ARISTA

Arista 7150 1/10 GbE SFP Ultra Low Latency Switch Series

Product highlights

Performance
- 7150S-24: 24 x 1/10GbE
- 7150S-52: 52 x 1/10GbE
- 7150S-64: 48 x 1/10GbE and 4 x 10/40GbE
- Up to 1.28 terabits per second
- Up to 960 million packets per second
- Wire speed L2 and L3 forwarding

Ultra-low latency
- From 350 nanosecond latency
- Same latency for L2 and L3
- Low latency at 1, 10, and 40GbE
- Low jitter for unicast and multicast
- Dynamic buffer allocation

Advanced provisioning & monitoring
- CloudVision
- LANZ microburst analysis
- IEEE 1588 PTP high-precision clock option
- Ultra-low latency NAT, MNAT
- DANZ Advanced Mirroring & TAP Aggregation for improved visibility
- sFlow® (RFC3176)
- Zero-touch provisioning (ZTP)
- VM Tracer
- Self-configure/recover from USB

Data center optimized design
- Typical power draw from 3.5 W/port
- 1+1 redundant & hot-swappable power
- N+1 redundant & hot-swappable fans
- Front-to-rear or rear-to-front fans

Overview

HPE and Arista share a common vision around the need to deliver secure hybrid IT solutions and experiences built on industry-leading software-defined infrastructure—helping customers to operate their workloads with speed and agility to grow their business. This partnership will provide our customers with proven networking solutions that are superior to legacy alternatives and that complement HPE compute, storage, virtualization, and cloud offerings.

The Arista 7150S series represents the industry's leading ultra-low latency 1RU 1/10/40GbE layer 2/3/4 wire speed switch family, offering a unique combination of performance, advanced functionality and extensive onboard resources.

Designed to suit the requirements of demanding environments such as ultra-low latency financial ECNs, HPC clusters and cloud data centers, the class-leading deterministic latency from 350ns is coupled with a set of advanced tools for monitoring and controlling mission critical environments.

Figure 1: Arista 7150S family

Supervisor module	DCS-7500-SUP2
Wire-speed low-latency network address translation	Reduce NAT latency by 10's of microseconds vs. traditional high-latency solutions
IEEE 1588 Precision Time Protocol (boundary and transparent modes)	Provides hardware-based timing for accurate in-band time distribution with nanosecond accuracy
Integrated high-precision oscillator	Ensures highly accurate timing with extended holdover
Latency and Application Analysis (LANZ)	Detect, capture, stream microbursts and transient congestion at microsecond rates
Advanced Multiport Mirroring Suite	Avoid costly SPAN/TAP aggregators with in-switch capturing, filtering and time-stamping
Wire-speed VXLAN Gateway	Enabling next generation data center virtualization
AgilePorts	Adapt from 10 G to 40 G without costly upgrades

Resilient control plane
- Dual-core x86 CPU
- 4GB DRAM
- 2GB 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

Arista EOS
- Single binary image
- 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++

Arista Extensible Operating System (EOS)

The Arista 7150S 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 multiprocess 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, VM Tracer, and Linux-based tools can be run natively on the switch with the powerful dual-core x86 CPU subsystem.

