

CABLEXPRESS ARISTA GUIDE

High-speed quality
and performance



SKINNY-TRUNK CABLES

The CABLEExpress® Skinny-Trunk™ Product portfolio is designed in accordance with and exceeds the Cabling Infrastructure specified in TIA942-C and IEEE Data Center Standards.

All Skinny-Trunk™ products are manufactured in the USA, in one of our numerous, ISO certified, fiber production facilities that are capable of producing thousands of terminations per day.

The CABLEExpress Skinny-Trunk™ product set is designed to meet and exceed the loss budgets of 10Gb through 1600Gb Ethernet; 4Gb through 256Gb Fibre Channel; and the 600Gb HDR InfiniBand standards.

Our Standard Skinny-Trunk cables feature the highest quality factory terminations to ensure they far exceed TIA 568.3-E/ TIA-942-C dB insertion loss standards.

All CABLEExpress Skinny-Trunks, Fiber Optic Jumpers, and Enclosure products are designed to meet and exceed the loss budgets and distance requirements of the IEEE 802.3ba, 802.3bm and 802.3bs Ethernet Standards, Generation 7 Fibre Channel Standards as well as the InfiniBand SDR, DDR, QDR and HDR 600G Standards.

AWARD-WINNING QUALITY

Cabling Installation & Maintenance has awarded CABLEExpress several Gold-Level Cabling Innovators Awards, thanks to our industry leading products and solutions. Most notably, these awards given have been for the CABLEExpress designed patch panel and fiber breakout system, which provided the industry's first Port Replication™ Solution for various OEMs, such as Arista's Network Core Switches, and Brocade's Storage Directors.

CABLEExpress has also been awarded for the design of our Multi-Path™ Solution, which simplifies the cabling plant fiber infrastructure for all current and future high-speed migrations.

AN ARISTA PARTNER

Designed with performance and manageability in all aspects of its product set, the Skinny-Trunk® solution from CABLEExpress is the best way to ensure your Arista network will achieve optimum performance.

Partnering with Arista, the CABLEExpress architecture team will help you implement a cabling infrastructure that provides the quality and performance that will easily enable your fiber infrastructure to carry your high-speed requirements through multiple speed migrations. Our product sets are specifically designed to work in conjunction with all of the Arista switch platforms and form factors. We accomplish this through Port Replication™ and specific pre-engineered multi-fiber staggered trunks, of which CABLEExpress is the inventor, for every line card and transceiver type Arista manufacturers.

In conjunction with Arista, CABLEExpress is a true partner, providing insight, knowledge, and assistance through every interaction you have with us.

At CABLEExpress, we define ourselves on the guarantee that working with us means that your layer one infrastructure will perform to and exceed expectations. Our Skinny-Trunk® solution has been an innovative and market leader for 20 plus years, protecting your critical assets with the highest quality product, best service, optimum performance, and industry leading innovation.

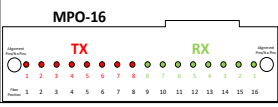
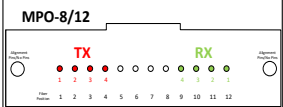
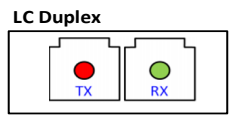
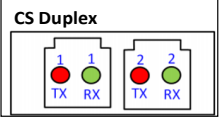
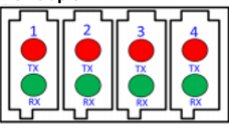
When cabling up the new 400G line card systems, it helps to understand the nomenclature and the technology. The terms QSFP, QSFP-DD, and OSFP reference the type of optic that plugs into the line cards or ports in a router, switch or server. The front side of the optic is determined by part numbers such as SRBD, SR8, PSM4, DR4 and others where the fiber optic connector plugs into the optic. This guide will serve as a reference.

Contact us today to learn more!

ARISTA TRANSCEIVER CONNECTOR TYPES


This CABLExpress Arista cabling guide provides the information necessary to connect every aspect of the requirements of 40G, 100G, and 400G transceivers as well as breakout options, staggered trunk designs, Port Replication™ and most importantly, maintaining extremely low loss budget requirements. Arista’s optical transceiver modules offer various connector types and with the introduction of 400G, new form factors have been released. These include including the new VSFF (Very Small Form Factor) connectors, the CS® connectors and SN. CABLExpress Skinny-Trunk™ and Port Replication™ solutions are designed to support both single-mode and multimode optical interfaces.

The following is a partial list of Arista transceivers by connector type.


