Product Highlights

Performance

- 7050SX-128: 96 x 1/10GbE and 8x 40GbE
- 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 under 2W per 10GbE port for lower cost of ownership
- Over 93% efficient power supplies
- 1+1 redundant & hot-swappable power
- N+1 redundant & hot-swappable fans
- Front-to-rear or rear-to-front cooling

Cloud Networking Ready

- VXLAN and VM Tracer
- OpenFlow, DirectFlow and eAPI
- 288K MAC entries
- 16K IPv4 Routes
- 208K IPv4 Host Routes
- 12MB Dynamic Buffer Allocation

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

- Zero Touch Provisioning (ZTP)
- LANZ for microburst detection
- DANZ Advanced Mirroring & Tap Aggregation for improved visibility
- IEEE 1588 PTP
- 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 7050SX-128 is a member of the Arista 7050X Series and a key component of the Arista portfolio of data center switches. The Arista 7050X Series are 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 7050SX-128 supports 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 both east-west traffic patterns found in modern data centers and a requirement for low latency and power efficiency. Optimized for both spine and leaf applications the 7050SX-128 enables dense 2 tier networking as both a 10G server connection, or aggregating both 1G and 10G switches.

Featuring 96 1/10GbE SFP+ and 8 40GbE QSFP+ ports in a 2RU system the 7050SX-128 switch delivers feature rich layer 2 and layer 3 wirespeed performance with an overall performance of 2.56Tbps. The Arista 7050SX-128 combines low latency, and a shared packet buffer pool of 12MB per group of ports that is allocated dynamically to ports that are congested.

With typical power consumption under 2W per 10GbE port the 7050SX-128 provides industry leading power efficiency 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 7050X Series delivers advanced features for big data, cloud, virtualized and traditional designs.

Arista 7050SX-128: 96x 10GbE SFP+ and 8x 40GbE QSFP+ 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 - 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 7050X 2RU Rear View: Rear-to-front airflow model*

Arista 7050X hot swap and reversible fans and power supplies

Dynamic Buffer Allocation

In cut-through mode, the Arista 7050X 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 7050X Series use Dynamic Buffer Allocation (DBA) to allocate up to 6.7MB of packet memory to a single port for lossless forwarding.

Scaling Data Center Performance

The Arista 7050X 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 110,000 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.
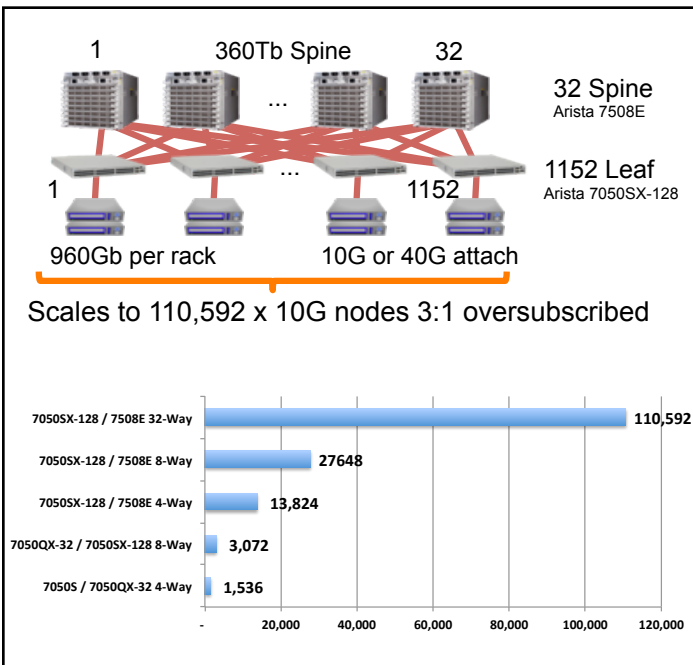
Arista Leaf-Spine Design with L3 ECMP
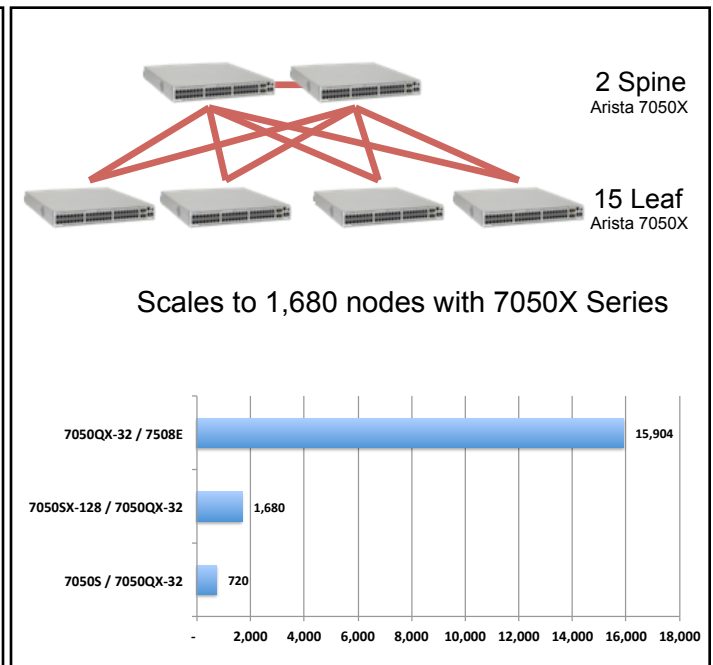
Arista Leaf-Spine Design with L2 MLAG

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

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 7050X 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
- 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, PTP, 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.

