AOS-S and AOS-CX Transceiver Guide

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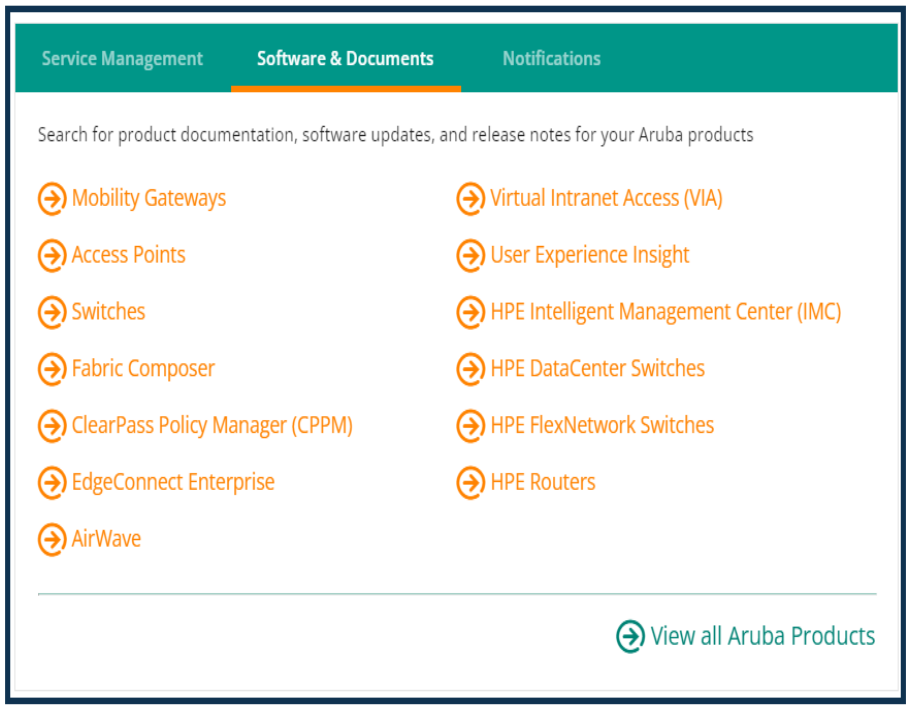
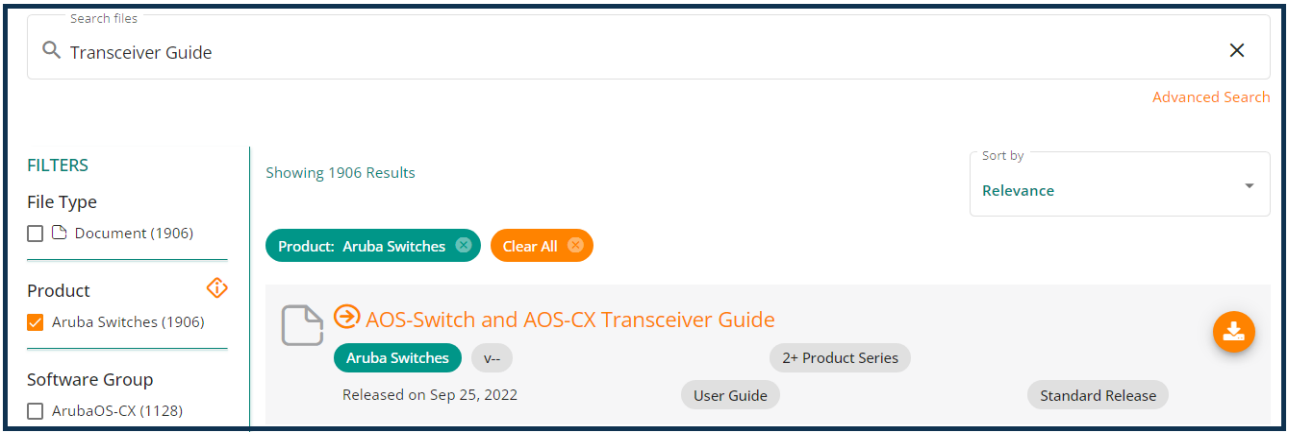
Chapter 2
Updates to this edition

Edition 13 reflects support up to the AOS-CX 10.11.1000 release.

Updates to this AOS-S and AOS-CX Transceiver Guide can be found on asp.arubanetworks.com by navigating to **Software & Documents > Switches > Search files** and entering "Transceiver Guide" in the search window:





Overview Chapter

Writeup for new technology introduced with the AOS-CX 9300 Switch Series.

- QSFP-DD (aka Q-DD or Double Density) ports (400G, 200G) backward compatible to support QSFP+ (40G), QSFP28 (100G) and QSFP56 (200G) technologies.
- Added background for MPO16 (used on 400G SR8 MMF, and 400G eDR4 SMF) vs MPO12 connectors (used on 100G SR4 and 40G SR4), and a customized MPO12 (using 4 fibers) used on 100G FR1 SMF optics that connect optically to split-mode 400G SR8 MMF xcvrs.
- 400G eDR4 are SMF using a SMF MPO12 connector and when split into 4x 2 fibers connect to 4x 100G FR1 xcvrs (which are NOT compatible to connect optically to 100G LR4).

AOS-CX updates

- New section covering Q-DD(QSFP-DD) 400G and the coverage for the 9300-32D Series switches.
  - Optics and AOCs (400G and 200G DACs are not offered at this time).
- New version of the split command (in 10.10.xxxx code) due to the 9300-32D Q-DD ports offering different quantities of splits at different speeds (2 links at 200G vs 4 links at 100G).
- Addition of 100G FR1 transceiver – supported on the 10000, 8360, 8325, 6400 series (see QSFP28 chapter for switch specifics).
- Correction for the 10000 series - added Notes for interface groups for 25G, 10G and 1G sections.
- Correction for 6100 series - no support for the J4860D 1G LH optic (enabled under UT-mode)

AOS-Switch updates

Removed references to the 8100fl switch series (in 1G and 100Mbps chapters).

Support for HPE Servers and Systems products

- For HPE SERVER division products (adapters and interconnect products), refer to the HPE Compute transceiver and cable hardware matrix product availability matrix at hpe.com.
- Addition of ordering SKUs to be used by HPE Server and Storage resellers to correspond to Aruba products (only the Xcvrs and interconnects are covered in this XCVR Guide). See other resources for HPE SKUs corresponding to Aruba Switches and accessories.

The transceivers listed in this document represent the currently available and End of Sale products at the time of this publication. Not all transceiver products are supported in every switch available from Aruba. Consult the datasheets for the applicable switch product for a list of supported transceiver products. Datasheets can be found at https://www.arubanetworks.com/resources/product-and-solution-information/.

How to use this Guide

Read this Overview chapter for basic understanding of technologies and features, such as split ports and breakout cables.

- Find the chapter with the port type you are interested in – usually related to the speed of the interconnect:
  - Q-DD or QSFP-DD = 400G
  - QSFP56 = 200G (also supported by Q-DD ports)
  - QSFP28 = 100G (also supported by Q-DD ports)
  - QSFP+= 40G (also supported by Q-DD ports)
  - SFP56 = 50G
  - SFP28 = 25G (also supported by SFP56 ports)
  - SFP+ = 10G (also supported by SFP28 and SFP56 ports)
  - SFP= 1G, 100Mbps (may also be supported by SFP+, SFP25, SFP56 ports - see specific comments by switch model)
- See the details of the Transceiver, DAC or AOC including wavelength and distance supported over which type of medium.
- Find the switch of interest, and note the minimum software version required to support the transceiver, DAC, or AOC and any exceptions (such as limitations to select ports or port configuration requirements)
- HPE Server and Systems, HPE Storage interconnect products (DACs, Split DACs/AOCs) are noted.

Conventions

This section describes the conventions used in the documentation.

Note on product images

Product images in this guide may differ from actual product.

Port numbering in examples

The port numbers in this document are for illustration only and might be unavailable on your device.

Types of transceiver modules and network cables

Types of transceiver modules and network cables

Transceiver module type		Connector head
QSFP-DD (Q-DD)	QSFP-Double-Density (different physical edge connector than QSFP28 or QSFP56)	Depending on technology, MPO-12 strand, MPO-16 strand or LC 2-strand
	Q-DD AOC (Active Optical Cable for interconnecting devices) 3m to 50m reaches	Optical cable permanently attached
QSFP28 module (transceiver)	QSFP28 optical transceiver module	MPO 12-strand or LC 2-strand
	QSFP28 DAC (copper cable for interconnecting devices) 1m to 5m reaches	Twinax cable permanently attached
	QSFP28 AOC (Active Optical Cable for interconnecting devices) 2m to 30m reaches	Optical cable permanently attached
QSFP+ module (transceiver)	QSFP+ optical transceiver module	MPO 12-strand or LC 2-strand
	QSFP+ DAC (copper cable for interconnecting devices) 1 - 5m reaches	Twinax cable permanently attached
	QSFP+ AOC (Active Optical Cable for interconnecting devices) 7m to 30m reaches	Optical cable permanently attached
SFP56 module	SFP56 optics (50G) and 50G AOCs	Will be available in the future; awaiting market viability
	SFP56 DAC (copper cable for interconnecting devices)	Twinax cable permanently attached
SFP28 module	SFP28 same size as SFP+ (optical)	LC 2-strand
	SFP28 DAC (copper cable for interconnecting devices) 0.65m to 5m reaches	Twinax cable permanently attached
	SFP28 AOC (Active Optical Cable for interconnecting devices) 3m to 15m reaches	Optical cable permanently attached
SFP+ module (transceiver)	SFP+ optical transceiver module	LC 2-strand or 1-strand (for BiDi)
	SFP+ DAC (copper cable for interconnecting devices)	Twinax cable permanently attached
	10GBASE-T copper transceiver module	RJ-45 (Requires Cat6a for maximum supported distances. Shielded 6a cable recommended to eliminate EMI issues.)

Transceiver module type		Connector head
Small form-factor pluggable (SFP) module (transceiver)	100-Megabit SFP optical transceiver module	LC 2-strand
	Gigabit SFP optical transceiver module	
	1G SFP copper transceiver module	RJ-45 (1G requires Cat5e for maximum supported distances.)

The available transceiver modules and network cables vary by device models and are subject to change over time. For the most up-to-date list of transceiver modules and network cables, contact your Aruba sales representative or technical support engineer.

For information about the transceiver modules and network cables available for each device model, see the Datasheets or QuickSpecs for the applicable switch product. Refer to the tables within this guide for the specific switch model.

Data rate

Data rate is the number of bits transmitted per second. The unit of measure for data rate is Megabits per second (Mbps) or Gigabits per second (Gbps). Transceiver modules, optical, Direct Attach over Copper (DAC), and Active Optical Cables (AOC) products provide the following levels of data rates:

- 400 Gbps (Optical, AOC at this time)
- 200 Gbps (AOC at this time)
- 100 Gbps (optical, DAC, and AOC)
- 50 Gbps (DAC and SR only at this time)
- 40 Gbps (optical, DAC, and AOC)
- 25 Gbps (optical, DAC, and AOC)
- 10 Gbps (optical, DAC, and RJ45 10GBASE-T)
- 1000 Mbps (also known as Gigabit) (optical and RJ45 1GbT)
- 100 Mbps (also known as Fast Ethernet) (optical only)

Transmission distance

Through UTP or STP cables, signals can be transmitted over a distance of 100 m (328.08 ft.) only. This behavior occurs because signals attenuate during transmission through the UTP cables.

Attenuation refers to the dissipation of the power of a transmitted signal as it travels over a cable.

Attenuation occurs because signal transmission suffers certain resistance from the cable, which weakens the signals as they travel over the cable. When signals are transmitted over a long distance, signal strength decreases significantly, causing the signal-to-noise ratio to drop below the accepted level. This decrease makes it impossible to distinguish between signals and noise, which results in data loss.

Patch panel and punch down blocks also affect attenuation; that is, they can be a source of issues resulting in shorter distances or data loss.

10GBASE-T connections require Category 6a as a minimum for proper 10G speeds up to the 100m distance dictated by the IEEE 802.3ae standard for a fixed 10GBASE-T port. The JL563A/JL563B transceiver has a limit of 30m max distance due to limited power available to the transceiver (vs a fixed 10GBASE-T port). Anything less (Cat 6, 5e, 5) will compromise the distance that 10G over copper can achieve.

Shielded Twisted Pair (STP) Cat 6a cable is recommended when using the 10GBase-T transceiver (JL563A/JL563B).

Use of STP prevents EMI events from affecting data traffic carried on the wire - known as Crosstalk or Alien Crosstalk. Large EMI events from electronically noisy environments may be coupled onto unshielded cabling and cause temporary packet errors. Fixed 10G ports have designs to counteract these types of bit error conditions, that the 10GBASE-T transceiver cannot counteract consistently. Using STP Cat6a cables mitigate the errors significantly. All packet loss errors observed in extensive testing are considered recoverable by the host system with the JL563A/JL563B transceiver.

Central wavelength

Central wavelength (wl) represents the wave band used for optical signal transmission. The following central wavelengths are available for common optical transceiver modules representing three wavebands:

- 850 nm waveband: Used for short-reach transmission.
- 1310 nm and 1550 nm waveband: Used for middle-reach and long-haul transmission.

Fiber

Fiber types

Fibers are classified as multimode fibers and single-mode fibers.

Multimode fibers

Multimode fibers (MMFs) have thicker fiber cores and can transport light in multiple modes. However, the intermodal dispersion is greater and worsens as the transmission distance increases.

Multimode fibers can be classified into multiple grades according to their diameters and modal bandwidth. The modal bandwidth of a multimode fiber is determined by the expression of the maximum modulation frequency pulse that can pass a fiber × the fiber length. The modal bandwidth is a comprehensive index reflecting the optical characteristics of a multimode fiber.

International Telecommunication Union (ITU) defines multimode fiber types in its G series standards. The commonly used multimode fiber is defined in the ITU G.651 standard. The G.651-compliant fiber transmits light at the wavelength range 800 nm to 900 nm or 1200 nm to 1350 nm.

Multimode fiber grades

Fiber mode	Fiber grade	Fiber diameter (μm)	Modal bandwidth at 850 nm (MHz*km)
Multimode fiber	OM1	62.5/125	200
	OM2	50/125	500
	OM3	50/125	2000
	OM4	50/125	4700

Other factors that influence the transmission distance of multimode fibers include interface type, central wavelength, and fiber grade. The modal bandwidth values shown above are for the fiber grades listed. There are multimode fibers that have different modal bandwidth characteristics and do not necessarily match the OM1 - OM4 grades. See the individual transceiver specifications for distances supported when using MMF OM1-OM4. OM5 is a grade of multimode fiber that is primarily designed for short wave division multiplexing (SWDM) used by 40G speeds and higher. There usually is no distance advantage for 10G through 40G speeds that use single wavelengths over an OM5 fiber.

Single-mode fibers

Single-mode fibers (SMFs) have a small core size, typically 9 µm or 10 µm, and can transmit light in only one mode. Single-mode fibers suffer little intermodal dispersion and are suitable for long-haul communication. Single-mode fibers transmit light at the central wavelength of 1310 nm or 1550 nm.

Telecommunication Industries Alliance (TIA)/Electronic Industries Alliance (EIA) defines that single-mode fibers use yellow outer jackets with the mark "SM".

ITU defines single-mode fiber types in its G series standards. The most commonly used single-mode fibers are defined in ITU G.652 and G.655 standards. The following table describes features of the G.652 and G.655-compliant fibers.

Features of G.652- and G.655-compliant single-mode fiber

Single-mode fiber type	Wavelength (nm)	Features	Applications
G.652-compliant fiber (standard single-mode fiber)	1260 to 1360 1530 to 1565	Zero dispersion at 1310 nm	Connecting transceiver modules with a central wavelength of 1310 nm or 1550 nm.
G.655-compliant fiber (non-zero dispersion shifted fiber)	1530 to 1565	Near-zero dispersion around 1550 nm	For 1550 nm wavelength-division multiplexing (WDM) transmissions.

Fiber diameter

Fiber diameter is expressed as core diameter/cladding diameter, in µm. For example, 9/125 µm means that the fiber core diameter is 9 µm and the fiber cladding diameter is 125 µm.

For the HPE devices, the following fiber diameters are recommended:

- **G.651 standard multimode fiber:** 50/125 µm or 62.5/125 µm
- **G.652 standard single-mode fiber:** 9/125 µm
- **G.655 non zero dispersion shifted single-mode fiber:** 9/125 µm

Connector types

Cover the connector with a dust cap when it is not connected to any optical fibers.

Connectors connect transceiver modules to the corresponding transmission media. The transceiver modules available for Aruba products use the following types of connectors:

Lucent connector or local connector (LC)

Single LC connectors (also known as Simplex) are typically used for 1G & 10G BiDi (Bidirectional) optics.

Dual LC connectors (Duplex) are typically used in normal optical types.

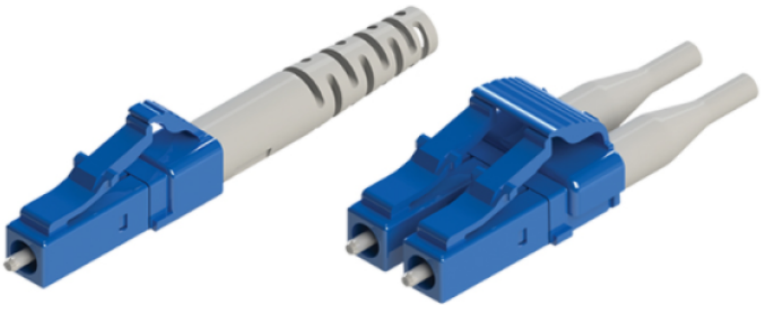
Fiber connectors used for insertion into optical transceivers are typically of the ferrule polish type PC (Physical Contact) or UPC (Ultra Physical Contact). These minimize the air gap when inserted into a transceiver or when fiber to fiber mating.

Another type of polished end is the APC (Angled Physical Contact) usually with an 8° polished angle. Although this reduces reflected signal loss, the difficultly in mating the two angled surfaces limits it to only the most demanding splicing conditions. APC connectors are required for the 400G transceivers (both SR8 and eDR4).

Refer to the transceiver specifications to determine whether to use fiber connectors of PC, UPC or APC.

40G BiDi uses only Duplex fiber versus MPO (see below) for 40G SR4 applications.

LC connector (Simplex = single fiber, Duplex = dual fiber)



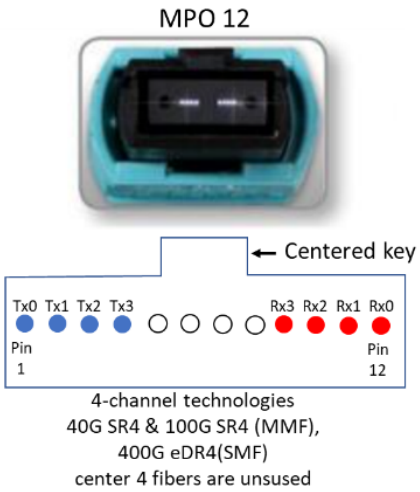
Multifiber Push On (MPO) connector

MPO connector: Female (guide holes) and Male (guide pins)

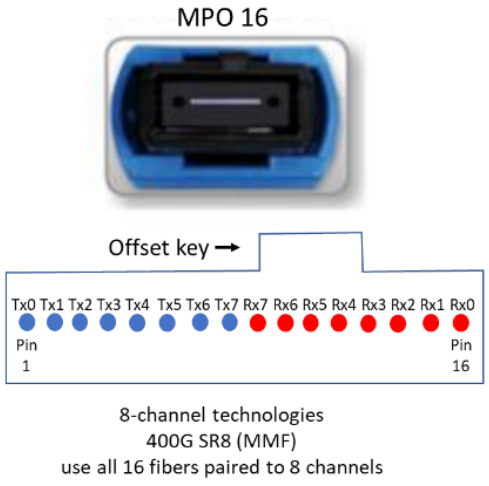
The 40G SR4,100G SR4, 200G MPO, and 400G MPO transceiver modules use cables with female MPOs (connectors which have guide holes in the end face of the MPO connector). The transceiver has guide pins within the MPO receptacle.

- MPO12 connectors are used by QSFP+ 40G SR4 and QSFP28 100G SR4 optics (12 fibers), but only 8 fibers are in use, mapped to the 4 channels used by 40G and 100G Short Reach technology. (4 center fibers are not used)
- MPO16 connectors are used by QSFP-DD 400G SR8 optics where all 16 fibers are mapped to the 8 channels used by 400G Short Reach and 2km eDR4 technology. MPO16 connectors have the key in a different position than MPO12, preventing either from plugging into the wrong type of transceiver.

MPO12 or MPO16 cables can either be MMF for short reach applications or SMF for long reach applications. MPO12 connectors have a centered "key" to assure proper up/down insertion.

MPO12 connectors have 12 fibers but only the outer eight fibers form the four channels. Fibers 1 and 12 form a pair for channel 0 Fibers 2 and 11 form a pair for channel 1 Fibers 3 and 10 form a pair for channel 2 Fibers 4 and 9 form a pair for channel 3 Fibers 5 through 8 are unused	

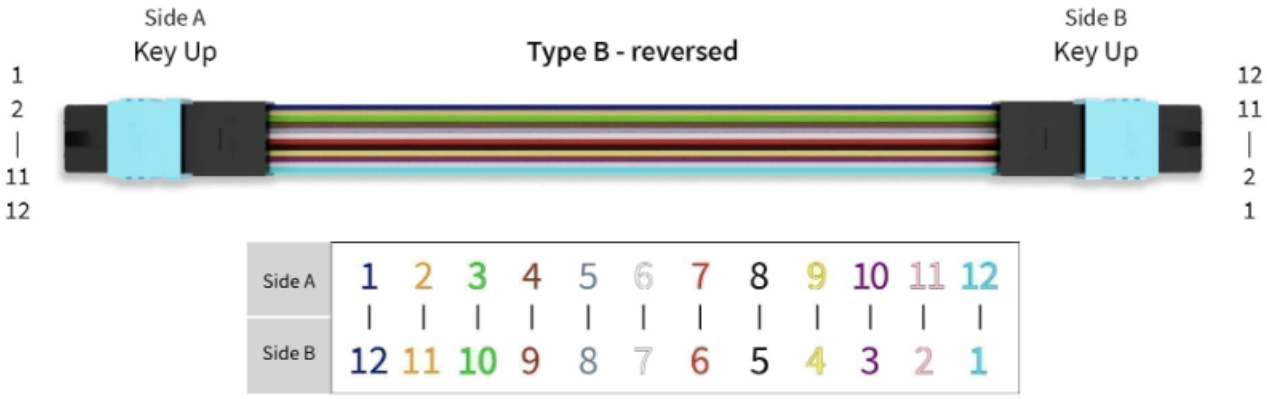
MPO16 uses an offset "key" to assure that MPO12 are not used where an MPO16 is required.

MPO16 uses all 16 fibers; depending on the opposite end transceiver or port type the fibers are mapped differently. Fibers 1 and 16 for channel 0 Fibers 2 and 15 for channel 1 Fibers 3 and 14 for channel 2 Fibers 4 and 13 for channel 3 Fibers 5 and 12 for channel 4 Fibers 6 and 11 for channel 5 Fibers 7 and 10 for channel 6 Fibers 8 and 9 for channel 7	

Proper crossover mapping

Patch cables and structured cabling from endpoint to endpoint must create a proper crossover connection to link transmit to the other ends receive, with attention to each channel selection.

The MPO cable types used by 40G SR4/eSR4 and 100G SR4 and used for "patch" cable connections or direct transceiver to transceiver connection are typically referred to as female "Type B", key-up crossover cables. Type B cables route fibers 1 through 12 to fibers 12 through 1 on the opposite end to create a crossover and matching transmit to receive channels.

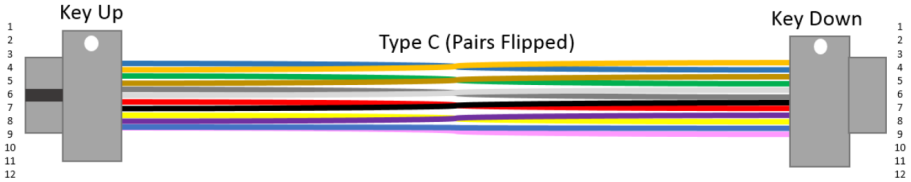


MPO16 type B cables are wired in a similar fashion with fiber 1 to 16, 2 to15, and so on.

Be aware that using two (an even number of) crossover cables in series cancels this crossover effect and no connection will be established. This can occur if you are unaware of how your cable-plant infrastructure is wired from patch panel to patch panel. If your fiber plant is already structured with crossover connections, then two more patch cables at both endpoints that are also crossover will create a proper crossover connection (essentially an odd number of crossovers).

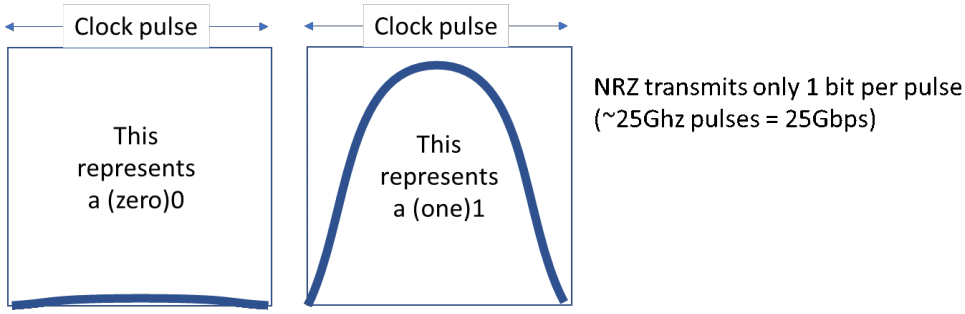
If your cable-plant is wired as straight-through (i.e. 1-1, 2-2, ...,12-12) then you will need one cross over cable on one end, and a straight through cable on the other end of the cable run (i.e. an odd number of cross-over points).

Do not use Type A (straight-through) or Type C (paired crossovers) MPO cables for direct transceiver to transceiver connections. Type C cables are not correct because the Tx for channels 0 and 1 are paired, instead of a pairing of TX0(1) and RX0(12), etc.

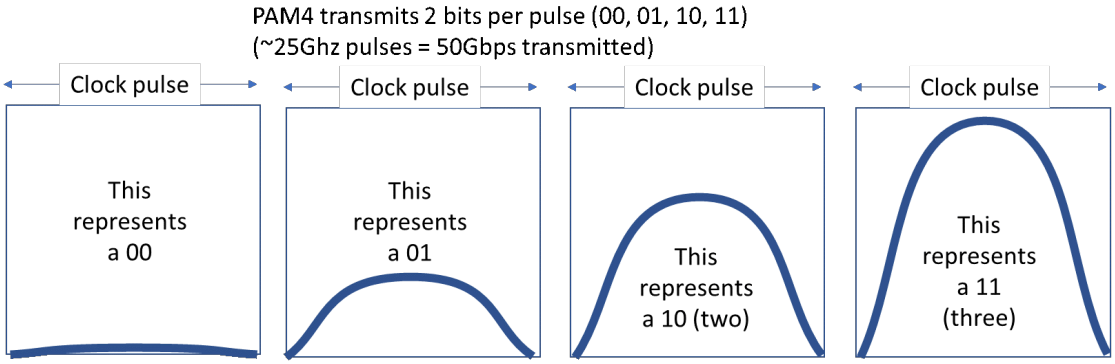


Optical encoding methods (NRZ vs PAM4)

1G, 10G and 25G use an optical encoding method called Non-Return to Zero (NRZ). NRZ sends data by representing a 1 as a high signal and 0 as a low signal. The optical signal is detected as a pulse for a 1 and no pulse for a 0. At a clock rate close to 10Ghz (10.31Ghz) or 25Ghz (26.56Ghz) you can transmit 10Gbps or 25Gbps using NRZ encoding.



50G optics use another optical encoding method called Pulse Amplitude Modulation, 4 levels (PAM4). The optics still transmit at a 26.56Ghz signalling rate, however each pulse now transmits 2 bits of data. Since each pulse can be interpreted in any of 4 values (00, 01, 10, or 11) it can effectively transmit 50Gbps of data per wavelength. A similar technique can use a ~50Ghz signal and effectively transmit 100Gbps.



Speed	Form factor	Channels	Speed/Channel & type	Split mode where applicable
40G	QSFP or QSFP+ SR4 or LR4	4	10G NRZ	40G SR4 => 4x 10G SR 40G LR4 (n/a)
100G	QSFP28 SR4, LR4, ER4L	4	25G NRZ	100G SR4 => 4x 25G SR 100G LR4, ER4L (n/a)
100G	QSFP56 SR2	2	25G PAM4(50G)	Not applicable
200G	QSFP56 SR4	4	25G PAM4(50G)	200G SR4 => 2x 100G SR4
400G	QSFP-DD or Q-DD SR8, eDR4	8 4	25G PAM4(50G) 50G PAM4(100G)	400G SR8 => 2x 100G SR4 400G eDR4 => 4x 100G FR1 (SMF)

Where 40G is composed of 4 channels of 10G streams, parallel optics (40G SR4) are used with discrete 4 pairs of fibers. Each pair is transmitting at 10G and can connect to 10G SR optics for each channel.

100G SR4 also uses 4 discrete channels (all 8 fibers are required for the 100G link), or split into 4 separate channels of 2 fibers each, transmitting at 25G connecting to 25G SR optics for each channel.

With 100G using a QSFP56 form factor port (capable of utilizing PAM4 optics) where the bandwidth is 50G over 2 discrete channels, each paired fiber can now connect to 2 separate 50G SR optics.

Splitting of QSFP+ and QSFP28 ports

Quad-SFP (QSFP+ and QSFP28) ports allow for four channels of lower-bandwidth communication.

AOS-CX release 10.05 introduced this feature for select switches and modules. Split port is not available for AOS-S products.

- A QSFP+ 40G port can be split into four(4) 10G speed ports
- A QSFP28 100G port can be split into four(4) 25G speed ports

Most QSFP28 ports can be used with either 40G or 100G optics, DAC or AOC cables. Not all QSFP28 port can be split into channels of 10G or 25G: what's required are MACs and PHYs that can support both 10G and 25G speeds. Some designs will allow only splitting into the four (4) channels at 10G because they lack a 25G MAC (for example, the Aruba 8400 Switch Series JL366A 6port 40G/100G module). Some switches/modules also limit only certain ports to be split because of design combinations of PHY/Ports or limitations of the maximum number of MACs in a switching ASIC.

An example CLI configuration for port 1/1/52:

```
switch(config-if)# interface 1/1/52
switch(config-if)# split
This command will disable the specified port, clear its configuration,
and split it into multiple interfaces. The split interfaces will not
be available until the next system or line module reboot.

Continue (y/n)? y

switch(config-if)# show interface brief
--------------------------------------------------------------------------------
Port     Native Mode Type      Enabled Status Reason          Speed  Description
         VLAN                                                (Mb/s)
--------------------------------------------------------------------------------
1/1/52:1 --  routed QSFP+DA3x4 yes     up                     10000  Aruba-AP
1/1/52:2 --  routed QSFP+DA3x4 yes     up                     10000  --
1/1/52:3 --  routed QSFP+DA3x4 yes     down   Waiting for link --     --
1/1/52:4 --  routed QSFP+DA3x4 yes     down   Waiting for link --     --
```

AOS-CX release 10.05 and 10.06 requires the config to be saved and the switch or module to be rebooted to take on the new configuration for the port. This requirement is removed in AOS-CX 10.07 and later releases.

Split mode on QSFP-DD ports for the 9300 series

QSFP-DD ports on the Aruba 9300-32D switch series are capable of operating with different speeds for the split ends.

Using the CLI command: `split [<COUNT>][<SPEED>][confirm]`

The `COUNT` parameter specifies the number of child interfaces to activate upon splitting the port. The `SPEED` parameter specifies the speed for the child interfaces. For additional information on the `split` command please refer to the CLI Guide for the Aruba 9300 Switch Series.

When the `split` command is used on a QSFP+ port it always implements 4 links at 10G. On a QSFP28 port 4 links at either 25G or 10G.

Number of child interfaces	Child interface speed	Examples**
4	100G	R9B48A Aruba 400G Q-DD to 4xQSFP56 100G 7m AOC * conect to HPE Server Adapters that are 100G QSFP**56** R9B42A Aruba 400G Q-DD MPO12 eDR4 2km SMF XCVR * R9B63A ARUBA 100G QSFP28 LC FR1 2KM SMF XCVR
2	200G	R9B53A Aruba 400G Q-DD to 2xQSFP56 200G 7m AOC * connect to HPE Server Adapters that are **200G** QSFP**56**
2	100G	R9B58A 200G QDD to 2xQSFP28 100G 7m AOC * connect to ports that are 100G QSFP28
4	25G	(845420-B21) HPE QSFP28 to 4x25G SFP28 7m AOC {HPE Server product} * connect to ports that are 25G SFP28 JL309A Aruba 100G QSFP28 MPO SR4 MMF XCVR * Connect to 25G SR transceivers
4	10G	(845420-B21) HPE QSFP28 to 4x25G SFP28 7m AOC

Number of child interfaces	Child interface speed	Examples**
		{HPE Server product} * connect to ports that are 10G SFP capable JH233A HPE X142 40G QSFP+ MPO eSR4 300M XCVR * J9150D Aruba 10G SFP+ LC SR 300m MMF XCVR

* Solution on the far end of the link

** For additional information please refer to the product datasheet.

400G to 400G products do not require the `split` command.

DAC breakout cables

DAC breakout cables typically have a QSFP-type connector on one end and four (4) SFP-type connectors at the other end.

DAC cables are passive devices and used for short (<5m lengths) distances. 40G breakout and 100G breakout DACs look the same, but they are different parts (different Part Type information encoded on both ends).

40G splits into 4 channels of 10G and the SFP+ ends identify as a 10G DAC part.

100G port may be split in a similar manner:

- The QSFP28 port is configured as a 100G split into 4x 25G channels or
- The port is run at 40G and split into 4x 10G channels
- The cable speed is not configurable and cannot be mixed speeds
  - QSFP28 cables are always 100G, split ends identify as a 25G DAC part and
  - QSFP+ cables are always 40G, split ends identify as a 10G DAC part

A QSFP28 cable, at the time of this publication, cannot be used as a 40G connection nor split into 4 x 10G links -- use a QSFP+ split cable to create 4x 10G links.

