Oracle Ethernet Switch ES2-64 and ES2-72

Introduction

Oracle Ethernet Switch ES2-64 and Oracle Ethernet Switch ES2-72 are high-density, low-latency, nonblocking 10/40 GbE Ethernet switches, built for cloud-enabled and software-driven data centers. With advancements in server and storage virtualization creating complex network connectivity challenges, Oracle Ethernet Switch ES2-64 and Oracle Ethernet Switch ES2-72 help alleviate this problem with built-in virtualization features like VXLAN. The industry-standard command-line interface (CLI) and unified management enable simple, easy, and dynamic configuration of these switches for network connectivity in virtualized data centers.

Figure 1: Oracle Ethernet Switch ES2-72 and Oracle Ethernet Switch ES2-64

Frequently Asked Questions

Q: What is new in the next-gen Oracle Ethernet Switch ES2-64 and Oracle Ethernet Switch ES2-72 hardware?

A: The latest 1/40 Gb/sec switches have high port density and extreme low latency in 1U. Oracle Ethernet Switch ES2-64 has 40x 10 G Base-T and 6x QSFP+ ports while Oracle Ethernet Switch ES2-72 has 18x QSFP+ ports. The switches provide a total bandwidth of 1.28 to 1.44 Tb/sec for nonblocking, cut-through switching, and they have a capacity of 950 million packets per second (PPS) with Layer 2 and Layer 3 forwarding at wire speed.

Q: Are AC and DC power supplies part of the chassis?

A: The Oracle Ethernet Switch ES2-64 and Oracle Ethernet Switch ES2-72 switch chassis comes with either the AC or the DC power supply unit. You can order the desired version by choosing the appropriate part number.

7110593 Oracle Ethernet Switch ES2-72 with 18 QSFP+ ports. Includes 2 AC power supply units and rack rail kit. Requires one option: 1) fans with "Front-to-rear" or "Rear-to-front" airflow direction.

7112328 Oracle Ethernet Switch ES2-72 with 18 QSFP+ ports. Includes 2 DC power supply units and rack rail kit. Requires one option: 1) fans with "Front-to-rear" or "Rear-to-front" airflow direction.

7110614 Oracle Ethernet Switch ES2-64 with 40 ports of 1/10 GBase-T and 6 QSFP ports. Includes 2 AC power supply units and rack rail kit. Requires one option: 1) fans with "Front-to-rear" or "Rear-to-front" airflow direction.

7112329 Oracle Ethernet Switch ES2-64 with 40 ports of 1/10 G Base-T and 6 QSFP ports. Includes 2 DC power supply units and rack rail kit. Requires one option: 1) fans with "Front-to-rear" or "Rear-to-front" airflow direction.

Q: What are the cabling requirements for the switches?

A: For Oracle Ethernet Switch ES2-64, the 40x 10 G Base-T ports can be connected with RJ45 connectors supporting Cat 6A cables.

For the QSFP ports on Oracle Ethernet Switch ES2-64 and Oracle Ethernet Switch ES2-72, both 40 G and 10 G speeds using either twinax or optical cabling solutions are supported.

- Twinax Cabling:

  For 40 G connectivity between QSFP+ ports, use the direct-attach passive cables available in 1, 2, 3, and 5 meters.

  For 10 G connectivity, use the QSFP+ to 4 SFP+ passive copper splitter cables available in 1, 3, and 5 meters.

There is no need for transceivers while using twinax cables.

- Optical Cabling:

  For 40 G connectivity between QSFP+ ports, there are two options using either the QSFP+ LR transceiver or the QSFP+ SR transceiver. Note that the LR transceiver supports single-mode fiber cables and SR transceivers support multimode fiber cables only. The QSFP+ to QSFP+ multimode fiber cables are available in 5, 10, 20, 50, and 100 meters.

  For 10 G connectivity, use MPO to 4x LC optical splitter cables (multimode fiber), available in 10, 20, and 50 meters. The 10 G SFP+ transceivers are required at the pig tail end.

