Oracle's 10 Gigabit Ethernet Transceivers and Cables Frequently Asked Questions
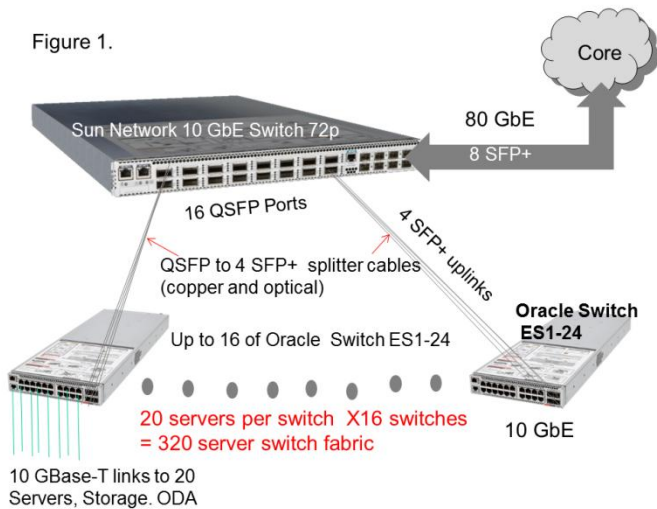
Contents

1: Ethernet switches and adapters

How do I scale to a larger switching fabric with Oracle's Ethernet switch portfolio?


Figure 1.

Oracle's Sun Network 10 GbE Switch 72p with 16 QSFP and 8 SFP+ ports is used as an aggregation switch with the Oracle Switch ES1-24 as a top-of-rack (ToR) switch. Users can connect twenty 10GBase-T ports from the switch to Oracle servers, storage, and Oracle Database Appliance since they already have on their system 1/10GBase-T ports. Four SFP+ ports of the switch are used as uplink to one of the 16 QSFP ports on Oracle's Sun Network 10 GbE Switch 72p. Twenty servers/storage per switch and 16 switches connected to Sun Network 10 GbE Switch 72p provide a high-performance and cost-effective 10 GbE switching fabric for up to 320 servers/storage as shown in the above Figure 1.

What types of physical ports are available on Oracle's Ethernet switches and networking cards?

Part #	Description	Ports		
		SFP+	QSFP	10GBase-T
Ethernet Switch				
X2074A-F	Sun Network 10 GbE Switch 72p (front-to-rear airflow)	8	16	
X2074A-R	Sun Network 10 GbE Switch 72p (rear-to front airflow)	8	16	
X2073A-N	Sun Blade 6000 Ethernet Switched NEM 24p 10 GbE	2	3	
7105443	Oracle Switch ES1-24 (front-to-rear airflow) ATO	4		20
7105444	Oracle Switch ES1-24 (rear-to-front airflow) ATO	4		20
10 GbE Networkin Cards				
X1109A-Z 1109A-Z for factory installation	Sun Dual Port 10 GbE SFP+ PCIe 2.0 Low Profile adapter	2		
X1110A-Z 1110A-Z for factory installation	Sun Dual Port 10 GbE SFP+ PCIe 2.0 ExpressModule Adapter	2		
7100488 7100563 for factory installation	Sun Dual Port 10GBase-T Low Profile Adapter			2
7100490 7100492 for factory installation	Sun Dual Port 10GBase-T ExpressModule			2

How do I connect Oracle servers, storage and other networking devices to the Ethernet switches?
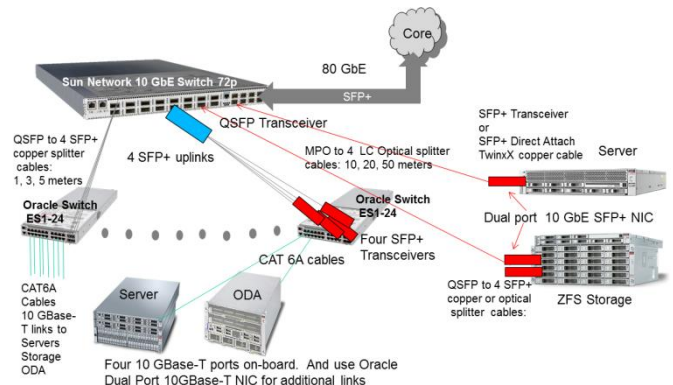
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2: Fiber interconnect solutions

What are the QSFP and SFP+ transceivers provided by Oracle?

