

## Product Highlights Overview

### Performance

- 460 Terabits per second fabric capacity
- Up to 96 Billion packets per second
- Up to 14.4 Terabit per second per slot
- Up to 576 wire-speed 400G ports
- 100G, 200G and 400G mode support
- Under 4 microsecond latency (64 bytes)
- 800G Ready

### High Hardware Availability

- N+2 Grid redundant power system
- 1+1 Supervisor redundancy
- Fabric module redundancy
- N+1 Fan module redundancy

### Virtualization and Provisioning

- CloudVision
- VXLAN for next generation DC
- LANZ for microburst detection
- VM Tracer
- Zero Touch Provisioning (ZTP)
- Advanced Event Monitoring
- sFlow (RFC3176)
- IEEE 1588 PTP

### Scalable Architecture

- Dense 400G and 100G
- Deep packet buffer (24GB per line card)
- Virtual Output Queues per port to eliminate head of line blocking

### Resilient Control Plane

- Multi-core Hyper-threaded x86 CPU
- 64GB DRAM / 4GB Flash
- Dual Supervisor modules
- User applications can run in a VM

### Data Center Class Design

- AC and DC power options
- Front-to-rear airflow for optimized cooling
- 32W per 400G port typical power
- Up to 720 400G ports per 42U rack

### 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

The Arista 7800R3 Series of purpose built modular switches deliver the industry's highest performance scaling to 460 Tbps of system throughput to meet the needs of the largest scale data centers. They combine 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 7800R3 can be deployed in a wide range of open networking solutions including large scale layer 2 and layer 3 cloud designs, overlay networks, virtualized or traditional enterprise data center networks. Deep packet buffers and large routing tables allow for internet peering and secure data center interconnect applications and provides complete deployment flexibility.

Available in a modular system design, as a choice of 16, 8 and 4 slots, the Arista 7800R3 is the next generation of the 7500 Series and delivers a consistent architecture offering the same deep buffer, non-blocking VoQ capabilities while setting a new standard for performance, density, reliability, and power efficiency. The 7800R3 can support up to 576 ports of wire speed 400G and 768 ports of 100G and offers over 460 Tbps of total capacity with a broad choice of line cards. Standards based OSFP 400G and QSFP 100G interfaces support a choice of speeds including 50G providing unparalleled flexibility and the ability to seamlessly transition data centers to the next generation of Ethernet performance.

All components are hot swappable, with redundant supervisor, power, fabric and cooling modules with front-to-rear airflow. The system is purpose built for data centers and is energy efficient with typical power consumption of under 25 watts per 100G port and 50W per 400G port for a fully configured chassis. These attributes make the Arista 7800R an ideal platform for building reliable and highly scalable data center networks.



*Arista 7800R Series Modular Data Center Switches*

## Arista EOS

All Arista products including the 7800R3 Series 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.

## 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 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.

## The Four Pillars of Arista's Software Defined Cloud Networking:

### Universal Cloud Network

- Scalable standards-based MLAG at Layer 2, ECMP for Layer 3 and VXLAN for network virtualization flexibility
- Non blocking leaf-spine for 50K-2M hosts

### Cloud Control

- Standards based EOS with AEM, ZTP/ZTR, LANZ and DANZ
- Automated Monitoring for visibility and telemetry

### Network Wide Virtualization

- Multi-vendor API Support with eAPI
- Support for VMWare and NSX with VXLAN and VMTracer
- Support for Microsoft OMI and Openstack OVSDB

### Network Applications and Automated Management

- Single point of network-wide state with Arista CloudVision
- Networked applications for workload mobility, smart systems rollback and upgrades and workflow telemetry
- Open Partner integration

## Scaling Data Center Performance

The Arista 7800R Series deliver non-blocking switching capacity that enables dramatically faster and simpler network designs for data centers and lower both capital and operational expenses. A wide range of modular systems with a single consistent EOS allows for flexible selections at all tiers of the network and deployment scenarios including layer 2 MLAG, layer 3 ECMP, VXLAN Overlay and Internet Peering.

Arista's **Multi-Chassis Link Aggregation (MLAG)** technology supports a leaf and spine active/active L2 network topology. An **Equal Cost Multi-Path (ECMP)** design at Layer 3 scales the network in a fully non-blocking, low-latency, two-stage 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 that scales to hundreds of thousands of hosts in a single two-tier design. Both designs support overlay networks via VXLAN and can integrate with standards-based overlay controller solutions.

The Arista 7800R Series **FlexRoute** technology provides the flexible scalability to support deployment as a routing platform with Internet scale routing. Arista FlexRoute along with EOS NetDB enables innovation not natively available in merchant chipsets. Arista EOS provides operational savings through visibility, automation and improved network operations.

