

Solution Showcase

Expand the Value of SAP with the Performance and Resiliency of Dell EMC PowerMax

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Abstract: Data, the lifeblood of the modern business, offers a competitive advantage to those capable of capitalizing on its value. Among complex and diverse workload environments managed by modern IT organizations, SAP often ranks among the top in both its importance to day-to-day operations and its potential to introduce new business opportunities. Unlocking the value of this data and taking full advantage of enterprise SAP requires secure, resilient, and powerful infrastructure, such as the mission-critical data storage delivered by Dell EMC PowerMax, powered by Intel® Xeon® Scalable processors.

Overview

Few, if any, workloads exemplify the complexities of modern IT more than SAP. Essential to day-to-day enterprise operations, SAP is always on and mission-critical. It is not only important to many internal workflows but also often powers customer experiences with substantial impact on revenue. As the business scales, SAP must scale with it. Interruptions in performance, downtime, or data loss can have a material impact on business results and erode customer confidence. With the recent rise in data driven applications and business processes leveraging analytics, AI, and IoT, the opportunity and pressure placed on SAP environments has never been greater. IT must modernize to keep pace with the business while opening the door for these new opportunities.

With the digital era of business upon us, IT and the digital services it provides play a larger role in determining business outcomes and market competitiveness. Maximizing the potential of business data, such as the insights offered by SAP HANA and S/4HANA, is essential to business survival. Unfortunately, the business cannot stop while IT redesigns the infrastructure to take full advantage of its SAP implementation. Most enterprise IT organizations have existing highly virtualized, mission-critical SAP environments requiring daily care, often made more complex with multiple information silos.

To stay relevant, IT organizations must drive IT infrastructure modernization in support of digital business initiatives. According to ESG's research on IT spending intentions, 86% of IT decision makers agree with the statement, "If we do not embrace digital transformation, we will be a less competitive and/or effective organization."¹

With SAP, these transformations can be a challenge. Businesses often endure multiple complex landscapes, frequently highly virtualized ones with mixed workloads. Essential to the business, these existing deployments cannot be eliminated. Modernized IT must offer server, networking, and storage infrastructure with the necessary resiliency and security, while

¹ Source: ESG Master Survey Results, [2018 IT Spending Intentions Survey](#), December 2017.

delivering the performance, management, automation, flexibility, and scale to consolidate these complex environments. Simultaneously, IT must provide a smooth path to SAP HANA with its in-memory architecture and S/4HANA. To accomplish this feat, IT needs a partner like Dell EMC. As a leader in IT infrastructure, Dell EMC and its PowerMax enterprise storage platform, powered by Intel® Xeon® Scalable processors, offers everything necessary to lead the transformation for high-value workloads such as SAP.

The Role of SAP in Digital Transformation

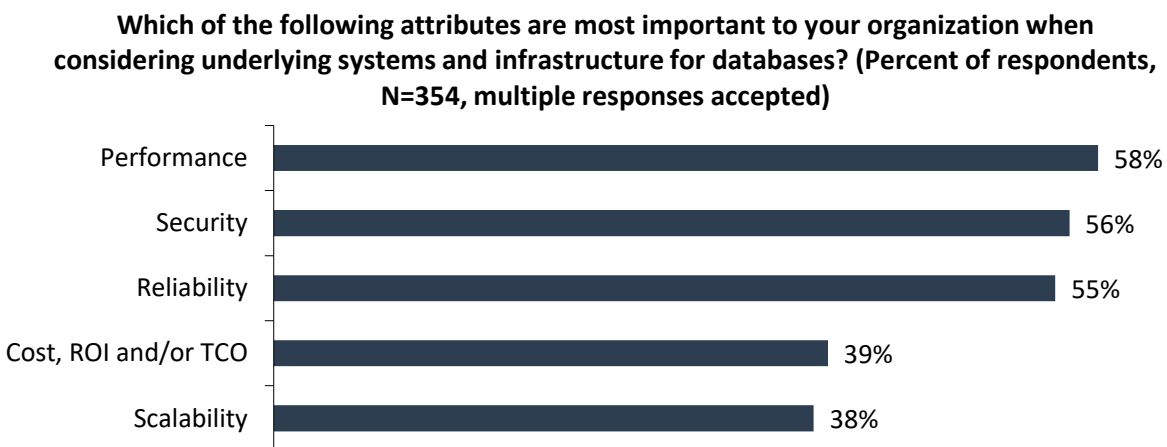
As businesses strive to deliver the best customer experience, with next generation intelligent enterprise application and business processes, and get value from their data in real time, the information managed by SAP is essential. And unlocking the value of SAP’s data requires a powerful and dynamic infrastructure as the foundation. When IT decision makers were asked to identify what business initiatives they expected to drive the most technology spending, nearly one third (30%) identified improving data analysis for real-time business intelligence and customer insight.²