Deterministic, ultra-low latency

- The Arista 7150S is optimized for ultra-low latency and cut-through forwarding. It offers the same low latency characteristics at all packet sizes. The latency remains consistent even when features such as L3, ACL, QoS, multicast, port mirroring, LANZ+, and time-stamping are enabled. The 7150S also supports cut-through mode at 100 Mb and 1GbE speeds at low latency for legacy connections.
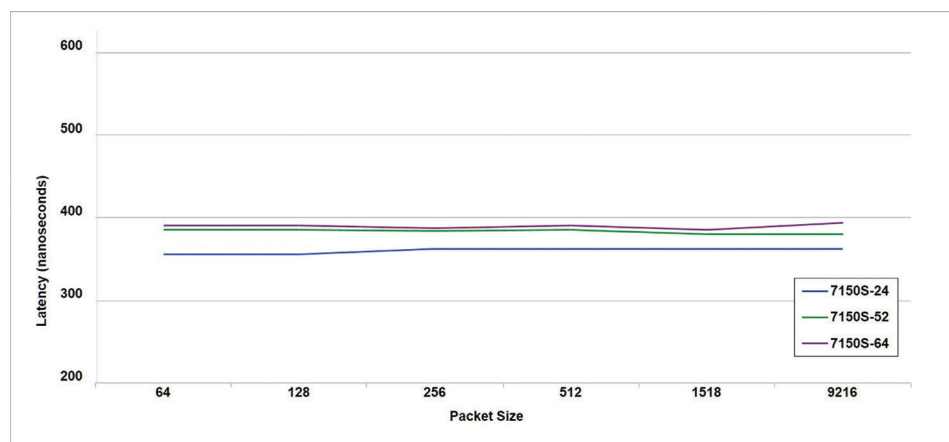

Figure 2: Arista 7150S family 10G latency profile

Dynamic buffer allocation

The Arista 7150S forwards packets at an ultra-low latency of 350 nanoseconds from any port to any other port. However, when a microburst or transient in-cast condition causes contention of an egress interface, packets must be buffered. The global packet memory of the 7150S is dynamically allocated on demand to congested interfaces, avoiding packet loss.

Enhanced features for high-performance networks

The Arista 7150S delivers a suite of advanced traffic control and monitoring features to improve the agility of modern high-performance environments, with solutions for network address translation, precise timing, and next-generation virtualization.

Low-latency address translation

The Arista 7150S includes support for line rate NAT while still delivering latency of under 1 microsecond. Latency- and performance-sensitive environments can take advantage of NAT to resolve addressing challenges, such as masking internal addresses and translating overlapping ranges, to avoid conflicts without penalty.

Monitoring, analysis, and forensics

Arista's enhanced LANZ microburst and latency analysis enables the monitor of even the slightest transient congestion at microsecond granularity. Data affected by congestion is captured, and verbose logs are written locally and streamed in real time to external tools over an open protocol buffer encoded format. Event monitoring complements LANZ with protocol-layer captures, providing a forensic history of network adds, moves and changes. The combination of Arista's Advanced Mirroring Suite and the ability to time-stamp every packet in hardware with features such as sFlow, delivers unmatched instrumentation of network behavior and performance. Enhanced to support proactive capacity planning and preempt issues, the 7150S is uniquely equipped to root-cause network anomalies.

Precision timing (IEEE 1588)

Arista's hardware-derived Precision Time Protocol solution provides a robust mechanism for accurate in-band time distribution in high-performance environments. Offering both Boundary and Transparent Clock modes, the versatile 7150S enables timing networks to scale independently of Grand Master capacity, maintaining accuracy approaching that of a dedicated out-of-band platform. Uniquely, the 7150S employs a high-precision oscillator for consistent timekeeping. With disciplined stability measured in single-digit picoseconds and 24-hour holdover of single-digit nanoseconds, the optional clock module ensures exceptional determinism in timing operations.

Virtualization

Supporting next-generation virtualized data centers requires tight integration with orchestration tools and emerging encapsulation technologies such as VXLAN and NVGRE. The 7150S builds on the valuable tools already provided by the Arista

VM Tracer suite to integrate directly into encapsulated environments. Offering a true, wire-speed, low latency gateway between VXLAN and traditional L2/3 environments, the 7150S 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.

AgilePorts enable flexible deployment

AgilePorts deliver complete flexibility in connectivity—each SFP+ interface is capable of supporting 100 M–10 G over a variety of media, including DWDM with distances up to 80 km. The AgilePorts feature also enables groups of adjacent SFP+ ports to be configured for 40 Gb operation using 10 Gb transceivers and cables providing maximum port flexibility and a seamless migration from 10 Gb to 40 Gb.

