Arista 7020R Series: Q&A

Product Overview

What is the 7020R Series?

The Arista 7020R Series, including the 7020SR, 7020TR and 7020TRA, offer purpose built high performance and power efficient solutions for high density data center deployments. With a choice of 10G SFP+ or 100/1000Mb RJ45 ports, the switches deliver forwarding of up to 1.04Tbps combined with feature rich L2 and L3 switching. A natural extension to the 7280R Series, the 7020R are members of the Arista portfolio of data center switches.
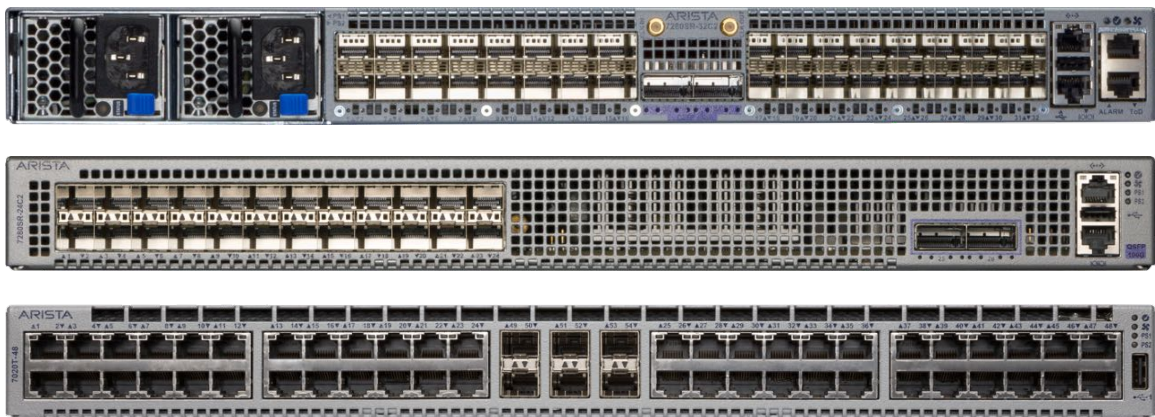
Figure 1: 7020SR-32C2 (top), 7020SR-24C2 (middle) and 7020TR-48 (bottom)

The 7020R Series are an extension of the Arista 7280R Series with 3GB of deep packet buffer and a VOQ architecture that eliminates head-of-line blocking and packet drops caused by speed mismatches, absorbs bursts and peaks in traffic, while providing consistent low latency.

The 7020R Series delivers the flexibility to be deployed as a lossless 10Gb or 1Gb leaf in the data center universal cloud network, demanding big data environments, media and entertainment post processing applications, edge computing and high performance IP storage fabrics with long lived flows and zero tolerance for packet loss. Scalable L2 and L3 resources and advanced EOS features for network monitoring, network virtualization and open automation delivers reliable performance with deterministic latency, simplifying designs and dramatically reducing operational expense.

The 7020SRG-24C2 includes IPSec site-to-site VPN capability allowing for deployment as a high performance IPSec router in environments demanding secure connections to remote locations such as backup data center or remote offices.

What switch models are available in the 7020R Series?

Offering a choice of models the 7020TR series supports 48 100/1000Mb RJ45 ports and 6 SFP+ ports for both 1G or 10G uplink connections with a full range of optics and cables.

The 7020SR series supports a choice of 32 or 24 SFP+ ports and 2 QSFP100 ports for 40G or 100G uplink connections with a full range of optics and cables. All models offer AC or DC power. The 7020SRG-24C2 enables support for IPSec for secure site-site tunnels. The 7020SR-32C2 has front removable power supplies and PPS input and output ports for clock connections.

What are the key features of the 7020R?

One of the key aspects of the 7020R is that it matches closely the feature set and enhanced forwarding scalability of the 7280R series with some minor differences. As a result it can be used in similar environments that call for 1GbE, or lower density 10GbE, and provide a simple consistent solution for universal leaf.

