

Oracle Virtual Networking

Overview and Frequently Asked Questions

March 26, 2013

Overview

Oracle Virtual Networking revolutionizes data center economics by creating an agile, highly efficient infrastructure built on your choice of hardware and software. This open architecture lets you dynamically connect servers, networks, and storage. You create networks and connections entirely in software to enable secure, isolated services that support your business processes and priorities. With Oracle Virtual Networking, all traffic types, including Ethernet and Fibre Channel, traverse a converged infrastructure, resulting in a simpler, more efficient, wire-once environment with flexible connectivity.

Products in the Oracle Virtual Networking family include:

- Oracle Fabric Interconnect F1-4
- Oracle Fabric Interconnect F1-15
- Oracle Fabric Manager
- Oracle Fabric Monitor
- Oracle SDN

Converged I/O and Network Infrastructure

The mass adoption of server virtualization has exposed the network as the next frontier to be negotiated in the pursuit of agile and efficient data centers. Server, storage, and network connectivity can be extremely inefficient, as virtualized servers utilizing traditional approaches are provisioned with numerous physical network and storage connections, each with its own dedicated adapters, cables, switches, and management tools. Lack of virtualization in the network infrastructure has resulted in expensive, underutilized networks, which cannot respond to the demands of dynamic server and storage workloads.

Fabric convergence, whereby all network and storage traffic shares a single high-performance fabric, represents the logical next step in the progression toward highly efficient and agile

data centers. Oracle Virtual Networking provides enterprises with the advantage of deploying a converged data center fabric without requiring a forklift upgrade of existing LAN and SAN infrastructures. Oracle's approach allows customers to capture the untapped value within their underutilized LAN and SAN assets.

Oracle Virtual Networking employs virtualization to let administrators flexibly connect servers to networks and storage. Oracle Fabric Interconnect eliminates the physical storage and networking cards found in every server and replaces them with virtual network interface cards (vNICs) and virtual host bus adapters (vHBAs) that can be deployed on the fly. Applications and operating systems see these virtual resources exactly as they would see their physical counterparts. The result is an architecture that is much easier to manage, far more cost-effective, and fully open.

Software Defined Networking

Traditional data center networks are rigid and hierarchical. Server, storage, and network connectivity is constrained by the network's physical cabling and switch topology. The management of network resources often entails numerous, disparate, and incompatible tools. Data center networks must frequently be re-wired and reconfigured to accommodate new applications or adapt to changing workload demands. This rigidity in the network infrastructure has a tangible impact on organizational results, as business needs suffer and opportunities are lost due to inefficiency.

With the advent of converged data center fabrics, it is now possible to provision each server or storage device with a single physical connection to a virtualized, high-performance fabric. The fabric provides an elastic pool of virtualized network resources that can be allocated and re-allocated dynamically by a unified control plane. With Software Defined Networking, data centers become agile and efficient. The time to provision new applications decreases from days to

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minutes and network capacity can be added to running applications without service disruption.

Customer Benefits

Oracle's software defined networking technology simplifies cloud infrastructure and operations by allowing customers to dynamically and flexibly connect any server to any network and storage, resulting in increased asset utilization and application performance while reducing cost. With an open architecture, Oracle Virtual Networking allows customers to gain the advantages of network virtualization while complementing rather than replacing their existing LAN and SAN resources.

Through virtualization of network resources, customers deploying Oracle Virtual Networking:

- Reduce network infrastructure complexity by over 70%
- Reduce LAN and SAN infrastructure costs by over 50%
- Provision new services and reconfigure resources in minutes, not days

Simplification of IT infrastructure and management

Fabric convergence eliminates the need to have servers provisioned with multiple network interfaces. This not only removes numerous adapters from servers, but also eliminates multiple leaf switches from the network access layer and reduces the number of expensive switch ports consumed in the data center core. In addition to providing a low latency, high bandwidth fabric for server-to-server, and server-to-storage traffic, Oracle Virtual Networking enables all attached servers to connect to existing LANs and SANs using standard Ethernet and Fibre Channel semantics. Oracle Virtual Networking does not disrupt the operations and policies of existing LAN and SAN administration, allowing customers to migrate to converged fabrics at their own pace.

Oracle Virtual Networking provides a unified I/O and network management framework that allows administrators to provision server and storage I/O as well as manage and monitor both Ethernet and Fibre Channel traffic across all servers on a single screen.

Industry's only converged fabric solution supporting real time connection management

Oracle Virtual Networking uniquely allows real time I/O and network provisioning. Network capacity and connections can be added to running servers. Connections can be added or modified without requiring service disruptions or reboots. Oracle Virtual Networking is an ideal solution for cloud or virtualization deployments requiring responsiveness in network provisioning and orchestration.

