

HP Virtual Connect Interoperability Matrix

Version 2.0



Disclaimer

- The purpose of this matrix is to help field people to avoid mistakes while connecting VC Ethernet Modules to external LAN switches.
- This document can change as soon as I get some new details, so come and check it from time to time!
- All the information were collected either via the web (ProCurve.com, Cisco.com, Finsiar.com...), internal documents (.pdf, .doc...), and last but not least thanks to EMEA CC and Steve McLean for their tests contribution!



HP Virtual Connect FlexFabric

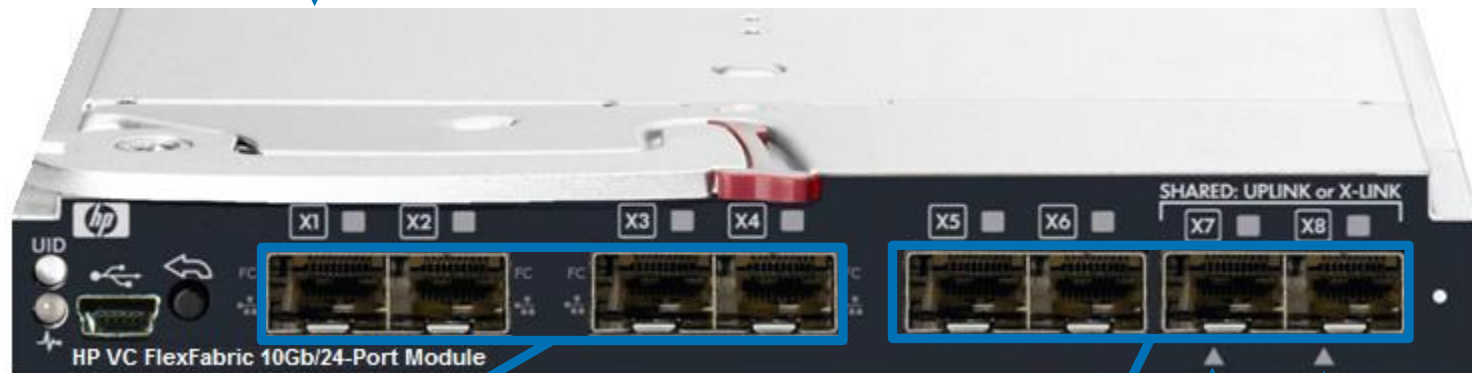


VC FlexFabric 10Gb/24-Port Module

MidPlane – 16 Individually Configurable Downlink Ports



- 10 Gb Ethernet, Flex-10, Flex-10/FCoE, Flex-10/iSCSI
- 2 x 10Gb Cross-links between adjacent FlexFabric modules
- Mgmt Interfaces to Onboard Administrator (Enet, RS232, and I²C)



Four Flexible Uplink Ports (X1-X4)

- Individually configurable as FC or Ethernet
- **Ethernet 10Gb (only)**, Fibre Channel: 2/4/8 Gb
- FC uplinks – N_Ports, just like legacy VC-FC module uplinks
- Stacking supported for Ethernet Only (FCoE future upgrade)

2x Crosslinks (midplane) or
2x Enet SFP+ ports (X7-X8)

Four Ethernet Uplink Ports (X5-X8)






- Ethernet only (1/10 GbE)
- SFP+ SR/LR/LRM/Copper DAC
- Stacking supported for Ethernet Only (FCoE future upgrade)

FlexFabric Shared Port Operation: X7 and X8









- Port X7 (SFP+) and port X8 (SFP+) are each shared with two internal 10Gb cross-link. Either the port is active or the internal cross-link is active, but not both. Port X7 is shared with internal cross-link 1, and Port X8 is shared with internal cross-link 2.
- If there is a module installed in the SFP+ port, the SFP+ port is the active port.
- If there is no module installed in the SFP+ port, and the port **has not been configured** as an uplink in a VC Ethernet network, then the internal cross-link is the active port.
- If there is no module installed in the SFP+ port, and the port **has been configured** as an uplink in a VC Ethernet network, then the SFP+ port is the active port.

