Product Highlights

Performance

- 7050QX-32S: 32x40GbE ports & 4x10GbE
- 7050QX2-32S: 32x40GbE ports & 4x10GbE
- Up to 2.56 terabits per second
- Up to 1.44 billion packets per second
- Wire speed L2 and L3 forwarding
- Latency from 550ns

Data Center Optimized Design

- Typical power of 5W per 40GbE port for lower cost of ownership
- Over 92% efficient power supplies
- 1+1 redundant & hot-swappable power
- N+1 redundant & hot-swappable fans
- Front-to-rear or rear-to-front cooling
- Tool less rails for simple installation

Cloud Networking Ready

- VXLAN and VM Tracer
- OpenFlow, DirectFlow and eAPI
- 288K MAC entries
- 144K IPv4 Routes
- 208K IPv4 Host Routes
- Up to 16MB Dynamic Buffer Allocation

Resilient Control Plane

- High Performance x86 CPU
- Up to 8GB DRAM
- Up to 4GB Flash
- User applications can run in a VM

Built-in Solid State Storage

- Solid State Drive option
- Store logs and data captures
- Leverage linux tools with no limitations

Advanced Provisioning & Monitoring

- CloudVision
- Zero Touch Provisioning (ZTP)
- LANZ for microburst detection
- DANZ Advanced Mirroring for improved visibility
- sFlow
- Self-configure and recover from USB

Arista Extensible Operating System

- Single binary image for all products
- Fine-grained truly modular network OS

Stateful Fault Containment (SFC)
Stateful Fault Repair (SFR)
Full Access to Linux shell and tools
Extensible platform - bash, python, C++

Overview

The Arista 7050QX are members of the Arista 7050X Series and key components of the Arista portfolio of data center switches. The Arista 7050X Series are purpose built 10/40GbE data center switches in compact and energy efficient form factors with wire speed layer 2 and layer 3 features, combined with advanced features for software defined cloud networking.

Increased adoption of 10 Gigabit Ethernet servers coupled with applications using higher bandwidth is accelerating the need for dense 10 and 40 Gigabit Ethernet switching. The 7050QX Series support a flexible combination of 10G and 40G in a highly compact form factor that allows customers to design large leaf and spine networks to accommodate east-west traffic patterns found in modern data centers, high performance compute and big data environments.

Featuring 32 QSFP+ ports in a 1RU form factor the switches deliver feature rich layer 2 and layer 3 wire speed performance with an overall throughput of 2.56 Tbps. For configuration flexibility all models support up to 32x 40GbE ports or 24 QSFP+ ports can be used as 4x10GbE for a 96x10GbE and 8x 40GbE system. Additionally the 7050QX-32S and 7050QX2-32S feature four SFP+ ports that are internally shared with the first QSFP+ port for directly connecting 10GbE and 1GbE interfaces. The Arista 7050QX switches offer low latency from 550ns in cut-through mode, and a shared packet buffer pool that is allocated dynamically to ports that are congested. With typical power consumption of less than 5 watts per 40GbE port the 7050QX Series provide industry leading power efficiency. An optional built-in SSD supports advanced logging, data captures and other services directly on the switch.

Combined with Arista EOS the 7050QX Series delivers advanced features for big data, cloud, virtualized and traditional designs.

Arista 7050QX-32S: 32 x 40GbE QSFP+ ports, 4 SFP+ ports

Arista EOS

The Arista 7050X runs the same Arista EOS software as all Arista products, simplifying network administration. Arista EOS is a modular switch operating system with a unique state sharing architecture that cleanly separates switch state from protocol processing and application logic. Built on top of a standard Linux kernel, all EOS processes run in their own protected memory space and exchange state through an in-memory database. This multi-process state sharing architecture provides the foundation for in-service-software updates and self-healing resiliency.