MPO -16 APC	MPO-8/12	LC Duplex	CS and SN
<p>Multimode: OSFP-400G-SR8 QDD-400G-SR8</p> 	<p>Single-Mode: OSFP-400G-DR4 QDD-400G-DR4 QSFP-100G-PSM4 QSFP-40G-PLR4</p> <p>Multimode: QSFP-100G-SR4 QSFP-40G-SR4</p> 	<p>Single-Mode: OSFP-400G-FR4 QDD-400G-FR4 QSFP-100G-CWDM4 QSFP-100G-LR4 QSFP-100G-ERL4 QSFP-100G-DR QSFP-100G-FR QSFP-100G-LR QSFP-40G-LR4 QSFP-40G-ER4 SFP-25G-LR SFP-10G-LR SFP-10G-ER SFP-10G-ZR SFP-10G-DWDM</p> <p>Multimode: QSFP-100G-SRBD QSFP-100G-SWDM4 QSFP-40G-SRBD QSFP-40G-UNIV SFP-25G-SR SFP-10G-SR</p> 	<p>Single-mode: OSFP-400G-2FR4 OSFP-400G-XDR4-S OSFP-400G-PLR4-S</p> <p>2x Duplex CS 4x duplex SN connectors (individually pluggable) 4x duplex SN connectors (individually pluggable)</p>  

TRANSCEIVERS


100G QSFP

Type	Fiber Type	Connector Interface	Breakout Capability	CBX Product example
100G-SR4/XSR4	MM	MPO8/12	4x25G-SR	
100G-SWDM4	MM	LC	N/A	
100G-BIDI	MM	LC	N/A	
100G-PSM4	SM	MPO8/12	4x25G-SR	
100G-LR4	SM	LC	N/A	
100G-CWDM4	SM	LC	N/A	

400G OSFP

Type	Fiber Type	Connector Interface	Breakout Capability	CBX Product example
400GBASE-DR4	SM	MPO8/12	4x100G-DR	
400GBASE-XDR4	SM	MPO8/12	4x100G-FR	
400GBASE-FR4	SM	LC	N/A	
400GBASE-2FR4	SM	CS	2xCWDM4	

400G QSFP-DD

Type	Fiber Type	Connector Interface	Breakout Capability	CBX Product example
400GBASE-DR4	SM	MPO8/12	4x100G-DR	
400GBASE-XDR4	SM	MPO8/12	4x100G-FR	
400GBASE-FR4	SM	LC	N/A	

SKINNY TRUNK CABLING

Trunks

MTP-MTP base 12 OM4 Plenum Trunk Cables	Number of Fibers	Part Numbers ("xxxx" length in Feet)
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12	CBX-STC012BPF-OXXN-OXXN-xxxx
24	CBX-STC024BPF-O00N-O00N-xxxx
48	CBX-STC048BPF-O00N-O00N-xxxx
72	CBX-STC072BPF-O00N-O00N-xxxx
96	CBX-STC096BPF-O00N-O00N-xxxx
144	CBX-STC144BPF-O00N-O00N-xxxx



MTP-MTP base 12 SM Plenum Trunk Cables	Number of Fibers	Part Numbers ("xxxx" length in Feet)
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12	CBX-STC0129PF-OXXN-OXXN-xxxx
24	CBX-STC0249PF-O00N-O00N-xxxx
48	CBX-STC0489PF-O00N-O00N-xxxx
72	CBX-STC0729PF-O00N-O00N-xxxx
96	CBX-STC0969PF-O00N-O00N-xxxx
144	CBX-STC1449PF-O00N-O00N-xxxx



SKINNY TRUNK CABLING (CONTINUED)

Trunks

MTP-MTP base 8 OM4 Plenum Trunk Cables	Number of Fibers	Part Numbers ("xxxx" length in Feet)
	16	CBX-STC012BPF-2XXN-2XXN-xxxx
	24	CBX-STC024BPF-200N-200N-xxxx
	48	CBX-STC048BPF-200N-200N-xxxx
	72	CBX-STC072BPF-200N-200N-xxxx
	96	CBX-STC096BPF-200N-200N-xxxx
	144	CBX-STC144BPF-200N-200N-xxxx

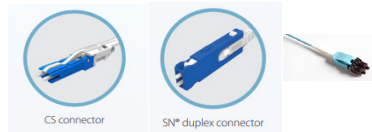


MTP-MTP base 8 SM Plenum Trunk Cables	Number of Fibers	Part Numbers ("xxxx" length in Feet)
	16	CBX-STC0129PF-2XXN-2XXN-xxxx
	24	CBX-STC0249PF-200N-200N-xxxx
	48	CBX-STC0489PF-200N-200N-xxxx
	72	CBX-STC0729PF-200N-200N-xxxx
	96	CBX-STC0969PF-200N-200N-xxxx
	144	CBX-STC1449PF-200N-200N-xxxx