## Routing Table Scale

Network scalability is directly impacted by the size of a systems 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 7800R3 Series leverage a database for forwarding resources which can be allocated for MAC, Routing, Host and ARP tables with a choice of forwarding profiles that optimizes these tables. The flexibility coupled with the range of system forwarding profiles ensures optimal resource allocation for a wide range of network topologies and use cases including Internet Peering, virtualization, Carrier Edge and Security as well as datacenter spine and leaf.

## Enhanced Features for High Performance Cloud Networks

The Arista 7800R delivers a suite of advanced traffic control and monitoring features to improve the agility of modern high performance environments, with solutions for automation, data monitoring, precise timing and next-generation virtualization.

Automating the data center enables customers to dynamically provision computing resources in the most efficient manner while also meeting business needs by maintaining service level agreements (SLAs). Arista EOS automates complex IT workflows and simplifies network operations while reducing or even eliminating downtime. Arista EOS rich automation capabilities not only reduce the human error element in network operations but also enable IT operators to make the network work the way they want.

Arista offers solutions for a variety of approaches to cloud-like network automation. Addressing the needs of the largest public cloud environments as well as applying those lessons learned in the turnkey CloudVision automation offering.

### CloudVision

CloudVision is a network-wide approach for workload orchestration and workflow automation as a turnkey solution for Cloud Networking. CloudVision extends the EOS publish subscribe architectural approach across the network for state, topology, monitoring and visibility. This enables enterprises to move to cloud-class automation without needing any significant internal development.

### Arista Event Management (AEM)

Advanced Event Management (AEM), a sub-system of Arista EOS, is a powerful and flexible tool to automate tasks and customize the behavior of EOS and the operation of the overall data center switching infrastructure. Simplifying the overall operations, AEM provides the tools to customize alerts and actions. 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.

### 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 100/400Gbps 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)

Arista's hardware derived Precision Time Protocol solution provides a robust mechanism for accurate in-band time distribution in high performance environments. The system clock can be synchronized using the Supervisor module clock input port with a PPS source or IEEE 1588 PTP.

### Virtualization

Supporting next-generation virtualized data centers requires tight integration with orchestration tools and emerging encapsulation technologies such as VXLAN. The 7800R 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 7800R 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.

### Maximum Network Design Flexibility

- Scalable designs with up to a 256-way ECMP provides flexibility and balances traffic evenly across the largest leaf-spine designs
- MLAG designs are effective at almost any layer of the network and maximize cross-sectional bandwidth with fast failover times measured in 100's of milliseconds for link failures.
- VXLAN gateway, bridging and routing with VMTracer features to enable next generation data center designs
- Scaleable routing tables to support internet route peering
- Wide choice of dense 100G and 400G line cards with support for flexible 25G or 50G modes.
- Support for standards based IEEE 25GbE with mix and match support for simple and cost effective migration
- Virtual output queue (VoQ) architecture and deep packet buffering to eliminate head of line blocking with low latency
- ACL scalability with up to 100K entries per forwarding engine allows for rich policy control
- Flexible allocation of L2 and L3 forwarding table resources for more design choice
- PTP, sFlow, DANZ and multi-port mirroring tools provide network wide visibility and monitoring to detect traffic bursts, monitor latency and congestion and allow capacity planning to improve application performance and availability

## System Overview

The 7800R3 Series offers architectural consistency to the 7500R and 7280R Series that ensures long term investment protection with support for deterministic fair delivery, flexible scale and open programmability building on evolution of the Arista R-Series delivered by the 7500 and 7280 Series. The following 7800R3 chassis options are available:

- **7816R** a 16-slot 31RU chassis that supports up to 16 line cards with both AC or DC power options
- **7808R** an 8-slot 16 RU chassis that supports up to 8 line cards with both AC or DC power options
- **7804R** a 4-slot 10 RU chassis that supports up to 4 line cards with both AC or DC power options

The 7800R systems can accommodate any combination of the 7800R3 line cards providing a choice of density, scale and speed, with all options including support for FlexRoute, Accelerated sFlow and Algorithmic ACLs

The Arista 7800R3 lowers total cost of ownership as it is designed to be efficient with power per port as low as 25W per 100G port which combined with front to rear cooling to optimize the data center environment produces the most reliable, dense and power efficient modular switch.

## 7800R3 Deterministic Network Performance

The Arista 7800R Series uses a deep buffer virtual output queue (VOQ) architecture that eliminates head-of-line (HOL) blocking and virtually eliminates packet drops even in the most congested network scenarios.