Description and Part #	Conn-ector Type	Max. Cabling Distance	Wave-length (nm)	Cabl e Type	Core/ Cladding (microns)	Fiber Grade	Modal BW (MHz/km)
Trasceivers							
QSFP Optical SR Part # X2124A-N Part # 2124A-N for factory installation	MPO	100 meters	850	M M F	50/125	OM3	2000
		150 meters			50/125	OM4	4700
SFP+ 10Gbps Optical SR (Short Reach Multi Mode) Part # X2129A-N Part # 2129A for factory installation	LC	33 meters	850	M M F	62.5/ 125	OM1	200 (OFL)
		82 meters			50/125	OM2	500 (OFL)
		300/ 400 meters			50/125	OM3/4	2000/ 4700
SFP+ 10Gbps Optical LR (Long Reach, Single Mode) Part # X5562A-Z Part # 5562A-Z for factory installation	LC	up to 10km depending on cable plant loss	1310	S M F	9/125	OS1/ OS2	

What are the marketing part numbers for the optical cables provided by Oracle?

Part #	Description	Connector Type	Length
X2127A-10M	MPO to 4 LC Optical Splitter Cable 10M (multimode)	MPO& LC ends	10 meter
X2127A-20M	MPO to 4 LC Optical Splitter Cable 20M (multimode)	MPO& LC ends	20 meter
X2127A-50M	MPO to 4 LC Optical Splitter Cable 50M (multimode)	MPO& LC ends	50 meter

What transceivers should I use with Oracle's QSFP optical splitter cable?

QSFP to 4 SFP+ optical splitter cables:

X2127A-10M	MPO to 4 LC Optical Splitter Cable 10 meters
X2127A-20M	MPO to 4 LC Optical Splitter Cable 20 meters
X2127A-50M	MPO to 4 LC Optical Splitter Cable 50 meters

Use x2129A-N SFP+ SR transceiver for the LC end to plug into the Oracle switch/NIC SFP+ port.

Use X2124A-N QSFP SR transceiver to plug into the MPO end of the cable to plug into the QSFP port of the Sun Network 10 GbE Switch 72p.
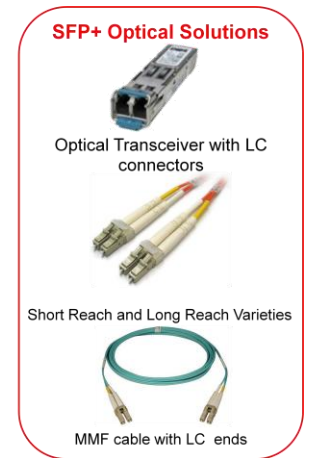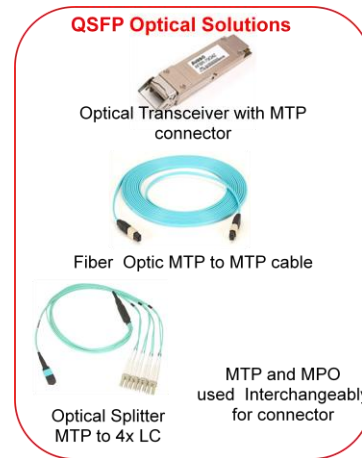
When do I use an Oracle transceiver versus a third-party transceiver?

Use an Oracle transceiver to plug into the Oracle device (switch/NIC). Use a third-party supplied transceiver to plug into the third-party device (switch).

If I want to use third-party transceivers and cables, will they work with the Oracle Switch ES1-24?

