Applications
Engineering Note

Connectivity Solutions Utilizing Base-8 Structured Cabling

AEN 156, Revision: 3

This Application Engineering Note will discuss the different Corning Optical Communications components that are available to provide fiber optic connectivity utilizing Base-8 structured cabling. This document will be specific by providing connectivity solutions that use OM3/OM4 Laser-Optimized 50µm multimode and OS2 single-mode fiber (This document will only provide OM4 and OS2 part numbers). This document will cover duplex (2-fiber), parallel (8-fiber/20-fiber), and parallel to duplex optical links. For Base-12 solutions, please refer to AEN151 "Four-Channel Parallel Optic Connectivity Solutions Utilizing Base-12 Structured Cabling". For Base-12 four-channel parallel to duplex transmission, please refer to AEN152 "Four-channel Parallel to Duplex Optical Connectivity Solutions Utilizing Base-12 Structured Cabling".

Duplex and Parallel Optical Links

A duplex optical link, also known as duplex communications, is accomplished by using two fibers as shown in Figure 1. The optical signal will be transmitted on the B connector and received on the A connector. For these types of links operating in a duplex optical system, the most commonly used connector is the duplexed LC.

Figure 1: Duplex Fiber Optic Transmission

A parallel optical link is accomplished by combining two or more channels. Parallel optical links can be achieved by using eight fibers (4 fibers for Tx and 4 fibers for Rx), twenty fibers (10 fibers for Tx and 10 fibers for Rx), or twenty-four fibers (12 fibers for Tx and 12 fibers for Rx). The standard cabling to accomplish an 8-fiber parallel optical link is a 12-fiber trunk with a MTP® connector interface (12-fiber connector), as shown in Figure 2.

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For parallel connectivity (8-fiber), Tx1 has to follow a path that requires the data to exit on Rx1. As Figure 1 illustrates if Tx1 enters on fiber position 1 it needs to exit on fiber position 12. This is the same if the transmit enters on fiber position 12 it needs to exit on fiber position 1. This is accomplished by using a Type B polarity component (according to TIA-568). As components are added to the optical system an odd number of Type B components are required to maintain the correct polarity scheme so the light enters and exits (transmit versus receive) the correct fiber positions.
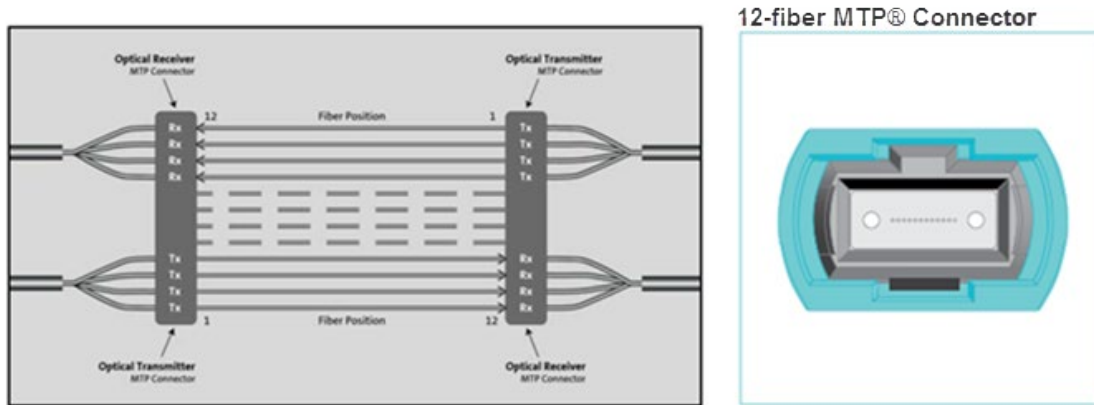

Figure 2: Parallel Fiber (8-fiber) Optic Transmission

The standard cabling to accomplish a twenty fiber parallel optical link with a one-plug, two-row transceiver is a 12-fiber based trunk infrastructure using a Y-jumper at each end with two 12-fiber legs MTP® (12-fiber connector) to a MTP connector interface (24-fiber connector), as shown in Figure 3.

For parallel connectivity (20-fiber), Tx1 has to follow a path that requires the data to exit on Rx1. As Figure 3 illustrates if Tx1 enters on fiber position 2, bottom row it needs to exit on fiber position 2, top row. This is the same if the transmit enters on fiber position 2, top row it needs to exit on fiber position 2, bottom row.
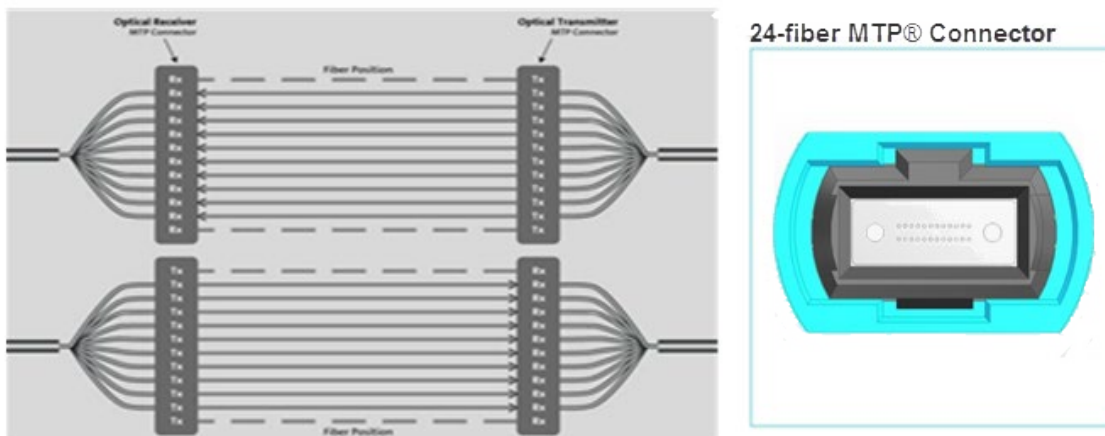

Figure 3: Parallel Fiber (20-fiber) Optic Transmission

Why Utilize a Base-8 Infrastructure?

With the current transceiver technology advancements, network switch vendors are all tooling up their 100GbE switch portfolios based on 25GbE electrical traces instead of 10GbE electrical traces. This reduces the fiber requirement for 100GbE from twenty to eight fibers. In addition, 40GbE transceivers are currently available in two and eight fiber solutions for both Single-mode/Multimode links. At the same time, similar solutions are currently in the development phase for 200GbE and 400GbE. Recently, Fibre Channel vendors on the SAN side of the DC are following a similar path at 128GFC by using a SR4 communications, utilizing an eight fiber MTP®. After much discussion with transceiver and switch vendors, the solutions today (40/100GbE) and in the future (200/400GbE) all converge on duplex and 8f parallel solutions with some interim solutions along the way.

With current transceivers and switch vendor's trends leading to 2F and 8F transceivers, there is a need for optimized solutions. Traditional MTP solutions are based on 12F connectors, which is not always divisible by 8. Based on this information, to simplify network design and operation, improve fiber utilization, reduce costs and attenuation in an optical link, an 8 fiber based infrastructure would provide you with the optimal solution.

Fiber Utilization with a Base-8 Infrastructure

A Base-8 infrastructure consists of backbone trunks that have 8-fiber legs, modules that have 4 ports (8-fibers) and eight fiber harnesses.

Since parallel connectivity uses 8-fibers out of the available 12-fibers in the connector, the issue arises with a Base-12 infrastructure to either leave the four middle fibers dark or use some type of conversion device. A conversion device can convert two 12-fiber links into three 8-fiber links. This allows all fibers to be utilized giving you three parallel links for each 24 fibers of installed Base-12 trunk cables. This is not necessary when a Base-8 infrastructure is installed. Migration from duplex to parallel links is easy without the added complexity since the infrastructure is already 8-fibers (each trunk cable has 8 fiber legs). The conversion is made easy by removing the modules used for duplex communication and replacing them with MTP adapter panels. MTP-MTP array jumpers would provide the link from the trunks to the QFSP+ transceivers. The installation of a Base-8 infrastructure allows for 100% fiber utilization when migrating to parallel links without the need of conversion modules or harnesses.

The solutions provided (BOMs) in this document do not include housing part numbers because the density requirement differs from one project to another project. It is important to remember that an EDGE8™ housing would be required to hold EDGE8 modules, EDGE8 Port Breakout Modules, and EDGE8 Adapter Panels.

For BOMs including MTP® to LC harnesses, a part number with 24" non-staggered LC legs will be provided as default. For harness options with LC staggered legs based on specific SAN or LAN switches, please refer to AEN157 "Choosing the Correct Harness

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for your Switch".

NOTE: EDGE8 consists of pinned trunks and non-pinned modules which is the opposite of EDGE™ products which have non-pinned trunks and pinned modules. EDGE8 modules and trunks should not be connected to EDGE modules and trunks. EDGE8 is designed with visual indicators to enable the differentiation between EDGE8 and EDGE components. An "8" is designated on all EDGE8 components and MTP jumpers will state 8F on the jacket. Modules/panels are gray in color, as shown in Figure 4. EDGE8 trays can be installed in EDGE housings to enable installation of EDGE8 systems in a previous installed EDGE environment, as shown in Figure 5.

Figure 4: EDGE8 Solution Product

EDGE8 Solution Trays

EDGE Solution Trays

Figure 5: EDGE8 Solution Trays and EDGE Solution Trays in the same EDGE Housing

With the broad offering of transmission protocols in the market, there are several configurations to create your network infrastructure utilizing Base-8 connectivity solutions. This AE Note will aid the designer by providing the Corning Optical Communications products that are needed to connect duplex and parallel transceivers.

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At the end of this document, you will find all the polarity drawings for Corning Optical Communications products that will be discussed throughout this Application Engineering Note in Appendix A.