An advanced traffic scheduler fairly allocates bandwidth between all virtual output queues while accurately following queue disciplines including weighted fair queueing, fixed priority, or hybrid schemes. As a result, the Arista 7800R can handle the most demanding data center requirements with ease, including mixed traffic loads of real-time, multicast, and storage traffic while still delivering low latency.

## 7800R3 Series Chassis - 16-Slot, 8-slot and 4-slot

The 7800R Series chassis each provide room for two supervisor modules, four, eight or sixteen line card modules, grid redundant power supplies, and six fabric modules on the 4-slot and 8-slot, and 12 fabric modules on the 16-slot systems. Supervisor and line card modules plug in from the front, along with the power supplies while the fabric modules are inserted from the rear. The system uses a mid plane less design for direct connection from line cards to fabric modules with control plane connectivity to each of the fabric and line card modules. The system design is optimized for data center deployments with front-to-rear airflow and internally redundant AC or DC power supplies. The system is designed to support migration to higher performance and density with no loss of functionality or redundancy.

## Supervisor Module

The supervisor modules for the 7800R3 series run Arista Extensible Operating System (EOS) and handle all control plane and management functions of the system. One supervisor module is needed to run the system and a second can be added for 1+1 redundancy. The multi-core x86 CPU with 64GB of DRAM and an optional SSD provides the control plane performance needed to run an advanced data center switch scaling to hundreds of physical ports and thousands of virtual ports. A pulse per second clock input port enables synchronizing with an external source to improve the accuracy of monitoring tools.

## Fabric Module

At the heart of the 7800R3 series is the fabric. It interconnects all line cards in a non-blocking architecture irrespective of the traffic. Each line card module connects to the fabric with multiple links and data packets are spread across the links to fully utilize the fabric capacity. Unlike hash-based selection of fabric links, the 7800R architecture provides 100% efficient connectivity from any port to any other port with no drops. The fabric modules are always active-active, provide redundancy and can be hot-swapped. The Fabric Modules for each system are based on the size of the chassis and integrate a fan assembly for flexible and redundant cooling.

## Power Supply Modules

The 7800R3 series switches are equipped with redundant and hot-swappable AC or DC power supplies with an internal variable speed fan. Each power supply integrates 1+1 power redundancy ensuring grid redundancy in a choice of 3000W AC or DC power supplies. The AC supplies are Titanium climate saver rated and have an efficiency of over 94% with single stage conversion to the internal 12V DC voltage. The DC power supplies use -40 to -72V direct current inputs.

## Line Card Modules

Wire-speed line cards deliver up to 6 Billion packets per second of forwarding with a distributed virtual output queue architecture and lossless fabric that eliminates head-of-line blocking and provides fairness across all ports. Line cards contain up to 24GB of packet memory for approximately 50msec of traffic buffer per ingress port and virtually eliminating packet drops in congestion scenarios. Line cards connect to all fabric modules in a non-blocking full mesh.

The Arista 7800R3 systems can be populated with any combination of line cards. For environments requiring the highest performance combined with scalability a wide choice of speed and interface options is available to provide cloud scale density with carrier grade features for flexible deployment in data center, internet edge, peering and backbones with advanced features for routing, telemetry and programmable packet processing.

## 7800R3 and 7800R3K Series Line Cards

The 7800R3 Series line cards provide a choice of 100G and 400G interfaces with support for industry standard optics for both single and multi-mode fiber with the flexibility to enable multi-rate configurations. Line cards support for 100G breakout and 400G ensure future proofing for next generation network architectures. Speed changes and breakout modes are enabled independently of the other ports on the line card for seamless migration and investment protection for both existing and new network designs.

The 7800R3 Series of line cards build on the capability of the 7280R and 7500R Series with support for FlexRoute, Accelerated sFlow and large scale ACLs. FlexRoute provides scalability to support deployment as a routing platform with Internet scale routing. Algorithmic ACLs provide flexible pattern matching for access control, policy based forwarding and network telemetry. All variations of the 7800R3 Series line cards interoperate and the large scale 7800R3K Series of line cards expand FlexRoute support to over 2.5M IPv4 and IPv6 routes. Accelerated sFlow at high density 100G and 400G provides visibility and programmatic control of traffic steering with no impact on packet forwarding.

## FlexRoute™

The Arista FlexRoute Engine provides support for the full internet routing table, in hardware, with IP forwarding at Layer 3 and with sufficient headroom for future growth in both IPv4 and IPv6 route scale to more than 1.3 million routes. The innovative FlexRoute Engine with its patented algorithmic approach to building layer 3 forwarding tables on Arista R-Series Universal Spine and Leaf platforms is unique to Arista and a key enabler in calling these platforms routers. The large scale 7800R3K linecards expand FlexRoute support to over 2.5M IPv4 and IPv6 routes.