See the QSFP-DD modules chapter for more about split cables at 400G or 200G speeds.

Breakout optical cables

Parallel optical technologies such as 40G SR4/eSR4 and 100G SR4 optical transceivers can also split into four separate optical streams to connect to 10G SR or 25G SR/eSR optics on the opposite end of the link using fiber breakout cables.

LR4/ER4 technologies use a Singlemode Fiber (SMF) in each direction, and multiplex (combine) 4 different wavelengths over a single fiber in each direction (hence LR4/ER4 use a 2-fiber LC connector). The wavelengths are de-muxed on the receive side. Unlike SR4 technologies, where each channel can be split into separate channels, LR4/ER4 technologies cannot be split into separate 10G or 25G LR technologies. Aruba does not offer PLR4 (Parallel LR4) technology.

The fiber breakout cable used is an MPO to 4x LC type of cable with Multimode Fiber (MMF) pairs in a specific configuration (see above MPO Fiber channel assignment).

The LC ends can be connected to your fiber patch panel to reach the end of the link to a 10G or 25G SR/eSR transceiver (depending on which speed is being split). Ensure you obtain a female (no pins) MPO 12-fiber connector mapped to only 4 LC connectors of Multimode Fiber of OM3 or better. Fiber breakout cables that have 6 LC connectors are usually mapped for a different type of application and cannot be used with 40G or 100G transceivers.

The distance this optically split link can support is determined by the 40G or 100G transceiver, not the 10G or 25G transceiver on the other end of the link. For example, a 100G SR4 can reach 70m over OM3 or 100m over OM4 -- this is the same distance as a 25G SR on the other end of the links. Using a 25G eSR4 (JL485A) transceiver with a longer reach of 200m over OM3 or 400m over OM4 will not accomplish the longer reach, but it is indeed optically compatible and can link to the 100G SR4 limits of 70m/100m.

The following optical breakout cables can be used with 40G SR4/eSR4 to split into 4x10G SR, or with 100G SR4 to split into 4x25G SR compatible streams.

These cables are ordered from the HPE Compute and Server or Storage business units and may not be available to Aruba-only resellers.

Fiber split cables are readily available from cable vendors. Ensure that any acquired cables are mapped properly and have the proper APC or UPC ends per transceiver requirement.

Fiber breakout cables (from HPE Server products)

- (Server SKU) R1N86A, HPE 12 Fiber MPO to 4xLC MM 3m Cbl
- (Storage SKU) K2Q46A, HPE MPO to 4 x LC 5m Cable
- (Storage SKU) K2Q47A, HPE MPO to 4 x LC 15m Cable

It is important that the LC connectors map to the 4 channels in this manner:

MPO connector Fiber numbers	LC connector	Logical interface (using port 52 as an example)
1 and 12	LC #1	1/1/52:1
2 and 11	LC #2	1/1/52:2
3 and 10	LC #3	1/1/52:3
4 and 9	LC #4	1/1/52:4
5 thru 8 are unused		

Starting with AOS-CX 10.05, the following switches and modules are capable of splitting a QSFP+ or QSFP28 port with the noted restrictions. Configure the ports for split mode. 10.05 and 10.06 require the configuration to be saved and the switch to be rebooted to enable the split operation on the ports.

Starting with the 10.07 release, the need to save and reboot is now removed for the 8320, 8325, and 8360 series; the 8400 still requires a save and reboot (no support for split ports on the 6400 series).

The 8400 still requires a save and reboot as of AOS-CX 10.10.1000.

Part Number (PN)	Description	Port info
Aruba 6400 Series	V1 or v2 series: NO SUPPORT for split Ports	--
Aruba 8320 Series - JL479A - JL579A - JL581A	Aruba 8320 48 10/6 40 X472 5 2 Bdl Aruba 8320 32 40G X472 5 2 Bdl Aruba 8320 48 T/6 40 X472 5 2 Bdl	49-54 (40G) 5-28 (40G, center 24 ports) 49-54 (40G)
Aruba 8325 48Y8C models JL635A (base system) - JL624A - Prt-to-Pwr model (FB) - JL625A - Pwr-to-Prt model (BF) **Aruba 8325 32C models** JL636A (base system) - JL626A - Prt-to-Pwr model (FB) - JL627A - Pwr-to-Prt model (BF)	Displayed by `show system` Aruba 8325-48Y8C FB 6 F 2 PS Bdl Aruba 8325-48Y8C BF 6 F 2 PS Bdl Displayed by `show system` Aruba 8325-32C FB 6 F 2 PS Bdl Aruba 8325-32C BF 6 F 2 PS Bdl	49-56 (40G or 100G) 1-32 (40G or 100G)
Aruba 8360 32Y4C models JL717A/JL717C(v2)(base system) - JL700A/ JL700C(v2) Prt-to-Pwr model - JL701A/JL701C(v2) Pwr-to-Prt model **Aruba 8360 16Y2C models** JL718A/JL718C(v2) (base system) - JL702A /JL702C(v2) Prt-to-Pwr model - JL703A/JL703C(v2)Pwr-to-Prt model **Aruba 8360 48XT4C models** JL720A/JL720C(v2) (base system) - JL706A/JL706C(v2) Prt-to-Pwr model	Displayed by `show system` Aruba 8360-32Y4C Prt2Pwr3F2PS Bdl Aruba 8360-32Y4C Pwr2Prt3F2PS Bdl Displayed by `show system` Aruba 8360-16Y2C Prt2Pwr3F2PS Bdl Aruba 8360-16Y2C Pwr2Prt3F2PS Bdl Displayed by `show system`	33-36 (40G or 100G) 17-18 (40G or 100G) NO SUPPORT for split ports. Limitation of MACs

Part Number (PN)	Description	Port info
- JL707A/JL707C(v2) Pwr-to-Prt model **Aruba 8360-12C models** JL721A/JL721C(v2) (base system) - JL708A/JL708C(v2) Prt-to-Pwr model - JL709A/JL709C(v2) Pwr-to-Prt model **Aruba 8360 24XF2C models** JL722A/JL722C(v2) (base system) - JL710A/JL710C(v2) Prt-to-Pwr model - JL711A/JL711C(v2) Pwr-to-Prt model **Aruba 8360 48Y6C models** JL719C (base system) - JL704C(v2) - 48Y6C FB bundle - JL705C(v2) - 48Y6C BF bundle	Aruba 8360-48XT4C Prt2Pwr3F2PS Bdl Aruba 8360-48XT4C Pwr2Prt3F2PS Bdl Displayed by `show system` Aruba 8360-12C Pwr2Prt3F2PS Bdl Aruba 8360-12C Prt2Pwr3F2PS Bdl Displayed by `show system` Aruba 8360-24XF2C Prt2Pwr3F2PS Bdl Aruba 8360-24XF2C Pwr2Pwr3F2PS Bdl Displayed by CLI `show system` Aruba 8360-48Y6C v2 FB 5F 2AC Bdl Aruba 8360-48Y6C v2 BF 5F 2AC Bdl	on this ASIC. 1-12 (40G or 100G) 25-26 (40G or 100G) 49-54 (40G or 100G) MACSec available on ports 53-54 and via Split 10G or 25G on those ports
Aruba 8400X modules - JL365A - JL366A	Aruba 8400X 8p 40G QSFP+ Adv Mod Aruba 8400X 6p 40G/100G QSFP28 Adv Mod	1-8 (40G) 1-6 Only capable of 40G split into 4 x 10G JL366A modules do not have 25G MACs to support split 100G
Aruba 9300-32D models R8Z96A (base system) - R9A29A -32D FB bundle - R9A30A -32D BF bundle	Displayed by CLI `show system` Aruba 9300-32D 32D2XF FB 6F2AC Bdl Aruba 9300-32D 32D2XF BF 6F2AC Bdl	1-32 (40G, 100G, 200G, 400G)
Aruba 10000 models R8S96A (base system) - R8P13A - 48Y6C FB bundle - R8P14A - 48Y6C BF bundle	Displayed by CLI `show system` Aruba CX 10000-48Y6C FB 6F 2PS Bdl Aruba CX 10000-48Y6C BF 6F 2PS Bdl	49-54 (40G or 100G)

Aruba 6400 modules with QSFP28 ports do not have Split Mode enabled in AOS-CX as of 10.10 or earlier releases. AOS-Switch products do not allow splitting of QSFP+ ports (5400R, 3810M, 2930M).

Refer to the "*Aruba-Corning 400G Cable Reference Guide*" on the Aruba Support Portal for more split optical cables specifically for use with 400G products. 400G split into different lower speeds (200G or 100G) depending on the 400G optic you are using (400G SR8 or eDR4) and the 100G technology you are using (100G SR4, SR2 or FR1) on the far end of the link.

Optical parameters

This guide provides average transmit and receive power ranges for transceiver modules.

Transmit power

Transmit power is the power at which the transmitter of an optical transceiver module transmits optical signals, in dBm.

Receive sensitivity

Receive power is the power at which the receiver of an optical transceiver module receives optical signals, in dBm.

Using attenuators (for short test cables)

Transceivers are designed to transmit light pulses at power levels that account for loss in the fiber optic cabling, and meets the receiver input thresholds of the link partner optical transceiver.

If you are using a fiber cable with less light loss than expected (for example, in a test environment and you do not have a 40km spool of SMF available), use attenuators to reduce the transmit level to be within the receive sensitivity of the other transceiver -- you will need to condition both fibers (sends in both directions). If not done, you risk overdriving the Receive end and permanently damaging the transceiver. For example, a 40G ER4 has a highest transmit level of 4.5dBm, but the Receive Sensitivity can be no higher than -4.5dBm. That means there must be at least a 9dBm loss on the light level to be within the standards (4.5 - (-4.5) = 9dBm required). Attenuation required = (highest transmit power) - (highest receive sensitivity). Throughout this guide, it is indicated which would require attenuation if using short fiber cables.

Copper transceiver modules

Copper transceiver modules transmit signals over Category-5, -5e, -6, and -6a unshielded twisted pair (UTP) or shielded twisted pair (STP). UTP transmission cover shorter distances than fiber transmission and can be used in small-sized networks only. 10G over twisted pair requires the use of Category 6 and 6a.

1G copper transceivers are supported in 1G SFP and 10G SFP+ (and most SFP28 and SFP56) ports where listed in the compatibility tables. See the specifics for each switch model. 1G optics may not be supported in uplink ports (usually due to support for higher speed MACsec capabilities). 10G Copper transceivers are supported in 10G/25G and 50G SFP ports.

Transmission distance

Through UTP or STP cables, signals can be transmitted over a distance of 100 m (328.08 ft.) only. This behavior occurs because signals attenuate during transmission through the UTP cables.

Attenuation refers to the dissipation of the power of a transmitted signal as it travels over a cable.

Attenuation occurs because signal transmission suffers certain resistance from the cable, which weakens the signals as they travel over the cable. When signals are transmitted over a long distance, signal strength decreases significantly, causing the signal-to-noise ratio to drop below the accepted level. This decrease makes it impossible to distinguish between signals and noise, which results in data loss.

Patch panel and punch down blocks also affect attenuation; that is, they can be a source of issues resulting in shorter distances or data loss.

10GBASE-T connections require Category 6a as a minimum for proper 10G speeds up to the 100m distance dictated by the IEEE 802.3ae standard for a fixed 10GBASE-T port. The JL563A/JL563B transceiver has a limit of 30m max distance due to limited power available to the transceiver (vs a fixed 10GBASE-T port). Anything less (Cat 6, 5e, 5) will compromise the distance that 10G over copper can achieve.

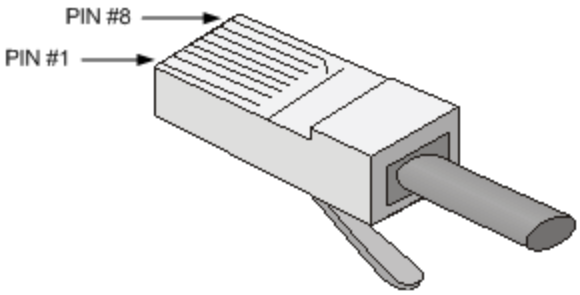
Shielded Twisted Pair (STP) Cat 6a cable is recommended when using the 10GBase-T transceiver (JL563A/JL563B).

Use of STP prevents EMI events from affecting data traffic carried on the wire - known as Crosstalk or Alien Crosstalk. Large EMI events from electronically noisy environments may be coupled onto unshielded cabling and cause temporary packet errors. Fixed 10G ports have designs to counteract

these types of bit error conditions, that the 10GBASE-T transceiver cannot counteract consistently. Using STP Cat6a cables mitigate the errors significantly. All packet loss errors observed in extensive testing are considered recoverable by the host system with the JL563A/JL563B transceiver.

Connector

Registered Jack-45 (RJ-45) twisted-pair connectors are used as connectors for copper transceiver modules.



RJ-45 GE connector pin assignment for gigabit connections

Pin	Signal	Function
1	MX_0+	Data transmit/receive
2	MX_0-	Data transmit/receive
3	MX_1+	Data transmit/receive
4	MX_2+	Data transmit/receive
5	MX_2-	Data transmit/receive
6	MX_1-	Data transmit/receive
7	MX_3+	Data transmit/receive
8	MX_3-	Data transmit/receive

Identification of 4x4 part numbers

A SKU# (Stock Keeping Unit, also called a Product Number or Part Number) may be fulfilled by one or more vendor parts providing similar functionality. A 4x4 (or "4 by 4") part number is of the form *nnnn-nnnn* and is printed on the transceiver, DAC, or AOC label. For example, J9151E (10G LR) may have 1990-4727 or 1990-4694 as the associated 4x4 part number representing two different vendors.

4x4 part numbers are referenced in the:

- specification tables, to identify parts that support DOM (Digital Optical Monitoring) capabilities. (Some older vendor parts do not support DOM.)
- compatibility tables, where necessary, to identify supported combinations of switch or module with the identified transceiver, along with the minimum software version required.

In December 2017, Aruba introduced Revision D (and, in 2019, a Rev E 10G LR optic) versions of 100M, 1G, and 10G products. Revision D transceivers and DACs eliminated previous alternative vendors, so that you can be assured that only certified vendor parts are supported on AOS-CX Series Switch products. Earlier Revision A, B, or C product may have alternative vendors that Aruba no longer actively

ships, but remain fully supported in specific switches. The specifications for Revision D transceiver products are the same as the specified Revision A, B, and C SKUs. Where support for a Revision A, B, or C transceiver existed on an earlier switch product, Revision D parts are also supported.

Some switch products will specify Revision D (and, in some cases, Rev E 10G LR optic) transceivers for full support, while other products may support earlier (older) revision transceivers – and some with specific 4x4 part numbers.

To cross-reference the Transceiver/DAC product against the switch product to identify the minimum software required for transceiver support, always refer to the Datasheet or QuickSpecs for the switch product to see the current list of supported transceivers. Refer to the compatibility tables within this document .

To use CLI commands to display data for an installed transceiver, see the following examples.

```
switch# show int 1/10/6 transceiver
-------------------------------------------------------------
Port      Type        Product   Serial          Part
                      Number    Number          Number
-------------------------------------------------------------
1/10/6    QSFP+SR4    JH231A    XX57nnnnnn      1990-5555
```

```
switch# show interface dom
-------------------------------------------------------------------------------
Port      Type          Lane  Temp     Voltage   Tx Bias   Rx Power  Tx Power
                              (C)      (V)       (mA)      (dBm)     (dBm)
-------------------------------------------------------------------------------
1/1/1     SFP+SR              47.65    3.31      8.40      -10.96    -2.49
1/1/2     SFP+SR              n/a      n/a       n/a       n/a       n/a
1/1/3     SFP+DAC3            42.10    3.24      n/a       n/a       n/a
1/1/4     unknown             ??       ??        ??        ??        ??
1/1/5     unknown             ??       ??        ??        ??        ??
1/1/6     unknown             ??       ??        ??        ??        ??
1/2/1     QSFP+SR4      1     44.46    3.30      6.12      -10.96    -1.95
                        2     44.46    3.30      6.04      -10.96    -2.00
                        3     44.46    3.30      6.51      -10.96    -2.16
                        4     44.46    3.30      6.19      -10.96    -1.94
1/2/2     unknown             ??       ??        ??        ??        ??
1/2/3     unknown             ??       ??        ??        ??        ??
1/2/4     SFP+SR@             47.65    3.31      8.40      -10.96    -2.49
```

```
switch# show interfaces transceiver f2 detail
Transceiver in F2
   Interface Index    : 162
   Type               : QSFP+SR4
   Model              : JH231A
   Connector Type     : MPO
   Wavelength         : 850nm
   Transfer Distance  : 100m (50um OM3), 150m (50um OM4)
   Diagnostic Support : DOM
   Serial Number      : XX57nnnnnn
 Status
   Temperature : 33.332C
   Voltage     : 3.3208V

            Tx Bias  Rx Power       Tx Power
  Channel#  (mA)     (mW/dbM)       (mW/dbM)
  --------- -------- -------------- --------------
  1         6.904    0.5622, -2.501 0.5822, -2.349
```

```
2         6.706    0.5922, -2.275 0.5856, -2.324
3         6.894    0.6321, -1.992 0.5813, -2.356
4         6.792    0.5111, -2.915 0.5651, -2.479
Current Alarms:
  Channel 1 :
     Tx bias low alarm
     Rx power low warning
  Channel 2 :
     Tx bias low alarm
     Rx power low warning
Current Errors:
  Channel 1 :
     Rx Loss of Signal
  Channel 2 :
     Rx Loss of Signal
  Channel 3 :
     Rx Loss of Signal
  Channel 4 :
     Rx Loss of Signal
```

Unsupported transceiver mode

The term "transceiver" applies collectively to optical transceivers, DAC and AOC cables, and Port Adapters. The "allow-unsupported-transceiver" ("UT-mode") feature provides the flexibility to use non-Aruba/HPE transceiver products. Allowing use of unsupported products in Aruba switches can assist in the initial installation or validation of switching products while you obtain fully supported products.

The term "third-party transceiver" applies to transceiver parts not specifically identified on datasheets or in this guide. Transceivers sold by Aruba for use on other switches/controllers not listed within this guide or sold by HPE for use on HPE Servers or Storage devices are also considered "third-party". This guide indicates the specific transceiver products and minimum software version required for full support. Older generation transceivers may not be fully supported on newer generations of switch models. For questions, contact your Aruba Account Team who can get clarity from Aruba Product Line management.

Using third-party products present these caveats:

- An unsupported transceiver is used by the customer at their own risk.
- Aruba assumes no liability to ensure the proper operation of a product not designed/designated as supported, even from future revisions of AOS-CX firmware. No guarantees are implied that a third-party transceiver will continue to work from release to release.
- Third-party transceiver products are not under the control of Aruba, so Aruba has no knowledge of changes in design and cannot vouch for the quality of the third-party part, nor any assurance that the parts are the same from time to time.

UT-mode is implemented in the following switch series:

- AOS-S 16.02: 5400R, 3810M, 2930M/2930F, 2930, 2920 2540, and 2530 (1G-40G)
  There may be other products that can also run 16.02 switch code, but UT-mode is not extended to those switch series. UT-mode is NOT enabled by default on AOS-S product. You must issue the CLI command for the capability to be allowed.
- AOS-CX 10.05.0001: all AOS-CX Switch Series (1G- to 10G only)
- AOS-CX 10.09.0002: 8360, 8325 and 10000 (1G to 100G) enabled by default

- AOS-CX 10.10.0002: 8400, 6xxxx Switch Series (1G to 100G) enabled by default
- AOS-CX 10.11.0001: 9300-32D (40G to 400G) enabled by default

100Mbps may still be limited on some models to only support Aruba 100FX transceivers)

There is no guarantee that an unsupported transceiver WILL be enabled; however, it can be attempted.

The UT-mode command (particularly on an AOS-Switch) may require an acknowledgment of the support risk before use. An example CLI session may look like this:

```
switch(config)# allow-unsupported-transceiver
Warning: The use of unsupported transceivers, DACs, and AOCs is at your own risk
and may void support and warranty. Please see HPE Warranty terms and conditions.

Do you agree and do you want to continue (y/n)?
```

Supported vs unsupported

Simply because a part is enabled for use, does not mean that it is "supported".

- Supported products are listed and covered by the terms found on the Product Warranty and Support page.
- Supported products warranty can be extended (beyond the typical 3 year warranty) with a Support Contract.
- When it is determined that an issue may involve questionable connectivity using an unsupported transceiver (optics/DACs/AOCs), the Technical Assistance Center (TAC) may ask that you replace the third-party transceiver with a product supported for use with Aruba switches before continuing troubleshooting activities. The support call will be paused until this is done, eliminating the suspicion of the third-party transceiver as a possible issue.
- Even if a product displays a part number as one of the "supported" product part numbers, if the TAC discovers that the part is not a bonafide Aruba or HPE part (that is, a counterfeit or a compatible product), they may elect to halt the support call. Damage to the switch or port would not be covered under warranty.
- The CLI command `show interface transceiver detail` may display unreliable information (for example, DOM). The accuracy of the electronic information in third-party products is unknown to and not verified by Aruba. The information is reported on a best-effort basis. AOS-CX software may or may not use any information provided by a third-party/unsupported transceiver.

This guide details products that are supported by a switch model or module. In some cases, a particular switch model or module may not have the proper hardware or software support to allow a transceiver technology to work at all. This guide denotes that limitation with a comment about "or any type of technology" - even with UT-mode that type of transceiver most likely will not work. For example: J9152A/J9152D (or any type of 10G LRM technology) is not supported in any 2930F model.

Transceiver products (including DACs and AOCs) have identification information within the product - this information is read when the transceiver is inserted into the switch. Aruba switches use this information to validate whether the part is a "supported" product. If not, it is officially "unsupported" and usually shown as such.

Some considerations for third-party products:

- Do they follow the guidelines agreed upon by Multi-Source Agreement (MSA) vendors? MSA specifications dictate many physical characteristics, but not necessarily the electrical designs. For that reason, a transceiver may work in one switch/module, but not in another due to design differences not taken into consideration for fully supported products.
- Many low-cost products do not properly code the MSA required fields for type, distance, media type among other fields, or they may incorrectly identify the part, causing the switch to enable them with settings not appropriate for the type of transceiver inserted.
- Does the part work the way the Aruba switches expect them to? Aruba 'tunes' ports according to the characteristics of selected parts.
- Third-party products may substitute a different vendor part from time to time. The third-party product you buy today may work, but the part you buy a month from now could be a different part. There are no guarantees.

Hewlett Packard Enterprise Company consists of different divisions and product families (often times by recent acquisitions). The Aruba division is one of these many divisions. Transceiver products that are designed to work with specific HPE division products, may not work properly on Aruba switches. For this reason, until the Aruba division has done the development work to certify other HPE division products work on Aruba switches, those products may be identified as third-party, and their complete operation and full support is not absolutely certain.

Glossary of terms

Term	Description
AOC	Active Optical Cable - similar to a DAC, but uses active components similar to short reach optics, and has an applicable fiber cable permanently attached to both ends. AOCs are typically easier to implement since they mimic a short reach transceiver.
AOS/Aruba OS	Aruba Operating System - usually reserved for Wireless LAN products.
AOS-CX	Aruba OS-CX for the CX line of switching product sold by Aruba. First introduced June 2017.
AOS-S or AOS-Switch	Aruba OS-Switch -- operating system name for earlier generation switches sold by Aruba under the former name of HPE Networking (aka "ProCurve Networking").
APC	Angled Physical Contact - ends of the fiber ferule are at an 8° polished angle. These must mate to a matching APC point. APC reduce reflected light loss and are used for demanding applications such as 400G connections. See UPC and the Overview chapter.
ASP	Aruba Support Portal (asp.arubanetworks.com).
Cat5e, Cat6a	Category 5e, Category 6a ethernet twisted pair cable. 1Gigabit speeds requires at least Cat5e cable (more twists per foot compared to Cat5 or Cat5a cable). 10G speeds over twisted pair requires at least Cat6a to reach 100m (the max distance supported by Ethernet over twisted pair).
DAC	Direct Attach Copper - a copper cable assembly, consisting of pluggable connectors on both ends -- these resemble transceivers, but they lack the active electronics of an optical transceiver. The nature of DAC cables is that they present a "wire" from one switch transceiver port to the other transceiver port (switch to switch, or switch to server adapter). DAC cables can be more difficult to ensure end-to-end compatibility

Term	Description
	due to the nature of both devices must be able to recognize the part and properly tune electrical characteristics. Switches may have to adjust tunings depending on how far one port is from the main switching ASIC versus another port that is closer. Server adapters don't neccesarly have this issue with only 1 to 4 ports to deal with.
LC	Lucent Connector -- see Overview chapter -- Connector types.
MMF	Multimode Fiber -- usually used for short runs (less than 400m for 10G and higher).
MPO	Multifiber-Push-On/Off connector -- see Overview chapter -- Connector types (MTP is a brand name of a type of MPO connector -- compatible with each other).
MPO12 or MPO16	An MPO connector with 12 or 16 fibers. See the Overview chapter for more details.
nm	Nanometer -- used to specify the wavelength used in optical transmissions. A nm is one-billionth of a meter or 1/1000,000,000.
NRZ	Non-Return to Zero -- a method of encoding pulses that uses opposite and alternating high and low levels representing a 0(low) or 1(high) and there is no return to a zero between encoding pulses. A signal transmitting at ~25Ghz effectively transmits 25G bits of data. (see PAM4).
PAM4	Pulse Amplitude Modulation - 4 levels -- a method of encoding 4 bits of data by using 4 levels of signaling. A signal transmitting at ~25Ghz effectively transmits 50G bits of data since each pulse is now transmitting 2 bits of data in each clock pulse. (See NRZ).
Q-DD or QSFP-DD	QSFP Double-Density. Double the density/bandwidth of a QSFP56 or 400G. QSFP-DD is backward compatible to accept QSFP56, QSFP28 or QSFP+ pluggables. Depending on the switch port hardware, QSFP-DD.
QSFP+	Quad Small Formfactor Pluggable (Plus) -- term used for 40G type of ports (see QSFP28 and other QSFP). Depending on the switch port hardware, QSFP+ can be split into 4x 10G links using appropriate hardware (parallel optics, Split-DACs or Split-AOCs).
QSFP28	Quad Small Formfactor Pluggable 28 Gigahertz - used by ports that use a 25G channels x 4(quad) resulting in a 100Gb connection. QSFP28 ports are usually backward compatible to accept 40G QSFP+ pluggables. Depending on the switch port hardware, QSFP28 can usually be split into 4x 25G or 4x 10G links using appropriate hardware (parallel optics, Split-DACs or Split-AOCs).
QSFP56	Quad Small Formfactor Pluggable 56 Gigahertz - used by ports that use a 25G channels using PAM4 encoding, resulting in 4 channels of 50G or a 200Gb connection. QSFP56 ports are usually backward compatible to accept QSFP28 100G and QSFP+ 40G QSFP+ pluggables. Depending on the switch port hardware, QSFP56 may split into 2x100G, 4x50G, 2x50G, or 4x 25G or 4x 10G links using appropriate hardware (parallel optics, Split-DACs or Split-AOCs).
SFP	Small Formfactor Pluggable -- Smaller transceiver port, same physical dimensions for 100Mb, 1G, 10G 25G and 50G parts (optics, DAC cables, AOCs).
SMF	Singlemode Fiber -- usually used for longer runs.
TAA	Trade Agreement Act -- USA regulation requirement for product to be manufactured/assembled in countries that meet the US Trade Agreement Act of 1979.
TRX	Alternative abbreviation for Transceiver (shortened version of XCVR).
UPC	Ultra Physical Contact - ends of the fiber ferule ground to a more precise level than

Term	Description
	"PC" See APC and the Overview chapter.
UTM	UT-mode, or Unsupported Transceiver Mode - see Overview chapter.
UTP/STP	Unshielded Twisted Pair / Shielded Twisted Pair - copper cables to support ethernet speeds from 10 Megabits (10M), 100 Megabits (100M), 1000 Megabit or 1 Gigabit(1G) to 10 Gigabits (10G). Cables made up of pairs of wires that are twisted (to reject electromagnetic interference) -- "twisted pairs".
XCVR	Transceiver - a combination of "X" for Transmitter and Receiver.

Always refer to the Datasheet or QuickSpecs for the switch product to see the current list of supported transceivers.

400 Gigabit Ethernet in Aruba systems use QSFP-DD ports. Q-DD ports are available on select models within the CX product family.

Quad Small Form-Factor Pluggable Double-Density products provide up to 400 Gb/s of data bandwidth. QSFP-DD builds on the existing QSFP physical form-factor to provide 50Gb/s bandwidth per channel using 4-level Pulse Amplitude Modulation (PAM4) technology. The Double-Density module and connector design increases the number of high-speed data channels from four to eight for an aggregate bandwidth of 400Gb/s (8x50Gb/s). Aruba uses the abbreviation of Q-DD interchangeably for QSFP-DD.

See more information about QSFP-DD, PAM4 vs NRZ along with MPO16, MPO12 connector types in the Overview chapter.

QSFP-DD, QSFP56, QSFP28, and QSFP+ compatibility

QSFP-DD ports can accommodate QSFP-DD, QSFP56, QSFP28 and QSFP+ products. QSFP-DD products cannot be used in QSFP56, QSFP28, or QSFP+ ports. Although the products may appear to be the same physical size, QSFP-DD products incorporate an extra row of connections for the Double-Density capability that QSFP-based products do not include.

QSFP-DD optical transceiver modules

Models, specifications, and compatibility

Specifications for QSFP-DD optical transceiver module

Product name (SKU)	DOM-Digital Optical Monitoring	Central wl (nm) & encoding type	Fiber mode & Connector Type	Fiber Diameter	Modal Bandwidth	Distance
Aruba 400G Q-DD MPO16 SR8 100m MMF XCVR (R9B41A)	Yes	Eight lanes: 850 PAM4 (50G lanes)	MMF MPO16 (APC)	50/125	2000(OM3) 4700(OM4 & OM5)	70m (229.6 ft) 100m (328.0 ft)
Aruba 400G Q-DD MPO12 eDR4 2km SMF XCVR (R9B42A)	Yes	Four lanes: 1310, PAM4 (50Ghz @ PAM4 = 100Gbps)	SMF MPO12 (APC)	9/125	n/a	2km (1.24 miles)

400G SR8 are not supported for use over OM1/OM2 multimode fiber.
The IEEE standard did not specify any requirements for use over these lower quality multimode fiber.
The MPO16 and MPO12 connectors must be APC (Angled Physical Connector) when connecting to 200G, 400G transceivers to achieve the distance stated above. See the Overview chapter regarding APC vs UPC.

Please refer to the "Aruba-Corning 400G Cable Reference Guide" on the Aruba Support Portal for more split optical cables specifically for use with 400G products. 400G split into different lower speeds (200G or 100G) depending on the 400G optic you are using (400G SR8 or eDR4) and the 100G technology you are using (100G SR4, SR2 or FR1).

Optical specifications for QSFP-DD optical transceiver modules

Product name (SKU)	Optical parameters (dBm)	
	Transmit power	Receive power
Aruba 400G Q-DD MPO16 SR8 100m MMF XCVR (R9B41A)	-6.5 to +4	-8.4 to +4
Aruba 400G Q-DD MPO12 eDR4 2km SMF XCVR (R9B42A)	-3.1 to +4	-7.1 to +4

Compatibility for the QSFP-DD transceiver modules

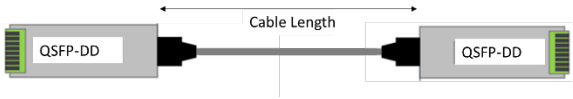
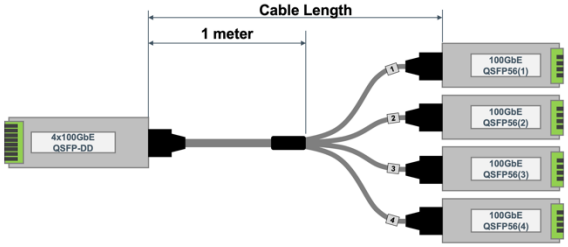
Product name	SKU	Minimum software required	Comments
Aruba 9300 Switch Series	-32D models	10.10.1000	For the 9300-32D model: QSFP-DD(Q-DD) products can not be used in QSFP28(100G) or QSFP+(40G) ports.

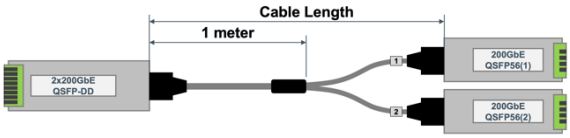
400G Q-DD to Q-DD and Q-DD to split QSFP56 AOC (active optical cables)

Always refer to the Datasheet or QuickSpecs for the switch product to see the current list of supported transceivers.

QSFP-DD (Q-DD) end can NOT be used in QSFP28 nor QSFP+ ports

Refer to the section later in this guide “HPE Servers and Systems Support” for use cases of 400G and 200G split cables when used with validated HPE Server and HPE Storage adapters.

