JNP-QSFP-100G-SR4

Part number: 740-061405

Optics Overview

Juniper Networks offers a complete portfolio of modular and fixed-chassis routers and switches for both WAN and data center networks. These solutions span Juniper's MX-Series Universal Routing Platform and PTX-Series Packet Transport Routers to EX-Series Ethernet Switches and QFX-Series Data Center Switches among others. Depending on deployment scenarios, Juniper's platforms support different pluggable optic modules that can be selected based on speed, distance, form-factor, and wavelength among other relevant attributes.

Additional Resources

Hardware Compatibility Tool

HCT contains a regularly updated database of Juniper's transceivers, DACs, and AOCs along with information regarding compatibility with Juniper's platforms and interface modules.

https://apps.juniper.net/hct/home/

Product Description

QSFP28 100GBase-SR4 Optics for up to 100m transmission over parallel MMF

Overview

Part Number	740-061405
Speed	4 x 25 Gigabit Ethernet, 100 Gigabit Ethernet
Breakout Capable	Yes
Breakout cables	MTP-4LC-M1M, MTP-4LC-M3M, MTP-4LC-M5M, MTP-4LC-M10M can be used as break-out cables
Transceiver Type	QSFP28
Product Type	Optical Transceiver
Connector	MPO-12
Monitoring Available	Yes
Digital Optical Monitoring	Yes
Common Optic Equivalent	QSFP-100G-SR4-C

Note:

- Monitoring Available - Can measure received optical power and display in CLI.
- Digital Optical Monitoring - Full support for SFF-8636.
- Common Optic - The common optics product line provides competitively priced single-SKU optics offerings for use across Juniper routing, switching, and security platforms.

Supported Platforms

Platform	Introduced Release	Additional Information
Routing		
ACX710	Junos OS 23.1R1	
ACX5448-D Breakout Supported	Junos OS 23.1R1	
ACX5448-M Breakout Supported	Junos OS 23.1R1	
ACX5448 Breakout Supported	Junos OS 18.2R1	
ACX7024	Junos OS Evolved 22.3R1	
ACX7100-32C Breakout Supported	Junos OS Evolved 21.2R1	
ACX7100-48L Breakout Supported	Junos OS Evolved 21.1R1	
ACX7348	Junos OS Evolved 23.4R1	
ACX7509 Breakout Supported	Junos OS Evolved 21.4R1	
MX204	Junos OS 18.2R1	
MX240 Breakout Supported		
MX304 Breakout Supported	Junos OS 22.2R1	
MX480 Breakout Supported		
MX960 Breakout Supported		
MX2008	Junos OS 15.1F7	
MX2010 Breakout Supported	Junos OS 18.2R1	
MX2020 Breakout Supported	Junos OS 18.2R1	
MX10003	Junos OS 18.2R1	

Platform	Introduced Release	Additional Information
MX10004	Junos OS 22.3R1	
MX10008	Junos OS 18.2R1	
MX10016	Junos OS 19.2R1	
PTX10001-36MR Breakout Supported	Junos OS Evolved 20.2R1	
PTX1000	Junos OS 16.1X65-D30	
PTX3000	Junos OS 18.2R1	
PTX5000	Junos OS 18.2R1	
PTX10002-60C	Junos OS 18.2R1	
PTX10003 Breakout Supported	Junos OS Evolved 19.1R1	
PTX10004 Breakout Supported	Junos OS Evolved 20.3R1	
PTX10008 Breakout Supported	Junos OS 17.2R1	
PTX10016	Junos OS 17.4R1	
Security		
SRX2300 Breakout Supported	Junos OS 23.4R1	
SRX4600	Junos OS 17.4R2	
SRX5400	Junos OS 15.1X53-D210	
SRX5600	Junos OS 15.1X53-D210	
SRX5800	Junos OS 15.1X53-D210	
Switching		
EX4300 Multigigabit	Junos OS 18.4R1	
EX4400 Breakout Supported	Junos OS 21.1R1	
EX4400-48T Breakout Supported	Junos OS 21.1R1	
EX4400-24T Breakout Supported	Junos OS 21.1R1	