Q: What are the new software features in the next-gen Oracle Ethernet Switch ES2-64 and Oracle Ethernet Switch ES2-72?

A: In addition to industry-standard Layer 2 and Layer 3 features, the switches also support:

VXLAN network overlay functions

OSPF, BGP, OSPF v3, BGP v4

High availability with VRRP v3

Oracle Integrated Lights Out Manager (Oracle ILOM) management

Unified management with Oracle Enterprise Manager

Q: What are the management options?

A: The switches can be managed with Oracle ILOM, Oracle Enterprise Manager, SNMP v1/2/3, and industry-standard CLI.

Q: Will Oracle OpenStack for Oracle Linux or Oracle OpenStack for Oracle Solaris support VXLAN configuration and management?

A: No. It is not supported currently.

Q: Is FCoE supported on the switches?

A: No. The switches can transmit FCoE packets, but they are not FCoE gateway switches.

Q: Are jumbo frames supported?

A: Jumbo frames (9,216 bytes) are supported.

Q: Is 1 G uplink supported on Oracle Ethernet Switch ES2-64 and Oracle Ethernet Switch ES2-72?

A: Yes, 1 G is supported on the 10 G Base-T and QSFP ports. You need to explicitly set the speed at 1 G to get a linkup with a 1 G link partner.

On Oracle Ethernet Switch ES2-64, 10GBase-T ports are auto-negotiating and will automatically link up at 1 G if that is the max the link partner can support. On Oracle Ethernet Switch ES2-64 10GBase-T ports, 10 G/1 G speeds are supported.

Q: What network overlays are supported?

A: VXLAN overlay is supported. The switch acts as a VXLAN gateway, supporting VXLAN bridging and routing. Network Virtualization using Generic Routing Encapsulation (NVGRE) and Generic Network Virtualization Encapsulation (GENEVE) protocols are not supported.

Q: Is VXLAN tunnel endpoint (VTEP) supported?

A: Yes. VTEP is supported along with VXLAN to VLAN mapping.

Q: Is Ethernet VPN supported over VXLAN?

A: No. It is not supported currently.

Q: Which operating system runs on the switches?

A: Oracle Fabric OS — Ethernet, which is based on Oracle Linux.

Q: How many instances of access control lists (ACLs) are supported?

A: Up to 24,000 ACL entries, with ingress and egress ACLs using Layer 2, 3, and 4 fields.

Q: What are the network connectivity options with Oracle's engineered systems and servers and Oracle ZFS Storage Appliance?

A: Typically two switches are connected for high availability and redundancy. Here are the connectivity options:

Oracle's Virtual Compute Appliance: The 10 GbE SFP+ ports from Ethernet I/O modules on Oracle Fabric Interconnect can connect to the QSFP ports on the switch using splitter cables.

Oracle’s Exalogic Elastic Cloud and Exadata Database Machine: For network connectivity to a data center's upstream network, connect the QSFP ports on the gateway switch in Oracle Exalogic to Oracle Ethernet Switch ES2-64 or Oracle Ethernet Switch ES2-72. In the case of Oracle Exadata, you can connect the twin port 10 GbE SFP+ using splitter cables to either switch.

Oracle Supercluster T5-8: Connect the 16x10 GbE SFP+ in the half rack or 32x10 GbE SFP+ ports in the full rack to the QSFP ports on the Oracle Ethernet Switch ES2-72 switch.

Oracle Server X5-2 and Oracle Server X5-2L: Take advantage of the 10GBase-T ports on the motherboard and connect to the 10GBase-T ports on Oracle Ethernet Switch ES2-64.

Oracle ZFS Storage ZS3 appliances: The four network adapters on these appliances can be connected to the QSFP port on Oracle Ethernet Switch ES2-64 or Oracle Ethernet Switch ES2-72.

Q: What is Logical Link Aggregation (LLA) feature?

