

Product Highlights

Density and Performance

- 48 x 1/10GbE and 6x 100GbE in 1RU
- Wire speed L2 and L3 forwarding
- Up to 2.16Tbps of wire speed performance with 4GB of buffer

Wire-speed Encryption

- IEEE 802.1AE MACsec encryption
- Wire speed encryption on 6x100GbE ports
- MACsec encryption on a per port basis
- Optimized for secure DCI and site-site encryption in a compact footprint

Data Center Optimized Design

- 4GB of Ultra-deep packet buffer
- Virtual Output Queues per port to eliminate head of line blocking
- Over 94% efficient power supplies
- Redundant & hot-swap power and fans
- Front-to-rear or rear-to-front cooling
- NEBS compliant
- Tool less rails for simple installation

Virtualization and Provisioning

- CloudVision
- VXLAN for next generation DC
- LANZ for microburst detection
- DANZ Advanced Mirroring & TAP Aggregation for improved visibility
- VM Tracer
- Zero Touch Provisioning (ZTP)
- Advanced Event Monitoring
- Accelerated sFlow (RFC3176)

Cloud Networking Ready

- 768K MAC Addresses
- 768K IPv4 and IPv6 Host Routes
- Over 1M IPv4 Routes
- Arista AlgoMatch™

Resilient Control Plane

- High Performance x86 CPU
- 32GB System memory
- 4GB Flash
- User applications can run in a VM

Arista Extensible Operating System

- 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++ , GO, OpenConfig

Overview

The Arista 7280SRAM-48C6 is part of the 7280R fixed systems which are key components of the Arista 7000 Series portfolio of data center switches. The Arista 7280SRAM-48C6 is a high performance compact routing platform with built-in wire speed MACsec encryption that is purpose built for the highest performance environments, and to meet the needs of the largest scale data centers. It delivers scalable L2 and L3 resources and high density with advanced features for network monitoring, precision timing and network virtualization to deliver scalable and deterministic network performance while simplifying designs and reducing Opex. The built-in MACsec capability removes the need for external encryption device and provides security against intrusion, passive wire tapping and other playback attacks. MACsec encryption meets regulatory compliance requirements and provides data protection without loss of performance.

The Arista MACsec solution utilizes proven encryption technology to protect traffic for simple, reliable and scalable data center interconnect and for securing links between tiers in leaf and spine data center designs. MACsec offers security in the data link layer and is transparent and non-disruptive to L2/L3 traffic. Flexible 100GbE QSFP pluggable optics ensures a broad choice of cost effective connections.

The 7280SRAM can be deployed in a wide range of open networking solutions including secure Data Center Interconnect (DCI), large scale layer 2 and layer 3 cloud designs, overlay networks and virtualized or traditional enterprise data center networks. Deep packet buffers and large routing tables allow for internet peering applications. The broad range of interfaces and density choice provides deployment flexibility.



Arista 7280SRAM-48C6 MACsec systems

Arista EOS

All Arista products including the 7280SRAM-48C6 runs the same Arista EOS software, binary image simplifying network administration with a single standard across all switches. 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 together with stateful switchover without the loss of data plane forwarding.

Arista EOS enables advanced monitoring and automation capabilities such as Zero Touch Provisioning, LANZ, VM Tracer and Linux based tools to be run natively on the switch.

System Overview

The 7280SRAM-48C6 delivers unprecedented levels of buffering, scale and availability with built-in wire-speed MACsec encryption on the 100G ports and support for AlgoMatch.

7280SRAM-48C6: 48 port SFP+ and 6 ports QSFP100

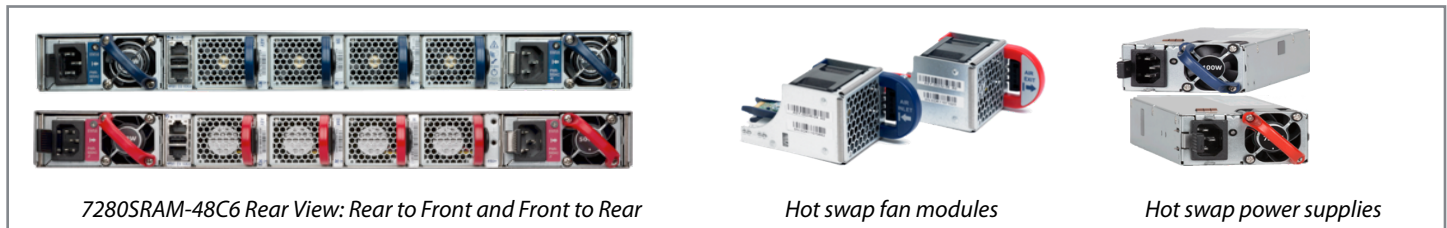
- Offers 48 wire speed 1/10G SFP+ ports
- Six 100G QSFP ports allow choice of 6 x 100GbE (with MACsec) and 6x40GbE
- 2.16Tbps of wire speed performance with 4GB of buffer



