



## AVAYA VIRTUAL SERVICES PLATFORM 8404

Flexible, Compact Form-Factor Ethernet Switch designed to deliver sophisticated functionality in versatile deployment scenarios for businesses that range from mid-market up to mid-sized enterprises

Avaya progresses the Compact Form-Factor Ethernet Switch concept with the introduction of a flexible, semi-modular option. An important pillar of the Virtual Services Platform 8000 Series, this Switch enables businesses to satisfy many typical deployments scenarios with a consistent hardware platform.

### PRODUCT HIGHLIGHTS:

- High-performance 10/40 Gigabit Ethernet Switch
- Flexible pay-as-you-grow semi-modular design
- Flexibly supports high-density 10 Gigabit, 40 Gigabit, and Combo modules
- At home in both the Campus Core and as the Spine Switch in a Data Center Spine/Leaf Top-of-Rack deployment
- Efficient compact form-factor that reduces power and footprint consumption
- Supports both conventional Routed IP and/or Fabric-based network deployments
- Delivers high-end functionality, performance, and scalability while helping to avoid the traditional 'Chassis Tax'

Mid-sized businesses are increasingly dependent upon application access and IT systems – much like their larger siblings – however they typically do not have the same levels of IT or funding resources available to build-out reliable networks using conventional techniques and products. They too seek advanced networking capabilities, but need these to be delivered in a streamlined, simplified, and cost-effective package.

The VSP 8000 Series features tight integration between the Industry's leading hardware and Avaya's proven VSP Operating System and this delivers a compelling package of enhanced levels of functionality and robustness. Leveraging Avaya's unique virtualization technologies, businesses can benefit from real-time service agility, avoiding the delays associated with conventional design, and the outages introduced in trying to maintain them. The Compact Form-Factor (CFF) design revolutionizes the cost/benefit proposition for the mid-market/mid-

sized Core Switch role; delivering higher port density, better price/port, lower entry price-point, enhanced power efficiency, reduced maintenance, smaller physical footprint, and easy scalability. Essentially, the CFF gives business what they need, and at the same time helps them avoid the 'Chassis Tax'.

The VSP 8000 Series debuted the Compact Form-Factor design concept, ushering in a unique approach to product and solution design. The original VSP 8284XSQ has come to define simplification, and the new VSP 8404 now adds flexibility to the equation. Leveraging the ability to support a diverse mix of Ethernet interfaces – from 10Mbps to 40Gbps, Copper- and Fiber-based – businesses can use the VSP 8404 to address a range of networking applications. The VSP 8404 is equally at home in the Core of a mid-sized Campus network, or as the Spine Switch in a Data Center Spine/Leaf Top-of-deployment. The VSP 8404



VSP 8404 4-slot Switch



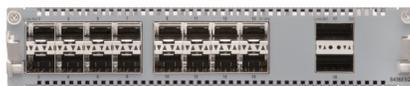
Front View



Rear View



8408QQ 40 Gigabit ESM



8418XSQ 10/40 Gigabit ESM



8418XTQ 10/40 Gigabit ESM



8424XS 10 Gigabit ESM



8424XT 10 Gigabit ESM



8424GS Gigabit ESM



8424GT Gigabit ESM

can also be deployed as a Campus Distribution Switch, providing and aggregation point between the Core and Access tiers. Supporting Avaya's innovative Fabric Connect and Switch Cluster technologies, in addition to conventional IPv4 and IPv6 Routing, the VSP 8404 is an agile and versatile player in a number of distinct scenarios.

The VSP 8404 deploys and operationalizes quickly, minimizes ongoing operational burden, and Avaya's unique network virtualization technologies enable real-time service deployment. As a product line, the VSP 800 Series enables businesses to redirect their finite IT resources to important value-adding projects.

The VSP 8404 shares the same next-generation hardware and software technology basis as the existing VSP 8284XSQ. This positions the product line to support both today's requirements and tomorrow's emerging needs. The VSP 8000 Series provides business with a future-ready solution that leverages the Industry's most software-definable network virtualization technology.