Figure 3: Arista 7150S AgilePorts—Four SFP+ grouped to deliver 40GbE

High availability

The Arista 7150S switches were designed for high availability and simple provisioning from both a software and hardware perspective. Key high-availability features include:

- 1+1 hot-swappable power supplies and four N+1 hot-swappable fans

- Color-coded PSUs and fans—common to Arista 1RU devices

- EOS zero-touch provisioning (ZTP)

- Self-healing software with stateful fault repair (SFR)

- Live software patching

- 32-way MLAG and ECMP routing for all-active L2 and L3

Figure 4: Arista 7150S Rear View: Front-to-rear airflow model

Figure 5: Arista 7150S Rear View: Rear-to-front airflow model

Feature overview

Layer 2 features
- 64K L2 Forwarding Entries
- 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
  – 16 ports/channel
  – 64 groups per system
- Multi-Chassis Link Aggregation (MLAG)
  – Uses IEEE 802.3ad LACP
  – 32 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
- 70K IPv4 Routes
- 20K IPv4 Multicast Routes
- 18K IPv6 Routes*
- 2K IPv6 Multicast Routes*
- 64K Next Hops
- VRF
- RIPv2

* Not yet supported in EOS

Layer 3 features (continued)
- OSPF
- OSPFv3
- BGP
- MP-BGP
- ISIS
- 32-way Equal Cost Multipath Routing (ECMP)
- BFD
- IGMP v2/v3
- PIM-SM/PIM-SSM
- Anycast RP (RFC 4610)
- MSDP
- VRRP
- Virtual ARP (VARP)
- Network Address Translation
  - Source/Destination NAT
  - Source/Group Multicast NAT

Security features
- Ingress/Egress ACLs using L2, L3, L4 fields
- ACL Logging and Counters
- Control Plane Protection (CoPP)
- DHCP Relay
- MAC Security
- TACACS+
- RADIUS

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

Advanced monitoring and provisioning
- Zero-touch provisioning (ZTP)
- Enhanced Latency Analyzer (LANZ) and Microburst Detection
  - Configurable Congestion Notification (CLI, Syslog)
  - Streaming Events (GPB Encoded)
  - Capture/mirror of congested traffic
  - Continuous Latency Monitoring
- Advanced Monitoring and TAP Aggregation (DANZ)
  - Port Mirroring M:N (4 sessions)
  - SPAN/TAP M:N Aggregation
  - L2/3/4 Filtering
  - Custom header matching and filtering*
  - Traffic steering*
  - Custom load balancing
  - Time-stamping
  - Ingress and egress truncation
  - Mirror to EOS/SSD
- Advanced Event Management suite (AEM)
  - CLI Scheduler
  - Event Manager
  - Event Monitor
  - Linux tools
- Integrated packet capture/analysis with TCPDump
- Optional SSD for logging and data capture
- RFC 3176 sFlow
- Restore & Configure from USB
- Blue Beacon LED for system identification
- Software-defined networking (SDN)
  - OpenFlow 1.0*
  - Arista DirectFlow*
  - eAPI

Quality of service (QoS) features
- Up to 8 queues per port
- Strict priority queueing

- 802.1p based classification
- Per-Priority Flow Control (PFC)
- Data Center Bridging Extensions (DCBX)
- DSCP based classification and remarking
- Egress Rate Shaping/WRR
- Policers
- Rate limiting
- Audio Video Bridging (AVB)

Precision timing
- Precision Time Stamping
- Precision Time Protocol—Transparent Clock
- Precision Time Protocol—Boundary Clock
- High Precision Oscillator (optional on -24)

Network management
- CloudVision
- 100/1000 management port
- RS-232 serial console port
- USB port
- SNMP v2, v3
- Management over IPv6
- Telnet and SSHv2
- Syslog
- Role-based Access Control
- AAA
- Industry Standard CLI
- Blue Beacon LED for system identification

