

Validated SFPs and Cables for CSG3000 Series Appliances

This article lists the small form-factor pluggable (SFP) transceivers, active optical connector (AOC) cables, and direct-attach copper (DAC) cables supported on the Cloud Services Gateway (CSG) 3000 series appliance fiber interfaces, and it describes the test environment used for the remote switches.

Supported VNI and Ethernet Ports

You can install SFP, SFP+ ,SFP28, and QSFP28 transceivers in virtual network interface (VNI) ports vni-0/0 through vni-0/3 and Ethernet ports enet-0/4 through enet-0/36. The VNI and Ethernet ports on the CSG3300 and CSG3500 appliances use different Ethernet controllers and hence support different SFPs.

The following table describes the VNI ports, controllers, and supported transceivers on the CSG3000 series appliances.

VNI Ports	Controller	Supported Transceivers
vni-0/0, vni-0/1	Intel X550T	1-Gigabit Ethernet/10-Gigabit Ethernet copper ports
vni-0/2, vni-0/3	Intel X710-BM2	1-Gigabit Ethernet/10-Gigabit Ethernet fiber ports

The following table describes the Ethernet ports, controllers, and supported transceivers on the CSG3000 series appliances.

Ethernet Ports	Controller	Supported Transceivers
enet-0/4 through enet-0/19	Broadcom BCM54998E	1-Gigabit Ethernet/2.5-Gigabit Ethernet copper ports
enet-0/20 through enet-0/27	Broadcom BCM84898	1-Gigabit Ethernet/2.5-Gigabit Ethernet/5-Gigabit Ethernet/10-Gigabit Ethernet copper ports
enet-0/28 through enet-0/31	Broadcom BCM56376	10-Gigabit Ethernet/25-Gigabit Ethernet fiber ports
enet-0/32 and enet-0/36	Broadcom BCM56376	100-Gigabit Ethernet fiber ports

Supported Dual-Rate SFP/SFP+ Transceivers

The following table describes the dual-rate (1-Gigabit Ethernet/10-Gigabit Ethernet) SFP/SFP+ transceiver modules supported on the CSG3000 series appliances.

SFP/SFP+ Transceiver Type	Manufacturer	Part Number	vni-0/2 and vni-0/3	enet-0/28 through enet-0/31	Transceiver Description
Short reach (SR)	Finisar	FTLX8574D3BCV-IT	Yes	Yes	Intel OEM, 1G-SX/10G-SR dual-rate
Long reach (LR)	Finisar	FTLX1471D3BCV-IT	Yes	Yes	Intel OEM, 1G-LX/10G-LR dual-rate

Supported 1-Gigabit Ethernet SFP Transceivers

The following table describes the 1-Gigabit Ethernet SFP transceiver modules supported on the CSG3000 series appliances.

SFP Transceiver Type	Manufacturer	Part Number	vni-0/2 and vni-0/3	enet-0/28 through enet-0/31	Transceiver Description
Short wavelength (SX)	Finisar	FTLX8574D3BCV	Yes	Yes	1000BASE-SX SFP transceiver
Long wavelength (LX)	Finisar	FTLX1475D3BCV	Yes	Yes	1000BASE-LX SFP transceiver

Supported 10-Gigabit Ethernet SFP+ Transceivers and Cables

The following table describes the 10-Gigabit Ethernet SFP+ transceiver modules supported on the CSG3000 series appliances.

SFP+ Transceiver Type	Manufacturer	Part Number	vni-0/2 and vni-0/3	enet-0/28 through enet-0/31	Transceiver Description
Short wavelength (SX)	Finisar	FTLX8574D3BCL	Yes	Yes	10GBASE-SR/SW, up to 300-m multimode datacom SFP+ optical transceiver
Long wavelength (LX)	Finisar	FTLX1475D3BCL	Yes	Yes	10GBASE-LR 1310-nm single-mode datacom SFP+ optical transceiver
Copper optic	FS	F1804000060	Yes	Yes	1000BASE-T SFP copper RJ-45 up to 100-m transceiver module

The following table describes the 10-Gigabit Ethernet SFP+ AOC and DAC cables supported on the CSG3000 series appliances.

SFP+ Cable Type	Manufacturer	Part Number	vni-0/2 and vni-0/3	enet-0/28 through enet-0/31	Cable Description
AOC 5-m	FS	SFPP-AO05	Yes	Yes	5-m (16-ft) generic compatible 10-Gigabit Ethernet SFP+ AOC
DAC 1-m	FS	SFPP-PC01	Yes	Yes	1-m generic compatible 10-Gigabit Ethernet SFP+ passive DAC twinax cable

SFP+ Cable Type	Manufacturer	Part Number	vni-0/2 and vni-0/3	enet-0/28 through enet-0/31	Cable Description
DAC 5-m	FS	SFPP-PC05	Yes	Yes	5-m (16-ft) generic compatible 10-Gigabit Ethernet SFP+ passive DAC twinax cable

Supported 25-Gigabit Ethernet SFP28 Transceivers and Cables

The following table describes the 25-Gigabit Ethernet SFP28 transceiver modules supported on the CSG3300 series appliances.

