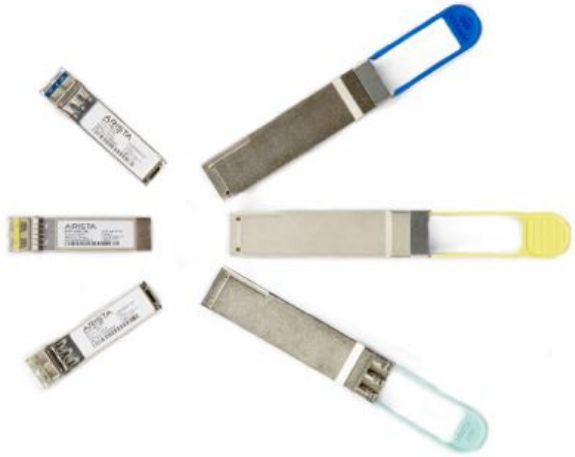
Overview

The Arista optical transceivers and cables product range offer maximum deployment flexibility and cost optimized network connectivity. The Arista 1/10/25 Gigabit Ethernet SFP/SFP+, 40 Gigabit Ethernet QSFP+ and 100 Gigabit Ethernet QSFP and CFP2 transceivers and cables are all hot-swappable pluggable devices, compliant with relevant industry standards. The Arista transceivers are tested and certified on all Arista platforms.

This document provides a technical reference guide on compatibility, interoperability and how to handle Arista transceivers and cables.



Arista EOS Support

All Arista products run on Arista EOS software. Tables 1-4 below provide the minimum version of EOS that is required for each of the transceivers and cables. Note that Arista switches have their own minimum EOS release requirement and Tables 1-5 should be read in conjunction with the EOS release notes.

Table 1: Minimum EOS Version for 100G QSFP, CFP2 and MXP (Embedded) Transceivers

Part Number	Description	Minimum EOS Ver#
CAB-Q-Q-100G-yM	100GBASE-CR4 QSFP to QSFP Twinax Copper Cable (y = 1 to 5 meters)	4.15.2
CAB-Q-4S-100G-yM	100GBASE-CR4 QSFP to 4 x 25GbE SFP Twinax Copper Cable (y = 1 to 5 meters)	4.18.0
AOC-Q-Q-100G-yM	QSFP to QSFP 100GbE Active Optical Cable (y = 3 to 30 meters)	4.15.2
QSFP-100G-SR4	100GBASE-SR4 QSFP transceiver, up to 70m over parallel OM3 or 100m over OM4 MMF	4.15.2
QSFP-100G-SWDM4	100GBASE-SWDM4 QSFP transceiver, up to 70m over OM3 or 100m over OM4 duplex MMF	4.20.1
QSFP-100G-SRBD	100GBASE-BIDI QSFP transceiver, up to 70m/100m over OM3/OM4 duplex MMF	4.20.1
QSFP-100G-PSM4	100GBASE-PSM4 QSFP Optics Module, up to 500m over parallel SMF	4.15.3
QSFP-100G-CWDM4	100GBASE-CWDM4 QSFP Optics Module, up to 2km over duplex SMF	4.15.5
QSFP-100G-LRL4	100GBASE-LRL4 QSFP Optics Module, up to 2km over duplex SMF	4.15.2
QSFP-100G-LR4	100GBASE-LR4 QSFP Optics Module, up to 10km over duplex SMF	4.15.2
QSFP-100G-ERL4	100GBASE-ERL4 QSFP Optics Module, up to 40km over duplex SMF	4.20.1
QSFP-100G-DZ2-xx	100G DWDM QSFP transceiver, 2 lambda PAM4, 19x.x0 THz, up to 80km over single-mode fiber	4.18.0
CFP2-100G-XSR10	100GBASE-XSR10 CFP2 Optics Module, up to 300m over OM3 or 400m over OM4 MMF	4.14.5
CFP2-100G-LR4	100GBASE-LR4 CFP2 Optics Module, up to 10km over duplex SMF	4.14.0
CFP2-100G-ER4	100GBASE-ER4 CFP2 Optics Module, up to 40km over duplex SMF	4.14.5
MXP - Multi-Speed Port	Arista Multi-Speed Ports (MXP) Embedded on the Switch for 10G, 40G and 100G speeds	Switch/Linecard Dependent