VC FlexFabric: Ethernet Options

FlexFabric Interconnect Option	Connector Image	Connector Type	Cable Needed	Distance Covered
RJ-45 SFP 453154-B21 Available only for port X5 to X8		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	100mt
SX 1Gb SFP 453151-B21 Available only for port X5 to X8		LC	Multi-Mode FC Cable OM2/OM3	550mt (50/100μm)
10Gb SR SFP+ 455883-B21		LC	Multi-Mode FC Cable OM2/OM3	300mt (with OM3)
10Gb LR SFP+ 455886-B21		LC	Single-Mode FC Cable OM2/OM3	16/25Km
10Gb LRM SFP+ 455889-B21		LC	Multi-Mode FC Cable OM2/OM3	260mt (with OM3)

VC FlexFabric: Fiber Options

Note: all these SFP are available only for ports X1 → X4
1Gbps FC is not supported on uplinks X1 → X4






FlexFabric Interconnect Option	Connector Image	Connector Type
4Gb Short Wave FC SFP A7446B		LC
4Gb Long Wave B-series 30km FC SFP AN211A		LC
4 Gb Short Wave B-series FC SFP AJ715A		LC
4 Gb Short Wave B-series FC SFP AJ715A		LC
8Gb B-series Short Wave FC SFP+ AJ716A		LC
8Gb B-series Long Wave FC SFP+ AJ717A		LC



Integrating Virtual Connect FlexFabric with HP ProCurve








VC FlexFabric: ProCurve Connection

FlexFabric Interconnect Option	Connector Image	What ProCurve connector do I need?	What Cable do I need?	Comment
RJ-45 SFP 453154-B21 Available only for port X5 to X8		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	It supports only 1000BaseT, doesn't work with 10/100
SX 1Gb SFP 453151-B21 Available only for port X5 to X8		SFP LC/SC	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve transceiver
10Gb SR SFP+ 455883-B21		SFP/SFP+/XFP/X2 10Gb SR	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve transceiver
10Gb LR SFP+ 455886-B21		SFP/SFP+/XFP/X2 10Gb LR	Single-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve transceiver
10Gb LRM SFP+ 455889-B21		SFP/SFP+/XFP/X2 10Gb LRM	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve transceiver

Integrating Virtual Connect FlexFabric with Cisco








VC FlexFabric: Cisco Connection

FlexFabric Interconnect Option	Connector Image	What Cisco connector do I need?	What Cable do I need?	Comment
RJ-45 SFP 453154-B21 Available only for port X5 to X8		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	It supports only 1000BaseT, doesn't work with 10/100
SX 1Gb SFP 453151-B21 Available only for port X5 to X8		Cisco SFP SC/LC Connector	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver
10Gb SR SFP+ 455883-B21		SFP/SFP+/XFP/X2 10Gb SR	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver
10Gb LR SFP+ 455886-B21		SFP/SFP+/XFP/X2 10Gb LR	Single-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver
10Gb LRM SFP+ 455889-B21		SFP/SFP+/XFP/X2 10Gb LRM	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver

Integrating Virtual Connect Flex-10 with BNT/Nortel



VC FlexFabric: BNT/Nortel Connection

FlexFabric Interconnect Option	Connector Image	What BNT connector do I need?	What Cable do I need?	Comment
RJ-45 SFP 453154-B21 Available only for port X5 to X8		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	It supports only 1000BaseT, doesn't work with 10/100
SX 1Gb SFP 453151-B21 Available only for port X5 to X8		SFP with SC/LC Connector	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver
10Gb SR SFP+ 455883-B21		SFP/SFP+/XFP/X2 10Gb SR	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver
10Gb LR SFP+ 455886-B21		SFP/SFP+/XFP/X2 10Gb LR	Single-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver
10Gb LRM SFP+ 455889-B21		SFP/SFP+/XFP/X2 10Gb LRM	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver

HP Virtual Connect Flex-10



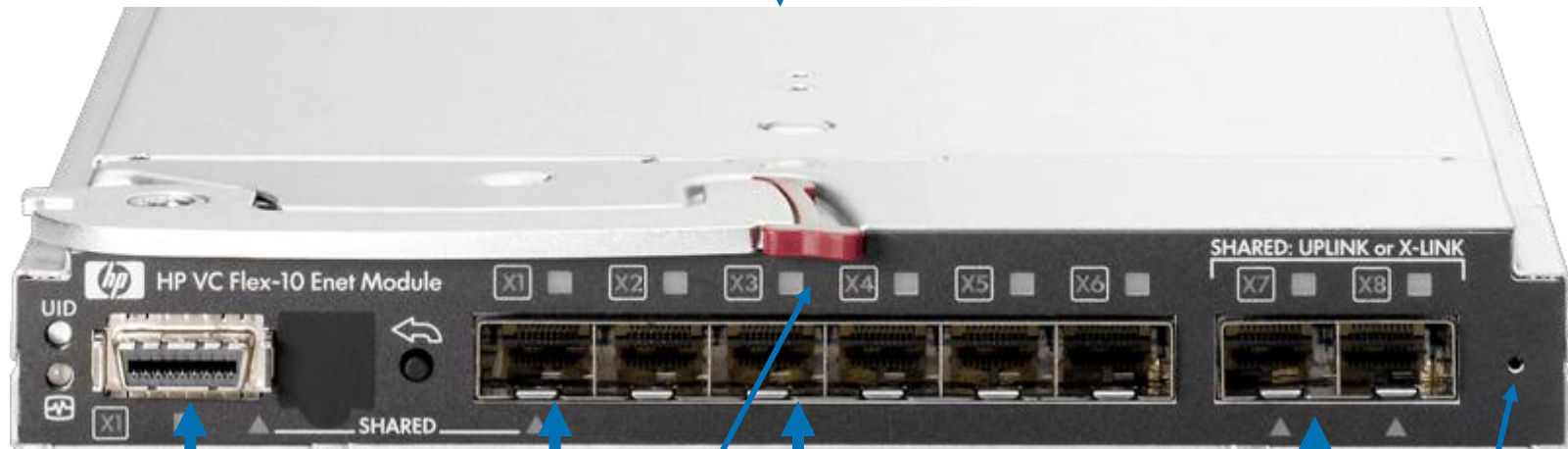
HP Virtual Connect Flex-10 10Gb Ethernet Module

MidPlane:

16x 10GBASE-KR Ethernet – Connects to one (1Gb or 10Gb) NIC in each HH blade bay

2x 10Gb Ethernet – Cross-link between adjacent VC-Enet modules

Mgmt Interfaces to Onboard Administrator (Enet & I2C)



1x 10GBASE-CX4 Ethernet or
1x SFP+ module (X1)

5x SFP+ modules (X2-6)
(1GbE or 10GbE)

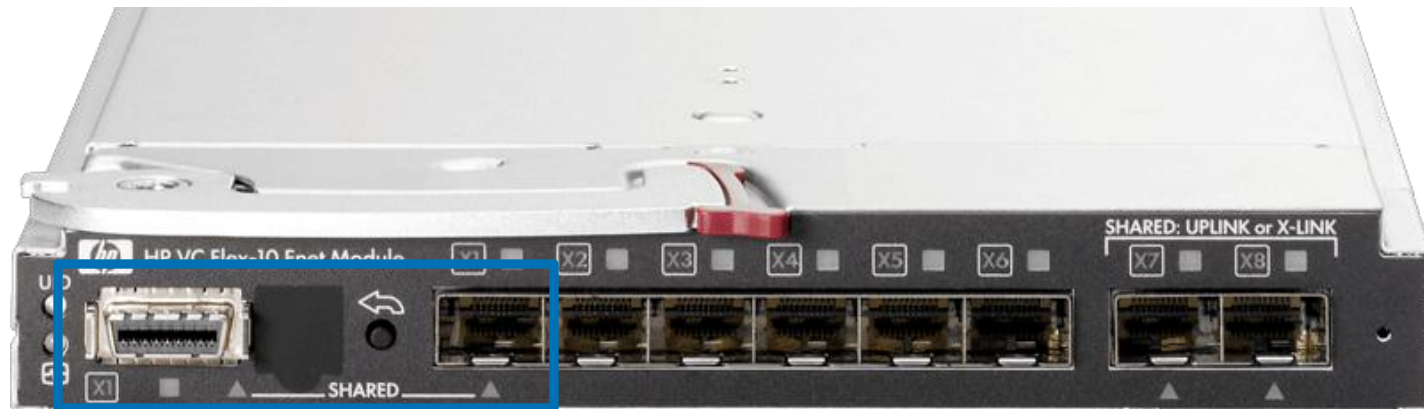
2x Crosslinks (midplane) or
2x SFP+ module (X7-8)