Enhanced Features for High Performance Networks

The Arista 7050X 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.

Precise Data Analysis

Arista Latency Analyzer (LANZ) and Precision Data Analyzer (DANZ) are integrated features of EOS. DANZ provides a solution to monitoring and visibility challenges at 10 and 40Gbps giving IT operations the ability to proactively deliver feedback on congestion events, filter, replicate, aggregate and capture traffic without affecting production performance. 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.

Precision Timing (IEEE 1588)

The IEEE 1588 Precision Time Protocol enables building and maintaining an accurate timing solution that delivers highly accurate precision time synchronization to sub-microsecond accuracy to applications within existing network infrastructure with no need to invest in and deploy a separate timing network. Arista's 7050X Series hardware assisted Precision Time Protocol solution provides a high-performance and robust mechanism for accurate in-band time distribution to servers, routers and other switches.

Virtualization

Supporting next-generation virtualized data centers requires tight integration with orchestration tools and emerging encapsulation technologies such as VXLAN. The 7050X 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.

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.

Network Address Translation (NAT)

The Arista 7050X includes support for line rate NAT with no impact on performance or scalability for environments where address translation is essential to resolve addressing challenges such as masking internal address and translating overlapping ranges to avoid conflicts without penalty.

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* (16 ports/channel)
  - 64 groups per system
- Multi-Chassis Link Aggregation (MLAG)
  - 32 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 active sessions)
  - L2/3/4 Filtering on Mirror Sessions*
  - Mirror to EOS/SSD* SPAN/TAP Aggregation*
  - Ingress filtering on Tap Aggregation Ports*
- 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

- 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) *

* Not currently supported in EOS

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
Egress ACLs	1K
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	No Change

Maximum values dependent on shared resources in some cases

* Supported in a future software release

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

EMI	FCC Part 15 Class A ICES-003 Class A VCCI Class A
Safety	IEC/EN/UL/CSA 60950 CE, uTUVc Mark
Other	ROHS-2 Compliant

Supported Optics and Cables

Interface Type	QSFP+ ports
10GBASE-CR	0.5m-5m QSFP+ to 4x SFP+
40GBASE-CR4	0.5m to 7m QSFP+ to QSFP+
AOC-40G-Q-Q	3m to 30m
40GBASE-SR4	100m (OM3) /150m (OM4)
40GBASE-XSR4	300m (OM3) /450m (OM4)
40G-PLRL4	1km (1km 4x10G LR/LRL)
40G-LRL4	1km
40GBASE-LR4	10km

Interface Type	SFP+ ports
10GBASE-CR	SFP+ to SFP+: 0.5m-5m
10GBASE-SRL	100m
10GBASE-SR	300m
10GBASE-LRL	1km
10GBASE-LR	10km
10GBASE-ER	40km
10GBASE-ZR	80km
10G-DWDM	80km
100Mb Tx, 1GbE SX/LX/ZX	Yes

Specifications

	7050SX-128
Ports	96 x SFP+ 8 x QSFP+
Total 40GbE Ports	8
Total 10GbE Ports	96
Throughput	2.56 Tbps
Packets/Second	1440 Mpps
Latency	550 ns
CPU	Quad-Core x86
System Memory	8 Gigabytes
Flash Storage Memory	4 Gigabytes
Packet Buffer Memory	12MB (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 redundant)
Hot-swappable Fans	4 (N+1 redundant)
Reversible Airflow Option	Yes
Typical/Max Power Draw*	235W / 415W
Size (WxHxD)	19 x 3.5 x 18.1 inches (44.5 x 8.8 x 45.9cm)
Weight	33lbs (15.1kg)

* 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

Power Supply Model	PWR-500AC *	PWR-500DC *	PWR-750AC
Input Voltage	100-240AC	40-72V DC	100-240AC
Typical Input Current	2.3-6.3A		4-10A
Input Frequency	50/60Hz	DC	50/60Hz
Input Connector	IEC 320-C13	AWG #16-12	IEC 320-C13
Efficiency (Typical)	93% Platinum	-	93% Platinum

Ordering Information

Product Number	Product Description
DCS-7050SX-128-F	Arista 7050, 96xSFP+ & 8xQSFP+ switch, front-to-rear airflow and dual 750W AC power supplies
DCS-7050SX-128-R	Arista 7050, 96xSFP+ & 8xQSFP+ switch, rear-to-front airflow and dual 750W AC power supplies
DCS-7050SX-128#	Arista 7050, 96x10GbE (SFP+) & 8xQSFP+ switch, no fans, no psu (requires fan and psu)
DCS-7050SX-128-D#	Arista 7050, 96x10GbE (SFP+) & 8xQSFP+ switch, SSD, no fans, no psu (requires fan and psu)
LIC-FIX-2-E	Enhanced L3 License for Arista Fixed switches, 40-128 port 10G (BGP, OSPF, ISIS, PIM, NAT)
LIC-FIX-2-V	Virtualization license for Arista Fixed switches 40-128 port 10G (VMTracer and VXLAN)
LIC-FIX-2-Z	Monitoring & provisioning license for Arista Fixed switches 40-128 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-750AC-F	Spare 750 Watt AC power supply for Arista 7050SX-128 2RU Switches (front-to-rear airflow)
PWR-750AC-R	Spare 750 Watt AC power supply for Arista 7050SX-128 2RU Switches (rear-to-front airflow)
KIT-7002	Spare accessory kit for Arista 7050 2RU switches
KIT-2POST	Spare 2 post rack mount installation kit for Arista 7050X 2RU switches

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.aristanetworks.com/en/service

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