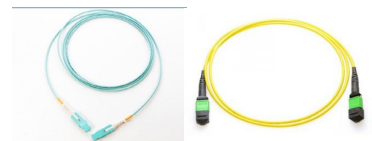


Jumpers

OM4	Number of Fibers	Part Numbers ("xxxx" length in Feet)
MTP-MTP 8/12 Plenum Jumper OM4	8 or 12	CBX-STC012BPF-XXXN-XXXN-xxx
LC-LC Uniboot duplex jumper OM4	2	CXJ04-U2-U2-D2-XXX
LC-CS Uniboot duplex jumper OM4	2	CXJ04-CS-U2-D2-XXX
LC-SN Uniboot duplex jumper OM4	2	CXJ04-U2-SN-D2-XXX
SN-SN Uniboot duplex jumper OM4	2	CXJ04-SN-SN-D2-XXX
CS-CS Uniboot duplex jumper OM4	2144	CXJ04-CS-CS-D2-XXX

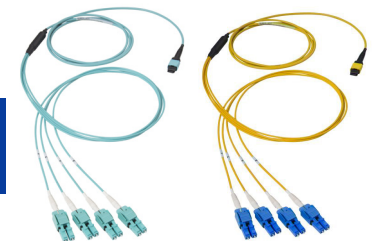


SM	Number of Fibers	Part Numbers ("xxxx" length in Feet)
MTP-MTP 8/12 Plenum Jumper SM	8 or 12	CBX-STC0129PF-XXXN-XXXN-xxx
LC-LC Uniboot duplex jumper SM	2	CXJ09-U2-U2-D2-XXX
LC-CS Uniboot duplex jumper SM	2	CXJ09-CS-U2-D2-XXX
LC-SN Uniboot duplex jumper SM	2	CXJ09-U2-SN-D2-XXX
SN-SN Uniboot duplex jumper SM	2	CXJ09-SN-SN-D2-XXX
CS-CS Uniboot duplex jumper SM	2144	CXJ09-CS-CS-D2-XXX



MTP- (4) Duplex Harnesses

OM4	Number of Fibers	Part Numbers ("xxxx" length in Feet)
MTP-(4) LC Uniboot OM4		CBX-STH008BPQ-XXXN-U02N-xxx
MTP-(4) CS Uniboot OM4		CBX-STH008BPQ-XXXN-C02N-xxx
MTP-(4) SN Uniboot OM4		CBX-STH008BPQ-XXXN-D02N-xxx



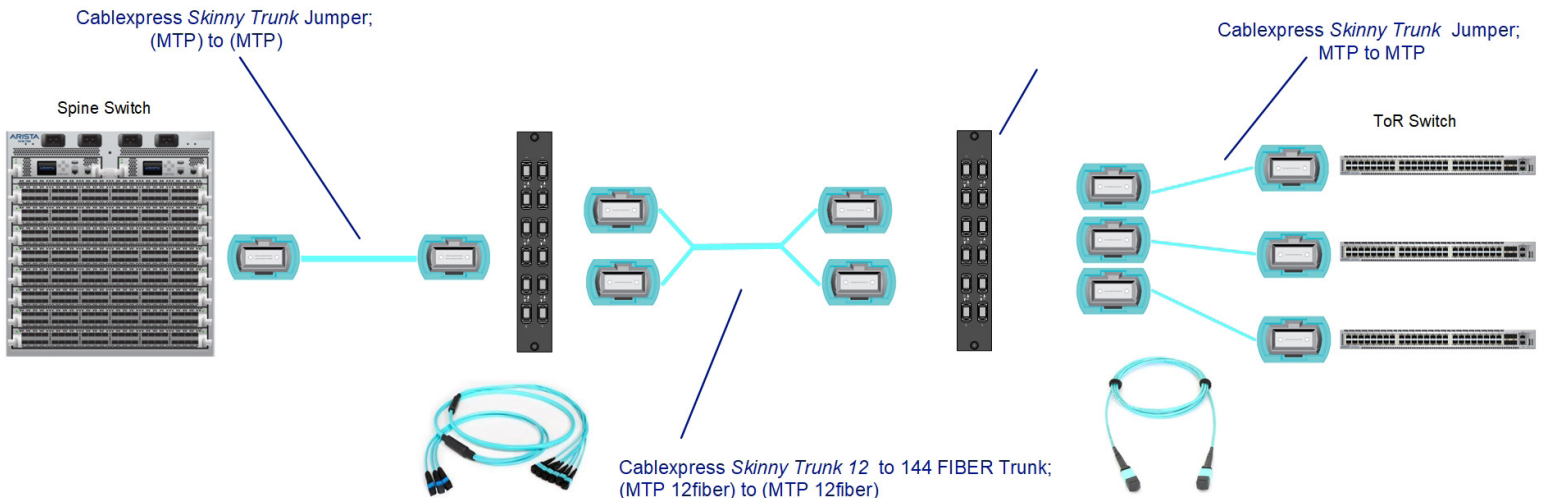
SM	Number of Fibers	Part Numbers ("xxxx" length in Feet)
MTP-(4) LC Uniboot SM		CBX-STH0089PQ-XXXN-U02N-xxx
MTP-(4) CS Uniboot SM		CBX-STH0089PQ-XXXN-C02N-xxx
MTP-(4) SN Uniboot SM		CBX-STH0089PQ-XXXN-D02N-xxx