Port Number & Status Indicators

Indicates whether a data center link (green), stacking link (amber), or highlighted port (blue).

Recessed module reset button

Flex-10 Shared Port Operation: CX4 and X1



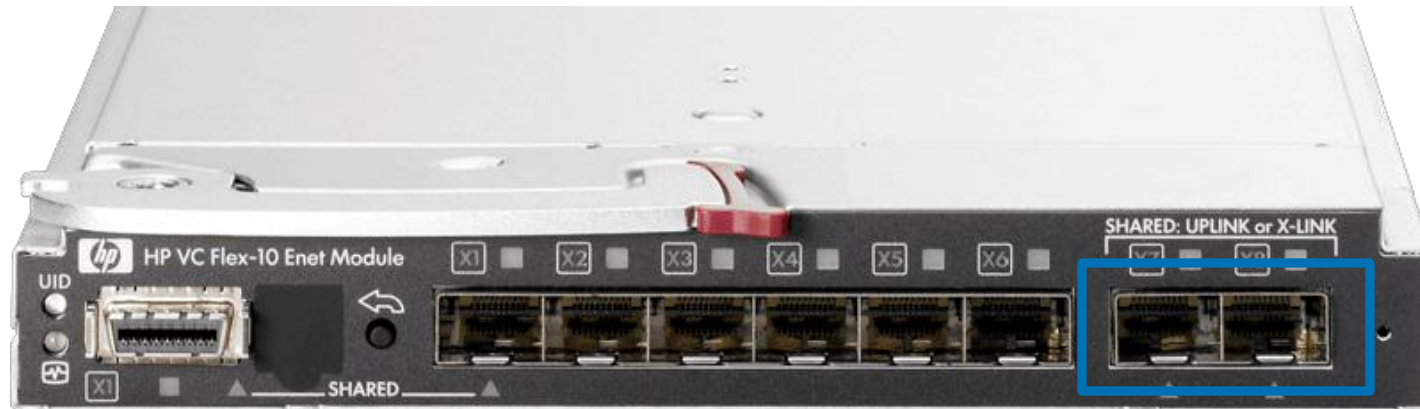
Port X1 (10BASE-CX4) is shared with Port X1 (SFP+)

You can have either the CX-4 port active or the SFP+ port active and the triangle LED underneath each port indicates which port is active.

The SFP+ port always has precedence over the CX4 port:






- If there is a module installed in the SFP+ port, the SFP+ port is the active port.
- If there is no module installed in the SFP+ port, the CX4 port is the active port.

Flex-10 Shared Port Operation: X7 and X8



- Port X7 (SFP+) and port X8 (SFP+) are each shared with two internal 10Gb cross-link. Either the port is active or the internal cross-link is active, but not both. Port X7 is shared with internal cross-link 1, and Port X8 is shared with internal cross-link 2.
- If there is a module installed in the SFP+ port, the SFP+ port is the active port.
- If there is no module installed in the SFP+ port, and the port **has not been configured** as an uplink in a VC Ethernet network, then the internal cross-link is the active port.
- If there is no module installed in the SFP+ port, and the port **has been configured** as an uplink in a VC Ethernet network, then the SFP+ port is the active port.