Duplex Fiber Optic Transmission Links (2-fiber to 2-fiber)

In this section, we will discuss the products required to connect two duplex transceivers. These protocols include, but are not limited to, the following: 10GBase-SR, 10GBase-LR, 10GBase-ER, 40GBase-BiDi, 40GBase-LR4, 40GBase-LRL4, 40GBase-UNIV, 40GBase-FR, 100GBase-LR4, 100GBase-ER4, 100GBase-CWDM4, 100GBase-BiDi, 1GFC, 2GFC, 4GFC, 8GFC, 16GFC, 32GFC, IB-1x-SX, IB-1x-LX, IB-4x-LX, IB-1x-DDR-SX, IB-1x-DDR-LX , IB-1x-QDR-SX, and IB-1x-QDR-LX.

Duplex Direct Connectivity Solutions

When directly connecting one SFP transceiver to another SFP transceiver a Type A-B duplex cable assembly (jumper) is required. This type of direct connectivity is only suggested within a given row of racks/cabinets. Figure 6 shows two SFP transceivers being connected with a LC Duplex to LC Duplex jumper.
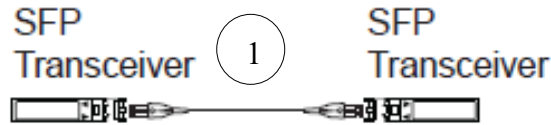

Figure 6: Direct Connectivity Utilizing an A-B Duplex Jumper

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Bill of Materials for Figure 6			
Item	**OM4 Part Number**	**OS2 Part Number**	**Description**
1	797902QD120xxxF	787802GD120xxxF	EDGE™ LC Uniboot to LC Uniboot Duplex Jumper, Riser, xxx ft.

Duplex Inter-connect Solutions

The structured cabling solution allows for patching on both ends of the optical network. An 8 to 144-fiber MTP® trunk (with 8-fiber legs) is deployed with 8-fiber modules connected to the end of the trunk. Reverse polarity LC Uniboot jumpers provide connectivity to the active components. The use of MTP trunks provides a robust solution that allows the cable to be placed in cable trays without the fear of the trunk cable being crushed resulting in fiber damage. Structured cabling allows for easier moves, adds, and changes (MACs). Figure 7 illustrates this solution.
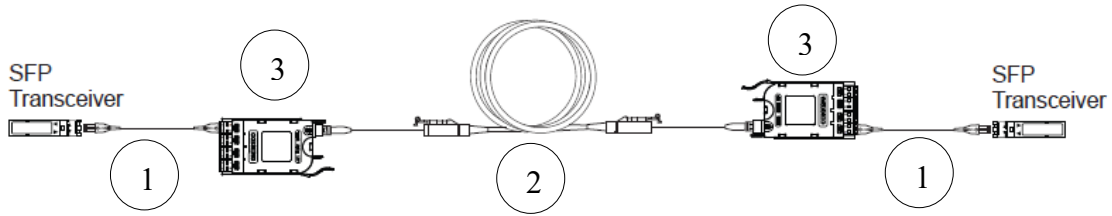
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Figure 7: Duplex Connectivity with Inter-connect Structured Cabling

Bill of Materials for Figure 7			
Item	**OM4 Part Number**	**OS2 Part Number**	**Description**
1	797902QD120xxxF	787802GD120xxxF	EDGE™ LC Uniboot to LC Uniboot Duplex Jumper, Riser, xxx ft.
2	GE5E508QPNDDUxxxF	GE7E708GPNDDUxxxF	EDGE8™ Trunk Cable, MTP® Connector (pinned) to MTP Connector (pinned), 8 Fibers, with 33/33 inch legs, pulling grip one side, xxx ft.
3	ECM8-UM08-05-E6Q-ULL	ECM8-UM08-04-E8G-ULL	EDGE8 Ultra Low Loss Module, LC Duplex to MTP (non-pinned), 8 Fibers

Note: EDGE8 trunk cables are available in fiber counts from 8 to 144 fibers.

The solution shown in figure 8 is also an inter-connect solution, but deploys an 8-fiber trunk harness on one end of the link. A MTP adapter panel and an 8-fiber harness replace the module and LC duplex jumper used in the previous solution. This cabling solution works best when connectivity is required for a high port count switch.
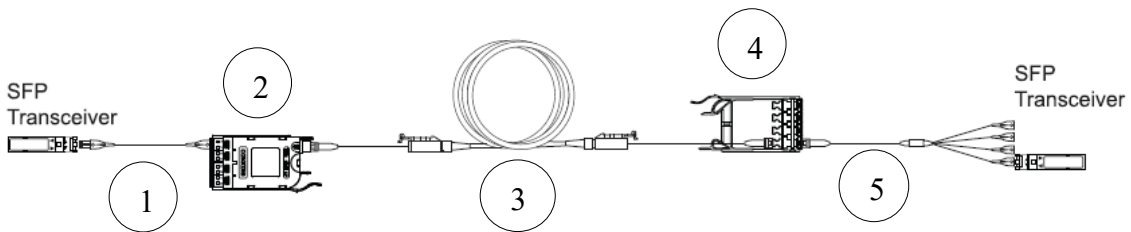

Figure 8: Duplex Connectivity with Inter-connect Structured Cabling utilizing a 8-fiber Module and Harness

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Bill of Materials for Figure 8			
Item	OM4 Part Number	OS2 Part Number	Description
1	797902QD120xxxF	787802GD120xxxF	EDGE™ LC Uniboot to LC Uniboot Duplex Jumper, Riser, xxx ft.
2	ECM8-UM08-05-E6Q-ULL	ECM8-UM08-04-E8G-ULL	EDGE8™ Ultra Low Loss Module, LC Duplex to MTP® (non-pinned), 8 Fibers
3	GE5E508QPNDDUxxxF	GE7E708GPNDDUxxxF	EDGE8 Trunk Cable, MTP Connector (pinned) to MTP Connector (pinned), 8 Fibers, with 33/33 inch legs, pulling grip one side, xxx ft.
4	EDGE8-CP32-V3	EDGE8-CP32-V1	EDGE8 32 Fibers MTP Adapter Panel, (4 port)
5	HE67908QPH-KAxxxF	HE87808GPH-KAxxxF	EDGE8 Type-A Harness, MTP (non-pinned), 8 Fibers, xxx ft., 24-in LC Uniboot legs

Note: EDGE8 trunk cables are available in fiber counts from 8 to 144 fibers.
Note: For harness options with LC staggered legs please, refer to AEN157.

Duplex Cross-connect Solutions

The final solution for a duplex link deploys a structured cabling solution with cross-connect connectivity. This solution will allow all patching to be made at the Main Distribution Area (MDA) with maximum flexibility for "any port" to "any port" connection. Figure 9 illustrates the cross-connect solution for duplex connectivity.
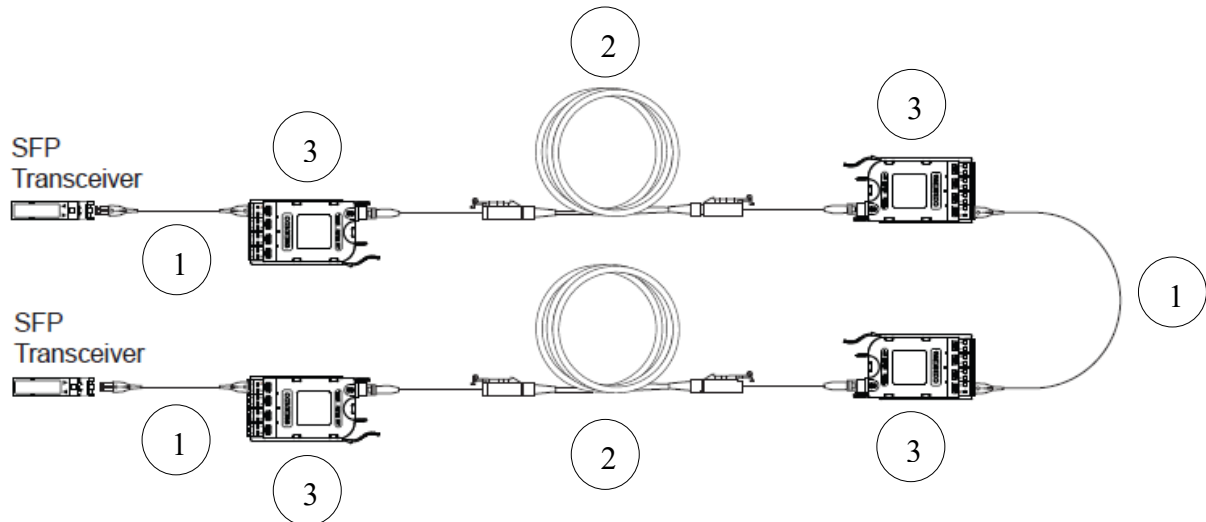

Figure 9: Duplex Connectivity with Cross-connect Structured Cabling

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Bill of Materials for Figure 9			
Item	**OM4 Part Number**	**OS2 Part Number**	**Description**
1	797902QD120xxxF	787802GD120xxxF	EDGE™ LC Uniboot to LC Uniboot Duplex Jumper, Riser, xxx ft.
2	GE5E508QPNDDUxxxF	GE7E708GPNDDUxxxF	EDGE8™ Trunk Cable, MTP® Connector (pinned) to MTP Connector (pinned), 8 Fibers, with 33/33 inch legs, pulling grip one side, xxx ft.
3	ECM8-UM08-05-E6Q-ULL	ECM8-UM08-04-E8G-ULL	EDGE8 Ultra Low Loss Module, LC Duplex to MTP (non-pinned), 8 Fibers

Note: EDGE8 trunk cables are available in fiber counts from 8 to 144 fibers.