Product name (SKU)	Cable length	Data rate
QDD to QDD Active Optical Cables (400G to 400G)		
Aruba 400G Q-DD to Q-DD 3m AOC (R9B45A)	3m	400G to 400G Active Optical Cables. These cables will only work in a QSFP-DD capable port.
Aruba 400G Q-DD to Q-DD 7m AOC (R9B43A)	7m	
Aruba 400G Q-DD to Q-DD 15m AOC (R9B47A)	15m	
Aruba 400G Q-DD to Q-DD 30m AOC (R9B46A)	30m	
Aruba 400G Q-DD to Q-DD 50m AOC (R9B44A)	50m	
QDD to 4x QSFP56 100G Active Optical Cables The following cables split 1m from the QSFP DD end. The 100G split ends only operate in a QSFP**56** compatible port (not the same as a 100G QSFP28 port		
Aruba 400G Q-DD to 4xQSFP56 100G 3m AOC (R9B50A)	3m	A split 400G port into 4x 100G speed ports. Requires a QSFP**56** port on the far end. See list of validated QSFP56 adapters in the "Support for HPE Servers and Systems" section. These cables will not work in a QSFP28 100G port.
Aruba 400G Q-DD to 4xQSFP56 100G 7m AOC (R9B48A)	7m	
Aruba 400G Q-DD to 4xQSFP56 100G 15m AOC (R9B52A)	15m	
Aruba 400G Q-DD to 4xQSFP56 100G 30m AOC (R9B51A)	30m	
Aruba 400G Q-DD to 4xQSFP56 100G 50m AOC (R9B49A)	50m	

Product name (SKU)	Cable length	Data rate
QDD to 2xQSFP56 200G Active Optical Cables The following cables split 1m from the Q-DD end. The Q-DD end configures the Q-DD port to run in 2x 200G mode. The split ends only operate in a 200G QSFP**56** compatible port.		
Aruba 400G Q-DD to 2xQSFP56 200G 3m AOC (R9B55A)	3m	Split 400G port into 2x 200G speed ports. Requires a QSFP**56** port on the far end. These cables will not work in a QSFP28 100G port.
Aruba 400G Q-DD to 2xQSFP56 200G 7m AOC (R9B53A)	7m	
Aruba 400G Q-DD to 2xQSFP56 200G 15m AOC (R9B57A)	15m	
Aruba 400G Q-DD to 2xQSFP56 200G 30m AOC (R9B56A)	30m	
Aruba 400G Q-DD to 2xQSFP56 200G 50m AOC (R9B54A)	50m	

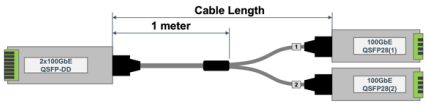
Compatibility for the QSFP-DD transceiver modules

Product name (SKU)	Minimum software required	Comments
Aruba 9300 Switch Series -32D models	QDD-QDD and QDD-split QSFP56 cables: 10.10.1000	Either end can be used in the 9300-32D (Q-DD ports support QSFP28 and Q-DD). QSFP-DD (Q-DD) products can not be used in 100G QSFP28 or in 40G QSFP+ ports.

200G Q-DD to split QSFP28 AOC (active optical cables)

Always refer to the Datasheet or QuickSpecs for the switch product to see the current list of supported transceivers. These 200G Q-DD cables automatically configure a Q-DD port to operate in 4-channel QSFP28 mode. Because of the 2xQSFP28 ends, this limits the Q-DD port to 200G (2 channels of 100G each).

Specifications for QSFP-DD optical transceiver module

Product name (SKU)	Cable length	Data rate
The following cables split 1m from the QSFP-DD end.		
Aruba 200G Q-DD to 2xQSFP28 100G 3m AOC (R9B60A)	3m	200G (QSFP56) to split 2x 100G (QSFP28). 200G QSFP56 end only works in QSFP56 or QSFP-DD/Q-DD ports. QSFP28 end can work in QSFP28, QSFP56, QSFP-DD/Q-DD ports.
Aruba 200G Q-DD to 2xQSFP28 100G 7m AOC (R9B58A)	7m	
Aruba 200G Q-DD to 2xQSFP28 100G 15m AOC (R9B62A)	15m	
Aruba 200G Q-DD to 2xQSFP28 100G 30m AOC (R9B61A)	30m	
Aruba 200G Q-DD to 2xQSFP28 100G 50m AOC (R9B59A)	50m	

Compatibility for the QSFP-DD transceiver modules

Product name (SKU)	Minimum software required	Comments
Aruba 6400 Switch Series	Not supported	
Aruba 8325 Switch Series (QSFP28 ports only)	10.10.1000	Only the QSFP28 end is supported.
Aruba 8360 Switch Series (QSFP28 ports only)	10.10.1000	Only the QSFP28 end is supported.
Aruba 8400 Switch Series	Not supported	
Aruba 9300 Switch Series -32D models	10.10.1000	Either end can be used in the 9300-32D (Q-DD ports support QSFP28 and Q-DD). QSFP-DD (Q-DD) ends of these AOCs can not be used in 100G QSFP28 or in 40G QSFP+ ports.
Aruba 10000 Switch Series	Not supported	QSFP28 ends will list as "unsupported" until a future CX release.

100G QSFP28 optical transceiver modules that use MPO connectors

QSFP28 modules are designed to operate with 4 channels of 25G (the "Q" stands for Quad) resulting in a combined bandwidth of 100G links. QSFP28 ports are also compatible to support QSFP+ which are 4 channels of 10G bandwidth resulting in 40G links. QSFP28 transceivers, DACs, and AOCs can be broken into 4 separate links of 25G or 10G but are determined by the switch hardware behind the QSFP28 port (See Splitting of QSFP+ and QSFP28 ports for more information). QSFP28 ports support products that are typically NRZ (Non-Return to Zero) technology, resulting in up to 4x 25G streams of data. See Overview for information regarding MPO connectors and cable requirements.

QSFP28 optical transceiver module that use MPO connectors

Models, specifications, and compatibility

QSFP28 optical transceiver modules provide a transmission rate of 100 Gbps.

Specifications for QSFP28 optical transceiver modules that use MPO connectors

Product name (SKU)	DOM - Digital Optical Monitoring (4x4 part #)	Central wl (nm)	Fiber mode & connector type	Fiber diameter (µm)	Modal bandwidth (MHz*km)	Transmission distance
Aruba 100G QSFP28 MPO SR4 100m 12-fiber MPO MMF Transceiver (JL309A)	YES (1990-4680, 1990-4678)	850	MMF MPO12 (PC)	50/125	2000 (OM3) 4700 (OM4)	70 m (229.66 ft) 100 m (328.08 ft)

SR4 is not supported for use over MMF OM1 or OM2 fiber. (The IEEE standard does not state a specification.) Use MPO Female connectors (no pins) with MPO transceivers. See Connector types for more information about MPO connectors.

100G SR4 optics can be used by a QSFP28 port that can be "split" into four channels of 25G (available on select switch models/modules on identified ports). See Splitting of QSFP+ and QSFP28 ports for more information.

The following optical breakout cables can be used with 100G SR4 to split into 4x 25G SR compatible streams. These cables are ordered from the HPE Compute and Server or Storage business units and may not be available to Aruba-only resellers.

Fiber breakout cables (from HPE Server products):

- (Server SKU) R1N86A, HPE 12 Fiber MPO to 4xLC MM 3m Cbl
- (Storage SKU) K2Q46A, HPE MPO to 4 x LC 5m Cable
- (Storage SKU) K2Q47A, HPE MPO to 4 x LC 15m Cable

See Splitting of QSFP+ and QSFP28 ports.

Optical specifications for QSFP28 optical transceiver modules that use MPO connectors

Product name (SKU)	Connector	Optical parameters (dBm)	
		Transmit power	Receive power
Aruba 100G QSFP28 MPO SR4 100m 12-fiber MPO MMF Transceiver (JL309A)	MPO (PC polished, 12-fiber) do NOT use APC	-8.4 to +2.4	-10.3 to +2.4

Compatibility for the QSFP28 optical transceiver modules that use MPO connectors

(see Unsupported transceiver mode)

Product name (SKU)	Minimum software required	Comments
Aruba 6400 12p 40G/100G QSFP28 Module (R0X45A) (R0X45C) v2 12p module)	10.04.2000 10.09.1000	Aruba 6400 modules with QSFP28 ports **do not** have Split Mode enabled in AOS-CX as of the 10.11 release.
Aruba 8325 32C models JL636A displayed by CLI (`show system`) ■ JL626A - Port-to-Power model (FB) ■ JL627A - Power-to-Port model (BF)	10.03.0030	100G SR4 can be optically split as of: 10.05.0001
Aruba 8325 48Y8C models JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	10.03.0030	100G SR4 can be optically split as of: 10.05.0001
Aruba 8360 32Y4C models** JL717A/JL717C(v2) displayed by CLI (show system)	v1 models: 10.05.0001 v2 models: 10.09.1000	100G SR4 can be optically split as of: 10.06.0001

Product name (SKU)	Minimum software required	Comments
▪ JL700A/JL700C(v2) - Port-to-Power model (FB) ▪ JL701A/JL701C(v2) - Power-to-Port model (BF)		
Aruba 8360 16Y2C models JL718A/JL718C(v2) displayed by CLI (show system) ▪ JL702A/JL702C(v2) - Port-to-Power model (FB) ▪ JL703A/JL703C(v2) - Power-to-Port model (BF)	v1 models: 10.05.0001 v2 models: 10.09.1000	100G SR4 can be optically split as of: 10.06.0001
Aruba 8360 48Y6C models** JL719C displayed by CLI (`show system`) ▪ JL704C(v2) - Port-to-Power model (FB) ▪ JL705C(v2) - Power-to-Port model (BF)	48Y6C initially released as v2 models: 10.09.0002	100G SR4 can be optically split as of: 10.09.0002 MACSec available on ports 53-54 and via split 10G or 25G on those ports (MACSec not available on ports 49-52)
Aruba 8360 48XT4C models JL720A/JL720C(v2) displayed by CLI (`show system`) ▪ JL706A/JL706C(v2) - Port-to-Power model (FB) ▪ JL707A/JL707C(v2) - Power-to-Port model (BF)	v1 models: 10.05.0001 v2 models: 10.09.1000	Cannot split the SR4 optics into four channels (lack of enough MACs)
Aruba 8360 12C models JL721A/JL721C(v2) displayed by CLI (`show system`) ▪ JL708A/JL708C(v2) - Port-to-Power model (FB) ▪ JL709A/JL709C(v2) - Power-to-Port model (BF)	v1 models: 10.05.0001 v2 models: 10.09.1000	100G SR4 can be optically split as of: 10.06.0001
Aruba 8360 24XF2C models JL722A/JL722C(v2) displayed by CLI (`show system`) ▪ JL710A/JL710C(v2) - Port-to-Power model (FB) ▪ JL711A/JL711C(v2) - Power-to-Port model (BF)	v1 models: 10.05.0001 v2 models: 10.09.1000	100G SR4 can be optically split as of: 10.06.0001
Aruba 8400X Module: 6p 40G/100G QSFP28 Advanced Module (JL366A)	10.00.0005	10.00.0005 provided 100G product support. 10.00.0006 provides additional support for 40G on the JL366A. 8400 JL366A QSFP28 module cannot split 100G SR4 into

Product name (SKU)	Minimum software required	Comments
		25G streams (no 25G MAC).
9300-32D series	10.11.1000	100G SR4 can be optically split
Aruba 10000 48Y6C models R8S96A displayed by CLI (`show system`) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	10.10.0002	100G SR4 can be optically split

**The 48 and 32 x 25G port models of the 8360 switch also support low-density MACsec ports and enable secured connectivity at 10GbE and 25GbE over unsecured domains. The 48 x 25G port model of the 8360 switch also supports MACsec with 2 x40/100G ports.

100G QSFP28 optical transceiver modules that use LC connectors

QSFP28 optical transceiver module that use LC connectors

Models, specifications, and compatibility

QSFP28 optical transceiver modules provide a transmission rate of 100 Gbps and use LC connectors.

The 845972-B21 100G BiD transceiver is a Short Reach 100G product, designed to work over Multi-mode Fiber (MMF) only of OM3 or better quality. It is NOT supported for use over OM1/OM2 quality fiber.

The 845972-B21 100G BiDi transceiver is offered by HPE Compute and ordered using the specified part number (transceiver may not be available to order for Aruba-only partners).

Refer to the HPE Compute transceiver and cable hardware matrix product availability matrix at hpe.com to verify compatibility with HPE network adapters.

Specifications for QSFP28 optical transceiver modules that use LC connectors

Product name (SKU)	DOM - Digital Optical Monitoring (4x4 part #)	Central wl (nm)	Fiber mode	Fiber diameter (µm)	Transmission distance
HPE 100Gb QSFP28 Bidirectional XCVR (845972-B21) an HPE Server SKU#	YES (part # n/a)	2 lanes on each fiber: 850 and 910	MMF	50u OM3 50u OM4 50u OM5	70m (229.6 ft) 100m (328.1 ft) 150m (492.1 ft)
Aruba 100G QSFP28 LC	YES (1990-4644,	Four lanes: 1264.5 to 1277.5	SMF	9/125	2km (1.24 miles)

Product name (SKU)	DOM - Digital Optical Monitoring (4x4 part #)	Central wl (nm)	Fiber mode	Fiber diameter (µm)	Transmission distance
CWDM4 2km SMF Transceiver (R0Z30A)	1990-4643)	1284.5 to 1297.5 1304.5 to 1317.5 1324.5 to 1337.5			
Aruba 100 QSFP28 LC FR1 2km SMF Transceiver (R9B63A)	1990-4825 1990-4826	2 lanes on each 1310 (PAM4)	SMF	9/125	2km (1.24 miles)
Aruba 100G QSFP28 LC LR4 10km SMF 2-strand Transceiver (JL310A)	(1990-4681)	Four lanes: 1294.53 to 1296.59 1299.02 to 1301.09 1303.54 to 1305.63 1308.09 to 1310.19	SMF	9/125	10km (6.21 miles)
Aruba 100G QSFP28 LC ER4L 40km SMF Transceiver (JL743A)	YES (1254-5112)	Four lanes: 1294.53 to 1296.59 1299.02 to 1301.09 1303.54 to 1305.63 1308.09 to 1310.19	SMF	9/125	40km (24.86 miles) Requires FEC

Specifications for QSFP28 optical transceiver modules that use LC connectors

(see Unsupported transceiver mode)

Product name (SKU)	Connector	Optical parameters (dBm)	
		Transmit power	Receive power
HPE 100Gb QSFP28 Bidirectional XCVR (845972-B21)	LC	-6.0 to 4.0 per lane	-7.9 to 4.0 per lane
Aruba 100G QSFP28 LC CWDM4 2km SMF Transceiver (R0Z30A)	LC	-6.5 to 2.5 per lane	-11.5 to 2.5 per lane
Aruba 100 QSFP28 LC FR1 2km SMF Transceiver (R9B63A)	LC	-6.0 to 4.0 per lane	-7.1 to 4.0 per lane
Aruba 100G QSFP28 LC LR4 10km SMF 2-strand Transceiver (JL310A)	LC	-4.3 to +4.5 per lane	-10.6 to +4.5 per lane
Aruba 100G QSFP28 LC ER4L 40km SMF Transceiver (JL743A)	LC	-2.5 to 6.5 per lane	-20.5 to -3.5 per lane (use -10dBm attenuator for short SMF cables)

Compatibility for the QSFP28 optical transceiver modules that use LC connectors

Product name (SKU)	Minimum software required	Comments
Aruba 6400 Module: 12p 40G/100G QSFP28 Module R0X45A/R0X45C	845972-B21 (100G BiDi): 10.08.0010 R0Z30A (CWDM4 2km): 10.07.0005 JL310A (LR4 10km): 10.04.2000 JL743A (ER4L 40km): Not supported R9B63A FR1 2km: Not supported	The minimum software release for the R0X45C module is 10.09.1000.
Aruba 8325 32C models (JL626A/JL627A)	845972-B21 (100G BiDi): 10.08.0010 R0Z30A (CWDM4 2km): 10.03.0030 JL310A (LR4 10km): 10.03.0030 JL743A (ER4L 40km): 10.04.3000; ports 29-32 only R9B63A FR1 2km: 10.10.1000	JL743A (100G ER4L) is limited to quantity 4 and only allowed in ports 29-32 (last 4 ports) to limit possible heat issues.
Aruba 8325 48Y8C models (JL624A/JL625A)	845972-B21 (100G BiDi): 10.08.0010 R0Z30A (CWDM4 2km): 10.03.0030 JL310A (LR4 10km): 10.03.0030 JL743A (ER4L 40km): 10.04.3000; ports 49, 51, 53, and 55 only R9B63A FR1 2km: 10.10.1000	JL743A (100G ER4L) is limited to quantity 4 and only allowed in ports 49, 51, 53, and 55 (top row) to limit possible heat issues.
Aruba 8360 v1 and v2 models (48Y6C noted below)	845972-B21 (100G BiDi): 10.08.0010 R0Z30A (CWDM4 2km): 10.07.0005 JL310A (LR4 10km): 10.06.0001 JL743A (ER4L 40km): 10.06.0140 and 10.07.0004 v2 models: 10.09.1000 (except 48Y6C noted below) R9B63A FR1 2km: 10.10.1000	
Aruba 8360 48Y6C models JL719C displayed by CLI (`show system`) ■ JL704C(v2) - Port-to-Power model (FB) ■ JL705C(v2) - Power-to-Port model (BF)	845972-B21(100G BiDi): 10.09.0002 R0Z30A (CWDM4 2km): 10.09.0002 JL310A (LR4 10km): 10.09.0002 JL743A (ER4L 40km): 10.09.0002 R9B63A FR1 2km: 10.10.1000	Ports 49-54 Note: MACSec available on ports 53-54
Aruba 8400X Module: 6p 40G/100G QSFP28 Advanced Module (JL366A)	845972-B21 (100G BiDi): 10.08.0010 R0Z30A (CWDM4 2km): 10.06.0001 JL310A (LR4 10km): 10.00.0005 JL743A (ER4L 40km): 10.04.3000 R9B63A FR1 2km: Not supported	10.00.0005 provides support for 100G products. 10.00.0006 provides additional support for 40G on the JL366A.
9300-32D series	845972-B2: not supported All others in this chapter: 10.11.1000	
Aruba 10000 48Y6C models R8S96A displayed by CLI (`show system`) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	845972-B21(100G BiDi):10.10.0002 R0Z30A(CWDM4 2km): 10.10.0002 JL310A(LR4 10km): 10.10.0002 JL743A (ER4L 40km): not supported R9B63A FR1 2km: Not supported	See Unsupported transceiver mode.

100G QSFP28 DAC and breakout DAC (copper cables)

Models, specifications, and compatibility

Specifications for QSFP28 copper cables

Product name (SKU)	Cable length	Data rate	Description
Aruba 100G QSFP28 to QSFP28 1m Direct Attach Copper Cable (R0Z25A)	1 m (3.28 ft)	100 Gbps	Used for interconnecting 100-Gigabit QSFP28 ports
Aruba 100G QSFP28 to QSFP28 3m Direct Attach Copper Cable (JL307A)	3 m (9.8 ft)	100 Gbps	Used for interconnecting 100-Gigabit QSFP28 ports
Aruba 100G QSFP28 to QSFP28 5m Direct Attach Copper Cable (R0Z26A)	5 m (16.4 ft)	100 Gbps	Used for interconnecting 100-Gigabit QSFP28 ports

The following breakout DAC cable is offered by HPE Servers and Systems and ordered using the specified part number (these cables may not be available to order for Aruba-only partners). Refer to the HPE Compute transceiver and cable hardware matrix product availability matrix at hpe.com.

AOS-CX releases 10.05 and later support a `split` command configured on 100G QSFP28 ports.

See Splitting of QSFP+ and QSFP28 ports for more information.

For the AOS-CX 10.05 and later releases, the configuration requires a save and reboot of the switch or module. See the *Monitoring Guide* for details on the `split` command.

Specifications for HPE QSFP28 breakout DAC cables (from HPE Server products)

Product name (SKU)	Cable length	Data rate
HPE 100Gb QSFP28 to 4x25Gb SFP28 3m DAC (845416-B21)	3m (9.84 ft)	100G to 4 x 25G

Compatibility for the QSFP28 DAC and breakout DAC copper cables
(see Unsupported transceiver mode)

* HPE Server product - may not be available to Aruba resellers

Product name (SKU)	Minimum software required	Comments
Aruba 6300M 48G 4SFP56 Swch (JL663A) Aruba 6300M 48G Pwr2Prt 2F 1PS Bdl (JL762A) 6300M 24G SFP+ 2p50 2p25G (R8S92A)	*845416-B21: 10.06.0120 / 10.07.0020 JL663A and JL762A: 10.06.0120 / 10.07.0020 (SFP28 ends) *845416-B21: 10.10.1000 only in ports 25-28 (only SFP28 ends)	The SFP28 ends of 845416-B21 are supported for use in the SFP56 ports of the models specified here (NOT on the other models).
Aruba 6400 12p 40G/100G QSFP28 Module (R0X45A/R0X45C)	JL307A: 10.04.2000 R0Z25A/R0Z26A: 10.08.0001 *845416-B21: Not supported	845416: 6400 does not yet have split port capability.The minimum software release for the R0X45C module is 10.09.1000
Aruba 8325 32C models JL636A displayed by CLI (`show system`) ■ JL626A - Port-to-Power model (FB) ■ JL627A - Power-to-Port model (BF)	JL307A: 10.03.0030 R0Z25A/R0Z26A: 10.04.2000 *845416-B21: 10.05.0001 (Requires `split` command)	All 32 QSFP28 ports can be 'split' 10.05.0001: only the QSFP28 end is supported in the switch. SFP28 end is not supported at this time
Aruba 8325 48Y8C models JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	JL307A: 10.03.0030 R0Z25A/R0Z26A: 10.04.2000 *845416-B21: 10.05.0001 (Requires `split` command)	All 8 QSFP28 ports can be 'split' 10.05.0001: only QSFP28 end is supported in the switch. SFP28 end is not supported at this time
8360 32Y4C models JL717A displayed by CLI (`show system`) ■ JL700A Port-to-Power model ■ JL701A Power-to-Port model	JL307A, R0Z25A/R0Z26A: 10.06.0001 *845416-B21: 10.06.0001 (Requires split command) v2 models require: 10.09.1000	33-36 (all QSFP28 ports can be split) 10.06.0001: only the QSFP28 end is supported in the switch. SFP28 end is not supported at this time
8360 16Y2C models JL718A displayed by CLI (`show system`) ■ JL702A/JL702C(v2) Port-to-Power model ■ JL703A/JL703C(v2) Power-to-Port model	JL307A, R0Z25A/R0Z26A: 10.06.0001 *845416-B21: 10.06.0001 (Requires split command) v2 models require: 10.09.1000	17-18 (all QSFP28 ports can be split) 10.06.0001: only the QSFP28 end is supported in the switch. SFP28 end is not supported at this time
Aruba 8360 48Y6C models JL719C(v2) displayed by CLI (`show system`) ■ JL704C(v2) - Port-to-Power model (FB) ■ JL705C(v2) - Power-to-Port model (BF)	(introduced as a v2 model) L307A, R0Z25A/R0Z26A: 10.09.0002 *845416-B21: 10.09.0002 (Requires split command)	Ports 49-54 Note: MACSec available on ports 53-54
8360 48XT4C models JL720A displayed by CLI (`show system`)	JL307A, R0Z25A/R0Z26A: 10.06.0001 *845416-B21: 10.06.0001	Hardware does not support splitting of any of the QSFP28 ports. (There are not enough

Product name (SKU)	Minimum software required	Comments
▪ JL706A/JL706C(v2) Port-to-Power model ▪ JL707A/JL707C(v2) Power-to-Port model	(Requires split command) v2 models require: 10.09.1000	MACs to support split QSFP28 ports.)
Aruba 8360-12C models JL721A displayed by CLI (`show system`) ▪ JL708A/JL708C(v2) Port-to-Power model ▪ JL709A/JL709C(v2) Power-to-Port model	JL307A, R0Z25A/R0Z26A: 10.06.0001 *845416-B21: 10.06.0001 (Requires split command) v2 models require: 10.09.1000	1-12 (all QSFP28 ports can be split) There are no SFP28 ports on this model
8360 24XF2C models JL722A displayed by CLI (`show system`) ▪ JL710A/JL710C(v2) Port-to-Power model ▪ JL711A/JL711C(v2) Power-to-Port model	JL307A, R0Z25A/R0Z26A: 10.06.0001 *845416-B21: 10.06.0001 (Requires split command) v2 models require: 10.09.1000	25-26 (all QSFP28 ports can be split) There are no SFP28 ports on this model (24 ports of 1G/10G SFP and 2 ports of QSFP28)
Aruba 8400X Module: 6p 40G/100G QSFP28 Advanced Module (JL366A)	JL307A: 10.00.0005 R0Z25A/R0Z26A: 10.06.0001 *845416-B21: Not supported nor any type of 100G Split Cable (or Split SR4 optic)	8400 JL366A 6p QSFP28 module cannot support splitting 100G ports into 4x25G speed (no 25G MAC available on the JL366A module)
Aruba 9300-32D series	JL307A, R0Z25A/R0Z26A: 10.11.1000 *845416-B21: not supported	
Aruba 10000 48Y6C models R8S96A displayed by CLI (`show system`) ▪ R8P13A - 48Y6C FB bundle ▪ R8P14A - 48Y6C BF bundle	JL307A, R0Z25A/R0Z26A: 10.10.0002 *845416-B21: Not supported	

100G QSFP28 AOC and breakout AOC (active optical cables)

Models, specifications, and compatibility

Specifications for QSFP28 100G active optical cables

Product name (SKU)	Cable length	Data rate
Aruba 100G QSFP28 to QSFP28 2m AOC (JL856A)	2 m (6.6 ft)	100 Gbps
Aruba 100G QSFP28 to QSFP28 7m AOC (R0Z27A)	7 m (22.96 ft)	100 Gbps
Aruba 100G QSFP28 to QSFP28 15m AOC (R0Z28A)	15 m (49.21ft)	100 Gbps
Aruba 100G QSFP28 to QSFP28 30m AOC (R0Z29A)	30 m (98.42 ft)	100 Gbps

The following 100G breakout AOC cables are offered by HPE Servers and Systems and ordered using the specified part number (these cables may not be available to order for Aruba-only partners). Refer to the HPE Compute transceiver and cable hardware matrix product availability matrix at hpe.com.

For the AOS-CX 10.05 and later releases, the configuration requires a save and reboot of the switch or module. See the *Monitoring Guide* for details on the `split` command.

Specifications for HPE QSFP28 breakout 100G active optical cables (from HPE Server products)

Product name (SKU)	Cable length	Data rate
HPE QSFP28 to 4x25G SFP28 7m AOC (845420-B21)	7 m (22.96 ft)	4 x 25Gbps
HPE QSFP28 to 4x25G SFP28 15m AOC (845424-B21)	15 m (49.21ft)	4 x 25Gbps

Compatibility for the QSFP28 100G active optical cables
(see Unsupported transceiver mode)

* HPE Server product - may not be available to Aruba resellers

Product name (SKU)	Minimum software required (R0Z27A, R0Z28A, R0Z29A, 845420-B21, 845424-B21)	Comments
Aruba 6300 (select models) ■ JL658A - Aruba 6300M 24SFP+ 4SFP56 Swch ■ JL663A - Aruba 6300M 48G 4SFP56 Swch ■ JL762A - Aruba 6300M 48G Pwr2Prt 2F 1PS Bd ■ R8S92A - Aruba 6300M 24G SFP+ 2p50 2p25G	*845420-B21, 845424-B21: 10.08.0001 *845420-B21, 845424-B21: 10.10.1000 only in ports 25-28	Support for the 25G ends of the split AOC from HPE Compute parts
Aruba 6400 Module: 12p 40G/100G QSFP28 Module (R0X45A/R0X45C)	Not supported	
Aruba 8325 48Y8C models JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	JL856A: 10.08.0001 R0Z27A, R0Z28A, R0Z29A: 10.06.0001 *845420-B21, 845424-B21: 10.06.0001 (Requires `split` command)	845420-B21, 845424-B21: either QSFP28 or SFP28 ends are supported for use The 8325 requires configuration of **interface groups** (groups of 12 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
Aruba 8325 32C models JL636A displayed by CLI (`show system`) ■ JL626A - Port-to-Power model (FB) ■ JL627A - Power-to-Port model (BF)	JL856A: 10.08.0001 R0Z27A, R0Z28A, R0Z29A: 10.06.0001 *845420-B21, 845424-B21: 10.06.0001 (Requires `split` command)	845420-B21, 845424-B21: only QSFP28 supported for use in this 8325 model
Aruba 8360 series	JL856A: 10.08.0001 R0Z27A, R0Z28A, R0Z29A: 10.07.0005 *845420-B21, 845424-B21: 10.07.0005 (Requires `split` command)	845420-B21, 845424-B21: NOT supported on 8360 48XT4C models (v1 or v2) no support for splitting ports; not enough MACs available.
Aruba 8360 48Y6C models	10.09.0002	
Aruba 8400X Module: 6p 40G/100G QSFP28 Advanced Module (JL366A)	R0Z27A, R0Z28A, R0Z29A: 10.06.0001 *845420-B21, 845424-B21: Only the 25G end of these 4x25G AOC are supported with 10.06.0001	845420-B21, 845424-B21: Only the SFP28 ends are supported for use with 10.06.0001

Product name (SKU)	Minimum software required (R0Z27A, R0Z28A, R0Z29A, 845420-B21, 845424-B21)	Comments
Aruba 9300-32D series	JL856A, R0Z27A, R0Z28A, R0Z29A: 10.11.1000 *845420-B21, 845424-B21: not supported	
Aruba 10000 48Y6C models R8S96A displayed by CLI (`show system`) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	R0Z27A, R0Z28A, R0Z29A: 10.10.0002 *845420-B21: Not supported *845424-B21: 10.09.0010 (Requires `split` command)	845420-B21: 7m split cable not supported. 845424-B21: 15m split cable supported

QSFP28 to SFP28 adapter support

Figure 1 *QSFP28 to SFP28 adapter*

Models, specifications, and compatibility

The following QSA28 to SFP28 adapter is offered by HPE Servers and Systems and ordered using the specified part number (this product may not be available to order by Aruba-only partners).

HPE QSFP28 to SFP28 Adapter (845970-B21)	When used in a QSFP28 port allows for use of 25G or 10G optics When used in a QSFP+ port only use of 10G optics

The 845970-B21 is not the same as the 655874-B21 or 720193-B21 which are 40G-only adapters (cannot work in QSFP28 ports). DACs and 10GBASE-T transceivers are NOT supported through the QSA28 adapter; 3rd party transceivers - may work, but remain listed as unsupported.

Compatibility for the QSA28 adapter

* HPE Server product - may not be available to Aruba resellers

Product name (SKU shown by `show system` command)	Minimum software required: Limited to port information	Comments
Aruba 6400 Module: ■ 12p 40G/100G QSFP28 Module (R0X45A/(R0X45C)	Not supported	
Aruba 8320 series ■ 48p SFP & 6p QSFP+: JL479A ■ 32p QSFP+: JL597A ■ 48p 10GBT & 6p QSFP+: JL581A	Min Software: 10.07.0004 ■ 49-54 ■ 1-32 ■ 49-54	Only 10G optics supported No DAC support UT-mode optics may work (unsupported)
Aruba 8325 series ■ 48Y8C models: JL635A (bundles: JL624A/JL625A) ■ 32C models: JL636A (bundles: JL626A/JL627A)	Min Software: 10.07.0010 ■ 49-56 ■ 1-32	Use of 10G or 25G optic will automatically be detected. No DAC support UT-mode optics may work (unsupported)
Aruba 8360 series (note v1 vs v2 Min Software required) ■ 32Y4C models: JL717A/JL717C(v2) ■ 16Y2C models: JL718A/JL718C(v2) ■ 48XT4C models: JL720A/JL720C(v2 ■ 12C models: JL721A/JL721C(v2) ■ 24XF2C models: JL722A/JL722C (v2) ■ 48Y6C models: JL719C(v2)	Min Software as noted below: v1:10.07.0004 v2:10.09.1000 ■ 34-35 ■ 17 ■ 50-51 ■ 7-12 ■ 25 ■ 49-50, 52-53 (10.09.0002) (JL719C only introduced as a v2 model)	The QSA28 is not supported for use in ports not listed (hardware or ASIC limitations). Use of 10G or 25G optic will automatically be detected. No configuration of the port is needed. No DAC support UT-mode optics may work (unsupported)
Aruba 8400 Module: ■ Aruba 8400X 6p 40G/100G QSFP28 Adv Module (JL366A)	Not supported	
Aruba 9300-32D series	Not supported	
Aruba 10000 48Y6C models ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	Min Software: 10.10.0002 ■ 49-54 ■ 49-54	Use of 10G or 25G optic will automatically be detected. No DAC support UT-mode optics may work (unsupported)

40G QSFP+ optical transceiver modules that use MPO connectors

Models, specifications, and compatibility

QSFP+ optical transceiver modules provide a transmission rate of 40 Gbps and use Multifiber Push On (MPO) connectors.

40G SR4 and eSR4 are not supported for use over MMF OM1 or OM2 quality fiber. (The IEEE standard does not state a specification). Use MPO female connectors for use with the MPO transceivers. See Overview for information regarding MPO connectors and cable requirements.

Specifications for QSFP+ optical transceiver modules that use MPO connectors

Product name (SKU)	DOM - Digital Optical Monitoring (4x4 part #)	Central wl (nm)	Fiber mode	Fiber diameter (µm)	Modal bandwidth (MHz*km)	Transmission distance
HPE X142 40G QSFP+ MPO SR4 Transceiver (JH231A)	YES (1990-4554 1990-4557 1990-4737)	850	MMF	50/125	2000 (OM3) 4700 (OM4)	100 m (328.08 ft) 150 m (492.12 ft)
HPE X142 40G QSFP+ MPO eSR4 300M XCVR (JH233A)	YES (1990-4555)	850	MMF	50/125	2000 (OM3) 4700 (OM4)	300 m (984.25 ft) 400 m (1312.34 ft)

40G SR4/eSR4 optics can be used by a QSFP28/QSFP+ port that can be "split" into four channels of 10G (available on select switch models/modules on identified ports).

40G SR4/eSR4 are not supported for use over MMF OM1/OM2 quality fiber.

The IEEE standard did not specify any requirements for use over these types.

The following optical breakout cables can be used with 40G SR4/eSR4 to split into 4x 10G SR compatible streams. These cables are ordered from the HPE Compute and Server or Storage business units and may not be available to Aruba-only resellers.

Fiber breakout cables (from HPE Server products):

- (Server SKU) R1N86A, HPE 12 Fiber MPO to 4xLC MM 3m Cbl
- (Storage SKU) K2Q46A, HPE MPO to 4 x LC 5m Cable
- (Storage SKU) K2Q47A, HPE MPO to 4 x LC 15m Cable

AOS-CX release 10.05 and latersupports a `split` command configured on 100G QSFP28 or 40G QSFP+ ports. See Splitting of QSFP+ and QSFP28 ports.