Table 2: Minimum EOS Version for QSFP+ Transceivers and Cables

Part Number	Description	Minimum EOS Ver#
CAB-Q-S-yM	4 x 10GbE QSFP+ to 4 x SFP+ Twinax Copper Cable (y = 0.5 to 5 meter)	All supported EOS releases
CAB-Q-Q-yM	40GBASE-CR4 QSFP+ to QSFP+ Twinax Copper Cable (y = 0.5 to 5 meters)	All supported EOS releases
AOC-Q-Q-40G-yM	QSFP+ to QSFP+ 40GbE Active Optical Cable (y = 3 to 100 meters)	4.13.0
QSFP-40G-SR4	40GBASE-SR4 QSFP+ Optic, up to 100m over OM3 MMF or 150m over OM4 MMF	All supported EOS releases
QSFP-40G-XSR4	40GBASE-XSR4 QSFP+ Optic, up to 300m over OM3 MMF or 400m over OM4 MMF	4.11.1
QSFP-40G-SRBD	40GBASE-BIDI Bidirectional QSFP+ Optic, up to 100m/150m over duplex OM3/OM4 MMF	4.15.2
QSFP-40G-UNIV	40GBASE-UNIV QSFP+ Optic, up to 150m over duplex OM3/OM4 and 500m over duplex SMF	4.14.0
QSFP-40G-LRL4	40GBASE-LRL4 QSFP+ Optic, up to 1km over duplex SMF	4.13.3
QSFP-40G-LR4	40GBASE-LR4 QSFP+ Optic, up to 10km over duplex SMF	All supported EOS releases
QSFP-40G-PLRL4	40GBASE-PLRL4 QSFP+ Optic, up to 1km over parallel SMF (4x10G LR up to 1km)	4.13.0
QSFP-40G-PLR4	40GBASE-PLR4 QSFP+ Optic, up to 10km over parallel SMF (4x10G LR up to 10km)	4.13.0
QSFP-40G-ER4	40GBASE-ER4 QSFP+ Optic, up to 40km over duplex SMF	4.14.5

Table 3: Minimum EOS Version for 25G SFP Transceivers

Part Number	Description	Minimum EOS Ver#
CAB-S-S-25G-yM	25GBASE-CR SFP Cable (y = 1 to 5 meters)	4.18.0
AOC-S-S-25G-yM	SFP to SFP 25GbE Active Optical Cable (y = 3 to 30 meters)	4.18.0
SFP-25G-SR	25GBASE-SR SFP Optics Module, up to 70m over OM3 MMF or 100m over OM4 MMF	4.18.0
SFP-25G-LR	25GBASE-LR SFP Optics Module, up to 10km over duplex SMF	4.18.0

Table 4: Minimum EOS Version for SFP+ Transceivers and Cables

Part Number	Description	Minimum EOS Ver#
CAB-SFP-SFP-yM	10GBASE-CR SFP+ Cable (y = 0.5 to 5 meters)	All supported EOS releases
AOC-S-S-10G-yM	SFP+ to SFP+ 10GbE Active Optical Cable (y = 3 to 30 meters)	4.14.0
SFP-10G-SRL	10GBASE-SRL SFP+ Optics Module, up to 100m over OM3 MMF or 150m over OM4 MMF	All supported EOS releases
SFP-10G-SR	10GBASE-SR SFP+ Optics Module, up to 300m over OM3 MMF or 400m over OM4 MMF	All supported EOS releases
SFP-10G-LRL	10GBASE-LRL SFP+ Optics Module, up to 1km over duplex SMF	All supported EOS releases
SFP-10G-LR	10GBASE-LR SFP+ Optics Module, up to 10km over duplex SMF	All supported EOS releases
SFP-10G-ER	10GBASE-ER SFP+ Optics Module, up to 40km over duplex SMF	All supported EOS releases
SFP-10G-ZR	10GBASE-ZR SFP+ Optics Module, up to 80km over duplex SMF	All supported EOS releases
SFP-10G-DZ-T	10GBASE-DWDM Tunable SFP+ Optics Module, Full C-Band 50 GHz ITU Grid, up to 80km over duplex SMF	4.15.2

Table 5: Minimum EOS Version for SFP Transceivers

Part Number	Description	Minimum EOS Ver#
SFP-1G-SX	1000BASE-SX SFP Optics Module	All supported EOS releases
SFP-1G-LX	1000BASE-LX SFP Optics Module	All supported EOS releases
SFP-1G-T	100/1000BASE-T SFP Copper Module	All supported EOS releases

Connector and Cable type

Tables 6-8 provides the physical attributes of Arista transceivers and cables for easy product identification and lists the correct cable and connector type for termination*.