Parallel Fiber Optic Transmission Links (8-fibers to 8-fibers)

In this section, we will discuss the products required to connect two 8-fiber transceivers. These protocols include, but are not limited to, the following: 40GBase-SR4, 40GBase-xSR4/cSR4/eSR4, 40GBase-PLR4, 40GBase-PSM4, 100GBase-SR4, 100GBase-eSR4, 100GBase-PSM4, IB-4x-SX, and IB-4x-DDR-SX.

Parallel Direct Connectivity Solutions

When directly connecting one QFSP+ transceiver to another QFSP+ transceiver a Type-B non-pinned MTP® to non-pinned MTP (8-fiber) cable assembly (jumper) is required. This type of direct connectivity is only suggested for short distances within a given row of racks/cabinets. Figure 10 shows two QFSP+ transceivers being connected with a MTP (non-pinned) 8-fiber jumper.
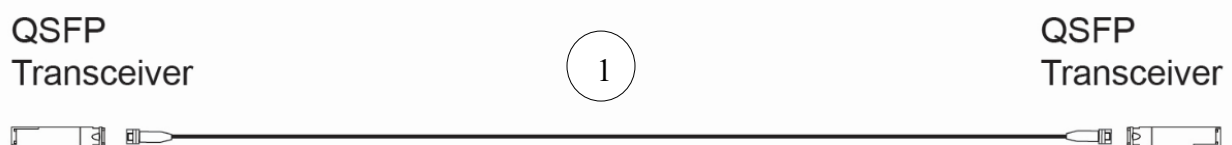

Figure 10: Parallel Connectivity Utilizing an 8-fiber Type B MTP Jumper

Bill of Materials for Figure 10			
Item	**OM4 Part Number**	**OS2 Part Number**	**Description**
1	JE6E608QE8-NBxxxF	JE8E808GE8-NBxxxF	EDGE8™, MTP (non-pinned) to MTP (non-pinned), 8 F Jumper, TIA-568 Type-B polarity, xxx ft.

Parallel Inter-connect Solutions

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The next solution is similar to the previous, but instead of using an 8-fiber jumper, an 8 to 144-fiber MTP® trunk is deployed. Using a MTP trunk cables provides for a durable solution that allows the cable to be placed in cable trays without the fear of the trunk cable being crushed. Structured cabling allows for easier moves, adds and changes (MACs). Figure 11 illustrates this solution.
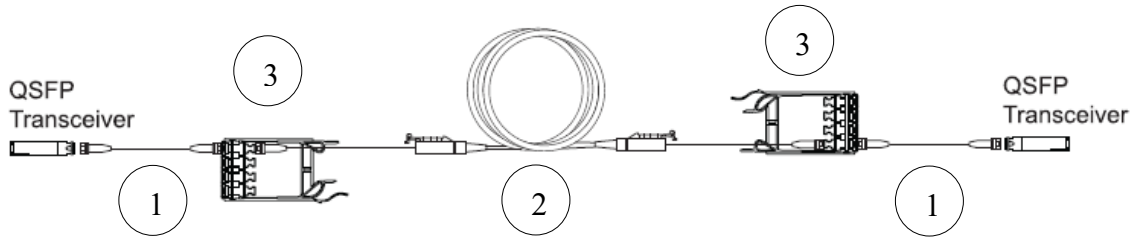

Figure 11: Parallel Connectivity with Inter-connect Structured Cabling

Bill of Materials for Figure 11			
Item	OM4 Part Number	OS2 Part Number	Description
1	JE6E608QE8-NBxxxF	JE8E808GE8-NBxxxF	EDGE8™, MTP (non-pinned) to MTP (non-pinned), 8 F Jumper, TIA-568 Type-B polarity, xxx ft.
2	GE5E508QPNDDUxxxF	GE7E708GPNDDUxxxF	EDGE8 Trunk Cable, MTP Connector (pinned) to MTP Connector (pinned), 8 Fibers, with 33/33 inch legs, pulling grip one side, xxx ft.
3	EDGE8-CP32-V3	EDGE8-CP32-V1	EDGE8 32 Fibers MTP Adapter Panel, (4 port)

Note: EDGE8 trunk cables are available in fiber counts from 8 to 144 fibers.

Parallel Cross-connect Solution

The solution in Figure 12 utilizes MTP trunk cables to provide a structured cable solution with cross-connect connectivity with complete port replication. This solution will allow all MACs to be made at one location (usually the MDA). Utilizing pinned trunks allows all array jumpers to be non-pinned to non-pinned, thus reducing ordering and inventory complexity.
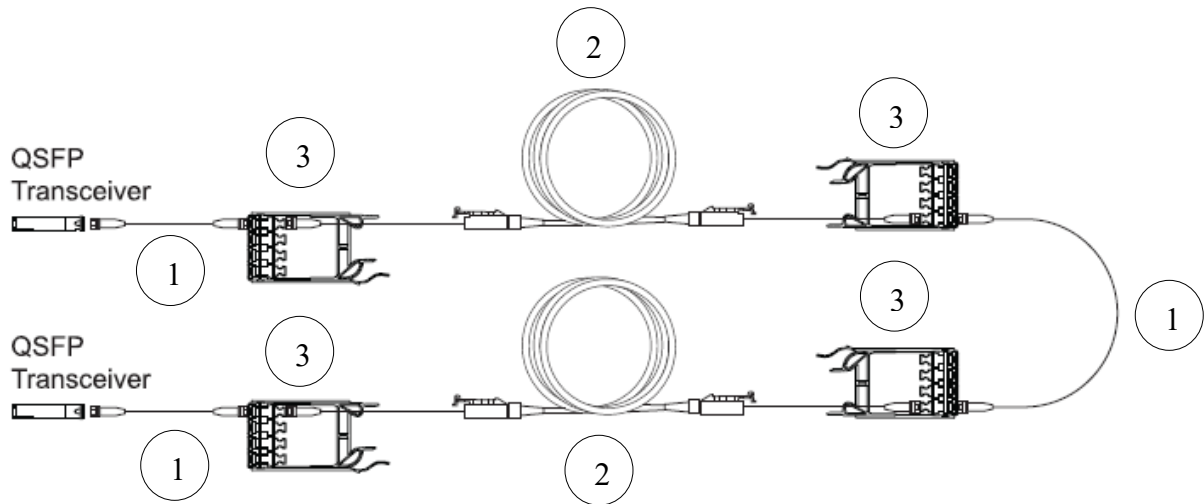
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Figure 12: Parallel Connectivity with Cross-connect Structured Cabling

Bill of Materials for Figure 12			
Item	**OM4 Part Number**	**OS2 Part Number**	**Description**
1	JE6E608QE8-NBxxxF	JE8E808GE8-NBxxxF	EDGE8™, MTP® (non-pinned) to MTP (non-pinned), 8 F Jumper, TIA-568 Type-B polarity, xxx ft.
2	GE5E508QPNDDUxxxF	GE7E708GPNDDUxxxF	EDGE8 Trunk Cable, MTP Connector (pinned) to MTP Connector (pinned), 8 Fibers, with 33/33 inch legs, pulling grip one side, xxx ft.
3	EDGE8-CP32-V3	EDGE8-CP32-V1	EDGE8™ 32 Fibers MTP Adapter Panel, (4 port)

Note: EDGE8 trunk cables are available in fiber counts from 8 to 144 fibers.

Parallel Fiber Optic Transmission Links (20-fiber or 24-fiber)

In this section, we will discuss the products required to connect two 20 or 24-fiber transceivers. These protocols include, but are not limited to, the following: 100GBase-SR10, IB-12x-SX, and IB-12x-DDR-SX. The following solutions can apply for either 20 or 24-fiber transceivers.

Interconnect Solutions (20-fiber or 24-fiber)

The solution in figure 13 illustrates the products required to provide connectivity from a CFP to a CFP transceiver (or 20-fibers to 20-fibers). To break-out the CFPs to transmit the signal across an 8-fiber infrastructure a 1 X 3 Breakout Harness (24-fiber MTP to three 8-fiber MTP®) is required. A Breakout Harness (or sometimes-referred to as Trident Harness) is required on the other end of the optical link to couple the 8-fiber links together to connect to the corresponding CFP.
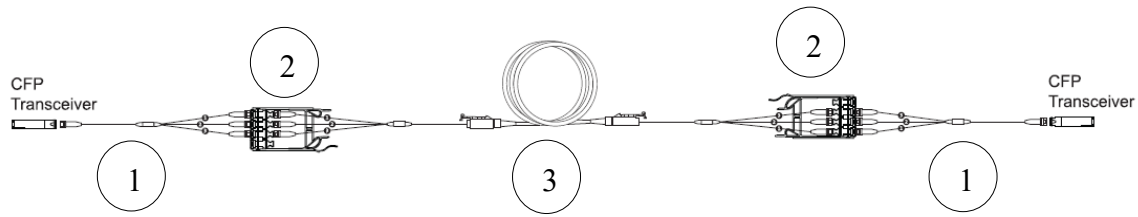
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Figure 13: 20-fiber to 20-Fiber Inter-connect Structured Cabling

Bill of Materials for Figure 13			
Item	OM4 Part Number	OS2 Part Number	Description
1	HA67524QPH-KAxxxF	HA99024GPH-KAxxxF	EDGE™ AO 24 F MTP Breakout Harness, 24 F MTP (non-pinned) to 8 F MTP (non-pinned), Type A polarity, 8 Fibers leg length of 24 in (K), xxx ft.
2	EDGE8-CP32-V3	EDGE8-CP32-V1	EDGE8™ 32 Fibers MTP Adapter Panel, (4 port)
3	GE5E524QPNDDUxxxF	GE7E708GPNDDUxxxF	EDGE8 Trunk Cable, MTP Connector (pinned) to MT® Connector (pinned), 24 Fibers, with 33/33 inch legs, pulling grip one side, xxx ft.

Note: EDGE8 trunk cables are available in fiber counts from 8 to 144 fibers.