Optical specifications for QSFP+ optical transceiver modules that use MPO connectors

Product name (SKU)	Connector	Optical parameters (dBm)	
		Transmit power	Receive power
HPE X142 40G QSFP+ MPO SR4 Transceiver (JH231A)	MPO (PC polished, 12-fiber)	–7.6 to 0	–9.5 to +2.4
HPE X142 40G QSFP+ MPO eSR4 300M XCVR (JH233A)	MPO (PC polished, 12-fiber)	–7.6 to 0	–9.9 to +2.4

Compatibility for the QSFP+ optical transceiver modules that use MPO connectors

(see Unsupported transceiver mode)

Product name (SKU)	Minimum software required	Comments
Aruba 3810M/2930M 1QSFP+ 40GbE Module (JL078A)	All	No optical split capability on AOS-Switch series: 3810M, 2930M, 5400R
Aruba 3810M 24G 1-slot Switch 2QSFP+ 40GbE Module (JL079A)	All	
Aruba 20p PoE+ / 1p 40GbE QSFP+ v3 zl2 Module (J9992A)	KB.15.17	
Aruba 2p 40GbE QSFP+ v3 zl2 Module (J9996A)	KB.15.17	
Aruba 6400 12p 40G/100G QSFP28 Module R0X45A Module R0X45C	10.04.2000 10.09.1000	No support for splitting of SR4 optics. Aruba 6400 modules with QSFP28 ports **do not** have Split Mode enabled in AOS-CX as of the 10.10 release.
Aruba 8320 48p SFP/SFP+ & 6p 40G QSFP+ Switch (JL479A)	10.00.0006	40G SR4/eSR4 can be optically split as of: 10.05.0001 JL579A limits to only ports 5-28 See Splitting of QSFP+ and QSFP28 ports.
Aruba 8320 32p 40G QSFP+ Switch (JL579A)	10.00.0012	
Aruba 8320 48p G /6p 40G QSFP+ Switch (JL581A)	10.00.0012	

Product name (SKU)	Minimum software required	Comments
Aruba 8325 32C models JL636A displayed by CLI (`show system`) ■ JL626A - Port-to-Power model (FB) ■ JL627A - Power-to-Port model (BF)	10.03.0030	40G SR4/eSR4 can be optically split: 10.05.0001 See Splitting of QSFP+ and QSFP28 ports.
Aruba 8325 48Y8C models JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	10.03.0030	40G SR4/eSR4 can be optically split: 10.05.0001 See Splitting of QSFP+ and QSFP28 ports.
8360 32Y4C models JL717A/JL717C(v2) displayed by CLI (`show system`) ■ JL700A/JL701C(v2) Port-to-Power model ■ JL701A/JL701C Power-to-Port model	JH231A, JH233A: 10.06.0001	40G SR4/eSR4 can be optically split as of: 10.06.0001 See Splitting of QSFP+ and QSFP28 ports.
8360 16Y2C models JL718A displayed by CLI (`show system`) ■ JL702A/JL702C(v2) Port-to-Power model ■ JL703A/JL703C(v2) Power-to-Port model	JH231A, JH233A: 10.06.0001	40G SR4/eSR4 can be optically split as of: 10.06.0001 See Splitting of QSFP+ and QSFP28 ports.
8360 48XT4C model JL720A displayed by CLI (`show system`) ■ JL706A/JL706C(v2) Port-to-Power model ■ JL707A/JL707C(v2) Power-to-Port model	JH231A, JH233A: 10.06.0001	8360 48XT4C does not support split ports
8360 12C models JL721A displayed by CLI (`show system`) ■ JL708A/JL708C(v2) Port-to-Power model ■ JL709A/JL709C(v2) Power-to-Port model	JH231A, JH233A: 10.06.0001	40G SR4/eSR4 can be optically split as of: 10.06.0001 See Splitting of QSFP+ and QSFP28 ports.
8360 24XF2C models	JH231A, JH233A: 10.06.0001	40G SR4/eSR4 can be optically split as of:

Product name (SKU)	Minimum software required	Comments
JL722A displayed by CLI (`show system`) ■ JL710A/JL710C(v2) Port-to-Power model ■ JL711A/JL711C(v2) Power-to-Port model		10.06.0001 See Splitting of QSFP+ and QSFP28 ports.
8360 48Y6C models JL719C displayed by CLI (`show system`) ■ JL704C(v2) Port-to-Power model (FB) ■ JL705C(v2) Power-to-Port model (BF)	JH231A, JH233A: 10.09.0002	40G SR4/eSR4 can be optically split See Splitting of QSFP+ and QSFP28 ports. MACSec available on ports 53-54
Aruba 8400X Modules: 8p 40G QSFP+ Advanced Module (JL365A)	All	40G SR4/eSR4 can be optically split: 10.05.0001
Aruba 8400X Modules: 6p 40G/100G QSFP28 Advanced Module (JL366A)	10.00.0006	10.00.0005 supports 100G products. 10.00.0006 provides additional support for 40G on the JL366A. JL366A module: 40G SR4/eSR4 can be optically split: 10.05.0001 See Splitting of QSFP+ and QSFP28 ports.
Aruba 9300-32D series	JH231A, JH233A: 10.11.1000	
Aruba 10000 48Y6C models R8S96A displayed by CLI (`show system`) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	JH231A, JH233A: 10.10.0002	

40G QSFP+ optical transceiver modules that use LC connectors

Models, specifications, and compatibility

QSFP+ optical transceiver modules provide a transmission rate of 40 Gbps and use LC connectors.

Specifications for QSFP+ transceiver modules that use LC connectors

Product name (SKU)	DOM - Digital Optical Monitoring (4x4)	Central wl (nm)	Fiber mode	Fiber diameter (µm)	Modal bandwidth (MHz*km)	Transmission distance
Aruba 40G QSFP+ LC BiDi 150m MMF XCVR (JL308A)	YES (1990-4679)	Dual 20Gb/s: ▪ 850 ▪ 900	MMF	50/125	2000 (OM3) 4700 (OM4)	100m (328.08 ft) 150m (492.12 ft) Not supported on OM1/OM2.
HPE X142 40G QSFP+ LC LR4 SM Transceiver (JH232A)	YES (1990-4556)	Four lanes: ▪ 1271 ▪ 1291 ▪ 1311 ▪ 1331	SMF	9/125	N/A	10km (6.21 miles)
Aruba 40G QSFP+ LC ER4 40km SMF Transceiver (Q9G82A)	YES (1990-4734)	Four lanes: ▪ 1271 ▪ 1291 ▪ 1311 ▪ 1331	SMF	9/125	N/A	30km (18.6 miles) over SMF for No-FEC 40km (24.86 miles) requires FEC (Forward Error Correction) on both ends of the engineered link using this optic to achieve this maximum distance

Optical specifications for QSFP+ transceiver modules that use LC connectors

Product name (SKU)	Optical parameters (dBm)	
	Transmit power	Receive power
Aruba 40G QSFP+ LC BiDi 150m MMF Transceiver (JL308A)	-4 to +5	-6 to +5
HPE X142 40G QSFP+ LC LR4 SM Transceiver (JH232A)	-7 to +2.3 per lane	-13.7 to +2.3 per

Product name (SKU)	Optical parameters (dBm)	
	Transmit power	Receive power
		lane
Aruba 40G QSFP+ LC ER4 40km SMF XCVR (Q9G82A)	-2.7 to 4.5 dBm	-21.2 to -4.5 dBm (Use -9dBm attenuator for short SMF cables)

Compatibility for the QSFP+ optical transceiver modules that use LC connectors

(see Unsupported transceiver mode)

Product name (SKU)	Minimum software required	Comments
Aruba 3810M/2930M 1QSFP+ 40GbE Module (JL078A)	JH232A: all JL308A: KB.16.04.0008 or WC.16.04.0008 Q9G82A: Not supported	
Aruba 3810M 2QSFP+ 40GbE Module (JL079A)	JH232A: all JL308A: KB.16.04.0008 Q9G82A: Not supported	The JL079A 2p 40G module is not supported in the 2930M series nor on the 3810M 16SFP+ 2-slot switch (JL075A).
Aruba 20p PoE+ / 1p 40GbE QSFP+ v3 zl2 Module (J9992A)	JH232A: KB.15.17 JL308A: KB.16.04.0008 Q9G82A: Not supported	
Aruba 2p 40GbE QSFP+ v3 zl2 Module (J9996A)	JH232A: KB.15.17 JL308A: KB.16.04.0008 Q9G82A: Not supported	The minimum software release for the R0X45C is 10.09.1000.
Aruba 6400 12p 40G/100G QSFP28 Module (R0X45A/R0X45C)	JH232A/JL308A/Q9G82A: 10.04.2000	
Aruba 8320 48p SFP/SFP+ & 6p 40G QSFP+ Switch (JL479A)	JH232A: 10.00.0006 JL308A: 10.00.0006 Q9G82A: 10.00.0018	
Aruba 8320 32p 40G QSFP+ Switch (JL579A)	JH232A: 10.00.0012 JL308A: 10.00.0012 Q9G82A: 10.00.0018	
Aruba 8320 48p G /6p 40G Q SFP+ Switch (JL581A)	JH232A: 10.00.0012 JL308A: 10.00.0012 Q9G82A: 10.00.0018	
Aruba 8325 32C models JL636A displayed by CLI (`show system`) ■ JL626A - Port-to-Power model (FB) ■ JL627A - Power-to-Port model (BF)	JH232A, JL308A, Q9G82A: 10.03.0030	
Aruba 8325 48Y8C models JL635A displayed by CLI (`show system`)	JH232A, JL308A, Q9G82A: 10.03.0030	

Product name (SKU)	Minimum software required	Comments
▪ JL624A - Port-to-Power model (FB) ▪ JL625A - Power-to-Port model (BF)		
Aruba 8360 series	JH232A, JL308A, Q9G82A: 10.06.0001	
Aruba 8360 48Y6C models: JL719C	JH232A, JL308A, Q9G82A: 10.09.0002	
Aruba 8400X Modules: 8p 40G QSFP+ Advanced Module (JL365A)	JH232A: all JL308A: all Q9G82A: 10.00.0018	
Aruba 8400X Modules: 6p 40G/100G QSFP28 Advanced Module (JL366A)	JH232A: 10.00.0006 JL308A: 10.00.0006 Q9G82A: 10.00.0018	10.00.0005 provides support for 100G products. 10.00.0006 provides additional support for 40G on the JL366A.
Aruba 9300-32D series	JH232A, JL308A, Q9G82A: 10.11.1000	
Aruba 10000 48Y6C models R8S96A displayed by CLI (`show system`) ▪ R8P13A - 48Y6C FB bundle ▪ R8P14A - 48Y6C BF bundle	JH232A(LR4): 10.10.0002 JL308A(BiDi): 10.09.0010 Q8G82A(ER4): 10.10.0002	

40G QSFP+ DAC and breakout DAC (copper cables)

Direct Attach over Copper (DAC) cables have a minimum bend radius of typically 10x the diameter of the cable (approximately 2.75" [70mm] bend radius). Handle DAC cables carefully to ensure that you do not crimp or bend the cable; otherwise, you risk damaging the cable.

Models, specifications, and compatibility

Specifications for QSFP+ copper cables

Product name (SKU)	Cable length	Data rate
HPE X242 40G QSFP+ to QSFP+ 1m DAC Cable (JH234A)	1 m (3.28 ft)	40 Gbps
HPE X242 40G QSFP+ to QSFP+ 3m DAC Cable (JH235A)	3 m (9.84 ft)	
HPE X242 40G QSFP+ to QSFP+ 5m DAC Cable (JH236A)	5 m (16.40 ft)	

The following DAC breakout cable is offered by HPE Servers and Systems and ordered using the specified part number (these cables may not be available to order for Aruba-only partners). Refer to the HPE Compute transceiver and cable hardware matrix product availability matrix at hpe.com.

AOS-CX releases 10.05 and later support a `split` command configured on 100G QSFP28 ports.

As of the AOS-CX 10.05 and 10.06 releases, the configuration requires a save and reboot of the switch or module. See the *Monitoring Guide* for details on the `split` command.

See Splitting of QSFP+ and QSFP28 ports for more information.

Specifications for HPE QSFP+ breakout DAC cables (from HPE Server products)

Product name (SKU)	Cable length	Data rate
HPE BLc 40G QSFP+ 4x10G SFP+ 3m DAC Cbl (721064-B21)	3m (9.84ft)	40G to 4 x 10G

Compatibility for the QSFP+ DAC and breakout DAC copper cables (see Unsupported transceiver mode)

* HPE Server product - may not be available to Aruba resellers

Product name (SKU)	Minimum software required	Comments
Aruba 3810M/2930M 1QSFP+ 40GbE Module (JL078A)	JH234A, JH235A, JH236A: All *721064-B21: Not supported	
Aruba 3810M 2QSFP+ 40GbE Module (JL079A)	JH234A, JH235A, JH236A: All *721064-B21: Not supported	The JL079A module is not supported in the 2930M series nor on the 3810M 16SFP+ 2-slot Switch (JL075A)
Aruba 20p PoE+ / 1p 40GbE QSFP+ v3 zl2 Module (J9992A)	JH234A, JH235A, JH236A: KB 15.17 *721064-B21: Not supported	
Aruba 2p 40GbE QSFP+ v3 zl2 Module (J9996A)	JH234A, JH235A, JH236A: KB 15.17 *721064-B21: Not supported	
Aruba 6300 (select models) JL658A Aruba 6300M 24SFP+ 4SFP56 Swch JL663A Aruba 6300M 48G 4SFP56 Swch JL762A Aruba 6300M 48G Pwr2Prt 2F 1PS Bdl R8S92A Aruba 6300M 24G 2SFP56 2p25G Swch	*721064-B21: 10.08.0001	721064-B21: SFP+ ends only of the split cable from HPE Compute parts

Product name (SKU)	Minimum software required	Comments
	*721064-B21: 10.10.1000	
Aruba 6400 12p 40G/100G QSFP28 Module (R0X45A/R0X45C)	JH234A, JH235A, JH236A: 10.04.2000 *721064-B21: Not supported	The minimum software release for the R0X45C is 10.09.1000. 721064-B21 not supported on either R0X45A/R0X45C.
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ Switch (JL479A)	JH234A, JH235A, JH236A: 10.00.0012 *721064-B21: 10.06.0140 or 10.07.0020 or later (Requires `split` command)	721064-B21: This HPE Compute SKU has two vendors; 10.05.0001 release supported only the 9-digit serial number cables; 10.06.0140 and 10.07.0021 adds support for the 8-digit serial number cable. Only the QSFP end is supported
Aruba 8320 32p 40G QSFP+ Switch (JL579A)	JH234A, JH235A, JH236A: 10.00.0012 *721064-B21: 10.06.0140 or 10.07.0020 or later (see comments)	8320 JL579A only allows splitting of ports 5-28 (center 24 ports). 721064-B21: This HPE Compute SKU has two vendors; 10.05.0001 release supported only the 9-digit serial number cables; 10.06.0140 and 10.07.0021 adds support for the 8-digit serial number cable. Only the QSFP end is supported
Aruba 8320 48p 10GBT 6p 40G QSFP+ Switch (JL581A)	JH234A, JH235A, JH236A: 10.03.0030 *721064-B21: 10.06.0140 or 10.07.0020 or later (Requires `split` command)	721064-B21: This HPE Compute SKU has two vendors; 10.05.0001 release supported only the 9-digit serial number cables; 10.06.0140 and 10.07.0021 adds support for the 8-digit serial number cable. Only the QSFP end is supported
Aruba 8325 32C models JL636A displayed by CLI (`show system`) ▪ JL626A - Port-to-Power model (FB) ▪ JL627A - Power-to-Port model (BF)	JH234A, JH235A, JH236A: 10.00.0012 *721064-B21: 10.06.0140 or 10.07.0020 or later (Requires `split` command)	8325 JL636A allows splitting of all 32 ports. 721064-B21: This HPE Compute SKU has two vendors; 10.05.0001 release supported only the 9-digit serial number cables; 10.06.0140 and 10.07.0021 adds support for the 8-digit serial number cable.

Product name (SKU)	Minimum software required	Comments
		Only the QSFP end is supported
Aruba 8325 48Y8C models JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	JH234A, JH235A, JH236A: 10.03.0030 *721064-B21: 10.06.0140 or 10.07.0020 or later (Requires `split` command)	8325 JL635A allows splitting of all 8 ports 721064-B21: This HPE Compute SKU has two vendors; 10.05.0001 release supported only the 9-digit serial number cables; 10.06.0140 and 10.07.0021 adds support for the 8-digit serial number cable. Only the QSFP end is supported
Aruba 8360 32Y4C models JL717A/JL717C(v2) displayed by CLI (`show system`) ■ JL700A/JL700C(v2) Port-to-Power model ■ JL701A/JL701C(v2) Power-to-Port model	JH234A, JH235A, JH236A: 10.06.0001 *721064-B21: 10.06.0140 or 10.07.0020 or later (Requires `split` command)	721064-B21: This HPE Compute SKU has two vendors; 10.05.0001 release supported only the 9-digit serial number cables; 10.06.0140 and 10.07.0021 adds support for the 8-digit serial number cable. Only the QSFP end is supported
Aruba 8360 16Y2C models JL718A/JL718C(v2) displayed by CLI (`show system`) ■ JL702A/JL702C(v2) Port-to-Power model ■ JL703A/JL703C(v2) Power-to-Port model	JH234A, JH235A, JH236A: 10.06.0001 *721064-B21: 10.06.0140 or 10.07.0020 or later (Requires `split` command)	721064-B21: This HPE Compute SKU has two vendors; 10.05.0001 release supported only the 9-digit serial number cables; 10.06.0140 and 10.07.0021 adds support for the 8-digit serial number cable. Only the QSFP end is supported
Aruba 8360 48Y6C models JL719C displayed by CLI (`show system`) ■ JL704C(v2)Port-to-Power model (FB) ■ JL705C(v2) Power-to-Port model (BF)	JH234A, JH235A, JH236A: 10.09.0002 *721064-B21: 10.09.0002 (Requires `split` command)	MACSec available on ports 53-54.
Aruba 8360 48XT4C models JL720A/JL720C(v2) displayed by CLI (`show system`) ■ JL76A/JL76C(v2) Port-to-Power model ■ JL707A/JL707C(v2) Power-to-Port model	JH234A, JH235A, JH236A: 10.06.0001 *721064-B21: Can NEVER be supported	8360 48XT4C model QSFP28 ports **do not** support split-mode (hardware is not capable)
Aruba 8360 12C models JL721A/JL721C(v2) displayed by CLI (`show system`)	JH234A, JH235A, JH236A: 10.06.0001 *721064-B21: 10.06.0140 or 10.07.0020 or later (Requires	721064-B21: This HPE Compute SKU has two vendors; 10.05.0001

Product name (SKU)	Minimum software required	Comments
▪ JL708A/JL708C(v2) Port-to-Power model ▪ JL709A/JL709C(v2) Power-to-Port model	`split` command)	release supported only the 9-digit serial number cables; 10.06.0140 and 10.07.0021 adds support for the 8-digit serial number cable.
Aruba 8360 24XF2C models JL722A/JL722C(v2) displayed by CLI (`show system`) ▪ JL710A/JL710C(v2) Port-to-Power model ▪ JL711A/JL711C(v2) Power-to-Port model	JH234A, JH235A, JH236A: 10.06.0001 *721064-B21: 10.06.0140 or 10.07.0020 or later (Requires `split` command)	721064-B21: This HPE Compute SKU has two vendors; 10.05.0001 release supported only the 9-digit serial number cables; 10.06.0140 and 10.07.0021 adds support for the 8-digit serial number cable.
Aruba 8400X Module: 8p 40G QSFP+ Adv Module (JL365A)	JH234A, JH235A, JH236A: 10.00.0002 *721064-B21: Not supported	8400 JL365A 8p QSFP+ module allows splitting of all 8 ports
Aruba 8400X Module: 6p 40G/100G QSFP28 Adv Module (JL366A)	JH234A, JH235A, JH236A: 10.00.0006 *721064-B21: Not supported	JL366A 6p QSFP28 module no support for breakout 40G DACs
Aruba 9300-32D series	JH234A, JH235A, JH236A, *721064-B21:10.11.1000	721064-B21 requires the CLI command `split 4 10`. See Splitting of QSFP+ and QSFP28 ports for additional information.
Aruba 10000 48Y6C models R8S96A displayed by CLI (`show system`) ▪ R8P13A - 48Y6C FB bundle ▪ R8P14A - 48Y6C BF bundle	JH234A, JH235A, JH236A: 10.10.0002 *721064-B21: 10.10.0002	

40G QSFP+ AOC and breakout AOC (active optical cables)

Models, specifications, and compatibility

Specifications for QSFP+ 40G active optical cables

Product name (SKU)	Cable length	Data rate
Aruba 40G QSFP+ to QSFP+ 7m AOC (R0Z22A)	7m (22.96 ft)	40 Gbps
Aruba 40G QSFP+ to QSFP+ 15m AOC (R0Z23A)	15m (49.21 ft)	
Aruba 40G QSFP+ to QSFP+ 30m AOC (R0Z24A)	30m (98.42 ft)	

The following 40G breakout AOC cable is offered by HPE Servers and Systems and ordered using the specified part number (these cables may not be available to order for Aruba-only partners). Refer to the HPE Compute transceiver and cable hardware matrix product availability matrix at hpe.com.

AOS-CX release 10.05 and later supports a `split` command configured on 100G QSFP28 ports.

As of the AOS-CX 10.05 and 10.06 releases, the configuration requires a save and reboot of the switch or module. See the *Monitoring Guide* for details on the `split` command.

Specifications for HPE QSFP+ breakout 40G active optical cables (from HPE Server products)

Product name (SKU)	Cable length	Data rate
HPE BLc QSFP+ to 4x10G SFP+ AOC 15m Opt (721076-B21)	7m (22.96 ft)	4 x 10G

Compatibility for QSFP+ 40G active optical cables

* HPE Server product - may not be available to Aruba resellers

Product name (SKU)	Minimum software required	Comments
Aruba 6300 (select models) JL658A Aruba 6300M 24SFP+ 4SFP56 Swch JL663A Aruba 6300M 48G 4SFP56 Swch JL762A Aruba 6300M 48G Pwr2Prt 2F 1PS Bdl R8S92A Aruba 6300M 24G 2SFP56 2p25G Swch	*721076-B21: 10.08.0001 21076-B21: 10.10.1000	721076-B21: SFP+ ends only of the split cable from HPE Compute parts
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ Switch (JL479A)	R0Z22A,R0Z23A,R0Z24A: Not supported *721076-B21: 10.06.0001 (Requires `split` command)	
Aruba 8320 32p 40G QSFP+ Switch (JL579A)	R0Z22A,R0Z23A,R0Z24A: Not supported *721076-B21: 10.06.0001 (Requires `split` command)	8320 JL579A only allows splitting of ports 5-28 (center 24 ports). 721076-B21: Only the QSFP end is supported
Aruba 8320 48p 10GBT 6p 40G QSFP+ Switch (JL581A)	R0Z22A,R0Z23A,R0Z24A: Not supported *721076-B21: 10.06.0001 (Requires `split` command)	
Aruba 8325 32C models	R0Z22A, R0Z23A, R0Z24A: 10.03.0040	

Product name (SKU)	Minimum software required	Comments
JL636A displayed by CLI (`show system`) ■ JL626A - Port-to-Power model (FB) ■ JL627A - Power-to-Port model (BF)	*721076-B21: 10.06.0001 (Requires `split` command)	
Aruba 8325 48Y8C models JL635A displayed by CLI (`show system`) ■ JL624A -Port-to-Powermodel(FB) ■ JL625A - Power-to-Port model (BF)	R0Z22A, R0Z23A, R0Z24A: 10.03.0040 *721076-B21: 10.06.0001 (Requires `split` command)	721076-B21: Both QSFP+ and SFP+ ends are supported The 8325 requires configuration of **interface groups** (groups of 12 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
Aruba 8360 32Y4C models JL717A/JL717C(v2) displayed by CLI (`show system`) ■ JL700A/JL700C(v2) Port-to-Power model ■ JL701A/JL701C(v2) Power-to-Port model	R0Z22A, R0Z23A, R0Z24A: 10.07.0005 *721076-B21: 10.07.0005 (Requires `split` command)	721076-B21: Both QSFP+ and 10G SFP+ ends are supported (on the models with SFP28 ports). The 8360 32Y4C model requires configuration of **interface groups** only for ports 1-4 (as group number 1) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). All other ports can individually auto-detect the speed of the inserted transceiver. Not applicable to the 24XF (1G/10G) model See the *Installation Guide* for details.
Aruba 8360 16Y2C models JL718A/JL718C(v2) displayed by CLI (`show system`) ■ JL702APoC(v2) -to-Power model ■ JL703A/JL703C(v2) Power-to-Port model	R0Z22A, R0Z23A, R0Z24A: 10.07.0005 *721076-B21: 10.07.0005 (Requires `split` command)	
Aruba 8360 48XT4C models JL720A/JL720C(v2) displayed by CLI (`show system`) ■ JL706A/JL706C(v2) Port-to-Power model ■ JL707A/JL707C(v2) Power-to-Port model	R0Z22A, R0Z23A, R0Z24A: 10.07.0005 *721076-B21: Not supported (No split support on the QSFP28 ports on the 48XT4C models)	
Aruba 8360 12C models JL721A/JL721C(v2) displayed by CLI (`show system`) ■ JL708A/JL708C(v2) Port-to-Power model ■ JL709A/JL709C(v2) Power-to-Port model	R0Z22A, R0Z23A, R0Z24A: 10.07.0005 *721076-B21: 10.07.0005 (Requires `split` command)	
Aruba 8360 24XF2C models JL722A/JL722C(v2) displayed by CLI (`show system`) ■ JL710A/JL710C(v2) Port-to-Power model ■ JL711A/JL711C(v2) Power-to-Port model	R0Z22A, R0Z23A, R0Z24A: 10.07.0005 *721076-B21: 10.07.0005 (only the QSFP end is supported in ports 25 and 26)	
Aruba 8360 48Y6C models JL719C displayed by CLI (`show system`) ■ JL704C(v2) Port-to-Power model (FB) ■ JL705C(v2) Power-to-Port model (BF)	R0Z22A, R0Z23A, R0Z24A: 10.09.0002 *721076-B21: 10.09.0002 (Requires `split` command)	MACSec available on ports 53-54.
Aruba 8400X 32p SFP/SFP+ 10G MACsec	*721076-B21: (10G SFP+	721076-B21: 10G SFP+ end

Product name (SKU)	Minimum software required	Comments
Module (JL363A)	ends) 10.06.0001	supported by 10.06.0001
Aruba 8400X 8p 40G QSFP+ Adv Module (JL365A)	R0Z22A, R0Z23A, R0Z24A: not supported *721076-B21: 10.06.0001 (Requires `split` command)	721076-B21: QSFP+ end supported in this module
Aruba 8400X 6p 40G/100G QSFP28 AdvModule (JL366A)	R0Z22A, R0Z23A, R0Z24A: not supported *721076-B21: 10.05.0001 (Requires `split` command)	721076-B21: QSFP+ end supported in this module
Aruba 8400X 32p 25G SFP28 Module(JL687A)	*721076-B21: (10G SFP+ ends) 10.06.0001	721076-B21: 10G SFP+ end supported by 10.06.0001 JL687A 32p 25G module requires configuration of **interface groups** (groups of four ports) to enable use of 1G or 10G transceivers or DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
Aruba 9300-32D series	JH234A, JH235A, JH236A: 10.11.1000 *721076-B21: not supported	
Aruba 10000 48Y6C models R8S96A displayed by CLI (`show system`) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	R0Z22A, R0Z23A, R0Z24A: 10.10.0002 *721076-B21: 10.10.0002 (Requires `split` command)	

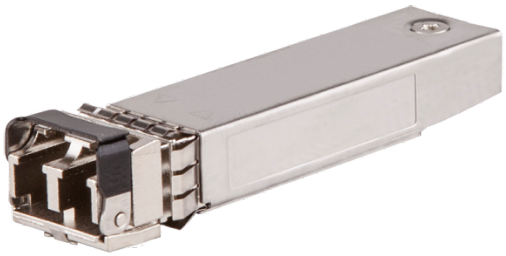
40G QSFP+ to SFP+ Adapter

See QSFP28 to SFP28 adapter support for 40G support within QSFP28 or QSFP+ ports.

SFP56 optical transceiver modules

Always refer to the Datasheet or QuickSpecs for the switch product to see the current list of supported transceivers.

50G technology, implemented through an SFP56 port, is available on select models within the CX product family. Although 50G SFP transceivers (and 50G DACs) are the same physical size as a 1G, 10G, or 25G technology, the 50G products only work at the 50G speed and only in ports that are 50G-capable; usually marked as SFP56.



Models, specifications, and compatibility

SFP56 optical transceiver modules are a single-lane, serial 4-level Pulse Amplitude Modulation (PAM4) technology providing a transmission rate of 50 Gbps and use LC connectors. Note that 50G SFP56 technology can not be split into two 25G flows - it is a single-lane, single-wavelength technology.

Specifications for SFP56 optical transceiver module

Product name (SKU)	DOM- Digital Optical Monitoring	Central wl (nm)	Fiber mode	Fiber Diameter	Modal bandwidth (MHz*km)	Transmission distance
Aruba 50G SFP56 LC SR 100m MMF XCVR (R0M48A)	Yes	850	MMF	50/125	OM3	70m (229.66 ft)
					OM4 and OM5	100m (328.08 ft)

50G SR transceivers are not supported for use over MMF OM1/OM2 quality fiber. The IEEE standard did not specify any requirements for use over these types of multimode fiber.

Optical specifications for SFP56 optical transceiver modules

Product name (SKU)	Optical parameters (dBm)	
	Transmit power	Receive power
Aruba 50G SFP56 LC SR 100m MMF XCVR (R0M48A)	-6 to +4	-8.4 to +4

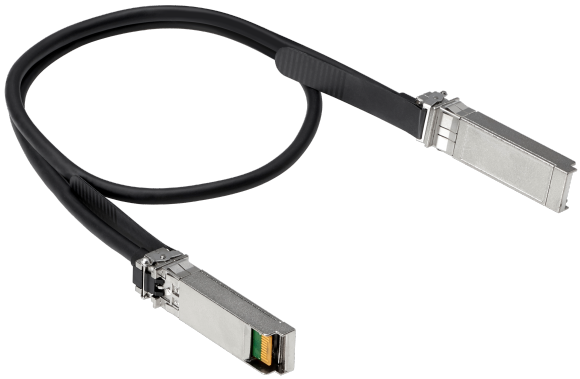
Compatibility for the SFP56 transceiver module

Product name	SKU	Minimum Software required	Comments
Aruba 6300 series	All Models M and F JL762A(F-B airflow model R8S89A, R8S90A, R8S91A, R8S92A	10.09.1010 10.10.0002	
Aruba 6400 Modules	R0X39B/R0X39C, R0X40B/R0X40C, R0X41A/R0X41C, R0X42A/R0X42C, R0X43A/R0X43C	10.09.1000 Only supported in SFP56 ports	R0X43A/R0X43C: 50G optics are not supported in 10G SFP+ ports. R0X44A does not support 50G speeds. R0X44C enables 50G on the ports, but Interface Groups must be enabled. 50G capability (DACs or Optics) is only allowed on the lower ports (even numbers) of the group and disables the use of any other connection in the upper ports (odd numbers). Port groups are as follows: Group 1= ports 1-12; Groups 2 through7= four ports (13-16; 17-20; 21-24; 25-28; 29-32; 33-36); Group 8 = ports 37-48.
	R0X44C (not supported in R0X44A)	10.09.1000 Supported in configured bottom SFP28 ports.	
Aruba 8360 32Y4C models	JL717C(v2) displayed by CLI (show system) JL700C(v2) Port-to-Power model JL701C(v2) Power-to-Port model	10.09.1000 Supported on even # ports 6-32	8360 v1 models (ending in "A") do not support the use of 50G transceivers. The 8360 32Y4C model requires configuration of **interface groups** (groups of four ports) to select a speed of 50G. When selected, the upper two ports in a group are disabled and both bottom ports only support the 50G speed. Ports 1-4 on the 8360 32Y4C model do not support 50G speed due to the MACsec capability limiting these ports to a maximum speed of 25G. See the Installation Guide for details.
Aruba 8360 16Y2C models	JL718C(v2) displayed by CLI (show system) JL702C(v2) Port-to-Power model JL703C(v2) Power-to-Port model	10.09.1000 Supported on even # ports 2-16	8360 v1 models (ending in "A") do not support the use of 50G transceivers. The 8360 16Y2C model requires configuration of **interface groups** (groups of four ports) to select a speed of 50G. When selected, the upper two ports in a group are disabled and both bottom ports only support the 50G speed. See the Installation Guide for details.
Aruba 8360 48Y6C models	JL719C displayed by CLI (show system)	10.09.1000	The 8360 48Y6C model requires configuration of **interface groups** (groups of four ports) to select a 50G speed. When selected, the upper

Product name	SKU	Minimum Software required	Comments
	JL704C(v2) Port-to-Power model (FB) JL705C(v2) Power-to-Port model (BF)	Supported on even # ports 6-48	two ports in a group are disabled and both bottom ports only support the 50G speed. Ports 1-4 on the 8360 48Y6C model do not support 50G speeds due to the MACsec capability limiting these ports to a maximum speed of 25G. See the Installation Guide for details.

SFP56 Direct Attach over Copper (DAC) cables

Always refer to the Datasheet or QuickSpecs for the switch product to see the current list of supported transceivers.



Direct Attach over Copper (DAC) cables have a minimum bend radius of typically 4x the diameter of the cable (approximately a 1" bend radius). Handle DAC cables carefully to ensure that you do not crimp or bend the cable beyond a 1" radius; otherwise, you risk damaging the cable.