JNP-QSFP-100G-SR4

Platform	Introduced Release	Additional Information
EX4400 Multigigabit Breakout Supported	Junos OS 21.2R1	
EX4400-24X Breakout Supported	Junos OS 23.1R1	
EX4400-48F Breakout Supported	Junos OS 21.1R1	
EX4650-48Y Breakout Supported	Junos OS 18.3R1	
EX9204 Breakout Supported	Junos OS 20.3R1	
EX9208 Breakout Supported	Junos OS 20.3R1	
EX9214 Breakout Supported	Junos OS 20.3R1	
EX9251	Junos OS 18.1R1	
EX9253	Junos OS 18.2R1	
QFX5110	Junos OS 15.1X53-D210	This transceiver is not supported on Virtual Chassis Ports (VCP) connections.
QFX5120-32C Breakout Supported	Junos OS 19.1R1	
QFX5130-32CD Breakout Supported	Junos OS Evolved 20.4R1	
QFX5120-48T Breakout Supported	Junos OS 20.2R1 Junos OS 20.2R1	Only ports 50 and 51 support 4x25G breakout.
QFX5120-48Y Breakout Supported	Junos OS 18.3R1	
QFX5120-48YM Breakout Supported	Junos OS 20.4R1 Junos OS 20.4R1	Only ports 50 and 52 support 4x25G breakout.
QFX5200-32C Breakout Supported	Junos OS 15.1X53-D30	
QFX5210-64C Breakout Supported	Junos OS 18.1R1	
QFX5220-32CD Breakout Supported	Junos OS Evolved 19.2R1	

Platform	Introduced Release	Additional Information
QFX5220-128C Breakout Supported	Junos OS Evolved 19.2R1	
QFX5230-64CD Breakout Supported		
QFX5200-48Y Breakout Supported	Junos OS 18.1R1	
QFX5700 Breakout Supported	Junos OS Evolved 21.2R1	
QFX10002	Junos OS 15.1X53-D20	
QFX10008	Junos OS 15.1X53-D30	
QFX10016	Junos OS 15.1X53-D61	
QFX10002-60C		

Supported Interface Modules

Flexible PIC Concentrators (FPCs)

Name	Description	Platforms and Introduced Releases
100 Gigabit Ethernet		
QFX5K-FPC-16C	16X100G linecard for QFX5700 chassis	QFX5700 Junos OS Evolved 21.2R1 Breakout Supported
QFX5K-FPC-4CD	4X400G linecard for QFX700 chassis	QFX5700 Junos OS Evolved 21.2R1 Breakout Supported
4 x 25 Gigabit Ethernet		
QFX5K-FPC-16C	16X100G linecard for QFX5700 chassis	QFX5700 Junos OS Evolved 21.2R1 Breakout Supported

Name	Description	Platforms and Introduced Releases	
QFX5K-FPC-4CD	4X400G linecard for QFX700 chassis	QFX5700 Junos OS Evolved 21.2R1 `Breakout Supported`	

I/O cards (IOCs)

Name	Description	Platforms and Introduced Releases	
100 Gigabit Ethernet			
SRX5K-IOC4-MRAT	SRX5K-IOC4-MRAT is a fixed-configuration interface card with a Packet Forwarding Engine that provides up to 480-Gbps (240-Gbps per PIC slot) line rate. This interface card provides scalability in bandwidth and services to the SRX5400, SRX5600, and SRX5800 Services Gateways. Note: SRX5K-IOC4-MRAT cards do not support plug-in Modular Interface Cards (MICs).</br>	SRX5400 Junos OS 19.3R1 SRX5800 Junos OS 19.3R1	SRX5600 Junos OS 19.3R1

Line Cards

Name	Description	Platforms and Introduced Releases	
100 Gigabit Ethernet			
ACX7300-FPC-2CD4C	ACX7300-2CD4C: 4-Port (QSFP28) & 2-Ports (QSFP56-DD)	ACX7348 Junos OS Evolved 23.4R1 `Breakout Supported`	
ACX7509-FPC-16C	ACX7509 16X40GE/16X100GE LINE CARD	ACX7509 Junos OS Evolved 21.4R1 `Breakout Supported`	
EX9200-15C	Fixed-configuration line card with 15 rate-selectable ports. All ports can operate at 10-Gbps, 25-Gbps, 40-Gbps, or 100-Gbps speeds. The ports are configured to operate at 100-Gbps speed by default.	EX9204 Junos OS 20.3R1 `Breakout Supported` EX9214 Junos OS 20.3R1 `Breakout Supported`	EX9208 Junos OS 20.3R1 `Breakout Supported`