With Arista EOS, advanced monitoring and automation capabilities such as Zero Touch Provisioning, VMTracer and Linux based tools can be run natively on the switch with the powerful x86 CPU subsystem.
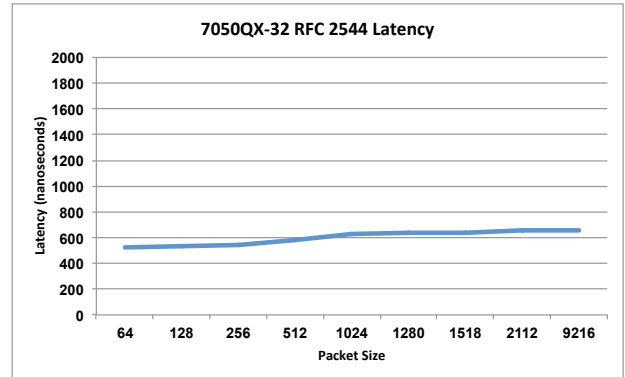
High Availability

The Arista 7050X series switches were designed for high availability from both a software and hardware perspective. Key high availability features include:

- 1+1 hot-swappable power supplies and four N+1 hot-swap fans
- Color coded PSU's and fans
- Live software patching
- Self healing software with Stateful Fault Repair (SFR)
- Smart System Upgrade (SSU) and Accelerated Software Update (ASU)
- Up to 64 10GbE or 40GbE ports per link aggregation group (LAG)
- Multi-chassis LAG for active/active L2 multi-pathing
- Up to 128-way ECMP routing for load balancing and redundancy

Arista 7050QX 1RU Rear View:
*Front to Rear (red) and Rear-to-front (blue) airflow*

Dynamic Buffer Allocation

In cut-through mode, the Arista 7050QX switches forward packets with a latency of 550 nanoseconds to 650 nanoseconds. Upon congestion, the packets are buffered in shared packet memory that has a total size of 12 MBytes. Unlike other architectures that have fixed per-port packet memory, the 7050QX Series use Dynamic Buffer Allocation (DBA) to allocate up to 6.7MB of packet memory to a single port for lossless forwarding. The 7050QX2-32S has an optimized 16Mbyte buffer for more demanding environments.

Arista 7050QX: Latency through QSFP+ ports

Scaling Data Center Performance

The Arista 7050QX series deliver line rate switching at layer 2 and layer 3 to enable faster and simpler network designs for data centers that dramatically lowers the network capital and operational expenses. When used in conjunction with the Arista 7000 series of fixed and modular switches it allows networks to scale to over 110,000 10G servers in low-latency two-tier networks that provide predictable and consistent application performance. The flexibility of the L2 and L3 multi-path design options combined with support for open standards provides maximum flexibility, scalability and network wide virtualization. Arista EOS advanced features provide control and visibility with single point of management.
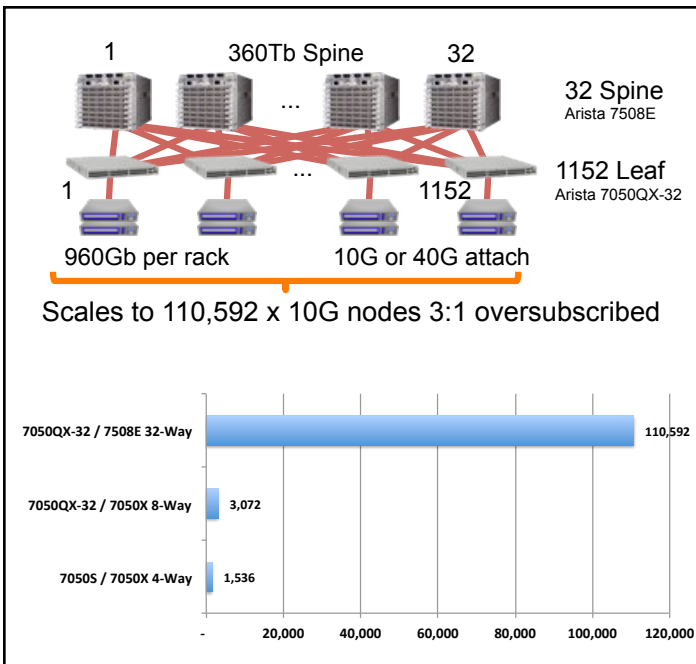
Arista Leaf-Spine Design with L3 ECMP
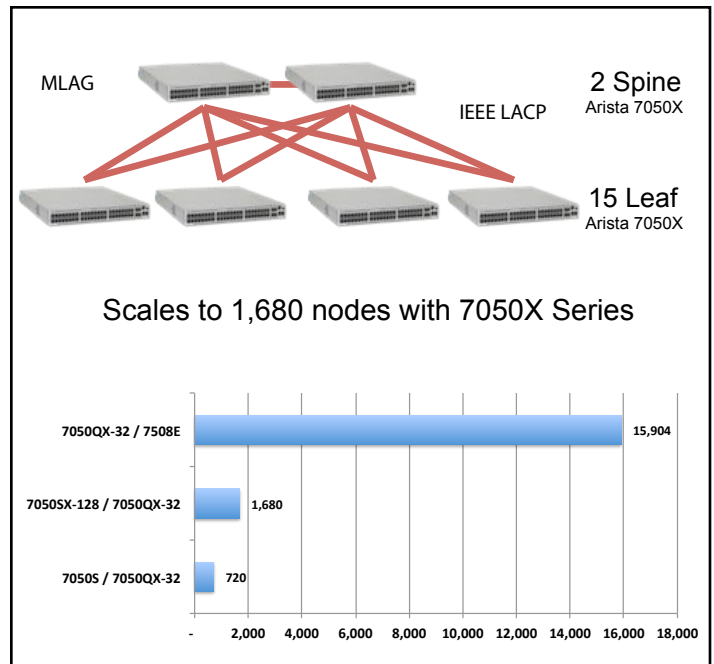
Arista Leaf-Spine Design with L2 MLAG