Models, specifications, and compatibility

Specifications for SFP56 copper cables

Product name (SKU)	Cable length	Data rate
Aruba 50G SFP56 to SFP56 0.65m DAC Cable (R0M46A)	0.65m (2.13 ft)	50Gbps
Aruba 50G SFP56 to SFP56 3m DAC Cable (R0M47A)	3m (9.84 ft)	

Compatibility for the SFP56 DAC copper cables

Product name	SKU	Minimum software required	Comments
Aruba 6300 Switch	All models M and F	R0M46A, R0M47A:	Used for stacking or switch-to-switch interconnectivity (non-stack) Only in

Product name	SKU	Minimum software required	Comments
Series	R8S89A, R8S90A, R8S91A R8S92A	10.04.0001 10.10.0002	SFP56 ports
Aruba 6400 Switch Series	All modules with SFP56 ports	R0M46A, R0M47A: 10.09.0002	
Aruba 8360 Switch Series	Aruba 8360 48Y6C models JL719C displayed by CLI (show system) ■ JL704C(v2) - Port-to-Power model (FB) ■ JL705C(v2) - Power-to-Port model (BF)	R0M46A, R0M47A: 10.09.0002	8360 v1 models (ending in "A") do not support the use of 50G transceivers. 8360 32Y4C and 48Y6C ports 2 and 4 do not support the use of 50G speeds because of the MACsec capability for ports 1-4 at 10G/25G speeds. 8360 16Y2C does not have MACsec capability. To enable 50G capability, configure **interface groups** only for applicable ports (in groups of four ports) to enable the use of 50G transceivers / DACs in the *lower* SFP28 ports. (Interface Groups default to 1G, 10G or 25G speeds.) When configured for 50G, only the bottom ports in each group are enabled, and the upper ports are disabled for any use. (The 50G bandwidth reconfigures two ports).
	JL717C(v2) displayed by CLI (show system) ■ JL701C(v2) Port-to-Power model ■ JL701C(v2) Power-to-Port model		
	JL718C(v2) displayed by CLI (show system) ■ JL702C(v2) Port-to-Power model ■ JL703C(v2) Power-to-Port model		

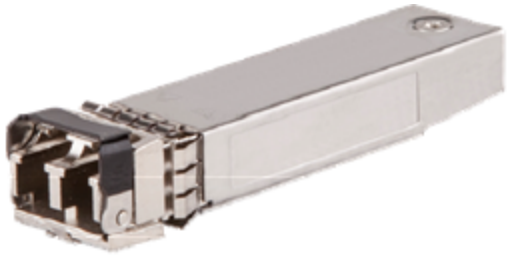
SFP28 optical transceiver modules

SFP28 ports are 25G speed ports and similar in size to a 10G SFP+ or 1G SFP port. They have supporting circuitry to enable 25G speed transceiver, DAC, and AOC components.

Although 10G and 1G transceiver products may 'fit' into an SFP28 port, the particular switch model or module may be limited in supporting lower speeds.

See Types of transceiver modules and network cables for information regarding the type of connectors used by SFP28 port products.

25G as a standard does not specify any distance over MMF OM1 or OM2 fiber. There is no guarantee for distance. Always refer to the Datasheet or QuickSpecs for the switch product to see the current list of supported transceivers.



Models, specifications, and compatibility

SFP28 optical transceiver modules provide a transmission rate of 25 Gbps and use LC connectors.

Specifications for SFP28 optical transceiver modules

Product name (SKU)	DOM- Digital Optical Monitoring (4x4 part number)	Central wl (nm)	Fiber mode	Fiber Diameter	Modal bandwidth (MHz*km)	Transmission distance
Aruba 25G SFP28 LC SR 100m MMF XCVR (JL484A)	Yes (partial)	850	MMF	50/125	2000 (OM3)	70m (229.66 ft)
					4700 (OM4)	100m (328.08 ft)
Aruba 25G SFP28 LC eSR 400m MMF XCVR (JL485A)	Yes (partial)	850	MMF	50/125	2000 (OM3)	200m (656.16 ft)
					4700 (OM4)	400m (1,312.34 ft)
Aruba 25G	Yes (partial)	1310	SMF	9/125	n/a	10km (6.21 miles)

Product name (SKU)	DOM- Digital Optical Monitoring (4x4 part number)	Central wl (nm)	Fiber mode	Fiber Diameter	Modal bandwidth (MHz*km)	Transmission distance
SFP28 LC LR 10km SMF Transceiver (JL486A)						

25G SR/eSR are not supported for use over MMF OM1/OM2 quality fiber.

The IEEE standard did not specify any requirements for use over these types of multimode fiber.

Optical specifications for SFP28 optical transceiver modules

Product name (SKU)	Optical parameters (dBm)	
	Transmit power	Receive power
Aruba 25G SFP28 LC SR 100m MMF XCVR (JL484A)	-8.4 to +2.4	-10.3 to +2.4
Aruba 25G SFP28 LC eSR 400m MMF XCVR (JL485A)	-8.4 to+2.4	-10.3 to +2.4
Aruba 25G SFP28 LC LR 10km SMF Transceiver (JL486A)	-7.0 to+2.0	-13.3 to +2.0

Compatibility for the SFP28 transceiver modules

Product name	SKU	Minimum software required	Comments
Aruba 6300 series	All models M and F JL762A (F-B airflow model) R8S89A, R8S90A, R8S91A, R8S92A	10.04.0001 10.04.3000 10.10.0002 only in SFP28 and SFP56 ports	
Aruba 6400 Modules	R0X39B, R0X40B, R0X41A, R0X42A, R0X43A R0X39C, R0X40C, R0X41C, R0X42C, R0X43C R0X44A R0X44C	10.04.1000 Only supported in SFP56 ports 10.09.1000 10.04.2000 Suported in all SFP28 ports 10.09.1000	R0X39A/R0X40A (revision A) are no longer supported for use in the 6400 series. R0X43A/R0X43C: 25G optics are not supported in 10G SFP+ ports. R0X44A/R0X44C auto-detects the inserted type of transceiver; it does NOT require any **interface groups** like the 8325.

Product name	SKU	Minimum software required	Comments
Aruba 8325 48Y8C models	JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	10.02.0001	The 8325 requires configuration of **interface groups** (groups of 12 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
Aruba 8360 32Y4C models	JL717A/JL717C(v2) displayed by CLI (`show system`) ■ JL700A/JL700C(v2) Port-to-Power model ■ JL701A/JL701C(v2) Power-to-Port model	10.06.0001	The 8360 32Y4C model requires configuration of **interface groups** only for ports 1-4 (as group number 1) to enable the use of 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). Ports 1-4 on the 8360 32Y4C model do not support 1G transceivers. All other ports can individually auto-detect the speed of the inserted transceiver. Not applicable to the 24XF (1G/10G) model See the *Installation Guide* for details.
Aruba 8360 16Y2C models	JL718A/JL718C(v2) displayed by CLI (`show system`) ■ JL702A/JL702C(v2) Port-to-Power model ■ JL703A/JL703C(v2) Power-to-Port model	10.06.0001	
Aruba 8360 48Y6C models	JL719C displayed by CLI (`show system`) ■ JL704C(v2) Port-to-Power model (FB) ■ JL705C(v2) Power-to-Port model (BF)	10.09.0002	MACSec available on ports 1-4 10G or 25G speeds
Aruba 8400X Modules	JL687A	10.04.2000	JL687A 32p 25G module requires configuration of **interface groups** (groups of four ports) to enable use of 1G or 10G transceivers or DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for

Product name	SKU	Minimum software required	Comments
			details.
Aruba 10000 48Y6C models	R8S96A displayed by CLI (`show system`) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	JL484A(SR), JL485A (eSR): 10.10.0002 JL486A (LR):10.10.0002	The 10000 series requires configuration of interface groups (groups of 4 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (set speed back to 25G for default). See the *Installation Guide* for details.

25G SFP28 Direct Attach over Copper (DAC) cables

Always refer to the Datasheet or QuickSpecs for the Switch product to see the current list of supported transceivers.

Direct Attach over Copper (DAC) cables have a minimum bend radius of typically 4x the diameter of the cable (approximately a 1" bend radius). Handle DAC cables carefully to ensure that you do not crimp or bend the cable beyond a 1" radius; otherwise, you risk damaging the cable.

Models, specifications, and compatibility

Specifications for SFP28 DACs

Product name (SKU)	Cable length	Data rate
Aruba 25G SFP28 to SFP28 0.65m DAC Cable (JL487A)	0.65m (2.13 ft)	25 Gbps
Aruba 25G SFP28 to SFP28 3m DAC Cable (JL488A)	3m (9.8ft)	
Aruba 25G SFP28 to SFP28 5m DAC Cable (JL489A)	5m (16.40 ft)	

The following DAC cables are offered by HPE Servers and Systems and ordered using the specified part number (these cables may not be available to order for Aruba-only partners). Refer to the HPE Compute transceiver and cable hardware matrix product availability matrix at hpe.com.

Specifications for HPE SFP28 DACs (from HPE Server Products)

Product name (SKU)	Cable length	Data rate
HPE 25Gb SFP28 to SFP28 3m DAC (844477-B21)	3m (9.84 ft)	25 Gbps
HPE 25Gb SFP28 to SFP28 5m DAC (844480-B21)	5m (16.40 ft)	

Compatibility for the SFP28 DACs

* HPE Server product - may not be available to Aruba resellers

Product name	SKU	Minimum software required	Comments
Aruba 6300 Switch Series	All models M and F	JL487A, JL488A, JL489A: 10.04.0001 *844477-B21 and 844480-B21: 10.08.0001 (see note)	844477-B21 and 844480-B21: only supported on uplink ports on these models: JL658A, JL663A and JL762A. Intermittent issues seen with HPE Servers NICs. See details in HPE Servers and Systems Support
	R8S89A, R8S90A, R8S91A R8S92A	10.10.0002	
Aruba 6400 modules with SFP56 ports	R0X39B, R0X40B R0X41A, R0X42A, R0X43A	JL487A, JL488A, JL489A: 10.04.1000 Only supported in SFP56 ports *844477-B21 and 844480-B21: 10.08.0001	R0X39A/R0X40A (revision A) are no longer supported for use in the 6400 series. R0X43A/R0X43C: 25G DACs are not supported in 10G SFP+ ports. R0X44A/R0X44C auto-detects the inserted type of transceiver; it does NOT require any **interface groups** like the 8325. Intermittent issues seen with HPE Servers NICs. See details in HPE Servers and Systems Support
	R0X39C, R0X40C R0X41C, R0X42C, R0X43C R0X43A	10.09.1000	
	R0X44A	JL487A, JL488A, JL489A: 10.04.2000 Supported in all SFP28 ports *844477-B21 and 844480-B21: 10.08.0001	
	R0X44C	10.09.1000	
Aruba 8325 48Y8C models	JL635A displayed by CLI (`show system` ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	JL487A, JL488A, JL489A: 10.03.0030 *844477-B21 and 844480-B21: 10.04.1000	The 8325 requires configuration of **interface groups** (groups of 12 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details. 844477-B21 and 844480-B21: verified against HPE

Product name	SKU	Minimum software required	Comments
			interconnects listed in HPE Servers and Systems Support
8360 32Y4C models	JL717A/JL717C(v2) displayed by CLI (`show system`) ■ JL700A/JL700C(v2) Port-to-Power model ■ JL701A/JL701C(v2) Power-to-Port model	JL487A, JL488A, JL489A: 10.06.0001 *844477-B21 and 844480-B21: 10.06.0001	The 8360 32Y4C model requires configuration of **interface groups** only for ports 1-4 (as group number one) to enable the use of 10G transceivers / DACs in the SFP28 ports. (Interface Groups default to 25G speeds.) Ports 1-4 on the 8360 32Y4C model do not support 1G transceivers. All other ports can individually auto-detect the speed of the inserted transceiver. Not applicable to the 24XF (1G/10G) model See the *Installation Guide* for details. Intermittent issues seen with HPE Servers NICs. See details in HPE Servers and Systems Support.
8360 16Y2C models	JL718A/JL718C(v2) displayed by CLI (`show system`) ■ JL702A/JL702C(v2) Port-to-Power model ■ JL703A/JL703C(v2) Power-to-Port model	JL487A, JL488A, JL489A: 10.06.0001 *844477-B21 and 844480-B21: 10.06.0001	Intermittent issues seen with HPE Servers NICs. See details in HPE Servers and Systems Support.
8360 48Y6C models	JL719C displayed by CLI (`show system`) ■ JL704C(v2) Port-to-Power model (FB) ■ JL705C(v2) Power-to-Port model (BF)	JL487A, JL488A, JL489A: 10.09.0002 Supported in all SFP28 ports *844477-B21 and 844480-B21: 10.09.0002	MACSec available on ports 1-4 10G or 25G speeds The 8360 48Y6C model requires configuration of **interface groups** only for ports 1-4 (as group number 1) to enable the use of 10G transceivers /DACs in the SFP28 ports (Interface Groups default to 25G speed). Ports 1-4 on the 8360 48Y6C model do not support 1G transceivers. All other ports can individually autodetect the speed of the inserted transceiver. Intermittent issues seen with HPE Servers NICs. See details in HPE Servers and Systems Support.
Aruba 8400X Modules	JL687A	JL487A: Not Supported JL488A, JL489A:	JL487A 0.65m DAC not supported The JL687A module requires configuration of **interface**

Product name	SKU	Minimum software required	Comments
		10.04.2000 *844477-B21, 844480-B21: 10.06.0001	**groups** (groups of four ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
Aruba 10000 48Y6C models	R8S96A displayed by CLI (`show system`) ▪ R8P13A - 48Y6C FB bundle ▪ R8P14A - 48Y6C BF bundle	JL487A, JL488A, JL489A, *844477-B21 and 844480-B21: 10.10.0002	The 10000 series requires configuration of interface groups (groups of 4 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (set speed back to 25G for the default). See the *Installation Guide* for details.

25G SFP28 AOC (Active Optical Cable)

Models, specifications, and compatibility

Specifications for SFP28 25G active optical cables

Product name (SKU)	Cable length	Data rate
Aruba 25G SFP28 to SFP28 3m AOC (R0M44A)	3m (9.84 ft)	25 Gbps
Aruba 25G SFP28 to SFP28 7m AOC (R0M45A)	7m (22.96 ft)	
Aruba 25G SFP28 to SFP28 15m AOC (R0Z21A)	15m (49.21 ft)	

The following Active Optical Cable (AOC) products are offered by HPE Servers and Systems and ordered using the specified part number (these cables may not be available to order for Aruba-only partners).

Refer to the HPE Compute transceiver and cable hardware matrix product availability matrix at hpe.com.

Specifications for HPE SFP28 AOCs (from HPE Server Products)

Product name (SKU)	Cable length	Data rate
HPE QSFP28 to 4x25G SFP28 7m AOC (845420-B21)	7m (22.9ft)	25 Gbps
HPE QSFP28 to 4x25G SFP28 15m AOC (845424-B21)	15m (49.2ft)	

Compatibility for the SFP28 25G active optical cables

* HPE Server product - may not be available to Aruba resellers

Product Name	SKU	Minimum software required R0M44A, R0M45A, R0Z21A	Comments
Aruba 8325 Switch Series	JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	R0M44A, R0M45A, R0Z21A: 10.03.0040 *845420-B21, 845424-B21: 10.06.0001	The 8325 requires configuration of **interface groups** (groups of 12 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). 845420-B21, 845424-B21 supported in 6300 select SKUs JL658A (uplink ports only), JL663A, JL762A for 10.08.0001 See the *Installation Guide* for details.
8360 32Y4C models	JL717A/JL717C(v2) displayed by CLI (`show system`) ■ JL700A/JL700C(v2) Port-to-Power model ■ JL701A/JL701C(v2) Power-to-Port model	R0M44A, R0M45A, R0Z21A: 10.06.0001 *845420-B21, 845424-B21: 10.10.0002 (HPE Server part)	The 8360 32Y4C model requires configuration of **interface groups** only for ports 1-4 (as group number 1) to enable the use of 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). Ports 1-4 on the 8360 32Y4C model do not support 1G transcevers. All other ports can individually auto-detect the speed of the inserted transceiver. Not applicable to the 24XF (1G/10G) model. 845420-B21, 845424-B21 supported in 6300 select SKUs JL658A (uplink ports only), JL663A, JL762A for 10.08.0001 See the *Installation Guide* for details.
8360 16Y2C models	JL718A/JL718C(v2) displayed by CLI (`show system`) ■ JL702A/JL702C(v2) Port-to-Power model ■ JL703A/JL703C(v2) Power-to-Port model	R0M44A, R0M45A, R0Z21A: 10.06.0001 *845420-B21, 845424-B21: 10.10.0002 (HPE Server part)	
8360 48Y6C models	JL719C displayed by CLI (`show system`) ■ JL704C(v2) Port-to-	R0M44A, R0M45A, R0Z21A: 10.09.0002	MACSec available on ports 1-4 10G or 25G speeds The 8360 48Y6C model requires configuration

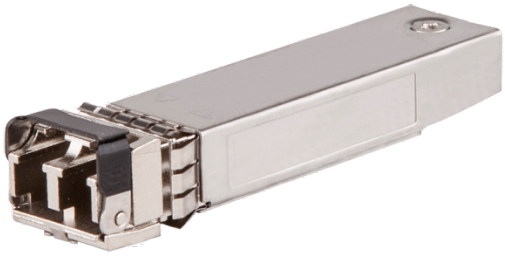
Product Name	SKU	Minimum software required R0M44A, R0M45A, R0Z21A	Comments
	Power model (FB) ■ JL705C(v2) Power-to-Port model (BF)	*845420-B21, 845424-B21: 10.10.0002 (HPE Server part)	of **interface groups** only for ports 1-4 (as group number 1) to enable the use of 10G transceivers /DACs in the SFP28 ports (Interface Groups default to 25G speed). Ports 1-4 on the 8360 48Y6C model do not support 1G transceivers. All other ports can individually autodetect the speed of the inserted transceiver.
Aruba 8400X Modules	JL687A	R0M44A, R0M45A, R0Z21A, *845420-B21, 845424-B21: 10.06.0001 (HPE Server part)	The JL687A module requires configuration of **interface groups** (groups of four ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). 845420-B21, 845424-B21 supported in 6300 select SKUs JL658A (uplink ports only), JL663A, JL762A for 10.08.0001 See the *Installation Guide* for details.
Aruba 10000 48Y6C models	R8S96A displayed by CLI (`show system`) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	R0M44A, R0M45A, R0Z21A: 10.10.0002 *845420-B21(7m Split), 845424-B21(15m Split): 10.10.0002 (HPE Server part)	The 10000 series requires configuration of interface groups (groups of 4 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (set speed back to 25G for the default). See the *Installation Guide* for details.

SFP+ optical transceiver modules

In December 2017, Aruba introduced Revision D versions of 100M, 1G, and 10G transceivers. Revision D products are structured to be specific alternate vendors as sources for the SKU#. Earlier Revision A, B, or C product may have alternate vendors that we no longer actively ship, but remain as fully supported in earlier and current products.

Some switch products will be specifying Revision D or Revision E (as is the case for the 8325 requiring J9151E or later) transceivers for full support, while other products may support earlier (older) revision transceivers – and some with specific 4x4 part numbers (see Identification of 4x4 part numbers for information).

Always refer to the Datasheet or QuickSpecs for the switch product to see the current list of supported transceivers.



- Although a 10G SFP+ transceiver module is the same physical dimensions of a 1G SFP transceiver, a 10G transceiver will NOT operate in a 1G-only SFP port.
- Many, although not all, 10G SFP+ ports have support to use a 1G SFP transceiver (or even a 100Mbps FX SFP transceiver).
  See the QuickSpec for the Switch product and verify if the 1G or 100Mbps SFP transceiver is supported in the 10G SFP+ port.

Models, specifications, and compatibility

SFP+ optical transceiver modules provide a transmission rate of 10.31 Gbps and use LC connectors.

The specifications for Revision D and E transceiver products are the same as the specified Revision A, B, C SKUs. Where support for a Revision A, B, or C transceiver existed, Revision D or E parts are also supported. Not all earlier revisions can be re-used on newer products: Check the tables below and compare the 4x4 number of the part to the list of supported 4x4 numbers. See Identification of 4x4 part numbers for more information.

Specifications for SFP+ optical transceiver modules

Product Name (SKU)	DOM - Digital Optical Monitoring (4x4 part #)	Central wl (nm)	Fiber mode	Fiber diameter (µm)	Bandwidth (MHz*km)	Transmission distance
HPE X132 10G SFP+ LC SR Transceiver (J9150A) Aruba 10G SFP+ LC SR 300m MMF XCVR (J9150D) Aruba 10G I-Tmp SFP+ LC SR 300m MMF XCVR (JL782A) Aruba 10G SFP+ LC SR 300m MMF TAA XCVR (JL748A)	Yes (1990-4391, 1990-4635, 1990-4634, 1990-4175) JL748A 4x4: (1990-4175, 1990-4776) JL782A 4x4: (1990-4767, 1990-4770)	850	MMF	50/125	4700 (OM4) 2000 (OM3) 500 (OM2) 400	400m (1312.34 ft) 300m (984.25 ft) 82m (269.03 ft) 66m (216.54 ft)
				62.5/125	200 (OM1) 160	33m (108.27 ft) 26m (85.30 ft)
HPE X132 10G SFP+ LC LRM Transceiver (J9152A) Aruba 10G SFP+ LC LRM 220m MMF XCVR (J9152D)	Yes (1990-4485 1990-4801) See note below regarding MCP.	1310	MMF	50/125	1500 500 (OM2) 400	220m (721.78 ft) 220m (721.78 ft) 100m (328.08 ft)
				62.5/125	200 (OM1) 160	220m (721.78 ft) 220m (721.78 ft)
			SMF	9/125	N/A	300m (987.25 ft)
HPE X132 10G SFP+ LC LR Transceiver (J9151A) Aruba 10G SFP+ LC LR 10km SMF XCVR (J9151D and J9151E) Aruba 10G SFP+ LC LR 10km SMF TAA XCVR (JL749A) Aruba 10G I-Tmp SFP+ LC LR 10km	Yes J9151A/J9151D: (1990-4657, 1990-4694) JL749A: (1990-4751, 1990-4752) JL783A: (1990-4768,1990-4769)	1310	SMF	9/125	N/A	10km (6.21 miles)

Product Name (SKU)	DOM - Digital Optical Monitoring (4x4 part #)	Central wl (nm)	Fiber mode	Fiber diameter (µm)	Bandwidth (MHz*km)	Transmission distance
SMF XCVR (JL783A)						
Aruba 10G LC BiDi 40km-D 1330/1270 XCVR (R9X54A)	Yes (1990-4843)	TX:1330 RX:1270	SMF (simplex LC)	9/125	N/A	40km (24.86 miles)
Aruba 10G LC BiDi 40km-U 1270/1330 XCVR (R9X55A)	Yes (1990-4842)	TX:1270 RX:1330	SMF (simplex LC)	9/125	N/A	40km (24.86 miles)
HPE X132 10G SFP+ LC ER Transceiver (J9153A) Aruba 10G SFP+ LC ER 40km SMF XCVR (J9153D)	Yes (1990-4365, 1990-4656)	1550	SMF	9/125	N/A	40km (24.86 miles) on engineered link (less than 11.1dBm loss over the entire link). 30km on standard SMF links.

MCP note: J9152D 10G LRM (Long Reach Multimode) with 4x4 numbers 1990-4485 or 1990-4801 are tuned so that they do not require a Mode Conditioning Patch (MCP) cable. Older J9152A with 4x4 numbers other than 1990-4485 or 1990-4801 may require an MCP when you use OM1 or OM2 fiber cables. Never use mode conditioning patch cables for OM3 or OM4 fiber types. For more information about mode conditioning patch cables, see related sections in the IEEE 802.3 standard.

10G LRM transceivers require an Electronic Dispersion Compensation (EDC) behind the SFP+ port to support 10G LRM technology. Switches with note "(or any type of 10G LRM technology)" cannot support any type of 10G LRM transceiver (even under Unsupported Transceiver mode).

Optical specifications for SFP+ optical transceiver modules

Product name (SKU)	Optical parameters (dBm)	
	Transmit power	Receive power
HPE X132 10G SFP+ LC SR Transceiver (J9150A) Aruba 10G SFP+ LC SR 300m MMF XCVR (J9150D) Aruba 10G SFP+ LC SR 300m MMF TAA XCVR (JL748A) Aruba 10G I-Tmp SFP+ LC SR 300m MMF XCVR (JL782A)	–7.3 to –1	–9.9 to +0.5

Product name (SKU)	Optical parameters (dBm)	
	Transmit power	Receive power
HPE X132 10G SFP+ LC LRM Transceiver (J9152A) Aruba 10G SFP+ LC LRM 220m MMF XCVR (J9152D)	–6.5 to +0.5	–6.5 to +1.5
HPE X132 10G SFP+ LC LR Transceiver (J9151A) Aruba 10G SFP+ LC LR 10km SMF XCVR (J9151D/J9151E) Aruba 10G SFP+ LC LR 10km SMF TAA XCVR (JL749A) Aruba 10G I-Tmp SFP+ LC LR 10km SMF XCVR (JL783A)	–8.2 to +0.5	–14.4 to +0.5
Aruba 10G LC BiDi 40km-D 1330/1270 XCVR (R9X54A) Aruba 10G LC BiDi 40km-U 1270/1330 XCVR (R9X55A)	0 to +5	-19 to -7 (use a -12dBm attenuator for short SMF cables)
HPE X132 10G SFP+ LC ER Transceiver (J9153A) Aruba 10G SFP+ LC ER 40km SMF XCVR (J9153D)	–4.7 to +4	–15.8 to –1 (use -5dBm attenuator for short SMF cables)

Compatibility for the SFP+ optical transceiver module

Product name	SKU	Minimum software required		Comments
		10G-SR, LR, LRM (J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D)	10G-ER (J9153A/J9153D)	
2530 Switch Series	J9853A, J9854A, J9855A, J9856A	All	All	Unlisted models do not have SFP+ ports.
2540 Switch Series	JL354A, JL355A, JL356A, JL357A	All (J9150A/J9150D and J9151A/J9151D/J9151E only) J9152A/J9152D (LRM) is not supported in any 2540 model	All	J9152A/J9152D (or any type of 10G LRM technology) is not supported in any 2540 model
2910al Switch Series	J9008A	All	W.15.07.0002	Unlisted models do not have SFP+ ports.
2920 Switch Series	J9726A, J9727A, J9728A, J9729A, J9836A	All		For use in an installed J9731A Aruba 2920 2-port 10GbE SFP+ Module.
2930F Switch Series	JL253A, JL254A, JL255A, JL256A, JL258A, JL263A, JL264A, JL558A, JL559A	J9150A/J9150D and J9151A/J9151D/J9151E: All versions JL748A/JL749A (TAA XCVRs): 16.08.0021 and 16.10.0007 J9152A/J9152D (or any	All	Unlisted models do not have SFP+ ports. J9152A/J9152D (or any type of 10G LRM technology) is not supported in any 2930F model.

Product name	SKU	Minimum software required		Comments
		10G-SR, LR, LRM (J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D)	10G-ER (J9153A/J9153D)	
		type of 10G LRM technology) is not supported in any 2930F model		
2930M Switch Series	JL319A, JL320A, JL321A, JL322A, JL323A, JL324A	J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D:All versions JL748A/JL749A (TAA XCVRs): 16.08.0021 and 16.10.0007	All	For use in an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module.
	R0M67A, R0M68A	J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D: WC.16.05.*xxxx* JL748A/JL749A (TAA XCVRs): 16.08.0021 and 16.10.0007	WC.16.05	
3500yl Switch Series	J8692A, J8693A, J9310A, J9311A	K.14.50 and later	K.15.02.0004 and later	For use in an installed J9312A 10GbE 2-port SFP+/2-port CX4 yl Module.
3800 Switch Series	J9575A, J9576A, J9573A, J9574A, J9584A	All	All	Unlisted models do not have SFP+ ports.
3810M Switch Series	JL071A, JL072A, JL073A, JL074A, JL076A	J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D:All versions JL748A/JL749A (TAA XCVRs): 16.08.0021 and 16.10.0007	All	For use in an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module
	JL075A	J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D:All versions JL748A/JL749A (TAA XCVRs): 16.08.0021 and 16.10.0007	All	For use in the JL075A SFP+ ports or in an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module
4100i Switch Series	JL817A, JL818A	J9150D, J9151D, J9153D: 10.08 (Commercial Temp) JL748A/JL749A (TAA XCVRs):	J9153D: 10.08.0001 (Commercial Temp) No Aruba 10G ER Ind Temp xcvr	Temp warnings will trigger at lower temperatures (~50C) if Commercial Temp vs Industrial Temp

Product name	SKU	Minimum software required		Comments
		10G-SR, LR, LRM (J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D)	10G-ER (J9153A/J9153D)	
		10.08 (Commercial Temp) JL782A, JL783A: 10.08.0001 (Industrial Temp) J9152A/J9152D (or any type of 10G LRM technology) is not supported in this Series	available	transceivers (~70C) are used. Commercial temp transceivers listed are enabled by 10.08.0001 but will be marked as "unsupported" because of non-compliant temp rating. All Third Party transceivers are treated as Commercial Temp, regardless of capability.
5400zl Switch Series	J9309A	K.14.39	K.15.02.0004	The J9309A 4-port SFP+ module supports only 10G transceivers. 10G ER (J9153A/D) transceivers are limited to a maximum of two transceivers per J9309A or J9538A modules when used in a 5400zl or 8200zl chassis.
	J9538A, J9548A, J9536A	K.15.02.0004	K.15.02.0004	
5400R Switch Series	J9538A, J9548A, J9536A	J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D:All versions JL748A/JL749A (TAA XCVRs): 16.08.0021 and 16.10.0007	All	
	J9990A, J9993A	J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D:KB.15.17 JL748A/JL749A (TAA XCVRs): 16.08.0021 and 16.10.0007	KB.15.17	
Aruba 6100 Switch Series	All models	10.06.0001 JL748A/JL749A (TAA transceivers): 10.06.0130 / 10.07.0010 J9152A/J9152D (or any type of 10G LRM technology) is not supported in the 6100 series	J9153D 10G ER not supported on the 6100 series	Only the listed 4x4 parts are fully supported J9150A/J9150D ▪ 1990-4391 ▪ 1990-4175 ▪ 1990-4635 ▪ 1990-4634 J9151A/J9151D ▪ 1990-4657

Product name	SKU	Minimum software required		Comments
		10G-SR, LR, LRM (J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D)	10G-ER (J9153A/J9153D)	
				▪ 1990-4727 ▪ 1990-4694 J9151E ▪ 1990-4727 ▪ 1990-4694 J9152A/J9152D (or any type of 10G LRM technology) is not supported on the 6100 Series
6120 Switch Series	516733-B21 (6120XG)	All	Not supported	498358-B21 (6120G/XG) has 1GB SFP and 10G XFP or CX4 ports and does not support these SFP+ transceivers.
6200yl Switch Series	J8992A	K.14.50	K.15.02.0004	J8992A fixed SFP ports are 1GB and do not support these SFP+ transceivers. For use in an installed J9312A 10GbE 2-port SFP+/2-port CX4 yl Module.
Aruba 6200F Switch Series	6200F models (except R8Q72A/R8V13A)	J9150A/J9150D and J9151A/J9151D/J9151E: 10.04.1000 JL748A/JL749A (TAA XCVRs): 10.06.0130 / 10.07.0010 J9152A/J9152D (or any type of 10G LRM technology) is not supported in this series	10.04.1000 Only the listed 4x4 parts are fully supported J9153A/J9153D ▪ 1990-4365 ▪ 1990-4656	Only the listed 4x4 parts are fully supported J9150A/J9150D ▪ 1990-4391 ▪ 1990-4175 ▪ 1990-4635 ▪ 1990-4634 J9151A/J9151D ▪ 1990-4657 ▪ 1990-4727 ▪ 1990-4694 J9151E ▪ 1990-4727 ▪ 1990-4694 J9152A/J9152D (or any type of 10G LRM technology) is not supported on the 6200F Series
	6200F (12p) R8Q72A/R8V13A (TAA)	10.11.1005 (no support for 10G LRM)	10.11.1005	
Aruba 6200M Switch	All 6200M models	10.11.1005 (support for 10G LRM on uplinks)	10.11.1005	6200M models support all of the above 10G products in addition to:

Product name	SKU	Minimum software required		Comments
		10G-SR, LR, LRM (J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D)	10G-ER (J9153A/J9153D)	
Series				J9152D 10G LRM ■ 1990-4485 ■ 1990-4801
Aruba 6300 Switch Series	All models (M and F) except JL762A R8S89A, R8S90A, R8S91A, R8S92A	J9150A/J9150D and J9151A/J9151D/J9151E: 10.04.1000 Except JL762A: 10.04.3000 JL748A/JL749A (TAA XCVRs): 10.06.0130 / 10.07.0005 J9152A/J9152D (or any type of 10G LRM technology) is not supported in this series. 10.10.0002 J9152D are only supported in select ports on 6300M models R8S91A and R8S92A. (Other models in this series do NOT support LRM technology, even in UT-mode).	10.04.0001 J9153A/J9153D ■ 1990-4365 ■ 1990-4656	J9150A/J9150D ■ 1990-4391 ■ 1990-4175 ■ 1990-4635 ■ 1990-4634 JL748A ■ 1990-4175 ■ 1990-4776 J9151A/J9151D ■ 1990-4657 ■ 1990-4727 ■ 1990-4694 J9151E ■ 1990-4727 ■ 1990-4694 JL749A 4x4: ■ 1990-4751 ■ 1990-4752 J9152D ■ 1990-4485 ■ 1990-4801 6300M models (R8S91A supports LRM in ports 51 & 52) and (R8S92A supports LRM in ports 1-24) and only J9152D (earlier J9152A are not supported) Other 6300M models not noted above do NOT support J9152A/J9152D (or any type of 10G LRM technology) even in UT-mode.
Aruba 6400 Modules	R0X39B, R0X40B R0X41A, R0X42A, R0X43A	J9150A/J9150D and J9151A/J9151D/J9151E: 10.04.1000 JL748A/JL749A (TAA XCVRs): 10.06.0140 and 10.07.0005 J9152A/J9152D (or any	10.04.1000	R0X38A/R0X39A/R0X40A (revision A) are no longer supported for use in the 6400 modules. J9150A/J9150D ■ 1990-4391 ■ 1990-4175

Product name	SKU	Minimum software required		Comments
		10G-SR, LR, LRM (J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D)	10G-ER (J9153A/J9153D)	
	R0X39C/R0X40C R0X41C, R0X42C, R0X43C	type of 10G LRM technology) is not supported in this series. 10.09.1000 No support for LRM technology	10.09.1000	▪ 1990-4635 ▪ 1990-4634 JL748A ▪ 1990-4175 ▪ 1990-4776 J9151A/J9151D ▪ 1990-4657 ▪ 1990-4727 ▪ 1990-4694 J9151E ▪ 1990-4727 ▪ 1990-4694 JL749A ▪ 1990-4751 ▪ 1990-4752 J9152A/J9152D (or any type of 10G LRM technology) is not supported in any of the 6400 modules. R0X44A auto-detects the inserted type of transceiver; it does NOT require any interface groups like the 8325. R9X54A/R9X55A (10G 40km BiDi)only supported for use on the R0X44C module, not in any other SFP56 port on other modules
	R0X44A	J9150A/J9150D and J9151A/J9151D/J9151E: 10.04.2000 JL748A/JL749A (TAA XCVRs): 10.06.0140 and 10.07.0005 J9152A/J9152D (or any type of 10G LRM technology) is not supported in this series	10.04.2000 J9153A/J9153D ▪ 1990-4365 ▪ 1990-4656	
	R0X44C	10.09.1000 No support for LRM technology R9X54A/R9X55A (10G 40km BiDi): 10.11.0001	10.09.1000	
6600 Switch Series	J9264A, J9265A	K.14.03	K.15.02.0004	
	J9452A	K.14.24	K.15.02.0004	
8200zl Switch Series	J9309A	K.14.39	K.15.02.0004	The J9309A four-port SFP+ module only supports 10G transceivers.
	J9538A, J9548A, J9536A	K.15.02.0004	K.15.02.0004	10G ER (J9153A/D) transceivers are limited to a maximum of two transceivers per J9309A or J9538A modules when used in a 5400zl or 8200zl chassis.