Database workloads, such as SAP, play a crucial role in unlocking the value of data for business intelligence. While traditionally its information has been essential for operations, real-time insights are determining competitiveness. As a result, SAP has become even more valuable and the requirement for modern infrastructure is even greater.

Modern Infrastructure Unlocks the Full Value of SAP

Three infrastructure attributes stand out when it comes to unlocking the potential of enterprise database environments, such as SAP. Performance (58%), security (56%), and reliability (55%) were the infrastructure attributes for database workloads most commonly identified as important by ESG research respondents.³ After these three, there was a 16-point drop before getting to total cost of ownership, TCO. In other words, performance, security, and reliability outweighed cost considerations for most organizations.

Figure 1. Top Five Important Attributes for Database Infrastructure



Source: Enterprise Strategy Group

This data aligns with the context of the enterprise SAP environment. Maximizing the performance, security, and reliability of SAP infrastructure delivers countless business benefits. And conversely, if an organization did prioritize infrastructure cost savings over performance, security, and reliability, that decision would likely add an unacceptable level of risk to the business and its operations.

² Source: ESG Master Survey Results, [2018 IT Spending Intentions Survey](#), December 2017.

³ Source: ESG Research Survey, [Enterprise Database Trends](#), February 2017.

Dell EMC PowerMax NVMe-based architecture, powered by Intel® Xeon® Scalable processors, is designed to change expectations when it comes to data storage performance. According to Dell EMC, [PowerMax](#) is the world’s fastest enterprise storage array,⁴ with up to 15 million IOPS and a speed of 350 GB per second, plus three times the performance density of the predecessor VMAX All Flash system and up to 50% better response times. Newly emergent NVMe technology plays a crucial role in delivering this transformational performance.

NVMe Delivers the Performance Necessary to Maximize the Value of SAP

Accelerated data storage delivers far greater benefits than simply improved application performance. Fast storage supports workload consolidation, shrinks hardware footprint, reduces power consumption, and thus lowers costs. Users of high-performing (flash) storage surveyed by ESG say they are saving, on average, 24% in storage capital expenditures and 25% in storage operational expenditures.⁵ Now, non-volatile memory express (NVMe) technology is poised to increase these benefits even further.