Frequently Asked Questions

What products are included in the Oracle Virtual Networking portfolio?

Oracle provides a complete portfolio of hardware and software products to provision and manage virtual I/O and networks for servers and storage. The portfolio includes:

- Oracle Fabric Interconnect
- Oracle Virtual Networking Software (Oracle SDN, Oracle Fabric Manager, Oracle Fabric Monitor) for provisioning virtual networks and managing Oracle Virtual Networking deployments
- Sun Datacenter InfiniBand Switch 36 for scaling Oracle Virtual Networking
- Sun InfiniBand Dual Port 4x QDR PCIe Low Profile and Expressmodule Host Channel Adapters M2 for connecting servers and storage systems to Oracle Fabric Interconnect

What is the Oracle Fabric Interconnect?

Oracle Fabric Interconnect replaces the physical storage and networking cards found in every server with virtual network interface cards (vNICs) and virtual host bus adapters (vHBAs) that can be deployed on the fly. It uses the latest InfiniBand networking technology to provide up to 80 Gb/sec of converged networking capacity.

Oracle offers two Oracle Fabric Interconnect models, supporting either 4 or 15 I/O modules.

Oracle Fabric Interconnect Chassis		
Model	Height	I/O Module Slots
Oracle Fabric Interconnect F1-4	2U	4
Oracle Fabric Interconnect F1-15	4U	15

How many network ports and of what type are on the Oracle Fabric Interconnect?

The front panel of each Oracle Fabric Interconnect has 20 Quad Small Form-factor Pluggable (QSFP) connectors for connection to servers, storage, or Sun Data Center InfiniBand Switch 36 systems. The I/O modules installed in the system have their own connectors, which are appropriate for industry standard media types.

What I/O modules are available for Oracle Fabric Interconnect?

Oracle provides I/O modules to connect Oracle Virtual Networking deployments to standard 1 Gb Ethernet, 10 Gb Ethernet, or 8 Gb Fibre Channel networks. The following modules are available:

- Oracle Fabric Interconnect Ten Port 1 Gb Ethernet Module
- Oracle Fabric Interconnect Single Port 10 Gb Ethernet Module
- Oracle Fabric Interconnect Quad Port 10 Gb Ethernet Module
- Oracle Fabric Interconnect Dual Port 8 Gb Fibre Channel Module

How is a server within an Oracle Virtual Networking deployment viewed by the Ethernet network?

Oracle Fabric Interconnect Ethernet modules use industry standard Ethernet NICs which are “shared” by the physical or virtual servers that are connected to the module. Therefore, the Ethernet network is presented with a collection of Ethernet NICs.

Does Oracle Virtual Networking change the way the installed LAN is administered today?

No. Oracle Fabric Interconnects do not appear as a foreign switch or router to the LAN and therefore, no modifications to network administration tools or methods are required.

What type of Ethernet switch should the Ethernet I/O modules be connected to?

As the Ethernet modules expose standard Ethernet NICs to the LAN, they should be connected to an L2 capable switch.

How is a server within an Oracle Virtual Networking deployment viewed by the Fibre Channel SAN?

Oracle Fabric Interconnect Fibre Channel modules use industry standard Fibre Channel HBAs which are “shared” by the physical or virtual servers that are connected to the module using N_Port ID Virtualization (NPIV). The SAN is presented with a collection of Fibre Channel initiators (WWNs/WWPNs) which can then be zoned like regular HBA WWNs/WWPNs.

Does Oracle Virtual Networking change the way the installed SAN is administered today?

No. Oracle Fabric Interconnects do not appear as a foreign switch or router to the SAN and therefore, no modifications to network administration tools or methods are required.

What InfiniBand Host Channel Adapters are required to connect to the Oracle Virtual Networking?

Server or storage devices connecting to Oracle Fabric Interconnects should use either the Sun InfiniBand Dual Port 4x QDR PCIe Low Profile Host Channel Adapter M2 or the Sun InfiniBand Dual Port 4x QDR PCIe Expressmodule Host Channel Adapter M2.

What Oracle SPARC servers are supported with Oracle Virtual Networking?

Oracle Virtual Networking is supported with a number of SPARC platforms. For the current list of supported servers, see:

<https://wikis.oracle.com/display/SystemsComm/Home#tab:Oracle-Virtual-Networking>

What versions of Oracle Solaris are supported with Oracle Virtual Networking?