## 7800R3 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. Traditional sFlow utilizes a system CPU for processing samples of hundreds of thousands of flows. In modern high performance systems, guaranteed high rate sampling requires the capability to both sample and process packet rates of billions of packets per second. With the 7800R Series Accelerated sFlow feature the sampling and processing of flow samples into sFlow datagrams is handled via integrated sFlow engines capable of supporting 1:500 sampling rates on of full wire speed systems or even higher rates with selective sampling based on triggers and filters. All sFlow v5 information is included in the sFlow records ensuring integration with standard sFlow collection and analysis tools and no loss of key information.



**7800R3-48CQ, 7800R3-48CQM and 7800R3K-48CQ:**

**48 port 100G line card**

- Up to 48 100G ports per line card or 96 50G ports
- 4.8Tbps of forwarding
- 2Bpps of wire speed performance with 8GB of buffer



**7800R3-36P: 36 port 400G OSFP line card**

- Up to 36 400G ports per line card or 144 100G ports
- Flexible 10G, 25G, 50G and 100G with optics or cables
- 14.4Tbps of forwarding
- 6Bpps of wire speed performance with 24GB of buffer



**7800R3-36D and 7800R3K-36DM: 36 port 400G QSFP-DD line card**

- Up to 36 400G ports per line card or 144 100G ports
- Flexible 10G, 25G, 50G and 100G with optics or cables
- 14.4Tbps of forwarding
- 6Bpps of wire speed performance with 24GB of buffer



## Algorithmic ACLs

Algorithmic ACLs combine both software and hardware to enable more flexible and scalable solutions for access control, policy based forwarding and network telemetry. Combining general purpose memory with advanced software algorithms delivers higher scale, performance and efficiency with lower power and is more cost effective than traditional solutions. Algorithmic ACLs leverage efficient packet matching algorithms 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. Algorithmic ACLs are available on the 7800R3 and 7800R3K Series of linecards.

- 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

## 7800R Inband Network Telemetry

Inband network telemetry, or INT, is a standards approach to providing deep visibility into traffic in real-time, with no impact on switch performance. INT provides per-flow monitoring of traffic drops, latency, congestion and the network path. INT information can be exported in IPFIX or sFlow formats to a management system or collector such as Arista CloudVision, for predictive analytics and deep forensics to measure latency per device and across the network, trace packets and reconstruct path topology as well as detecting hot-spots.

Inband Network Telemetry is available on the 7800R3 Series of products, with the ability to originate, pass and terminate, along with mirroring to external collectors.

## 7800R High Availability

The Arista 7800R Series are designed for continuous operations with system wide monitoring of both hardware and software components, simple serviceability and provisioning to prevent single points of failure. The hardware supports high-availability with hot-swap of all components with redundant supervisors, power supplies, fabric and cooling modules. Fabric redundancy provides zero loss of performance with deterministic degradation and integrated fan systems provide dynamic temperature control combined with N+1 redundancy. The 7800R Series offer power redundancy that supports both power source and power supply redundancy with each power supply internally redundant. The Arista EOS software supports stateful failover (\*) between the dual redundant supervisors as well as self-healing stateful fault containment (SFC), stateful fault repair (SFR) and live patching through in-service-software updates to help ensure continuous service.

## Routing Table Scale

Network scalability is directly impacted by the size of a systems 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 7800R3 Series leverage a database for forwarding resources which can be allocated for MAC, Routing, Host and ARP tables with a choice of forwarding profiles that optimizes these tables. The flexibility coupled with the range of system forwarding profiles ensures optimal resource allocation for a wide range of network topologies and use cases including Internet Peering, virtualization, Carrier Edge and Security as well as datacenter spine and leaf.

## 100G and 400G Wire-speed Encryption

The Arista 100G and 400G MACsec line cards have built-in wire-speed encryption on every port. 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 which 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 a 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
  - 256 Ports / Channel
  - 1152 groups per system
- MLAG (Multi-Chassis Link Aggregation) \*
  - Uses IEEE 802.3ad LACP
  - 128 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 \*

## Layer 3 Features

- Static Routes
- Routing Protocols: OSPF, OSPFv3, BGP, MP-BGP, IS-IS, and RIPv2
- 512-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) \*
- 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

