

Product Highlights

Performance

- 7250QX-64: 64x40GbE ports
- Up to 5 terabits per second
- 3840 million packets per second
- Wire speed L2 and L3 forwarding
- Latency below 2 microseconds

Data Center Optimized Design

- Typical power under 14W per 40GbE port
- Over 93% efficient power supplies
- 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
- 12MB Dynamic Buffer per port group

Resilient Control Plane

- Quad-core x86 CPU
- 8GB DRAM
- 4GB Flash
- User applications can run in a VM

Built-in Storage

- 100GB 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 visibility
- sFlow
- Self-configure and recover from USB
- Advanced Event Monitoring

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 7250QX-64 is a key component of the Arista portfolio of data center switches. The Arista 7250QX-64 fixed configuration switch shares common features with the Arista 7050 and 7300 X-Series of purpose built 10/40GbE switches, with wire speed layer 2/3/4 performance combined with low latency and 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 7250X Series supports a flexible combination of 10G and 40G in a compact form factor that allows customers to design both large leaf and spine networks to accommodate both east-west traffic patterns and support the requirement for low latency and power efficiency in dense servers farms.

With 64 QSFP+ ports the 7250QX-64 is a dense 40GbE system that can support a flexible combination of up to 64x 40GbE or 256 x 10GbE of wire speed performance in a 2RU system. The Arista 7250QX-64 combines low latency, and a shared packet buffer pool of 12MB per group of ports that is allocated dynamically to ports that are congested.

Combining 40GbE density and industry leading power efficiency with typical power consumption under 14W per 40GbE port the 7250QX-64 is ideal for both middle or end of row leaf or collapsed spine tiers with airflow choices for back to front, or front to back. An optional built-in SSD supports advanced logging, data captures and other services directly on the switch.

Combined with Arista EOS the 7250QX-64 delivers advanced features for big data, cloud, virtualized and traditional designs.



Arista 7250QX-64: 64 x 40GbE or 256 x 10GbE

Arista EOS

The Arista 7250QX-64 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 7250QX 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 - common to Arista 2RU devices
- Live software patching
- Self healing software with Stateful Fault Repair (SFR)
- Up to 64 10GbE or 40GbE ports per link aggregation group (LAG)
- Multi-chassis LAG for active/active L2 multipathing
- 64-way ECMP routing for load balancing and redundancy



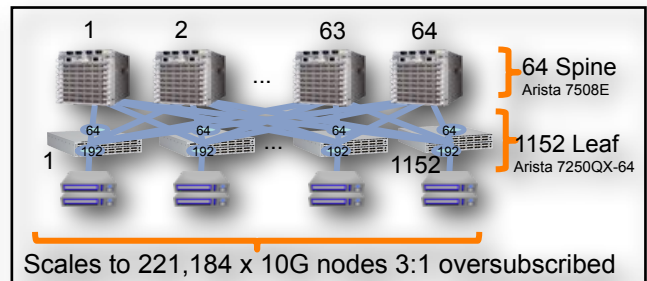
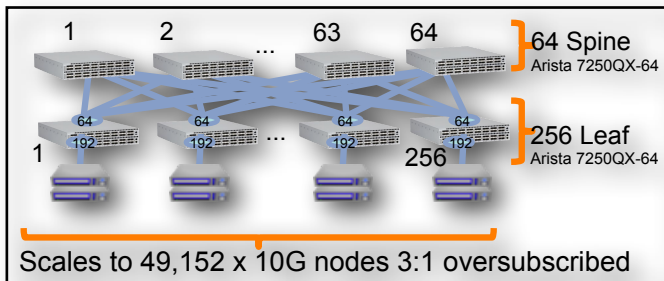
Arista 7250QX 2RU Rear View: Rear-to-front airflow model (blue)