SFP28 Transceiver Type	Manufacturer	Part Number	vni-0/2 and vni-0/3	enet-0/28 through enet-0/31	Transceiver Description
Short wavelength (SX)	FS	SFP28-25GSR-85	Yes	Yes	FS SFP28-850-nm 100-m, compatible with Cisco
Short wavelength (SX)	Finisar	FTLF8536P4BCL	Yes	Yes	25-Gigabit Ethernet SFP28 SR (850-nm) fiber-optic transmitter
Long wavelength (LX)	FS	SFP28-25GLR-31	Yes	Yes	25-Gigabit Ethernet SFP28 LR optic

The following table describes the 25-Gigabit Ethernet SFP28 transceiver modules supported on the CSG3500 series appliances.

SFP28 Transceiver Type	Manufacturer	Part Number	vni-0/2 and vni-0/3	enet-0/28 through enet-0/31	Transceiver Description
Short wavelength (SX)	Finisar	FTLF8536P4BCL	Yes	Yes	25-Gigabit Ethernet SFP28 SR (850-nm) fiber optic transmitter
Long wavelength (LX)	Finisar	SFP28-25GLR-31	Yes	Yes	25-Gigabit Ethernet SFP28 LR optic

The following table describes the 25-Gigabit Ethernet AOC and DAC cables supported on the CSG3000 series appliances.

SFP28 Cable Type	Manufacturer	Part Number	enet-0/28 through enet-0/31	Cable Description
AOC 5-m	FS	S28-AO05	Yes	5-m (1-ft) generic compatible 25-Gigabit Ethernet SFP28 AOC cable
DAC 3-m	FS	S28-PC03	Yes	3-m (10-ft) SFP-H25G-CU3M-compatible 25-Gigabit Ethernet SFP28 passive DAC twinax cable

Supported 100-Gigabit Ethernet QSPF28 Transceivers and Cables

The following table describes the 100-Gigabit Ethernet QSFP28 transceiver modules supported on the CSG3000 series appliances.

QSPF28 Transceiver Type	Manufacturer	Part Number	enet-0/32	enet-0/36	Transceiver Description
SR4	Finisar	FTLC9558REPM	Yes	Yes	100-Gigabit Ethernet parallel MMF 100-m Gen3 QSFP28 optical

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QSPF28 Transceiver Type	Manufacturer	Part Number	enet-0/32	enet-0/36	Transceiver Description
					transceiver

The following table describes the 100-Gigabit Ethernet AOC and DAC cables supported on the CSG3300 series appliances.

QSPF28 Cable Type	Manufacturer	Part Number	enet-0/32	enet-0/36
AOC 5-m	FS	Q28-AO05	Yes	Yes
DAC 1-m	FS	Q28-PC01	Yes	Yes
DAC 5-m	FS	Q28-PC05	Yes	Yes

The following table describes the 100-Gigabit Ethernet AOC and DAC cables supported on the CSG3500 series appliances.

QSPF28 Cable Type	Manufacturer	Part Number	enet-0/32	enet-0/36	Cable Description
AOC 5-m	Finisar	Q28-AO05	Yes	Yes	5-m (16-ft) 100-Gigabit Ethernet QSFP28 AOC cable
DAC 5-m	Finisar	Q28-PC05	Yes	Yes	5-m (16-ft) 100-Gigabit Ethernet QSFP28 passive DAC twinax cable

Supported Breakout AOC and DAC Cables

The following table describes the AOC and DAC breakout cables supported on the CSG3000 series appliances.

Breakout Cable Type	Manufacturer	Part number	enet-0/32	enet-0/36	Breakout Cable Description
AOC 5-m QSFP+ to SFP+	FS	Q-4SAO05	Yes	Yes	5-m (16-ft) generic compatible 40-Gigabit Ethernet QSFP+ to four 10-Gigabit Ethernet SFP+ AOC cables
AOC 5-m QSFP28 to SFP28	FS	Q-4S28AO05	Yes	Yes	5-m (16-ft) generic compatible 100-Gigabit Ethernet QSFP28 to four 25-Gigabit Ethernet SFP28 AOC cables
DAC 2-m QSFP+ to SFP+	FS	Q-4SPC02	Yes	Yes	2-m (7-ft) generic compatible 40-Gigabit Ethernet QSFP+ to four 10-Gigabit Ethernet SFP+ passive DAC cables
DAC 5-m QSFP+ to SFP+	FS	Q-4SPC05	Yes	Yes	5-m (16-ft) generic compatible 40-Gigabit Ethernet QSFP+ to four 10-Gigabit Ethernet SFP+ passive DAC cables
DAC 3-m QSFP28 to SFP28	FS	Q-4S28PC03	Yes	Yes	Generic compatible 100-Gigabit Ethernet QSFP28 to four 25-Gigabit Ethernet SFP28