Arista Leaf-Spine Two-tier Network Architecture with 7050QX Series

Maximum Flexibility for Scale Out Network Designs

Scale out network designs enable solutions to start small and evolve over time. A simple two-way design can grow as far as 64-way without significant changes to the architecture. The Arista 7050QX include enhancements that allow for flexible scale-out designs:
• Up to 128-way ECMP and 64-way MLAG provide scalable designs and balance traffic evenly across large scale 2 tier leaf-spine designs
• Custom hash algorithms for efficient hashing, persistent hashing and custom lookups for tunneled protocols.
• Flexible allocation of L2 and L3 forwarding table resources for more design choice
• Wide choice of dense 10G/40G ports for single port multi-speed flexibility
• VXLAN routing, bridging and gateway for physical to virtualization communication to enable next generation data center designs
• DANZ, sFlow and multi-port mirroring to detect micro-burst congestion and provide network wide visibility and monitoring

Software Defined Networking

Arista Software Defined Cloud Networking (SDCN), combines the principles that have made cloud computing the unstoppable force that it is: automation, self service provisioning, and linear scaling of both performance and economics coupled with the trend in Software Defined Networking that delivers: network virtualization, custom programmability, simplified architectures, and lower capital expenditure. This combination creates a best-in-class software foundation for maximizing the value of the network to both the enterprise and service provider data center. A new architecture for the most mission-critical location within the IT infrastructure that simplifies management and provisioning, speeds up service delivery, lowers costs and creates opportunities for competitive differentiation, while putting control and visibility back in the hands of the network and systems administrators.

Smart System Upgrade

Smart System Upgrade is a network application designed to address one of the most complicated and challenging tasks facing data center administrators - network infrastructure maintenance. Changes to the underlying network infrastructure can affect large numbers of devices and cause significant outages. SSU provides a fully customizable suite of features that tightly couples data center infrastructure to technology partners allowing for intelligent insertion and removal, programmable updates to software releases and open integration with application and infrastructure elements.

Advanced Event Management (AEM)

Simplifying the overall operations, AEM provides the tools to customize alerts and actions. AEM is a powerful and flexible set of tools to automate tasks and customize the behavior of EOS and the operation of the overall data center switching infrastructure. AEM allows operators to fully utilize the intelligence within EOS to respond to real-time events, automate routine tasks, and automate actions based on changing network conditions.

