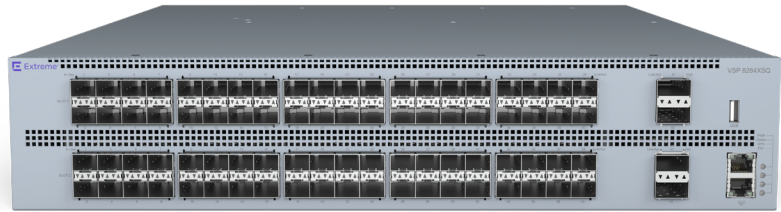


## Highlights

- High-performance 10/40 Gigabit Ethernet Switch
- 80 ports of 10 Gigabit Ethernet configured as SFP+ sockets
- 4 ports of 40 Gigabit Ethernet configured as QSFP+ sockets
- Efficient compact form-factor that reduces power and footprint consumption
- Supports both conventional Routed IP and/or Fabric-based networking deployments
- Delivers high-end functionality, performance, and scalability while helping avoid the 'Chassis Tax'



# Virtual Services Platform 8284XSQ

## Product Overview

The ExtremeSwitching<sup>™</sup> VSP 8284XSQ is a compact form-factor Ethernet switch designed to deliver sophisticated yet simplified functionality in deployments for mid-sized businesses. It provides a total of 84 fixed ports, configured as 80 ports of 10 Gigabit Ethernet, presented as SFP+ sockets and 4 ports of 40 Gigabit Ethernet, presented as QSFP+ sockets. The innovative design leverages an advanced chipset, featuring 2.56Tbps of switching and 1,428Mpps of frame forwarding performance.

The VSP 8284XSQ adds significant flexibility to the ExtremeSwitching portfolio. Introducing the Compact Form-Factor concept, the VSP 8284XSQ provides a very high-capacity, high-performance connectivity solution for mid-sized campus networks.

The VSP 8284XSQ also natively supports the Extreme Networks Fabric Connect technology. Some of the key advantages that Fabric Connect delivers include:

- Makes the need to configure network-wide VLANs obsolete
- Replaces multiple legacy protocols with a single unified technology
- Removes the risk of network loops
- Delivers an Edge-only provisioning model which seamlessly integrates with orchestration and automation
- Fully optimizes all links and all devices enabling businesses to get the most out of infrastructure investments

Traditionally, provisioning new network services required 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 enables a profound change. Rather than the network appearing as a mass of individual devices it becomes a single cloud, so that engineers only need to touch the single unique device that is providing service directly to the end-point. Fabric Connect technology automatically and instantly propagates all of service attributes to every other node within the cloud, delivering end-to-end connectivity.

## System Compatibility

The VSP 8284XSQ was introduced with VOSS 4.0 software version, which is the minimum level of software to operate the switch. The recent VOSS 7.1 release delivers the following major enhancements:

- Application Telemetry
- VXLAN VTEP Hardware Configuration and Management using OVSDDB

**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 this granular visibility into application performance, users, locations and devices.

## Features and Capabilities

- 80 ports of 10 Gigabit Ethernet and 4 ports of 40 Gigabit Ethernet
- 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, BGPv6 Peering, ECMP, VRRP, and VRF for IPv6 deployments
- IPv6-optimized Hardware
- Extreme Networks Switch Cluster technology supports Triangle and Square configurations, with both Layer 2 and Layer 3 functionality
- Extreme Networks 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, Fabric Extend, and Zero-Touch Fabric Connect
- MACsec and Enhanced Security Mode options

## High-Availability Power and Cooling

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

## Warranty

- Lifetime Next Business Day shipment of replacement hardware
- Lifetime Basic Technical Support
- 90-Day Advanced Technical Support
- A complete range of support options are also available, either directly from Extreme Networks 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 not 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)
- Taiwan (for GSA models)

## Specifications

### General

- Physical Connectivity:
  - 80 x 10GBASE-SFP+ Ports
  - 4 x 40GBASE-QSFP+ Ports
- Channelization of 40 Gigabit ports
- Switch Fabric Architecture: 2.56Tbps Full-Duplex
- Frame forwarding rate: 1,428Mpps per Switch
- Jumbo Frame support: up to 9,600 Bytes (802.1Q Tagged)
- MACsec support for 10 Gigabit ports

## Specifications (cont.)

### Layer 2

- MAC Address: 224,000
- Port-based VLANs: 4,059
- Private VLANs/E-Tree: up to 200
- MSTP Instances: 12
- MLT/LACP Groups: 84, and up to 96 when all 40 Gigabit ports are Channelized
- MLT Links per Group: 8
- LACP Links per Group: 8 Active
- Extreme Networks VLACP Interfaces: 84, and up to 96 when all 40 Gigabit ports are Channelized
- Extreme Networks SLPP VLANs: 128