Arista 7280SRAM-48C6 Front

The 7280SRAM-48C6 is designed for continuous operations with system wide monitoring for both hardware and software components, simple serviceability and provisioning to prevent single point of failure. Key high availability features include

- 1+1 hot swappable power supplies and four hot-swap fans provide dynamic temperature control combined with N+1 redundancy
- Color coded PSUs and fans that deliver platinum level power efficiency
- Self healing software with Stageful Fault Repair (SFR), Smart System Upgrade (SSU) and Accelerated Software Update (ASU)



7280SRAM-48C6 Rear View: Rear to Front and Front to Rear

Hot swap fan modules

Hot swap power supplies

7280R Accelerated sFlow

sFlow is a powerful tool used commonly by network operators for advanced network telemetry, capacity planning, security analysis and quality of experience monitoring. All models of the 7280R Series enable sFlow utilizing the high performance CPU. Within modern high performance systems traffic sampling requires the capability to both sample and process packet rates of hundreds of millions of packets per second. With the 7280R Series Accelerated sFlow feature the sampling and processing of flow samples into sFlow datagrams is handled via a dedicated sFlow engine capable of generating up to 1.6Mpps of sFlow data, and of supporting 1:1000 sampling rates of full wire speed systems or higher rates with selective sampling based on triggers and filters. All sFlow v5 information is included in the sFlow records ensuring consistent integration with existing standard sFlow collection and analysis tools and no loss of information.

AlgoMatch™

AlgoMatch is a unique Arista innovation for modern cloud networks, combining both software and hardware to enable more flexible and scalable solutions for access control, policy based forwarding and network telemetry. By combining general purpose memory with advanced software algorithms AlgoMatch delivers higher scale, performance and efficiency with lower power and is more cost effective than traditional solutions. AlgoMatch provides a more efficient packet matching algorithm that in turn enables flow matching for access control, policy and visibility. The net benefits are a high performance policy engine with both increased functionality and scale in a cost and power efficient solution. AlgoMatch is available on the 7280RA Series of products.

- AlgoMatch enables IPv4 and IPv6 access control at the same scale
- L4 rule ranges are programmed efficiently without expansion or reduced capacity
- Multiple actions can be performed on a single packet or flow
- User defined filters allow flexible packet classification based on offsets for custom actions
- Supports rich policy with consistent semantics that would exhaust classical resources

100G Wire-speed Encryption

Industry standard IEEE 802.1AE (MAC Security standard, referred to as MACsec) capabilities provide line-rate frame encryption and authentication for all traffic. This removes the need for additional encryption devices and ensures confidentiality as well as provides anti-replay protection and therefore confidence in the integrity of encrypted traffic. MACsec is a link layer encryption technology and operates at the speed of the Ethernet ports, providing high performance without the processing overheads associated with encryption options such as IPSec.

MACsec uses a long-term key to derive session keys used for encryption utilizing the MACsec Key Agreement Protocol per IEEE 802.1X-2010. Long term keys can either be statically defined or derived via RADIUS server(s). Data is encrypted using the 128 bit or 256-bit GCM-AES-XPB block cipher suite. MACsec encryption is an EOS licensed feature and requires a license file to enable the encryption feature. License information is included in the ordering information section of this document.

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
 - 54 Ports / Channel
 - 48 groups per system
- MLAG (Multi-Chassis Link Aggregation)
 - Uses IEEE 802.3ad LACP
 - 96 ports per MLAG
- 802.1Q VLANs/Trunking
- 802.1AB Link Layer Discovery Protocol
- 802.3x Flow Control
- Jumbo Frames (9216 Bytes)
- IGMP v1/v2/v3 snooping
- Storm Control *
- 802.1 AVB *
- SMPTE-2059-2 *

Layer 3 Features

- Static Routes
- Routing Protocols: OSPF, OSPFv3, BGP, MP-BGP, IS-IS, and RIPv2
- 128-way Equal Cost Multipath Routing (ECMP)
- VRF
- Bi-Directional Forwarding Detection (BFD)
- Unicast Reverse Path Forwarding (uRPF)
- VRRP
- Virtual ARP (VARP)
- Policy Based Routing (PBR)
- Route Maps

Multicast

- IGMP v2/v3
- Protocol Independent Multicast (PIM-SM / PIM-SSM)
- PIM-Bidir
- Anycast RP (RFC 4610)
- Multicast Source Discovery Protocol (MSDP)