## Product Overview

The VSP 8404 Ethernet Switch provides four front-panel slots that support the flexible deployment of high-density VSP 8400 Series Ethernet Switch Modules. By default, the VSP 8404 is a "zero port" system, with a Chassis that integrates the switching fabric and all associated control and management electronics. Ethernet interfaces are delivered by the addition of one or more field-replaceable and hot-swappable Ethernet Switch Modules (ESMs).

In this manner, the VSP 8404 provides a low-cost, pay-as-you-grow solution for mid-sized businesses that wish to retain a high degree of flexibility as they develop solutions for their networking requirements.

The VSP 8400 Series Ethernet Switch Modules delivered at launch are as follows:

- 8408QQ 8-port 40 Gigabit Ethernet QSFP+ ESM
- 8418XSQ 16-port 10 Gigabit Ethernet SFP+ and 2-port 40 Gigabit Ethernet QSFP+ Combo ESM
- 8418XTQ 16-port 10 Gigabit Ethernet RJ45 and 2-port 40 Gigabit Ethernet QSFP+ Combo ESM
- 8424XS 24-port 10 Gigabit Ethernet SFP+ ESM
- 8424XT 24-port 10 Gigabit Ethernet RJ45 ESM
- 8424GS 24-port Gigabit Ethernet SFP ESM
- 8424GT 24-port Gigabit Ethernet RJ45 ESM

It should also be noted:

- 40 Gigabit Ethernet QSFP+ ports support Channelization and can therefore be individual sub-divided into four 10 Gigabit Ethernet channels.
- 10 Gigabit Ethernet SFP+ ports also support a wide range of 1 Gigabit Ethernet SFP Transceivers.
- 10 Gigabit Ethernet RJ45 ports also support 100/1000Mbps connectivity
- Gigabit Ethernet SFP ports support a wide range of 1 Gigabit Ethernet SFP Transceivers.
- Gigabit Ethernet RJ45 ports support 10/100/1000Mbps connectivity.

Please refer to the product technical documentation for further details.

The innovative design leverages the most advanced chipset from the Industry's leading supplier, featuring 2.56Tbps of switching and 1,428Mpps of frame forwarding performance. The chipset is designed to deliver Terabit-scale, wire-speed capabilities, with a fully integrated, high-performance ASIC architecture that facilitates multiple design opportunities. Latency has been optimized, with a 40% advance over current best examples. New intelligent buffer technology self-tunes thresholds for excellent burst absorption, offering a 5x efficiency gain over existing static designs. A flexible, over-sized Unified Forwarding Table delivers enhanced support for L2, L3, and Multicast networking requirements. This chipset also includes embedded support for a range of enabling technologies such as DCB, SPB, VXLAN, PIM, FCoE, and NAT/PAT.

## Benefits

The VSP 8404 adds significant flexibility to the Avaya Networking portfolio, and is compatible with, and complementary to, existing products and technologies. A new product, introducing the Compact Form-Factor concept, the VSP 8404, when deployed with other Avaya or third party Ethernet Switches devices, provides very high-capacity, high-performance connectivity solution for mid-sized Campus networks.

Building the Core using the cost-effective VSP 8404 and the Avaya Switch Cluster technology enhances the resiliency posture normally available to mid-sized business. In addition to the various high-availability factors offered by

expensive Chassis-based products (i.e. CPU, Switch Fabric, Power, Cooling, and of course Link), the combination of Switch Cluster and distributed hardware delivers total physical independent, including the ability to have the 'Core' split and deployed in different physical locations, independent and isolated control planes (meaning genuine process separation, isolation, and protection), and in-service software upgrades and be easily enacted. The VSP 8404 brings to the mid-sized Core the advantages that deploying Switch Cluster on Avaya's Chassis-based products has delivered for many years to larger networks, but now offering it at a price-point more compatible with mid-sized business.

