

# SAN Connectivity for Oracle VM

## AT A GLANCE

Oracle has now entered the virtual server arena with the introduction of Oracle VM, based on the Open Source Xen™ 3.1 hypervisor. Emulex, an active participant in Open Source Linux and Xen, now supports Oracle VM. Emulex is driving technological innovation with Oracle and the Linux community to enhance virtualization and data integrity for SAN-connected deployments.

## PRODUCTS

Emulex LightPulse® 4Gb/s HBAs

## APPLICATIONS

Oracle VM deployments

## Server Virtualization, Reshaping the Data Center

Server virtualization is one of the fastest growing technologies in the data center. Its popularity is being driven by IT's need to dramatically improve resource and operational efficiencies, while improving their responsiveness.

## Oracle Introduces Oracle VM

Oracle has now entered the virtual server arena with the introduction of Oracle VM. Oracle VM is a powerful and easy to use solution that delivers the benefits of server virtualization and allows users to create and manage multiple Virtual Machines (VM) hosted on the same physical server but behaving like independent physical servers. Each VM possesses its own virtual CPUs, network interfaces, storage and operating system. In addition, with Oracle VM, users have access to an easy to use, rich, graphical interface to create and manage their virtual environments.

Oracle VM offers an enterprise-class, scalable, high-performance platform for server virtualization. Oracle VM includes two components: Oracle VM Manager and Oracle VM Server. The Oracle VM Server is Open Source and is based on the Xen™ 3.1 hypervisor. It includes a self-contained installation of Oracle Enterprise Linux 5, and enhanced versions of Xen™ hypervisor components. Oracle VM Manager is an easy to use browser-based management tool that allows users to manage VMs across various physical machines and enables operations such as creating a VM, cloning a VM, sharing a VM, configuring a VM, and booting a VM. Oracle VM is installed independently of any existing Oracle Enterprise Linux installation.

### **Storage Area Network (SAN) Connectivity for the Data Center**

As server virtualization has been on the rise, so in turn has SAN connectivity. The full consolidation, high-availability and workload balancing benefits of server virtualization require a robust, low-overhead networked storage infrastructure. This requirement has resulted in over 80% of today's virtual servers being Fibre Channel SAN connected.

Similarly, SAN connectivity is a requirement for enterprise class Oracle database deployments. The availability, performance, and accessibility made possible by storage area networks and high-end storage arrays, has made SANs a de facto standard for enterprise class Oracle deployments.

### **Emulex—Leader in Enterprise SANs**

Emulex is a market and technology leader in Fibre Channel connectivity for enterprise class SANs. With over 3 million Fibre Channel HBAs installed worldwide, Emulex has become the dominate choice of the Fortune 100 with over 95% using Emulex Fibre Channel HBAs for their mission critical applications.

Over the last few years, Emulex has taken a leadership position in advancing Open Source I/O connectivity and has gained market prominence for Linux IT deployments. These gains have been driven by Emulex's advanced driver architecture, renowned quality and reliability, high performance, ease of management and technology leadership. Emulex is an active member in the Linux Open Source community. Emulex contributions include architecting and maintaining the Linux FC Transport layer, contributing substantially to the sysfs design, and leading driver development for XEN Hypervisor support.

### **Emulex and Oracle Partnership**

Emulex and Oracle have long partnered together, delivering interoperable solutions to enterprise data centers. Emulex Fibre Channel HBAs are certified and fully supported with Oracle Enterprise Linux, and were first to be supported as part of Oracle's Unbreakable Linux program. Emulex Fibre Channel drivers are included with Oracle Enterprise Linux and fully supported by Oracle technical support.

Emulex and Oracle are partnering to advance enterprise-class storage connectivity. Oracle and Emulex worked with LSI and Seagate to establish the Data Integrity Initiative (DII) to develop the methodology for driving true end-to-end data integrity based on the T10 DIF standard. DII has now moved to the next level by establishing a SNIA task force to expand this discussion to other companies who have a similar interest in enhancing data integrity.

With the introduction of Oracle VM, Oracle and Emulex are once again pleased to announce that Emulex LightPulse® Fibre Channel HBAs are fully supported under Oracle VM from day one of its availability. As a long time contributor to Xen™ 3.1 hypervisor technology, Emulex advanced device drivers are extensively tested and provide seamless interoperability with the entire storage ecosystem.

### Next Generation SAN Support

In addition to support Oracle VM today, Emulex is working with Oracle and XEN on next-generation virtual server implementation. A key technological contribution will be support for N\_Port ID Virtualization (NPIV). Emulex co-developed (with IBM) NPIV technology. Emulex then drove the industry adoption of NPIV as the ANSI T11 standard.

NPIV is a key feature of Emulex Virtual HBA technology, enabling each physical HBA port to register multiple “virtual ports” identified by WWPN within the fabric. Support of NPIV will enable each virtual machine on an Oracle VM to have a unique Fibre Channel Worldwide Port Name (WWPN) providing a monitored data path to the SAN through the Virtual HBA port. By providing a unique Virtual HBA port, storage administrators will be able to implement SAN best practices such as LUN-masking and zoning for individual virtual machines. Administrators will also be able to take advantage of powerful SAN management tools and simplified migration of virtual machines and their storage resources.

Emulex has been working with the Xen Open Source Community to implement the NPIV standard in the Xen Hypervisor. Emulex was the first HBA vendor to develop and demonstrate NPIV-enabled Fibre Channel HBAs solutions with support for the Linux Xen virtualization engine. Emulex was also the first to submit and have accepted an NPIV enabled Fibre Channel HBA driver for inclusion with the 2.6.23 Linux upstream kernel.

### Emulex and Oracle Driving SAN Innovation in the Data Center

Oracle VM will accelerate virtual server adoption, with a high performance consolidation platform supported by Oracle, an enterprise class solution provider. With Oracle VM, users can now easily consolidate smaller, underutilized servers, and significantly improve utilization of existing resources and therefore improve the ability to respond to business changes, while reducing planned downtime and overall management costs.

Emulex is pleased to add Oracle VM to the currently supported Oracle Linux platforms: Oracle Enterprise Linux 4 and higher. Thereby giving enterprise SAN customers a highly reliability, easily managed, robust Fibre Channel connectivity solution. Together Emulex and Oracle will continue to be trusted suppliers to the enterprise data center. Oracle and Emulex synergistic partnership guarantees interoperability, common support, and innovation.



**Emulex Corporation**  
3333 Susan Street  
Costa Mesa CA 92626 USA  
Tel 714.662.5600  
www.emulex.com

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**Oracle Corporation**  
500 Oracle Parkway  
Redwood Shores CA 94065 USA  
Tel 650.506.7000  
www.oracle.com

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[www.emulex.com](http://www.emulex.com)

**World Headquarters** 3333 Susan Street, Costa Mesa, CA 92626 +1 714 662 5600

**Wokingham, UK** +44 (0) 118 977 2929 | **Munich, Germany** +49 (0) 89 97007 177  
**Paris, France** +33 (0) 158 580 022 | **Beijing, China** +86 10 68499547