Advanced Monitoring and Provisioning

- Latency Analyzer and Microburst Detection (LANZ)
 - Configurable Congestion Notification (CLI, Syslog) *
 - Streaming Events (GPB Encoded) *
 - Capture/Mirror of congested traffic *
- Zero Touch Provisioning (ZTP)
- Advanced Mirroring
 - Port Mirroring (16 sessions)
 - Enhanced Remote Port Mirroring
 - SPAN/TAP M:N Aggregation
 - L2/3/4 Filtering
- Advanced Event Management suite (AEM)
 - CLI Scheduler
 - Event Manager
 - Event Monitor
 - Linux tools

- Integrated packet capture/analysis with TCPDump
- Restore and Configure from USB
- RFC 3176 sFlow
- Built-in SSD for logging and data capture
- IEEE 1588 PTP *

Virtualization Support

- VXLAN Gateway (draft-mahlingam-dutt-dcops-vxlan-01)
- VXLAN Tunnel Endpoint
- VXLAN Bridging
- VXLAN Routing (VRF, MLAG)
- VM Tracer VMware Integration

Security Features

- PDP
- Service ACLs
- Ingress / Egress ACLs using L2, L3, L4 fields
- Ingress / Egress ACL Logging and Counters
- MAC ACLs*
- ACL Deny Logging
- ACL Counters
- DHCP Relay / Snooping
- MAC Security
- TACACS+
- RADIUS
- ARP trapping and rate limiting

Quality of Service (QoS) Features

- Up to 8 queues per port
- Strict priority queueing
- 802.1p based classification
- DSCP based classification and remarking
- Egress shaping / Weighted round robin (WRR)
- Policing / Shaping
- Rate limiting *
- Explicit Congestion Notification (ECN) marking *
- 802.1Qbb Per-Priority Flow Control (PFC)
- 802.1Qaz Enhanced Transmission Selection (ETS)*
- Data Center Bridging Extensions (DCBX)*

Network Management

- CloudVision
- Configuration rollback and commit
- 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
- Beacon LED for system identification
- System Logging
- Environment monitoring

* Not currently supported in EOS

Extensibility

- Linux Tools
 - Bash shell access and scripting
 - RPM support
 - Custom kernel modules
- Software Defined Networking (SDN)
 - eAPI
 - OpenStack Neutron Support
- Programmatic access to system state
 - Python
 - Chef
 - Puppet
 - C++
 - eAPI
 - GO
 - OpenConfig
 - OpenStack Neutron Plug-in support
- Native KVM/QEMU support

System Scalability

- 9216 Byte Jumbo Frame Support
- 8 Priority Queues per Port
- 1152 Link Aggregation Groups (LAG)
- 32 Ports per LAG
- Virtual Output Queueing
- Distributed Scheduler
- WFQ, CIR*, ETS*, Fixed Priority

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
- 802.3x Flow Control
- 802.3ab 1000BASE-T
- 802.3z Gigabit Ethernet
- 802.3ae 10 Gigabit Ethernet
- 802.3ba 40 Gigabit Ethernet
- 802.3ba 100 Gigabit Ethernet
- RFC 2460 Internet Protocol, Version 6 (IPv6) Specification
- RFC 2461 Neighbor Discovery for IP Version 6 (IPv6)

- RFC 2462 IPv6 Stateless Address Autoconfiguration
- RFC 2463 Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification
- IEEE 1588-2008 Precision Time Protocol

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

* Not currently supported in EOS

Scale

MAC Addresses	768K
IPv4 Host Routes	768K
IPv6 Unicast Host Routes	768K
IPv4 Unicast LPM Routes	Over 1M
IPv6 Unicast LPM Routes	1M
Multicast Routes	Up to 768K
ACL Entries	24K

Power Supply Specifications

Power Supply	PWR-500AC	PWR-500-DC
Input Voltage	100-240V AC	40-72V DC
Typical Input Current	6.3 - 2.3A	13.1 - 7.3A 11A at -48V
Input Frequency	50/60Hz	DC
Input Connector	IEC 320-C13	AWG #16-#12
Efficiency (Typical)	93% Platinum	90%

Model	7280SRAM-48C6
Ports	48 x SFP+, 6 x QSFP100
Max 100GbE Ports	6
Max 40GbE Ports*	6
Max 10GbE Ports	48
Throughput	2.16Tbps
Packets/Second	720Mpps
Latency	From 3.8us
CPU	Quad-Core x86
System Memory	32 Gigabytes
Packet Buffer Memory	4GB
USB Ports	2
Flash Storage Memory	4GB
SSD Storage	30GB
100/1000 Mgmt Ports	1
RS-232 Serial Ports	1 (RJ-45)
Hot-swap Power	2 (1+1 redundant)
Hot-swap Fans	4 (N+1 redundant)
Reversible Airflow	Yes
Rack Units	1U
Size (WxHxD)	19 x 1.75 x16" (48.3 x 4.4 x40.6cm)
Typical** / Max Power Draw	382W / 403W
Weight	20.4lbs (9.25kg)
NEBS	Yes
Power Supplies	500W AC, 500W DC
AlgoMatch	Yes
Accelerated sFlow	Yes
Minimum EOS	4.20.1