Table 6: Physical attributes of 1/10/25G SFP Transceivers

Part Number	Bail Latch or Pull Tab	Termination/Connector Type	Fiber Type to be used
SFP-1G-SX	Bail Latch	Duplex LC	MMF
SFP-1G-LX	Bail Latch	Duplex LC	MMF and SMF
SFP-1G-T	Bail Latch	RJ-45	Twisted pair, Category 5
CAB-SFP-SFP-xM	Pull Tab	Pre-terminated. Assembly includes both ends of transceivers and cable fused together	
AOC-S-S-10G-xM	Pull Tab		
SFP-10G-SRL	Bail Latch	Duplex LC	MMF
SFP-10G-SR	Bail Latch	Duplex LC	MMF
SFP-10G-LRL	Bail Latch	Duplex LC	SMF
SFP-10G-LR	Bail Latch	Duplex LC	SMF
SFP-10G-ER	Bail Latch	Duplex LC	SMF
SFP-10G-ZR	Bail Latch	Duplex LC	SMF
SFP-10G-DZ-T	Bail Latch	Duplex LC	SMF
CAB-S-S-25G-yM	Pull Tab	Pre-terminated. Assembly includes both ends of transceivers and cable fused together	
AOC-S-S-25G-yM	Pull Tab		
SFP-25G-SR	Bail Latch	Duplex LC	MMF
SFP-25G-LR	Bail Latch	Duplex LC	SMF

Table 7: Physical attributes of QSFP+ Transceivers and Cables

Part Number	Bail Latch or Pull Tab	Termination/Connector Type	Fiber Type to be used
CAB-Q-S-xM	Pull Tab	N/A	N/A
CAB-Q-Q-xM	Pull Tab	N/A	N/A
AOC-Q-Q-40G-xM	Pull Tab	N/A	N/A
QSFP-40G-SR4	Pull Tab	MPO-12	MMF
QSFP-40G-XSR4	Pull Tab	MPO-12	MMF
QSFP-40G-SRBD	Pull Tab	Duplex LC	MMF
QSFP-40G-LRL4	Pull Tab	Duplex LC	SMF
QSFP-40G-LR4	Pull Tab	Duplex LC	SMF
QSFP-40G-PLRL4	Pull Tab	MPO-12	SMF
QSFP-40G-PLR4	Pull Tab	MPO-12	SMF
QSFP-40G-UNIV	Pull Tab	Duplex LC	MMF and SMF
QSFP-40G-ER4	Pull Tab	Duplex LC	SMF

* Please refer to the Arista Transceivers datasheet for additional information on reach for each fiber/cable type (http://www.arista.com/assets/data/pdf/Datasheets/Transceiver-Data-Sheet.pdf)

Table 8: Physical attributes of 100G QSFP, CFP2 and MXP (Embedded) Transceivers

Part Number	Bail Latch or Pull Tab	Termination/Connector Type	Fiber Type to be used
CAB-Q-Q-100G-yM	Pull Tab	N/A	N/A
AOC-Q-Q-100G-xM	Pull Tab	N/A	N/A
QSFP-100G-SR4	Pull Tab	MPO-12	MMF
QSFP-100G-SWDM4	Pull Tab	Duplex LC	MMF
QSFP-100G-SRBD	Pull Tab	Duplex LC	MMF
QSFP-100G-PSM4	Pull Tab	MPO-12	SMF
QSFP-100G-CWDM4	Pull Tab	Duplex LC	SMF
QSFP-100G-LRL4	Pull Tab	Duplex LC	SMF
QSFP-100G-LR4	Pull Tab	Duplex LC	SMF
QSFP-100G-ERL4	Pull Tab	Duplex LC	SMF
QSFP-100G-DZ2-xx	Pull Tab	Duplex LC	SMF
CFP2-100G-XSR10	Bail Latch	MPO-24	MMF
CFP2-100G-LR4	Bail Latch	Duplex LC	SMF
CFP2-100G-ER4	Bail Latch	Duplex LC	SMF
MXP - Multi-Speed Port	N/A	MPO-24	MMF

Direct attach copper cables

Twinax copper Direct attach cables (also known as DACs) offer the most cost effective connectivity solution for short distance intra-rack (server to switch) and inter-rack (switch to switch across adjacent racks) links. Table 9 provides a summary of Arista's DAC cables and their attributes