A: Logical Logical Link Aggregation (LLA) is to allow redundant connectivity to hosts, where the host can use link aggregation / bonding to see a single logical interface and not be aware that this interface does in fact go to a pair of switches.

Q: Can LLA be configured between the ES2-64 and ES2-72 switches?

A: LLA is supported between switches of the same kind. So it is not possible to configure LLA between ES2-64 and ES2-72.

Q: Can the ES2 switches be stacked and managed as a single switch?

A: No. Stacking is not supported. So the switches cannot be managed as single switch.

Q: Is ISSU upgrade supported?

A: No. ISSU upgrade is not supported.

Q: What is the right type of fan for the ES2 switch deployment in server rack and network rack?

A: Ports are considered as “Front” of the switch. Verify that the switch chassis airflow matches the hot aisle and cold aisle orientation in the data center. Choose “Rear-to-front” airflow when switch is mounted in the server rack. Choose “Front-to-rear” airflow when switch is mounted with other network switches in a network rack.

For example, if the switch is co-located in a rack with servers that have front-to-rear airflow and I/O in the back: switch ports are on the front and therefore the switch would normally be installed facing backwards to minimize distance between the switch ports and the I/O ports of the server. In this case select switch chassis with airflow from rear-to-front so that the server and switch airflow are identical: from the front of the aisle (cold aisle) to back (hot aisle).

Q: Do the ES2 switches support MIB II and RFC 1213 ?

A: Yes

Q: How many ports can be aggregated per 802.3ad ? Is QoS with traffic policing supported ?

A: 16 ports can be aggregated to a single port-channel. Yes QoS with traffic policing is supported.

Q: Where and how can the complete description of the MIBs implemented by the ES2-64/ES2-72 found ?

A: The complete list of the supported standard and proprietary MIB files is available on the ES2-64 and ES2-72 switches. Refer to the switch ILOM user manual for steps to access them.

Q: Can the ES2 switches prioritize bandwidth by Class of Service (802.1p)?

A: Yes, 802.1p is supported. Some examples for configuring QoS can be found in the “QoS Administration Guide” at http://docs.oracle.com/cd/E60179_01/index.html The “Sun Ethernet Fabric Operating System CLI Reference, Vol. 8” at the above location provides a detailed description of the commands used to set up QoS.

Cabling Options

Optical Transceiver Options

A: **(X)2124A-N** QSFP Optical SR (supports multimode cables, MPO connector up to 100 m)

Optical Cable Options

A: **7105199** High-bandwidth QSFP optical cable: 5 meters, MPO to MPO

7102869 High-bandwidth QSFP optical cable: 10 meters, MPO to MPO

7102870 High-bandwidth QSFP optical cable: 20 meters, MPO to MPO

7102871 High-bandwidth QSFP optical cable: 50 meters, MPO to MPO

7105206 High-bandwidth QSFP optical cable: 100 meters, MPO to MPO

Optical Splitter Cable Options

A: **X2127A-10M** MPO to 4LC Optical splitter cable, 10 meter, multimode

X2127A-20M MPO to 4LC Optical splitter cable, 20 meter,

multimode

X2127A-50M MPO to 4LC Optical splitter cable, 50 meter, multimode

QSFP to QSFP Direct-Attach Passive Copper Cable Options

A: **X2121A-1M-N** QSFP to QSFP passive copper cable, 1 meter

X2121A-2M QSFP to QSFP passive copper cable, 2 meters

X2121A-3M-N QSFP to QSFP passive copper cable, 3 meters

X2121A-5M-N QSFP to QSFP passive copper cable, 5 meters

QSFP to 4 SFP+ Passive Copper Splitter Cable Options

A: **X2125A-1M-N** QSFP to 4 SFP+ passive copper splitter cable, 1 meter

X2125A-3M-N QSFP to 4 SFP+ passive copper splitter cable, 3 meters

X2125A-5M-N QSFP to 4 SFP+ passive copper splitter cable, 5 meters

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