CloudX Hyper-Converged Infrastructure for OpenStack with Supermicro

Introduction

Businesses of all sizes are turning to the cloud for an agile and elastic IT infrastructure to power their services and operations, and they see tremendous value in a pre-validated infrastructure that integrates compute, storage, networking and software into an efficient, application-centric cloud solution that is simple to deploy and easy to scale. Mellanox CloudX™ defines a group of reference architectures that help businesses build turn-key, elastic and efficient cloud powered Mellanox's Efficient Virtual Network (EVN)[1], high-volume server and storage, and cloud software packages. EVN is delivered through a complete 10/25/40/50/56/100 Gb/s Ethernet and InfiniBand adapter, switch, cable product lines.

CloudX for OpenStack improves the classical architecture for OpenStack deployment with offload, acceleration and virtualization features of EVN to enhance OpenStack cloud efficiency with advanced, scale-out software defined storage technologies. Mellanox and Supermicro have partnered to integrate EVN with Supermicro's high-density, cost-effective server and storage products into orderable, converged or hyper-converged rack-level cloud solutions based on CloudX reference architecture. These turn-key solutions are delivered with OpenStack as cloud management platforms, and cloud storage management software such as ScaleIO from EMC, simplifying the deployment of the most efficient and scalable private, public and hybrid clouds.

Supermicro CloudX Solution Benefits

- **Efficiency:** Provide applications with an optimized and integrated cloud infrastructure that enables the efficient use of compute and storage resources through ultra-high performance networks, low-latency connections, and traffic isolation.
- **Elasticity:** Leverage open and flexible cloud management and software-defined storage software that create scale-out infrastructure which are scalable and resilient.
- **Simplicity:** Turn-key integrated solutions that have been pre-validated and optimized, so it is easy to procure, deploy and operate.
- **Cost-effectiveness:** Lower total cost of ownership driven from high density hardware, workload efficiency, and automation.

[1] For more details read the whitepaper: Efficient Virtual Networks: The Key to building an Efficient Cloud

Solution Architecture and Components

As shown in Table 1 Supermicro's CloudX solution includes the following components in a standardized configuration that scales from entry-level designs for hundreds of users up to large, high-performance workloads for thousands of users:

	Configuration
Server and Storage	Supermicro SuperServer SYS-F627R2-F73: • Ivy Bridge 8-core E5-2640 • 64GB DDR3 RAM • 4x Micron M500DC -800GB
Network Fabric	Mellanox SX-14 family Switch
	Mellanox ConnectX-3 Pro VPI Adapter
OpenStack Distribution	Mirantis Fuel 5.1
Storage Management	EMC ScaleIO 1.31.1

Table 1: Supermicro CloudX Solution Configuration

- Supermicro SuperServer, ranging from single Pentium 4 and dual Xeon to quad Xeon MP and dual Itanium systems, with proven high level of quality and performance.
- Mellanox SX-14XX family of high performance Virtualized 10/40/56 Gb/s Ethernet switches. In addition to offering full L2/L3 switching, routing, and data center bridging capabilities; these switches support a fully virtualized KVM control plane that allow VM's and applications to be hosted on the switch.
- Mellanox ConnectX-3 Pro VPI Adapter, the highest performing and most flexible interconnect solution for PCI Express Gen3 servers with distinguished features such as guaranteed bandwidth and low-latency , hardware-based I/O virtualization, CPU and storage offload and acceleration, and virtualization offload.
- Cloud and storage management software packages. Initial release of the solution includes Mirantis Fuel OpenStack and EMC ScaleIO.

Figure 1 shows the architecture of this integration. For more details, please refer to http://www.mellanox.com/related-docs/applications/WP_ScaleIO-Hyper-Converged.pdf.

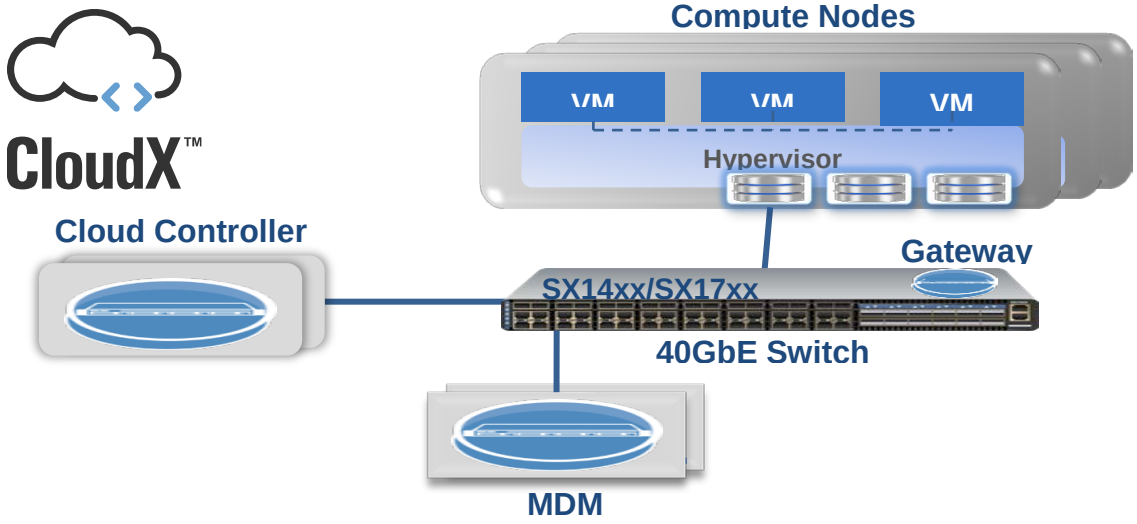

Figure 1: CloudX Hyper-Converged Cloud Solution Architecture

Summary

In summary, these CloudX-based joint solutions between Mellanox and Supermicro are built to unleash cloud performance and efficiency. They will be ideal for Big Data/Hadoop, database, web services, Telco Network Function Virtualization (NFV), High Performance Computing (HPC), and enterprise Virtual Desktop Interface (VDI) type of applications. These solutions are available from Supermicro direct as well as Supermicro authorized resellers and channel partners.