Name	Description	Platforms and Introduced Releases	
EX9253-6Q12C [(EOL)]	A line card with six built-in QSFP+ ports, each of which can house QSFP+ pluggable transceivers and 12 built-in QSFP28 ports, each of which can house QSFP28 pluggable transceivers.	EX9253 Junos OS 18.2R1	
EX9253-6Q12C-M [(EOL)]	A line card with six built-in QSFP+ ports, each of which can house QSFP+ pluggable transceivers and 12 built-in QSFP28 ports with Media Access Control Security (MACsec) capability, each of which can house QSFP28 pluggable transceivers.	EX9253 Junos OS 18.2R1	
MX10003-LC2103	JNP10003/MX10003 Modular Port Concentrator, 6xQSFP+, 1 MIC Slot	MX10003 Junos OS 18.2R1	
MX10003-LC2103-V2	12x100G/18x40G/72x10G Line Card with QuadCore Processor	MX10003 Junos OS 21.3R1	
MX10K-LC2101	JNP10008/MX10008 24x100G/24x40G/96x10G Line Card	MX10004 Junos OS 22.3R1 MX10016 Junos OS 19.2R1	MX10008 Junos OS 18.2R1
MX10K-LC9600	The MX10K-LC9600 (Model number: JNP10K-LC9600) is a fixed-configuration 24-port line card, which provides a line rate throughput of 9.6 Tbps	MX10004 Junos OS 22.3R1 Breakout Supported	MX10008 Junos OS 21.4R1 Breakout Supported
MX304-LMIC16	The MX304-LMIC16-BASE is a 16-port line card that supports maximum data throughput of 1.6 TB ingress and 1.6 TB egress	MX304 Junos OS 22.2R1 Breakout Supported	
PTX10K-LC1101	30x100G/30x40G Line Card	PTX10008 Junos OS 17.2R1	PTX10016 Junos OS 17.4R1
PTX10K-LC1102	36X40G/12X100G Line Card	PTX10008 Junos OS 17.2R1	PTX10016 Junos OS 17.4R1
PTX10K-LC1105	PTX10K 3Tbps MACse Line Card - 30x100G/30x40G	PTX10008 Junos OS 17.4R2	PTX10016 Junos OS 18.3R1

Name	Description	Platforms and Introduced Releases	
PTX10K-LC1201-36CD	PTX10K 36 ports of 400 Gigabit Ethernet that provide 14.4-Tbps line rate processing speeds	PTX10004 Junos OS Evolved 20.3R1 Breakout Supported PTX10016 Junos OS Evolved 21.2R2 Breakout Supported	PTX10008 Junos OS Evolved 20.1R1 Breakout Supported
PTX10K-LC1202-36MR	36-port line card that has thirty-two QSFP28 ports capable of supporting 100-Gbps speed, and four QSFP56-DD ports capable of supporting 400-Gbps speed	PTX10004 Junos OS Evolved 21.2R1 Breakout Supported PTX10016 Junos OS Evolved 21.2R2 Breakout Supported	PTX10008 Junos OS Evolved 21.2R1 Breakout Supported PTX10016 Junos OS Evolved 21.2R1 Breakout Supported
QFX10000-30C	A 30-port 100-Gigabit or 40-Gigabit Ethernet QSFP28 line card	QFX10008 Junos OS 15.1X53-D30	QFX10016 Junos OS 15.1X53-D61
QFX10000-30C-M	QFX10000 30-port 100G QSFP28 /24-port 40G QSFP+ with 6-port 100G QSFP28 line card, with MACSec	QFX10008 Junos OS 18.1R1	QFX10016 Junos OS 18.1R1
QFX10000-36Q	A 36-port 40-Gigabit Ethernet quad small form-factor pluggable plus transceiver (QSFP+) or 12-port 100GbE QSFP28 line card	QFX10008 Junos OS 15.1X53-D30	QFX10016 Junos OS 15.1X53-D61
QFX10000-60S-6Q	QFX10000 60-port 1/10G SFP/SFP+ line card with 6 40G QSFP+ / 2 100G QSFP28 ports	PTX10008 Junos OS 19.1R1 QFX10008 Junos OS 17.1R1	PTX10016 Junos OS 19.1R1 QFX10016 Junos OS 17.1R1
4 x 25 Gigabit Ethernet			
ACX7509-FPC-16C	ACX7509 16X40GE/16X100GE LINE CARD	ACX7509 Junos OS Evolved 21.4R1 Breakout Supported	

