

## Arista 7050X3 series: Q&A

### Product Overview

#### What are the 7050X3 Series?

The Arista 7050X3 are members of Arista 7050X series and key components of the Arista portfolio of data center switches. Increased adoption of high performance servers coupled with applications using higher bandwidth is accelerating the need for dense 10/25G and 100G Ethernet switching in both leaf and spine tiers of modern networks.

The Arista 7050X Series are purpose built data center switches in compact and energy efficient form factors with wire speed layer 2 and layer 3 features combined with low latency and advanced features for software defined cloud networking.

The 7050X3 Series offers support for a broad set of software features and support for 10/25/40/50/100G Ethernet, and are each equipped with 32MB of packet buffer that is fully shared across all ports together with the flexible forwarding tables that can be arranged to address multiple use cases including data center leaf and spine architectures providing a transition from 1/10G at the leaf to 10/25G server connections and 40G/100G in the spine. With support for a flexible combination of speeds including 10G, 25G, 40G, 50G and 100G and combined with Arista EOS, the 7050X3 delivers rich features for big data, cloud, virtualized and traditional designs and accommodates the myriad different applications and east-west traffic patterns found in modern data centers. The flexibility provided by the 7050X3 Series allows customers to start with a design leveraging 10G/40G today and migrate easily to a 25G/100G solution in future.

#### What switch models are available in the 7050X3 Family?

There are 7 members of the 7050X3 Series, each in a compact system:

##### **7050CX3-32S - 1RU WITH 32 PORT 100GBE QSFP AND 2 SFP+**

- Offers a choice of port combinations with 40G and 100G QSFP optics and cables
- Flexible interface combinations - 32x 40G, 128x 10G, 32x 100G, 128 x 25G, 64x 50G
- IEEE 25GbE and 25G Consortium specification support
- 5 speeds for flexible 10GbE, 25GbE, 40GbE, 50GbE and 100GbE with optics or cables
- 6.4Tbps of wire speed performance with 32MB of buffer

##### **7050CX3M-32S - 1RU WITH MACSEC ENABLED 32 PORT 100GBE QSFP AND 2 SFP+**

- Offers a choice of port combinations with 40G and 100G QSFP optics and cables
- Flexible option for MACsec on all QSFP ports and a choice of interface speeds
- Flexible interface combinations - 32x 40G, 128x 10G, 32x 100G, 128 x 25G, 64x 50G
- IEEE 25GbE and 25G Consortium specification support
- 5 speeds for flexible 10GbE, 25GbE, 40GbE, 50GbE and 100GbE with optics or cables
- 6.4Tbps of wire speed performance with 32MB of buffer

### **7050SX3-96YC8 - 2RU WITH 96 PORT 25GBE SFP AND 8 PORT 100GBE QSFP**

- Offers 96 wire speed 25GbE and eight 40/100G QSFP ports for up to 128 total 25G or 10G ports
- IEEE 25GbE and 25G Consortium specification support
- Easy migration from 1/10G to 1/10/25G using familiar SFP connections.
- Eight 40/100G QSFP ports for flexible combinations of 40G and 100G QSFP
- 6.4Tbps of wire speed performance with 32MB of buffer

### **7050SX3-48YC12 - 1RU WITH 48 PORT 25GBE SFP AND 12 PORT 100GBE QSFP**

- Offers 48 wire speed 25GbE and twelve 40/100G QSFP ports for up to 96 total 25G or 10G ports
- IEEE 25GbE and 25G Consortium specification support
- Easy migration from 1/10G to 1/10/25G using familiar SFP connections.
- Twelve 40/100G QSFP ports for flexible combinations of 40G and 100G QSFP
- 4.8Tbps of wire speed performance with 32MB of buffer

### **7050SX3-48YC8 - 1RU WITH 48 PORT 25GBE SFP AND 8 PORT 100GBE QSFP**

- Offers 48 wire speed 25GbE and eight 40/100G QSFP ports for up to 64 total 25G or 10G ports
- IEEE 25GbE and 25G Consortium specification support
- Easy migration from 1/10G to 1/10/25G using familiar SFP connections.
- Eight 40/100G QSFP ports for flexible combinations of 40G and 100G QSFP
- 4.0Tbps of wire speed performance with 32MB of buffer

