

# Converge and Consolidate Your Workloads with the **Dell EMC™ XC Family**

## Executive Summary



### Insistent Innovation: **Introduction**

As applications become more complex, enterprises often struggle to cope with performance needs, the need to consolidate workloads, operational agility, and IT simplicity. But with HCI (Hyperconverged infrastructure) solutions from Dell EMC and Toshiba Memory, your enterprise can adapt to these challenges without complexity or compromise.

In this executive summary, we will demonstrate how the Dell EMC XC Family of hyperconverged infrastructure, powered by Toshiba Memory PM5 Series 12Gb/s enterprise SAS SSDs, can help medium and large organizations consolidate and converge mixed workloads, like VDI and databases, while improving responsiveness and enhancing operational outcomes.

### Exploring the **Dell EMC XC Family**

The Dell EMC XC Family – Powered by PowerEdge 14G servers and Nutanix software with the enterprise SAS SSDs from Toshiba Memory – delivers:

- **Reduced complexity** by consolidating storage and compute in the same appliance
- **Rapid deployment** – be up and running in a few hours
- **Simplified management** – manage all nodes in the same user interface
- **Non disruptive upgrades** – add nodes or capacity without downtime
- **High performance flash storage** - to run applications faster

### Powered by **Toshiba Memory PM5 Series 12Gb/s Enterprise SAS SSDs**

Enterprise applications and services demand the highest levels of performance, reliability, and scale. Organizations understand the value of SSDs for these applications, such as Toshiba Memory PM5 Series 12Gb/s enterprise SAS SSDs. These drives deliver:

- 1. Performance:** The PM5 Series provides the highest levels of reliability and performance - up to 82% higher performance than the previous generation.
- 2. Reliability:** Providing data protection, data integrity, and availability, PM5 Series SSDs features include power loss protection, end-to-end data protection, and dual-port support.
- 3. Quality of Service:** Toshiba Memory's PM5 Series delivers superior performance, consistency, and Quality of Service through Multi-Stream Write technology.
- 4. Data security:** PM5 Series SSDs drives offer a broad range of security options, from no encryption to full FIPS 140-2 certification, without any performance impact.

In short, Toshiba Memory drives are an essential part of the XC Family and support better outcomes for IT and business operations alike.



## Proving the Value: Testing Overview

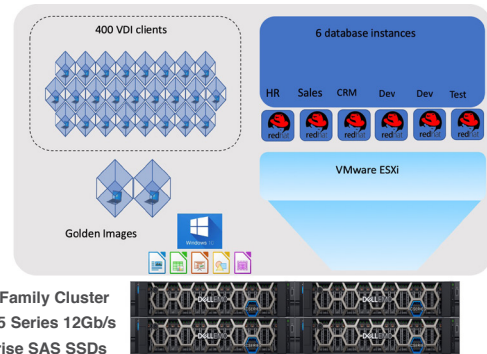
Traditionally, mixed workloads like databases and VDI have required different architectures to cope with different performance requirements. VDI has a random and unpredictable read/write pattern, while databases often have predictable IO characterization, but still random read/write mixes.

Running multiple applications that require different architectures creates challenges, including:

- Complexity and administrative headaches
- Increased costs and lower ROI
- Reduced performance
- Security and compliance risks

The XC Family is purpose-built for workload consolidation. Scaling with compute/storage nodes, it's easy to run multiple workloads without compromising performance. To prove this, Cloud Evolutions, commissioned by Dell EMC and Toshiba Memory America, conducted a series of tests on a four-node XC cluster, simulating a medium-sized

financial services organization that's consolidating 400 VDI VMs and six database instances in parallel on the XC Family cluster. We conducted IO characterization using X-RAY, an industry standard tool that enables organizations to evaluate hardware performance. This tool executes 4-corner and mixed workloads tests, examining both latency and IOPS, to prove that the XC cluster could handle a mix of application workloads that utilized high levels of IO with low latencies.



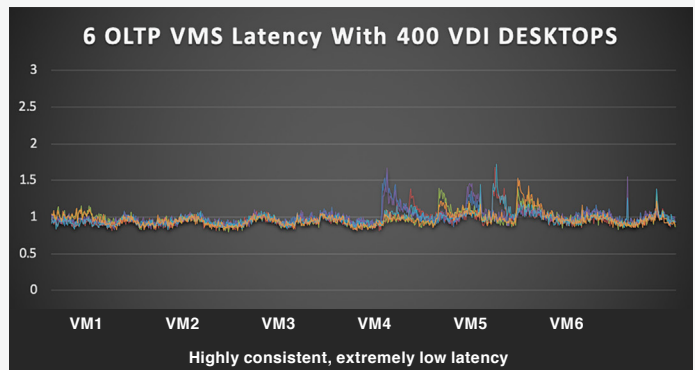
XC Family cluster Environment supporting VDI and Database Instances

## Proving the Value: Exploring the Results

Our tests generated random IOs on 400 VDI desktop clients along with concurrent transactions from 6 OLTP database instances. The data shows the XC Family cluster could support both sets of workloads simultaneously with less than two millisecond latency for all 400 VDI clients, as well as consistent database performance with sub-millisecond latency. The IOPS and latency performance of Toshiba Memory PM5 Series SAS SSDs delivered exceptional results, both for real-time OLTP and virtual desktop users. For both workloads, consistency latency results in a better user experience.

These results demonstrate that a basic XC Family cluster can deliver the performance needed by medium-sized to large organizations. Low latency for databases allows more transactions per second for

improved operational efficiency. VDI users could expect similar levels of performance to traditional SSD-based clients, because the latency is low.



## Proving the Value: Why the Results Matter

**Solving Silos:** An XC Family cluster has the performance to support demanding mixed workloads due to the advantages of the Toshiba Memory PM5 Series SSDs without separate compute and storage silos. Can your existing platform solve the problem of siloed IT infrastructure?

**Consolidate and Converge:** The XC Family lets you start small and grow as demand increases while enabling you to consolidate workload and converge hardware without any impacts to latency and performance. It also allows for a choice of hypervisors. Your current infrastructure probably won't allow you to consolidate mixed workloads on the same platform. It also probably can't support different hypervisors.

**Value:** We tested and proved that an entry-level XC Family cluster can support the needs of a medium-sized business. Imagine the implications to lifespan, TCO, and ROI. Legacy infrastructures can't offer compelling value like the Dell EMC XC Family.

## Conclusion

The flexible and agile Dell EMC XC Family, powered by the Toshiba Memory PM5 Series 12Gb/s enterprise SAS SSDs, offers the highest levels of performance for mixed workloads (including VDI and mission critical database transactional workloads) while simplifying operations. With the XC Family, organizations have an opportunity to transform their IT. They can focus on innovation by converging and consolidating workloads on a platform that minimizes management, maintenance and monitoring—for a significant increase in ROI\*.

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\*Testing conducted under laboratory conditions using synthetic benchmark tools, real-world performance may vary.

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