The VSP 8404 also natively supports the Avaya Fabric Connect technology. Some of the key advantages that Fabric Connect delivers include:

- Making the need to configure network-wide VLANs obsolete
- Replacing multiple sequential legacy protocols with this one single unified technology
- Totally removing the risk of network loops
- Delivering the Edge-only provisioning model which seamlessly integrates with orchestration and automation
- Fully optimizing all links and all devices enabling businesses to get the most out of infrastructure investments

Traditionally, provisioning new services or to changing existing ones, requires engineers to touch every device in the service path, configuring each device to enable both the active and redundant links. The bigger the network the more complex and risky

this becomes. Leveraging Fabric Connect to virtualize the network delivers fundamental change. Rather than the network appearing as a mass of individual devices it becomes an opaque cloud, where we only need to touch the single unique device that is providing service directly to the end-point. Fabric Connects automatically and instantly propagates all of service attributes to every other node within the cloud.

Fabric Connect has the added advantage of separating and segmenting traffic to unique service constructs. This has advantages in delivering 'stealth networking' solutions that help with compliance for business processes such as PCI and HIPAA.

Creating an autonomic network delivers crucial advantages. It means that businesses no longer need to configure the Core of the network for every service change; service change is only configured at the Edge of the network, and this has dramatic impacts for the entire change paradigm. Network segmentation means that each service is uniquely encapsulated and carried independent of every other service. Leveraging a single unified protocol, with integrated IP Multicast, enables Fabric Connect to deliver the Industry's premium solution for simplified, scalable, and resilient IP Multicast-based applications. The Edge-only provisioning model delivers significant advances in how the network interacts with VM mobility. Layer 2 VLANs can be easily and seamlessly extended throughout the Data Center whether that is a single site or multi-site, and traffic flows are automatically load-balanced across all available links.

## System Compatibility

From a software perspective, the VSP 8404 introduced with the release of the VOSS 4.2 software version; this will therefore be the minimum level of software available to operate the Switch. The VOSS 6.0 release delivers the following major enhancements:

- **Avaya Distributed Virtual Routing (DvR).** This feature enhances IP routing for Fabric Connect implementations by fully optimizing both availability and performance of the IP Gateway functionality. When Layer 2 networks are stretched across the network - as might be the case for a dispersed Data Center or for a campus-wide WLAN deployment - it can be easy to end up in a situation where trans-subnetwork traffic is forced to double-back across interconnects. This problem is known as the "Trombone Effect". However, Avaya DvR virtualizes the Layer 3 Gateway functionality enabling this to be distributed to any or every node. Simple to configure and seamless to deploy, DvR avoids unnecessary bandwidth consumption, improves capacity and, especially relevant in the context of high-performance Data Center applications - reduces latency.

- **Avaya 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.

- **VXLAN Gateway.** This feature enables Fabric Connect edge nodes to connect to a Virtual Tunnel End-Point (VTEP) using VXLAN. This capability has a number of diverse uses, including defining connectivity a third party Open vSwitch implementation of VTEP, however, it's probably more likely to be used to deliver simplified, highly available interconnectivity between Fabric Connect domains. Organizations with large-scale Fabric Connect deployments, those encompassing multiple or diverse sites, sometimes prefer to selectively extend services between the domains. With the VXLAN Gateway capability, it's now possible to leverage simply-to-configure VXLAN provisioning over generic IP services (for example, MPLS) to interconnect the edge nodes of two distinct Fabric Connect domains and thereby seamlessly exchange services.

## Features & Capabilities

- Flexible support for up to 96 ports of 10 Gigabit Ethernet or up to 24 ports of 40 Gigabit Ethernet.
- Hot-swappable Ethernet Switch Modules.
- Non-blocking, wire-speed switching architecture.
- Integrated design that is optimized for low latency.
- Flexible table architecture delivers MAC, ARP, and IP Routing scalability.
- Feature-rich support for conventional VLAN, Link Aggregation, Spanning Tree technologies.

