Arista 7060X4 series: Q&A

Product Overview

What are the 7060X4 Series?

The growth in applications for machine learning and AI driven by faster CPUs, flash storage and server-less compute is driving intra-datacenter traffic levels to new highs. The emergence of 400G Ethernet addresses the need for cost effective and power efficient bandwidth increase while retaining all the advantages of consistent network architectures.

The Arista 7060X4 Series are purpose built 400G data center switches in compact and energy efficient form factors with wirespeed layer 2 and layer 3 features, combined with enhanced traffic management and monitoring features optimized for modern cloud environments.

The 7060X4 Series provide 4X the bandwidth per RU, typical power that is less than half the equivalent for 100G, collapse multiple tiers, lower end to end latency and enable the next generation of hyperscale cloud networks based on 400G Ethernet.

In a number of environments high density 100G solutions are required and the 7060X4 Series are able to support up to 128 ports of 100G in addition to future proof 400G.

The Arista 7060X Series comprises the 7060X, 7060X2, 7260X, 7260X3 and 7060X4 purpose-built 10/25/40G/100G/400G data center switches.

What switch models are available in the 7060X4 Family?

There are two members of the 7060X4 Series, each in a compact 1RU system:

7060PX4-32 - 1RU WITH 32 PORT 400G OSFP AND 2 PORT 10G SFP+

- Flexible interface combinations - 32x 400G, 128x 100G, 64x 200G
- A full range of 400G and 100G OSFP optics and cables
- IEEE 400G and 100G specification support
- 12.8Tbps of wire speed performance with 64MB of shared packet buffer
- Front to rear airflow
- Low Latency and Power Efficient

7060DX4-32 - 1RU WITH 32 PORT 400G QSFP-DD AND 2 PORT 10G SFP+

- Flexible interface combinations - 32x 400G, 128x 100G, 64x 200G
- A full range of 400G and 100G QSFP-DD optics and cables
- IEEE 400G and 100G specification support
- 12.8Tbps of wire speed performance with 64MB of shared packet buffer
- Front to rear airflow
- Low Latency and Power Efficient

The Arista 7060X4 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 five hot-swap fans provide dynamic temperature control combined with N+1 redundancy.

Figure 1: 7060PX4-32 – 32 x OSFP   **Figure 2:** 7060DX4-32 – 32 x QSFP-DD

What are the key use cases for the 7060X4 Series?

The key features of the 7060X4 Series are the support for high density and cost effective 100G and 400G with support for enhanced ECMP with traffic aware load balancing and scheduling, cut-through forwarding and a shared packet buffer that improves end to end application latency for AI and storage workloads. These characteristics are suitable for a number of solutions:

- Cloud Scale Data Centers

With the adoption of 25G and 50G on servers an increase in the leaf and spine network capacity is needed to accommodate the increased traffic. As a result, the primary market for the 7060X4 series is for cloud-based leaf networks, when lowest cost per gigabit of bandwidth is critical, along with a reduction in space, power and the number of network devices. Traffic management and scale enhancements ensure optimum performance of large scale ECMP environments.

- 25G and 100G HPC Clusters

In addition to 25G the emergence of 50G and 100G host connectivity for the largest scale of high performance compute (HPC) systems is driving the need for high density 100G networks with scalable throughput and power efficiency. The 7060X4 and the 7060X Series deliver high density and wire speed performance in fixed systems with a wide range of port configurations for cost effective solutions that allow scale-out high performance compute applications to achieve maximum performance. In HPC environments the elephant flow detector automatically identifies large flows and assigns to lower priority queues, allowing mice flows to remain uncongested.

- GPU clusters for deep learning, automation and machine learning

Compute clusters designed for deep learning and automation equipped with GPUs require high speed networks to shuttle data between nodes and reduce latency to maximize the performance. Leaf and Spine networks based on the 7060X4 reduces the end to end latency with a large integrated buffer to maximize the buffer available for congested ports, reducing the job-critical tail latency. Deploying high density 400G systems with 100G breakout is a cost effective option for the removal of network tiers, aggregating bandwidth between network tiers and simple migration to 400G.

In addition, Big Data analysis, Content Delivery, High Tech Enterprise and Manufacturing, SW Development all benefit from higher density 100G-based leaf and spine solutions and investment protection for migrating to 400G connectivity.

What are the key enhancements with the 7060X4 Series?

The Arista 7060X4 models enhance the 7060X series portfolio with the addition of key new technologies, and features with a consistent architecture and proven EOS features for resilient and scalable L2 and L3 networks, open programmability, automation and traffic monitoring.

Dynamic Load Balancing - uses a large number of hash results and allocates (and dynamically re-allocates) flows to new links based on current utilization.

Elephant Flow Detector - allows the tracking of large flows and re-assigns to a lower priority to avoid congestion for mice flows.

Enhanced ECMP – allows for larger scale ECMP networks with better control of traffic over all available paths, improved convergence and immediate recovery from failed links.

Shared Buffer and Traffic Prioritization – provides improved burst absorption with support for multiple lossless classes and advanced congestion controls for end to end latency improvements

The 7060X4 support a consistent set of EOS features that are already supported on other Arista 7060X Series systems including Hitless Speed Changes, Smart System Upgrade, LANZ and Network Telemetry. Maintaining operational and feature consistency lowers the qualification time typically associated with introducing new switches and the 7060X4 systems seamlessly insert into existing networks.

Is IEEE 400G standard support available on the 7060X4 Series?

The 7060X4 Series offers full support for the IEEE 802.3bs 400Gigabit Ethernet standard ensuring long term investment protection, along with support for the 100G and 200G standards for backward compatibility to existing networks.