Product name	SKU	Minimum software required		Comments
		10G-SR, LR, LRM (J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D)	10G-ER (J9153A/J9153D)	
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ Switch	JL479A	J9150A/J9150D and J9151A/J9151D/J9151E: 10.03.0001 JL748A/JL749A (TAA XCVRs): 10.06.0140 and 10.07.0005 J9152A/J9152D (or any type of 10G LRM technology) is not supported in this series	All	Only the listed 4x4 parts are fully supported. J9150A/J9150D ▪ 1990-4391 ▪ 1990-4175 ▪ 1990-4635 ▪ 1990-4634 JL748A ▪ 1990-4175 ▪ 1990-4776 J9151A/J9151D ▪ 1990-4657 ▪ 1990-4727 ▪ 1990-4694 J9151E ▪ 1990-4727 ▪ 1990-4694 JL749A ▪ 1990-4751 ▪ 1990-4752 J9152A/J9152D (or any type of 10G LRM technology) is not supported on the 8320 Series.
Aruba 8325 48Y8C Switch	JL635A displayed by CLI (show system) JL624A - Portto-Power model (FB) JL625A - Power-to-Port model (BF)	J9150A/J9150D and J9151A/J9151D/J9151**E**: 10.03.0030 JL748A/JL749A (TAA XCVRs): 10.06.0140 and 10.07.0005 J9152A/J9152D (or any type of 10G LRM technology) is not supported in this series	10.03.0030 Only the listed 4x4 parts are fully supported J9153A/J9153D ▪ 1990-4365 ▪ 1990-4656	Only the listed 4x4 parts are fully supported. J9150A/J9150D ▪ 1990-4391 ▪ 1990-4175 ▪ 1990-4635 ▪ 1990-4634 JL748A 4x4: ▪ 1990-4175 ▪ 1990-4776 8325 is only compatible with J9151**E** or later. Do not attempt to use J9151D or earlier. J9151E ▪ 1990-4727 ▪ 1990-4694 JL749A 4x4: ▪ 1990-4751 ▪ 1990-4752

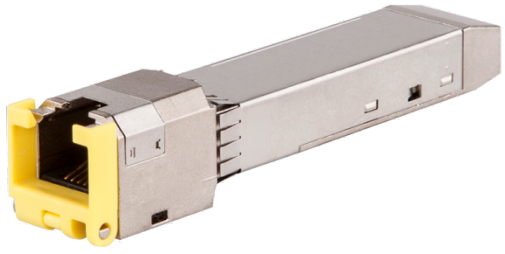
Product name	SKU	Minimum software required		Comments
		10G-SR, LR, LRM (J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D)	10G-ER (J9153A/J9153D)	
				J9152A/J9152D (or any type of 10G LRM technology) is not supported in the 8325 switches. The 8325 requires configuration of **interface groups** (groups of 12 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
Aruba 8360 Switch Series	8360 32Y4C models JL717A/JL717C(v2) displayed by CLI (`show system`) ■ JL700A/JL700C (v2) Port-to-Power model ■ JL701A/JL701C (v2) Power-to-Port model 8360 16Y2C models JL718A/JL718C(v2) displayed by CLI (`show system`) ■ JL702A/JL702C (v2) Port-to-Power model ■ JL703A/JL703C (v2) Power-to-Port model 8360 24XF2C models JL722A displayed by CLI (`show system`) ■ JL710A/JL710C (v2) Port-to-Power model	10.06.0001 JL748A/JL749A (TAA XCVRs): 10.06.0140 and 10.07.0005 J9152A/J9152D (or any type of 10G LRM technology) is not supported in this series 48Y6C models: 10.09.0002	10.06.0001 Only the listed 4x4 parts are fully supported J9153A/J9153D ■ 1990-4365 ■ 1990-4656 48Y6C models: 10.09.0002	Only the listed 4x4 parts are fully supported J9150A/J9150D ■ 1990-4391 ■ 1990-4175 ■ 1990-4635 ■ 1990-4634 JL748A ■ 1990-4175 ■ 1990-4776 J9151A/J9151D ■ 1990-4657 ■ 1990-4727 ■ 1990-4694 J9151E ■ 1990-4727 ■ 1990-4694 JL749A ■ 1990-4751 ■ 1990-4752 J9152A/J9152D (or any type of 10G LRM technology) is not supported on this series. The 8360 32Y4C model requires configuration of **interface groups** only for ports 1-4 (as group number 1) to enable the

Product name	SKU	Minimum software required		Comments
		10G-SR, LR, LRM (J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D)	10G-ER (J9153A/J9153D)	
	▪ JL711A/JL711C (v2) Power-to-Port model 8360 48Y6C models L719C displayed by CLI (`show system`) ▪ JL704C(v2) - Port-to-Power model (FB) ▪ JL705C(v2) - Power-to-Port model (BF)			use of 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). Ports 1-4 on the 8360 32Y4C models do not support 1G transceivers. All other ports can individually auto-detect the speed of the inserted xcvr. Not applicable to the 24XF (1G/10G) model. See the *Installation Guide* for details.
Aruba 8400X modules	JL363A JL687A	For JL363A 10G module: J9150A/J9150D and J9151A/J9151D/J9151E, J9152A/J9152D: 10.00.0001 JL748A/JL749A (TAA XCVRs): 10.06.0140 and 10.07.0005 10G LRM technology is supported only on the JL363A module For JL687A 25G module: J9150A/J9150D and J9151A/J9151D/J9151E: 10.04.2000 JL748A/JL749A (TAA XCVRs): 10.07.0005 J9152A/J9152D (or any type of 10G LRM technology) is not supported in the JL687A module.	JL363A: All JL687A: 10.04.2000	Only the listed 4x4 parts are fully supported. J9150A/J9150D ▪ 1990-4391 ▪ 1990-4175 ▪ 1990-4635 ▪ 1990-4634 JL748A ▪ 1990-4175 ▪ 1990-4776 J9151E ▪ 1990-4727 ▪ 1990-4694 JL749A ▪ 1990-4751 ▪ 1990-4752 JL363A module supports J9152A/J9152D ▪ 1990-4485 ▪ 1990-4801 JL687A module does NOT support J9152A/J9152D (or any type of 10G LRM technology). The JL687A module requires configuration of **interface groups** (groups of four ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups

Product name	SKU	Minimum software required		Comments
		10G-SR, LR, LRM (J9150A/J9150D, J9151A/J9151D/J9151E, J9152A/J9152D)	10G-ER (J9153A/J9153D)	
				default to 25G speed). See the *Installation Guide* for details.
Aruba 10000 48Y6C models	R8S96A displayed by CLI (`show system`) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	All 10000 models: J9150D: 10.10.0002 J9151**E**, JL748A(TAA): 10.10.0002 J9152A/J9152D (or any type of 10G LRM technology) is not supported in this series	J9153D:10.10.0002	Only the listed 4x4 parts are fully supported J9150A/J9150D ■ 1990-4391 ■ 1990-4175 ■ 1990-4635 ■ 1990-4634 J9151D is not supported: J9151E: ■ 1990-4727 ■ 1990-4694 The 10000 series requires configuration of interface groups (groups of 4 ports) to enable the use of 1G or 10G transceivers/DACs in the SFP28 ports (set speed to 25G for the default). See the *Installation Guide* for details.

J9152D 10G LRM with part numbers 1990-4485 and 1990-4801 are tuned so that it does not require the use of a mode conditioning patch (MCP) cable. Using an MCP with a J9152D will reduce the light levels and may trigger an "Rx power low" alarm. Older J9152A with part numbers other than 1990-4485 or 1990-4801 may require an MCP when you use OM1 or OM2 fiber cables. Never use mode-conditioning patch cables for OM3 or OM4 fiber types. For more information about mode conditioning patch cables, see related parts in the IEEE 802.3 standard.

10G SFP+ copper transceiver modules



Models, specifications, and compatibility

The 10GBASE-T Transceiver (JL563A/JL563B) are NOT supported for use through a QSA28 adapter (see QSFP28 to SFP28 adapter support)

Specifications for SFP+ copper transceiver modules

Product name (SKU)	Transmission distance	Data rate	Cable type	Connector type
Aruba 10GBASE-T SFP+ RJ45 30m Cat6A XCVR (JL563A/JL563B)	30 m (98.43 ft)	10G	STP Cat6A**	RJ-45

**See Transmission distance

Compatibility for SFP+ copper transceiver modules

Product name	SKU	Minimum software required (JL563A/ JL563B)	Comments
Aruba 4100i Switch Series	JL817A, JL818A	Not supported	Not supported
Aruba 6100 Switch Series	All models	Not supported	Not supported
Aruba 6200 Switch Series	All models	10.04.1000	JL563A/JL563B does not support flow control and only operates at 10G speed (does not auto-negotiate to 1G)
Aruba 6300 Switch Series	All models M and F	10.04.0001	JL563A/JL563B can be used in all SFP+ or SFP56 ports; no quantity limit. JL563A/JL563B does not support flow control and only operates at 10G speed (does not auto-negotiate to 1G).
	R8S89A, R8S90A, R8S91A, R8S92A	10.10.0002	
Aruba 6400 Modules	R0X39B, R0X40B, R0X41A, R0X42A, R0X43A R0X39C, R0X40C, R0X41C, R0X42C, R0X43C	10.04.1000 10.09.1000	R0X39A/R0X40A (revision A) are no longer supported for use in the 6400 series JL563A/JL563B can be used in all SFP+ , SFP28, or SFP56 ports; no quantity limit. JL563A/JL563B does not support flow control and only operates at 10G speed (does not auto-negotiate to 1G). R0X44AR0X44C auto-detects the inserted type of transceiver; it does NOT require any "interface groups" like the 8325.
	R0X44A ROX44C	10.04.2000 10.09.1000	

Product name	SKU	Minimum software required (JL563A/ JL563B)	Comments
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ Switch	JL479A	10.01.0011	JL563A/JL563B does not support flow control and only operates at 10G speed (does not auto-negotiate to 1G). It is only supported in ports 1 – 12. Use in any other port generates an incompatible interface error (meaning the port does not support the use of this transceiver); move to a supported port. A maximum of 12 JL563A/JL563B transceivers can be used in a switch.
Aruba 8325 48Y8C	JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	10.03.0030	JL563A/JL563B does not support flow control and only operates at 10G speed (does not auto-negotiate to 1G). A maximum of 12 JL563A/JL563B transceivers can be used in a switch. It is only supported in the top two rows, ports 1 - 17. It is disallowed in ports 3, 6, 9, 12, and 15. Use in any other port generates an incompatible interface error (meaning the port does not support the use of this transceiver); move to a supported port. The 8325 requires configuration of "interface groups(groups of 12 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
Aruba 8360 Switch Series	8360 32Y4C models JL717A/JL717C(v2) displayed by CLI (show system) ■ JL700A/JL700C(v2) Port-to-Power model ■ JL701A/JL701C(v2) Power-to-Port model 8360 16Y2C models JL718A/JL718C(v2) displayed by CLI (show system) ■ JL702A/JL702C(v2) Port-to-Power model ■ JL703A/JL703C(v2) 3A Power-to-Port	JL7117A/JL717C (v2) , JL718A/JL718C(v2) , JL722A/JL72C(v2) : 10.06.0001 JL719C: 10.09.0002	JL563A/JL563B does not support flow control and only operates at 10G speed (does not auto-negotiate to 1G). JL563A/JL563B transceivers can be used in all SFP or SFP28 ports in the 8360 switch (unlike the 8320 & 8325). The 8360 32Y4C and 48Y6C models require configuration of "interface groups" only for ports 1-4 (as group #1) to enable the use of 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed).

Product name	SKU	Minimum software required (JL563A/ JL563B)	Comments
	model 8360 24XF2C models JL722A/JL722C(v2) displayed by CLI (show system) ■ JL710A/JL710C(v2) Port-to-Power model ■ JL711A/JL711Power-to-Port model 8360 48Y6C models JL719C displayed by CLI (show system) ■ JL704C(v2) Port-to-Power model (FB) ■ JL705C(v2) Power-to-Port model (BF)		Ports 1-4 on the 8360 32Y4C and 48Y6C models do not support 1G transceivers. All other ports can individually auto-detect the speed of the inserted xcvr. Not applicable to the 24XF (1G/10G) model. See the *Installation Guide* for details.
Aruba 8400X Modules	JL363A JL687A	10.00.0018 10.04.2000	JL563A/JL563B does not support 1G operation; only 10G. It is only supported in ports 1 - 12. A maximum of 12 JL563A/JL563B transceivers can be used in the JL363A module. The JL687A 32p 25G module can support the use of the JL563A/JL563B transceiver in all 32 ports. The JL687A module requires configuration of **interface groups**(groups of 4 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
Aruba 10000 48Y6C models	R8S96A displayed by CLI (`show system`) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	All 10000 models: JL563A is locked out of being used in this series JL563B: 10.10.0002	The JL563A (10GBase-T, A-Revision) transceiver is locked out of use in this series. (even with UT-mode) JL563B (B-revision) is supported in all SFP ports. **NOTE:** The CX 10000 requires configuration of **interface groups**(groups of 4 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports. (Interface Groups default to 25G.)

SFP+ DAC cables

Direct Attach over Copper (DAC) cables have a minimum bend radius of typically 4x the diameter of the cable (approximately a 1" bend radius). Handle DAC cables carefully to ensure that you do not crimp or bend the cable beyond a 1" radius; otherwise, you risk damaging the cable.

Aruba and other HPE DAC cables are passive devices. If your deployment calls for Active DACs, these are not compatible. If an Active DAC is required, an alternative is to use a 10G SR transceiver at both ends with the appropriate fiber cable between them.

Where support for a Revision A, B, or C transceiver existed, Revision D or E parts are also supported. Not all earlier revisions can be re-used on newer product: Check the tables below and compare the 4x4 number of the part to the list of supported 4x4 numbers. See Identification of 4x4 part numbers for more information.

Models, specifications, and compatibility

The specifications for Revision D transceiver products are the same as the specified Revision A, B, and C SKUs.

Specifications for SFP+ DACs

Product name (SKU)	Cable length	Data rate
HPE X242 10G SFP+ to SFP+ 1m DAC Cable (J9281B) Aruba 10G SFP+ to SFP+ 1m DAC Cable (J9281D)	1 m (3.28 ft)	10 Gbps
HPE X242 10G SFP+ to SFP+ 3m DAC Cable (J9283B) Aruba 10G SFP+ to SFP+ 3m DAC Cable (J9283D)	3 m (9.84 ft)	
HPE X242 10G SFP+ to SFP+ 7m DAC Cable (J9285B) Aruba 10G SFP+ to SFP+ 7m DAC Cable (J9285D)	7 m (22.97 ft)	

10G 7m DACs require a PHY behind the SFP+ port to support >5m DAC technology. Switches with a note "or any type of 7m DAC is not supported" cannot support any type of 10G 7m DAC (even under Unsupported Transceiver mode). 5m DACs may work with Allow-Unsupported-Transceiver enabled.

The following DAC cables are offered by HPE Servers and Systems and ordered using the specified part number (these cables may not be available to order for Aruba-only partners). Refer to the HPE Compute transceiver and cable hardware matrix product availability matrix at hpe.com.

Specifications for HPE SFP+ DACs (from HPE Server Products)

Product name (SKU)	Cable length	Data rate
HPE BLc 10G SFP+ SFP+ 3m DAC Cable (487655-B21)	3m (9.84 ft)	10 Gbps
HPE BLc 10G SFP+ SFP+ 5m DAC Cable (537963-B21)	5m (16.40 ft)	

(AOS-Switch) Compatibility for the SFP+ DACs

Product name	SKU	Minimum software required (J9281B/J9281D, J9283B/J9283D, J9285B/J9285D)	Comments
2530 Switch Series	J9853A, J9854A, J9855A, J9856A	All	Unlisted models do not have SFP+ ports.
2540 Switch Series	JL354A, JL355A, JL356A, JL357A	All (J9281B/J9281D and J9283B/J9283D only. See comments for exception)	J9285B/J9285D or any type of 7m DAC is not supported in any of these series. For more information, see Unsupported transceiver mode
2910al Switch Series	J9145A, J9146A, J9147A, J9148A	W.14.28	For use in the J9008A 2-port 10GbE SFP+ al module.
2920 itch Series	J9726A, J9727A, J9728A, J9729A, J9836A	All	The SFP ports on the models listed do not support these 10G SFP+ cables. For use in an installed J9731A Aruba 2920 2-port 10GbE SFP+ .
2930F Switch Series	JL253A, JL254A, JL255A, JL256A, JL258A, JL263A, JL264A, JL558A, JL559A	All (J9281B/J9281D and J928 3B/J9283D only. See comment for exception)	Unlisted models do not have 10G SFP+ports. J9285B/J9285D or any type of 7m DAC is not supported in any of these series.
2930M Switch Series	JL319A, JL320A, JL321A, JL322A, JL323A, JL324A	All	For use in an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module J9285B/9285D (7m DAC) is supported in all 2930M models.
3500yl Switch Series	J8692A, J8693A, J9310A, J9311A	K.14.50	For use in an installed J9312A 10GbE 2-port SFP+/2-port CX4 yl Module.

Product name	SKU	Minimum software required (J9281B/J9281D, J9283B/J9283D, J9285B/J9285D)	Comments
3800 Switch Series	J9575A, J9576A, J9573A, J9574A, J9584A	All	Unlisted models not do not have SFP+ ports.
3810M Switch Series	JL071A, JL072A, JL073A, JL074A, JL076A	All	For use in an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module.
	JL075A	All	For use in the JL075A SFP+ ports or used in an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module.
5400zl Switch Series	J9309A	K.14.39	The J9309A 4-port SFP+ module only supports 10G transceivers.
	J9538A, J9548A, J9536A	K.15.02.0004	
5400R Switch Series	J9538A, J9548A, J9536A	All	
	J9990A, J9993A	KB.15.17	
6120 Switch Series	516733-B21	All	
6200yl Switch Series	J8992A	K.14.50	J8992A fixed SFP ports are 1GB and do not support these SFP+ copper cables. For use in an installed J9312A 10GbE 2-port SFP+/2-port CX4 yl Module.
6600 Switch Series	J9264A, J9265A, J9452A	K.14.32	
8200zl Switch Series	J9309A	K.14.39	The J9309A 4-port SFP+ module only supports 10G transceivers.
	J9538A, J9548A, J9536A	K.15.02.0004	

(AOS-CX) Compatibility for the SFP+ DACs (and specifics for HPE Server cables)

* HPE Server product - may not be available to Aruba resellers

Product name	SKU	Minimum software required (J9281D, J9283D, J9285D, 487655-B21, 537963-B21)	Comments
Aruba 4100i Switch Series	JL817A, JL818A	J9281D, J9283D: 10.08.0001 (Commercial Temp) *487655-B21, 537963-B21: Not supported	J9285D (7m) Not Supported nor any type of 7m DAC. High Temp warnings will trigger at lower temperatures (~50C)if Commercial Temp vs Industrial Temp transceivers (~70C) are used. All Third Party transceivers are treated as Commercial Temp, regardless of capability. No Industrial Temp 10G DACs available
Aruba 6100 Switch Series	All models	J9281B/J9281D, J9283B/J9283D (see comment for exception): 10.11.1000 *487655-B21 and 537963-B21: not supported	Only the listed 4x4 parts are fully supported: J9281B/J9281D ■ 8121-1151 ■ 8121-1300 J9283B/J9283D ■ 8121-1152 ■ 8121-1298 J9285B/J9285D or any type of 7m DAC technology is not supported in any of these series. See Unsupported Transceiver Mode.
Aruba 6200 Switch Series	All models	J9281B/J9281D and J9283B/J9283D only. See comment for exception): 10.04.1000 *487655-B21 and 537963-B21: not supported	Only the listed 4x4 parts are fully supported: J9281B/J9281D ■ 8121-1151 ■ 8121-1300 J9283B/J9283D ■ 8121-1152 ■ 8121-1298 J9285B/J9285D or any type of 7m DAC is not supported any 6200 model.
Aruba 6300 Switch Series	All models M and F R8S89A, R8S90A, R8S91A, R8S92A	J9281B/J9281D and J9283B/J9283D only. See comment for exception): 10.04.0001 *487655-B21and 537963-B21: 10.08.0001 for 6300 select SKUs JL658A (all ports), JL663A, JL762A J9281B/J9281D and J9283B/J9283D, *487655-B21 and 537963-B21: 10.10.0002	Only the listed 4x4 parts are fully supported J9281B/J9281D ■ 8121-1151 ■ 8121-1300 J9283B/J9283D ■ 8121-1152 ■ 8121-1298 J9285B/J9285D or any type of 7m DAC is not supported in any 6300 model.
Aruba 6400	R0X39B, R0X40B	J9281B/J9281D and	R0X39A/R0X40A (revision A) are no

Product name	SKU	Minimum software required (J9281D, J9283D, J9285D, 487655-B21, 537963-B21)	Comments
Modules	R0X41A, R0X42A,R0X43A	J9283B/J9283D only. See comment for exception): 10.04.1000 *487655-B21and 537963-B21: 10.08.0001	longer supported for use in the 6400 series. Only the following 4x4 part numbers are supported: J9281B/J9281D ■ 8121-1151 ■ 8121-1300 J9283B/J9283D ■ 8121-1152 ■ 8121-1298 J9285B/J9285D or any type of 7m DAC is not supported in any 6400 modules. R0X44A/R0X44C auto-detects the inserted type of transceiver; it does NOT require any interface groups like the 8325.
	R0X39C, R0X40C R0X41C, R0X42C, R0X43C	10.09.1000	
	R0X44A	J9281B/J9281D and J9283B/J9283D only (see comment for exception): 10.04.2000 *487655-B21 and 537963- B21: not supported	
	R0X44C	J9281B/J9281D and J9283B/J9283D only (see comment for exception): 10.09.1000 *487655-B21 and 537963- B21: not supported	
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ Switch	JL479A	J9281B/J9281D and J9283B/J9283D only. See comment for exception): 10.00.0006 *487655-B21and 537963-B21: 10.04.1000	Only the following 4x4 part numbers are supported: J9281B/J9281D ■ 8121-1151 ■ 8121-1300 9283B/J9283D: ■ 8121-1152 ■ 8121-1298 J9285B/J9285D or any type of 7m DAC is not supported in the 8320 models. 487655-B21 and 537963- B21: See HPE Servers and Systems Support for HPE Interconnect support.
Aruba 8325 48Y8C Switch	JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	J9281B/J9281D and J9283B/J9283D only. See comment for exception): 10.02.0001 *487655-B21and 537963-B21: 10.04.1000	Only the following 4x4 part numbers are supported: J9281D: ■ 8121-1151 ■ 8121-1300 J9283D: ■ 8121-1152 ■ 8121-1298 J9285B/J9285D or any type of 7m DAC is not supported in the 8325 models. 487655-B21 and 537963- B21: See HPE Servers and Systems Support for HPE Interconnect support.

Product name	SKU	Minimum software required (J9281D, J9283D, J9285D, 487655-B21, 537963-B21)	Comments
			The 8325 requires configuration of **interface groups** (in groups of 12 ports) to enable use of 1G or 10G transceivers or DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
Aruba 8360 Switch Series	8360 32Y4C models JL717A/JL717C(v2) displayed by CLI (`show system`) ▪ JL700A/JL700C (v2) Port-to-Power model ▪ JL701A/JL701C (v2) Power-to-Port model 8360 16Y2C models JL718A displayed by CLI (`show system`) ▪ JL702A/JL702C (v2) Port-to-Power model ▪ JL703A/JL703C (v2) Power-to-Port model JL719C displayed by CLI (`show system`) ▪ JL704C(v2) Port-to-Power model (FB) ▪ JL705C(v2) Power-to-Port model (BF) 8360 24XF2C models JL722A/JL722C(v2) displayed by CLI (`show system`) ▪ JL710A/JL710C (v2) Port-to-Power model ▪ JL711A/JL711C (v2) Power-to-Port model 8360 48Y6C models	JL717A/JL717C(v2) , JL718A/JL718C(v2) , and JL722A/JL722C(v2) : J9281B/J9281D and J9283B/J9283D only. See comment for exception): 10.06.0001 *487655-B21 and 537963-B21: 10.06.0001 JL719C: J9281B/J9281D and J9283B/J9283D only. See comment for exception): 10.09.0002 *487655-B21 and 537963-B21: 10.09.0002	Only the following 4x4 part numbers are supported: J9281B/J9281D: ▪ 8121-1151 ▪ 8121-1300 J9283B/J9283D: ▪ 8121-1152 ▪ 8121-1298 J9285B/J9285D or any type of 7m DAC is not supported in the 8360 models. 487655-B21 and 537963- B21: See HPE Servers and Systems Support for HPE Interconnect support. The 8360 32Y4C and 48Y6C models require configuration of **interface groups** only for ports 1-4 (as group number 1) to enable the use of 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). Ports 1-4 on the 8360 32Y4C model do not support 1G transceivers. All other ports can individually auto-detect the speed of the inserted transceiver. Not applicable to the 24XF (1G/10G) model. See the *Installation Guide* for details.

Product name	SKU	Minimum software required (J9281D, J9283D, J9285D, 487655-B21, 537963-B21)	Comments
Aruba 8400X modules	JL363A	J9281D, J9283D, J9285D: 10.00.0003 *487655-B21and 537963-B21: 10.06.0001	Only the following 4x4 part numbers are supported: J9281B/J9281D: ▪ 8121-1151, ▪ 8121-1300 J9283B/J9283D: ▪ 8121-1152, ▪ 8121-1298 J9285B/J9285D: ▪ 8121-1154, ▪ 8121-1305 ▪ 8121-1724 JL687A 32p 25G module requires configuration of **interface groups** (groups of four ports) to enable use of 1G or 10G transceivers or DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
	JL687A	J9281D, J9283D, J9285D: 10.04.2000 *487655-B21and 537963-B21: 10.06.0001	
Aruba 10000 Switch Series	R8S96A displayed by CLI (`show system`) ▪ R8P13A - 48Y6C FB bundle ▪ R8P14A - 48Y6C BF bundle	J9281D and J9283D only. See comment for exception):10.10.0002 *487655-B21and 537963-B21: 10.10.0002	Only the following 4x4 part numbers are supported: J9281D: ▪ 8121-1151 ▪ 8121-1300 J9283D: ▪ 8121-1152 ▪ 8121-1298 J9285D or any type of 7m DAC is not supported in the 10000 models. 487655-B21 and 537963- B21: See HPE Servers and Systems Support for HPE Interconnect support. The 10000 series requires configuration of interface groups (groups of 4 ports) to enable the use of 1G or 10G transceivers/DACs in the SFP28 ports (set speed to 25g for the default). See the *Installation Guide* for details.

Gigabit SFP optical transceiver modules

In December 2017, Aruba introduced Revision D versions of 100M, 1G, and 10G transceivers. Revision D products are structured to be specific alternative vendors as sources for the SKU#. Earlier Revision A, B, or C product may have alternative vendors that we no longer actively ship, but remain as fully supported in earlier and current products.

Some switch products will be specifying Revision D transceivers for full support, while other products may support earlier (older) revision transceivers – and some with specific 4x4 part numbers (see Identification of 4x4 part numbers for information regarding 4x4 part numbers).

Always refer to the Datasheet or QuickSpecs for the Switch product to see the current list of supported transceivers.

- Although a 10G SFP+ transceiver module has the same physical dimensions of a 1G SFP transceiver, a 10G transceiver will NOT operate in a 1G SFP port.
- Many, although not all, 10G SFP+ ports have support to use a 1G SFP transceiver (or even a 100Mbps FX SFP transceiver). See the QuickSpec for the Switch product and verify if the 1G or 100Mbps SFP transceiver is supported in the 10G SFP+ port.

Models, specifications, and compatibility

Gigabit SFP optical transceiver modules use LC connectors.

The specifications for Revision D transceiver products are the same as the specified Revision A, B, and C SKUs. Where support for a Revision A, B, or C transceiver existed, Revision D or E parts are also supported. Not all earlier revisions can be re-used on newer product: Check the tables below and compare the 4x4 number of the part to the list of supported 4x4 numbers. See Identification of 4x4 part numbers for more information.