VC Flex-10: Connectivity Options

Flex-10 Interconnect Option	Connector Image	Connector Type	Cable Needed	Distance Covered
RJ-45 SFP 453154-B21		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	100mt
SX 1Gb SFP 453151-B21		LC	Multi-Mode FC Cable OM2/OM3	550mt (50/100 μ m)
10Gb SR SFP+ 455883-B21		LC	Multi-Mode FC Cable OM2/OM3	300mt (with OM3)
10Gb LR SFP+ 455886-B21		LC	Single-Mode FC Cable OM2/OM3	16/25Km
10Gb LRM SFP+ 455889-B21		LC	Multi-Mode FC Cable OM2/OM3	260mt (with OM3)

Integrating Virtual Connect Flex-10 with HP ProCurve








VC Flex-10: ProCurve Connection

I have a Flex-10 with this Kit:	Connector Image	What ProCurve connector do I need?	What Cable do I need?	Comment
RJ-45 SFP 453154-B21		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	It supports only 1000BaseT, doesn't work with 10/100
SX 1Gb SFP 453151-B21		SFP LC/SC	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve transceiver
10Gb SR SFP+ 455883-B21		SFP/SFP+/XFP/X2 10Gb SR	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve transceiver
10Gb LR SFP+ 455886-B21		SFP/SFP+/XFP/X2 10Gb LR	Single-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve transceiver
10Gb LRM SFP+ 455889-B21		SFP/SFP+/XFP/X2 10Gb LRM	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve transceiver

Integrating Virtual Connect Flex-10 with Cisco








VC Flex-10: Cisco Connection

I have a Flex-10 with this Kit:	Connector Image	What Cisco connector do I need?	What Cable do I need?	Comment
RJ-45 SFP 453154-B21		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	It supports only 1000BaseT, doesn't work with 10/100
SX 1Gb SFP 453151-B21		Cisco SFP SC/LC Connector	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver
10Gb SR SFP+ 455883-B21		SFP/SFP+/XFP/X2 10Gb SR	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver
10Gb LR SFP+ 455886-B21		SFP/SFP+/XFP/X2 10Gb LR	Single-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver
10Gb LRM SFP+ 455889-B21		SFP/SFP+/XFP/X2 10Gb LRM	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver

Integrating Virtual Connect Flex-10 with BNT/Nortel



VC Flex-10: BNT/Nortel Connection

I have a Flex-10 with this Kit:	Connector Image	What BNT connector do I need?	What Cable do I need?	Comment
RJ-45 SFP 453154-B21		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	It supports only 1000BaseT, doesn't work with 10/100
SX 1Gb SFP 453151-B21		SFP with SC/LC Connector	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver
10Gb SR SFP+ 455883-B21		SFP/SFP+/XFP/X2 10Gb SR	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver
10Gb LR SFP+ 455886-B21		SFP/SFP+/XFP/X2 10Gb LR	Single-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver
10Gb LRM SFP+ 455889-B21		SFP/SFP+/XFP/X2 10Gb LRM	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver

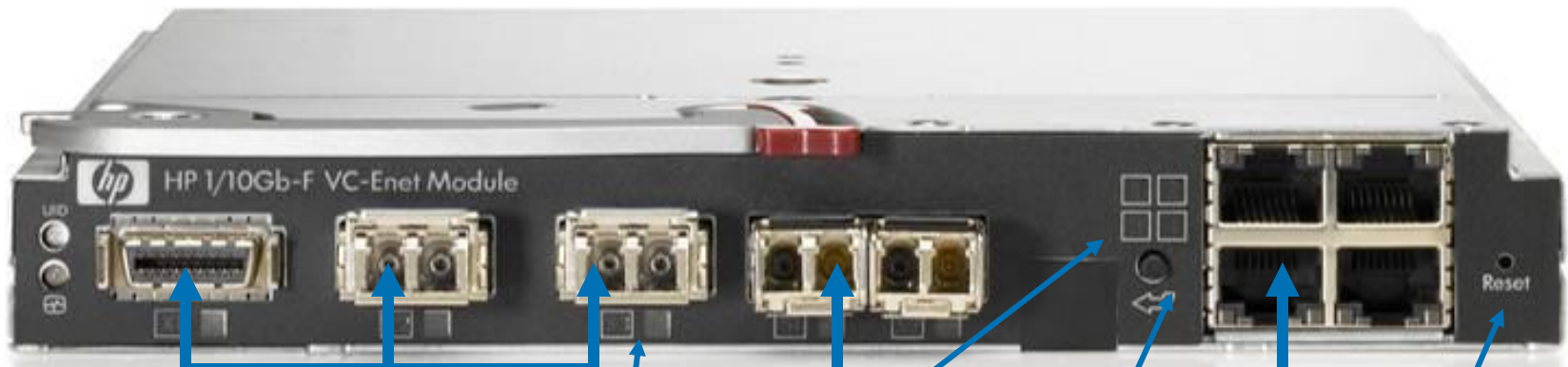
HP Virtual Connect 1/10-F



HP Virtual Connect Ethernet Module

HP 1/10Gb-F VC-Enet Module

MidPlane 16x 1Gb Ethernet—Connects to one NIC in each HH blade server bay
1x 10Gb—Cross-link between adjacent VC-Enet modules
Mgmt Interfaces to Onboard Administrator



1x 10Gb Ethernet (CX4) Port X1
2x 10Gb Ethernet (XFP) Ports X2, X3

2x 1Gb Ethernet (SFP modules
SX/RJ45)
Ports S1 and S2





4x 1Gb Ethernet (RJ45)
Ports 1, 2, 3, 4

Port Number & Status Indicators
Indicates whether a data center link (green),
stacking link (amber), or highlighted port (blue).

'Next' button (unused in
initial release firmware)

Recessed module
reset button





VC 1/10-F: Connectivity Options

VC 1/10-F Interconnect Option	Connector Image	Connector Type	Cable Needed	Distance Covered
RJ-45 SFP 453154-B21 Available only for port S1 and S2		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	100mt
SX 1Gb SFP 453151-B21 Available only for port S1 and S2		LC	Multi-Mode FC Cable OM2/OM3	550mt (50/100μm)
10Gb SR XFP 443756-B21 Available only for port X2 and X3		LC	Multi-Mode FC Cable OM2/OM3	300mt (with OM3)
10Gb LR XFP 443757-B21 Available only for port X2 and X3		LC	Single-Mode FC Cable OM2/OM3	16/25Km

Integrating Virtual Connect 1/10-F with HP ProCurve







VC 1/10-F: ProCurve Connection

I have a VC 1/10F with this Kit:	Connector Image	What ProCurve connector do I need?	What Cable do I need?	Comment
RJ-45 SFP 453154-B21		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	It supports only 1000BaseT, doesn't work with 10/100
SX 1Gb SFP 453151-B21		ProCurve SFP LC/SC	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve SFP
10Gb SR XFP 443756-B21		SFP/SFP+/XFP/X2 10Gb SR	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve module
10Gb LR XFP 443757-B21		SFP/SFP+/XFP/X2 10Gb LR	Single-Mode FC Cable OM2/OM3	The Switch Port must have a ProCurve module

Integrating Virtual Connect 1/10-F with Cisco







VC 1/10-F: Cisco Connection

I have a VC 1/10-F with this Kit:	Connector Image	What Cisco connector do I need?	What Cable do I need?	Comment
RJ-45 SFP 453154-B21		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	It supports only 1000BaseT, doesn't work with 10/100
SX 1Gb SFP 453151-B21		SFP LC/SC	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver
10Gb SR XFP 443756-B21		SFP/SFP+/XFP/X2 10Gb SR	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver
10Gb LR XFP 443757-B21		SFP/SFP+/XFP/X2 10Gb LR	Single-Mode FC Cable OM2/OM3	The Switch Port must have a Cisco transceiver