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)

Supported Optics and Cables

SFP+ Ports	
10GBASE-CR	SFP+ to SFP+: 0.5m-5m
10GBASE-AOC	SFP+ to SFP+: 3m-30m
10GBASE-SRL	100m OM3 / 150m OM4 duplex MMF
10GBASE-SR	300m OM3 / 400m OM4 duplex MMF
10GBASE-LR/LRL	10km/1km duplex SMF
10GBASE-ER	40km duplex SMF
10GBASE-ZR	80km duplex SMF
10GBASE-DWDM	80km duplex SMF (DWDM)
100M, 1GbE SX/LX/TX	Supported
QSFP Ports	
100GBASE-CR4	Up to 5m
100GBASE-AOC	3m to 30m
100GBASE-SR4	70m OM3 / 100m OM4 parallel MMF
100GBASE-SWDM4	70m OM3 / 100m OM4 duplex MMF
100GBASE-PSM4	500m parallel SMF
100GBASE-CWDM4	2km duplex SMF
100GBASE-LR4/LRL4	10km/2km duplex SMF
100GBASE-DWDM	80km duplex SMF (DWDM)
40GBASE-CR4	Up to 5m
40GBASE-AOC	3m to 100m
40GBASE-SR4	100m OM3 / 150m OM4 parallel MMF
40GBASE-XSR4	300m OM3 / 400m OM4 parallel MMF
40GBASE-SRBD	100m OM3 / 150m OM4 duplex MMF
40GBASE-UNIV	150m OM3/OM4 duplex MMF 500m duplex SMF
40GBASE-PLR4/PLRL4	10km/1km duplex SMF (4x10G LR/LRL)
40GBASE-LR4/LRL4	10km/1km duplex SMF
40GBASE-ER4	40km duplex SMF

* 40G QSFP not currently supported in EOS. MACsec encryption can be used in 100G mode only

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

*** Higher power or reduced temperature range optics may reduce system operating temperature to 35°C (95°F)

Ordering Information

Product Number	Product Description
DCS-7280SRAM-48C6-F	Arista 7280RA, 48x10GbE (SFP+) & 6x100GbE QSFP switch router, AlgoMatch and MACsec, expn mem, SSD, front to rear air, 2 x AC
DCS-7280SRAM-48C6-R	Arista 7280RA, 48x10GbE (SFP+) & 6x100GbE QSFP switch router, AlgoMatch and MACsec, expn mem, SSD, rear to front air, 2 x AC
DCS-7280SRAM-48C6#	Arista 7280RA, 48x10GbE (SFP+) & 6x100GbE QSFP switch router, AlgoMatch and MACsec, expn mem, SSD, configurable fans and psu
PWR-500AC-F	Spare 500 Watt AC power supply for Arista 7050X and 7280R 1RU Switches (front-to-rear airflow)
PWR-500AC-R	Spare 500 Watt AC power supply for Arista 7050X and 7280R 1RU Switches (rear-to-front airflow)
PWR-500-DC-F	Spare 500 Watt DC power supply for Arista 7050X and 7280R 1RU Switches (front-to-rear airflow)
PWR-500-DC-R	Spare 500 Watt DC power supply for Arista 7050X and 7280R 1RU Switches (rear-to-front airflow)
FAN-7000H-F	Spare high speed fan module for Arista 7280R 1RU switches (front to rear airflow)
FAN-7000H-R	Spare high speed fan module for Arista 7280R 1RU switches (rear to front airflow)
LIC-FIX-2-MACSEC	MACSEC Encryption License for Arista Fixed switches, 1-6 MACSEC capable ports
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 (VMTracer 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	FlexRoute L3 License for Arista Fixed switches, 40-132 port 10G - OSPF, ISIS, BGP, PIM, 256K-1M Routes, EVPN, VXLAN, SR & MPLS
LIC-FIX-2-FLX-L	FlexRoute-Lite L3 License for Arista Fixed switches, 40-132 port 10G - OSPF, ISIS, BGP, PIM, Up to 256K Routes, EVPN, VXLAN
KIT-7001	Spare accessory kit for Arista 1RU tool-less switches
KIT-2POST-1U-NT	Spare 1RU 2 post rail kit for 1RU tool less systems (7050QX-32S, 7050SX/TX and 7280R)
KIT-4POST-NT	Spare 1RU/2RU tool-less rail kits for 4-post installation (7050QX-32S, 7050SX/TX, 7280R and 7250X)

Warranty

The Arista 7280R Series switches come 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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