ARISTA 100G TO 25G REPLICATION AND 400G INTERCONNECTS

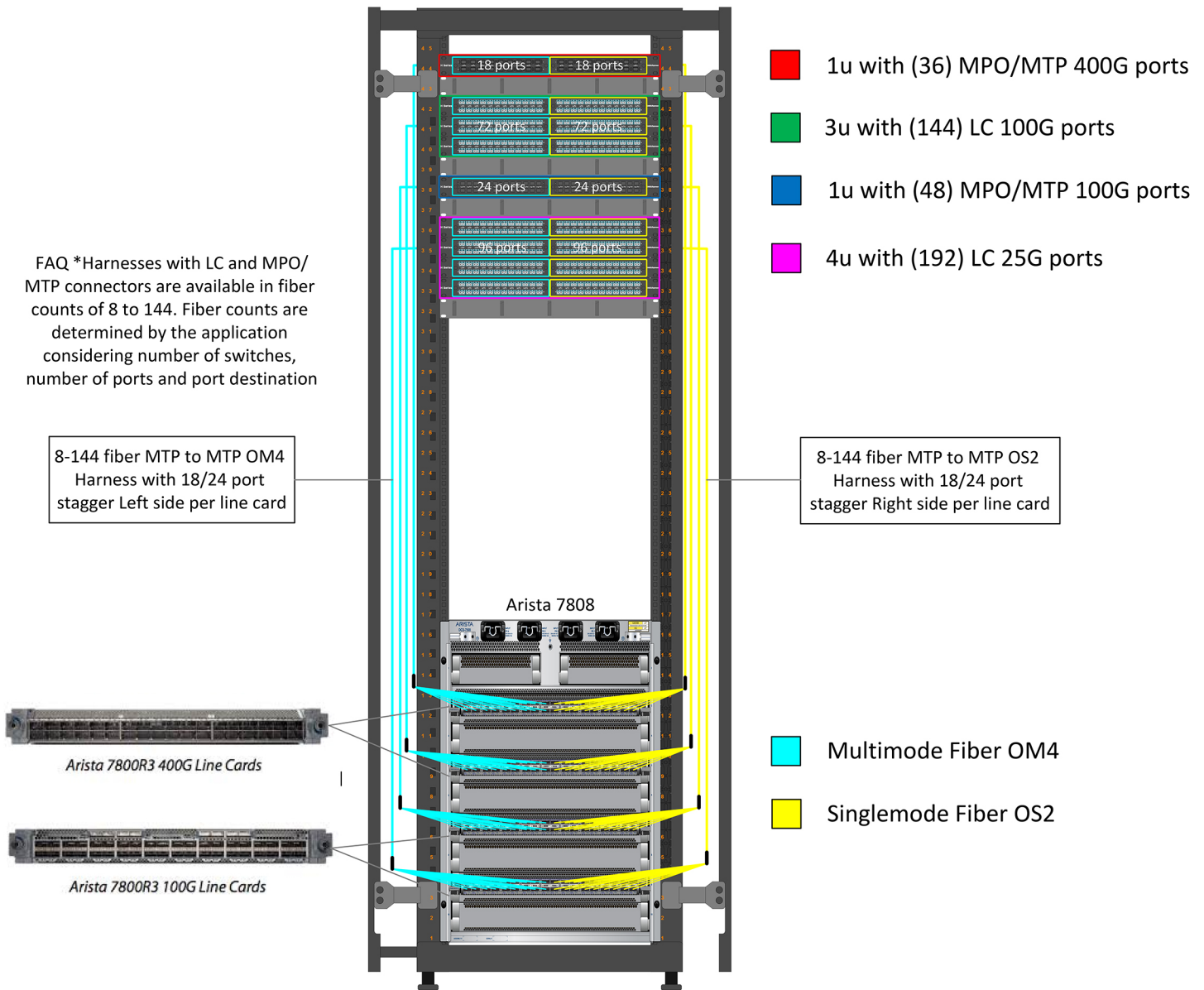


Port replication™ “mirrors” the ports of active fiber optic hardware in a passive component (fiber patch panel), creating a direct, one-to-one relationship between the active hardware ports and the passive structured cabling environment. This allows switches to be cabled once and then replicated in a Main Distribution Area (MDA), simplifying the cabling process with all numbers on the hardware directly corresponding to the numbers on the patch panel. Any changes can then be made at the MDA, as recommended in the TIA-942 Data Center Standard. Making changes in the passive MDA environment reduces cable management issues, decreases opportunities for patching errors and limits wear and tear on active ports.

40/100/400G QSFP-SR4 Connectivity with Inter-Connect Structured Cabling



ARISTA 7000 SERIES SWITCH PLATFORMS 400G/100G CABLING DESIGNS



Both the OSFP and QSFP-DD optics support the same connector types, fiber types, polarity (or light paths), and distances. Also available is a passive mechanical adapter that allows the use of existing QSFP28 optics on OSFP ports and line cards.

The biggest advantage in using the OSFP is that it will work with 800G speed optics when available, ensuring future-proofing. Figure 1 shows replication and breakout of both the 100G and 400G line cards using multimode and singlemode optics as in-cabinet connectivity.

The 36-port 400G line card accepts both multimode and singlemode fiber. When using multimode (OM4) fiber, two optics are available – the 400GBASE-SR8 and the 400GBASE-SRBD.

ARISTA 7000 SERIES SWITCH PLATFORMS (100G AND 400G) SPINE REPLICATION BREAKOUT IN CABINET

400G Optics

400G Optic Speed Link End-to-End	OSFP QSFP-DD QSFP	Optic Part #	Singlemode or Multimode	Duplex or Parallel Optic	Optic Part #	Distance Maximum	Arista Line Card Part #