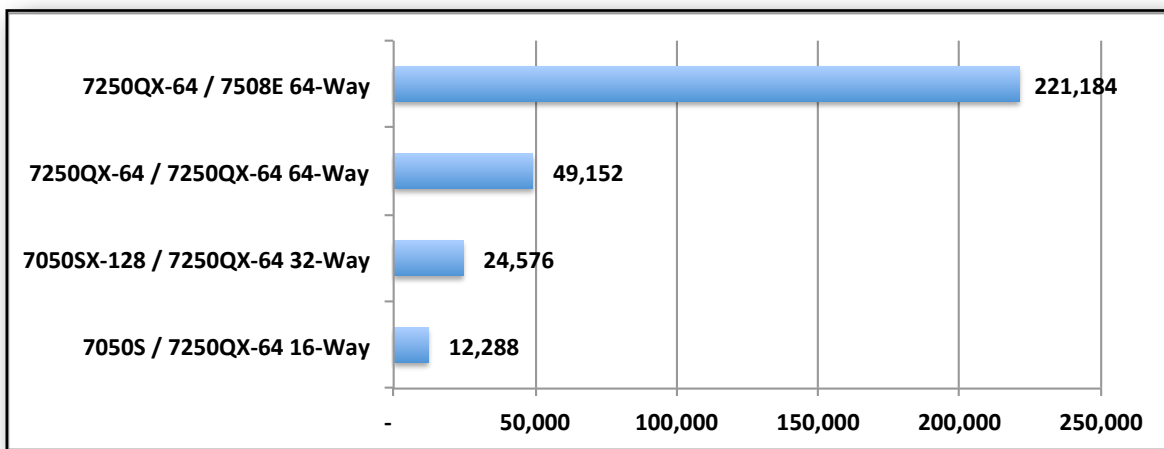
Arista 7250QX hot swap and reversible fans and power supplies

Scaling Data Center Performance

The Arista 7250X series delivers line rate switching at layer 2 and layer 3 to enable dramatically 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 200,000 10G servers in a low-latency two-tier network that provides 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



Number of 10GbE Nodes Interconnected Using Arista Leaf-Spine Designs

Software Defined Cloud Networks

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 linearly 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.

Dynamic Buffer Allocation

In cut-through mode, the Arista 7250X series switches forward packets with a latency of less than 2 microseconds. Upon congestion, the packets are buffered in shared packet memory that has a total size of 48 Mbytes. Unlike other architectures that have fixed per-port packet memory, the 7250X Series use Dynamic Buffer Allocation (DBA) to allocate up to 6MB of packet memory to a single port for lossless forwarding.

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 wide as 64-way without significant changes to the architecture. The 7250QX include enhancements that allow for flexible scale-out designs:

- 64-way ECMP and 64-way MLAG to provide scalable designs and balance traffic evenly across large scale 2 tier leaf-spine designs
- Flow based FDLB architecture to balance large flows and dynamic packet buffering to absorb congestion from microbursts
- 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 10G/40G optics and cables 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

Enhanced Features for High Performance Networks

The Arista 7250QX delivers a suite of advanced traffic control and monitoring features to improve the agility of modern high performance environments, with solutions for data monitoring, precise timing and next-generation virtualization.

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.

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 7250QX 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 7250QX 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.

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.

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 7300X 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 7300X ensures optimal resource allocation for all network topologies and network virtualization technologies. Algorithmic Longest Prefix Match (ALPM) allows for the shared UFT to be expanded to contain up to 128K longest prefix match (LPM) route entries.

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
 - 256 groups per system
- Multi-Chassis Link Aggregation (MLAG)
 - 64 ports per MLAG
 - Custom LAG Hashing
- Resilient LAG Hashing
- 802.1AB Link Layer Discovery Protocol
- 802.3x Flow Control
- Jumbo Frames (9216 Bytes)
- IGMP v1/v2/v3 snooping
- Storm Control
- Private VLANs
- RAIL

Layer 3 Features

- Routing Protocols: OSPF, OSPFv3, BGP, MP-BGP, IS-IS, and RIPv2
- 64-way Equal Cost Multipath Routing (ECMP)
- Resilient ECMP Routes
- VRF
- BFD
- Route Maps
- IGMP v2/v3
- PIM-SM / PIM-SSM
- Anycast RP (RFC 4610)
- VRRP
- Virtual ARP (VARP)
- Policy Based Routing (DirectFlow)
- Network Address Translation *
 - Static NAT
 - Dynamic NAT
- uRPF

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 and Aggregation
 - Port Mirroring 4 to 16 (4 active sessions per ASIC)
 - 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 *
 - Arista DirectFlow *
 - eAPI
 - OpenStack Neutron Support

Virtualization Support

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

Security Features

- IPv4 / IPv6 Ingress & Egress ACLs using L2, L3, L4 fields
- MAC ACLs
- ACL Drop Logging
- ACL Counters
- Control Plane Protection (CPP)
- DHCP Relay / Snooping
- MAC Security
- 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) *

Network Management

- CloudVision Task-Oriented Multi-Device CLI
- 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