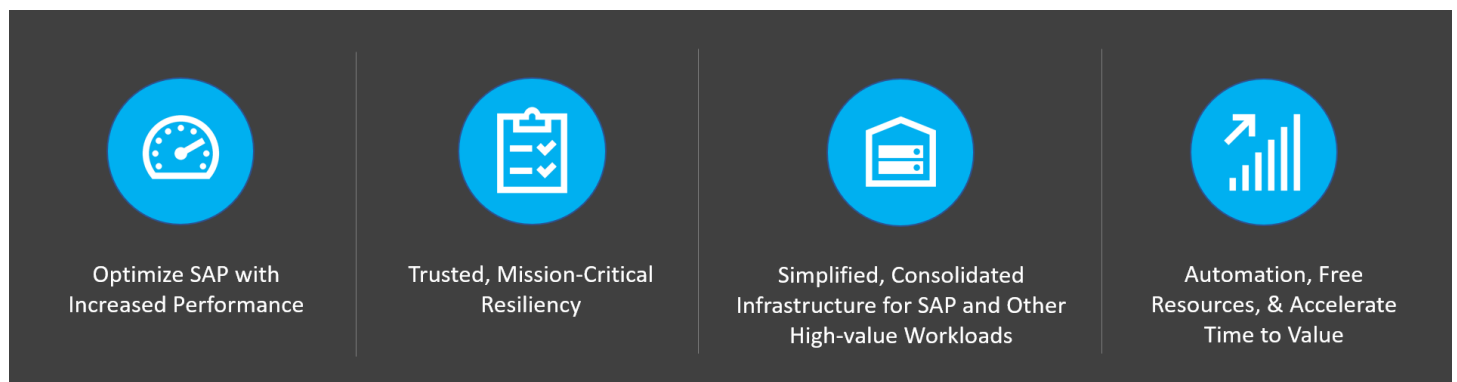
NVMe is an open logical device interface for accessing non-volatile storage media attached via a PCI Express (PCIe) bus or switch. Designed for flash storage rather than spinning hard drives, the NVMe protocol is both streamlined and parallel in its design to maximize low-latency performance. More efficient than traditional protocols, such as SATA or SAS, NVMe better delivers the latency improvements of flash. For parallelism, NVMe offers a queue depth of 64,000 commands while supporting 64,000 separate queues. SATA, as an alternative, offers a queue depth of only 32 with only a single command queue.

The stark contrast between NVMe and its traditional counterparts fuels the demands and expectations for NVMe, as storage decision makers are bullish about NVMe—79% of IT managers surveyed by ESG who were familiar with NVMe technology said they expect it to eventually replace traditional SAS- or SATA-connected solid-state flash storage.⁶

The Value of Dell PowerMax for SAP

Few, if any, storage systems can boast the pedigree in enterprise storage compared to Dell EMC PowerMax, powered by Intel® Xeon® Scalable processors. Architected as a successor to the VMAX product line, Dell EMC PowerMax, powered by Intel® Xeon® processors, delivers a true scale-out architecture with global memory and storage provisioning across all 16 controllers with an end-to-end NVMe architecture.

Figure 2. PowerMax Benefits for SAP



Source: Enterprise Strategy Group

⁴ From Dell EMC and based on Dell EMC internal analysis of published bandwidth of the PowerMax 8000 versus competitive mainstream arrays, July 2019.

⁵ Source: ESG Research Insights Brief, [Flash Storage Fuels IT Transformation](#), May 2018.

⁶ Source: ESG Master Survey Results, [2017 General Storage Trends](#), November 2017.

Deployments can start small at 13TB, and scale with demand. The result offers a variety of benefits for enterprise SAP, including:

- **Optimized classic SAP Enterprise Resource Planning (ERP) and Business Warehouse (BW) with increased performance:** Despite its rank as the most commonly identified most important infrastructure attribute (see Figure 1), consistent low-latency, high-performance storage might be even undervalued. For classic SAP environments, improved data performance directly translates into accelerated business operations. With proper performance, not only are detailed analytics and insight on, for example, supply chain operations available faster, but also the newly freed cycles create opportunities to uncover new ways to improve efficiency. With faster extract, transform, load (ETL) operations, core businesses, some of which impact revenue recognition (e.g., invoice processing), accelerate as well, reducing business risk. In addition to the massive performance numbers offered by PowerMax, the system includes a built-in machine learning engine that drives over six billion decisions per day designed to maximize performance with no management overhead.

With NVMe, PowerMax offers far more than simply supporting NVMe-based storage media. The enterprise storage platform is architected with NVMe-based technology end-to-end, helping to ensure consistent, low-latency performance. PowerMax's automatic data tiering ensures that NVMe-based storage is optimized and leveraged efficiently. The end-to-end NVMe foundation also enables PowerMax to maximize the benefits of the latest technology, such as NVMe over Fabrics and Storage Class Memory, powered by Intel® Optane™ Technology, both of which are shipping today.