400G to 400G	OSFP or QSFP-DD	FR4	Singlemode OS2	Duplex	FR4	2 Kilometers	7800R3-36P
400G to 400G	OSFP or QSFP-DD	XDR4 DR4	Singlemode OS2	Parallel	XDR4 DR4	2 Kilometers 500 Meters	7800R3-36P
400G to 400G	OSFP or QSFP-DD	SRBD	Multimode OM4	Parallel	SRBD	100 Meters	7800R3-36P
400G to 4x 100G	OSFP or QSFP-DD	DR4	Singlemode OS2	Parallel	(4) DR	500 Meters	7800R3-36P
400G to 4x 100G	OSFP/QSFP-DD to QSFP	SRBD	Multimode OM4	Parallel	(4) SRBD	100 Meters	7800R3-36P
400G to 2x 100G	OSFP/QSFP-DD to QSFP	SR8	Multimode OM4	Parallel	(2) SR4	100 Meters	7800R3-36P

100G Optics

400G Optic Speed Link End-to-End	OSFP QSFP-DD QSFP	Optic Part #	Singlemode or Multimode	Duplex or Parallel Optic	Optic Part #	Distance Maximum	Arista Line Card Part #
100G to 100G	OSFP to QSFP	PSM4	Singlemode OS2	Parallel	PSM4	500 Meters	7800R3-48CQ
100G to 100G	OSFP to QSFP	SR4	Multimode OM4	Parallel	SR4	100 Meters	7800R3-48CQ
100G to 100G	OSFP to QSFP	BIDI or SWDM4	Multimode OM4	Duplex	BIDI or SWDM4	100 Meters	7800R3-48CQ
100G to 4x 25G	OSFP to SFP	PSM4	Singlemode OS2	Parallel	(4) DR	500 Meters	7800R3-48CQ
100G to 4x 25G	OSFP to SFP	SR4	Multimode OM4	Parallel	(4) SR	100 Meters	7800R3-48CQ

Conclusion

In conclusion, cabling the Arista 7000 Series Switch Platforms begins with understanding the optic types available for both 100G and 400G. Consider 400G over 100G because the price of breaking out 400G ports into 4x 100G ports can be more cost-effective versus supporting individual 100G optics at the Spine. Consider 400G singlemode optics (DR4) as the cabling infrastructure will work with next-generation 800G optics. Plan to replicate or breakout the 400G ports in-cabinet, in-row, or at a desired location on the data center floor to have Spine ports near equipment that needs to be connected.

Contact us today to learn more!