- SSD for logging and data capture
- IEEE 1588 PTP

## Virtualization Support

- VXLAN Bridging and Routing (VRF, MLAG) \*
- VM Tracer VMware Integration \*

## Security Features

- Control Plane Protection (CPP)
- Ingress / Egress ACLs using L2, L3, L4 fields
- Ingress / Egress ACL Logging and Counters
- MAC ACLs
- ACL Deny Logging
- ACL Counters
- Atomic ACL Hitless restart
- 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
- 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
- 802.3by 25 Gigabit Ethernet
- 802.3ba 40 Gigabit Ethernet
- 802.3ba 100 Gigabit Ethernet
- 802.3bs 400 and 200 Gigabit Ethernet
- 802.3cm 400 Gigabit over multimode fiber
- 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



Chassis	DCS-7816	DCS-7808	DCS-7804
Supervisor slots	2	2	2
Linecard Slots	16	8	4
Fabric Module Slots	12	6	6
Power Supply Slots	24	12	8
Physical Dimensions (HxWxD)	55.9 x 17.3 x 40" (142.2 x 44.1 x 101.6cm)	27.6 x 17.3 x 37.0" (70.2 x 44.1 x 94.0cm)	17.1 x 17.3 x 37.0" (43.5 x 44.1 x 94.0cm)
Rack Units	31	16	10
Weight (Chassis only)	640 lbs (291 kg)	222 lbs (101 kg)	163 lbs (74 kg)
Weight (Full System)	1400 lbs (291 kg)	610 lbs (277 kg)	375 lbs (170 kg)
Maximum 50G Density	1536	768	384
Maximum 100G Density	768	384	192
Maximum 400G Density	576	288	144
Maximum Throughput/PPS	460Tbps / 96 Bpps	230Tbps / 48 Bpps	115Tbps / 24 Bpps
Max Power Consumption	tbd	18,215W	9,084W

Maximum density values with all ports in breakout, based on per line card breakout and subject to EOS Scale support

Fabric Module	DCS-7816R3-FM	DCS-7808R3-FM	DCS-7804R3-FM
Redundancy	Graceful degradation supported	Graceful degradation supported	Graceful degradation supported
Dimensions (HxWxD)	2.5" x 21.75" x 23.75" (6.4 x 55.3 x 60.3cm)	2.5" x 21.75" x 23.75" (6.4 x 55.3 x 60.3cm)	2.5" x 12.25" x 23.75" (6.4 x 31.1 x 60.3cm)
Weight	32 lbs (14.5 kg)	35 lbs (15.9 kg)	20 lbs (9.1 kg)
Typical (Max) Power *	438W (693W)	438W (693W)	219W (346 W)
Integrated Fan Module	Yes (8 Fan Modules)	Yes (8 Fan Modules)	Yes (4 Fan Modules)
Chassis Support	DCS-7816 (12 per chassis required)	DCS-7808 (6 per chassis required)	DCS-7804 (6 per chassis required)

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

7800R Series	7800R3-36P	7800R3-36D	7800R3K-36DM
Ports	36 x OSFP	36 x QSFP-DD	36 x QSFP-DD
Max 10G	288	288	288
Max 25G	288	288	288
Max 40G	36	36	36
Max 50G	288	288	288
Max 100G	144	144	144
Max 400G	36	36	36
Accelerated sFlow	Yes	Yes	Yes
MACsec	No	No	Yes - All ports
Port Buffer	24GB	24GB	24GB
Weight	22 lbs (10 kg)	22 lbs (10 kg)	22 lbs (10 kg)
Typical (Max) Power *	807W (1083W) Excluding optics	807W (1083W) Excluding optics	
Dimensions (WxHxD)	18.9" x 2.1" x 17.8" (48.1 x 5.4 45.2cm)		
Chassis Support	DCS-7816, DCS-7808, DCS-7804		

7800R Series	7800R3-48CQ	7800R3-48CQM	7800R3K-48CQ
Ports	48 x QSFP100	48 x QSFP100	48 x QSFP100
Max 10G	96	--	96
Max 25G	96	--	96
Max 40G	48	48 (no MACsec)	48
Max 50G	96	--	48
Max 100G	48	48	48
Max 400G	--	--	--
Accelerated sFlow	Yes	Yes	Yes
MACsec	No	Yes - All ports	No
Port Buffer	8GB	8GB	8GB
Weight	20 lbs (9.1 kg)	20 lbs (9.1 kg)	20 lbs (9.1 kg)
Typical (Max) Power *	398W (462W)	620W (684W)	398W (462W)
Dimensions (WxHxD)	18.9" x 2.1" x 17.8" (48.1 x 5.4 45.2cm)		
Chassis Support	DCS-7816, DCS-7808, DCS-7804		

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

\*Power excludes optics power as this is a significant variable for 100G and 400G media

