

# Intelligent Visibility Optics

Efficient and Scalable



## General Overview

### Introduction

iVi's optical networking portfolio includes transceivers, cables, breakout cables, AOCs, and DACs supporting speeds from 1Gb to 400Gb. iVi also offers a wide assortment of patch cabling, power cabling, fiber shelves, and cassettes to support efficient, organized, and easily understood cable plants for data-center, IDF, and colocated installations.



### ▶▶▶ Solutions Offerings

We offer solutions for SFP, SFP+, QSFP+, QSFP-100, QSFP-200, QSFP-DD, and OSFP and are supported in networking, security, and storage infrastructure from over 35 OEMs.



NUTANIX



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### ▶▶▶ iVi Expertise

Our sales engineers will work with you to meet your interconnect and host connectivity requirements in an efficient and repeatable manner and a 5-year warranty backs all iVi Optics against material or manufacturing defects.

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## General Capabilities

- Solutions for 800G (2x400G), 400G, 100G, 50G, 40G, 25G, 10G, 1G
- Compatibility with 35+ OEMs
- SFP Solutions from 1Gb to 25Gb
- QSFP+ 40Gb solutions including breakout-ready solutions (4x10Gb)
- QSFP 100G solutions for SMF, MMF, extended distances, and specific lambdas
- QSFP 100G breakout-ready solutions (4x25Gb or 4x10Gb) to simplify migrations
- QSFP 200G transceivers, cables and AOCs
- OSFP and QSFP-DD solutions for 400Gb and 400G-ZR/ZR+



## 1 Gb Ethernet Solutions

### Small Form-Factor Pluggables

SFPs	Description	Speed / Fiber	Notes
1G-T	1000BaseTX Copper	1Gb / CAT5+	
1G-SX	1000BaseSX SFP	1Gb / MMF	
1G-LX	1000BaseLX SFP	1Gb / SMF	
1G-SX/LX RA	Rate Adapting SX/LX (1Gb/10Gb)	1Gb MMF/SMF	Requires OEM support which may vary by platform and code level. Contact IVI to validate compatibility

# 1 Gb Ethernet Solutions



## Cables

Patch Cables	Description	Lengths	Notes
1G-T	Copper Patch Cables	0.5-25M	Available in a variety of colors
1G-SX	MMF Fiber Patch Cables	0.5-25M	
1G-LX	SMF Fiber Patch Cables	0.5-25M	



## Characteristics

1Gb	Connector	Wave Length	Cable type(s)	Core(s)	Tx	Rx	Max Reach
1000Base-SX	LC	850nm	MMF	62.5um50um	-9.5 to -4.0	-17 to 0.0	200m500m
1000Base-LX	LC	1310nm	MMF	62.5um50um	-9.5 to 3.0	-19 to 3.0	550m550m
1000Base-LC	LC	1310nm	SMF	G.562	-9.5 to 3.0	-19 to 3.0	10km
1000Base-T	RJ-45		CAT5 (UTP)				100m

# 10 Gb Ethernet Solutions



## Small Form-Factor Pluggables

10 Gb SFPs	Description	Speed / Fiber	Notes
10GBase-T	10Gb Copper SFP	10Gb / CAT6	
10GBase-SR	10Gb SFP - SR	10Gb / MMF	
10GBase-SRL	10Gb SFP - SRL	10Gb / SMF	Short reach "lite"
10GBase-LR	10Gb SFP - LR	10Gb / SMF	
10GBase-LRL	10Gb SFP - LRL	10Gb / SMF	Long reach "lite"
10GBase-ERBD	10Gb SFP - ER BD	10Gb / SMF	
10GBase-EDLBD	10Gb SFP - ERL BD	10Gb / SMF	ER-BD "lite"
10GBase-ER	10Gb SFP - ER	10Gb / SMF	
10GBase-ZR	10Gb SFP - ZR	10Gb / SMF	
10GBase-DWDM	10Gb SFP - DWDM, multiple frequencies available	10Gb / SMF	Contact iVi to validate compatibility with your application.