The Arista 7020R supports a comprehensive range of L2, L3, Management, Monitoring, Provisioning, Security and Forwarding features that allow it to be deployed in SDN, HPC, Big Data and traditional data center applications. The 7020R line rate performance, low power consumption and a compact design combined with a common EOS image make it ideal for a wide range of solutions.

- Rich IPv4 and IPv6 features - OSPF, OSPFv3, BGP, MP-BGP, ISIS and PIM

- RAIL for Big Data environments

- eAPI for programmatic access to EOS

- VM Tracer support (subject to SW roadmap)

- VXLAN routing in hardware

- High performance IPSec encryption scaling to over 100 tunnels with the 7020SRG-24C2 in hardware

The hardware design provides a number of advantages:

- Low power under 95W typical

- A choice of AC and DC hot swap power supplies

- Small form factor just 16" deep on the 7020TR and 7020SR-24C2

- A 13" deep chassis with front removable power supplies on the 7020SR-32C2

- Reversible airflow direction for both hot and cold aisle deployment.

- Resilient and hot swap fan modules for demanding DC and Colo environments

What is AlgoMatch and which 7020R switches support AlgoMatch?

AlgoMatch is a unique Arista innovation combining software and hardware to implement access control lists to achieve higher scale. AlgoMatch utilizes a more efficient packet matching algorithm that in turn enables flow matching for access control, policy and visibility that is more flexible.

The following 7020R products currently support AlgoMatch.

- 7020TRA-48 - 48 x RJ45 (100/1000Mb) and 6 x SFP+ (1/10GbE)

What are the focus markets of the 7020R?

The 7020R are high performance datacenter switches. This means that many existing mission-critical datacenter applications are suited to the 7020R.

The following are a selection of common use cases:

- Leaf-Spine - open standards L2 and L3 support for IPv4 and IPv6 routing protocols with wire speed L2 and L3 performance using dedicated hardware and local switching.
- Big Data with deep buffers and non blocking designs, with RAIL and MapReduce Tracer
- Edge computing and 5G networks requiring high performance with compact and power efficient platforms with dual 100G uplinks
- Streaming video and post-production media and entertainment solutions.
- Multi tenant server virtualization with hardware based VXLAN routing.
- Grid / HPC - designs requiring cost effective and high throughput systems to enable non-blocking or minimal over-subscription networks.
- Software Defined Networking - with support for eAPI and OpenStack the 7020R are ideal for SDN use cases.
- Enterprise access layers as top of rack supporting both 100Mb and 1Gb server connectivity options with 6 1/10GbE SFP+ uplinks for multi-path designs.
- Hyper-converged infrastructure (HCI) where 10G performance and non-blocking designs are essential
- ECMP up to 128-way in hardware allows cost-effective multi-way solutions using 10GbE to 100Gbe uplinks, or in virtualized server environments with multiple next-hops.
- Site-to-site VPN with IPSec for Secure VPNs for the transmission of sensitive

information over unprotected public networks (7020SRG only)

What EOS licenses are available and what features require them?

There are a number of software licenses available for the 7020R series. The 7020TR Series uses the same license structure as the Arista 7010T, to reduce complexity and simplify customer deployments.

- The Enhanced Routing License (E) enables dynamic unicast (IPv4 and IPv6) and multicast routing protocols – OSPF, BGP, IS-IS and PIM.

- The Virtualization License (V) is required for the VM Tracer and VXLAN features.

- The EOS Extensions (V2) license for security and partner integration features

- The Network monitoring and provisioning (Z) License enables LANZ and TapAgg features

- The FlexRoute-Lite License enables the features within both the E and V licenses and in addition supports EVPN, with routing scale to 32K IPv4 / 16K IPv6

The FlexRoute License enables the features within both the E and V licenses and EVPN, and scales to 200K IPv4 routes

There is no separate -Z license for the 7020TR, and all applicable features are available for the 7020TR in the Base EOS.