Linecard Resources <sup>1</sup>	7800R3 Series		7800R3K Series		
Profile	Balanced	L3	Balanced	L3	L2
MAC Addresses	448K	128K	736K	160K	1.4M
IPv4 Host Routes	896K	256K	1.4M	320K	2.8M
IPv6 Unicast Host Routes	224K	64K	368K	80K	736K
IPv4 Unicast LPM Routes	704K	1.3M	1.2M	2.5M	128K
IPv6 Unicast LPM Routes	235K	440K	411K	821K	42K
Multicast Routes	448K	128K	736K	160K	1.4M
ACL Entries	24K	24K	24K	24K	24K

1. Maximum values dependent on shared resources in some cases

Supervisor Module	DCS-7800-SUP	DCS-7816-SUP
Processor	1.9Ghz, Multi Core, x86, 64-bit	1.9Ghz, Multi Core, x86, 64-bit
System Memory	64 GB	64 GB
Flash Storage Memory	4 GB	4 GB
RS-232 Serial Ports	1	1
Management Ports	1 (RJ-45) + 1 (SFP 1G)	1 (RJ-45) + 1 (SFP 1G)
USB 2.0 Interface	2	2
SSD Storage	256 GB	256 GB
Size (WxHxD)	9.0 " x 2.1" x 17.25" (22.8 x 5.3 x 43.8cm)	9.0 " x 2.1" x 17.25" (22.8 x 5.3 x 43.8cm)
Weight	6.3 lbs (2.9 kg)	6.3 lbs (2.9 kg)
Typical (Max) Power *	61 W (72 W)	71 W (78 W)
Chassis Support	DCS-7808, DCS-7804	DCS-7816

### Standards Compliance

EMC	FCC, EN55022, EN61000-3-2, EN61000-3-3 or EN61000-3-11, EN61000-3-12 (as applicable)
Immunity	EN55024 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

### Power Supply

	PWR-D1-3041-AC	PWR-D2-3041-DC
Input Circuit (Max)	2x - 200-240VAC, 16A	2x- 48-60VDC, 80A
Input Frequency	50/60Hz	N/A
Output Power	3000W	3000W
Input Connector	2x - APP Saf-D-Grid 400	2x - 6x M6 Stud
Efficiency	96% Titanium	90%
Size (WxHxD)	2.7" x 1.6" x 23.6" (6.8 x 40.6 x 60.0cm)	2.7" x 1.6" x 23.6" (6.8 x 40.6 x 60.0cm)
Weight	8lbs (3.6kg)	8lbs (3.6kg)
Chassis Support	DCS-7816, DCS-7808, DCS-7804	

### 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 90%
Operating Altitude	0 to 10,000 ft, (0-3,000m)
Airflow	Maximum 800 CFM @ 40 °C / Typical 600 CFM @ 25 °C

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

\*Power excludes optics power as this is a significant variable for 100G and 400G media

## Supported Optics and Cables \*

Interface Type	400G OSFP and QSFP-DD ports
400GBASE-CR8	OSFP to OSFP: 1m-3m QSFP-DD to QSFP-DD: 1m-2.5m
400GBASE-AOC	OSFP to OSFP: 1m-30m QSFP-DD to QSFP-DD: 1m-30m
400GBASE-SR8	100m
400GBASE-DR4	500m
400GBASE-XDR4	2km
400GBASE-FR4	2km
400GBASE-2FR4	2km
200GBASE-CR4	OSFP to 2xQSFP: 1m to 3m lengths QSFP-DD to 2xQSFP: 1m to 2.5m lengths
100GBASE-CR2	OSFP to 4xQSFP: 1m to 3m lengths QSFP-DD to 4xQSFP: 1m to 2.5m lengths
100GBASE-CR4 **	OSFP to 2xQSFP: 1m to 3m lengths QSFP-DD to 2xQSFP: 1m to 2.5m lengths
50GBASE-CR2 **	OSFP to 4xQSFP: 1m to 3m lengths QSFP-DD to 4xQSFP: 1m to 2.5m lengths
25GBASE-CR **	OSFP to 8xSFP: 1m to 3m lengths QSFP-DD to 8xSFP: 1m to 2.5m lengths