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Breakout Cable Type	Manufacturer	Part number	enet-0/32	enet-0/36	Breakout Cable Description
					passive DAC cables
DAC 5-m QSFP28 to SFP28	FS	Q-4S28PC05	Yes	Yes	5-m (16-ft) generic compatible 100-Gigabit Ethernet QSFP28 to four 25-Gigabit Ethernet SFP28 passive DAC cables
Four 10-Gigabit Ethernet optic	FS	FTLX8574D3BCL	Yes	Yes	40-Gigabit Ethernet QSFP+ SR4 optic cable on head end; four 10-Gigabit Ethernet SFP+ SR optic cables on tail end
Four 25-Gigabit Ethernet optic	Finisar	FTLC9558REPM	Yes	Yes	100-Gigabit Ethernet QSFP+ SR4 optic cable on head end; four 25-Gigabit Ethernet SFP+ SR optic cables on tail end

LED Color

The color of the LEDs on the CSG3300 and CSG3500 series appliances depends on the speed of the media connected to the appliance.

For the CSG3000 series appliances, the colors are as follows:

- 1-Gigabit Ethernet—Amber (orange)
- 10-Gigabit Ethernet—Amber (Orange)
- 25-Gigabit Ethernet—Blue
- 100-Gigabit Ethernet—Light green
- Four 10-Gigabit Ethernet breakout—NA

- Four 25-Gigabit Ethernet breakout—Light green

Test Environment

The following test environments were used for the remote devices:

- 1-Gigabit Ethernet media
 - Test the 1-Gigabit Ethernet link connection of CSG3300 and CSG3500 with peer as BCM platforms (CSG3000, CSX4000, and CSX8300 series appliances).
 - To set the speed of a port as 1-Gigabit Ethernet, issue the **set interfaces port-number ether-options link-speed 1g** CLI command.
 - Plug in the same SFP on the local and remote ends.
 - 1-Gigabit Ethernet copper SFP optic is not supported on the 25-Gigabit Ethernet fiber ports of CSG3000 series appliances.
- 10-Gigabit Ethernet/25-Gigabit Ethernet media
 - Test the 10-Gigabit Ethernet link connection of CSG3300 and CSG3500 with peer as BCM platforms (CSG3000, CSX4000, and CSX8300 series appliances).
 - To validate 10-Gigabit Ethernet ports on 25-Gigabit Ethernet ports, issue the **set interfaces port-number ether-options link-speed 10g** CLI command set the speed of the fiber port as 10-Gigabit Ethernet.
 - Validate the 10-Gigabit Ethernet copper optic across the RJ45 ports on the peer switch.
 - Plug in the same SFP+ on the local and remote ends.
 - 10-Gigabit Ethernet copper SFP optic is supported on the 25-Gigabit Ethernet fiber ports of CSG3000 series appliances. Note that the CAT6A cable from this port must be plugged in to a 10-Gigabit Ethernet copper port on the peer switch.
- 100-Gigabit Ethernet media
 - Test the 100-Gigabit Ethernet link connection of CSG3300 and CSG3500 with peer as BCM platforms (CSG3000, CSX4000, and CSX8000 series appliances) and 100-Gigabit Ethernet port of the Spirent traffic generator.
 - Plug in the same QSFP28 on the local and remote ends.
 - 100-Gigabit Ethernet DAC cable comes up between the BCM switch and the Spirent, only after enabling "Autoneg On" on the Spirent side.
- Breakout port media
 - On CSG3000 series appliances, issue the **set interfaces port-number breakout-mode 4x10g** CLI command to configure all the breakout ports on the device under test (DUT). For example:
 - To configure four 10-Gigabit Ethernet port breakout on a 100-Gigabit Ethernet interface of a CSG3000 appliance, issue the **set interfaces enet-0/32 breakout-mode 4x10g** CLI command.
 - To configure four 25-Gigabit Ethernet port breakout on a 100-Gigabit Ethernet interface of a CSG3000 appliance, issue the **set interfaces enet-0/32 breakout-mode 4x25g** CLI command.
 - Enable all the breakout ports on the DUT and on the peer switch in which the tail ends are inserted. For example, issue the **set interfaces enet-0/32 enable true** CLI command.