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

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.

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 7250X 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 7250X 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
- 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 / PIM-BIDIR
- Anycast RP (RFC 4610)
- VRRP
- Virtual ARP (VARP)
- Policy Based Routing (DirectFlow)
- Network Address Translation *
- 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 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
- IEEE 1588 PTP (Transparent Clock and Boundary Clock)

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
- 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) *

Advanced Event Management suite (AEM)
- CLI Scheduler
- Event Manager
- Event Monitor
- Linux tools
- Optional SSD for logging and data capture

* Not currently supported in EOS
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

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

<table>
<thead>
<tr>
<th></th>
<th>Base Mode</th>
<th>UFT Modes</th>
</tr>
</thead>
<tbody>
<tr>
<td>STP Instances</td>
<td>64 (MST)/510 (RPVST+)</td>
<td></td>
</tr>
<tr>
<td>IGMP Groups</td>
<td>288K, with 8K unique groups</td>
<td></td>
</tr>
<tr>
<td>ECMP</td>
<td>64-way, 1K groups</td>
<td></td>
</tr>
<tr>
<td>MAC Addresses</td>
<td>32K</td>
<td>288K</td>
</tr>
<tr>
<td>IPv4 Hosts</td>
<td>32K</td>
<td>208K</td>
</tr>
<tr>
<td>IPv4 Routes - Unicast</td>
<td>16K</td>
<td>144K</td>
</tr>
<tr>
<td>IPv4 Routes - Multicast</td>
<td>16K</td>
<td>104K *</td>
</tr>
<tr>
<td>IPv6 Hosts</td>
<td>16K</td>
<td>104K</td>
</tr>
<tr>
<td>IPv6 Routes - Unicast</td>
<td>8K</td>
<td>77K *</td>
</tr>
<tr>
<td>IPv6 Routes - Multicast</td>
<td>4K</td>
<td>52K *</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>0 to 40°C (32 to 104°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-25 to 70°C (-13 to 158°F)</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>5 to 95%</td>
</tr>
<tr>
<td>Operating Altitude</td>
<td>0 to 10,000 ft, (0-3,000m)</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Interface Type</th>
<th>QSFP+ ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>10GBASE-CR</td>
<td>0.5m-5m QSFP+ to 4x SFP+</td>
</tr>
<tr>
<td>40GBASE-CR4</td>
<td>0.5m to 5m QSFP+ to QSFP+</td>
</tr>
<tr>
<td>40GBASE-AOC</td>
<td>3m to 100m</td>
</tr>
<tr>
<td>40GBASE-UNIV</td>
<td>150m (OM3) / 150m (OM4) / 500m (SM)</td>
</tr>
<tr>
<td>40GBASE-SR8D</td>
<td>100m (OM3) / 150m (OM4)</td>
</tr>
<tr>
<td>40GBASE-SR4</td>
<td>100m (OM3) / 150m (OM4)</td>
</tr>
<tr>
<td>40GBASE-XSR4</td>
<td>300m (OM3) / 400m (OM4)</td>
</tr>
<tr>
<td>40GBASE-PLRL4</td>
<td>1km (1km 4x10G LR/LRL)</td>
</tr>
<tr>
<td>40GBASE-PLR4</td>
<td>10km (10km 4x10G LR/LRL)</td>
</tr>
<tr>
<td>40GBASE-LRL4</td>
<td>1km</td>
</tr>
<tr>
<td>40GBASE-LR4</td>
<td>10km</td>
</tr>
<tr>
<td>40GBASE-ER4</td>
<td>40km</td>
</tr>
</tbody>
</table>

### Model Comparison

<table>
<thead>
<tr>
<th>Model</th>
<th>7250QX-64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ports</td>
<td>64 x QSFP+</td>
</tr>
<tr>
<td>Total 40GbE Ports</td>
<td>64</td>
</tr>
<tr>
<td>Total 10GbE Ports</td>
<td>256</td>
</tr>
<tr>
<td>Throughput</td>
<td>5Tbps</td>
</tr>
<tr>
<td>Packets/Second</td>
<td>3840 Mpps</td>
</tr>
<tr>
<td>Latency</td>
<td>550 to 1800 ns</td>
</tr>
<tr>
<td>CPU</td>
<td>Quad-Core x86</td>
</tr>
<tr>
<td>System Memory</td>
<td>8 Gigabytes</td>
</tr>
<tr>
<td>Flash Storage Memory</td>
<td>4 Gigabytes</td>
</tr>
<tr>
<td>Packet Buffer Memory</td>
<td>48MB (Dynamic Buffer Allocation)</td>
</tr>
<tr>
<td>SSD Storage (optional)</td>
<td>100 Gigabytes</td>
</tr>
<tr>
<td>10/100/1000 Mgmt Ports</td>
<td>2</td>
</tr>
<tr>
<td>RS-232 Serial Ports</td>
<td>1 (RJ-45)</td>
</tr>
<tr>
<td>USB Ports</td>
<td>1</td>
</tr>
<tr>
<td>Hot-swap Power Supplies</td>
<td>2 (1+1)</td>
</tr>
<tr>
<td>Hot-swappable Fans</td>
<td>4 (N+1 redundant)</td>
</tr>
<tr>
<td>Reversible Airflow Option</td>
<td>Yes</td>
</tr>
<tr>
<td>Typical / Maximum Power *</td>
<td>622W / 1200W</td>
</tr>
<tr>
<td>Size (WxHxD)</td>
<td>19 x 3.5 x 21.8 inches (44.5 x 8.8 x 55.3cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>42.3 lbs (19.2kg)</td>
</tr>
<tr>
<td>Minimum EOS Version</td>
<td>4.13.0</td>
</tr>
</tbody>
</table>

