



Top-5 Reasons for Deploying Network Convergence

Global competition and rapidly changing business dynamics are forcing businesses to align their IT infrastructure to be more agile. Data center managers are challenged to respond efficiently to market changes, customer demands and growth opportunities.

While server consolidation initiatives such as server virtualization and blade server deployments have enabled higher efficiencies and agility in the computing infrastructure, the overall networking infrastructure has not kept pace with the changing dynamics. Networks are still managed as individual silos, where storage and networking traffic are each carried over a dedicated infrastructure.

Consolidation of these multiple networks into a common infrastructure that can be shared by multiple traffic types helps to overcome the emerging network challenges. Ethernet innovations such as lossless characteristics, efficient physical media and transceiver optimizations are enabling 10 Gigabit Ethernet (10GbE) to be the technology of choice for converging data center networks. Besides Ethernet innovations, the emergence of Fibre Channel over Ethernet (FCoE) technology is enabling network convergence in enterprise data centers. The key reasons for deploying network convergence in the data center include:

1. Lowered Total Cost of Ownership

Deploying a converged network with 10 Gigabit Ethernet simplifies networking by carrying Local Area Network (LAN) and Fibre Channel Storage Area Network (SAN) traffic over a single wire. This lowers capital infrastructure expenses by reducing the number of adapters, switch ports and cables, and lowers operational expenses by reducing power, cooling and administrative costs. The converged network simplifies cable management, allowing hosts to connect to LAN and SAN using a converged network adapter. With the servers now enabled for all connectivity options, this deployment model enables IT managers to roll out new applications and services more efficiently. The Convergencomics™ of the simplified infrastructure results in:

- A decrease in the number of adapters and cables by as much as 80%
- A reduction in switches, adapters and rack space by as much as 28%
- A reduction of power and cooling costs by up to 42%



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In addition, leveraging the Emulex OneConnect OCe10000 and OCe11000 Universal Converged Network Adapters (UCNA) CPU offload feature for processing of Ethernet, iSCSI and Fibre Channel traffic frees up the host processor to focus on application and virtual machine (VM) management. CPU efficiency means that smaller servers can be used, further contributing to the reduction of power and cooling costs.

2. Improved Business Agility

Deploying a converged network in data centers enables network consolidation and facilitates network bandwidth provisioning for various applications on demand. The use of network convergence complements server virtualization deployments and enables IT organizations to dynamically respond to changing business demands through rapid provisioning of application and infrastructure services from shared pools of consolidated compute, storage and network resources.

Higher CPU efficiency and the highest virtual port count per VM, supported by Emulex OCe10000 and OCe11000 UCNAs, enables the converged network to offload processing from the hypervisor and support more VMs per server. Dynamic QoS bandwidth allocation based on individual VMs gives data centers the flexibility and performance they need to maximize server consolidation. This collection of virtual machine-optimized networking and storage services enables IT managers to tie virtual machine mobility to policy- and event-based triggers, such as CPU utilization, thermal load and environmental variables.

3. Protect Existing Infrastructure Investments

One of the key advantages of network convergence is that the technology does not require a rip-and-replace approach. Based on standard Fibre Channel and iSCSI protocols, converged networks can be phased into existing SANs without affecting the existing server and storage infrastructure or the processes required to manage and support existing applications.

4. Green Data Centers

Environmental regulations across the world are requiring data centers to be designed optimally for maximum energy efficiency and minimum environmental impact. Deploying converged networks in the data center reduces the power consumption in data center networks, maximizes cooling efficiency and minimizes the data center footprint—all of which helps to achieve a green data center.

In addition, the Emulex OCe10000 and OCe11000 UCNAs offload I/O processing. This feature directly translates into more virtual machines per physical server running virtual server hypervisors, thereby improving data center energy efficiency.

5. Simplified Management

Deploying network convergence enables management of multiple protocols throughout the data center from a centralized management console. The Emulex OneCommand™ Manager application provides powerful adapter provisioning and diagnostic capabilities designed to help increase administration efficiency and business agility. This approach protects existing investments in management tools and processes and thus lowers the long-term operating cost of the data center. In addition, network convergence is fully compatible with common Fibre Channel security mechanisms. This enables IT departments to protect the SAN infrastructure from unauthorized access, WWN spoofing, host masquerading, rogue/compromised access and non-malicious and administrator-caused outages using the same tools and processes that organizations have used so far.

Consolidation and virtualization are the key data center initiatives for transitioning from existing IT infrastructures to more efficient, agile infrastructures. Network convergence fully complements virtualization initiatives and provides the foundation for a truly agile end-to-end infrastructure. Network convergence is all the more attractive since it powers this transition while achieving significant reductions in capital equipment and operational expenses.



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