The transceivers and cables that directly plug into the Oracle Switch ES1-24 and are supplied by Oracle are compliant to the industry standards for SFP+ solutions (SR, LR, TwinX copper). Though standards-compliant, third-party

SFP+ solutions "should" interoperate with Oracle Switch ES1-24, but Oracle does not qualify third-party solutions with the switch and does not know whether they will work or not work and therefore does not support them. If you choose to use third-party SFP+ solutions and encounters an issue that cannot be isolated to the Oracle Switch ES1-24, you must replicate the issue with an Oracle qualified solution before Oracle can triage the issue.

Transceivers that directly plug into third-party switches should be purchased from the third-party switch suppliers and not from Oracle.

What is the distance supported by the SFP+ SR transceiver?

The supported distance is up to 300 meters depending on the quality of the multimode fiber (MMF) you use. Quality of MMF is listed as OM1 (up to 33 meters), OM2 (up to 82 meters), OM3 (up to 300 meters), and OM4 (up to 400 meters). Check with the supplier for the cable distance supported.

Does Oracle offer a MMF (850 nm) cable for SFP+ SR transceiver?

No, Oracle does not offer and does not plan to offer the MMF cables for the SFP+ SR transceiver. These cables are industry standard and widely available or existing in your environment.

Do the SFP+ optical transceivers support 1 GbE operation?

Yes, they support 1GbE and 10 GbE dual rates and can be configured for 1 GbE.

Will the SFP+ optical transceivers auto-negotiate between 1 GbE and 10 GbE?

Auto-negotiation is not supported between the 10 GE and 1 GE speed. The transceiver must be manually configured to operate at 1 GE speed.

3: Copper interconnect solutions

What are the QSFP and SFP+ copper cables provided by Oracle?

Copper Cables			
X2130A-1M-N 7105137 for factory installation	Sun 10 Gbps SFP+ TwinX Copper Cable, 1M	SFP+ male both ends	1 meter
X2130A-3M-N 7105140 for factory installation	Sun 10 Gbps SFP+ TwinX copper Cable, 3M	SFP+ male both ends	3 meter
X2130A-5M-N 7105141 for factory installation	Sun 10 Gbps SFP+ TwinX Copper Cable, 5M	SFP+ male both ends	5 meter
X2121A-1M-N 7105169 for factory installation	QSFP to QSFP Copper Cable, 1M	QSFP+ both ends	1 meter
X2121A-3M-N 7105174 for factory installation	QSFP to QSFP Copper Cable, 3M	QSFP+ both ends	3 meter
X2121A-5M-N 7105177 for factory installation	QSFP to QSFP Copper Cable, 5M	QSFP+ both ends	5 meter
X2125A-1M-N	QSFP to 4SFP+ Copper Splitter Cable, 1M	QSFP+ & SFP+ ends	1 meter
X2125A-3M-N	QSFP to 4SFP+ Copper Splitter Cable, 3M	QSFP+ & SFP+ ends	3 meter
X2125A-5M-N	QSFP to 4SFP+ Copper Splitter Cable, 5M	QSFP+ & SFP+ ends	5 meter
SFP+ to 1OOOBASE-T converter			
Part #:X2123A Part # 2123A for factory installation	Converts from SFP+ to RJ45 1000BASE-T	RJ45	100 meters

QSFP Copper Solutions
- No Transceiver Required
- Direct Attach Twinax
- Direct Attach Twinax QSFP to 4x SFP+ Splitter
- QSFP Copper 1, 3 & 5 Meter lengths

SFP+ Copper Solutions
- No Transceiver Required
- Direct Attach Twinax
- SFP+ Copper 1, 3 and 5 Meter lengths
- SFP+ 1000BaseT Module

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Frequently Asked Questions

Is TwinX same as Twinax?

Yes.

Does the TwinX copper cable plug directly into the NIC and the switch?

Yes, the copper cable has an SFP+ or QSFP connector on both ends of the cable that directly plugs into the corresponding ports of the switch and NIC.

Should I use optical transceivers with the SFP+ and QSFP direct-attach TwinX copper cables?