Parallel to Duplex Fiber Optic Transmission Links (8-fiber to 2-fiber)

This section will discuss the different Corning Optical Communications Base-8 components that are available to provide fiber optic connectivity 40GBase-SR4, 40GBase-xSR4/cSR4/eSR4(for example fiber optic connectivity between 40GbE transceivers and 10GbE transceivers).

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Direct Connectivity Solutions (8-fiber to 2-fiber)

When directly connecting an 8-fiber transceiver to the four corresponding duplex ports, an 8-fiber LC harness is required. The harness will have four LC Duplex connectors and the fibers will be paired in a specific way, assuring the proper polarity is maintained. This type of direct connectivity is only suggested for short distances within a given row or in the same rack/cabinet. Figure 14 shows the parallel transceiver connected to four duplex transceivers.
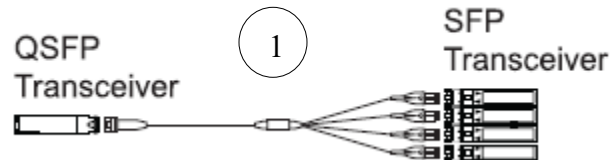
Figure 14: Direct Connect Structured Cabling With An 8-fiber Harness

Bill of Materials for Figure 14			
Item	**OM4 Part Number**	**OS2 Part Number**	**Description**
1	HE67908QPH-KBxxxF	HE87808GPH-KBxxxF	EDGE8™ Type-B Harness, MTP® (non-pinned), 8 Fibers, xxx ft., 24-in LC Uniboot legs

Note: For harness options with LC staggered legs please, refer to AEN157.

Interconnect Solutions (8-fiber to 2-fiber)

The structured cabling solution in Figure 15 allows for patching on both ends of the optical network. The patching on the QFSP+ end is accomplished by using Type-A non-pinned MTP to non- pinned MTP jumper, which connects to the trunk cable. The patching on the 10GbE end is accomplished using EDGE8 modules and LC Uniboot jumpers
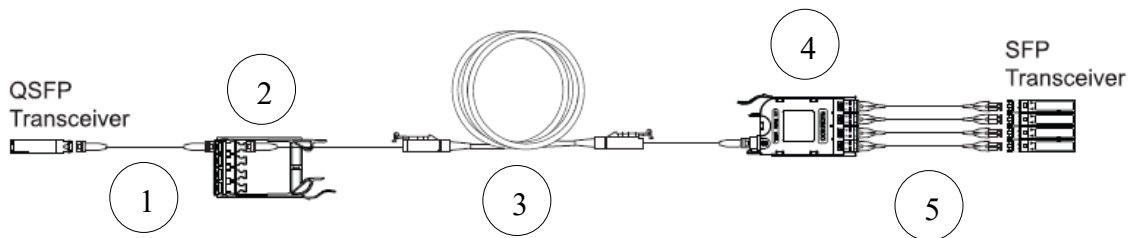

Figure 15: 8-fiber to 2-Fiber Inter-connect Structured Cabling

Bill of Materials for Figure 15		
Item	OM4 Part Number	OS2 Part Number	Description
1	JE6E608QE8-NAxxxF	JE8E808GE8-NAxxxF	EDGE8™, MTP® (non-pinned) to MTP (non-pinned), 8 F Jumper, TIA-568 Type-A polarity, xxx ft.
2	EDGE8-CP32-V3	EDGE8-CP32-V1	EDGE8 32 Fibers MTP Adapter Panel, (4 port)
3	GE5E508QPNDDUxxxF	GE7E708GPNDDUxxxF	EDGE8 Trunk Cable, MTP Connector (pinned) to MTP Connector (pinned), 8 Fibers, with 33/33 inch legs, pulling grip one side, xxx ft.
4	ECM8-UM08-05-E6Q-ULL	ECM8-UM08-04-E8G-ULL	EDGE8 Ultra Low Loss Module, LC Duplex to MTP (non-pinned), 8 Fibers
5	797902QD120xxxF	787802GD120xxxF	EDGE™ LC Uniboot to LC Uniboot Duplex Jumper, Riser, xxx ft.

Note: EDGE8 trunk cables are available in fiber counts from 8 to 144 fibers.

The cabling solution shown in Figure 16, works best when the active equipment being connected is within the same row. It is also an excellent solution to port replicate and breakout an 8-fiber transceiver into a 2-fiber patching field. This solution does reduce the amount of system attenuation by removing a MTP connector pair. The disadvantage of this solution would be that the port breakout module has a limited tail length.
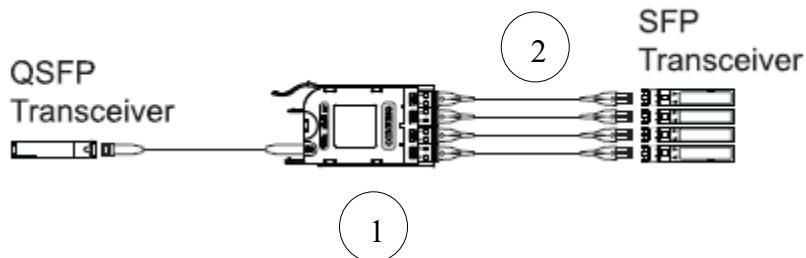

Figure 16: 8-fiber to 2-Fiber Inter-connect Structured Cabling Utilizing a Port Breakout Module

Bill of Materials for Figure 16		
Item	OM4 Part Number	OS2 Part Number	Description
1	ECM8-05E6-QE8B-xxxF	ECM8-04E8-GE8B-xxxF	EDGE8 Port Breakout Module, LC Duplex to MTP (non-pinned), 8 Fiber, Type B Polarity, Plenum, xxx ft.
2	797902QD120xxxF	787802GD120xxxF	EDGE LC Uniboot to LC Uniboot Duplex Jumper, Riser, xxx ft.

Figure 17 illustrates the last inter-connect solution for 8-fiber to 2-fiber connectivity. A disadvantage of using this solution is that flexibility is lost on the SFP+ end because the

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transceiver ports need to be located in the same chassis. This is because the leg lengths for the LC Duplexed legs will be the same. However, this approach allows for an easy upgrade path moving from 2-fiber to 8-fiber connectivity. To connect to the SFP+s ports use the 8-fiber harness as shown in the diagram, and an 8-fiber MTP® jumper would be used from the adapter panel for the QFSP+ connectivity, thus allowing a mix and match upgrade path without having to change out the patch panels.
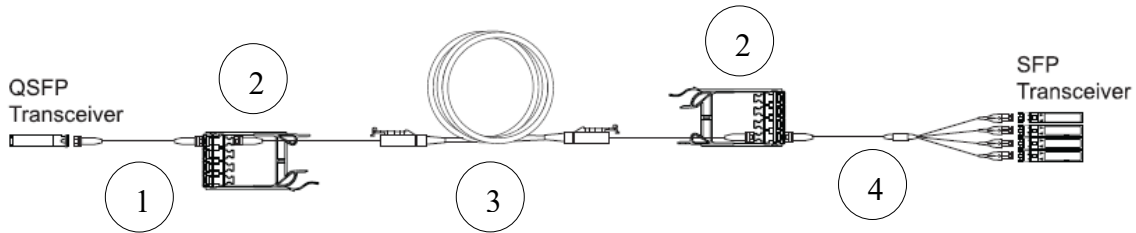

Figure 17: 8-fiber to 2-Fiber Inter-connect Structured Cabling utilizing an 8-fiber Harness

Bill of Materials for Figure 17			
Item	OM4 Part Number	OS2 Part Number	Description
1	JE6E608QE8-NBxxxF	JE8E808GE8-NBxxxF	EDGE8™, MTP (non-pinned) to MTP (non-pinned), 8 F Jumper, TIA-568 Type-B polarity, xxx ft.
2	EDGE8-CP32-V3	EDGE8-CP32-V1	EDGE8 32 Fibers MTP Adapter Panel, (4 port)
3	GE5E508QPNDDUxxxF	GE7E708GPNDDUxxxF	EDGE8 Trunk Cable, MTP Connector (pinned) to MTP Connector (pinned), 8 Fibers, with 33/33 inch legs, pulling grip one side, xxx ft.
4	HE67908QPH-KBxxxF	HE87808GPH-KBxxxF	EDGE8 Type-B Harness, MTP (non-pinned), 8 Fibers, xxx ft., 24-in LC Uniboot legs

Note: EDGE8 trunk cables are available in fiber counts from 8 to 144 fibers.
Note: For harness options with LC staggered legs please, refer to AEN157.