Table 9: Attributes of copper direct attach cables

	10G SFP+ to SFP+	25G SFP to SFP	40G QSFP+ to QSFP+	100G QSFP to QSFP
Arista Part Number	CAB-SFP-SFP-yM	CAB-S-S-25G-yM	CAB-Q-Q-yM	CAB-Q-Q-100G-yM
Cable Type	Twinax	Twinax	Twinax	Twinax
Supported Standards	10GBASE-CR	25GBASE-CR	40GBASE-CR4	100GBASE-CR4
Available lengths (meters)	0.5, 1, 1.5, 2, 2.5, 3, 5	1, 2, 3, 5	0.5, 1, 2, 3, 5	1, 2, 3, 5
Wire AWG	0.5 to 3 meter: 30 AWG 5 meter: 24 AWG	1, 2 meter: 30 AWG 3, 5 meter: 26 AWG	1, 2, 3 meter: 30 AWG 5 meter: 24 AWG	1, 2, 3 meter: 30 AWG 5 meter: 26 AWG
Cable characteristic impedance	100 Ohm Differential	100 Ohm Differential	100 Ohm Differential	100 Ohm Differential
Bend Radius	0.5 to 3 meter: 25mm 5 meter: 30mm	1, 2, 3, 5 meter: 30mm	1, 2, 3 meter: 35mm 5 meter: 50mm	1, 2, 3 meter: 45mm 5 meter: 60mm

Direct attach copper cables - Breakout

Table 10: Attributes of copper direct attach breakout cables

	40G QSFP+ to 4x10G SFP+ break-out cable	100G QSFP to 4x25G SFP break-out cable
Arista Part Number	CAB-Q-S-yM	CAB-Q-4S-100G-yM
Cable Type	Twinax	Twinax
Supported Standards	40GBASE-CR4, 10GBASE-CR	100GBASE-CR4, 25GBASE-CR
Available lengths (meters)	0.5, 1, 2, 3, 5	1, 2, 3, 5
Wire AWG	1, 2, 3 meter: 30 AWG 5 meter: 24 AWG	1, 2 meter: 30 AWG 3, 5 meter: 26 AWG
Cable characteristic impedance	100 Ohm Differential	100 Ohm Differential
Bend Radius	40G QSFP+ Side 0.5, 1, 2, 3 meter: 35mm 5 meter: 50mm 10G SFP+ Side 0.5, 1, 2, 3 meter: 25mm 5 meter: 30mm	100G QSFP Side 1, 2 meter: 45 mm 3, 5 meter: 60mm 25G SFP Side 1, 2, 3, 5 meter: 30mm

Digital Optical Monitoring (DOM)

Arista EOS provides enhanced monitoring capabilities for continuous performance monitoring and troubleshooting of optical transceivers. Some of the key monitor parameters are Temperature Monitor, Voltage Monitor, Transmitter and Receive power and Transmitter Bias current. Tables 11 provides a summary of the supported DOM capabilities for each transceiver type.

Table 11: Support for Digital Optical Monitoring (DOM)

Part Number	DOM Support
AOC-Q-Q-100G-xM	YES
QSFP-100G-SR4	YES
QSFP-100G-SWDM4	YES
QSFP-100G-SRBD	YES
QSFP-100G-PSM4	YES
QSFP-100G-CWDM4	YES
QSFP-100G-LRL4	YES
QSFP-100G-LR4	YES
QSFP-100G-ERL4	YES
QSFP-100G-DZ2-xx	YES
AOC-S-S-25G-yM	YES
SFP-25G-SR	YES
SFP-25G-LR	YES

Part Number	DOM Support
AOC-Q-Q-40G-xM	YES*
QSFP-40G-SR4	YES
QSFP-40G-XSR4	YES
QSFP-40G-SRBD	YES
QSFP-40G-LRL4	YES
QSFP-40G-LR4	YES
QSFP-40G-PLRL4	YES
QSFP-40G-PLR4	YES
QSFP-40G-UNIV	YES
QSFP-40G-ER4	YES

* Tx Power Monitor is not supported on 40G AOCs

Part Number	DOM Support
AOC-S-S-10G-xM	NO
SFP-10G-SRL	YES
SFP-10G-SR	YES
SFP-10G-LRL	YES
SFP-10G-LR	YES
SFP-10G-ER	YES
SFP-10G-ZR	YES
SFP-10G-DZ-T	YES
SFP-1G-SX	YES
SFP-1G-LX	YES

Interoperability

Arista transceivers and cables are based on industry standards and/or Multi-Source Agreements (MSA) and therefore interoperable with the relevant standards and MSA transceivers. Guidance on the interoperability of the Arista transceivers for use with Multi-mode fiber is detailed in Table 12 and for single-mode fiber in Table 13.