- Support for IP Routing techniques including Static, RIP, OSPF, eBGP, BGP+, ECMP, DvR/VRRP, PIM-SM/SSM, and VRF. Additionally, supports Static, RIPng, OSPFv3, ECMP, and VRRP for IPv6 deployments.
- IPv6-optimized Hardware.
- Avaya Switch Cluster technology supports Triangle & Square configurations, with both Layer 2 and Layer 3 functionality.
- Avaya Fabric Connect technology supports L2 Virtual Service Networks (VSNs), Layer 3 Virtual Service Networks, Inter-VSN Routing, IP Shortcut Routing, IP Multicast-over-Fabric Connect and Fabric Connect-PIM Gateway, Fabric Attach Server and Client, and Fabric Extend.
- MACsec and Enhanced Security Mode options.

### High Availability Power & Cooling

- Up to 2 field-replaceable, hot-swappable AC or DC internal Power Supplies.
- 4 field-replaceable Fan Modules.

### Warranty

- 12-month hardware.
- A complete range of support options are also available, either directly from Avaya or indirectly from our Authorized Business Partner network.

### Software Licensing

- 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 features: Layer 3 Virtual Service Networks, Fabric Extend, DvR, VXLAN Gateway, >24 VRFs, and - where local regulations permit - MACsec.

### Country of Origin

- China (PRC).

## VSP 8404 Specifications

### General

- Physical Connectivity:
  - Up to 24 x 40GBASE-QSFP+ Ports
  - Up to 96 x 10GBASE-SFP+ Ports
  - Up to 96 x 10GBASE-T Ports
  - Up to 96 x 1000BASE-SFP Ports
  - Up to 96 x 1000BASE-T Ports
- Channelization of 40 Gigabit ports
- Switch Fabric Architecture: 2.56Tbps Full-Duplex
- Frame forwarding rate: 1,428Mpps per Switch
- Nominal Latency: <480nsec
- Jumbo Frame support: up to 9,600 Bytes (802.1Q Tagged)
- MACsec support for 10 Gigabit and Channelized 40 Gigabit ports

### Layer 2

- MAC Address: 224,000
- Port-based VLANs: 4,059
- Private VLANs/E-Tree: 4,059
- MSTP Instances: 12
- MLT/LACP Groups: up to 96
- MLT Links per Group: 8
- LACP Links per Group: 8 Active
- Avaya VLACP Instances: up to 96
- Avaya SLPP Instances: 128

### Layer 3 IPv4 Routing Services

- ARP Entries: 32,000
- Static ARP Entries: 2000 per VRF, 10,000 System-wide
- IP Interfaces: 506
- CLIP Interfaces: 64
- IP Routes: up to 15,488
- IP Static Routes: 1,000 per VRF, 5000 System-wide
- RIP Interfaces: 200
- RIP Routes: up to 15,488
- OSPF Interfaces: 500
- OSPF Routes: up to 15,488
- OSPF Areas: 12 per VRF, 80 System-wide
- BGP Peers: 12
- BGP Routes: up to 15,488
- ECMP Groups: 1,000
- ECMP Paths per Group: 8
- NLB Clusters: 200
- RRRP Interfaces: 252
- RSMLT Interfaces: 252
- IPv4 UDP Forwarding Entries: 512
- IPv4 DHCP Relay Forwarding Entries: 1024
- IP Route Policies: 500 per VRF, 5,000 System-wide
- VRF Instances: up to 256

### Layer 3 IPv6 Routing Services

- Neighbors: 8,000
- Static Neighbors: 256
- IP Interfaces: 506
- CLIP Interfaces: 64
- IP Configured Tunnels: 506
- IP Routes: up to 7,488
- IP Static Routes: 1,000
- RIPng Interfaces: 48
- RIPng Routes: up to 7,488
- OSPFv3 Interfaces: 500
- OSPFv3 Routes: up to 7,488
- OSPFv3 Areas: 12 per VRF, 80 System-wide
- ECMP Groups: 1,000
- ECMP Paths per Group: 8
- RRRP Interfaces: 252
- RSMLT Interfaces: 252

