

Third Generation Dell EMC XC Series Appliances Based on 14th Generation Dell EMC PowerEdge Servers

The industry's #1 hyper-converged portfolio gets even better as Dell EMC HCI solutions embrace the 14th Generation PowerEdge server platforms and take HCI to the next level with the first and only industry standard architecture designed and optimized for HCI.

The Dell EMC XC Series is a hyper-converged solution that combines storage, compute, networking, and virtualization using industry-proven Dell EMC PowerEdge™ servers and Nutanix software. By combining the hardware resources from each server appliance into a shared-everything model for simplified operations, improved agility, and greater flexibility, Dell EMC and Nutanix together deliver simple, cost-effective solutions for enterprise workloads.

XC Series appliances are now available in configurations built with the newly designed 14th Generation of the [Dell EMC PowerEdge server portfolio](#). Featuring higher core counts, greater network throughput, and improved power efficiency, Dell EMC HCI is the ideal foundation for software-defined data center initiatives from the edge, to the core, and on to the cloud. The XC Series platform is hypervisor agnostic and supports hypervisor choice. With a focus on ease-of-use and the ability to rapidly deploy multiple virtualized workloads the XC Series is the preferred platform for many enterprises and midmarket customers alike.

The 14th Generation PowerEdge server portfolio supports the latest generation Intel Scalable Processor Family (the micro-architecture also known as “Skylake”). In addition to the latest processor, these servers include several other technology additions such as: up to 4X more performance with iDRAC9, greater throughput with 25 Gbe and RDMA (Remote Direct Memory Access) network connections, and support for BOSS (Boot Optimized Storage Subsystem). And much more!

Processor and Memory

The new generation of Dell EMC PowerEdge “Skylake” servers used by XC Series appliances provide greater computation power than the previous generation. Based on the industry-standardized, CPU-intensive benchmark suite SPEC CPU 2006, the Skylake 8180 scored 67 percent higher in the Floating Point benchmark tests and 49 percent higher in the Integer benchmark tests than the previous generation Broadwell E5-2699v4. These results are posted at [Spec.org](#).

Table 1 Enhancements in the latest Dell EMC PowerEdge servers over the previous generation

	XC630	XC640	XC730xd	XC740xd	730 -> 740 % Increase
CPU and chipset	Broadwell-EP	Skylake	Broadwell-EP	Skylake	
Front side bus	Intel QuickPath Interconnect @ 9.6 GT/s	Intel UltraPath Interconnect @ 11.2 GT/s	Intel QuickPath Interconnect @ 9.6 GT/s	Intel UltraPath Interconnect @ 10.4 GT/s	8%
Cores (max)	18 cores	28 cores	22 cores	28 cores	27%
TDP (max)	145 W	205 W	145 W	205 W	
Instruction set	AVX2	AVX2/ AVX-512	AVX2	AVX2/ AVX-512	
Max DP FLOPS / CLK	16 per core (w /AVX2)	32 per core (w / AVX-512)	16 per core (w /AVX2)	32 per core (w / AVX-512)	100%
Memory channels per socket	4 channels, DDR4	6 channels, DDR4	4 channels, DDR4	6 channels, DDR4	50%
Memory (max)	384 GB/ socket (768 GB total)	768 GB/ socket (1.5 TB total)	768 GB/ socket (1.5 TB total)	1.5 TB / socket (3 TB total)	100%
Memory speed (max)	2133 MT/s	2667 MT/s	2400 MT/s	2667 MT/s	11%
PCIe Lanes	40	48	40	48	20%

There are other architectural changes like a larger L2 cache for the cores, a non-inclusive L3 cache, a new uncore interconnect, distributed home agent, optimized turbo bins, per core P-states, and more.

Storage

As business and capacity requirements grow, scale out architectural designs allow customers to deploy systems with a low cost of entry while delivering a modular approach to scaling infrastructure. With compute and storage co-located, there are various platform configurations that optimize compute, storage, and price. The table below shows the storage configurations available.