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

* Not yet supported in EOS

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
- IEEE 1588-2008 Precision Time Protocol (Transparent Clock)
- IEEE 1588-2008 Precision Time Protocol (Boundary Clock)

Table sizes*

MAC addresses	64,000
STP instances	64 (MST)/256 (RPVST+)
IGMP groups	36,000
ACLs	up to 20,000 ACEs
IPv4 Hosts	64,000
IPv4 Routes—Unicast	70,000
IPv4 Routes—Multicast	20,000
IPv6 Routes—Unicast	18,000
IPv6 Routes—Multicast	2,000
ECMP	32-way

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

Note: See EOS release notes for latest supported MIBs

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* The 7150 series employs dynamic resources shared among several features. Actual capacity depends on configuration.

Technical specifications

Environmental characteristics

Operating temperature	0˚C to 40˚C
Storage temperature	-40˚C to 70˚C
Relative humidity	5% to 95%
Operating altitude	0 to 10,000 ft

Physical characteristics

Size (WxHxD)	19" x 1.75" x 16" (44.5 x 4.4 x 40.64 cm)
Weight	7150S-52/64: 19 lbs (8.61 kg) 7150S-24: 18 lbs (8.18 kg)

Power supply specifications

	AC	DC
Input voltage	100-240AC	40-72V DC
Input current	2.2-5.3A	12.8-7.1A 11.3A at -48V
Input frequency	50/60Hz	DC
Input connector	IEC 320-C13	AWG #16-12

Standards compliance

EMI	FCC Part 15 Class A ICES-003 Class A VCCI Class A
Safety	IEC/UL/CSA/EN 60950 CE, UL, TUV Mark
Other	ROHS-6 Compliant

** Refer to installation guide for operating ranges for each model and airflow direction.

Model comparison

	7150S-24	7150S-52	7150S-64
Ports	24 x SFP+	52 x SFP+	48 x SFP+ 4 x QSFP+
Max 40GbE ports	4	13	16
Max 10GbE ports	24	52	64
Throughput	480 Gbps	1.04 Tbps	1.28 Tbps
Packets per second	360 Mpps	780 Mpps	960 Mpps
Latency (SFP+ ports)	350 ns	380 ns	380 ns
CPU		Dual-Core x86	
System memory		4 GB	
Flash storage memory		2 GB	
Packet buffer memory		9.5 MB (dynamic buffer allocation)	
SSD storage (optional)		50 GB	
100/1000 mgmt ports		1	
RS-232 serial ports		1 (RJ-45)	
USB ports		1	
Hot-swappable power supplies		2 (1+1 redundant)	
Hot-swappable fans		4 (N+1 redundant)	
Reversible airflow option		Yes	
Typical/max power draw*	191/334 W	191/450 W	224/455 W

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

Supported optics and cables

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

Interface type	SFP+ ports	QSFP+ ports
10GBASE-CR	SFP+ to SFP+: 0.5-5m	0.5-3m QSFP+ to 4 x SFP+
10GBASE-AOC	SFP+ to SFP+: 3m-30m	
10GBASE-SRL	100m	-
10GBASE-SR	300m	-
10GBASE-LRL	1km	
10GBASE-LR	10km	-
10GBASE-ER	40km	-
10GBASE-ZR	80km	
10GBASE-DWDM	80km	-
100/1000BASE-T, 1GbE SX/LX	Yes	-