Enhanced Features for High Performance Networks

The Arista 7050QX deliver a suite of advanced traffic control and monitoring features to improve the agility of modern high performance environments, with solutions for data monitoring, and next-generation virtualization.

Precise Data Analysis

Arista Latency Analyzer (LANZ) is an integrated feature of EOS. LANZ provides precise real-time monitoring of micro-burst and congestion events before they impact applications, with the ability to identify the sources and capture affected traffic for analysis.

Virtualization

Supporting next-generation virtualized data centers requires tight integration with orchestration tools and emerging encapsulation technologies such as VXLAN. The 7050QX builds on the valuable tools already provided by the Arista VM Tracer suite to integrate directly into encapsulated environments. Offering a wire-speed gateway between VXLAN and traditional L2/3 environments, the 7050X makes integration of non-VXLAN aware devices including servers, firewalls and load-balancers seamless and provides the ability to leverage VXLAN as a standards based L2 extension technology for non-MPLS environments.

Unified Forwarding Table

Cloud network scalability is directly impacted by the size of a switches forwarding tables. In many systems a 'one size fits all' approach is adopted using discrete fixed size tables for each of the common types of forwarding entry. The Arista 7050X leverages a common Unified Forwarding Table for the L2 MAC, L3 Routing, L3 Host and IP Multicast forwarding entries, which can be partitioned per entry type. The ideal size of each partition varies depending on the network deployment scenario. The flexibility of the UFT coupled with the range of pre-defined configuration profiles available on the 7050X ensures optimal resource allocation for all network topologies and network virtualization technologies.

Layer 2 Features

- 802.1w Rapid Spanning Tree
- 802.1s Multiple Spanning Tree Protocol
- Rapid Per VLAN Spanning Tree (RPVST+)
- 4096 VLANs
- Q-in-Q
- 802.3ad Link Aggregation/LACP
    - 64 ports/channel
    - 104 groups per system
- Multi-Chassis Link Aggregation (MLAG)
    - 64 ports per MLAG
- Custom LAG Hashing
- 802.1AB Link Layer Discovery Protocol
- 802.3x Flow Control
- Jumbo Frames (9216 Bytes)
- IGMP v1/v2/v3 snooping
- Storm Control
- RAIL

Layer 3 Features

- Routing Protocols: OSPF, OSPFv3, BGP, MP-BGP, IS-IS, and RIPv2
- 64-way Equal Cost Multipath Routing (ECMP) [2]
- Resilient ECMP Routes
- VRF
- BFD
- Route Maps
- IGMP v2/v3
- PIM-SM / PIM-SSM / PIM-BIDIR
- Anycast RP (RFC 4610)
- VRRP
- Virtual ARP (VARP)
- Policy Based Routing
- uRPF
- Selective Route Download

Advanced Monitoring and Provisioning

- Zero Touch Provisioning (ZTP)
- Latency Analyzer and Microburst Detection (LANZ)
    - Configurable Congestion Notification (CLI, Syslog)
    - Streaming Events (GPB Encoded) *
    - Capture/Mirror of congested traffic *
- Advanced Monitoring
    - Port Mirroring (4 active sessions)
    - L2/3/4 Filtering on Mirror Sessions
    - Mirror to EOS/SSD
- Advanced Event Management suite (AEM)
    - CLI Scheduler
    - Event Manager
    - Event Monitor
    - Linux tools
- Optional SSD for logging and data capture
- Integrated packet capture/analysis with TCPDump
- RFC 3176 sFlow

- Restore & configure from USB
- Blue Beacon LED for system identification
- Software Defined Networking (SDN)
    - Openflow 1.0 [1]
    - Openflow 1.3 [1]
    - Arista DirectFlow
    - eAPI
    - OpenStack Neutron Support
- IEEE 1588 PTP (Transparent Clock and Boundary Clock)

Virtualization Support

- VXLAN Gateway (draft-mahalingam-dutt-dcops-vxlan-01)
- VXLAN Tunnel Endpoint
- VXLAN Routing
- VXLAN Bridging
- VM Tracer VMware Integration
    - VMware vSphere support
    - VM Auto Discovery
    - VM Adaptive Segmentation
    - VM Host View