* Typical power consumption measured at 25°C ambient with 50% load

Note: Performance rated over operation with average packets larger than 200 bytes.
Power Supply Specifications

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCS-7250QX-64-F</td>
<td>Arista 7250, 64xQSFP+ switch, front-to-rear airflow and dual 1100W AC power supplies</td>
</tr>
<tr>
<td>DCS-7250QX-64-R</td>
<td>Arista 7250, 64xQSFP+ switch, rear-to-front airflow and dual 1100W AC power supplies</td>
</tr>
<tr>
<td>DCS-7250QX-64#</td>
<td>Arista 7250, 64xQSFP+ switch, no fans, no psu (requires fans and psu)</td>
</tr>
<tr>
<td>DCS-7250QX-64-D#</td>
<td>Arista 7250, 64xQSFP+ switch, SSD, no fans, no psu (requires fans and psu)</td>
</tr>
<tr>
<td>LIC-FIX-3-E</td>
<td>Enhanced L3 License for Arista Fixed switches, 144-256 port 10G (BGP, OSPF, ISIS, PIM)</td>
</tr>
<tr>
<td>LIC-FIX-3-V</td>
<td>Virtualization license for Arista Fixed switches 144-256 port 10G (VMTracer and VXLAN)</td>
</tr>
<tr>
<td>LIC-FIX-3-Z</td>
<td>Monitoring &amp; provisioning license for Arista Fixed switches 144-256 port 10G (ZTP, LANZ, TapAgg, OpenFlow)</td>
</tr>
<tr>
<td>LIC-FIX-3-FLX-L</td>
<td>FLX-Lite L3 License for Arista Fixed switches, 144-256 port 10G - OSPF, ISIS, BGP, PIM, Up to 256K Routes, EVPN, VXLAN</td>
</tr>
</tbody>
</table>

Spare Options

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAN-7002-F</td>
<td>Spare fan module for Arista 7050X/7250X 2RU and 7300 switches (front-to-rear airflow)</td>
</tr>
<tr>
<td>FAN-7002-R</td>
<td>Spare fan module for Arista 7050X/7250X 2RU and 7300 switches (rear-to-front airflow)</td>
</tr>
<tr>
<td>PWR-1100AC-F</td>
<td>Spare 1100 Watt AC power supply for Arista 7250QX-64 2RU Switches (front-to-rear airflow)</td>
</tr>
<tr>
<td>PWR-1100AC-R</td>
<td>Spare 1100 Watt AC power supply for Arista 7250QX-64 2RU Switches (rear-to-front airflow)</td>
</tr>
<tr>
<td>PWR-1900-DC-F</td>
<td>Spare 1900W DC Power Supply for 7050X and 7250X series (front to rear airflow switch)</td>
</tr>
<tr>
<td>PWR-1900-DC-R</td>
<td>Spare 1900W DC Power Supply for 7050X and 7250X series (rear to front airflow switch)</td>
</tr>
<tr>
<td>KIT-7002</td>
<td>Spare accessory kit for Arista 7250 / 7050 2RU switches</td>
</tr>
<tr>
<td>KIT-2POST</td>
<td>Spare 2 post rack mount installation kit for Arista 7050X and 7250X 2RU switches</td>
</tr>
<tr>
<td>KIT-4POST-NT</td>
<td>Spare 1RU/2RU tool-less rail kits for 4-post installation (7280, 7250QX, 7050SX/TX, 7050QX-32S)</td>
</tr>
</tbody>
</table>

* Not currently supported in EOS
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](http://www.arista.com/en/service)

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5453 Great America Parkway
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408-547-5500

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866-476-0000

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866-497-0000