## Cables

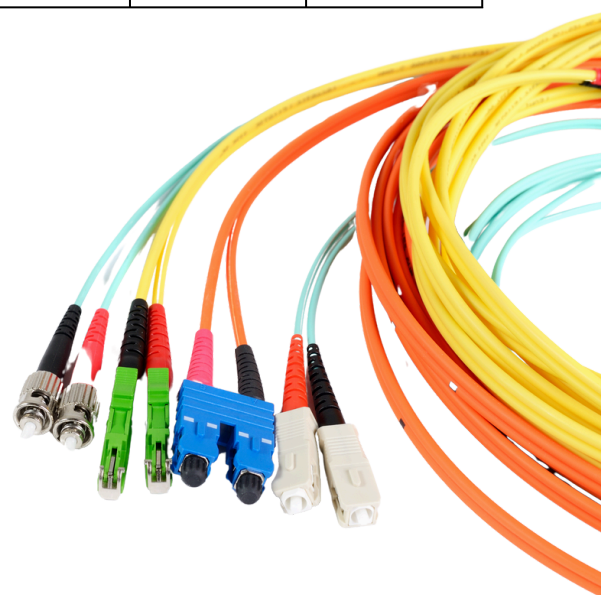
10Gb Cables	Description	Lengths	Notes
10GBase-CR	10GBase-CR Twinax	0.5-5m	
10GBase-CR	10GBase-CR x 4 to 1 QSFP+	0.5-5m	
10GBase-AOC	10GBase Active Optical	3-30m	
10G-T	Copper Patch Cables	0.5-25M	Available in a variety of colors
10G-MMF	MMF Fiber Patch Cables	0.5-25M	
10G-SMF	SMF Fiber Patch Cables	0.5-25M	

# 10 Gb Ethernet Solutions



## Characteristics

10Gb	Connector	Wavelength	Cable type(s)	Core(s)	Tx	Rx	Max Reach
10GBase-CR	SFP+			Twinax			0.5-5m
10GBase-CR	QSFP+ to 4xSFP+			Twinax			0.5-5m
10GBase-AOC	SFP+	850nm	MMF				3-30m
10GBase-T	RJ-45		CAT6A				30m
10GBase-SR	LC	850nm	MMF	62.5um50um	-8.0 to -1.0	-9.9 to -1.0	33m400m (OM4)
10GBase-SRL	LC	850nm	MMF	62.5um50um	-7.3 to -1.0	-9.9 to -1.0	11m150m (OM4)
10GBase-LR	LC	1310nm	SMF	62.5um50um	-8.2 to 0.5	-14.4 to 0.5	10km
10GBase-LRL	LC	1310nm	SMF	G.652	-8.2 to 0.5	-12.5 to 0.5	1km
10GBase-ERBD	LC	1270/1330nm	SMF	G.652	0 to 5.0	-9 to -21	40km
10GBase-ERLBD	LC	1270/1330nm	SMF	G.652	0 to 5.0	0 to -15	30km
10GBase-ER	LC	1550nm	SMF	G.652	-4.7 to 4.0	-4.7 to 4.0	40km
10GBase-ZR	LC	1550nm	SMF	G.652	-1.0 to 4.0	-1.0 to 4.0	80km
10GBase-DWDM	LC	1567.95 to 1529.94nm	SMF	G.652	-1.0 to 3.0	-1.0 to 3.0	80km



## 25 Gb Ethernet Solutions



### Small Form-Factor Pluggables

25 Gb SFPs	Description	Speed / Fiber	Notes
25GBase-SR	25Gb Short Reach	25GB / MMF	
25GBase-MR-SR	10/25Gb Short Reach	25GB / MMF	Multirate
25GBase-MR-XSR	10/25Gb X Short Reach	25GB / MMF	Multirate
25GBase-LR	25Gb Long Reach	25GB / SMF	
24GBase-MR-LR	10/25Gb Long Reach	25GB / SMF	Multirate



