



White Paper

Dell EMC Introduces the VxBlock System 1000 and Sets a Path for the Future of Enterprise Converged Systems

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IN THIS WHITE PAPER

This IDC white paper provides a brief update on the converged systems market and an overview of Dell EMC's recent VxBlock System 1000 announcement.

SITUATION OVERVIEW

There are many well-known technologies that have driven substantial benefits within the datacenter over the years. Technologies like server virtualization, for example, have helped drive considerable savings by enabling better infrastructure utilization rates and higher levels of application resiliency. Converged systems represent another area of datacenter innovation that has been helping companies achieve new levels of cost reduction, operational efficiencies, and better alignment of IT processes with business-centric needs.

Technology suppliers have been offering converged system solutions for nearly a decade. The adoption of converged systems has grown quickly during this time to become a multibillion-dollar market. Total spending on converged systems reached \$13.1 billion during the 12 months ending June 30, 2017. This represented 4.5% growth over the previous year, which is a striking rate when compared with the 2.4% decline experienced within the combined external storage and enterprise server markets during the same period. Clearly, converged systems are driving real benefits within the datacenter, and the broad shift of infrastructure investments toward converged systems can be seen as a clear indication of their effectiveness.

While the architecture of converged systems has evolved considerably over the years, the benefits these solutions offer have remained unchanged. Specifically, converged systems provide a tight integration between core datacenter infrastructure (storage, compute, and networking) while offering centralized management and increased levels of automation. Converged systems are driving higher levels of efficiency, agility, and resiliency for a vast number of companies around the world, which is solidifying their place as a critical component of a modern datacenter.

Overview of Dell EMC's Converged Systems Business and Updates to VxBlock

Dell EMC's portfolio of converged solutions goes back to the very early days of the converged systems market. The company had shown a prescient understanding of a growing need to improve operational simplicity related to datacenter infrastructure. Dell EMC's early move within the converged systems market, combined with the status of the company as a trusted global supplier of datacenter

infrastructure, has resulted in a leadership position. Indeed, Dell EMC's converged systems business accounted for more than 30% of the \$13.1 billion in sales during the 12 months ending June 30, 2017.

Dell EMC's current portfolio of converged systems offers a broad set of solutions able to support a diverse set of datacenter environments. The bulk of this business has traditionally come from the VxBlock Systems. Each VxBlock is a complete "datacenter" system that enables companies to procure, deploy, manage, scale, and refresh core datacenter infrastructure as a single system. Dell EMC designs, tests, and fully integrates each VxBlock System before it ships. All VxBlock solutions are designed to greatly reduce the time IT staff spend on low-value, high-risk infrastructure management tasks such as system maintenance, configuration management, change management, provisioning, and patching.

Dell EMC has traditionally offered VxBlock as distinct systems (examples are the VxBlock System 350, VxBlock System 540, and VxBlock System 740) and a set of "Converged Technology Extensions," which provide additional capabilities to VxBlock environments (an example is adding scale-out NAS with Dell EMC Isilon). As noted previously, all VxBlock Systems simplify IT by seamlessly integrating compute, network, storage, and virtualization technologies from Dell EMC (storage), Cisco (compute and networking), and VMware (virtualization) into one integrated system. The fundamental difference between the VxBlock models is the unique storage technologies, each with enterprise data services, performance, and scale for diverse workload and business requirements. The result has been the following portfolio of VxBlock Systems that support a wide range of all-flash and hybrid flash/HDD technologies:

- **VxBlock System 350:** Leverages Dell EMC Unity storage for midmarket requirements of general-purpose workloads
- **VxBlock System 540:** Leverages Dell EMC XtremIO storage targeting data reduction and copy-friendly workflows such as virtual desktop infrastructure (VDI) and DevOps environments
- **VxBlock System 740:** Leverages Dell EMC VMAX systems to deliver enterprise-grade availability and data services that are required for large-scale mixed workload consolidation and mission-critical applications

Dell EMC's ability to fully integrate multiple storage systems into a portfolio of VxBlock solutions has ensured maximum choice and flexibility for customers of Dell EMC's converged systems and has been an important part of the company's success within the converged systems market. That said, the converged systems market is rapidly changing. While IDC Business Value research clearly shows VxBlock Systems have driven real operational and cost benefits to the customers of Dell EMC, the company has been working to drive deeper integration of its converged system solutions in a way that further increases operational simplicity and improves flexibility without a reduction in business agility.