## Supported Optics and Cables \*

Interface Type	100G QSFP Ports
100GBASE-SR4	70m OM3 / 100m OM4 Parallel MMF
100GBASE-XSR4	150m OM3 / 300m OM4 Parallel MMF
100GBASE-SWDM4	70m OM3 / 100m OM4 Duplex MMF
100GBASE-SRBD	70m OM3 / 100m OM4 Duplex MMF
100GBASE-LR	10km SM Duplex
100GBASE-LR4	10km SM Duplex
100GBASE-LRL4	2km SM Duplex
100GBASE-XCWDM4	10km SM Duplex
100GBASE-CWDM4	2km SM Duplex
100GBASE-PSM4	500m SM Parallel
100GBASE-AOC	1m to 30m
100GBASE-ERL4	40km SM Duplex
100GBASE-CR4	QSFP to QSFP: 1m to 5m
25GBASE-CR	QSFP to SFP25: 1m to 3m lengths

\*\* Requires OSFP / QSFP-DD port to be configured for 200G, 8 x 25G NRZ lanes. Allows interop with 100G QSFP and 25G SFP ports



Product Number	Product Description
DCS-7804R3-BND	Arista 7804R Chassis bundle. Includes 7804 chassis, 6x3kW PS, 6xFM-R3, 1x7800-Sup
DCS-7804R3-BND-DC	Arista 7804R Chassis bundle. Includes 7804 chassis, 6x3kW DC PS, 6xFM-R3, 1x7800-Sup
DCS-7804R3-BND-S2	Arista 7804R Chassis bundle. Includes 7804 chassis, 6x3kW PS, 6xFM-R3, 2x7800-Sup
DCS-7804R3-BND-DC-S2	Arista 7804R Chassis bundle. Includes 7804 chassis, 6x3kW DC PS, 6xFM-R3, 2x7800-Sup
DCS-7808R3-BND	Arista 7808R Chassis bundle. Includes 7808 chassis, 8x3kW PS, 6xFM-R3, 1x7800-Sup
DCS-7808R3-BND-DC	Arista 7808R Chassis bundle. Includes 7808 chassis, 8x3kW DC PS, 6xFM-R3, 1x7800-Sup
DCS-7808R3-BND-S2	Arista 7808R Chassis bundle. Includes 7808 chassis, 8x3kW PS, 6xFM-R3, 2x7800-Sup
DCS-7808R3-BND-DC-S2	Arista 7808R Chassis bundle. Includes 7808 chassis, 8x3kW DC PS, 6xFM-R3, 2x7800-Sup
DCS-7816R3-BND	Arista 7816R Chassis bundle. Includes 7816 chassis, 12x3kW PS, 12xFM-R3, 1x7816-Sup
DCS-7816R3-BND-DC	Arista 7816R Chassis bundle. Includes 7816 chassis, 12x3kW DC PS, 12xFM-R3, 1x7816-Sup
DCS-7816R3-BND-S2	Arista 7816R Chassis bundle. Includes 7816 chassis, 12x3kW PS, 12xFM-R3, 2x7816-Sup
DCS-7816R3-BND-DC-S2	Arista 7816R Chassis bundle. Includes 7816 chassis, 12x3kW DC PS, 12xFM-R3, 2x7816-Sup
DCS-7800-SUP	Supervisor module for 7800 series chassis
DCS-7816-SUP	Supervisor module for 7800 series 7816 chassis

### Line Cards

DCS-7800R3-36P-LC	7800R3 Series 36 port 400GbE OSFP wirespeed line card
DCS-7800R3-36D-LC	7800R3 Series 36 port 400GbE QSFP-DD wirespeed line card
DCS-7800R3K-36DM-LC	7800R3 Series 36 port 400GbE QSFP-DD with MACsec wirespeed line card, large routes
DCS-7800R3-48CQ-LC	7800R3 Series 48 port 100GbE QSFP wirespeed line card
DCS-7800R3-48CQM-LC	7800R3 Series 48 port 100GbE QSFP with MACsec wirespeed line card
DCS-7800R3K-48CQ-LC	7800R3 Series 48 port 100GbE QSFP wirespeed line card, large routes

### Optional Components and Spares

DCS-7804-CH	Arista 7804 chassis, 2 Supervisor slots, 4 line card slots, 6 Fabric Module slots, AC or DC option
DCS-7804R3-FM	7800R3 Series Fabric Module for 7804R3 Chassis, required for fabric slots 1-6
DCS-7808-CH	Arista 7808 chassis, 2 Supervisor slots, 8 line card slots, 6 Fabric Module slots, AC or DC option
DCS-7808R3-FM	7800R3 Series Fabric Module for 7808 Chassis, required for fabric slots 1-6
DCS-7816-CH	Arista 7816 chassis, 2 Supervisor slots, 16 line card slots, 12 Fabric Module slots, AC or DC option
DCS-7816R3-FM	7800R3 Series Fabric Module for 7816 Chassis, required for fabric slots 1-12
PWR-D1-3041-AC-BLUE	Arista PSU, ATS, 1RU, AC, 3KW, BLUE
PWR-D2-3041-DC-BLUE	Arista PSU, DUAL INPUT, 1RU, DC, 3KW, BLUE