### Layer 3 IPv4 Routing Services

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

### Layer 3 IPv6 Routing Services

- Neighbors: 8,000
- Static Neighbors: 128 per VRF, 256 per switch
- IP Interfaces: up to 506
- CLIP Interfaces: 64
- IP Configured Tunnels: 506
- IP Routes: up to 7,744
- IP Static Routes: 1,000
- RIPng Interfaces: 48
- RIPng Routes: up to 7,744
- OSPFv3 Interfaces: 500
- OSPFv3 Routes: up to 7,744
- OSPFv3 Areas: 80 per switch
- BGPv6 Peers: 24
- ECMP Groups: 1,000
- ECMP Paths per Group: 8
- VRRP Interfaces: up to 252
- RSMLT Interfaces: 252
- DHCP Relay Forwarding: 512
- VRF Instances: up to 256

### 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

## Specifications (cont.)

### Fabric Connect

- 802.1aq/RFC 6329 Shortest Path Bridging with Extreme Networks extensions
- MAC Address: 112,000
- NNI Interfaces/Adjacencies: up to 255
- BEB Nodes per VSN: 500
- Transparent UNI Ports/Switch: 84, and up to 96 when all 40 Gigabit ports are Channelized
- BCB/BEB Nodes per Region: 800
- 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: up to 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 and Filtering

- IPv4 ACE: 766 Ingress and 252 Egress
- IPv6 ACE: 256 Ingress
- L2-L4 Ingress Port Rate Limiters: 84, and up to 96 when all 40 Gigabit ports are Channelized
- Egress Port Shaper Granularity: 1Mbps to 40Gbps per Port

### Operations and Management

- Mirrored Ports: 83, and up to 95 when all 40 Gigabit ports are Channelized
- 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-SR Bi-Directional QSFP+, up to 125m over MMF
- 40GBASE-SR4/4x10GBASE-SR QSFP+ up to 150m over MMF
- 40GBASE-LR4 QSFP+, up to 10km over SMF
- 40GBASE-LR4 Parallel Single-Mode 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-BX40 SFP+ Bi-Directional, up to 40km over SMF (must be used in pairs)
- 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 10 Gigabit Ethernet Transceivers. Extreme Networks 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.

# Specifications (cont.)

## Standards Compliance

### 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)
- 802.1Qbp 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, 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 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 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 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 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 AH1
- 2407 Internet IP Security Domain of Interpretation for ISAKMP1
- 2408 Internet Security Association and 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 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 tributes
- 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
- 2869 RADIUS Extensions (partial support)
- 2874 DNS Extensions for IPv6
- 2925 Definitions of Managed Objects for Remote Ping, Trace route, and 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
- 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
- 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
- 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 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 and VLAN Extensions (partial support)
- 4429 Optimistic DAD for IPv6 (partial support)
- 4443 ICMP for IPv6
- 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 AH
- 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 IEEE 802.1aq SPB
- 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)

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

## Ordering Information

Part Code	Description
EC8200A01-E6	Virtual Services Platform 8284XSQ 84-port Ethernet Switch, supporting 80 x 10GBASE-SFP+ and 4 x 40GBASE-QSFP+ ports. Includes a single 800W 100-240V AC Power Supply (no Power Cord), four Fan Trays, and Base Software License. Slide Rack Mount Kit sold separately.
EC8200001-E6	Virtual Services Platform 8284XSQ 84-port Ethernet Switch, supporting 80 x 10GBASE-SFP+ and 4 x 40GBASE-QSFP+ ports. Includes a single 800W DC Power Supply, four Fan Trays, and Base Software License. Slide Rack Mount Kit sold separately.
EC8005A01-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	Extreme Networks DB-9 Female to RJ-45 Console Connector (RED).
AL2011021-E6	Extreme Networks DB-9 Male to RJ-45 Console Connector (BLUE).
AL2011022-E6	Extreme Networks RJ-45/DB-9 Integrate Console Cable.
GSA Version	
EC8200A01-E6G6	Virtual Services Platform 8284XSQ GSA Version. Includes single 800W 100-240V AC Power Supply (no Power Cord, four Fan Trays, and Base Software License. Slide Rack Mount Kit sold separately.

Notes of product ordering and hardware installation considerations:

- Customers must separately order power cord corresponding to their regional (or country-specific) requirement. For a list of available power cords, please refer to "Lifecycle Notification on VSP Power Cord Models" at: <http://bit.ly/2q1YBqo>
- Extreme Networks recommends that Customers purchase a second power supply unit, in order to provide highly available power.
- Extreme Networks 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.



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