- **Trusted, mission-critical resiliency:** Often ingrained in core businesses processes, SAP availability is essential. As such, the infrastructure that supports SAP must offer the highest resiliency. PowerMax is the next in a long line of mission-critical tier-1 data storage systems from Dell EMC, building on a wealth of experience in this space. Designed for six-nines (99.9999) of availability, PowerMax also offers enterprise-level tier-0 availability and protection features, such as SnapVX, SRDF, and ProtectPoint. The Dell EMC Future-Proof Loyalty Program provides additional risk reduction and investment protection with a set of programs that enable Dell EMC's storage products to provide value for the lifetime of the customer's applications.
- **Simplified, consolidated infrastructure for SAP and other high-value workloads:** Building upon high-performance and mission-critical resiliency, PowerMax offers both infrastructure consolidation and simplification. PowerMax effortlessly consolidates mixed workloads such as classic SAP, SAP HANA, and non-SAP applications on a single array. When running SAP software on traditional storage-based databases such as Oracle Database, Microsoft SQL Server, or IBM DB2, workload attributes typically include a variety of I/O profiles while supporting potentially thousands of concurrent users. In addition to these massive workload demands, SAP environments must support long-running large batch jobs and processing data loads into SAP Business Warehouse (BW). PowerMax not only offers the performance to handle these demands, but also adjusts to the variety of data accesses, supporting the high percentage read profiles of traditional databases, the massive scale of concurrent users, and the requirements of batch operations.

For SAP on the SAP HANA in-memory database, I/O profiles evolve with support for 100% of "hot-data" processed within an in-memory platform. With all data and logs maintained on the storage layer for persistence, consistent and guaranteed low latency is essential at the storage system layer with the high throughput required for cold-data reads on startup. For these environments, PowerMax offers support for up to 162 SAP HANA server nodes with a single array. According to Dell EMC, Dell EMC PowerMax 8000 storage array, powered by Intel® Xeon® Scalable processors, supports the industry's highest SAP HANA TDI scalability.⁷ Additionally, with support for SAP HANA Dynamic Tiering,

⁷ Based on Dell EMC internal analysis of publicly available data on the scalability of competitive mainstream arrays, July 2019.

PowerMax can move less frequently accessed, or “warm,” data from in-memory to the NVMe-powered storage inside the PowerMax array. The result can significantly reduce SAP HANA infrastructure costs with only minimal performance impacts.

- **Automated tasks, freed-up cycles, and accelerated time to value:** In addition to its performance, PowerMax delivers the tools to accelerate and automate business opportunity generation with SAP. With SnapVX, the advanced snapshot technology enables thousands of space-efficient copies, accelerating development and test environments as well as application rollouts. For granular application owner control, PowerMax’s integrated copy data management (iCDM) lets SAP administrators and DBAs create and manage their own space-efficient copies matching their business needs. SAP Landscape Management (LaMa) integration for PowerMax enables automation of SAP operations, including end-to-end SAP system copy/refresh operations, reducing the personnel burden and freeing up cycles for high-value tasks. And with Dell EMC’s CloudIQ, PowerMax reduces the burden on IT with cloud-based predictive analytics and performance monitoring.

The Bigger Truth

SAP encapsulates the risk and opportunity associated with IT modernization. The highly virtualized and siloed environments of the past cannot sustain the business in the digital era, but the workload is just as vital. IT must be able to redesign, such as during a transition to SAP HANA, without any issues, interruptions, or surprises along the way. The rewards to the business, once the underlying infrastructure is modernized, are transformative. In the digital economy, the data that resides in SAP is a strategic asset—and not being able to leverage its potential fully is a massive competitive disadvantage.

Workloads such as SAP are simply too important to trust to a partner without the level of innovation, experience, and resume of Dell EMC. With innovations and tools tailored to the specific needs of SAP, Dell EMC’s PowerMax, powered by Intel® Xeon® Scalable processors, offers transformational application storage, enabling businesses to harness the full potential of their specific SAP environment, which drives business success today and into the future.

For more information, visit DellEMC.com/PowerMax-SAP



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