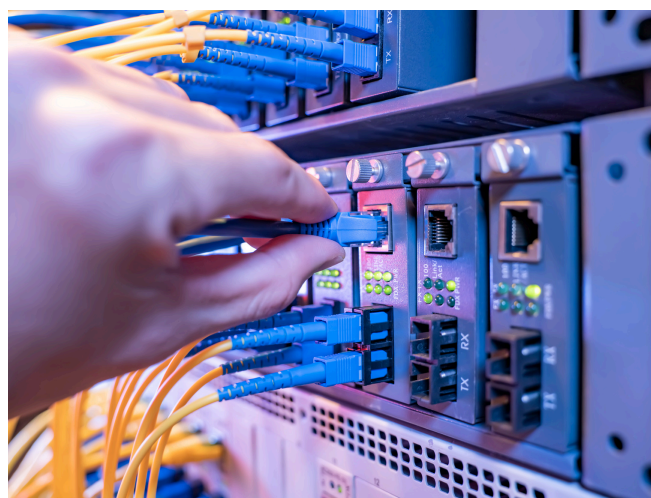
### Cables

25 Gb Cables	Description	Lengths	Notes
25GBase-CR	25GBase-CR Twinax	0.5-5m	
25GBase-CR	25GBase-CR x 4 to 1 QSFP+	0.5-5m	
25GBase-AOC	25GBase Active Optical	3-30m	
25G-MMF	MMF Fiber Patch Cables	0.5-25M	
25G-SMF	SMF Fiber Patch Cables	0.5-25M	



## Characteristics

25Gb	Connector	Wavelength	Cable type(s)	Core(s)	Tx	Rx	Max Reach
25GBase-CR	SFP+			Twinax			1-5m
25GBase-CR	QSFP100 to 4xSFP+			Twinax			1-5m
25GBase-AOC	SFP+	850nm	MMF				3-30m
25GBase-SR	LC	850nm	MMF	50um	-8.4 to 2.4	-10.3 to 2.4	70m (OM3)100m (OM4)
25GBase-MR	LC	850nm	MMF	50um	-8.4 to 2.4	-10.3 to 2.4	70/100m (25)300/400m (10)
25GBase-MR-XSR	LC	1310nm	SMF	50um	-6 to 2.4	-10.3 to 2.4	200/300m (25)300/400m (10)
25GBase-LR	LC	1310nm	SMF	G.652	-7 to 2.0	-13.3 to 2.0	10km
25GBase-MR-LR	LC	1270/1330nm	SMF	G.652	-7 to 2.0	-13.3 to 2.0	10km



# 40 Gb Ethernet Solutions



## Small Form-Factor Pluggables

40GB QSFPs	Description	Speed / Fiber	Notes
40GBASE-SR4	40GBASE SR4	40GB / MMF	MPO-12
40GBASE-XSR4	40GBASE XSR4	40GB / MMF	MPO-12
40GBASE-BIDI	40GBASE BIDI	40GB / MMF	
40GBASE-UNIV	40GBASE UNIVERSAL	40GB MMF/SMF	
40GBASE-LR4	40GBASE LR4	40GB / SMF	
40GBASE-LRL4	40GBASE LRL4	40GB / SMF	Long reach “lite”
40GBASE-ER4	40GBASE ER4	40GB / SMF	
40GBASE-PLR4	40GBASE PLR4	40GB / SMF	MPO-12
40GBASE-PLRL4	40GBASE PLRL 4	40GB / SMF	MPO-12 / PLR “lite”

## Cables

40GB Cables	Description	Lengths	Notes
40GBASE-CR	QSFP+ to QSFP+	0.5 to 5m	Twinax
10GBASE-CR	QSFP+ to 4 x SFP	0.5 to 5m	Twinax
40GBASE-AOC	QSFP+ to QSFP+	3m to 100m	MMF Assembled Cable
40G-MMF	MMF Fiber Patch Cables	0.5-25M	
40G-SMF	SMF Fiber Patch Cables	0.5-25M	