### **7050SX3-48C8 - 1RU WITH 48 PORT 10GBE SFP AND 8 PORT 100GBE QSFP**

- Offers 48 wire speed 10GbE and eight 40/100G QSFP ports for up to 56 ports
- IEEE 25GbE and 25G Consortium specification support with breakout cables on 2 ports of 100G
- Eight 40/100G QSFP ports for flexible combinations of 40G and 100G QSFP
- 2.56Tbps of wire speed performance with 32MB of buffer

### **7050TX3-48C8 - 1RU WITH 48 PORT 10GBASE-T AND 8 PORT 100GBE QSFP**

- Offers 48 wire speed 1/10G Base-T and eight 40/100G QSFP ports for up to 56 total 10G ports
- IEEE 25GbE and 25G Consortium specification support with breakout cables on 2 ports of 100G
- Eight 40/100G QSFP ports for flexible combinations of 40G and 100G QSFP
- 2.56Tbps of wire speed performance with 32MB of buffer

The Arista 7050X3 lower total cost of ownership as they are designed to be efficient with power per port as low as 7W per 100GbE port which combined with front to rear cooling to optimize the data center environment produces reliable, dense and power efficient 100GbE fixed configuration switches. The Arista 7050X3 switches were designed for continuous operations with system wide monitoring of hardware and software components, simple serviceability and provisioning to prevent single points of failure. Redundant 1+1 hot-

swappable power supplies and four hot-swap fans provide dynamic temperature control combined with N+1 redundancy.

### **What are the key advantages of the 7050X3 Series?**

The Arista 7050X3 models enhance the 7050X series portfolio with the addition of key new technologies, features and significant improvements in Layer 2 and Layer 3 scale.

The new capabilities that address the needs of many customers include Dynamic Load Balancing for efficient utilization of multipath networks, Network Address Translation for port and address translation at line rate and at low latency, enhanced network telemetry with triggered buffer capture and flow tracker along with support for features such as segment routing. The 7050X3M models additionally support wirespeed MACsec on all QSFP ports, with a choice of interface speeds from 10G to 100G, providing line-rate encryption. 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.

All ports have access to a fully shared 32MB packet buffer. Dynamic buffer management is designed for speed changes, microbursts or sustained network congestion. With support for features such as PFC, ETS etc., 7050X3 enables lossless Ethernet for storage applications.

In addition, the 7050X3 series offers low latency starting from 800ns for 100G interfaces with support for cut-through switching between any two ports of same speed or from higher speed port to lower speed port.

The 7050X3 series introduce IEEE standards based 25G and 100G uplinks to the 7050X portfolio. 100G is a major increase in bandwidth compared to 40G, and a more efficient and cost effective way to scale. With consistent cabling for 10G to 25G and 40G to 100G, the 7050X3 provides an easy migration path to upgrade the network while protecting the investment in the infrastructure. This enables customer data centers to transition to 25G server technology and get the full benefits of the server performance and the higher bandwidth. With typical power of under 7W for 100G and under 4W for 25G interfaces, 7050X3 offers increased power efficiency resulting in dramatically lower power required for the same bandwidth usage.

Network scalability is directly impacted by the size of a switches 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 7050X3 leverage a common Unified Forwarding Table for the L2 MAC, L3 Routing, L3 Host and IP Multicast forwarding entries, which can be partitioned per entry type. The ideal size of each partition varies depending on the network deployment scenario. The flexibility of the UFT coupled with the range of pre-defined configuration profiles available on the 7050X3 ensures optimal resource allocation for all network topologies and network virtualization technologies.

The 7050X3 support a consistent set of EOS features that are already supported on other Arista X-Series systems including Smart System Upgrade, LANZ and Network Telemetry as well as packet timestamping. Maintaining operational and feature consistency lowers the qualification time typically associated with introducing new products and the 7050X3 systems seamlessly insert into existing networks.

With increased performance and scale, low latency, higher power efficiency, feature consistency and enhancements the 7050X3 platforms are ideally suited for the evolutions in large Enterprises, big data and machine learning environments, traditional and virtualized data centers and Service Provider edge networking roles.