Table 12: 10G/40G Transceiver interoperability for Multi-mode fiber

	SFP+ SRL	SFP+ SR	QSFP+ SR4	QSFP+ XSR4	MXP	CFP2 XSR10	QSFP+ UNIV
SFP+ SRL	100m (OM3)	100m (OM3)	100m (OM3)	100m (OM3)	100m (OM3)	100m (OM3)	
SFP+ SR		300m (OM3) 400m (OM4)	100m (OM3) 150m (OM4)	300m (OM3) 400m (OM4)	300m (OM3) 400m (OM4)	300m (OM3) 400m (OM4)	
QSFP+ SR4			100m (OM3) 150m (OM4)	100m (OM3) 150m (OM4)	100m (OM3) 150m (OM4)	100m (OM3) 150m (OM4)	
QSFP+ XSR4				300m (OM3) 400m (OM4)	300m (OM3) 400m (OM4)	300m (OM3) 400m (OM4)	N/A
MXP					300m (OM3) 400m (OM4)	300m (OM3) 400m (OM4)	
CFP2 XSR10						300m (OM3) 400m (OM4)	
QSFP+ UNIV	N/A						150m (OM3) 150m (OM4)

Table 13: 10G/40G Transceiver interoperability for Single-mode fiber

	SFP+ LRL	SFP+ LR	QSFP+ PLRL4	QSFP+ PLR4	QSFP+ UNIV	QSFP+ LRL4	QSFP+ LR4
SFP+ LRL	1km	1km	1km	1km			
SFP+ LR		10km	1km	10km			
QSFP+ PLRL4			1km	1km	N/A		
QSFP+ PLR4				10km			
QSFP+ UNIV					500m	500m	500m
QSFP+ LRL4	N/A					1km	1km
QSFP+ LR4							10km

Table 14: 25G/100G Transceiver interoperability

	25G SFP SR	25G SFP LR	100G QSFP SR4	100G QSFP PSM4	100G QSFP LR4	100G QSFP LRL4
25G SFP SR	100m (OM4)	N/A	100m (OM4)	N/A		
25G SFP LR	N/A	10km (SMF)	N/A	500m (SMF)	N/A	
100G QSFP SR4	100m (OM4)	N/A	100m (OM4)	N/A		
100G QSFP PSM4	N/A	500m (SMF)	N/A	10km (SMF)	N/A	
100G QSFP LR4	NA				10km (SMF)	2km (SMF)
100G QSFP LRL4					2km (SMF)	2km (SMF)

Laser Eye Safety

Arista optical transceivers are classified as CLASS 1 laser eye safety compliant per IEC 60825-1: 2007. Class 1 laser products emit invisible laser radiation; it is strongly recommended not to stare into beams or view directly with optical instruments.

Fiber Cleaning

Contaminated fiber optic connectors often lead to degraded performance and costly, but preventable, failures. Industry studies show that the number one cause of link failure is a contaminated or dirty connector or fiber. To ensure proper performance and reliability care must be taken with the installation and maintenance of removable fiber connectors. For recommendations and best practices on fiber connection cleaning, please refer to the Arista Application Note at https://www.arista.com/assets/data/pdf/Fiber-Cleaning-App-Note.pdf

Installing and Removing Transceivers and Cables

This section describes how to install and remove optical transceivers and cables. An ESD-preventive wrist or ankle strap should be used before installing or removing transceivers and cables to protect the device from damage.

Installation procedure for Transceivers with Bail Latch

Step 1: Close the bail latch before inserting the transceiver
Step 2: Line-up the transceiver with the switch port and slide it into the port
Step 3: Firmly push the transceiver to ensure it is completely seated and secured in the receptacle on the switch
Step 4: Connect clean fiber cables to the transceiver. Alternatively cover the optical port with clean dust covers

Removal procedure for Transceivers with Bail Latch

Step 1: Disconnect all interface cables from the transceiver
Step 2: Open the bail latch on the transceiver with index finger
Step 3: Grasp the transceiver between thumb and index finger and carefully remove it from the switch port

Installation procedure for Transceivers with Pull-tab

Step 1: Line-up the transceiver with the switch port and slide it into the port
Step 2: Firmly push the transceiver to ensure it is completely seated and secured in the receptacle on the switch
Step 3: Connect clean fiber cables to the transceiver. Alternatively cover the optical port with clean dust covers

Removal procedure for Transceivers with Pull-tab

Step 1: Disconnect all interface cables from the transceiver
Step 2: Grasp the Pull-tab of the transceiver with thumb and index finger and gently pull it to get the transceiver out

Warranty

The Arista pluggables and cables include 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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