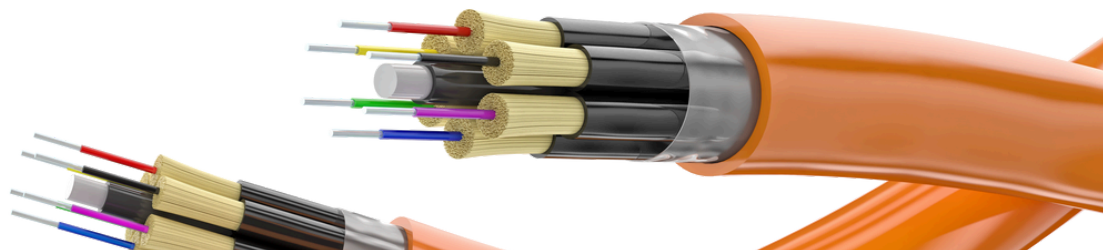


# 40 Gb Ethernet Solutions



## Characteristics

40Gb	Connector	Wavelength	Cable type(s)	Core(s)	Tx	Rx	Max Reach
40GBASE-SR4	MPO-12 UPC	850	MMF	50um	-7.6 to 2.4	-9.5 to 2.4	100m (OM3) 150m (OM4)
40GBASE-XSR4	MPO-12 UPC	850	MMF	50um	-7.5 to 1.0	-9.9 to 2.4	300m (OM3) 400m (OM4)
40GBASE-BIDI	LC	850	MMF	50um	-4 to 5	-6 to 5	100m (OM3) 150m (OM4)
40GBASE-UNIV	LC	1271 1291 1311 1331	MMFSMF	50umG.652	-10 to 2.3	-13.7 to 2.3	150m (OM3) 150m (OM4) 500m (SMF)
40GBASE-LRL4	LC	1271 1291 1311 1331	SMF	G.652	-10 to 2.3	-13.7 to 2.3	1km
40GBASE-LR4	LC	1271 1291 1311 1331	SMF	G.652	-7 to 2.3	-13.7 to 2.3	10km
40GBASE-ER4	LC	1271 1291 1311 1331	SMF	G.652	-2.7 to 3.8	-21.2 to -4.5	40km
40GBASE-PLRL4	MPO-12 APC	1310	SMF	G.652	-8.2 to 0.5	-12.5 to 0.5	1km
40GBASE-PLR4	MPO-12 APC	1310	SMF	G.652	-8.2 to 0.5	-14.4 to 0.5	10km



# 100 Gb Ethernet Solutions



## Small Form-Factor Pluggables

100GB QSFPs	Description	Speed / Fiber	Notes
100GBASE-SR4	MPO12 UPC	100Gb / MMF	70/100m over parallel OM3/4
100GBASE-SR4-E	MPO12 Enhanced no FEC (for low latency)	100Gb / MMF	30/50m OM3/4 (No FEC) 70/100m OM3/4 (w/FEC)
100GBASE-XSR4	MPO12 XSR4	100Gb/MMF	150m/300m OM3/4
100GBASE-SWDM4	SWDM 100G	100Gb/MMF	70/100m OM3/4 duplex
100GBASE-BIDI	BIDI 100G	100Gb/MMF	70/100m OM3/4 duplex
100GBASE-CWDM4	100G/40G Dual Rate	100Gb/SMF	2km over duplex SMF
100GBASE-XCWDM4	100G/40G Dual Rate	100Gb/SMF	10km over duplex SMF
100GBASE-PSM4	MPO12 Dual Rate 100/40GB	100Gb/SMF	500m parallel SMF
100GBASE-PLRL4	MPO12 Dual Rate 100/40GB	100Gb/SMF	2km parallel SMF
100GBASE-LR4	Long Reach	100Gb/SMF	10km duplex SMF
100GBASE-LRL4	Long Reach "lite"	100Gb/SMF	1km duplex SMF
100GBASE-ERL4	Extended Reach	100Gb/SMF	30/40km single-mode fiber
100GBASE-ZR4	ZR4	100Gb/SMF	80km single-mode fiber
100GBASE-DR	Single lamda DR	100Gb/SMF	500m duplex SMF
100GBASE-FR	Single lamda FR	100Gb/SMF	2km duplex SMF
100GBASE-LR	Single lamda LR	100Gb/SMF	10km duplex SMF