### Multicast

- IGMP Interfaces: 4,059
- PIM Active Interfaces: 128
- MLD Interfaces: 4,059
- Static Multicast Routes: 4,000
- BCB IP Multicast S,G Streams: 16,000
- PIM-SSM Static Channels: 4,000
- IP Multicast Streams: 6,000
- IP Multicast Streams (Fabric Connect-PIM Gateway Nodes): 3,000
- 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 Avaya extensions
- MAC Address: 112,000
- NNI Interfaces/Adjacencies: up to 256
- BCB/BEB Nodes per Region: 2,000
- Transparent UNI Ports/Switch: 96
- BEB Nodes per VSN: 500
- L2 Virtual Service Networks: 4,059
- L3 Virtual Service Networks: up to 256
- IP Shortcut Routes: IPv4 15,488, and IPv6 7,488
- DvR Domains per Region: 16
- DvR-enabled L2 VSNs: up to 502
- DvR Controllers per Domain: 8
- DvR Leafs per Domain: 250
- DvR Interfaces: up to 502
- DvR Routes: up to 32,000
- L2 Multicast Virtual Service Networks: 2,000
- L3 Multicast Virtual Service Networks: 256
- VXLAN Gateway VTEP Destinations per Node: 500
- VXLAN Gateway VNI IDs per Node: 2,000
- Fabric Attach VLAN/VSN Assignments per Port: 94

### QoS & Filtering

- ACL: 256 Ingress and 126 Egress
- IPv4 ACE: 766 Ingress and 252 Egress
- IPv4 ACE: 252 Ingress and 252 Egress
- IPv6 ACE: 256 Ingress
- L2-L4 Ingress Port Rate Limiters: up to 96
- Egress Port Shaper Granularity: 1Mbps to 40Gbps per Port

### Operations & Management

- Mirrored Ports: up to 95
- sFlow: up to 3,000 samples per second
- Fabric RSPAN: up to 1,000 VSN IDs per Region

### Supported Transceivers

#### 40 Gigabit Ethernet

- 40GBASE-QSFP+ Passive Copper Direct Attach Cables - 0.5m, 1m, 3m, 5m
- 40GBASE-QSFP+ Passive Copper Break-Out Cables - 1m, 3m, 5m
- 40GBASE-QSFP+ Active Optical Break-Out Cable - 7m, 10m, 15m
- 40GBASE-QSFP+ Active Optical Direct Attach Cable - 10m
- 40GBASE-LM4 QSFP+, up to 80m over MMF
- 40GBASE-SR4/4x10GBASE-SR QSFP+ up to 150m over MMF
- 40GBASE-LR4 QSFP+, up to 10km over SMF
- 40GBASE-ER4 QSFP+, up to 40km over SMF

#### 10 Gigabit Ethernet

- 10GBASE-T, up to 100m over Cat 6a UTP/STP
- 10GBASE-CX, up to 10m over Twinax
- 10GBASE-LRM SFP+, up to 220m over MMF
- 10GBASE-SR/SW SFP+, up to 400m over MMF
- 10GBASE-LR/LW SFP+, up to 10km over SMF
- 10GBASE-BX10 SFP+, up to 10km over SMF
- 10GBASE-ER/EW SFP+, up to 40km over SMF
- 10GBASE-ER CDWM SFP+, up to 40km over SMF
- 10GBASE-ZR/ZW SFP+, up to 70km over SMF
- 10GBASE-ZR CDWM SFP+, up to 70km over SMF

Note: SFP+ sockets are also capable of supporting a wide range of 1 Gigabit Ethernet Transceivers; additionally, 10 Gigabit Ethernet RJ45 ports also support 100/1000Mbps connectivity. Avaya also supports third party CDWM and DWDM Transceivers in "Forgiving Mode".