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 VRRPv2MIB
- 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

Table Sizes

STP Instances	64 (MST)/510 (RPVST+)	
IGMP Groups	288K, with 8K unique groups	
ACLs	4K to 16K	
Egress ACLs	1K to 4K	
ECMP	64-way, 1K groups	
	Base Mode	UFT Modes
MAC Addresses	32K	288K
IPv4 Hosts	32K	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 *

Maximum values dependent on shared resources in some cases
* Not currently supported in EOS

Environmental Characteristics

Operating Temperature	0 to 40°C (32 to 104°F)
Storage Temperature	-25 to 70°C (-13 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

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-PLR4	10km (10km 4x10G LR/LRL)
40GBASE-LRL4	1km
40GBASE-LR4	10km
40GBASE-ER4	40km

Model Comparison

	7250QX-64
Ports	64 x QSFP+
Total 40GbE Ports	64
Total 10GbE Ports	256
Throughput	5Tbps
Packets/Second	3840 Mpps
Latency	550 to 1800 ns
CPU	Quad-Core x86
System Memory	8 Gigabytes
Flash Storage Memory	4 Gigabytes
Packet Buffer Memory	48MB (Dynamic Buffer Allocation)
SSD Storage (optional)	100 Gigabytes
10/100/1000 Mgmt Ports	2
RS-232 Serial Ports	1 (RJ-45)
USB Ports	1
Hot-swap Power Supplies	2 (1+1)
Hot-swappable Fans	4 (N+1 redundant)
Reversible Airflow Option	Yes
Typical / Maximum Power *	622W / 1200W
Size (WxHxD)	19 x 3.5 x 21.8 inches (44.5 x 8.8 x 55.3cm)
Weight	42.3 lbs (19.2kg)

* 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 Series	7250QX-64	
Power Supply Model	PWR-1100AC	PWR-1100DC
Input Voltage	200-240AC	40-72V DC
Typical Input Current	6.5 - 5.5A	16 - 29A 26.6A at -48V
Input Frequency	50/60Hz	DC
Input Connector	IEC 320-C13	AWG #10-3
Efficiency (Typical)	93% Platinum	-

Ordering Information

Product Number	Product Description
DCS-7250QX-64-F	Arista 7250, 64xQSFP+ switch, front-to-rear airflow and dual 1100W AC power supplies
DCS-7250QX-64-R	Arista 7250, 64xQSFP+ switch, rear-to-front airflow and dual 1100W AC power supplies
DCS-7250QX-64#	Arista 7250, 64xQSFP+ switch, no fans, no psu (requires fans and psu)
DCS-7250QX-64-D#	Arista 7250, 64xQSFP+ switch, SSD, no fans, no psu (requires fans and psu)
LIC-FIX-3-E	Enhanced L3 License for Arista Fixed switches, 144-256 port 10G (BGP, OSPF, ISIS, PIM, NAT)
LIC-FIX-3-V	Virtualization license for Arista Fixed switches 144-256 port 10G (VMTracer and VXLAN)
LIC-FIX-3-Z	Monitoring & provisioning license for Arista Fixed switches 144-256 port 10G (ZTP, LANZ, TapAgg, OpenFlow)

Spare Options

FAN-7002-F	Spare fan module for Arista 7050X/7250X 2RU and 7300 switches (front-to-rear airflow)
FAN-7002-R	Spare fan module for Arista 7050X/7250X 2RU and 7300 switches (rear-to-front airflow)
PWR-1100AC-F	Spare 1100 Watt AC power supply for Arista 7250QX-64 2RU Switches (front-to-rear airflow)
PWR-1100AC-R	Spare 1100 Watt AC power supply for Arista 7250QX-64 2RU Switches (rear-to-front airflow)
PWR-1100-DC-F	Spare 1100W DC Power Supply for 7050X and 7250X series (front to rear airflow switch)
PWR-1100-DC-R	Spare 1100W DC Power Supply for 7050X and 7250X series (rear to front airflow switch)
KIT-7002	Spare accessory kit for Arista 7250 / 7050 2RU switches
KIT-2POST	Spare 2 post rack mount installation kit for Arista 7050X and 7250X 2RU switches
KIT-4POST-NT	Spare 1RU/2RU tool-less rail kits for 4-post installation (7280, 7250QX, 7050SX/TX, 7050QX-32S)

Warranty

The Arista 7250QX 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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