# 100 Gb Ethernet Solutions



## Cables

100Gb Cables	Description	Lengths	Notes
100GBASE-CR4	QSFP to QSFP	1-5m	Twinax copper
25GBASE-CR4	QSFP to 4xSFP	1-3m	Twinax copper
100G-MMF	MMF Fiber Patch Cables	0.5-25M	
100G-SMF	SMF Fiber Patch Cables	0.5-25M	



# 100 Gb Ethernet Solutions

## Characteristics



100Gb	Connector	Wavelength	Cable type(s)	Core(s)	Tx	Rx	Max Reach
100GBASE-SR4	MPO-12 UPC	850nm	MMF	50um	-8.4 to 2.4	-10.3 to 2.4	70m (OM3)100m (OM4)
100GBASE-SR4-E	MPO-12 UPC	850nm	MMF	50um	-4.5 to 2.4	-5.9 to 2.4	30/50m70/100m
100GBASE-XSR4	MPO-12 UPC	850nm	MMF	50um	-8.3 to 2.4	-10.3 to 2.4	150m (OM3)300m (OM4)
100GBASE-SWDM4	LC	850nm 880nm 910nm	MMF	50um	-7.5 to 3.4	-9.3 to 3.4	70m (OM3)100m (OM4)
100GBASE-BIDI	LC	855nm 908nm	MMF	50um	-6 to 4	-7.9 to 4	70m (OM3)100m (OM4)
100GBASE-CWDM4	LC	1271nm 1291nm	SMF	G.652	-6.5 to 2.5	-11.5 to 2.5	2km
100GBASE-XCWM4	LC	1311nm 1331nm	SMF	G.652	-6.5 to 2.5	-13 to 2.5	10km
100GBASE-PSM4	MPO-12 APC	1310nm	SMF	G.652	-9.4 to 2.0	-12.6 to 2.0	500m
100GBASE-PLRL4	MPO-12 APC	1310nm	SMF	G.652	-5.5 to 1.5	-12.6 to 2.0	2km
100GBASE-LR4	LC	1295.56nm 1300.05nm 1304.58nm 1309.14nm	SMF	G.652	-4.3 to 4.5	-10.6 to 4.5	10km
100GBASE-LRL4	LC		SMF	G.652	-6.0 to 4.5	-10.0 to 4.5	2km
100GBASE-ERL4	LC		SMF	G.652	-2.9 to 4.5	-20.9 to 4.9	30/40km
100GBASE-ZR4	LC		SMF	G.652	2 to 7	-5 to -28	80km
100GBASE-DR	LC	1310nm	SMF	G.652	-2.9 to 4.0	-5.9 to 4.0	500m
100GBASE-FR	LC	1310nm	SMF	G.652	-2.4 to 4.0	-6.4 to 4.5	2km
100GBASE-LR	LC	1310nm	SMF	G.652	-1.4 to 4.0	-7.7 to 4.5	10km