Cross-Connect Solution (8-fiber to 2-fiber)

The final two solutions for connecting a QFSP+ to a SFP+ are both cross-connects but use different components at the QFSP+ end. The solution in figure 18 uses an 8-fiber port breakout module to connect to the QFSP+. The MTP tail of the module connects to the active component and breaks out the 8-fiber transceiver into a 2-fiber patching field. This is also known as port mapping or port replication. The one drawback to using the port breakout module is the length of the tail, which would make this a "local" solution. This solution would have less loss that the typical cross-connect solution because two MTPs would be removed. The port breakout module would patch to an 8-fiber module that is connected to a fiber optic trunk (or link backbone). The other end of the trunk would have a module and LC jumpers that are connected to the SFP+.
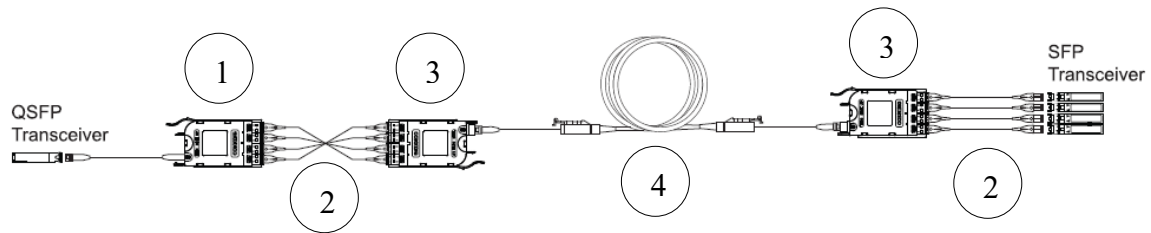
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Figure 18: 8-fiber to 2-Fiber Cross-connect Structured
Cabling utilizing a Port Breakout Module

	Bill of Materials for Figure 18		
Item	**OM4 Part Number**	**OS2 Part Number**	**Description**
1	ECM8-05E6-QE8B-xxxF	ECM8-04E8-GE8B-xxxF	EDGE8™ Port Breakout Module, LC Duplex to MTP® (non-pinned), 8 Fiber, Type B Polarity, Plenum, xxx ft.
2	797902QD120xxxF	787802GD120xxxF	EDGE™ LC Uniboot to LC Uniboot Duplex Jumper, Riser, xxx ft.
3	ECM8-UM08-05-E6Q-ULL	ECM8-UM08-04-E8G-ULL	EDGE8 Ultra Low Loss Module, LC Duplex to MTP (non-pinned), 8 Fibers
4	GE5E508QPNDDUxxxF	GE7E708GPNDDUxxxF	EDGE8 Trunk Cable, MTP Connector (pinned) to MTP Connector (pinned), 8 Fibers, with 33/33 inch legs, pulling grip one side, xxx ft.

Note: EDGE8 trunk cables are available in fiber counts from 8 to 144 fibers.

The solution in Figure 19 is similar to the previous solution except that the cross-connect would not have to be located "locally". The port breakout module is replaced with an 8-fiber array jumper, adapter panel, trunk, and an 8-fiber module. The trunk can be placed in a tray to protect the fiber from damage and allows for a greater distance between the distribution areas.
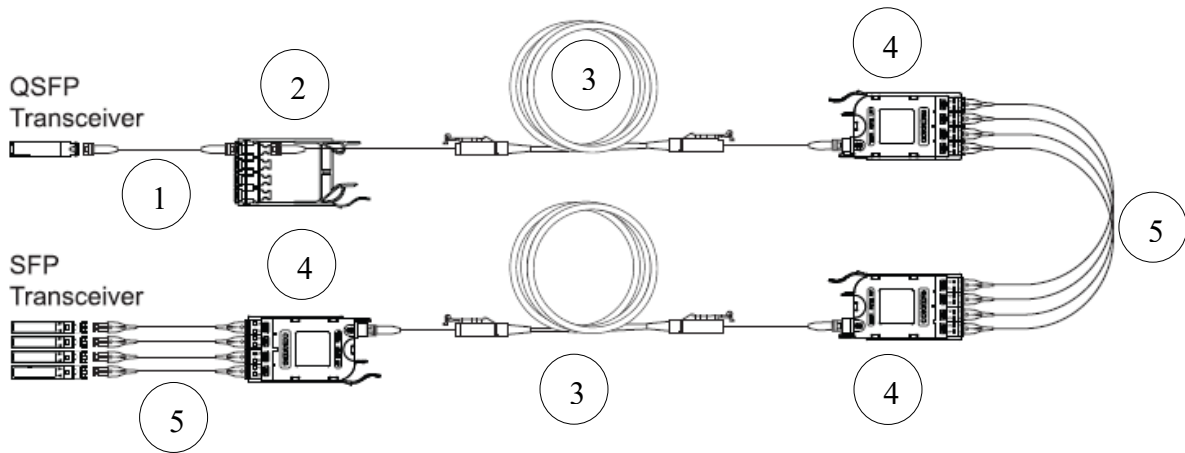
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Figure 19: 8-fiber to 2-Fiber Cross-connect Structured Cabling
Utilizing a MTP® Jumper and EDGE8™ Modules

Bill of Materials for Figure 19			
Item	OM4 Part Number	OS2 Part Number	Description
1	JE6E608QE8-NAxxxF	JE8E808GE8-NAxxxF	EDGE8, MTP (non-pinned) to MTP® (non-pinned), 8 F Jumper, TIA-568 Type-A polarity, xxx ft.
2	EDGE8-CP32-V3	EDGE8-CP32-V1	EDGE8 32 Fibers MTP Adapter Panel, (4 port)
3	GE5E508QPNDDUxxxF	GE7E708GPNDDUxxxF	EDGE8 Trunk Cable, MTP Connector (pinned) to MTP Connector (pinned), 8 Fibers, with 33/33 inch legs, pulling grip one side, xxx ft.
4	ECM8-UM08-05-E6Q-ULL	ECM8-UM08-04-E8G-ULL	EDGE8 Ultra Low Loss Module, LC Duplex to MTP (non-pinned), 8 Fibers
5	797902QD120xxxF	787802GD120xxxF	EDGE™ LC Uniboot to LC Uniboot Duplex Jumper, Riser, xxx ft.

Note: EDGE8 trunk cables are available in fiber counts from 8 to 144 fibers.

Interconnect Solutions (20-fiber to 2-fiber)

The interconnect solution in figure 20 shows how to take a CFP transceiver (20-fibers) and break it out into 10 SFP+ transceivers (2-fiber). A Breakout Harness similar to the one utilized in the twenty to twenty fiber interconnect solution would be used once again to split the 20-fibers into 3 different paths. The MTPs of the trident harness will be connected to 8-fiber modules. The connection to the SFPs is accomplished using LC Uniboot jumpers.
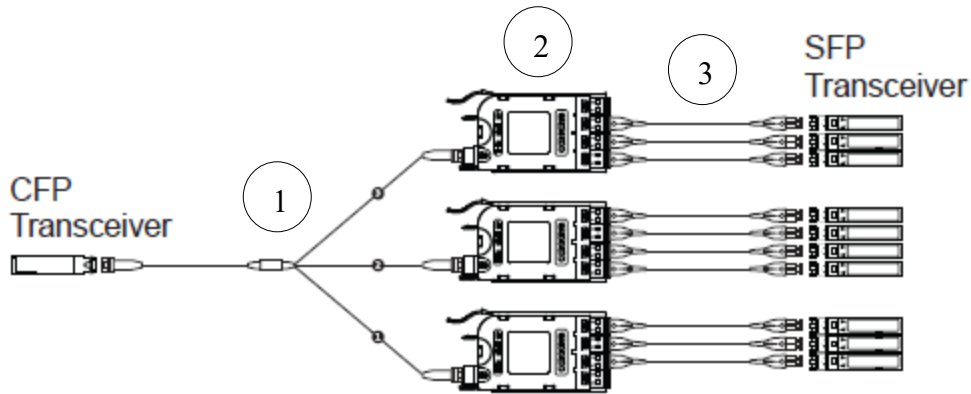
Figure 20: 20-fiber to 2-Fiber Inter-connect Structured Cabling

	Bill of Materials for Figure 20		
Item	**OM4 Part Number**	**OS2 Part Number**	**Description**
1	HA69324QPH-KAxxxF	HA98924GPH-KAxxxF	EDGE™ AO 24 F MTP® Breakout Harness, 24 F MTP (non-pinned) to 8 F MTP (pinned), Type A polarity, 8 Fibers leg length of 24 in (K), xxx ft.
2	ECM8-UM08-05-E6Q-ULL	ECM8-UM08-04-E8G-ULL	EDGE8™ Ultra Low Loss Module, LC Duplex to MTP (non-pinned), 8 Fibers
3	797902QD120xxxF	787802GD120xxxF	EDGE LC Uniboot to LC Uniboot Duplex Jumper, Riser, xxx ft.

The best application for your network will depend on many factors such as design, equipment location, migration path, cost, pathway availability, etc. For additional questions, contact Corning Optical Communications' Technical Support Line at 800-743-2671 or dutyeng@corning.com

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Appendix A: Polarity drawings for each scenario.

A-B Duplex Jumper

Figure 6-a: Direct Connectivity Utilizing an A-B Duplex Jumper

A-B Duplex Jumper   EDGE8 Module   EDGE8 Trunk   EDGE8 Module   A-B Duplex Jumper
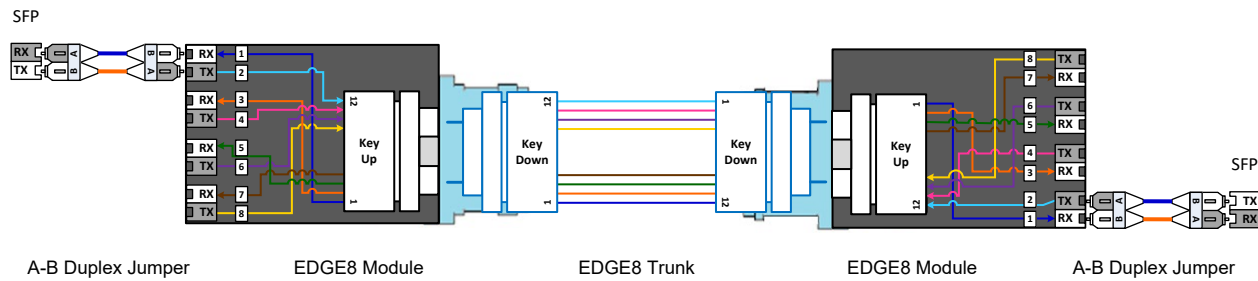
Figure 7-a: Duplex Connectivity with Inter-connect Structured Cabling