Specifications for Gigabit SFP optical transceiver modules

Product name (SKU)	DOM - Digital Optical Monitoring (4x4 part #)	Central wl (nm)	Fiber mode	Fiber diameter (µm)	Modal bandwidth (MHz*km)	Transmission distance
HPE X121 1G SFP LC SX Transceiver (J4858C) Aruba 1G SFP LC SX 500m MMF XCVR (J4858D) Aruba 1G SFP LC SX 500m MMF TAA XCVR (JL745A) Aruba 1G I-Tmp SFP LC SX 500m MMF XCVR (JL780A)	Yes (1990-4415 1990-4395 1990-4750 1990-4793) JL780A: (1990-4763, 1990-4765)	850	MMF	50/125	500 (OM2) 400	550m (1804.46 ft) 500 m (1640.42 ft)
				62.5/125	200 (OM1) 160	275m (902.23 ft) 220m (721.78 ft)
HPE X121 1G SFP LC LX Transceiver (J4859C) Aruba 1G SFP LC LX 10km SMF XCVR (J4859D) Aruba 1G SFP LC LX 10km SMF TAA XCVR (JL746A) Aruba 1G I-Tmp SFP LC LX 10km SMF XCVR (JL781A)	Yes (1990-4116, 1990-4414, & 1990-4608) JL781A: (1990-4764, 1990-4766)	1310	SMF	9/125	N/A	10km (6.21 miles)
			MMF	50/125	500 or 400	550m (1804.46 ft)
			MMF	62.5/125	500	550m (1804.46 ft)
HPE X121 1G SFP LC LH Transceiver (J4860C) Aruba 1G SFP LC LH 70km SMF XCVR (J4860D)	Yes (1990-4363)	1550	SMF	9/125	N/A	70km (43.49 miles)

Optical specifications for Gigabit SFP optical transceiver modules

Product name (SKU)	Optical parameters (dBm)	
	Transmit power	Receive power
HPE X121 1G SFP LC SX Transceiver (J4858C) Aruba 1G SFP LC SX 500m MMF XCVR (J4858D) Aruba 1G SFP LC SX 500m MMF TAA XCVR (JL745A)	–9.5 to 0	–17 to –3
HPE X121 1G SFP LC LX Transceiver (J4859C) Aruba 1G SFP LC LX 10km SMF XCVR (J4859D) Aruba 1G SFP LC LX 10km SMF TAA XCVR (JL746A)	–9.5 to –3	–20 to –3
HPE X121 1G SFP LC LH Transceiver (J4860C) Aruba 1G SFP LC LH 70km SMF XCVR (J4860D)	0 to +5	–22 to –3 (use -8dBm attenuator for short SMF cables)

Compatibility for Gigabit SFP optical transceiver modules

Product name	SKU	Minimum software required (J4858C/J4858D, J4859C/J4859D, J4860C/J4860D)	Comments
2510 Switch Series	J9019A/B, J9020A, J9279A, J9280A	All	
2520 Switch Series	J9137A, J9138A, J9298A, J9299A	All	
2530 Switch Series	J9772A, J9773A, J9774A, J9775A, J9776A, J9777A, J9778A, J9779A, J9780A, J9781A, J9782A, J9783A, J9853A, J9854A, J9855A, J9856A	All	
2540 Switch Series	JL354A, JL355A, JL356A, JL357A	All	
2600 Switch Series	J4899A/B/C, J4900A/B/C, J8164A, J8165A, J8762A	H.08.98	
2610 Switch Series	J9085A, J9086A, J9087A, J9088A, J9089A	All	
2615-8-PoE Switch	J9565A	All	
2620 Switch Series	J9623A, J9624A, J9625A, J9626A, J9627A	All	

Product name	SKU	Minimum software required (J4858C/J4858D, J4859C/J4859D, J4860C/J4860D)	Comments
2800 Switch Series	J4903A, J4904A	I.08.103	
2810 Switch Series	J9021A, J9022A	All	
2900 Switch Series	J9049A, J9050A	T.13.45	
2910al Switch Series	J9145A, J9146A, J9147A, J9148A	All	For use in the SFP ports on the models listed, and in the J9008A 2-port 10GbE SFP+ al module.
2915-8G-PoE Switch	J9562A	All	
2920 Series Switches	J9726A, J9727A, J9728A, J9729A, J9836A	All	For use in the SFP ports on the models listed. Also for use in the dual-speed SFP+ ports of the J9731A 2-Port 10GbE SFP+ Module.
2930F Series Switches	JL253A, JL254A, JL255A, JL256A, JL258A, JL259A, JL260A, JL261A, JL262A, JL263A, JL264A, JL557A, JL558A, JL559A	J4858C/D, J4859C/D, J4860C/D: All WC Software JL745A, JL746A (TAA XCVRs): WC 16.08.0021 and 16.10.0006 and later	
2930M Switch Series	JL319A, JL320A, JL321A, JL322A, JL323A, JL324A	J4858C/D, J4859C/D, J4860C/D: All WC Software JL745A, JL746A (TAA XCVRs): WC 16.08.0021 and 16.10.0006 and later	For use in SFP ports on switch and an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module.
3400cl Switch Series	J4905A, J4906A	All	
3500 Series Switches	J9470A, J9471A, J9472A, J9473A	K.14.31	
3500yl Switch Series	J8692A, J8693A	All	For use in the SFP ports on the models listed, and in an installed J9312A 10GbE 2-port SFP+/2-port CX4 yl Model
	J9310A, J9311A	K.14.50	

Product name	SKU	Minimum software required (J4858C/J4858D, J4859C/J4859D, J4860C/J4860D)	Comments
3800 Switch Series	J9573A, J9574A, J9575A, J9576A, J9584A	All	
3810M Switch Series	JL071A, JL072A, JL073A, JL074A, JL076A, JL075A	J4858C/D, J4859C/D, J4860C/D: All Software JL745A, JL746A (TAA XCVRs): 16.08.0021 and 16.10.0006 and later	For use in the JL075A 3810M switch. Also for use in any 3810M switch with a JL083A Aruba 3810M/2930M 4SFP+ MACsec Module installed.
4100gl Switch Series	J4893A, J4908A	G.07.103	
Aruba 4100i Switch Series	JL817A, JL818A	J4858D, J4859D, J4860D: 10.08.0001 (Commercial Temp) JL780A, JL781A: 10.08.0001 (Ind Temp)	Hi Temp warnings will trigger at lower temperatures (~50C)if Commercial Temp vs Industrial Temp transceivers (~70C) are used. All Third Party transceivers are treated as Commercial Temp, regardless of capability.
4200vl Switch Series	J8776A, J9033A	All	
5300xl Switch Series	J4878A/B, J4907A	E.10.36	
5400zl Switch Series	J8705A, J8706A	All	
	J9308A, J9309A	K.14.34	The J9309A 4-port SFP+ module only supports 10G transceivers.
	J9537A, J9549A, J9535A, J9637A, J9538A, J9548A, J9536A	K.15.02.0004	The J9538A 8-port SFP+ v2 module supports both 1G and 10G transceivers.
5400R Switch Series	J9537A, J9549A, J9535A, J9637A, J9538A, J9548A, J9536A	J4858C/D, J4859C/D, J4860C/D: All Software JL745A, JL746A (TAA XCVRs): 16.08.0021 and 16.10.0006 and later	The J9538A 8-port SFP+ v2 module supports both 1G and 10G transceivers.
	J9988A, J9989A, J9990A, J9993A	KB.15.17	
Aruba 6000	All models (1G uplink only) NO support for	J4858C/J4858D, J4859C/J4859D:	Only the following 4x4 part numbers are supported:

Product name	SKU	Minimum software required (J4858C/J4858D, J4859C/J4859D, J4860C/J4860D)	Comments
Switch Series	100Mbps FX.	JL745A, JL746A (TAA): 10.08.0001 J4860C/J4860D: not supported	J4858C/J4858D: ■ 1990-4415 ■ 1990-4395 ■ 1990-4750 ■ 1990-4793 J4859C/J4859D ■ 1990-4116 ■ 1990-4414
Aruba 6100 Switch Series	All models	J4858C/J4858D, J4859C/J4859D: 10.06.0001 JL745A, JL746A (TAA XCVRs): 10.06.0130 and 10.07.0010 J4860C/J4860D: not supported	Only the following 4x4 part numbers are supported: J4858C/J4858D: ■ 1990-4415 ■ 1990-4395 ■ 1990-4750 ■ 1990-4793 J4859C/J4859D: ■ 1990-4116 ■ 1990-4414
6108 Switch	J4902A	H.07.88	
6120 Switch Series	498358-B21, 516733-B21	SX, LX: all versions LH: not supported	
6200yl-24G-mGBIC Switch	J8992A	All	
Aruba 6200 Switch Series	All 6200F models (except R8V13A/R8V13A) All 6200M models & 6200F R8V13A/R8V13A)	J4858C/J4858D, J4859C/J4859D, J4860C/J4860D: 10.04.1000 JL745A, JL746A (TAA): 10.06.0130 and 10.07.0010 J4858C/J4858D, J4859C/J4859D, J4860C/J4860D: JL745A, JL746A (TAA): 10.11.0005	Only the following 4x4 part numbers are supported: J4858C/J4858D: ■ 1990-4415 ■ 1990-4395 ■ 1990-4750 ■ 1990-4793 J4859C/J4859D: ■ 1990-4116 ■ 1990-4414 J4860C/J4860D: ■ 1990-4363

Product name	SKU	Minimum software required (J4858C/J4858D, J4859C/J4859D, J4860C/J4860D)	Comments
Aruba 6300 Switch Series	All models except JL762A, R8S89A, R8S90A, R8S91A, R8S92A: JL745A, JL746A (TAA XCVRs): JL762A(6300 Pwr2Prt): R8S89A, R8S90A, R8S91A, R8S92A:	10.04.0001 10.06.0130 and 10.07.0010 10.08.0001 10.10.0002	**Aruba 6300 Switch Series only:** Hardware limitations for the following SKUs: R8S89A & R8S90A: cannot support 1G xcvrs in uplinks R8S91A only in ports 51-52 R8S92A only in ports 1-24 (can not support in uplinks ports 49-52)
Aruba 6400 Modules	R0X39B, R0X40B R0X41A, R0X42A, R0X43A	J4858C/J4858D, J4859C/J4859D, J4860C/J4860D: 10.04.1000 JL745A, JL746A (TAA): 10.06.0130 and 10.07.0010	R0X39A/R0X40A (revision A) are no longer supported for use in the 6400 series. Only the following 4x4 part numbers are supported: J4858C/J4858D: ▪ 1990-4415 ▪ 1990-4395 ▪ 1990-4750 ▪ 1990-4793 J4859C/J4859D: ▪ 1990-4116 ▪ 1990-4414 J4860C/J4860D: ▪ 1990-4363 R0X44A/R0X44C auto-detects the inserted type of transceiver; it does NOT require any interface groups like the 8325.
	R0X44A	For R0X44A module: J4858C/J4858D, J4859C/J4859D, J4860C/J4860D: 10.04.2000 JL745A, JL746A (TAA XCVRs): 10.06.0130 and 10.07.0010	
	R0X39C, R0X40C, R0X41C, R0X42C	10.09.1000	
6600 Switch Series	J9263A, J9264A	K.14.03	
	J9451A	K.14.24	
8200zl Switch Series	J8705A, J8706A	All	
	J9308A, J9309A	K.14.34	The J9309A 4-port SFP+ module only supports 10G transceivers
	J9537A, J9549A, J9535A, J9637A, J9538A, J9548A, J9536A	K.15.02.0004	The J9538A 8-port SFP+ v2 module supports both 1G and 10G transceivers.

Product name	SKU	Minimum software required (J4858C/J4858D, J4859C/J4859D, J4860C/J4860D)	Comments
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ Switch	JL479A	J4858C/J4858D, J4859C/J4859D, J4860C/J4860D: 10.03.0001 JL745A, JL746A (TAA XCVRs): 10.06.0130 and 10.07.0010	Only the following 4x4 part numbers are supported: J4858C/J4858D: ■ 1990-4415 ■ 1990-4395 ■ 1990-4750 ■ 1990-4793 J4859C/J4859D: ■ 1990-4116 ■ 1990-4414 J4860C/J4860D: ■ 1990-4363
Aruba 8325 Switch Series	JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	J4858C/J4858D, J4859C/J4859D, J4860C/J4860D: 10.03.0010 JL745A, JL746A (TAA XCVRs): 10.06.0130 and 10.07.0010	Only the following 4x4 part numbers are supported: J4858C/J4858D: ■ 1990-4395 ■ 1990-4415 J4859C/J4859D: ■ 1990-4116 ■ 1990-4414 J4860C/J4860D: ■ 1990-4363 The 8325 requires configuration of "interface groups" (groups of 12 ports) to enable use of 1G or 10G transceivers or DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details. 1G optics at the opposite end of the link must NOT enable auto-negotiation and operate in full duplex mode.
Aruba 8360 Switch Series	8360 32Y4C models JL717A/JL717C(v2) displayed by CLI (`show system`) ■ JL700A/JL700C(v2) Port-to-Power model ■ JL700A/JL700C(v2) A Power-to-Port model 8360 16Y2C models JL718A/JL718C(v2) displayed by CLI (`show system`) ■ JL702A/JL702C(v2) Port-to-Power model	JL717A/JL717C(v2), JL718A/JL718C(v2), and JL722A/JL722C (v2): J4858C/J4858D, J4859C/J4859D, J4860C/J4860D: 10.06.0001 JL745A, JL746A (TAA XCVRs): 10.06.0130 and 10.07.0010 JL719C: J4858C/J4858D,	Only the following 4x4 part numbers are supported: J4858C/J4858D: ■ 990-4415 ■ 1990-4395 ■ 1990-4750 ■ 1990-4793 J4859C/J4859D: ■ 1990-4116 ■ 1990-4414 J4860C/J4860D: ■ 1990-4363

Product name	SKU	Minimum software required (J4858C/J4858D, J4859C/J4859D, J4860C/J4860D)	Comments
	▪ JL702A/JL702C(v2) A Power-to-Port model 8360 24XF2C models JL722A/JL722C(v2) displayed by CLI (`show system`) ▪ JL710A/JL710C(v2) Port-to-Power model ▪ JL711A/JL711C(v2) Power-to-Port model 8360 48Y6C models JL719C displayed by CLI (`show system`) ▪ JL704C(v2) Port-to-Power model (FB) ▪ JL705C(v2) Power-to-Port model (BF)	J4859C/J4859D, J4860C/J4860D: 10.09.0002 JL745A, JL746A (TAA XCVRs): 10.09.0002	The 8360 32Y4C and 48Y6C models require configuration of "interface groups" only for ports 1-4 (as group #1) to enable the use of 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). Ports 1-4 on the 8360 32Y4C model do not support 1G transceivers. All other ports can individually auto-detect the speed of the inserted xcvr. Not applicable to the 24XF (1G/10G) model See the *Installation Guide* for details.
Aruba 8400X Modules	JL363A JL687A	For JL363A module: J4858C/J4858D, J4859C/J4859D, J4860C/J4860D: 10.00.0018 JL745A, JL746A (TAA XCVRs): 10.07.0005 For JL687A module: J4858C/J4858D, J4859C/J4859D, J4860C/J4860D: 10.04.2000 JL745A, JL746A (TAA XCVRs): 10.07.0005	Only the following 4x4 part numbers are supported: J4858C/J4858D: ▪ 1990-4415 ▪ 1990-4395 ▪ 1990-4750 ▪ 1990-4793 J4859C/J4859D: ▪ 1990-4116 ▪ 1990-4414 J4860C/J4860D: ▪ 1990-4363 JL687A 32p 25G module requires configuration of "interface groups" (groups of 4 ports) to enable use of 1G or 10G transceivers or DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details. JL687A: 1G optics at the opposite end of the link must NOT enable auto-negotiation and operate in full duplex mode (does not apply to the JL363A module)
9300m Switch Series	J4885A, J4894A	All	

Product name	SKU	Minimum software required (J4858C/J4858D, J4859C/J4859D, J4860C/J4860D)	Comments
9408sl Switch	J8684A	All	
Aruba 10000 Switch Series	R8S96A displayed by CLI (show system) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	J4858D, J4859D, J4860D: 10.10.0002 JL745A, JL746A (TAA): 10.10.0002	The 10000 series requires configuration of interface groups (groups of 4 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Set the speed to 25g for the default). See the *Installation Guide* for details. 1G optics at the opposite end of the link must NOT enable auto negotiation and operate in full duplex mode.

100-Megabit SFP optical transceiver modules

Models, specifications, and compatibility

100 Megabit SFP optical transceiver modules use LC connectors. The 100FX transceivers enabled by Aruba Switches use an SGMII (Serial Gigabit MII) interface with 8B/10B encoding.

Other 100FX transceivers that use 4B/5B encoding cannot be enabled (even with UT-mode).

The specifications for Revision D transceiver products are the same as the specified Revision A, B, and C SKUs.

Specifications for 100-Megabit SFP optical transceiver modules

Product name (SKU)	DOM - Digital Optical Monitoring (4x4 part #)	Central wl (nm)	Fiber mode	Fiber diameter (µm)	Transmission distance
HPE X111 100M SFP LC FX Transceiver (J9054C) Aruba 100M SFP LC FX 2km MMF XCVR (J9054D)	Yes (1990-4483 EOL, 1990-4360, 5400-3917)	1310	MMF	50/125 62.5/125	2km (1.24 miles)

Optical specifications for 100–Megabit SFP optical transceiver modules

Product name (SKU)	Optical parameters (dBm)	
	Transmit power	Receive power
HPE X111 100M SFP LC FX Transceiver (J9054C) Aruba 100M SFP LC FX 2km MMF XCVR (J9054D)	–19 to –14	–30 to –14

Compatibility for the 100-Megabit SFP optical transceiver module

Product name	SKU	100-Megabit SFP Minimum software required	Comments
2510-24 Switch	J9019A/B	Q.10.04	
2510-48 Switch	J9020A	All	

Product name	SKU	100-Megabit SFP Minimum software required	Comments
2510G Switch Series	J9279A, J9280A	All	
2520 Switch Series	J9137A, J9138A	All	
2520G Switch Series	J9298A, J9299A	J9054B: All J9054C: J.14.32	
2530 Switch Series	J9772A, J9773A, J9774A, J9775A, J9776A, J9777A, J9778A, J9779A, J9780A, J9781A, J9782A, J9783A, J9853A, J9854A, J9855A, J9856A	For J9853A, J9854A, J9855A, and J9856A: Not supported For all other switches: All	For use in the SFP ports of the 2530 Series Switches. (The J9853A, J9854A, J9855A, and J9856A models have 1G/10G SFP+ ports that do not support these 100Mbps transceiver modules.)
2540 Switch Series	JL354A, JL355A, JL356A, JL357A	All	
2610 Switch Series	J9085A, J9086A, J9087A, J9088A, J9089A	All	
2615-8-PoE Switch	J9565A	J9054B: All J9054C: A.14.07	
2620 Switch Series	J9623A, J9624A, J9625A, J9626A, J9627A	All	
2800 Switch Series	J4903A, J4904A	J9054B/C 1990-3613 and J9054C 1990-4112: i.10.30 J9054C 1990-4483: Not supported	J9054C part number 1990-4483 is not supported
2810 Switch Series	J9021A, J9022A	N.10.07	
2900 Switch Series	J9049A, J9050A	T.12.01	
2910al Switch Series	J9145A, J9146A, J9147A, J9148A	All	
2915-8G-PoE Switch	J9562A	J9054C/J9054D: A.14.07	
2920 Series Switches	J9726A, J9727A, J9728A, J9729A, J9836A	All	Use in the SFP ports of the 2920 Series Switches. 100-FX is not supported in the SFP+ ports of the J9731A 2-Port 10GbE SFP+ Module
2930F Switch Series	JL253A, JL254A, JL255A, JL256A, JL258A, JL263A, JL264A, JL259A, JL260A, JL261A,	J9054B: is not supported in the 2930F Series Switches For J9054C/9054D: All	The 2930F Switch Series models with 1G/10G SFP+ ports added support for this J9054C/J9054D 100FX transceiver. The J9054C/J9054D are supported in

Product name	SKU	100-Megabit SFP Minimum software required	Comments
	JL262A, JL557A, JL558A, JL559A		models with 1G SFP ports.
2930M Switch Series	JL319A, JL320A, JL321A, JL322A, JL323A, JL324A	J9054B is not supported in the 2930M Series Switches. For J9054C/J9054D: All	For use in SFP ports on switch and an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module.
3500 Series Switches	J9470A, J9471A, J9472A, J9473A	J9054B/C 1990-3613: K.14.31 J9054C 1990-4112 and 1990-4483: K.15.08.0007 J9054D: K.15.08.0007	
3500yl Switch Series	J8692A, J8693A, J9310A, J9311A	For J8692A, J8693A: K.12.01 (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483, and J9054D 1990-4483 and 1990-4360) For J9310A, J9311A: K.14.50 (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483, and J9054D)	
3800 Switch Series	J9573A, J9574A, J9575A, J9576A, J9584A	For J9573A, J9574A, J9575A, J9576A: Not supported. For J9584A: All	Not supported for use in the following 3800 models: J9573A, J9574A, J9575A, and J9576A. The SFP+ ports do not support 100M operation. Supported in the J8584A 3800-24SFP-2SFP+ Switch
3810M Switch Series	JL071A, JL072A, JL073A, JL074A, JL076A	All	For use in an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module.
	JL075A	All	For use in the JL075A SFP+ ports. Also used in an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module.
4100gl Switch Series	J4865A, J4887A	n/a	J9054C/J9054D 100FX is not supported.
4100i Switch Series	JL817A, JL818A	10.08.0001	Hi Temp warnings will trigger at lower temperatures (~50C) if Commercial Temp vs Industrial Temp transceivers (~70C) are used. All Third Party transceivers are treated as Commercial Temp, regardless of capability.
4200vl Switch Series	J8770A, J8771A, J8772A/B, J8773A	L.10.24	Supported: J9033A Switch vl 20-Port Gig-T + 4-Port SFP Module

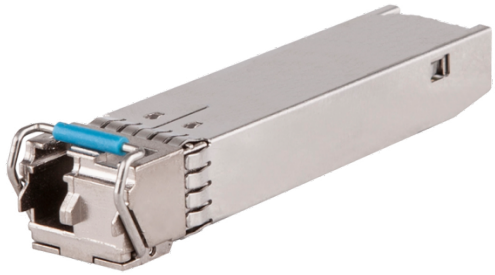
Product name	SKU	100-Megabit SFP Minimum software required	Comments
			Not supported: J8776A Switch vl 4-Port Mini-GBIC Module
5300xl Switch Series	J4819A, J4850A	n/a	J9054C/J9054D 100FX is not supported.
5400zl Switch Series	J8697A, J8698A, J9642A, J9643A	For J8705A and J8706A modules: K.12.01 (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483) J9054D: K.15.08.0007 For the J9308A module: K.14.34 (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483) J9054D: K.15.08.0007 For J9537A, J9549A, J9535A, and J9637A modules: K.15.02.0004 (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483) J9054D: K.15.08.0007	J8705A Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module J8706A Switch zl 24-Port Mini-GBIC Module J9308A 20-Port 10/100/1000 PoE+ and 4-Port SFP zl Module J9537A 24-Port SFP v2 zl Module J9549A 20- Port Gig-T / 4-Port SFP v2 zl Module J9535A 20-Port Gig-T PoE+ / 4- Port SFP v2 zl Module J9637A 12-Port Gig- T PoE+ / 12-Port SFP v2 zl Module
5400R Switch Series	J9821A, J9822A, J9823A, J9824A, J9825A, J9826A, J9868A	For J9535A, J9537A, J9549A, and J9637A modules: All For the J9988A, J9989A, J9990A, and J9993A modules: KB.15.17 and later	J9537A 24-Port SFP v2 zl Module J9549A 20-Port Gig-T / 4-Port SFP v2 zl Module J9535A 20-Port Gig-T PoE+ / 4-Port SFP v2 zl Module J9637A 12-Port Gig-T PoE+ / 12-Port SFP v2 zl Module J9988A 24p 1GbE SFP v3 zl2 Module J9989A 12p PoE+ / 12p 1GbE SFP v3 zl2 Module J9990A 20p PoE+ / 4p SFP+ v3 zl2 Module J9993A 8p 1G/10GbE SFP+ v3 zl2 Module
Aruba 6000 Switch Series	All models	n/a	100FX is not supported for use in any 6100 model
Aruba 6100 Switch Series	All models	n/a	100FX is not supported for use in any 6100 model
6108 Switch	J4902A	n/a	100-FX is not supported
6120 Blade Switch Series	498358-B21, 516733-B21	n/a	100-FX is not supported

Product name	SKU	100-Megabit SFP Minimum software required	Comments
6200yl-24G-mGBIC Switch	J8992A	K.12.01 (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483) J9054D: K.15.08.0007	For use in all 24 ports of the J8992A Switch 6200yl- 24G-mGBIC
Aruba 6200 Switch Series	All models	n/a	100FX is not supported for use in any 6200 model
Aruba 6300 Switch Series	JL658A	10.06.0120 or 10.07.0010	Only supported for use in SFP+ ports on JL658A/RS892A. 100-FX is not supported for use in any SFP56 ports on other models. 100FX link level flow control: not supported.
	RS892A	10.10.0002	
Aruba 6400 Switch Series	R0X43A	10.06.0120 or 10.07.0010	R0X43A/R0X43C 24p SFP+ module: Only supported in ports 1-24 (SFP+), NOT supported in ports 25-28 (SFP56 ports). R0X44A 48p SFP28: supported for use in ports 1-48 (SFP28 ports). R0X44A/R0X44C auto-detects the inserted type of transceiver; it does NOT require any **interface groups** like the 8325. 100-FX is NOT supported in any SFP56 port on any other 6400 module. 100FX does not support link-level flow control on the 6400.
	R0X44A	10.06.0120 or 10.07.0010	
	R0X44C	10.09.1000	
6600 Switch Series	J9263A, J9264A, J9265A, J9451A, J9452A	For J9263A, J9264A: K.14.03 (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483) For J9451A: K.14.24 (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483) J9054D: K.15.08.0007	For use in the SFP ports of the J9263A 6600-24G Switch, the J9264A 6600-24G-4XG Switch, and the J9451A 6600-48G Switch (The J9265A 6600-24XG Switch and J9452A 6600- 48G-4XG Switch do not have SFP ports)
8200zl Switch Series	J8715A/B, J9475A, J9640A, J9641A	For J8705A and J8706A modules: All (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483) J9054D: K.15.08.0007 For the J9308A module: K.14.34 (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483) J9054D: K.15.08.0007	J8705A Switch zl 20-Port 10/100/1000 + 4-Port Mini-GBIC Module J8706A Switch zl 24-Port Mini-GBIC Module J9308A 20-Port 10/100/1000 PoE+ and 4-Port SFP zl Module J9537A 24-Port SFP v2 zl Module J9549A 20- Port Gig-T / 4-Port SFP v2 zl Module J9535A 20-Port Gig-T PoE+ / 4- Port SFP v2 zl Module J9637A 12-Port Gig- T PoE+ / 12-

Product name	SKU	100-Megabit SFP Minimum software required	Comments
		For J9537A, J9549A, J9535A, and J9637A modules: K.15.02.0004 (for J9054B/C 1990-3613); K.15.08.0007 (for J9054C 1990-4112 and 1990-4483) J9054D: K.15.08.0007	Port SFP v2 zl Module
Aruba 8320 Switch Series	All	n/a	100Mbps Transceivers are NOT supported in the 8320 series.
Aruba 8325 Switch Series	All	n/a	100Mbps Transceivers are NOT supported in the 8325 series.
Aruba 8360 Switch Series	All models	n/a	100Mbps Transceivers are NOT supported
Aruba 8400X Modules	All	n/a	100Mbps Transceivers are NOT supported in the 8400 series.
9300m Switch Series	J4138A, J4139A, J4874A	n/a	100-FX is not supported.
9408sl Switch	J8680A	n/a	100-FX is not supported.
Aruba 10000 Switch Series	All	n/a	100Mbps Transceivers are NOT supported in the 10000 series.

Gigabit BIDI optical transceiver modules

Gigabit BiDi transceivers are no longer offered by Aruba. The information presented here is for compatibility use.



Models, specifications, and compatibility

Gigabit BIDI optical transceiver modules provide a transmission rate of 1,250 Mbps and use LC connectors.

- The J9142B/J9143B were End of Sale in April 2016 and are no longer available. Older J9142B/J9143B transceiver may work in switches using the "allow-unsupported-transceiver" feature. Consult your Aruba Sales team for alternative solutions. The information presented here is for compatibility use.
- BIDI optical transceiver modules use different central wavelengths in transmit and receive directions to implement bidirectional transmission of fiber signals over the same fiber.
- Use the HPE X122 1G SFP LC BX 10-D Transceiver (J9142B) and HPE X122 1G SFP LC BX 10-U Transceiver (J9143B) in pairs: a J9142B (-D = downstream) at one end of the connection and a J9143B (-U = upstream) at the other.

Specifications for Gigabit BIDI optical transceiver modules

Product name (SKU)	DOM - Digital Optical Monitoring (4x4 part #)	Central wavelength (nm)		Fiber mode	Fiber diameter (µm)	Transmission distance
		Transmit end (TX)	Receive end (RX)			
HPE X122 1G SFP LC BX-D Transceiver (J9142B)	No	1490	1310	SMF	9/125	10km (6.21 miles)
HPE X122 1G SFP LC BX-U Transceiver (J9143B)	No	1310	1490			

Optical specifications for Gigabit BIDI transceiver modules

Product name (SKU)	Optical parameters (dBm)	
	Transmit power	Receive power
HPE X122 1G SFP LC BX-D Transceiver (J9142B) HPE X122 1G SFP LC BX-U Transceiver (J9143B)	–9 to –3	–18.7 to –3

Compatibility for Gigabit BIDI transceiver modules

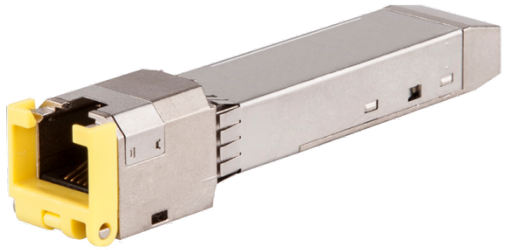
Product name	SKU	Minimum software required (J9142B, J9143B)	Comments
2510-24 Switch	J9019A/B	Q.11.16	
2510-48 Switch	J9020A	U.11.10	
2510G–24 Switch	J9279A	Y.11.03	
2510G–48 Switch	J9280A	Y.11.03	
2520 Switch Series	J9137A, J9138A, J9298A, J9299A	All	
2530 Switch Series	J9772A, J9773A, J9774A, J9775A, J9776A, J9777A, J9778A, J9779A, J9780A, J9781A, J9782A, J9783A, J9853A, J9854A, J9855A, J9856A	All	
2540 Switch Series	JL354A, JL355A, JL356A, JL357A	n/a	1G BX is not officially supported for use in the 2540 series.
2600 Switch Series	J4899A/B/C, 4900A/B/C, J8164A, J8165A, J8762A	H.10.72	
2610 Switch Series	J9085A, J9086A, J9087A, J9088A, J9089A	R.11.22	
2615-8-PoE Switch	J9565A	All	
2620 Switch Series	J9623A, J9624A, J9625A, J9626A, J9627A	All	
2800 Switch Series	J4903A, J4904A	i.10.69	
2810 Switch Series	J9021A, J9022A	N.11.14	

Product name	SKU	Minimum software required (J9142B, J9143B)	Comments
2900 Switch Series	J9049A, J9050A	T.13.45	
2910al Switch Series	J9145A, J9146A, J9147A, J9148A	All	
2915-8G-PoE Switch	J9562A	All	
2920 Series Switches	J9726A, J9727A, J9728A, J9729A, J9836A	All	
2930F Series Switches	JL253A, JL254A, JL255A, JL256A, JL258A, JL259A, JL260A, JL261A, JL262A, JL263A, JL264A	Supported for use with 16.07.0003 software. Enabled only through UT-Mode.	As of April 2016, the J9142B and J9143B 1G BX transceivers have been End of Sale. Contact your Aruba representative for alternative solutions.
2930M Switch Series	JL319A, JL320A, JL321A, JL322A, JL323A, JL324A, JL083A	Supported for use with 16.07.0003 software. Enabled only through UT-Mode.	As of April 2016, the J9142B and J9143B 1G BX transceivers have been End of Sale. Contact your Aruba representative for alternative solutions.
3500 Series Switches	J9470A, J9471A, J9472A, J9473A	K.14.31	
3500yl Switch Series	J8692A, J8693A	K.14.31	
	J9310A, J9311A	K.14.50	
3800 Switch Series	J9573A, J9574A, J9575A, J9576A, J9584A	All	
3810M Switch Series	JL075A, JL083A	All	As of April 2016, the J9142B and J9143B 1G BX transceivers have been End of Sale. Contact your Aruba representative for alternative solutions. For use in the JL075A 3810M switch or in any 3810M switch with a JL083A Aruba 3810M/2930M 4SFP+ MACsec Module installed.
4200vl Switch Series	J8776A, J9033A	L.11.16	
5300xl Switch Series	J4878A/B, J4907A	E.11.08	

Product name	SKU	Minimum software required (J9142B, J9143B)	Comments
5400zl Switch Series	J8705A, J8706A	K.13.45	
	J9308A	K.14.34	
	J9537A, J9549A, J9535A, J9637A, J9538A, J9548A, J9536A	K.15.02.0004	
5400R Switch Series	J9537A, J9549A, J9535A, J9637A, J9538A, J9548A, J9536A	All	As of April 2016, the J9142B and J9143B 1G BX transceivers have been End of Sale. Contact your Aruba representative for alternative solutions.
	J9988A, J9989A, J9990A, J9993A	KB.15.17	
Aruba 6000 Switch Series	All	n/a	1G BX transceivers are not officially supported.
Aruba 6100 Switch Series	All	n/a	1G BX transceivers are not officially supported.
6200yl-24G-mGBIC Switch	J8992A	K.13.45	
Aruba 6200 Switch Series	All	n/a	1G BX transceivers are not officially supported.
Aruba 6300 Switch Series	All	n/a	1G BX transceivers are not officially supported.
Aruba 6400 Switch Series	All	n/a	1G BX transceivers are not officially supported.
6600 Switch Series	J9263A, J9264A	K.14.03	
	J9451A	K.14.24	
8200zl Switch Series	J8705A, J8706A	K.13.45	
	J9308A	K.14.34	
	J9537A, J9549A, J9535A, J9637A, J9538A, J9548A, J9536A	K.15.02.0004	
Aruba 8320 Switch Series	JL479A, JL579A	n/a	1G BX transceivers are not officially supported.
Aruba 8325 Switch Series	All	n/a	1G BX transceivers are not officially supported.

Product name	SKU	Minimum software required (J9142B, J9143B)	Comments
Aruba 8400X Modules	All	n/a	1G BX transceivers are not officially supported.
Aruba 10000 Switch Series	All	n/a	1G BX transceivers are not officially supported.

Gigabit SFP copper transceiver modules



Models, specifications, and compatibility

The use of Gigabit SFP copper transceiver modules in a switch with only SFP or SFP+ ports, provides IEEE 802.3ab compliance.

Specifications for SFP copper transceiver modules

Product name (SKU)	Transmission distance	Data rate	Cable type	Connector type
HPE X121 1G SFP RJ45 T Transceiver (J8177C) Aruba 1G SFP RJ45 T 100m Cat5e XCVR (J8177D) Aruba 1G SFP RJ45 T 100m Cat5e TAA XCVR(JL747A)	100 m (328.08 ft)	1G 100Mbps (For certain products. See next table.)	Cat5e UTP/STP	RJ-45

Compatibility for SFP copper transceiver modules

The specifications for Revision D transceiver products are the same as the specified Revision A, B, and C SKUs.