VxBlock Updates: New Levels of Operational Simplicity and Flexibility

Dell EMC has worked with thousands of converged systems customers over the years and has become well attuned to the needs of IT teams leveraging solutions like its portfolio of VxBlock Systems. The company has made use of this knowledge to rethink how its VxBlock converged systems are designed and packaged. Dell EMC has announced updates to its VxBlock product family with the following goals in mind:

- **Simplify the portfolio of VxBlock Systems** by moving from multiple models to a single VxBlock System capable of supporting all workloads and business requirements.
- **Support efficient scaling** of performance and capacity by allowing customers to mix multiple types of enterprise servers and storage within a single VxBlock System that can start small and scale independently as needed.
- **Improve agility** by providing adaptive pools of resources that can be apportioned to a diverse set of workload profiles and adjusted to meet changing workload and business requirements.
- **Simplify life-cycle management**-related tasks through a single upgrade and patching process for all technologies within the system.

Dell EMC VxBlock 1000: Further Reducing Complexity While Adding Flexibility

Dell EMC's newly announced VxBlock System 1000 consolidates and expands on the capabilities of the three separate VxBlock Systems and Converged Technology Extensions highlighted previously in this white paper. Previously, Dell EMC converged infrastructure relied on a portfolio of VxBlock Systems, each tuned for specific sets of workload requirements; now, a single VxBlock 1000 supports pools of heterogeneous resources capable of addressing a wide range of performance, capacity, and resiliency requirements.

It's important to note that the VxBlock 1000 will continue to leverage the same proven enterprise servers, storage, and networking as its predecessors, including next-generation versions of those technologies. The current technologies include (the VxBlock 1000 supports a mix/combination of technologies within one system):

- **Dell EMC VMAX Storage Systems:** VMAX 250F and 950F
- **Dell EMC XtremIO:** XtremIO X2S and X2R
- **Dell EMC Unity Storage Systems:** Dell EMC Unity 350F, 450F, 550F, and 650F
- **Dell EMC Isilon Storage Systems:** Isilon F800 all flash; H600, H500, and H400 hybrid flash; and the A200 and A2000 archival arrays
- **Cisco UCS generation 3 servers:** A mix of M4, M5 blade, and rackmount servers that customers can deploy
- **Cisco Nexus and MDS SAN switches:** High-performance, high-density, and high-capacity 9000 series LAN and SAN switches and related fiber interconnect and extender components
- **Dell EMC Data Protection:** Integrated data protection options that include Dell EMC NetWorker, Avamar, Data Domain, RecoverPoint, and VPLEX

New System Architecture for Expanded Use Cases and Operational Simplicity

The VxBlock 1000 architecture, combined with denser storage technologies and higher-performance network bandwidth, yields higher overall capacity and datacenter efficiencies than previous VxBlock Systems.

For example, with further room to grow, a single 14-cabinet VxBlock 1000 can provide the equivalent of a previous-generation 6-system, 34-cabinet solution consisting of 264 servers and 33.1 PB of mixed storage technologies for production and archiving.

In this example, the new single system reduces:

- Datacenter footprint by 59%
- Power costs by 33%
- Network switch inventory by 70%
- Management hardware and software by 83%
- Time for life cycle management (release upgrades) by 75%

Previously, when a VxBlock System's storage reached capacity, users have deployed one or more additional VxBlock Systems and split workloads between them. While this met business requirements, this essentially doubled system administration and may have left some resources (such as servers) in the first VxBlock underutilized.

To mix different types of storage technologies for mixed data services within the same previous-generation VxBlock System, users would add a Converged Technology Extension cabinet with the new type of storage. The Converged Technology Extension cabinet would have included additional LAN and or SAN switches, plus the storage components.

The VxBlock 1000 further reduces infrastructure cost and administrative complexity with its native support for mixed technologies and by eliminating the requirements for additional LAN and SAN switches.

Next-Generation Management Platform for Efficient Scaling and Embedded Data Protection

All VxBlock Systems include a management infrastructure called the advanced management platform (AMP). The AMP is where core VxBlock virtualization, management, and monitoring software (e.g., VMware vCenter, Dell EMC Vision Intelligent Operations, and Cisco UCS Manager) and optional software like data protection, security, and other system management tools run.

The VxBlock 1000 leverages a completely refreshed advanced management platform, referred to as the AMP-VX. The new AMP-VX runs the same virtualization, management, and monitoring software as previously stated but now supports far greater VxBlock scaling than previous generations. Previously, each VxBlock System required a dedicated AMP. Thus multiple VxBlock Systems were managed through multiple VxBlock AMPs. The new scale-out AMP-VX architecture can manage up to eight systems using the same centralized software, including management for compute, storage, network, and virtualization components; Dell EMC Vision software for a holistic view of the entire system and for simplifying release upgrades and patches; and VMware vRealize Log Analytics for supporting incident and problem resolution. AMP-VX is also easily scaled to support optional third-party tools for orchestration and automation, such as Cisco UCS Central, Cisco UCS Director and VMware vRealize Automation.