## Small Form-Factor Pluggables

400GB OSFPs	Description	Speed / Fiber	Notes
OSFP-400G-VSR4	400Gb up to 50m OM4	400Gb / MMF	Parallel OM4 MMF only
OSFP-400G-SR8	400Gb up to 100m OM4	400Gb / MMF	Parallel OM4 MMF only
OSFP-400G-SR8-C	400Gb up to 100m OM4	400Gb / MMF	Parallel OM4 MMF only
OSFP-400G-SRBD	400Gb BIDI	400Gb / MMF	70m (OM3) 100m (OM4)
OSFP-400G-DR4	400Gb DR	400Gb / SMF	500m SMF
OSFP-400G-XDR4	4 x 100G-FR MPO-12	400Gb / SMF	2km SMF
OSFP-400G-XDR4-S	4 x 100G-FR SN	400Gb / SMF	2km SMF
OSFP-400G-PLR4	4 x 100G-FR MPO-12	400Gb / SMF	10km SMF
OSFP-400G-PLR4-S	4 x 100G-FR SN	400Gb / SMF	10km SMF
OSFP-400G-FR4	400G FR4	400Gb / SMF	2km duplex SMF
OSFP-400G-LR4	400G LR4	400Gb / SMF	10km duplex SMF
OSFP-400G-LR8	400G LR8	400Gb / SMF	10km duplex SMF
OSFP-400G-2FR4	2 x 200GB-FR4	400Gb / SMF	2km over 2 pairs
OSFP-400G-ZR	Coherent Tunable	400Gb / SMF	Contact iVi sales engineering for design assistance







## Cables

400GB Cables	Description	Lengths	Notes
QSFP-DD-CR8	400G QSFP-DD to QSFP-DD	1-3m	
OSFP-CR8	400G OSFP to OSFP	1-3m	
QSFP-DD-CR4	400G QSFP-DD to 2 x QSFP-200G-CR4	1-3m	
OSFP-CR4	400GB OSFP to 2 x QSFP-200G-CR4	1-3m	
QSFP-DD-200-CR4	200GB CR8 to 2 x 100GB CR4	1-3m	
OSFP-200-CR2	100GB CR8 to 2 x 100GB CR4	1-3m	
QSFP-DD-400-CR4	100GB CR8 to 4 x 100GB CR2	1-3m	
OSFP-400-CR4	100GB CR8 to 4 x 100GB CR2	1-3m	
QSFP-DD-400-CR8	400GB CR8 to 4 x 100GB CR4	1-3m	
OSFP-400-CR8	400GB CR8 to 4 x 100GB CR4	1-3m	
QSFP-DD-QSFP-DD	400GB QSFP-DD to QSFP-DD	1-30m	Active optical
OSFP-OSFP	400GB OSFP to OSFP	1-30m	Active optical



# 400 Gb Ethernet Solutions

## Characteristics



400Gb	Connector	Wavelength	Cable type(s)	Core(s)	Tx	Rx	Max Reach
400GBASE-VSR4	MPO-12 APC	850nm	OM3OM4	50um	4.0 to -4.6	4 to -6.3	30m (OM3) 40m (OM4)
400GBASE-SR8	MPO-16 APC	850nm	OM3OM4	50um	-6.5 to 4.0	-8.4 to 4.0	70m (OM3) 100m (OM4)
400GBASE-BIDI	MPO-12 UPC	855nm 908nm	OM3OM4	50um	-6 to 4	-7.9 to 4	70m (OM3) 100m (OM4)
400GBASE-FR4	LC	1271nm 1291nm	SMF	G.652	-3.3 to 3.5	-7.3 to 3.5	2km
400GBASE-LR4	LC	1311nm 1331nm	SMF	G.652	-2.7 to 5.1	-9 to 5.1	10km
400GBASE-LR8	LC	1274nm, 1278nm, 1282nm, 1287nm, 1296nm, 1300nm, 1305nm, 1309nm	SMF	G.652	-2.8 to 5.3	-9.1 to 5.3	10km
400GBASE-2FR4	CS	1271nm, 1291nm, 1311nm, 1331nm	SMF	G.652	-4.2 to 4.7	-8.2 to 4.7	2km
400GBASE-DR4	MPO-12 APC	1310nm	SMF	G.652	-2.9 to 4.0	-5.9 to 4.0	500m
400GBASE-XDR4	MPO-12 APC	1310nm	SMF	G.652	-2.4 to 4.0	-6.4 to 4.5	2km
400GBASE-PLR4	MPO-12 APC	1310nm	SMF	G.652	-1.4 to 4.0	-7.7 to 4.5	10km
400GBASE-ZR	LC	1528.77nm to 1566.52nm	SMF	G.652	>10	-16 to 0	120km