### What Data Center solutions does the 7050X3 Series target?

Each of the 7050X3 models offers multiple connectivity options that provide flexibility in building scalable leaf and spine designs. The operational flexibility offered by the entire 7050X3 series ensures suitability for a variety of deployment scenarios. The following are a selection of use cases:

- Dense top of rack for server racks with both 10GbE and 25GbE systems
- 10GbE to 25GbE Migration — 802.3by 25GbE and Consortium compliant for seamless transition to the next generation of Ethernet performance
- Grid / HPC — designs requiring cost effective and power efficient systems to enable non-blocking or minimal over-subscription for 10G and 25G Servers
- Leaf-Spine — open standards based L2 and L3 with telemetry and visibility features
- Secure Cloud Environments — MACsec on the 7050X3M Series for leaf and spine
- 100GbE Scale Out Designs — Small to medium locations requiring power efficiency and high density compact systems
- ECMP designs up to 128-way — cost-effective multi-pathing using open protocols and the Arista 7300X3 and 7500R3 as 100GbE modular spine switches
- Large scale L2 environments — flexible resource allocations achieve higher maximum L2 scale without inefficiency associated with traditional systems.

### Is IEEE 25GbE standard support available on the 7050X3 Series?

The 7050X3 Series offers full support for the IEEE 802.3by 25Gigabit Ethernet standard ensuring long term investment protection, and support for the 25G and 50G Consortium specification for backward compatibility to existing 25G devices.

The introduction of 25GbE provides a 2.5X performance improvement over 10GbE while using the same familiar cabling and designs. Support for 10G/25GbE modes allows for future investment protection with the ability to migrate as needed without expensive network upgrades.

### How many ports do each of the 7050X3 series switches have?

Within the 7050X3 series the various models provide a wide range of interface combinations. The table below summarizes the interface options.

Platform	RJ45	SFP+	SFP25	QSFP+	QSFP100	RU
<b>7050CX3-32S</b>		2			32	1
<b>7050CX3M-32S</b>		2			32	1
<b>7050SX3-96YC8</b>			96		8	2
<b>7050SX3-48YC12</b>			48		12	1
<b>7050SX3-48YC8</b>			48		8	1

<b>7050SX3-48C8</b>		48			8	1
<b>7050TX3-48C8</b>	48				8	1

### What speeds do the 7050X3 series ports support?

The table below shows the combinations of speeds supported on each switch.

Platform	10G Mode	25G Mode	40G Mode	100G Mode
<b>7050CX3-32S</b>	Ports 1 – 34	1 – 32	1 – 32	1 – 32
<b>7050CX3M-32S</b>	Ports 1 – 34	1 – 32	1 – 32	1 – 32
<b>7050SX3-96YC8</b>	Ports 1 – 104	1 – 104	97-104	97-104
<b>7050SX3-48YC12</b>	Ports 1 – 60	1 – 60	49 – 60	49 – 60
<b>7050SX3-48YC8</b>	Ports 1 – 56	1 – 56	49 – 56	49 – 56
<b>7050SX3-48C8</b>	Ports 1 – 56	49 – 56	49 – 56	49 – 56
<b>7050TX3-48C8</b>	Ports 1 – 56	49 – 56	49 – 56	49 – 56

### How are the multi-purpose QSFP100 ports on the 7050X3 Series moved between 25GbE, 50GbE and 100GbE modes and what is the default?

The default QSFP100 interface speed is 100GbE. The 7050X3 series feature multi-speed QSFP100 ports that can be used as four 25GbE ports or 10GbE, two 50GbE ports or a single 40GbE port. To migrate the links to a different speed, use the 'speed forced' command on the master interface. For 100GbE the master lane is x/1, for 50GbE x/1 and x/3, and for 25GbE and 10GbE x/1, x/2, x/3 and x/4.

```
7050X3(config)#interface ethernet 1/1
7050X3(config-if-Et1/1)#speed forced ?
10000full  Disable autoneg and force 10 Gbps/full duplex operation
1000full   Disable autoneg and force 1 Gbps/full duplex operation
1000half   Disable autoneg and force 1 Gbps/half duplex operation
100full    Disable autoneg and force 100 Mbps/full duplex operation
100gfull   Disable autoneg and force 100 Gbps/full duplex operation
100half    Disable autoneg and force 100 Mbps/half duplex operation
10full     Disable autoneg and force 10 Mbps/full duplex operation
10half     Disable autoneg and force 10 Mbps/half duplex operation
25gfull    Disable autoneg and force 25 Gbps/full duplex operation
40gfull    Disable autoneg and force 40 Gbps/full duplex operation
50gfull    Disable autoneg and force 50 Gbps/full duplex operation
```

### What are the advantages in the buffering of the 7050X3 series?

The 7050X3 Series incorporate an advanced traffic manager with 32MB of packet buffer that is fully shared across all ports and is an excellent choice for scalable data centers and modern intensive workloads. Unlike other architectures that have fixed per-port packet memory, the 7050X3 Series use dynamic thresholds to allocate packet memory based on traffic class, queue depth and quality of service policy ensuring a fair allocation to all ports of both lossy and lossless classes. Buffer utilization, occupancy and thresholds are all visible with Arista LANZ and can be exported to monitoring tools to identify hotspots and measure latency at the device and end to end.