Name	Description	Platforms and Introduced Releases	
EX9200-15C	Fixed-configuration line card with 15 rate-selectable ports. All ports can operate at 10-Gbps, 25-Gbps, 40-Gbps, or 100-Gbps speeds. The ports are configured to operate at 100-Gbps speed by default.	EX9204 Junos OS 20.3R1 `Breakout Supported` EX9214 Junos OS 20.3R1 `Breakout Supported`	EX9208 Junos OS 20.3R1 `Breakout Supported`
MX304-LMIC16	The MX304-LMIC16-BASE is a 16-port line card that supports maximum data throughput of 1.6 TB ingress and 1.6 TB egress	MX304 Junos OS 22.2R1 `Breakout Supported`	
PTX10K-LC1201-36CD	PTX10K 36 ports of 400 Gigabit Ethernet that provide 14.4-Tbps line rate processing speeds	PTX10004 Junos OS Evolved 20.3R1 `Breakout Supported` PTX10016 Junos OS Evolved 21.2R2 `Breakout Supported`	PTX10008 Junos OS Evolved 20.1R1 `Breakout Supported`
PTX10K-LC1202-36MR	36-port line card that has thirty-two QSFP28 ports capable of supporting 100-Gbps speed, and four QSFP56-DD ports capable of supporting 400-Gbps speed	PTX10004 Junos OS Evolved 21.2R1 `Breakout Supported` PTX10016 Junos OS Evolved 21.2R1 `Breakout Supported`	PTX10008 Junos OS Evolved 21.2R1 `Breakout Supported`

Modular Interface Cards (MICs)

Name	Description	Platforms and Introduced Releases
100 Gigabit Ethernet		
JNP-MIC1	12x100G/12x40G/48x10G Universal MIC	MX10003 Junos OS 23.1R1
JNP-MIC1-MACSEC	12x100G/12x40G/48x10G Universal MACSEC MIC	MX10003 Junos OS 18.2R1

Modular Port Concentrators (MPCs)

Name	Description	Platforms and Introduced Releases	
100 Gigabit Ethernet			
MPC10E-10C	MPC10E-10C-MRATE/MPC10E-10C-P-BASE, 10 x QSFP28/QSFP56-DD multirate port line card	MX240 Junos OS 19.2R1 Breakout Supported MX960 Junos OS 19.2R1 Breakout Supported	MX480 Junos OS 19.2R1 Breakout Supported
MPC10E-15C	MPC10E-15C-MRATE/MPC10E-15C-P-BASE, 15 x QSFP28/QSFP56-DD multirate port line card	MX240 Junos OS 19.1R1 Breakout Supported MX960 Junos OS 19.1R1 Breakout Supported	MX480 Junos OS 19.1R1 Breakout Supported
MPC7E-MRATE	MPC7E (Multi-Rate)	MX240 Junos OS 16.1R1 MX960 Junos OS 16.1R1 MX2010 Junos OS 16.1R1	MX480 Junos OS 16.1R1 MX2008 Junos OS 15.1F7 MX2020 Junos OS 16.1R1
MX2K-MPC11E	The MX2K-MPC11E is a fixed-configuration Module Port Concentrator (MPC) which delivers bandwidth up to 4-Tbps per MPC slot for MX2020 and MX2010 routers.	MX2010 Junos OS 20.1R1 Breakout Supported	MX2020 Junos OS 20.1R1 Breakout Supported
MX2K-MPC8E	MPC8E	MX2008 Junos OS 15.1F7 MX2020 Junos OS 18.2R1	MX2010 Junos OS 18.2R1
MX2K-MPC9E	MPC9E	MX2008 Junos OS 15.1F7 MX2020 Junos OS 18.2R1	MX2010 Junos OS 18.2R1