Product name	SKU	Minimum software required (J8177C/J8177D)	Comments
2510 Switch	J9020A	All	
2530 Switch Series	J9782A, J9781A, J9776A, J9775A, J9779A, J9778A, J9773A, J9772A, J9856A, J9855A, J9854A, J9853A	All	
2540 Switch	JL354A, JL355A, JL356A, JL357A	All	

Product name	SKU	Minimum software required (J8177C/J8177D)	Comments
Series			
2610 Switch Series	J9085A, J9086A, J9087A, J9088A, J9089A	All	
2620 Switch Series	J9623A, J9624A, J9625A, J9626A, J9627A	All	
2920 Series Switches	J9731A	All	J8177C/J8177D is not supported for use in the Dual-Personality ports of the 2920 Series Switches. For use ONLY in the J9731A module.
2930F Series Switches	JL253A, JL254A, JL255A, JL256A, JL258A, JL259A, JL260A, JL261A, JL262A, JL263A, JL264A, JL557A, JL558A, JL559A	J8177C/J8177D: All Software JL747A (TAA XCVRs): WC 16.10.0012	J8177C/J8177D support both 100Mbps and 1G operation in this Switch Series.
2930M Switch Series	JL083A	J8177C/J8177D: All Software JL747A (TAA XCVRs): WC 16.10.0012	J8177C/J8177D are not supported for use in the Dual-Personality ports of the 2930M Series Switches. For use in an installed JL083A Aruba 3810M/2930M 4SFP+ MACsec Module. J8177C/J8177D support both 100Mbps and 1G operation in this Switch Series.
3800 Switch Series	J9573A, J9574A, J9575A, J9576A, J9584A	All	
3810M Switch Series	JL075A, JL083A	J8177C/J8177D: All Software JL747A (TAA XCVRs): KB 16.10.0012	For use in the SFP+ ports of the JL075A 3810M switch. Also used in any 3810M switch with a JL083A Aruba 3810M/2930M 4SFP+ MACsec Module installed. J8177C/J8177D support both 100Mbps and 1G operation in this Switch Series.
4100gl Switch Series	J4893A, J4908A	G.07.69	
4200vl Switch Series	J8776A, J9033A	All	
5300xl Switch Series	J4878A/B	E.09.22	

Product name	SKU	Minimum software required (J8177C/J8177D)	Comments
5400zl Switch Series	J8705A, J8706A	All	
	J9308A	K.14.34	
	J9537A, J9549A, J9535A, J9637A	K.15.02.0004	
5400R Switch Series	J9537A, J9549A, J9535A, J9637A	J8177C/J8177D: All Software JL747A: KB 16.10.0012	J8177C/J8177D support both 100Mbps and 1G operation in this Switch Series.
	J9988A, J9989A, J9990A, J9993A	KB.15.17 JL747A (TAA XCVRs): KB 16.10.0012	J8177C/J8177D support both 100Mbps and 1G operation in this Switch Series.
Aruba 6000 Switch Series	All models	10.08.0001	100Mbps speed is NOT supported for the J8177D when used in SFP+ on the 6000 Series. J8177D does not support link-level flow control on 6000. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640
Aruba 6100 Switch Series	All models	10.06.0001 JL747A (TAA XCVRs): 10.06.0130 and 10.07.0010	100Mbps speed is NOT supported for the J8177D/JL747A when used in SFP+ on the 6100 Series. J8177D/JL747A does not support link-level flow control on 6100. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640 JL747A: ■ 1990-4640 ■ 1990-3816
6120 Blade Switch Series	498358-B21, 516733-B21	All	
6200yl-24G-mGBIC Switch	J8992A	All	
Aruba 6200 Switch Series	All models Only 1G speed supported See Comments	10.04.1000 JL747A (TAA XCVRs): 10.06.0130 and 10.07.0010	100Mbps speed is NOT supported for the J8177D/JL747A when used in SFP+ on the 6200 Series. J8177D/JL747A does not support

Product name	SKU	Minimum software required (J8177C/J8177D)	Comments
			link-level flow control on 6200. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640
Aruba 6300 Switch Series	All models M and F Only 1G speed supported See Comments	10.04.0001 JL747A (TAA XCVRs): 10.07.0005	100Mbps speed is NOT supported for the J8177D or JL747A when used in any SFP56 port on the 6300 Series, or SFP+ port of JL658A. J8177D or JL747A does not support link-level flow control on 6300. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640 JL747A: ■ 1990-3816 ■ 1990-4640 R8S91A: ports 51-52 R8S92A: ports 1-24
	R8S91A, R8S92A	10.10.0002	
Aruba 6400 Switch Series	R0X39B, R0X40B R0X41A, R0X42A, R0X43A	10.04.1000 JL747A (TAA XCVRs): 10.06.0001	R0X39A/R0X40A (revision A) are no longer supported for use in the 6400 series 100Mbps speed is NOT supported for the J8177D or JL747A when used in any port (SFP+, SFP28, or SFP56) on the 6400 series. J8177D or JL747A do not support link-level flow control on 6400. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640 JL747A: ■ 1990-3816 ■ 1990-4640 R0X44A/R0X44C auto-detects the inserted type of transceiver; it does NOT require any **interface groups** like the 8325.
	R0X39C, R0X40C R0X41C, R0X42C, R0X43C	J8177C/J8177D, JL747A: 10.09.1000	
	R0X44A	10.04.2000 JL747A (TAA XCVRs): 10.06.0001	
	R0X44C	J8177C/J8177D, JL747A: 10.09.1000	

Product name	SKU	Minimum software required (J8177C/J8177D)	Comments
8200zl Switch Series	J8705A, J8706A	All	
	J9308A	K.14.34	
	J9537A, J9549A, J9535A, J9637A	K.15.02.0004	
Aruba 8320 48p 10G SFP/SFP+ and 6p 40G QSFP+ Switch	JL479A	All JL747A (TAA XCVRs): 10.06.0001	100Mbps speed is NOT supported for the J8177D or JL474A on the 8320 series. J8177D/JL747A does not support link-level flow control on 8320. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640 JL747A: ■ 1990-3816 ■ 1990-4640
Aruba 8325 Switch Series	JL635A displayed by CLI (`show system`) ■ JL624A - Port-to-Power model (FB) ■ JL625A - Power-to-Port model (BF)	10.03.0030 JL747A (TAA XCVRs): 10.07.0005	100Mbps speed is NOT supported for the J8177D or JL474A or JL747A on the 8325 series. J8177D or JL474A does not support link-level flow control on 8325. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640 JL747A part numbers: ■ 1990-3816 ■ 1990-4640 RJ45 transceivers are only supported for use in the top 2 rows of ports (max of 32 per switch). J8177C/D or JL474A will have a delay (~15 secs) before link up or down is properly displayed when a cable is inserted or removed. The 8325 requires configuration of **interface groups** (groups of 12 ports) to enable the use of 1G or 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details.
Aruba 8360	JL717A/JL717C(v2) displayed by	Only on ports 1-16:	J8177C/D or JL747A can only

Product name	SKU	Minimum software required (J8177C/J8177D)	Comments
32Y4C models	CLI (`show system`) ■ JL700A/JL700C(v2) Port-to-Power model ■ JL701A/JL701C(v2) Power-to-Port model	10.06.0001 JL747A (TAA XCVRs): 10.07.0005	operate at 1G in the 8360 series. J8177C/D or JL747A does not support link-level flow control on 8360. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640 JL747A part numbers: ■ 1990-3816 ■ 1990-4640 The 8360 32Y4C model requires configuration of **interface groups** only for ports 1-4 (as group number 1) to enable the use of 10G transceivers / DACs in the SFP28 ports (Interface Groups default to 25G speed). Ports 1-4 on the 8360 32Y4C model do not support 1G transceivers. The v2 32Y4C models support MACsec on ports 1-4 only at 10G/25G speeds (50G speed NOT available for ports 2 and 4) All other ports can individually auto-detect the speed of the inserted transceiver. See the *Installation Guide* for details.
Aruba 8360 16Y2C models	JL718A/JL718C(v2) displayed by CLI (`show system`) ■ JL702A/JL702C(v2) Port-to-Power model ■ JL703A/JL703C(v2) Power-to-Port model	Only on ports 1-16: 10.06.0001 JL747A (TAA XCVRs): 10.07.0005	J8177C/D or JL747A can only operate at 1G in the 8360 series. J8177C/D or JL747A do not support link-level flow control on 8360. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640 JL747A part numbers: ■ 1990-3816 ■ 1990-4640 All ports can individually auto-detect the speed of the inserted transceiver.
Aruba 8360 48Y6C models	JL719C displayed by CLI (show system) ■ JL704C(v2) Port-to-Power model (FB) ■ JL705C(v2) Power-to-Port model (BF)	Only on ports 5-48: 10.06.0001 JL747A (TAA XCVRs): 10.07.0005	J8177C/D or JL747A can only operate at 1G in the 8360 series. J8177C/D or JL747A do not support link-level flow control on 8360. Only the following 4x4 part numbers are supported:

Product name	SKU	Minimum software required (J8177C/J8177D)	Comments
			J8177C/J8177D: n 1990-3816 n 1990-4606 n 1990-4640 JL747A 4x4 part numbers: n 1990-3816 n 1990-4640 All ports can individually autodetect the speed of the inserted transceiver.
Aruba 8360 48XT4C models	JL720A/JL720C(v2) displayed by CLI (`show system`) ■ JL706A/JL706C(v2) Port-to-Power model ■ JL707A/JL707C(v2) Power-to-Port model	J8177D not applicable	No SFP+ ports available
Aruba 8360 12C models	JL721A/JL721C(v2) displayed by CLI (`show system`) ■ JL708A/JL708C(v2) Port-to-Power model ■ JL709A/JL709C(v2) Power-to-Port model	J8177D not applicable	No SFP+ ports available
Aruba 8360 24XF2C models	JL722A/JL722C(v2) displayed by CLI (`show system`) ■ JL710A/JL710C(v2) Port-to-Power model ■ JL711A/JL711C(v2) Power-to-Port model	Only on ports 1-24: 10.06.0001 JL747A (TAA XCVRs): 10.07.0005	J8177C/D or JL747A can only operate at 1G in the 8360 series. J8177C/D or JL747A do not support link-level flow control on 8360. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640 JL747A: ■ 1990-3816 ■ 1990-4640
Aruba 8400X Modules	JL363A JL687A	10.00.0018 10.04.2000 JL474A (TAA XCVRs): 10.07.0005	J8177C/D or JL747A can only operate at 1G in the 8400 series. J8177D does not support link-level flow control on 8400. Only the following part numbers are supported: J8177C/J8177D: ■ 1990-3816 ■ 1990-4606 ■ 1990-4640 JL747A: ■ 1990-3816 ■ 1990-4640 JL687A notes: The 25G module (JL687A) requires configuration of **interface groups** (groups of four ports) to enable

Product name	SKU	Minimum software required (J8177C/J8177D)	Comments
			use of 1G or 10G transceivers or DACs in the SFP28 ports (Interface Groups default to 25G speed). See the *Installation Guide* for details. The link state of ports on the JL687A module will always show UP if a transceiver is inserted and the interface is enabled, even if the cable is disconnected
Aruba 10000 Switch Series	R8S96A displayed by CLI (show system) ■ R8P13A - 48Y6C FB bundle ■ R8P14A - 48Y6C BF bundle	J8177D: 10.10.0002	Only the J8177D is supported (J8177C not supported). J8177D or JL747A can only operate at 1G in the 10000 series. The 10000 series requires configuration of interface groups (groups of 4 ports) to enable the use of 1G or 10G transceivers/DACs in the SFP28 ports (set the speed to 25g for the default). See the *Installation Guide* for details. 1G optics at the opposite end of the link must NOT enable auto-negotiation and operate in full duplex mode

Chapter 9
HPE Servers and Systems Support

Aruba now supports select HPE Server and Systems interconnect products.

- This chapter summarizes the various interconnect products tested and verified to work with selected Aruba switches. NOT all Aruba switches are certified with HPE Server and Storage Systems products
- The term "HPE" products covers interconnect products sold by the HPE Servers and Systems division or HPE Storage Division. Aruba is a separate division within HPE.
- Aruba products are NOT the same as HPE products of the same speed support.
  They have different ordering part numbers and in many instances are of slightly different designs, requiring specific changes to the software drivers on either Switch or HPE Interconnect product (network adapters, or host-native ethernet port). For example, both divisions may sell a 10G DAC cable. However, the part incorporates an encoded part number specific for either Aruba or HPE and they are not the same. Steps must be taken to provide specific 'tuning' to allow the slightly different parts to provide proper support.
- Aruba has taken measures to add selected HPE products, and these HPE products are covered in each of the chapters of this guide – depending on the speed of product.
- An HPE only partner is not authorized to purchase Aruba Product Line SKUs, likewise, an Aruba only partner is not authorized to purchase HPE Server and Storage SKUs.
  - To allow HPE Resellers to quote Aruba specific switches and interconnect products, a different set of SKU (stock keeping unit) ordering numbers have been created. This set of SKU #s point to an Aruba part. The 1:1 relationship of these part numbers is covered later in this chapter.
  - The support of Aruba parts are covered in this Guide,
    - Support coverage of the HPE ordering SKU for a particular HPE Server product is covered by the information contained in this document at hpe.com: HPE Compute transceiver and cable hardware matrix product availability matrix.
    - Support information for HPE product ordering SKU #s for a particular HPE Storage products are covered by the SPOCK (Single Point of Connectivity Knowledge for HPE Storage Products) – requires an HPE Passport Login account to access.
      Search for "Aruba" on the SPOCK Home page.

Support of HPE products includes interoperability of HPE products with the following Aruba switches:

- Aruba 6300M 48G Pwr2Prt 2F 1PS Bundle (JL762A) -- used as an Out Of Band Management (OOBM) 1G switch, usually to connect server ILO ports to the network.
  Other 6300M (or F) series are not in particular the focus of pairing with HPE Servers and Systems.
- Aruba 8320, 8325, 8360 and 10000 series.
  Purchased in either Front-to-Back or Back-to-Front airflow pre-configured bundles.
  The 'bundles' are ordered with a particular SKU (stock keeping unit) part number, but each are comprised of the same base switch model – (with a different SKU #).

The following devices were tested against 9300 Switch series with AOS-CX 10.10.1000 and enable the listed use cases. The server adapters are supported by the HPE Server division.

The HPE Storage NICs below were tested with the 9300 series.

The SKUs shown are the Aruba SKU, along with the HPE ordered SKU; for more details see the Aruba Data Center Networking Solution for HPE section.

HPE Storage & Server partners should use the "HPE" SKU to obtain the Aruba SKU item.

Devices tested against the 9300 Switch Series

HPE Server SKU#	Description	Use case with 9300-32D series
P10180-B21	MLX MCX623105AS 200GbE 1p QSFP56 Adptr	**QDD to 2x QSFP56 200G AOC** R9B55A(S1D30A)[3m], R9B53A(S1D31A)[7m], R9B57A (S1D32A)[15m], R9B56A(S1D33A)[30m], R9B54A(S1D34A) [50m]
P25960-B21	MLX MCX623106AS 100GbE 2p QSFP56 NIC This is a QSFP56 NIC (compatible to use either QSFP28 or QSFP56 parts)	**QDD to 4x QSFP56 100G AOC** R9B50A(S1D35A)[3m], R9B48A(S1D36A)[7m], R9B52A(S1D37A)[15m], R9B51A(S1D38A)[30m], R9B49A(S1D39A)[50m] **QDD to 2xQSFP28 100G AOC** R9B60A(S1D25A)[3m], R9B58A(S1D26A)[7m], R9B62A(S1D27A)[15m], R9B61A(S1D28A)[30m], R9B59A(S1D29A)[50m] **400G QDD to 2xQSFP28 100G Optical Breakout** R9B41A(S1D18A)[SR8 xcvr] to 2x R9F75A(JL309A)[SR4] (MPO16 MMF breakout to 2x MPO12 (8 fibers each) **400G QDD eDR4 to 4xQSFP28 FR1 100G Optical Breakout** R9B42A(S1D19A)[eDR4 xcvr] to 4x R9B63A(S1D17A)[FR1 xcvr] (MPO12 SMF breakout to 4x LC (2 fibers each)
P21927-B21	HPE 100GbE 2P QSFP28 MCX516A-CCHT Adptr	**QDD to 2xQSFP28 100G AOC** R9B60A(S1D25A)[3m], R9B58A(S1D26A)[7m], R9B62A(S1D27A)[15m], R9B61A(S1D28A)[30m], R9B59A(S1D29A)[50m] **400G QDD to 2xQSFP28 100G Optical Breakout** R9B41A(S1D18A)[SR8 xcvr] to 2x R9F75A(JL309A)[SR4] (MPO16 MMF breakout to 2x MPO12 (8 fibers each) **400G QDD eDR4 to 4xQSFP28 FR1 100G Optical Breakout** R9B42A(S1D19A)[eDR4 xcvr] to 4x R9B63A(S1D17A)[FR1 xcvr] (MPO12 SMF breakout to 4x LC (2 fibers each)

Devices with known issues tested against the 9300 Switch Series

HPE Server SKU#	Description	Use case with 9300-32D series
874253-B21	HPE Eth 100Gb 1p 842QSFP28 Adptr	**QDD to 2xQSFP28 100G AOC** R9B60A(S1D25A)[3m], R9B58A(S1D26A)[7m], R9B62A(S1D27A)[15m], R9B61A(S1D28A)[30m], R9B59A(S1D29A)[50m] **400G QDD to 2xQSFP28 100G Optical Breakout**

HPE Server SKU#	Description	Use case with 9300-32D series
		R9B41A(S1D18A)[SR8 xcvr] to 2x R9F75A(JL309A)[SR4] (MPO16 MMF breakout to 2x MPO12 (8 fibers each) Known issue with R9B63A(FR1 xcvr): AOSCX-229645 when used in this Adapter
P21112-B21	INT E810 100GbE 2p QSFP28 Adptr	**QDD to 2xQSFP28 100G AOC** R9B60A(S1D25A)[3m], R9B58A(S1D26A)[7m], R9B62A(S1D27A)[15m], R9B61A(S1D28A)[30m], R9B59A(S1D29A)[50m] **400G QDD to 2xQSFP28 100G Optical Breakout** R9B41A(S1D18A)[SR8 xcvr] to 2x R9F75A(JL309A)[SR4] (MPO16 MMF breakout to 2x MPO12 (8 fibers each) Known issue with R9B63A(FR1 xcvr 1990-4826): AOSCX-229643 when used in this Adapter
P22767-B21	INT E810 100GbE 2p QSFP28 OCP3 Adptr	**QDD to 2xQSFP28 100G AOC** R9B60A(S1D25A)[3m], R9B58A(S1D26A)[7m], R9B62A(S1D27A)[15m], R9B61A(S1D28A)[30m], R9B59A(S1D29A)[50m] **400G QDD to 2xQSFP28 100G Optical Breakout** R9B41A(S1D18A)[SR8 xcvr] to 2x R9F75A(JL309A)[SR4] (MPO16 MMF breakout to 2x MPO12 (8 fibers each) Known issue with R9B63A(FR1 xcvr 1990-4826): AOSCX-229643 when used in this Adapter
P37690-B21	Pensando DSP DSC-100 Ent 100G QSFP28 Card Note: This module has been end of sale as of Dec 2022	**QDD to 2xQSFP28 100G AOC** R9B60A(S1D25A)[3m], R9B58A(S1D26A)[7m], R9B62A(S1D27A)[15m], R9B61A(S1D28A)[30m], R9B59A(S1D29A)[50m] **400G QDD to 2xQSFP28 100G Optical Breakout** R9B41A(S1D18A)[SR8 xcvr] to 2x R9F75A(JL309A)[SR4] (MPO16 MMF breakout to 2x MPO12 (8 fibers each) Known issue with R9B63A(FR1 xcvr 1990-4826): AOSCX-229643 when used in this Adapter

100Gb HPE Server adapters tested against 10000, 8325, 8360v1 and 8360v2 Switch Series

HPE SKU	SKU Description
874253-B21	HPE Eth 100Gb 1p 842QSFP28 Adptr
P21927-B21	HPE 100GbE 2P QSFP28 MCX516A-CCHT Adptr
Aruba is aware of the following known issues:	
P25960-B21	MLX MCX623106AS 100GbE 2p QSFP56 Adptr* * Intermittent issues seen with 8360/6400 models when using 3m and 5m DACs (JL307A and R0Z26A) (AOSCX-231260, AOSCX-218043, AOSCX-171162)

The following devices were tested against 10000, 8325, 8360v1 and 8360v2 Switch series with AOS-CX 10.09, and 6400 and 6300 Switch series with AOS-CX 10.08.

10/25Gb HPE Server adapters tested

HPE SKU #	SKU Description	Issue
817749-B21	HPE Ethernet 10/25Gb 2-port 640FLR-SFP28 Adapter	Known issue when using Mellanox FW 14.27 or higher with 4x10G Breakout DAC (721064-B21): (AOSCX-172421)
817753-B21	HPE Ethernet 10/25Gb 2-port 640SFP28 Adapter	Known issue when using Mellanox FW 14.27 or higher with 4x10G Breakout DAC (721064-B21): (AOSCX-172421)
867334-B21	HPE Ethernet 10/25Gb 2-port 622FLR-SFP28 CAN	Intermittent issues seen with 8360/6300/6400 models when using 25G DACs. (844477-B21, 844480-B21, JL487A, JL488A, JL489A) The use of AOCs is preferred in these NICs (R0M44A, R0M45A R0Z21A). (AOSCX-218043, AOSCX-171162)
867328-B21	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter	Intermittent issues seen with 8360/6300/6400 models when using 25G DACs. (844477-B21, 844480-B21, JL487A, JL488A, JL489A) The use of AOCs is preferred in these NICs (R0M44A, R0M45A R0Z21A). (AOSCX-218043, AOSCX-171162)
817709-B21	HPE Ethernet 10/25Gb 2-port 631FLR-SFP28 Adapter	Intermittent issues seen with 8360/6300/6400 models when using 25G DACs. (844477-B21, 844480-B21, JL487A, JL488A, JL489A) The use of AOCs is preferred in these NICs (R0M44A, R0M45A R0Z21A). (AOSCX-218043, AOSCX-171162)
817718-B21	HPE Ethernet 10/25Gb 2-port 631SFP28 Adapter	Intermittent issues seen with 8360/6300/6400 models when using 25G DACs. (844477-B21, 844480-B21, JL487A, JL488A, JL489A) The use of AOCs is preferred in these NICs (R0M44A, R0M45A R0Z21A). (AOSCX-218043, AOSCX-171162)
870825-B21	HPE Eth 10/25Gb 2p 661SFP28 Adptr	No AOCs currently supported. The use of DACs is preferred on this NIC. (AOSCX-153015)
P26966-B21	Pensando DSP DSC-25 10/25G 2p SFP28 Card	Known issue with Pensando FW

HPE SKU #	SKU Description	Issue
		1.28.2-E-93 or lower. Some interfaces will fail to link up on the lower rows of 8360/6400/6300 units. (AOSCX-170735, AOSCX-160057)
P26262-B21	BCM 57414 10/25GbE 2p SFP28 Adptr	ntermittent issues seen with 8360/6300/6400 models when using 25G DACs. (844477-B21, 844480-B21, JL487A, JL488A, JL489A) The use of AOCs is preferred in these NICs (R0M44A, R0M45A R0Z21A). (AOSCX-218043, AOSCX-171162)
P10115-B21	BCM 57414 10/25GbE 2p SFP28 OCP3 Adptr	Intermittent issues seen with 8360/6300/6400 models when using 25G DACs. (844477-B21, 844480-B21, JL487A, JL488A, JL489A) The use of AOCs is preferred in these NICs (R0M44A, R0M45A R0Z21A). (AOSCX-218043, AOSCX-171162)
P24437-B21	XIL X2522-25G 10/25GbE 2p SFP28 Adptr	R0M44A, R0M45A R0Z21A AOCs require FEC (“error-control”) = none: (AOSCX-192121)
P22702-B21	MRV QL41232HLCU 10/25GbE 2p SFP28 Adptr	Intermittent issues seen with 8360/6300/6400 models when using 25G DACs. (844477-B21, 844480-B21, JL487A, JL488A, JL489A) The use of AOCs is preferred in these NICs (R0M44A, R0M45A R0Z21A). (AOSCX-218043, AOSCX-171162) s.
P10118-B21	MRV QL41232 10/25GbE 2p SFP28 OCP3 Adptr	ntermittent issues seen with 8360/6300/6400 models when using 25G DACs. (844477-B21, 844480-B21, JL487A, JL488A, JL489A) The use of AOCs is preferred in these NICs (R0M44A, R0M45A R0Z21A). (AOSCX-218043, AOSCX-171162).
P13188-B21	MLX MCX512F 10/25GbE 2p SFP28 Adptr -	Intermittent issues seen with 25G AOCs (R0M44A, R0M45A R0Z21A) The use of DACs (844477-B21, 844480-B21, JL487A, JL488A, JL489A) is preferred on this NIC. (AOSCX-175875)

HPE SKU #	SKU Description	Issue
P10112-B21	MLX MCX562A 10/25GbE 2p SFP28 OCP3 Adptr	Intermittent issues seen with 25G AOCs (R0M44A, R0M45A R0Z21A) The use of DACs (844477-B21, 844480-B21, JL487A, JL488A, JL489A) is preferred on this NIC. (AOSCX-175875)

10Gb SFP+ HPE Server adapters tested

HPE SKU #	SKU Description
P11338-B21	HPEEthernet10Gb2-port548SFP+ Adapter** **This SKU has gone end of sale
P08446-B21	HPE Ethernet 10Gb 2-port 524SFP+ Adapter
727055-B21	HPE Ethernet 10Gb 2-port 562SFP+ Adapter
727054-B21	HPE Ethernet 10Gb 2-port 562FLR-SFP+ Adapter
700751-B21	HPE FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter
652503-B21	HPE Ethernet 10Gb 2-port 530SFP+ Adapter
656596-B21	HPE Ethernet 10Gb 2-port 530T Adapter
700759-B21	HPE FlexFabric 10Gb 2-port 533FLR-T Adapter
817745-B21	HPE Ethernet 10Gb 2-port 562FLR-T Adapter
817738-B21	HPE Ethernet 10Gb 2-port 562T Adapter
817721-B21	HPE Ethernet 10Gb 2-port 535FLR-T Adapter
813661-B21	HPE Ethernet 10Gb 2-port 535T Adapter

10Gb Base-T HPE Server adapters tested

HPE SKU #	SKU Description
656596-B21	HPEEthernet10Gb2-port530TAdapter
700759-B21	HPEFlexFabric10Gb 2-port 533FLR-TAdapter
817745-B21	HPEEthernet10Gb2-port562FLR-T Adapter
817738-B21	HPEEthernet10Gb2-port562TAdapter

HPE DACs, breakout DACs, AOCs, and breakout fiber cables

CableType	HIT SKU #	Description
Same speed DACs and AOCs		
25G to 25G	844477-B21 844480-B21	HPE 25Gb SFP28 to SFP28 3m DAC 25G SFP28
10G to 10G	487655-B21 537963-B21	HPE BLc 10G SFP+ SFP+ 3m DAC Cable HPE BLc 10G SFP+ SFP+ 5m DAC Cable
Breakout DACs and AOCs		
100G to 4x25G DAC	845416-B21	HPE100G QSFP28 to4x25G SFP28 3mDAC
100G to 4x25G AOC	845420-B21 845424-B21	HPE QSFP28 to 4x25G SFP28 7m AOC HPE QSFP28 to 4x25G SFP28 15m AOC
100G to 4x25G DAC	845416-B21	HPE 100Gb QSFP28 to 4x25Gb SFP28 3m DAC
40G to 4x10GDAC	721064-B21	HPE BLc 40G QSFP+ to 4x10G SFP+ 3m DAC Cbl
40G to 4x10G AOC	721076-B21	HPE BLc QSFP+ to 4x10G SFP+ 15m AOC
Breakout Fiber cables (see breakout optical cables)		
MPO to LC use with 40G	R1N86A	HPE 12 Fiber MPO to 4x LC MM 3m Cbl
SR4/eSR4 or 100G SR4 transceivers	K2Q46A K2Q47A	HPE MPO to 4 xLC 5m Cable HPE MPO to 4x LC 15m Cable

Other HPE cables not listed have not been validated against any Aruba Switch. Check the compatibility tables in this guide to determine if a HPE Server Cable is supported for use with the Aruba Switch.

Aruba Data Center Networking Solution for HPE

The table below shows the HPE SKU and Description, and its like-for-like Aruba SKU and Description. An HPE SKU is used by customers who were sold Aruba products as part of their HPE solution, while an Aruba SKU is used by customers who were sold Aruba products as part of an Aruba solution. Both, HPE SKU and Aruba SKU, are the same as shown in the table. Support and Serial Number information will be registered under the Aruba SKU.

HPE SKU	HPE Server SKU Description	Aruba SKU	Aruba SKU Description
R9F74A	HPE DC 100G QSFP28-QSFP28 3m DAC	JL307A	Aruba 100G QSFP28-QSFP28 3m DAC Cable
R9F75A	HPE DC 100G QSFP28 MPO SR4 MMF XCVR	JL309A	Aruba 100G QSFP28 MPO SR4 MMF XCVR
R9F76A	HPE DC 100G QSFP28 to QSFP28 2m AOC	JL856A	Aruba 100G QSFP28 to QSFP28 2m AOC
R9F77A	HPE DC 100G QSFP28 to QSFP28 1m DAC	R0Z25A	Aruba 100G QSFP28 to QSFP28 1m DAC Cable
R9F78A	HPE DC 100G QSFP28 to QSFP28 5m DAC	R0Z26A	Aruba 100G QSFP28 to QSFP28 5m DAC Cable
R9F79A	HPE DC 100G QSFP28 to QSFP28 7m AOC	R0Z27A	Aruba 100G QSFP28 to QSFP28 7m AOC
R9F80A	HPE DC 100G QSFP28 to QSFP28 15m AOC	R0Z28A	Aruba 100G QSFP28 to QSFP28 15m AOC
R9F81A	HPE DC 100G QSFP28 to QSFP28 30m AOC	R0Z29A	Aruba 100G QSFP28 to QSFP28 30m AOC
R9F82A	HPE DC 10G SFP+ LC SR 300m MMF XCVR	J9150D	Aruba 10G SFP+ LC SR 300m MMF XCVR
R9F83A	HPE DC 10G SFP+ to SFP+ 1m DAC	J9281D	Aruba 10G SFP+ to SFP+ 1m DAC Cable
R9F84A	HPE DC 10G SFP+ to SFP+ 3m DAC	J9283D	Aruba 10G SFP+ to SFP+ 3m DAC Cable
R9F85A	Aruba 10GBASE-T SFP+ 30m Cat6A XCVR HPE	JL563B	Aruba 10GBASE-T SFP+ RJ45 30m Cat6A XCVR
R9F86A	HPE DC 1G SFP LC SX 500m MMF XCVR	J4858D	Aruba 1G SFP LC SX 500m MMF XCVR
R9F87A	HPE DC 1G SFP RJ45 T 100m Cat5e XCVR	J8177D	Aruba 1G SFP RJ45 T 100m Cat5e XCVR
R9F88A	HPE DC 100M SFP LC FX 2km MMF XCVR	J9054D	Aruba 100M SFP LC FX 2km MMF XCVR
R9F89A	HPE DC 25G SFP28 LC SR 100m MMF XCVR	JL484A	Aruba 25G SFP28 LC SR 100m MMF XCVR
R9F90A	HPE DC 25G SFP28 LC eSR 400m MMF XCVR	JL485A	Aruba 25G SFP28 LC eSR 400m MMF XCVR
R9F91A	HPE DC 25G SFP28 to SFP28 0.65m DAC	JL487A	Aruba 25G SFP28 to SFP28 0.65m DAC Cable

HPE SKU	HPE Server SKU Description	Aruba SKU	Aruba SKU Description
R9F92A	HPE DC 25G SFP28 to SFP28 3m DAC	JL488A	Aruba 25G SFP28 to SFP28 3m DAC Cable
R9F93A	HPE DC 25G SFP28 to SFP28 5m DAC	JL489A	Aruba 25G SFP28 to SFP28 5m DAC Cable
R9F94A	HPE DC 25G SFP28 to SFP28 3m AOC	R0M44A	Aruba 25G SFP28 to SFP28 3m AOC
R9F95A	HPE DC 25G SFP28 to SFP28 7m AOC	R0M45A	Aruba 25G SFP28 to SFP28 7m AOC
R9F96A	HPE DC 25G SFP28 to SFP28 15m AOC	R0Z21A	Aruba 25G SFP28 to SFP28 15m AOC
R9F97A	HPE DC 40G QSFP+ MPO SR4 XCVR	JH231A	HPE X142 40G QSFP+ MPO SR4 Transceiver
R9F98A	HPE DC 40G QSFP+ MPO eSR4 300M XCVR	JH233A	HPE X142 40G QSFP+ MPO eSR4 300M XCVR
R9F99A	HPE DC 40G QSFP+ to QSFP+ 1m DAC	JH234A	HPE X242 40G QSFP+ to QSFP+ 1m DAC Cable
R9G00A	HPE DC 40G QSFP+ to QSFP+ 3m DAC	JH235A	HPE X242 40G QSFP+ to QSFP+ 3m DAC Cable
R9G01A	HPE DC 40G QSFP+ to QSFP+ 5m DAC	JH236A	HPE X242 40G QSFP+ to QSFP+ 5m DAC Cable
R9G02A	HPE DC 40G QSFP+ LC BiDi 150m MMF XCVR	JL308A	Aruba 40G QSFP+ LC BiDi 150m MMF XCVR
R9G03A	HPE DC 40G QSFP+ to QSFP+ 7m AOC	R0Z22A	Aruba 40G QSFP+ to QSFP+ 7m AOC
R9G04A	HPE DC 40G QSFP+ to QSFP+ 15m AOC	R0Z23A	Aruba 40G QSFP+ to QSFP+ 15m AOC
R9G05A	HPE DC 40G QSFP+ to QSFP+ 30m AOC	R0Z24A	Aruba 40G QSFP+ to QSFP+ 30m AOC
R9G06A	HPE DC 50G SFP56 to SFP56 0.65m DAC	R0M46A	Aruba 50G SFP56 to SFP56 0.65m DAC Cable
R9G07A	HPE DC 50G SFP56 to SFP56 3m DAC	R0M47A	Aruba 50G SFP56 to SFP56 3m DAC Cable
R9Q43A	Aruba 1G SFP LC SX 500m MMF TAA XCVR HPE	JL745A	Aruba 1G SFP LC SX 500m MMF TAA Transceiver
R9Q44A	Aruba 1G SFP LC LX 10km SMF TAA XCVR HPE	JL746A	Aruba 1G SFP LC LX 10km SMF TAA Transceiver
R9Q45A	Aruba 1GBASET SFP 100m Cat5e TAA TRX HPE	JL747A	Aruba 1G SFP RJ45 T 100m Cat5e TAA Transceiver

HPE SKU	HPE Server SKU Description	Aruba SKU	Aruba SKU Description
R9Q46A	Aruba 10G SFP+ SR 300m MMF TAA XCVR HPE	JL748A	Aruba 10G SFP+ LC SR 300m MMF TAA Transceiver
R9Q47A	Aruba 10G SFP+ LR 10km SMF TAA XCVR HPE	JL749A	Aruba 10G SFP+ LC LR 10km SMF TAA Transceiver

Access Aruba support and updates, and view warranty and regulatory information

Accessing Aruba Support

Aruba Support Services	https://www.arubanetworks.com/support-services/
Aruba Support Portal	https://asp.arubanetworks.com/
North America telephone	1-800-943-4526 (US and Canada Toll-Free Number) +1-408-754-1200 (Primary - Toll Number) +1-650-385-6582 (Backup - Toll Number - Use only when all other numbers are not working)
International telephone	https://www.arubanetworks.com/support-services/contact-support/

Be sure to collect the following information before contacting Support:

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Other useful sites

Other websites that can be used to find information:

Airheads social forums and Knowledge Base	https://community.arubanetworks.com/
Software licensing	https://lms.arubanetworks.com/
End-of-Life information	https://www.arubanetworks.com/support-services/end-of-life/
Aruba software and documentation	https://asp.arubanetworks.com/downloads

Accessing updates

You can access updates from the Aruba Support Portal or the HPE My Networking Website.

Aruba Support Portal

https://asp.arubanetworks.com/downloads

If you are unable to find your product in the Aruba Support Portal, you may need to search My Networking, where older networking products can be found:

My Networking

https://www.hpe.com/networking/support

To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:

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Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HP Passport set up with relevant entitlements.

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To subscribe to eNewsletters and alerts:

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To view warranty information for your product, go to https://www.arubanetworks.com/support-services/product-warranties/.

Regulatory information

To view the regulatory information for your product, view the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

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