For more information on Arista licensing please refer to the licensing page.

What are the maximums in terms of forwarding performance and resources of the 7020R Series?

Each 7020R is capable of forwarding in hardware at L2 and L3 with large scale L2 and L3 forwarding tables. The table below shows the feature scale.

Performance	7020TR-48 and 7020TRA-48	7020SR-24C2	7020SR-32C2
Throughput	216 Gbps	880 Gbps	1.04 Tbps
Packets/Second	162 Mpps	300 Mpps	300 Mpps
Latency	From 3.8 us	From 3.8 us	From 3.8 us
Packet Buffer	3GB	3GB	3GB
Feature Scale			
Total ports per MLAG	64	64	64
LAG Members	32	32	32
ECMP	128-way	128-way	128-way
ACLs	12K	12K	12K
MAC Addresses	256K	256K	256K

IPv4 Hosts	64K	64K	64K
IPv6 Hosts	64K	64K	64K
Routes IPv4/v6	32K/16K	32K/16K	32K/16K
FlexRoute Scale IPv4/v6	200K/100K	200K/100K	200K/100K
Multicast	24K	24K	24K
IPv6 Routes - Unicast	43K-200K	43K-200K	43K-200K

Is this switch really line rate on all ports?

With packet forwarding capacity of 162 Mpps the 7020TR is a wire speed 1G system that supports full L2 and L3 protocols. Unlike similar top of rack 1G products such as fabric extenders the 7020R is a fully featured hardware switch, with local switching, and a robust architecture with comprehensive L2 and L3 resources for demanding environments.

The 7020SR-24C2 and 7020SR-32C2 systems support up to 300Mpps, allowing for SFP+ ports to be linerate when sending to the 2x 100G uplinks, in a high performance network or hyper-converged infrastructure rack system. Combined with a 3GB packet buffer and rich L2 and L3 features the 7020SR is optimized for demanding workloads with bursty data.

Does performance or latency vary based on source and destination ports?

All packets within the system get consistent latency and performance does not vary based on ingress or egress ports.

Does performance or latency change if ACLs or QoS features are enabled?

The performance and latency of the system is consistent for L2 and L3 forwarding, and when features such as ACL's or QoS are enabled.

What is FlexRoute?

FlexRoute is an Arista innovation available in R Series switches including the 7020R that provides the flexibility to extend IPv4 and IPv6 route tables for deployment as a routing platform where larger IPv4 and IPv6 routing is required. The use of FlexRoute requires an EOS license.

What optics can be used with the 10G SFP+ and 100G QSFP ports?

A wide range of 1G & 10G SFP/SFP+ and 40/100G QSFP optics and cables are supported. Refer to the 7020R datasheet.

What is the power draw on the 7020R Models?

The 7020TR typical power draw is 105W (115W for 7020TRA) or approximately 1W/G of

performance. The typical power of the 7020SR-24C2 is just 95W, or under 2W per 10G of performance per port and the 7020SR-32C2 is 160W typical. Power consumption is variable depending on both the optics or cables used and the fan speeds. The maximum power for the 7020TR-48 is approximately 115W (125W for 7020TRA), 105W for the 7020SR-24C2 and 189W for the 7020SR-32C2. Fan speed is dynamic and adjusts automatically to the ambient air temperature and the system temperatures.

What power supply combinations are available?

Allowing for deployment in both traditional top of server rack and network rows the 7020R come with a choice of reversible airflow and both AC and DC power supplies.

What are the options for support?

Arista A-Care Service Options are designed to provide you with world-class support. A-Care service offerings are available 24x7x365 with advance replacement options to minimize any network downtime. All A-Care Service options include full access to bug fixes and software downloads. For more information about A-Care Service options go to http://www.arista.com/en/service.

Where do I get more information on the Arista 7020R Series?

For more information please go to www.arista.com or contact us at sales@arista.com