#### Note:

- Arista 7800 switches ship with 6, 8 or 12 SAF-D-GRID to C20 power cables (3m). Other power cables must be ordered separately
- Front-to-rear means the air flows from the switch port side to the fan side

## Optional Components and Spares

DCS-7800-SCVR	Blank cover for 7800 supervisor slot
DCS-7816-SCVR	Blank cover for 7816 supervisor slot
DCS-7800-LCVR	Blank cover for 7800 line card slot
DCS-7800-PCVR	Blank cover for 7800 power supply slot
KIT-7816	Spare accessory kit for Arista 7816. Includes 12x SG-C20 power cords, 4 post mounting brackets
KIT-7808	Spare accessory kit for Arista 7808. Includes 8x SG-C20 power cords, 4 post mounting brackets
KIT-7804	Spare accessory kit for Arista 7804. Includes 6x SG-C20 power cords, 4 post mounting brackets
CAB-AC-20A-SG-C20	Power cord, SAF-G to C20 (2m)
CAB-AC-20A-SG-C20-3M	Power cord, SAF-G to C20 (3m)
CAB-AC-20A-SG-C20-4M	Power cord, SAF-G to C20 (4m)
CAB-AC-20A-SG-C20-1M	Power cord, SAF-G to C20 (1m)

## Optional Licenses

LIC-MOD-1-E	Enhanced Software License for Arista Modular switches - 4 slots (OSPF, BGP, ISIS, PIM)
LIC-MOD-2-E	Enhanced Software License for Arista Modular switches - 8 slots (OSPF, BGP, ISIS, PIM)
LIC-MOD-4-E	Enhanced Software License for Arista Modular switches - 16 slots (OSPF, BGP, ISIS, PIM)
LIC-MOD-1-V	Virtualization license for Arista Modular switches - 4 slots (VM Tracer and VXLAN)
LIC-MOD-2-V	Virtualization license for Arista Modular switches - 8 slots (VM Tracer and VXLAN)
LIC-MOD-4-V	Virtualization license for Arista Modular switches - 16 slots (VM Tracer and VXLAN)
LIC-MOD-1-V2	EOS Extensions, Security and Partner Integration license for Arista Modular switches - 4 slots
LIC-MOD-2-V2	EOS Extensions, Security and Partner Integration license for Arista Modular switches - 8 slots
LIC-MOD-4-V2	EOS Extensions, Security and Partner Integration license for Arista Modular switches - 16 slots
LIC-MOD-1-Z	Monitoring & provisioning license for Arista Modular switches - 4 slots (ZTP, LANZ, API, TapAgg)
LIC-MOD-2-Z	Monitoring & provisioning license for Arista Modular switches - 8 slots (ZTP, LANZ, API, TapAgg)
LIC-MOD-4-Z	Monitoring & provisioning license for Arista Modular switches - 16 slots (ZTP, LANZ, API, TapAgg)
LIC-MOD-1-FLX	FLX License for Arista 4-Slot Modular - Full Routing upto 2M Routes, >24K ACL, EVPN, VXLAN, SR, Adv MPLS-LER/LSR, with TE & link/node protection
LIC-MOD-2-FLX	FLX License for Arista 8-Slot Modular - Full Routing upto 2M Routes, >24K ACL, EVPN, VXLAN, SR, Adv MPLS-LER/LSR, with TE & link/node protection
LIC-MOD-4-FLX	FLX License for Arista 16-Slot Modular - Full Routing upto 2M Routes, >24K ACL, EVPN, VXLAN, SR, Adv MPLS-LER/LSR, with TE & link/node protection
LIC-MOD-1-FLX-L	FLX-Lite License for Arista 4-Slot Modular - Full Routing Up to 256K Routes, EVPN, VXLAN, SR, base MPLS LSR (no TE or link/node protection)
LIC-MOD-2-FLX-L	FLX-Lite License for Arista 8-Slot Modular - Full Routing Up to 256K Routes, EVPN, VXLAN, SR, base MPLS LSR (no TE or link/node protection)
LIC-MOD-4-FLX-L	FLX-Lite License for Arista 16-Slot Modular - Full Routing Up to 256K Routes, EVPN, VXLAN, SR, base MPLS LSR (no TE or link/node protection)
LIC-MOD-1-MACSEC	MACSEC Encryption License for Arista Modular switches - Encryption with MACSEC capable Linecard

### Warranty

The Arista 7800R 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.



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