Security Features

- PDP
- Service ACLs
- DHCP Relay / Snooping
- TACACS+
- RADIUS

Quality of Service (QoS) Features

- Up to 8 queues per port
- 802.1p based classification
- DSCP based classification and remarking
- Explicit Congestion Notification (ECN)
- QoS interface trust (COS / DSCP)
- Strict priority queueing
- Weighted Round Robin (WRR) Scheduling
- Per-Priority Flow Control (PFC)
- Data Center Bridging Extensions (DCBX)
- 802.1Qaz Enhanced Transmissions Selection (ETS) *
- ACL based DSCP Marking
- ACL based Policing
- Policing/Shaping
- Rate limiting
- Audio Video Bridging (AVB) *

* Not currently supported in EOS
Note 1 Not supported on 7050QX2-32S
Note 2 Up to 128-way ECMP on 7050QX2-32S
Note 3 Not currently supported on 7050QX2-32S

Network Management

- CloudVision
- 10/100/1000 Management Port
- RS-232 Serial Console Port
- USB Port
- SNMP v1, v2, v3
- Management over IPv6
- Telnet and SSHv2
- Syslog
- AAA
- Industry Standard CLI
- Accelerated Software Upgrade (ASU) [3]

Extensibility

- Linux Tools
    - Bash shell access and scripting
    - RPM support
    - Custom kernel modules
- Programmatic access to system state
    - Python
    - C++
- Native KVM/QEMU support

Standards Compliance

- 802.1D Bridging and Spanning Tree
- 802.1p QOS/COS
- 802.1Q VLAN Tagging
- 802.1w Rapid Spanning Tree
- 802.1s Multiple Spanning Tree Protocol
- 802.1AB Link Layer Discovery Protocol
- 802.3ad Link Aggregation with LACP
- 802.3ab 1000BASE-T
- 802.3z Gigabit Ethernet
- 802.3ae 10 Gigabit Ethernet
- 802.3ba 40 Gigabit Ethernet
- RFC 2460 Internet Protocol, Version 6 (IPv6) Specification
- RFC 4861 Neighbor Discovery for IP Version 6 (IPv6)
- RFC 4862 IPv6 Stateless Address Autoconfiguration
- RFC 4443 Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification

SNMP MIBs

- RFC 3635 EtherLike-MIB
- RFC 3418 SNMPv2-MIB
- RFC 2863 IF-MIB
- RFC 2864 IF-INVERTED-STACK-MIB
- RFC 2096 IP-FORWARD-MIB
- RFC 4363 Q-BRIDGE-MIB
- RFC 4188 BRIDGE-MIB
- RFC 2013 UDP-MIB
- RFC 2012 TCP-MIB
- RFC 2011 IP-MIB
- RFC 2790 HOST-RESOURCES-MIB

- RFC 3636 MAU-MIB
- RMON-MIB
- RMON2-MIB
- HC-RMON-MIB
- LLDP-MIB
- LLDP-EXT-DOT1-MIB
- LLDP-EXT-DOT3-MIB
- ENTITY-MIB
- ENTITY-SENSOR-MIB
- ENTITY-STATE-MIB
- ARISTA-ACL-MIB
- ARISTA-QUEUE-MIB
- RFC 4273 BGP4-MIB
- RFC 4750 OSPF-MIB
- ARISTA-CONFIG-MAN-MIB
- ARISTA-REDUNDANCY-MIB
- RFC 2787 VRRPv2-MIB
- MSDP-MIB
- PIM-MIB
- IGMP-MIB
- IPMROUTE-STD-MIB
- SNMP Authentication Failure trap
- ENTITY-SENSOR-MIB support for DOM (Digital Optical Monitoring)
- User configurable custom OIDs

See EOS release notes for latest supported MIBs

System Resources	7050X Series	7050X2 Series
STP Instances	64 (MST)/510 (RPVST+)	
IGMP Groups	288K, with 8K unique groups	
ECMP	64-way, 1K groups	128-way, 2K groups