Integrating Virtual Connect 1/10-F with BNT



VC 1/10-F: BNT Connection

I have a VC 1/10-F with this Kit:	Connector Image	What BNT connector do I need?	What Cable do I need?	Comment
RJ-45 SFP 453154-B21		RJ-45	CAT5/6 Copper Cable with RJ-45 connector	It supports only 1000BaseT, doesn't work with 10/100
SX 1Gb SFP 453151-B21		SFP LC/SC	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver
10Gb SR XFP 443756-B21		SFP/SFP+/XFP/X2 10Gb SR	Multi-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver
10Gb LR XFP 443757-B21		SFP/SFP+/XFP/X2 10Gb LR	Single-Mode FC Cable OM2/OM3	The Switch Port must have a BNT transceiver

Direct Attach Cables



Direct Attach Cable – Connectivity Options

- Direct Attach Cable (DAC) is a cable that has a built-in SFP+ transceiver on both ends. It's very cheap compared to an SFP(+)/Cable/SFP(+) chain
- There are many DAC Cables provided by various vendor and with FW 3.x allows you can use a wider range of DAC



VC Firmware 3.x and later

- Since firmware 3.x, the limitation to use only HP branded cables has disappeared. Now you can use 3rd party DAC Cables, but they will be logged as “unsupported”. Currently allowed DAC Cables are from Cisco and Brocade, other non allowed cables will not link.
- Requirements for 3rd party DAC Cables are
Length: from 1 to 7 meters (**no 0.5 meters**)
Connector: Copper Pigtail
Speed: $\geq 10\text{Gb}$
Transceiver Code: active or passive



VC Firmware 3.x: Direct Attach Cable

Valid for VC fw. 3.x or above

DAC Vendor	Comment/Example
HP ISS DAC	HP 1m SFP+ 10GbE Copper Cable 487652-B21 HP 3m SFP+ 10GbE Copper Cable 487655-B21 HP 5m SFP+ 10GbE Copper Cable 537963-B21 HP 7m SFP+ 10GbE Copper Cable 487658-B21
HP ProCurve DAC	HP ProCurve 10-GbE SFP+ 1m Direct Attach Cable J9281B HP ProCurve 10-GbE SFP+ 3m Direct Attach Cable J9283B HP ProCurve 10-GbE SFP+ 7m Direct Attach Cable J9285B HP ProCurve XFP to SFP+ 1m Direct Attach Copper Cable J9300A HP ProCurve XFP to SFP+ 3m Direct Attach Copper Cable J9301A HP ProCurve XFP to SFP+ 5m Direct Attach Copper Cable J9302A
Brocade	Brocade 1m B-series Active Copper SFP+ Cable AP818A Brocade 3m B-series Active Copper SFP+ Cable AP819A Brocade 5m B-series Active Copper SFP+ Cable AP820A
Cisco	HP C-Series 10GB Copper Cable, 3m AP784A HP C-Series 10GB Copper Cable, 5m AP785A Cisco 3-m 10G SFP+ Copper Twinax Cable SFP-H10GB-CU3M Cisco 5-m 10G SFP+ Copper Twinax Cable SFP-H10GB-CU5M



VC Flex-10: Direct Attach Cable

Valid for VC fw. 2.30 to 2.34

DAC Vendor	Does it work with Virtual Connect?	Does it work with Manufacturer?	Comment/Example
HP ISS DAC	Yes	Yes	HP 1m SFP+ 10GbE Copper Cable 487652-B21 HP 3m SFP+ 10GbE Copper Cable 487655-B21 HP 7m SFP+ 10GbE Copper Cable 487658-B21
HP ProCurve DAC A*	Yes	Yes	HP ProCurve 10-GbE SFP+ 1m DAC J9281A HP ProCurve 10-GbE SFP+ 3m DAC J9283A HP ProCurve 10-GbE SFP+ 7m DAC J9285A
HP ProCurve DAC B	Yes	Yes	HP ProCurve 10-GbE SFP+ 1m DAC J9281B HP ProCurve 10-GbE SFP+ 3m DAC J9283B HP ProCurve 10-GbE SFP+ 7m DAC J9285B
BNT	No	Yes	Flex-10 checks manufacturer, 3 rd party DAC are not allowed
Brocade Cables	No	Yes	
Cisco	No	Yes	