A-B Duplex Jumper   EDGE8 Module   EDGE8 Trunk   EDGE8 MTP Adapter Panel   EDGE8 Type A Harness
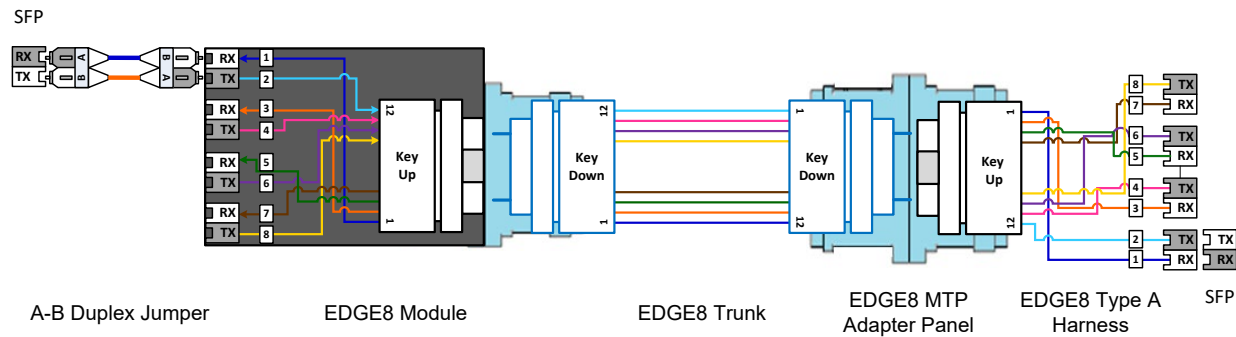
Figure 8-a: Duplex Connectivity with Inter-connect Structured Cabling Utilizing an 8-fiber Module and Harness

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SFP

RX
TX

A-B Duplex Jumper

EDGE8 Module

Key Up

EDGE8 Trunk

Key Down

Key Down

EDGE8 Module

Key Up

A-B Duplex Jumper

SFP

RX
TX

A-B Duplex Jumper

EDGE8 Module

Key Up

EDGE8 Trunk

Key Down

Key Down

EDGE8 Module

Key Up
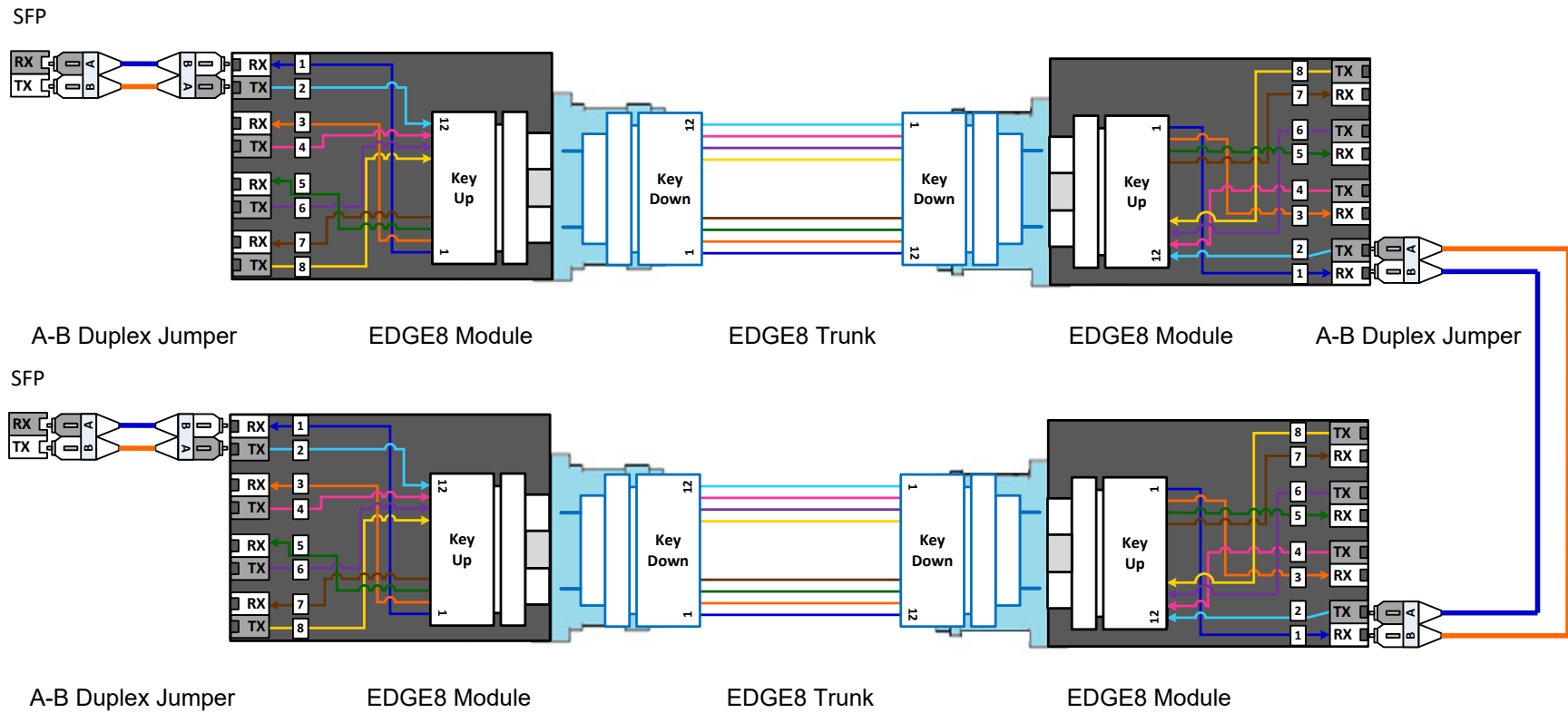
Figure 9-a: Duplex Connectivity with Cross-connect Structured Cabling

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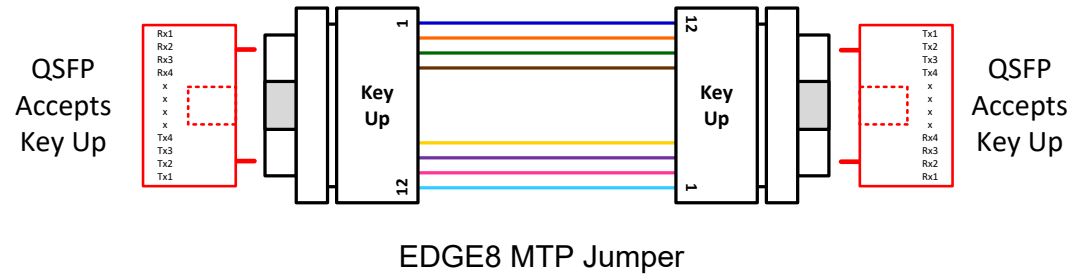
Figure 10-a: Parallel Connectivity Utilizing an 8-fiber Type B MTP® Jumper
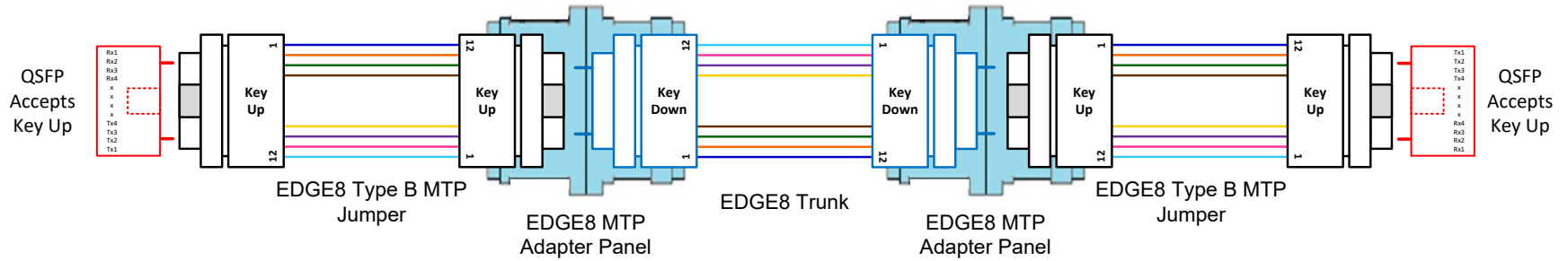
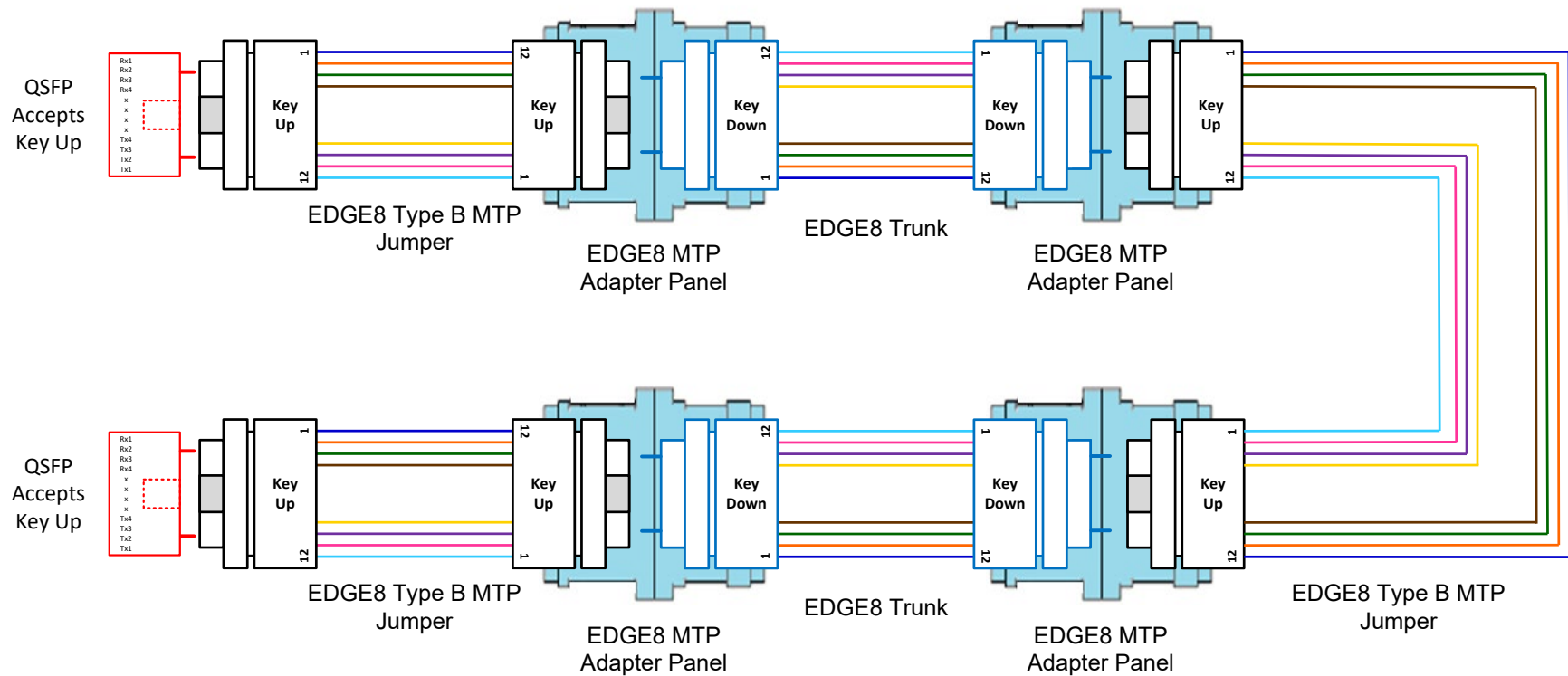Figure 11-a: Parallel Connectivity with Inter-connect Structured Cabling