Oracle Virtual Networking is supported with Oracle Solaris for SPARC and x86. For the current list of supported operating system and hypervisor versions, see:

<https://wikis.oracle.com/display/SystemsComm/Home#tab:Oracle-Virtual-Networking>

What operating systems and hypervisors are supported for servers in Oracle Virtual Networking deployments?

Oracle Virtual Networking is supported with leading hypervisors and operating systems. For the current list of supported hypervisors and operating systems, see:

<https://wikis.oracle.com/display/SystemsComm/Home#tab:Oracle-Virtual-Networking>

What Server, Storage, and Networking products are interoperable with Oracle Virtual Networking?

Oracle Virtual Networking is interoperable with leading server, storage, and networking products. For the current interoperability list, see:

<https://wikis.oracle.com/display/SystemsComm/Home#tab:Oracle-Virtual-Networking>

What InfiniBand cables can be used to connect servers to Oracle Fabric Interconnects?

Oracle supports copper cables for distances of 1 – 5 meters and optical cables for distances of 5 – 100 meters.

Supported InfiniBand Copper Cables	
Description	Oracle Part
QSFP to QSFP passive copper cable: 1 meter	X2121A-1M-N
QSFP to QSFP passive copper cable: 2 meter	X2121A-2M
QSFP to QSFP passive copper cable: 3 meter	X2121A-3M-N
QSFP to QSFP passive copper cable: 5 meter	X2121A-5M-N
Supported InfiniBand Optical Cables	
Description	Oracle Part
QSFP parallel fiber optics short wave transceiver (NOTE: Quantity 2 transceivers <u>required</u> for each cable below)	X2124A-N
High bandwidth QSFP optical cable: 5 meters, MPO to MPO	7105199
High bandwidth QSFP optical cable: 10 meters, MPO to MPO	7102869
High bandwidth QSFP optical cable: 20 meters, MPO to MPO	7102870
High bandwidth QSFP optical cable: 50 meters, MPO to MPO	7102871
High bandwidth QSFP optical cable: 100 meters, MPO to MPO	7105206

What transceivers are available to connect the Oracle Fabric Interconnect Single Port 10 Gb Ethernet Module to an Ethernet switch?

The Oracle Fabric Interconnect Single Port 10 Gb Ethernet Module comes with a short-range transceiver installed in the module. For customers requiring support for single mode fiber, Oracle offers LR transceivers.

Supported LR Transceivers	
Description	Oracle Part
10 GigE LR XFP Transceiver, RoHS 6 Compliant	X5560A-Z-N

What cables and transceivers are available to connect the Oracle Fabric Interconnect Quad Port 10 Gb Ethernet Module to an Ethernet switch?

The Oracle Fabric Interconnect Quad Port 10 Gb Ethernet Module supports SFP+ compatible transceivers and cables.

Supported SFP+ Transceivers and Cables	
Description	Oracle Part
Dual rate transceiver: SFP+ SR. Support 1 Gb/sec and 10 Gb/sec dual rate	X2129A-N
Sun SFP+ to 1000 Base-T adapter	X2123A
Sun dual speed 10 GbE SFP+ long reach pluggable transceiver	X5562A-Z
Twinax Passive Copper Cable: 1 meter	X2130A-1M-N
Twinax Passive Copper Cable: 2 meter	7105148
Twinax Passive Copper Cable: 3 meter	X2130A-3M-N
Twinax Passive Copper Cable: 5 meter	X2130A-5M-N

What are the product dependencies for each of the Oracle Virtual Networking software products?

All software requires at least one Oracle Fabric Interconnect system hardware be present within the environment.

Oracle Virtual Networking Software Prerequisites	
Description	Requires
Oracle Fabric Manager - Chassis Perpetual	- Oracle Fabric Interconnect System Hardware
Oracle Fabric Monitor - Chassis Perpetual	- Oracle Fabric Interconnect System Hardware - Oracle Fabric Manager
Oracle SDN - Physical Server Perpetual	- Oracle Fabric Interconnect System Hardware - Oracle Fabric Manager

What kind of service and warranty is offered on the Oracle Virtual Networking?

The warranty for Oracle Virtual Networking hardware is 1 year, 2nd business day.

Where can I find product documentation for Oracle Virtual Networking products?

Documentation for the Oracle Virtual Networking can be found at:

<http://www.oracle.com/technetwork/documentation/oracle-net-sec-hw-190016.html>

Where can I find drivers and host utilities for Oracle Virtual Networking?

Drivers and host utilities for Oracle Virtual Networking can be found at:

<http://www.oracle.com/technetwork/server-storage/xsigo-1870185.html>



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