Please refer to the product documentation for full details and a complete listing of all specifications and compliance.

**VSP 8404 Series Standards Compliance**  
 The VOSS 5.1 release provides compliance with the following IEEE and IETF standards:

**IEEE**

**802.1 Bridging (Networking) & 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 & 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
- 802.1AB-2005 Station & 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, implemented as 40GBASE-QSFP+

**RFC**

- 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 & 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 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 & 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 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, & Registration of an AS
- 1981 Path MTU Discovery for IPv6
- 2021 Remote Network Monitoring MIBv2 using SMIv2
- 2068 HTTP
- 2080 RIPng for IPv6
- 2131 DHCP
- 2138 RADIUS Authentication
- 2139 RADIUS Accounting
- 2236 IGMPv2 Snooping
- 2284 PPP Extensible Authentication Protocol
- 2328 OSPFv2
- 2404 HMAC-SHA-1-96 within ESP and AH<sup>1</sup>
- 2407 Internet IP Security Domain of Interpretation for ISAKMP<sup>1</sup>
- 2408 Internet Security Association & Key Management Protocol<sup>1</sup>
- 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 & 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 USM for SNMPv3
- 2575 VACM 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
- 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
- 2874 DNS Extensions for IPv6
- 2925 Definitions of Managed Objects for Remote Ping, Traceroute, & Lookup Operations
- 2933 IGMP 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
- 3376 IGMPv3
- 3411 Architecture for Describing SNMP Management Frameworks
- 3412 Message Processing and Dispatching for SNMP
- 3413 SNMP Applications
- 2139 RADIUS Accounting
- 3415 VACM for SNMP
- 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
- 3810 MLDv2 for IPv6
- 4007 IPv6 Scoped Address Architecture
- 4022 TCP MIB
- 4087 IP Tunnel MIB
- 4113 UDP MIB
- 4133 Entity MIB Version 3 (partial support)
- 4213 Basic Transition Mechanisms for IPv6 Hosts & 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 IP<sup>1</sup>
- 4302 IP Authentication Header<sup>1</sup>
- 4303 IP Encapsulating Security Payload<sup>1</sup>
- 4308 Cryptographic Suites for IPsec
- 4363 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering & VLAN Extensions
- 4429 Optimistic DAD for IPv6 (Partial Support)
- 4443 ICMP for IPv6
- 4541 Considerations for IGMP & MLD Snooping Switches
- 4552 Authentication/Confidentiality for OSPFv3
- 4601 PIM-SM: Revised Protocol Specification
- 4607 Source-Specific Multicast for IP
- 4835 Cryptographic Algorithm Implementation Requirements for ESP & AH
- 4861 Neighbor Discovery for IPv6
- 4862 IPv6 Stateless Address Auto-Configuration
- 5095 Deprecation of Type 0 Routing Headers in IPv6
- 5187 OSPFv3 Graceful Restart (Helper-mode)
- 5308 Routing IPv6 with IS-IS
- 5340 OSPF for IPv6
- 5798 VRRPv3 for IPv4 & IPv6
- 6105 IPv6 Router Advertisement Guard
- 6329 IS-IS Extensions supporting IEEE 802.1aq SPB
- 7358 VXLAN: A Framework for Overlaying Virtualized L2 Networks over L3 Networks (partial support)
- 7610 DHCPv6 Shield: Protecting against Rogue DHCPv6 Servers

<sup>1</sup> Implemented to deliver IPsec capability for Control Plane traffic only.