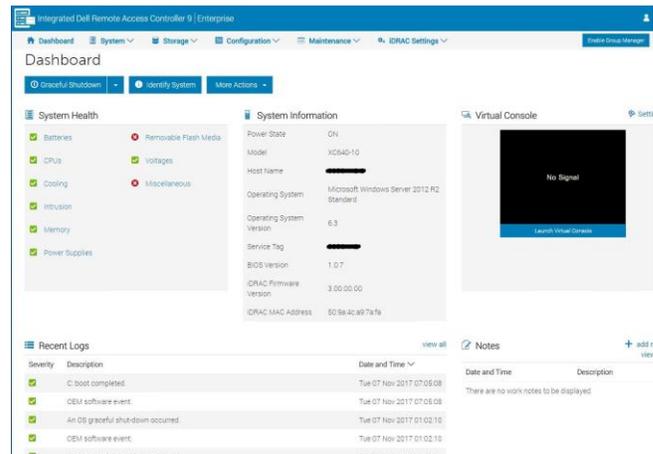
Table 2 Storage comparison between previous and current generation of XC Series appliances.

	XC630	XC640 ¹	XC730xd	XC740xd ¹
Drive Options	10x 2.5"	4x 3.5" 10x 2.5"	12x 3.5" 16x 2.5" 24x 2.5"	12x 3.5" 24x 2.5"

¹ Hybrid, all flash, and optional NVME+SSD configurations also available.

Management and Network

With XC Series appliances you have easy server lifecycle management from deployment to retirement. In addition, it allows for repurposing with enhanced Integrated Dell Remote Access Controller (iDRAC9). XC Series appliances give up to four times more improved performance in user interface and experience, and a 30 percent time reduction to set up iDRAC with QuickSync 2 mobile-based management. The new RESTful API enables support for the Redfish standard and enhances it with Dell EMC extensions.



Lower overall system-level power draw

Lower overall system-level power draw is a result of the breakthrough system design developed by Dell EMC. The system aims to maximize performance-per-watt through a combination of energy efficient technologies, optimized thermal design, and intelligent fan control algorithms. System fan control algorithms use an extensive array of sensors that automatically monitor power and thermal activity to minimize fan speeds based on system cooling requirements, reducing the power required for cooling. PSU power monitoring improvements include:

- Power monitoring accuracy of 1 percent, whereas the industry standard is 5 percent
- More accurate reporting of power
- Better performance under a power cap

Boot Optimized Storage Subsystem (BOSS)

The latest generation of Dell PowerEdge servers provides a simpler, more economical way to segregate operating system (OS) and data on server-internal storage. Many customers, particularly those in the Hyper-Converged Infrastructure (HCI) arena, prefer to separate their operating system drives from



data drives, and require hardware RAID mirroring (RAID1) for their OS drives. The main motivation for this is to create a server configuration optimized for application data. Providing a separate, redundant disk solution for the operating system enables a more robust, optimized compute platform. BOSS uses one or two read-intensive (Boot Class) M.2 SATA Solid State Devices (SSDs) instead of 2.5" SSD drives to house the OS, and uses a two-port SATA Hardware RAID controller chip to provide Hardware RAID 1 and Pass-Through capabilities. The M.2 devices offer the same performance as 2.5" SSD drives, and by consolidating the SSDs and controller chip on a single PCIe adapter card, the solution frees up an additional drive slot for data needs. The BOSS is offered as a means of booting XC Series appliances to a full OS mode when:

- Target OS is a full OS and not a hypervisor that may supported by IDSDM.
- The user does not want to trade off standard hot plug drive slots for OS install.

Key features of the BOSS:

- One or two 80mm M.2 SATA devices
- Dual x1 SATA ports for device interfaces
- M.2 devices are read intensive 120 GB/240 GB
- Presents single virtualized SATA device to the host
- Same cost & performance as 2.5"
- Half-height / half-length PCIe adapter module
- Fixed function hardware RAID 1 (mirroring) or pass-through
- TRIM (non-RAID PD)
- Single x2 PCIe Gen 2 host interface (x8 connector)
- Foreign import
- Fast initialization
- SMART info
- Auto-rebuild
- Non-RAID migration
- Frees up additional drive slots to be used for other data sets
- Managing BOSS is accomplished with standard, well-known management tools including iDRAC, OpenManage Systems Administrator (OMSA), and command line interface (CLI)

Summary

Dell EMC XC Series appliances based on 14th Generation PowerEdge servers enable higher performance workloads, faster network speeds, and NVMe/SSD configurations, with a choice of industry-leading hypervisors.



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