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QSFP Accepts Key Up

Rx1
Rx2
Rx3
Rx4
x
x
x
Tx4
Tx3
Tx2
Tx1

Key Up

1

12

EDGE8 Type B MTP Jumper

Key Up

12

1

EDGE8 MTP Adapter Panel

Key Down

12

1

EDGE8 Trunk

Key Down

1

12

EDGE8 MTP Adapter Panel

Key Up

1

12

QSFP Accepts Key Up

Rx1
Rx2
Rx3
Rx4
x
x
x
Tx4
Tx3
Tx2
Tx1

Key Up

1

12

EDGE8 Type B MTP Jumper

Key Up

12

1

EDGE8 MTP Adapter Panel

Key Down

12

1

EDGE8 Trunk

Key Down

1

12

EDGE8 MTP Adapter Panel

Key Up

1

12

EDGE8 Type B MTP Jumper

Figure 12-a: Parallel Connectivity with Cross-connect Structured Cabling
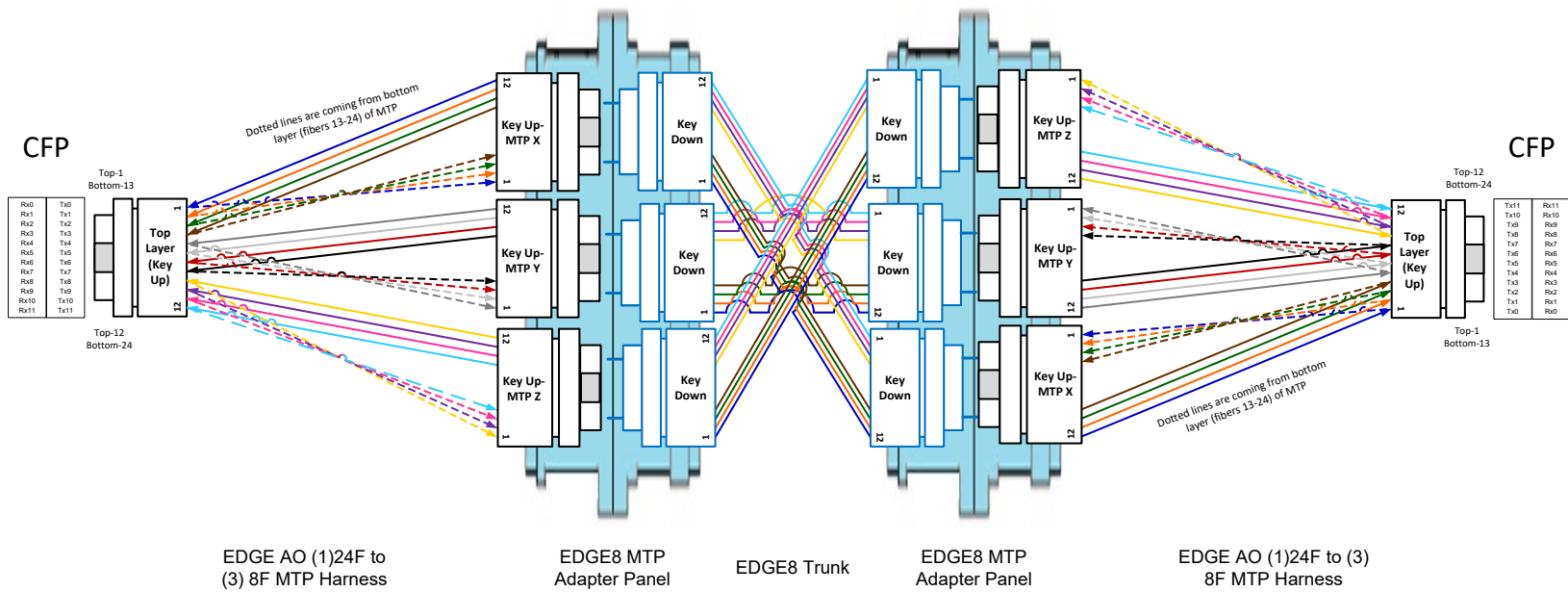
Figure 13-a: 20-fiber to 20-Fiber Inter-connect Structured Cabling
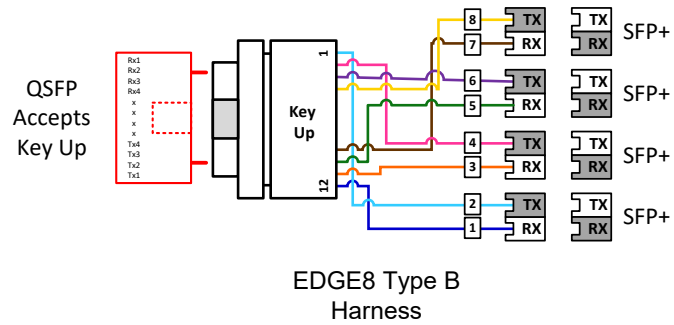
Figure 14-a: Direct Connect Structured Cabling

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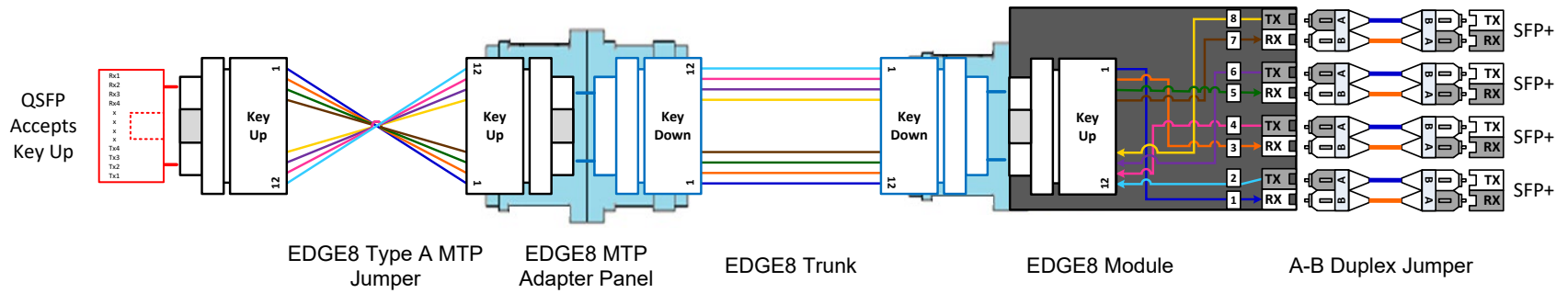
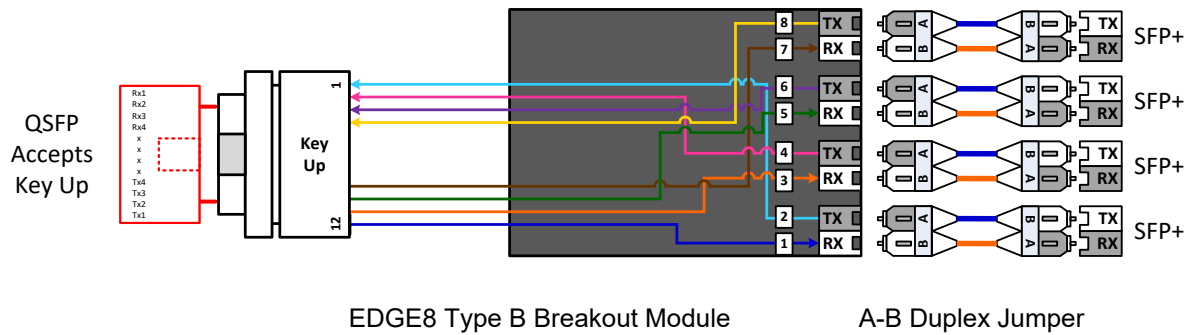Figure 15-a: 8-fiber to 2-Fiber Inter-connect Structured Cabling

