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COMPETITIVE BRIEF

CONNECTIVITY

Emulex OCe11102-F vs. Intel X520 FCoE with VMware vSphere 5

Data centers have traditionally used separate infrastructures for local area networks (LANs) based on TCP/IP and storage area networks (SANs) based on Fibre Channel. Wide-spread adoption of server virtualization has resulted in server deployments with multiple Ethernet adapters and Fibre Channel host bus adapters (HBAs) and a large number of cables and network connections. The overall result has been:

- High capital costs for adapters, switch ports and cables
- High operational costs for power, cooling and IT management

Fibre Channel over Ethernet (FCoE) provides a standard-based solution that supports transmission of Fibre Channel traffic over a lossless 10Gb/s TCP/IP network. This is particularly compelling with virtualized servers running VMware vSphere 5. With FCoE, 6-8 1Gb Ethernet adapter ports and 2 HBA ports can be replaced with a dual-port 10 Gigabit Ethernet (10GbE) adapter that supports FCoE.

With the release of VMware vSphere 5.0, data centers have two FCoE options:

- Hardware FCoE using a Converged Network Adapter (CNA) that supports full FCoE protocol offload
- Software FCoE using a 10GbE Network Interface Card (NIC) with partial FCoE protocol offload

This competitive brief will provide a comparison of FCoE deployments on VMware vSphere 5 using the Emulex OneConnect™ OCe11102-F CNA and the Intel X520 NIC.

At a Glance

Key benefits with OCe11102-F adapters

- Simplified deployment and configuration
- Field-proven Fibre Channel software stack
- Enterprise adapter management for entire Fibre Channel SAN
- Simplified Boot from SAN
- Optimized CPU performance with full protocol offload

OneConnect OCe11102-F

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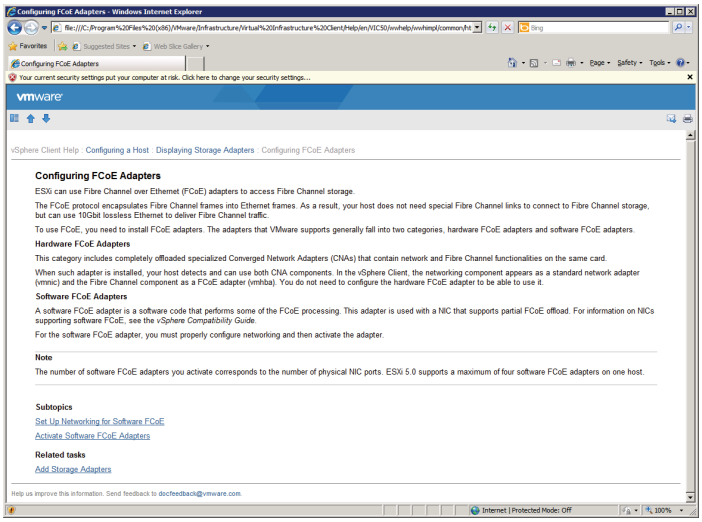
Setup and Configuration

As described in the configuring FCoE adapters for VMware help screen below, the setup procedure is much easier with a CNA that supports hardware FCoE:



Hardware FCoE Adapters

"When such adapter is installed, your host detects and can use both CNA components. In the vSphere Client, the networking component appears as a standard network adapter (vmnic) and the Fibre Channel component as a FCoE adapter (vmhba). You do not need to configure the hardware FCoE adapter to be able to use it."

Software FCoE Adapters

"A software FCoE adapter is software code that performs some of the FCoE processing. This adapter is used with a NIC that supports partial FCoE offload. For the software FCoE adapter, you must properly configure networking and then activate the adapter."

Deployment using an Intel X520 NIC with software FCoE requires a full understanding of both network and storage environments. As a minimum, the network or storage administrator must do the following for each port after installing current drivers:

- Create VMkernel port
- Assign Virtual LAN (VLAN) to VMkernel port
- Assign IP address to VMkernel port
- Modify NIC teaming to only use physical uplink
- Add FCoE initiator and associate to NIC port

As a best practice, current drivers should be installed for an Emulex OCe11102-F CNA. No additional setup is required. Adapter ports are recognized by the VMware ESX hypervisor and LUNs are automatically discovered for assignment to virtual machines or creation of a virtual machine file system (VMFS). There is no need for the storage administrator to deal with network configuration issues.

Reliable Fibre Channel Software Stack

Emulex OneConnect OCe11102-F adapters support FCoE with full protocol offload and acceleration using the same drivers that work with Emulex LightPulse® Fibre Channel Host Bus Adapters (HBAs).

The Emulex Fibre Chanel software stack has matured with ten product generations and shipment of over 11 million ports. It's a trusted technology that is widely deployed for business critical applications. The software FCoE and NIC option from Intel lacks the multi-generation, battle-tested pedigree that data centers demand for enterprise-class deployments.

As further confirmation of proven reliability, Emulex OneConnect FCoE adapters have been qualified by nine of the top ten server and storage providers. This includes standard stand-up adapters for rack-mount servers and custom form factor adapters for blade servers manufactured by HP, IBM, Dell, Cisco and Fujitsu Technology Solutions.

Enterprise Adapter Management

Current FCoE technology is generally limited to a single-hop from a server to an FCoE-capable switch that routes Fibre Channel traffic into and back from an existing fabric. The net result is most FCoE deployments are connected to an existing FC infrastructure of switches and storage arrays.

In order to fully leverage the existing Fibre Channel investment, data centers need a management application that fully supports the entire SAN environment.

The Emulex OneCommand™ Manager application provides management of Emulex One Connect 10GbE adapters and LightPulse HBAs throughout the data center with a single view of the entire network. OneCommand Manager supports NIC, iSCSI and Fibre Channel functions for OCe11102-F adapters to enable a comprehensive, centralized management console.

The OneCommand Manager application provides a graphical user interface (GUI), a scriptable command line user interface (CLI) and a plug-in module that is fully integrated with VMware vCenter.

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Boot from SAN

Boot-from-SAN (BFS) is a key SAN feature that allows servers to boot off a remote disk and is best supported with a hardware adapter. As opposed to software FCoE, the OCe11102-F CNA supports BFS configuration in a pre-boot environment using the same technologies that have been perfected over many years with Emulex Fibre Channel HBAs.

Reliability is enhanced when the same connection and settings for the boot LUN are used before booting, during the boot process and when the ESX hypervisor is running.

Performance

New servers are shipping with more cores and memory which is enabling much higher virtual machine densities. The end result is a requirement for greater I/O bandwidth and optimized CPU efficiency.

Emulex OCe11102-F CNAs support FCoE with full protocol offload. This allows critical CPU resources to be used to maximize virtualization ratios and support CPU-intensive applications.

Summary

Emulex OneConnect OCe11102-F CNAs provide several important benefits relative to a an Intel X520 NIC and software-based approach:

- Simplified deployment and configuration using a separate hardware adapter function
- Field-proven Fibre Channel software stack
- Enterprise management with a centralized console for CNA, HBA and network ports
- Adapter-based Boot from SAN capability
- Optimized CPU performance with full FCoE protocol offload

Data centers can deploy FCoE using Emulex OCe11102-F CNAs with confidence based on a track record of proven reliability and performance.

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