



Accelerate Microsoft UC&C Applications with Dell and Emulex

Optimize end user productivity with an integrated, virtualized Unified Communications and Collaboration (UC&C) platform that offers high performance, power efficiency and increase return on investment (ROI)

Effective communication and sharing of information in a mobile, globally distributed world is an increasing challenge – especially considering the ongoing need to lower operational costs. To meet this challenge, organizations need flexible UC&C solutions that enable people to locate one another and share information more efficiently from anywhere, at anytime, using any device.

A UC&C solution enabled by Microsoft Exchange, Microsoft Lync and Microsoft SharePoint software provides organizations with essential productivity tools to accomplish everyday tasks.

- Microsoft Exchange Server is a popular solution for enterprise email messaging.
- Microsoft Lync is for real-time communication, such as instant messaging and audio/video/web conferencing.
- Microsoft SharePoint provides a web-based engine and a platform for collaborative sites, content management systems, publishing intranets, business intelligence systems and web portals.

Dell UC&C enterprise solutions, inclusive of award-winning servers, storage, networking, software and services, incorporate Microsoft Windows Server 2012 with Hyper-V, in combination with Microsoft Exchange Server 2013, Lync Server 2013 and SharePoint Server 2013, to provide a compelling solution that enables IT to achieve greater efficiency, in a modern data center. Microsoft Windows Server 2012 with Hyper-V now provides an industrial strength virtualization platform, to run I/O intensive enterprise applications, such as Microsoft UC&C applications (Exchange, Lync and SharePoint) and SQL Server.

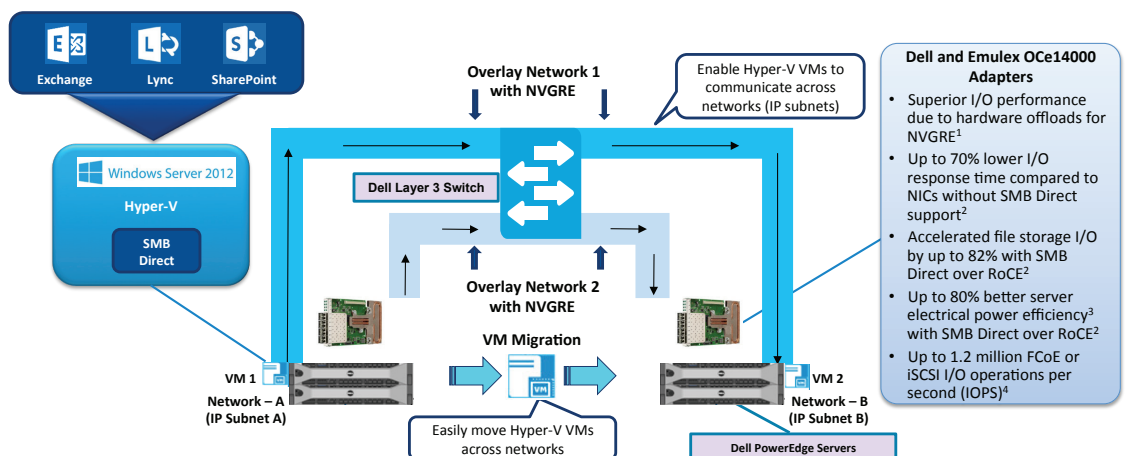
To address the I/O demands of Microsoft UC&C applications running on large Hyper-V deployments, the following questions need to be considered:

1. Can I/O technologies optimize application performance on servers running Hyper-V?
2. What I/O technologies and performance will simplify virtual machine (VM) migration, accelerate VM-to-VM communications and help scale network capacity?
3. Can common Hyper-V networking I/O solutions be leveraged across all applications on any server?

While Microsoft delivers Network Virtualization with Generic Routing Encapsulation (NVGRE) overlay networking and Server Message Block (SMB) Direct to address these I/O needs, Emulex OCE14000 10Gb Ethernet (10GbE) adapter offload technology and RDMA over Converged Ethernet (RoCE) support is key to enhancing any Hyper-V deployment with significant I/O performance and architectural features (represented in the figure below).

Dell and Emulex Advantages

Microsoft UC&C applications, running on Windows 2012 Hyper-V, benefit from Emulex leading network adapters supporting overlay network tunneling offload for Microsoft NVGRE, RoCE over Microsoft SMB Direct and storage offloads.