Dell EMC is also leveraging the powerful scale-out resources of VxBlock AMP-VX to host data protection software for VxBlock environments, providing customers with a singular platform to manage their converged systems data protection environments. The base AMP-VX configuration includes Dell EMC Avamar Virtual Edition software, while the Data Domain 2200 (24TB) appliance is optional for

backing up the management software workloads themselves. The AMP-VX can also host Dell EMC Data Protection for Converged Infrastructure to address production workloads.

Simplified Life-Cycle Management with a Single Upgrade Process

One of the most important benefits of Dell EMC's converged systems comes from the company's commitment to "life-cycle assurance" by providing fully tested software updates that cover a customer's entire VxBlock System. This requires compliance with Dell EMC's Release Certification Matrix (RCM), which constitutes a full matrix of approved components and configurations.

Dell EMC consistently tests all components' firmware and hypervisor upgrades and patches together to ensure interoperability and system integrity before issuing the components to customers throughout the life of VxBlock Systems. While the RCM eliminates much of the traditional risks of making changes in infrastructure, the number of component and configuration permutations can make updates and patches complex without the proper support. As such, customers of Dell EMC's converged solutions have always placed a very high value on the company's promise of "life-cycle assurance" through Dell EMC's RCM documentation, Vision software for life-cycle management, and customer support and services.

In the past, customers often had to manage multiple RCMs, each related to a specific VxBlock model's unique set of technologies, each optimized for different workloads' data services requirements. A variety of new technologies could be directly added to an individual VxBlock System via Converged Technology Extensions, but these introduced additional RCMs to the system. With the VxBlock 1000 supporting multiple storage and compute technologies all in one system, only one unified RCM (upgrade process) is required. The benefit is clear: One upgrade process to manage versus multiple processes means managing upgrades is simpler and faster and requires less resources.

Last, IDC notes that Dell EMC is also improving how customers can access their specific RCM. The RCM from Dell EMC is going from a static document to a dynamic online searchable database. This will further simplify the whole life-cycle management approach.

CHALLENGES

Companies around the world have invested a total of \$49.9 billion on converged systems over the past five-and-a-half years. The driving forces behind the adoption of enterprise converged systems have changed several times since these solutions first surfaced nearly a decade ago. Very early adoption of converged systems was driven by companies looking for a platform to consolidate virtual environments that expanded to take up vast amounts of datacenter space. Demand for converged systems then shifted to environments looking for a solution that could provide new levels of operational simplicity and agility while helping reduce risk related to life-cycle management. This remains a critical driver of adoption today, but we now see a sharp increase in the use of converged systems as a platform for digital transformation and on-premise private clouds. These most recent sources of demand for converged systems represent a new challenge for industry stakeholders. While digital transformation and private cloud implementations look set to drive the next wave of datacenter convergence, such projects are likely to be far more complex and challenging than past market drivers. Technology suppliers that want to help customers through this shift will need to show that they understand the changes driving the need for foundational transformation and intend to be a true partner throughout the journey.

CONCLUSION

It's difficult to overstate the amount of effort Dell EMC has put into the design and continued support of enterprise converged systems. Converged systems like VxBlock 1000 offload the complexity and risk associated with managing enterprise-grade datacenter infrastructure so that IT teams can confidently focus on higher-value projects/tasks. The company does this, in part, by taking on the considerable burden of fully integrating all aspects of datacenter infrastructure (compute, storage, networking, virtualization and management software, and applications). The enormous resources and ongoing efforts required to bring enterprise-grade converged systems to market need a true commitment to the technology and a deep belief in the benefits convergence brings to the datacenter. IDC believes that Dell EMC has demonstrated such commitment since helping launch this market nearly a decade ago.

As proof, we point to the fact that a very large percentage of Dell EMC's converged systems customers have been running mission-critical applications for many years. Many industry stakeholders simply assume this is true because the core infrastructure of a VxBlock (e.g., Dell EMC Unity, VMAX, XtremIO, Cisco UCS, and Cisco networking) is a proven platform for the most demanding environments in the world. While such an assumption is certainly true, it overlooks the faith Dell EMC customers have in the company's commitment to converged systems. Over the years, IDC has talked with countless customers of Dell EMC converged systems. A common theme within almost all these conversations is a view of Dell EMC as a trusted partner that will support their datacenter environment for many years to come. Most would simply not have chosen to run their most important and mission-critical applications on Dell EMC's converged systems if they weren't 100% sure that the company was fully committed to datacenter convergence and to committing the considerable resource needed to support these systems for years to come.

If the striking market share of Dell EMC within the converged systems market points to the trust datacenters around the world have placed in the company's converged solutions to date, its recent VxBlock 1000 announcements highlighted previously should stand as proof that it remains fully committed to datacenter convergence.

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