Optional components	Arista SKU	HPE SKU
Arista 7000 F-B Fan Module	FAN-7000-F	JH856A
Arista 7000 B-F Fan Module	FAN-7000-R	JH857A
Arista 7000 Accessory Kit	KIT-7000	JH865A
Arista 460W F-B AC Power Supply	PWR-460AC-F	JH610A
Arista 460W B-F AC Power Supply	PWR-460AC-R	JH611A
Arista 460W F-B DC Power Supply	PWR-460DC-F	JH612A
Arista 460W B-F DC Power Supply	PWR-460DC-R	JH613A
Arista 500W F-B AC Power Supply	PWR-500AC-F	JH882A
Arista 500W B-F AC Power Supply	PWR-500AC-R	JH883A
Arista 500W Front-to-Back DC Power Supply	PWR-500-DC-F	JH597A
Arista 500W Back-to-Front DC Power Supply	PWR-500-DC-R	JH599A
Arista Expanded L3 Software Fix-2 E-LTU	LIC-FIX-2-FLX	JH601AAE
Arista Enhanced L3 Software 10G Fix-2 E-LTU	LIC-FIX-2-E	JH606AAE
Arista Provisioning Software 10G Fix-2 E-LTU	LIC-FIX-2-Z	JH608AAE
Arista Virtualization Software 10G Fix-2 E-LTU	LIC-FIX-2-V	JH609AAE
Arista FlexRoute L3 Lite Software Fix-2 E-LTU	LIC-FIX-2-FLX-L	JQ049AAE

Switch	Arista SKU	HPE SKU
Arista 7150S 24SFP+ SFP+ F-B AC Switch	DCS-7150S-24-F	JH574A
Arista 7150S 24SFP+ SFP+ B-F AC Switch	DCS-7150S-24-R	JH575A
Arista 7150S 52SFP+ Clock F-B AC Switch	DCS-7150S-52-CL-F	JH572A
Arista 7150S 52SFP+ Clock B-F AC Switch	DCS-7150S-52-CL-R	JH573A
Arista 7150S 48SFP+ 4QSFP+ F-B AC Switch	DCS-7150S-64-CL-F	JH570A
Arista 7150S 48SFP+ 4QSFP+ B-F AC Switch	DCS-7150S-64-CL-R	JH571A

Service	Arista SKU	HPE SKU
Arista A-Care 7150S-64 Clock NBD Software 1 Month Support E-LTU	SVC-7150S-64-CL-1M-NB	JH490AAE
Arista A-Care 7150S-64 Clock 4H Software 1 Month Support E-LTU	SVC-7150S-64-CL-1M-4H	JH491AAE
Arista A-Care 7150S-64 Clock 2H Software 1 Month Support E-LTU	SVC-7150S-64-CL-1M-2H	JH492AAE
Arista A-Care 7150S-52 Clock NBD Software 1 Month Support E-LTU	SVC-7150S-52-CL-1M-NB	JH493AAE
Arista A-Care 7150S-52 Clock 4H Software 1 Month Support E-LTU	SVC-7150S-52-CL-1M-4H	JH494AAE
Arista A-Care 7150S-52 Clock 2H Software 1 Month Support E-LTU	SVC-7150S-52-CL-1M-2H	JH495AAE
Arista A-Care 7150S-24 NBD Software 1 Month Support E-LTU	SVC-7150S-24-1M-NB	JH496AAE
Arista A-Care 7150S-24 4H Software 1 Month Support E-LTU	SVC-7150S-24-1M-4H	JH497AAE
Arista A-Care 7150S-24 2H Software 1 Month Support E-LTU	SVC-7150S-24-1M-2H	JH498AAE

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Service and Support

HPE Pointnext's full portfolio of Consulting services as well as Support Services are available. The support services include Installation and Startup Services, Next Business Day Exchange, Next Business Day Onsite and 24x7 Onsite parts, Engineer and 4-hour committed response as well as Datacenter Care and Flex Capacity. (Arista A-Care services can also be purchased. Learn more at **arista.com**). For service depot locations, please see: **arista.com/en/service**.

Warranty

The Arista 7150S switches come with a one-year limited hardware warranty that covers parts, repair, or replacement with a 10-business-day turnaround after the unit is received. Learn more at **arista.com**.

Make the right purchase decision. Click here to chat with our presales specialists.

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