Forwarding Resources	Base Mode	UFT Modes [1]
MAC Addresses	32K	288K
IPv4 Hosts	16K	208K
IPv4 Routes - Unicast	16K	144K
IPv4 Routes - Multicast	16K	104K *
IPv6 Hosts	16K	104K
IPv6 Routes - Unicast	8K	77K *
IPv6 Routes - Multicast	4K	52K *

1. Maximum values dependent on shared resources in some cases

Specifications

	7050QX-32S	7050QX2-32S
Ports	32 x QSFP+ 4 x SFP+	32 x QSFP+ 4 x SFP+
Max 40GbE Ports	32 x QSFP+	32 x QSFP+
Max 10GbE Ports	96	96
Max 1GbE Ports	4	4
Throughput	2.56 Tbps	
Packets/Second	1440 Mpps	
Latency	550 ns	
CPU	Quad-Core x86	Quad-Core x86
System Memory	4 Gigabytes	8 Gigabytes
Flash Storage Memory	4 Gigabytes	4 Gigabytes
Packet Buffer Memory	12MB (Dynamic Buffer Allocation)	16MB
SSD Storage (optional)	120 Gigabytes	120 Gigabytes
10/100/1000 Mgmt Ports	1	
RS-232 Serial Ports	1 (RJ-45)	
USB Ports	1	
Hot-swap Power Supplies	2 (1+1 redundant)	
Hot-swappable Fans	4 (N+1 redundant)	
Reversible Airflow Option	Yes	
Typical/Max Power Draw*	150W /302W	129W /283W
Size (WxHxD)	19 x 1.75 x 16" (48.3x 4.4x 40.64cm)	
Weight	20lbs (9.1kg)	20lbs (9.1kg)
Minimum EOS Version	4.14.0	4.18.0

* Typical power consumption measured at 25C ambient with 50% load
Note Performance rated over operation with average packets larger than 200 bytes.

Power Supply Specifications

Switch Model	7050QX-32S / 7050QX2-32S	
Power Supply Model	PWR-500AC	PWR-500-DC
Input Voltage	100-240VAC	40-72V DC
Typical Input Current	6.3 - 2.2A	13.1 - 7.3A 11A at -48V
Input Frequency	50/60Hz	DC
Input Connector	IEC 320-C13	AWG #16-12
Efficiency (Typical)	93% Platinum	-

Supported Optics and Cables

Interface Type	QSFP+ ports
10GBASE-CR	0.5m-5m QSFP+ to 4x SFP+
40GBASE-CR4	0.5m to 5m QSFP+ to QSFP+
40GBASE-AOC	3m to 100m
40GBASE-UNIV	150m (OM3)/150m (OM4)/500m (SM)
40GBASE-SRBD	100m (OM3) /150m (OM4)
40GBASE-SR4	100m (OM3) /150m (OM4)
40GBASE-XSR4	300m (OM3) /400m (OM4)
40GBASE-PLRL4	1km (1km 4x10G LR/LRL)
40GBASE-LRL4	1km
40GBASE-PLR4	10km (10km 4x10G LR/LRL)
40GBASE-LR4	10km
40GBASE-ER4	40km

Interface Type	SFP+ ports
10GBASE-CR	SFP+ to SFP+: 0.5m-5m
10GBASE-AOC	SFP+ to SFP+: 3m-30m
10GBASE-SRL	100m (OM3) /150m (OM4)
10GBASE-SR	300m (OM3) /400m (OM4)
10GBASE-LRL	1km
10GBASE-LR	10km
10GBASE-ER	40km
10GBASE-ZR	80km
10GBASE-DWDM	80km
100/1000BASE-T, 1GbE SX/LX	Yes

Environmental Characteristics

Operating Temperature	0 to 40°C (32 to 104°F)
Storage Temperature	-40 to 70°C (-40 to 158°F)
Relative Humidity	5 to 95%
Operating Altitude	0 to 10,000 ft, (0-3,000m)