Figure 16-a: 8-fiber to 2-Fiber Inter-connect Structured Cabling Utilizing a Port Breakout Module
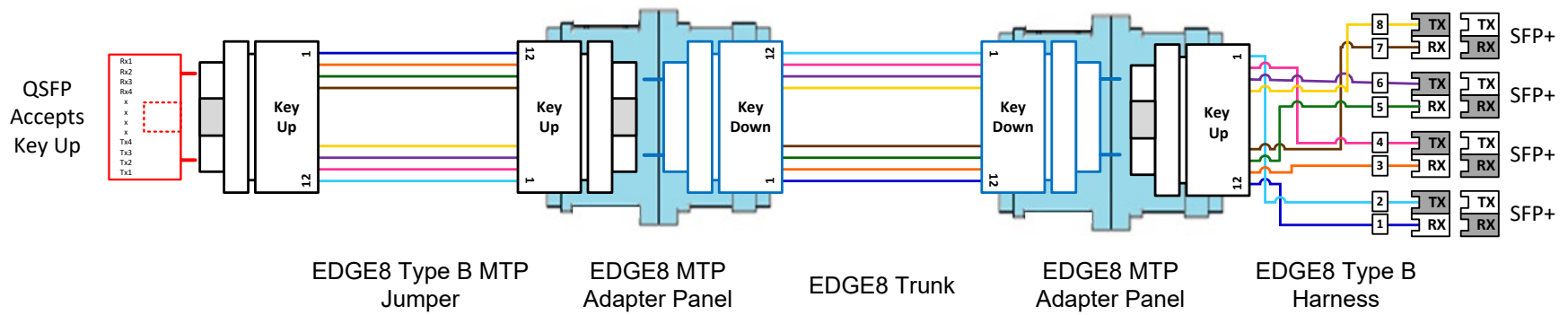
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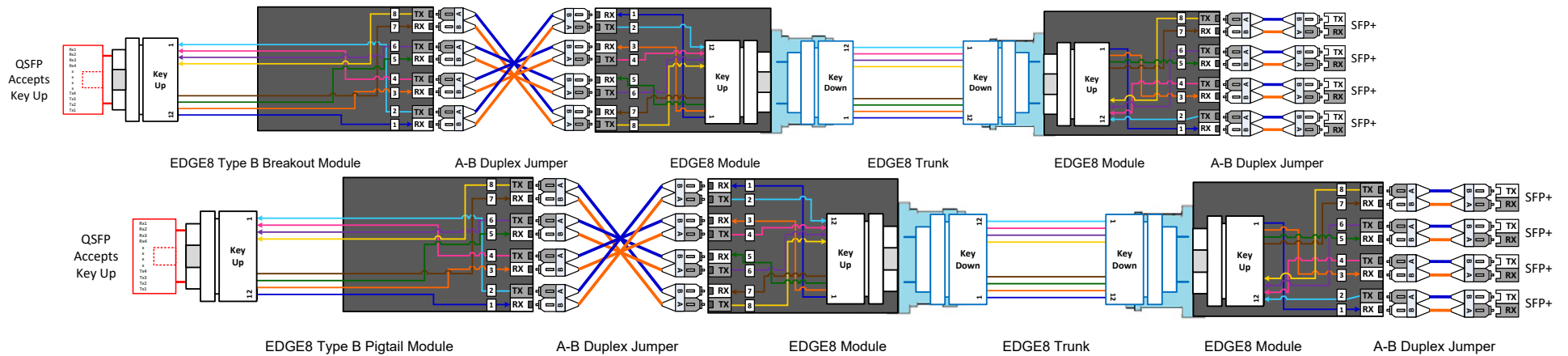Figure 17-a: 8-fiber to 2-Fiber Inter-connect Structured Cabling Utilizing an 8-fiber Harness

Figure 18-a: 8-fiber to 2-Fiber Cross-connect Structured Cabling Utilizing a Port Breakout Module and EDGE8™ Modules
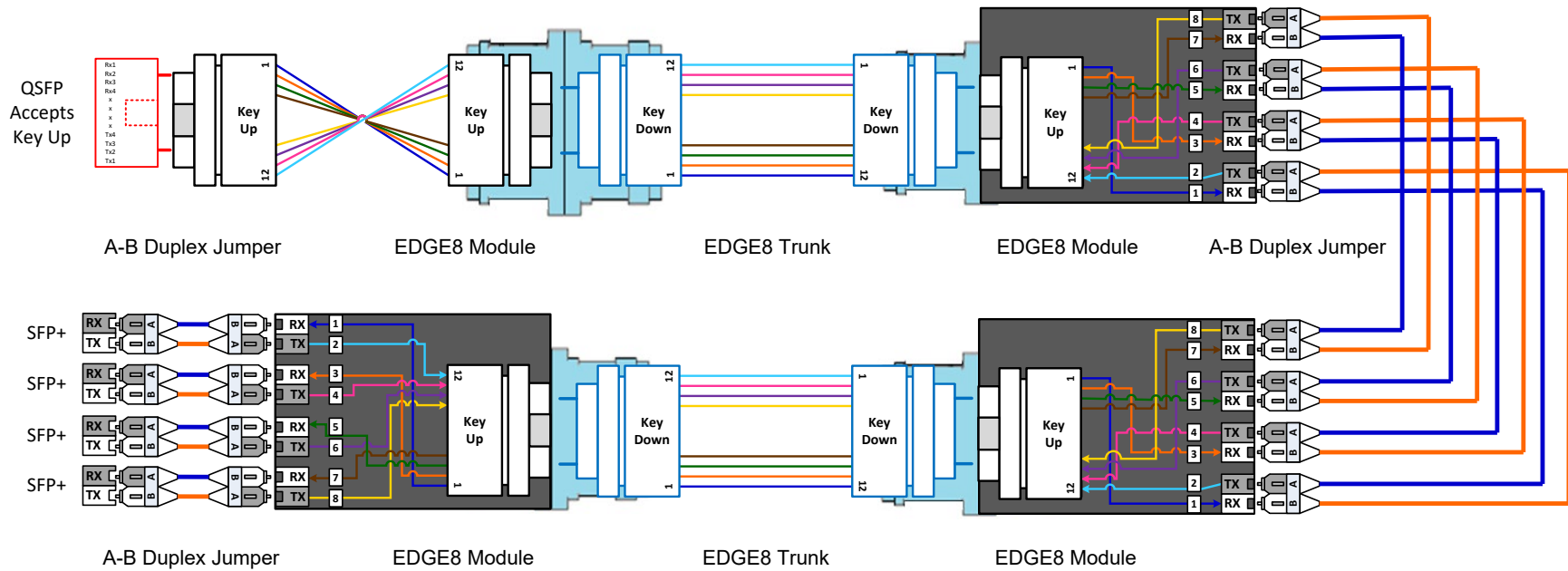
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Figure 19-a: 8-fiber to 2-Fiber Cross-connect Structured Cabling Utilizing a MTP® Jumper and EDGE8™ Modules
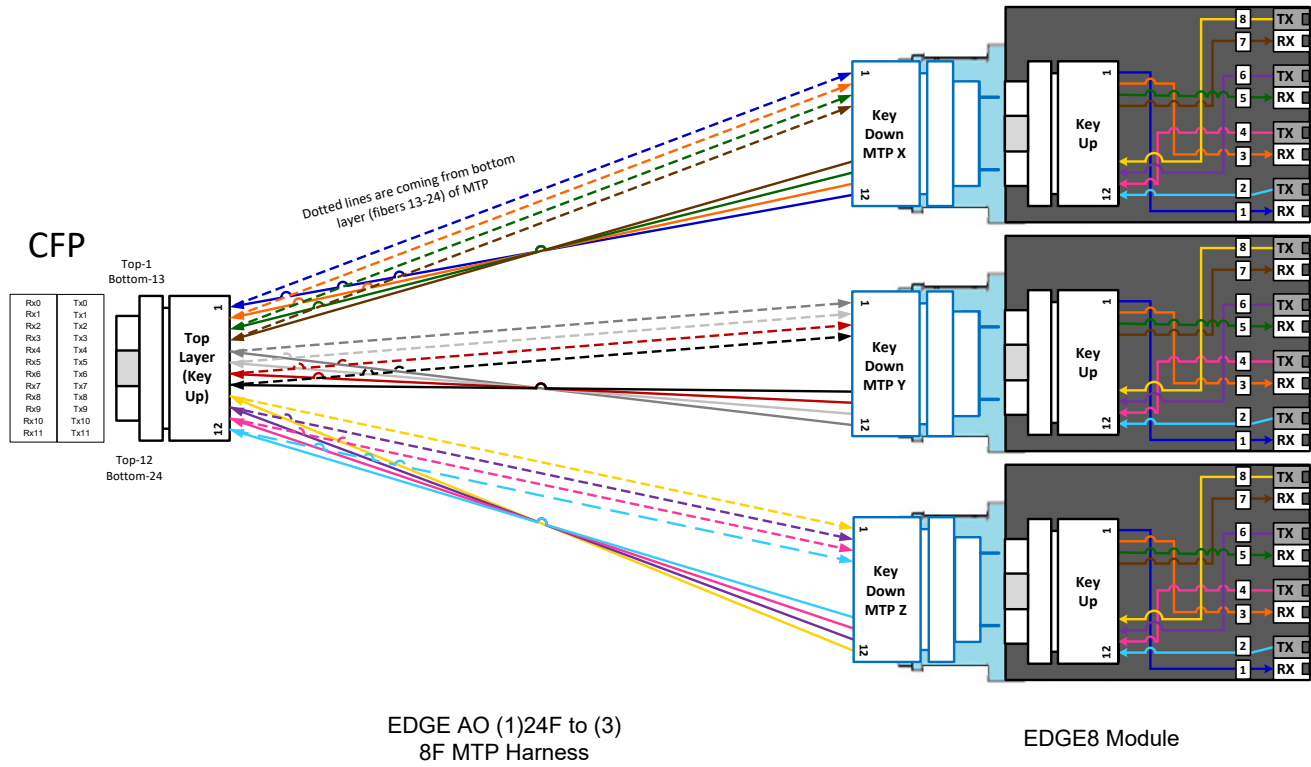
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Figure 20-a: 20-fiber to 2-Fiber Inter-connect Structured Cabling

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