* HP ProCurve DAC A is in shortage and will be obsolete soon



VC Flex-10: Direct Attach Cable

Valid for VC fw. 2.12 or below

DAC Vendor	Does it work with Virtual Connect?	Does it work with Manufacturer?	Comment/Example
HP ISS DAC	Yes	Yes	HP 1m SFP+ 10GbE Copper Cable 487652-B21 HP 3m SFP+ 10GbE Copper Cable 487655-B21 HP 7m SFP+ 10GbE Copper Cable 487658-B21
HP ProCurve DAC A*	Yes	Yes	HP ProCurve 10-GbE SFP+ 1m DAC J9281A HP ProCurve 10-GbE SFP+ 3m DAC J9283A HP ProCurve 10-GbE SFP+ 7m DAC J9285A
HP ProCurve DAC B	No	Yes	
BNT	No	Yes	
Brocade Cables	No	Yes	Flex-10 checks manufacturer, 3 rd party DAC are not allowed
Cisco	No	Yes	

* HP ProCurve DAC A is in shortage and will be obsolete soon



HP Virtual Connect Fibre channel module

4Gb FC

8Gb FC 20 Ports

8Gb FC 24 Ports



VC-FC 8Gb 20ports

572018-B21



8Gb Optical Transceivers (SFP+)

- Short Wave 8Gb - 75m

AJ718A

4Gb Optical Transceivers (SFP)

- Short Wave 4Gb - 150m
- Long Wave - 10 km

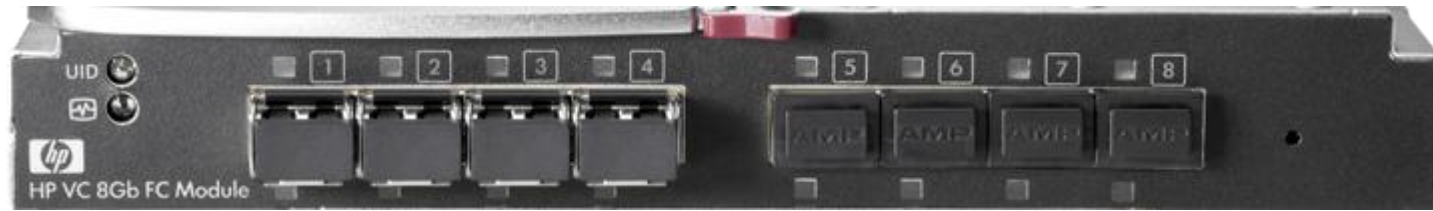
A7446B

AE493A



VC-FC 8Gb 24ports

466482-B21



8Gb Optical Transceivers (SFPs)

Short Wave

HP 8Gb SW B-series FC SFP+

AJ716A



Long Wave

HP 8Gb Long Wave B-series 10km FC SFP+ 1 Pack

AJ717A



4Gb Optical Transceivers (SFPs)

Short Wave

HP 4Gb SW B-series FC SFP

AJ715A



Long Wave

HP 4Gb LW B-series 35km FC SFP 1 Pack

AN211A



VC-FC 4Gb

409513-B22



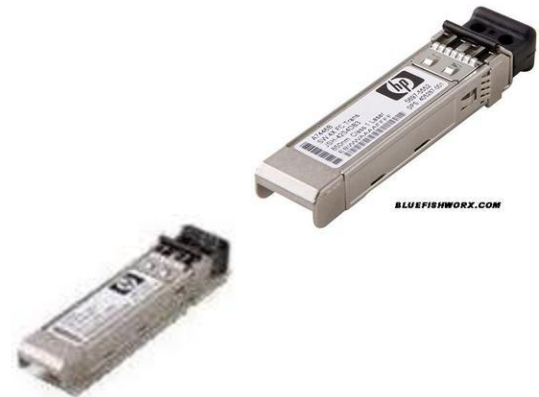
4Gb Optical Transceivers (SFPs)

Short Wave 4Gb - 150m

A7446B

Long Wave - 10 km

AE493A





Please send any feedback to Mauro Isoardo
mauro.isoardo@hp.com