Standards Compliance

EMC	Emissions: FCC, EN55022, EN61000-3-2, EN61000-3-3 or EN61000-3-11, EN61000-3-12 (as applicable) Immunity: EN55024 Emissions and Immunity: EN300 386
Safety	UL/CSA 60950-1, EN 60950-1, IEC 60950-1 CB Scheme with all country differences
Certifications	North America (NRTL) European Union (EU) BSMI (Taiwan) C-Tick (Australia) CCC (PRC) MSIP (Korea) EAC (Customs Union) VCCI (Japan)
European Union Directives	2006/95/EC Low Voltage Directive 2004/108/EC EMC Directive 2011/65/EU RoHS Directive 2012/19/EU WEEE Directive

Ordering Information

Product Number	Product Description
DCS-7050QX2-32S-F	Arista 7050X2, 32xQSFP+ & 4xSFP+ switch, front-to-rear airflow and dual 500W AC power supplies
DCS-7050QX2-32S-R	Arista 7050X2, 32xQSFP+ & 4xSFP+ switch, rear-to-front airflow and dual 500W AC power supplies
DCS-7050QX2-32S#	Arista 7050X2, 32xQSFP+ & 4xSFP+ switch, no fans, no psu (requires fans and psu)
DCS-7050QX-32S-F	Arista 7050X, 32xQSFP+ & 4xSFP+ switch, front-to-rear airflow and dual 500W AC power supplies
DCS-7050QX-32S-R	Arista 7050X, 32xQSFP+ & 4xSFP+ switch, rear-to-front airflow and dual 500W AC power supplies
DCS-7050QX-32S#	Arista 7050X, 32xQSFP+ & 4xSFP+ switch, no fans, no psu (requires fans and psu)
DCS-7050QX-32S-D#	Arista 7050X, 32xQSFP+ & 4xSFP+ switch, SSD, no fans, no psu (requires fans and psu)
LIC-FIX-2-E	Enhanced L3 License for Arista Fixed switches, 40-132 port 10G (BGP, OSPF, ISIS, PIM, NAT)
LIC-FIX-2-V	Virtualization license for Arista Fixed switches 40-132 port 10G (VM Tracer and VXLAN)
LIC-FIX-2-Z	Monitoring & provisioning license for Arista Fixed switches 40-132 port 10G (ZTP, LANZ, TapAgg, OpenFlow)
LIC-FIX-2-FLX-L	FLX-Lite L3 License for Arista Fixed switches, 40-132 port 10G - OSPF, ISIS, BGP, PIM, Up to 256K Routes, EVPN, VXLAN

Spare Options

FAN-7000-F	Spare fan module for Arista 7150, 7124SX(FX), 7050 & 7048-A switches (front-to-rear airflow)
FAN-7000-R	Spare fan module for Arista 7150, 7124SX(FX), 7050 & 7048-A switches (rear-to-front airflow)
PWR-500AC-F	Spare 500 Watt AC power supply for Arista 7050X and 7280 Switches (front-to-rear airflow)
PWR-500AC-R	Spare 500 Watt AC power supply for Arista 7050X and 7280 Switches (rear-to-front airflow)
PWR-500-DC-F	Spare 500 Watt DC power supply for Arista 7050X and 7280 Switches (front-to-rear airflow)
PWR-500-DC-R	Spare 500 Watt DC power supply for Arista 7050X and 7280 Switches (rear-to-front airflow)
KIT-7001	Spare accessory kit for Arista 1RU switches with tool-less rails
KIT-2POST-1U-NT	Spare 1RU 2 post rail kit for Arista 1RU tool less systems (7050QX-32S, 7050SX/TX and 7280)
KIT-4POST-NT	Spare 1RU/2RU tool-less rail kits for 4-post installation (7280, 7250QX, 7050SX/TX, 7050QX-32S)

Warranty

The Arista 7050 switches comes with a one-year limited hardware warranty, which covers parts, repair, or replacement with a 10 business day turn-around after the unit is received.

Service and Support

Support services including next business day and 4-hour advance hardware replacement are available. For service depot locations, please see: http://www.arista.com/en/service

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