Name	Description	Platforms and Introduced Releases	
4 x 25 Gigabit Ethernet			
MPC10E-10C	MPC10E-10C-MRATE/MPC10E-10C-P-BASE, 10 x QSFP28/QSFP56-DD multirate port line card	MX240 Junos OS 19.2R1 Breakout Supported MX960 Junos OS 19.2R1 Breakout Supported	MX480 Junos OS 19.2R1 Breakout Supported
MPC10E-15C	MPC10E-15C-MRATE/MPC10E-15C-P-BASE, 15 x QSFP28/QSFP56-DD multirate port line card	MX240 Junos OS 19.1R1 Breakout Supported MX960 Junos OS 19.1R1 Breakout Supported	MX480 Junos OS 19.1R1 Breakout Supported
MX2K-MPC11E	The MX2K-MPC11E is a fixed-configuration Module Port Concentrator (MPC) which delivers bandwidth up to 4-Tbps per MPC slot for MX2020 and MX2010 routers.	MX2010 Junos OS 20.1R1 Breakout Supported	MX2020 Junos OS 20.1R1 Breakout Supported

Physical Interface Cards (PICs)

Name	Description	Platforms and Introduced Releases	
100 Gigabit Ethernet			
P3-10-U-QSFP28	10-Port 10-Gigabit Ethernet, 40-Gigabit Ethernet, 100-Gigabit Ethernet PIC with QSFP28 (PTX Series)	PTX3000 Junos OS 18.2R1	PTX5000 Junos OS 18.2R1
P3-15-U-QSFP28	15 Port 10-Gigabit, 40-Gigabit Ethernet, 100-Gigabit Ethernet PIC with QSFP28 (PTX Series)	PTX5000 Junos OS 18.2R1	

Uplink Modules

Name	Description	Platforms and Introduced Releases
100 Gigabit Ethernet		
EX-UM-2QSFP-MR	EX4300MP 2-port 40GbE QSFP+/1-port 100GbE QSPF28 Uplink Module for EX4300-48MP	EX4300 Multigigabit Junos OS 18.4R1

Name	Description	Platforms and Introduced Releases	
EX4400-EM-1C	1x100GbE QSFP28 extension module for EX4400 series of switches	EX4400 Junos OS 23.1R1 `Breakout Supported` EX4400-24T Junos OS 23.1R1 `Breakout Supported` EX4400-24X Junos OS 23.1R1 `Breakout Supported`	EX4400-48T Junos OS 23.1R1 `Breakout Supported` EX4400 Multigigabit Junos OS 23.1R1 `Breakout Supported` EX4400-48F Junos OS 23.1R1 `Breakout Supported`

Why buy optics from Juniper?
There is <u>value</u> in choosing Juniper over 3rd party optics

✓ **Full testing, validation, and JTAC support for Juniper optics**

- Power, Electrical, and Management interfaces tested at the system level.
- Extended temperature and functional testing in DVT chamber using fully loaded systems.
- Full software integration into JUNOS/EVO for seamless part recognition, functionality, and telemetry.
- Latest qualification status and optics specifications published on Hardware Compatibility Tool.

✓ **Single-source provider for 1G to 400G on a variety of optical technologies**

- Juniper's optics portfolio is maintained and constantly refreshed based on vendor availability.
- Automatic supply chain diversity and supply continuity - multiple optics suppliers fulfilled through Juniper.

✓ **Rigorous evaluation of optical vendors**

- Juniper ensures uniformity across all vendors by standardizing P-Specs for management, specs, and logs.
- Vendors are scored based on engineering and supply-chain analysis.
- Factory audits and critical component evaluation (Ex. Who is supplying the laser?).

Aren't 3rd party optics the same?
Optics may be a commodity, but some things are too good to be true

× **Juniper does not Provide JTAC support for 3rd party optics**

- JTAC will only assist with host-related issues unrelated to the use of 3rd party optics.

× **Not all optics are the same - standards compliance does <u>not</u> guarantee quality or performance**

- Third-party providers lack system-level knowledge and testing.
- No guarantee of vendor reliability or accountability.

× **Newer technologies (ex. Coherent 400G ZR/ZR+) are complex and not simply plug-and-play**

- Significant software integration necessary to enable full functionality, management, and telemetry.
- Use of unqualified 3rd party high-power optics can damage the host equipment.

× **Third-party providers simply can't scale**

- Incomplete solution offerings and fast turnaround times only for limited quantities.