- Dell and Emulex OCE14000 Adapters**
- Superior I/O performance due to hardware offloads for NVGRE¹
 - Up to 70% lower I/O response time compared to NICs without SMB Direct support²
 - Accelerated file storage I/O by up to 82% with SMB Direct over RoCE²
 - Up to 80% better server electrical power efficiency³ with SMB Direct over RoCE²
 - Up to 1.2 million FCoE or iSCSI I/O operations per second (IOPS)⁴

Hyper-V Solution Benefits

Microsoft UC&C solutions running on Windows Server 2012 with Hyper-V virtualization provide many solution benefits, including the following:

- Move VMs (Live Migration) easily, without network reconfiguration costs, and save up to \$1,800 per VM migration event⁵
- Simplify VM-to-VM communications across networks (IP subnets)
- Break the 4,096 virtual LAN (VLAN) ID barrier to enable up to 16 million private networks
- Applicable to any workload on private and hybrid Hyper-V-based cloud networks

Improve Throughput and Efficiency with Emulex NVGRE Offload Support

Dell 10GbE networking solutions, which include Emulex OCE14000 adapters, provide hardware offload support for NVGRE, supported by Microsoft. This support delivers higher throughput and power efficiency, when compared to all other adapters that lack offload capability.

Boost Communication and Collaboration Performance with Microsoft SMB Direct Storage I/O

Microsoft UC&C applications (Exchange, Lync and SharePoint) running in Hyper-V clusters, can now utilize SMB Direct which supports Network Interface Cards (NICs) that accelerate file storage I/O and can reduce I/O time by bypassing the host TCP/IP stack, reducing data copies. RoCE is an underlying, industry-standard networking protocol for SMB Direct. By offering SMB Direct over RoCE support, Dell Emulex OCE14000 10GbE adapters for Dell servers accelerate application file storage I/O by up to 82 percent, and reduce I/O response time by up to 70 percent, when compared to adapters that do not have this support.

Consistent Application Performance with Dell and Emulex I/O Portfolio

IT agility demands infrastructure flexibility to run any workload, with consistent performance, anywhere, in the Hyper-V based data center or private hybrid cloud environment. Emulex and Dell deliver this flexibility with in-box Windows Server 2012 drivers for both OneConnect® 10GbE adapters and LightPulse® Gen 5 (16Gb) Fibre Channel (FC) Host Bus Adapters (HBAs). With Ethernet performance of up to 1.2 million I/O operations per second (IOPS) and FC performance of up to 1.2 million IOPS,⁶ these Emulex adapters, offered by Dell, accelerate any Hyper-V deployment.

Conclusion

Data centers can increase their ROI with Dell and Emulex, who deliver the industry-leading Ethernet adapters with Microsoft NVGRE offload and SMB Direct over RoCE support, allowing IT managers to build the most efficient and resilient Hyper-V scale-out networks to accelerate Microsoft UC&C applications, for improved end user productivity. FC high performance also increases file storage I/O significantly.

Dell and Emulex Advantages for Microsoft UC&C Solutions Incorporating Windows 2012 with Hyper-V

APPLICATION ACCELERATION	SCALABILITY	EFFICIENCY
<ul style="list-style-type: none">■ Accelerate application performance with higher I/O throughput with the Emulex OCE14000 adapters for Dell providing Microsoft NVGRE offload support■ Accelerate file storage I/O by up to 82% and lower I/O response time by up to 70% with SMB Direct over RoCE⁴■ Accelerate application block storage I/O for Hyper-V with Gen 5 FC HBAs capable of up to 1.2 million IOPS	<ul style="list-style-type: none">■ More traffic without adding I/O ports with Emulex OCE14000 NVGRE offload-enabled adapters for Dell servers■ 10GbE connectivity delivers network capacity to drive more VM traffic across more host servers■ Dell PowerEdge servers scale memory and CPU to deliver more VMs per server	<ul style="list-style-type: none">■ Emulex OCE14000 adapters for Dell servers with SMB Direct over RoCE have up to 80% better server electrical power efficiency than adapters not using RoCE■ Flexibility with inbox Windows Server 2012 drivers for both Ethernet adapters and Gen 5 FC HBAs

¹ Emulex Labs blog, "The Benefits of Network Virtualization Offload Technologies to Optimize Performance for NVGRE," June 2013

² IT Brand Pulse, "Blade Server I/O and Workloads of the Future," November 2014

³ Power efficiency = Server power consumption in watts per 1Mbps I/O throughput

⁴ Maximum product specification

⁵ Presentation at Open Networking Summit, April 2012

⁶ Emulex LPe16000B 16Gb Fibre Channel HBA Evaluation



For product information, please visit our website at www.emulex.com/Dell