## Ordering Information

Ordering Information	
Part Code	Description
EC8400*01-E6	Virtual Services Platform 8404 4-slot Ethernet Switch, supporting up to 4 VSP 8000 Series Ethernet Switch Modules. Includes single 800W 100-240V AC Power Supply (no Power Cord), four Fan Modules, and Base Software License. Slide Rack Mount Kit sold separately.
EC8400001-E6	Virtual Services Platform 8404 4-slot Ethernet Switch, supporting up to 4 VSP 8000 Series Ethernet Switch Modules. Includes single 800W DC Power Supply (no Power Cord), four Fan Modules, and Base Software License. Slide Rack Mount Kit sold separately.
EC8404003-E6	8408QQ 8-port 40GBASE-QSFP+ Ethernet Switch Module for VSP 8400 (Note: Ports 7 & 8 are disabled when used in VSP 8404).
EC8404005-E6	8418XSQ 16-port 10GBASE-SFP+ & 2-port 40GBASE-QSFP+ Combo Ethernet Switch Module for VSP 8400 Series.
EC8404006-E6	8418XTQ 16-port 10GBASE-T & 2-port 40GBASE-QSFP+ Combo Ethernet Switch Module for VSP 8400 Series
EC8404001-E6	8424XS 24-port 10GBASE-SFP+ Ethernet Switch Module for VSP 8400.
EC8404002-E6	8424XT 24-port 10GBASE-T Ethernet Switch Module for VSP 8400.
EC8404007-E6	8424GS 24-port 1000BASE-SFP Ethernet Switch Module for VSP 8400.
EC8404008-E6	8424GT 24-port 1000BASE-T Ethernet Switch Module for VSP 8400.
EC8005*01-E6	800W 100-240V AC Power Supply, for use with the VSP 7200/8000 Series.
EC8005001-E6	800W DC Power Supply, for use with the VSP 7200/8000 Series.
380176	VSP 8000 Series Premier Software License: enables L3 VSN.
380177	VSP 8000 Series Premier Software License: enables L3 VSN and MACsec.
EC8011002-E6	VSP 8000 Slide Rack Mount Kit (300-900mm).
EC8011003-E6	VSP 8000 Chassis Power Supply Filler Panel.
EC8011004-E6	VSP 8000 Chassis Spare Fan Module.
AL2011020-E6	Avaya DB-9 Female to RJ-45 Console Connector (RED).
AL2011021-E6	Avaya DB-9 Male to RJ-45 Console Connector (BLUE).
AL2011022-E6	Avaya RJ-45/DB-9 Integrate Console Cable.
Where applicable the seventh character (*) of the Product Code is replaced to indicate the required product nationalization:	
A	No Power Cord option.
B	Includes European "Schuko" Power Cord option, common in Austria, Belgium, Finland, France, Germany, Netherlands, Norway and Sweden.
C	Includes Power Cord used in UK and Ireland.
D	Includes Power Cord used in Japan.
E	Includes Power Cord used in North America.
F	Includes Power Cord used in Australia, New Zealand and People's Republic of China.

### Notes of product ordering and hardware installation considerations:

- Customers should choose the model number that corresponds with their regional power cord requirements.
- Avaya recommends that Customers purchase a second power supply unit, in order to provide highly available power.
- Avaya recommends that Customers order a Slide Rack Mount Kit with every unit; the 300-900mm kit is designed to fit within most 4-post rack mount systems. Rack mounting with just two post ears would likely cause warping of the rack due to the weight of the unit and is therefore not recommended. Customers are advised to use mounting ears only in conjunction with a supporting shelf.
- A Console Cable is not shipped with the unit and, if required, must be ordered separately.

## Additional Information

For further information about the Avaya Virtual Services Platform 8000 Series please visit [www.avaya.com/products](http://www.avaya.com/products), and for the complete Avaya Networking portfolio, [www.avaya.com/networking](http://www.avaya.com/networking).

## About Avaya

Avaya is a leading, global provider of customer and team engagement solutions and services available in a variety of flexible on-premise and cloud deployment options. Avaya's fabric-based networking solutions help simplify and accelerate the deployment of business critical applications and services. For more information, please visit [www.avaya.com](http://www.avaya.com).

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