The introduction of 400G provides a 4X performance improvement over 100G while using the same familiar fiber infrastructure and designs. Support for 400G/100G modes allows for investment protection with the ability to migrate as needed without expensive network upgrades.

What is the difference between the OSFP and QSFP-DD 400G 7060X4 models?

The 7060X4 Series offers a choice of OSFP and QSFP-DD 400G optics as there are customers who prefer the QSFP-DD form factor, and some who prefer the OSFP. Both models offer the same architecture, performance and features. The two models differ only in the type of interface, the OSFP or the QSFP-DD.

Figure 3: QSFP-DD Optics   **Figure 4:** OSFP Optics

Both OSFP and QSFP-DD are industry standard form factors for 400G pluggable optics and cables, with a similar set of available types. The OSFP is designed for a future higher speed connector, enabling 800G and uses an adaptor to support existing QSFP28 optics. The QSFP-DD leverages the QSFP28 form factor to allow the use of 100G optics, with no adaptor needed, but cannot support the future higher speeds required for 800G. The maximum thermal capacity of the QSFP-DD is approximately 5W less than the OSFP which

also limits the ability to support long-reach optics. Both allow for short reach with optics and cables, and the same number of interfaces in a 1U system.

For more information on both the 400G OSFP and QSFP-DD optics and cables refer to Arista.com

How many ports do each of the 7060X4 series switches have?

Within the 7060X4 series the two models provide a choice of OSFP and QSFP-DD 400G interfaces. The table below summarizes the interface options.

Platform	SFP+	QSFP-DD	OSFP	RU
7060PX4-32	2		32	1
7060DX4-32	2	32		1

What speeds do the 7060X4 series ports support?

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

Platform	10G	4x 100G Mode	2x 200G Mode	400G
7060PX4-32	Ports 33 – 34	1 – 32	1 – 32	1 – 32
7060DX4-32	Ports 33 – 34	1 – 32	1 – 32	1 – 32

Which cables and optics can be used in the OSFP, QSFP-DD and SFP+ ports?

A wide and comprehensive range of OSFP and QSFP-DD 400G transceivers and cables are supported on the Arista 7060X4 series including direct attach copper (DAC) cables, active optical cables (AOC), multimode and single mode fiber for 400G connections.

There are a wide range of options for using both OSFP and QSFP-DD ports with breakout cables, and optics for single and multi-mode fiber to convert the 400G ports when operating in 4x100G or 2x200G modes.

The 10G SFP+ ports accommodate a wide range of 10G and 1G 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.

For more information refer to the Arista Optic Modules and Cables Data Sheet and the Arista 400G Optics Q&A document.

How are the multi-purpose OSFP and QSFP-DD ports on the 7060X4 Series moved between 100G, 200G and 400G modes and what is the default?

The default interface speed is 400G for both OSFP and QSFP-DD ports. All 400G ports allow configuration as 4x100G or 2x200G mode. To migrate the links to a different speed, use the 'speed forced' command on the master interface.

```
7060X4(config)#interface ethernet 7/1
7060X4(config-if-Et7/1)#speed ?
```

How are the SFP+ ports on the 7060X4 series enabled?

The 2 SFP+ interfaces are enabled by default and operate in addition to other front panel interfaces, without requiring the disabling of other ports.

What latency can be expected on the 7060X4 series?

The 7060X4 series support both cut-through and store-and-forward capability. The 7060X4 Series are built upon a single system-on-chip, and offer low latency from 700ns. The latency depends on the forwarding mode of the switch – cut-through or store-and-forward.

What are the maximums for forwarding tables on the 7060X4 series?

The 7060X4 series support comprehensive L2 and L3 resources optimized for hyper-scale cloud, multi-tier compute clusters and HPC deployments:

Resources	7060X4 Series
MAC Addresses	8K
IPv4 Hosts	16K
IPv4 Routes - Unicast	640K
IPv6 Routes – Unicast	100K

 * Maximum values are dependent on shared resources in some cases

What EOS licenses are available and what features require them?

The 7060X4 series use the same license structure as the existing 7000 series fixed platforms.

Description	License	Platform
Virtualization license for Group 3 Arista Fixed switches (VMTracer and VXLAN)	LIC-FIX-3-V	
EOS Extensions, Security and Partner Integration license for Arista Group 3 Fixed switches	LIC-FIX-3-V2	
Monitoring & Automation license for Arista Group 3 Fixed switches (ZTP, LANZ, TapAgg, API, Time-stamping, OpenFlow)	LIC-FIX-3-Z	7060PX4-32 7060DX4-32
Enhanced L3 License for Arista Group 3 Fixed switches (BGP, OSPF, ISIS, PIM, NAT)	LIC-FIX-3-E	
FLX-Lite License for Arista Fixed Group 3 - Full Routing Up to 256K Routes, EVPN, VXLAN, SR, base MPLS LSR (no TE or link/node protection)	LIC-FIX-3-FLX-L	

NOTE: RIPv2 is supported without the Enhanced License.

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

What are the key high availability options?

The Arista 7060X4 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 five 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 is the power draw on the 7060X4 series?

The 7060X4 series feature low power draw, with typical per port power lower than 17W per 400G port. The actual power draw will be dependent on the type and quantity of 400G optics and cables.

What efficiency rating do the power supplies have?

The 1600W, AC power supplies are rated at over 93% efficient for typical use, or Platinum rated.

Do the 7060X4 series support both AC and DC PSUs?

Yes, both AC and DC power options are supported.

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 7060X4 series?

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

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