No. These are direct-attach TwinX cables and come with connectors that plug directly into the SFP+ port or the QSFP port of the switch/NIC on either end. Transceiver cannot be used.

What is the advantage of SFP+ TwinX copper cable?

It is a low-cost option for shorter distances up to 5 meters.

Do Oracle's SFP+ direct-attach TwinX passive cables work with Cisco or other third-party switches?

Oracle does not certify Oracle's direct-attach SFP+ TwinX passive cables with third-party switches. If the third-party switches support industry-standard SFP+ solutions, then

Oracle would expect them to interoperate with the Oracle cables.

How do I use the SFP+ ports for 1000BASE-T?

You need to purchase Oracle's SFP+ to 1000BASE-T adapter (SFP+/Copper RJ45), part number x2123A.

How do I use the SFP+ ports for 10GBaseT?

Oracle does not offer such adapter.

What are the distances supported by cables to use with the 10GBase-T ports? Does Oracle offer these cables?

Data centers have a large installed base of Cat 5/6/7 twisted pair cables for the last 10+ years—initially for 1000BASE-T and now for use with 1/10GBase-T infrastructure. Oracle does not offer these cables since they are industry standard and widely available from a large number of cable suppliers in various lengths and colors. Distances supported at 10 Gbps speed:

- CAT 6A and CAT 7 cables supporting 100 meters

- CAT 5e and CAT 6 cables supporting 55 meters

Cat6a, Cat 7 cable
100 Meters (330 ft) length

Cat 5e, Cat 6 cable
55 Meters (180 ft) length

Is 10GBase-T same as 10GBASE-T?

Yes. 1GBase-T is shorthand for 1000BASE-T and 10GBase-T is same as 10GBASE-T; they are the twisted pair implementations of 1 GbE and 10 GbE respectively

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4: Connectivity options for servers and storage products

What other Oracle products connect to the switch and what are the connectivity options?

Twisted pair cables to connect 10GBase-T ports on the switch:

• CAT 6A and CAT 7 cables supporting 100 meters

• CAT 5e and CAT 6 cables supporting 55 meters

Above cables are not provided by Oracle since they are industry standard and mature in interoperability.

Oracle servers

• Onboard or NIC with 1/10GBase-T ports: Connect with CAT 5/6/7 cables

• NIC with SFP+ ports: Connect with SFP+ transceivers or direct attach TwinX copper cables

Oracle's Sun ZFS Storage Appliance

• Oracle storage uses SFP+ NICs (X1109A-Z-N) and SFP+ transceivers (X2129A-N) that can be connected to the four SFP+ ports of the switch. Check the specific version of the storage product for support of the less expensive SFP+ TwinX copper cables (eliminating expensive transceivers). Use 10GBase-T ports as uplink to your network if all four SFP+ ports are used for ZFS connectivity.

Oracle Database Appliance

• Oracle Database Appliance has onboard 10Gbase-T ports. Use existing twisted pair cables (Cat 5/6/7) to connect to the 10GBase-T ports on the switch. SFP+ ports of the switch can be used as uplinks if you have fiber network infrastructure.

Sun Network 10 GbE Switch 72p

• SFP+ ports: Connect with SFP+ transceivers or direct attach TwinX copper cables

• QSFP port (only one): i) Connect with QSFP to 4 SFP+ copper splitter cable or ii) QSFP transceiver, QSFP to 4 SFP+ optical splitter cable (MPO to 4 LC), and SFP+ transceiver

Is it supported to mix SFP+ SR transceiver, direct-attach TwinX copper cable, and LR transceiver among the 4 SFP+ port of the switch?

Yes, any combination can coexist.

Service and Support

What kind of service and warranty is offered on the Oracle transceivers and cables?

The warranty is one year, second business day.

Where can I find more information on services and professional services at Oracle?

For more information on Oracle services and professional services, please refer to the following URL:

http://www.oracle.com/us/support/systems/premier/index.html

The documentation includes product notes, installation, and service guide, software configuration guide, and deployment best practices guide.

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