### What are the maximums for forwarding tables on the 7050X3 series?

The 7050X3 series support comprehensive L2 and L3 resources optimized for data center deployments:

Resources	Base Mode	UFT Mode
MAC Addresses	32K	288K
IPv4 Hosts	16K	168K
IPv4 Routes - Unicast	32K	384K
IPv4 Routes - Multicast	16K	104K
IPv6 Hosts	8K	104K
IPv6 Routes – Unicast	12K	256K

\* Maximum values are dependent on shared resources in some cases

\* Supported in a future software release

### What is the power draw on the 7050X3 series?

The 7050X3 series feature low power draw, with typical per port power lower than 7W per 100GbE port on the 7050CX3-32S and 7050CX3M-32S, and under 3W per 25G port on the 7050SX3-48YC12 and 705SX3-48YC8.

### What efficiency rating do the power supplies have?

The 500W, AC power supplies are rated at over 93% efficient for typical use, or Platinum rated.

### Do the 7050X3 series support both AC and DC PSUs?

Yes, all members of the 7050X3 series support AC and DC power supply options.

### What are the key high availability options?

The Arista 7050X3 Series were designed for high availability from both a software and hardware perspective. Key high availability features include:

- 1+1 hot-swappable power supplies and four N+1 hot-swappable fans
- Live software patching

- Color-coded PSUs and fans
- Self-healing software with Stateful Fault Repair (SFR)
- Smart System Upgrade (SSU) Leaf and Spine
- Multi-chassis LAG for active/active L2 multi-pathing
- 128-way ECMP routing for load-balancing and redundancy

### What EOS licenses are available and what features require them?

The 7050X3 series use the same license structure as the existing 7000 series fixed platforms.

NOTE: RIPv2 is supported without the Enhanced License.

Description	License	Platform
Virtualization feature license for Arista Fixed switches (VM Tracer and VXLAN)	LIC-FIX-2-V	
EOS Extensions, Security and Partner Integration license for Arista Fixed switches	LIC-FIX-2-V2	7050CX3-32S 7050CX3M-32S
Network monitoring and provisioning feature license for Arista Fixed switches (ZTP, LANZ, API, Time-stamping)	LIC-FIX-2-Z	7050SX3-96YC8 7050SX3-48YC12 7050SX3-48YC8
Enhanced L3 License for Arista Fixed switches (BGP, OSPF, ISIS, PIM, NAT)	LIC-FIX-2-E	7050SX3-48C8 7050TX3-48C8
FLX-Lite License for Arista Fixed switches, OSPF, ISIS, BGP, PIM, Up to 256K Routes, EVPN, VXLAN	LIC-FIX-2-FLX-L	
MACSEC Encryption License for Arista Fixed switches, 25-64 MACSEC capable ports	LIC-FIX-4-MACSEC	7050CX3M-32S

For more information on Arista licensing please refer to the official [licensing page](#).

### Which cables and optics can be used in the QSFP and SFP ports?

All full range of SFP+, SFP28, QSFP+ and QSFP100 transceivers are supported on the Arista 7050X3 series. The 25G SFP ports accommodate a wide range of 25G, 10GbE and 1GbE SFP transceivers and cables to provide support for a wide range of connectivity options from short reach copper and multi-mode fiber, to longer reaches over single mode up to 80km and DWDM solutions up to 80km. The SFP+/SFP28 options include multi-mode and single-mode fiber transceivers, and both 100Mb and 1Gb over copper cabling. QSFP+ and QSFP100 ports support a wide range of 10GbE, 40GbE and 100GbE options for cables, single and multi-mode fiber.

### 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 7050X3 series?

For more information please go to [www.arista.com](http://www.arista.com) or contact us at [sales@arista.com](mailto:sales@arista.com)