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Dell Technologies

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## Business Value Highlights

408%  
five-year ROI

44%  
lower five-year cost of operations

29%  
faster to deploy VxBlock

52%  
less staff time to deploy, manage, and run infrastructure for SAP environments

2x  
more IT staff time to spend on innovation and other activities

96%  
less unplanned downtime

15%  
faster development of new applications

19%  
faster execution of business processes

\$15.3 million  
higher gross revenue per organization per year

# Dell EMC VxBlock Provides Efficient, High-Performing Platform for Business-Critical SAP Environments

## EXECUTIVE SUMMARY

Data is an organization's most valuable asset, regardless of size or industry. To fully unlock the potential of data, organizations must pay attention to where data resides as well as how it is managed and how it is protected. Many organizations capture and process much of their data within SAP environments. SAP has been rapidly innovating its solutions platform, and businesses that innovate along with SAP often require new IT infrastructure and models. Older, siloed IT leaves organizations ill-equipped to manage the large volumes of data and extract business value. Switching to modern infrastructure for SAP presents a wide range of advantages such as consolidation, simplification, cloud enablement, secure and comprehensive data management, and — often — a lower TCO. IDC research has found that the most popular solution for SAP is SAP-certified converged infrastructure. A prominent offering in this category is the SAP-certified Dell EMC VxBlock from Dell Technologies. This IDC white paper presents the results of a comprehensive study into the business value of the VxBlock for SAP.

IDC interviewed organizations to understand the impact of running their SAP environments on VxBlock converged infrastructure in terms of infrastructure costs, IT staffing requirements, system performance and agility, and business operations. These Dell Technologies customers reported that VxBlock serves as an efficient and cost-effective platform for SAP while delivering the performance, agility, and reliability required for these business-critical and data-driven workloads and applications. IDC calculates that study participants will realize value worth an annual average of \$85,300 per 100 users of SAP workloads and applications, hereafter called "SAP users", (\$9.96 million per organization) and will enjoy an average of 44% lower cost of running SAP environments with VxBlock. Benefits also included higher gross revenue of \$15.3 million per year per organization. Dell EMC VxBlock for SAP helps organizations achieve these improvements by:

- **Allowing IT infrastructure and application teams** to shift time and focus from day-to-day administration to other projects and more innovative work

*Treating data as a form of capital and maximizing its potential requires investment, and many organizations capture and process much of their data within SAP environments.*

- **Creating value through application development activities**, including faster delivery of more new applications and features within their SAP environments
- **Reducing the business and operational impact of unplanned outages**, thereby improving employee productivity levels and minimizing revenue losses associated with outages
- **Enabling business operations with higher-performing and more agile SAP environments**, leading to higher revenue and productivity for employees using SAP applications

## SITUATION OVERVIEW

In a world where digital transformation defines winners and losers, data is an organization's most valuable asset. To fully unlock the potential of data, organizations must pay attention to where data resides as well as how it is managed and how it is protected. Every company, regardless of industry, should consider itself to be a technology company and regard its data as its biggest competitive advantage. Treating data as a form of capital and maximizing its potential requires investment, and many organizations capture and process much of their data within SAP environments.

SAP has been innovating its myriad of powerful business solutions at a rapid pace. SAP's next-generation intelligent enterprise applications are based on SAP S/4HANA, together with SAP Leonardo — SAP's platform for innovation with artificial intelligence (AI), big data, machine learning, and the Internet of Things (IoT). SAP S/4HANA is SAP's intelligent enterprise resource planning (ERP) replacing classic SAP ERP and SAP Business Suite applications with powerful in-memory and edge processing to enable real-time insights for business processes and machine learning. SAP refers to this as the "Digital Core."

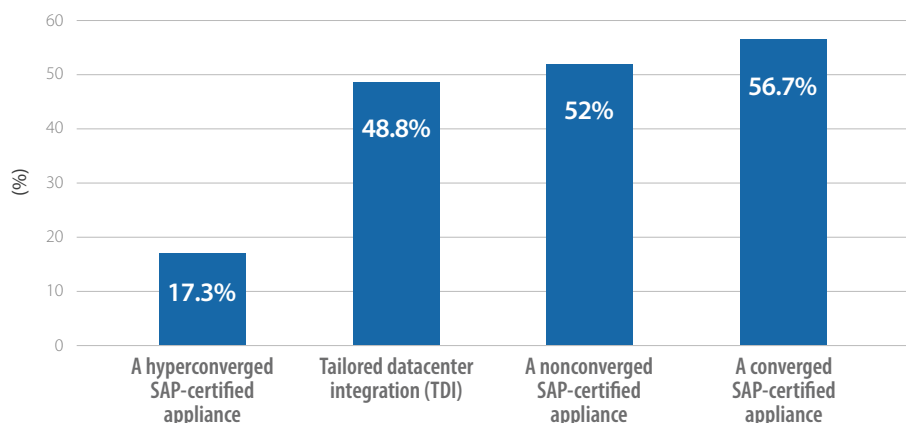
Businesses typically require new IT infrastructure and models to run this new SAP platform. Siloed IT from an era when data was a by-product, not a capital asset, leaves many organizations ill-equipped to manage large volumes of data and extract their business value. The processing, memory, and storage requirements of SAP's Digital Core are more demanding. Also, switching to new infrastructure presents an important consolidation and simplification opportunity. IDC believes that businesses that are moving to the Digital Core need to rethink the server and storage as well as data protection infrastructure that supports their SAP landscapes. Key objectives include:

- Consolidating and simplifying IT on modern infrastructure designed for SAP HANA (Organizations should strive for running mixed workloads [production and nonproduction] on the same infrastructure while achieving high performance at scale for their virtualized SAP landscapes, improving productivity, simplifying management, obtaining continuous availability, getting better data protection, and lowering their TCO.)
- Deploying a cloud-enabled infrastructure to run SAP with the efficiency of a cloud operating model and to facilitate seamless interaction with cloud deployments of new, intelligent SAP applications
- Supporting new, intelligent, data-driven applications that leverage diverse data from multiple sources, such as structured business data in SAP HANA and unstructured big data and IoT data, stored outside SAP HANA, with a comprehensive and secure data management and orchestration framework across the core-edge-cloud deployment

Rather than monolithic, siloed infrastructure, a modern datacenter requires infrastructure that supports both next-generation applications and modernized versions of existing mission-critical applications that are evolving to make greater use of extended memory and solid state storage resources. Modern infrastructure is agile, flexible, service ready, cloud based, and capex-friendly. In addition, it is standardized, software defined, and secure.

IDC has seen businesses increasingly move their mission-critical applications to converged systems to fulfill these requirements. Converged systems are pre-integrated, vendor-certified systems containing server hardware, storage, data protection, networking, and systems management software. They provide a platform for consolidation, reduced complexity, lower TCO, agility, and the ability to run mixed workloads on the same platform. Figure 1 shows that converged SAP-certified appliances are the preferred infrastructure choice for SAP.

**FIGURE 1 Preferred SAP-Certified Infrastructure**



Source: IDC's Special Study Infrastructure Adoption Trends for SAP and SAP HANA 2019

*Dell EMC's SAP-certified VxBlock converged infrastructure system delivers the capabilities necessary to support SAP's most demanding workloads.*

## DELL EMC VXBLOCK FOR SAP OVERVIEW

Dell EMC's SAP-certified VxBlock converged infrastructure system delivers the capabilities necessary to support SAP's most demanding workloads. VxBlock provides high availability and high performance of mission-critical SAP applications, data protection across SAP and non-SAP applications, efficient backup and restore of SAP data, a cloud-enabled infrastructure, and scalable data persistence next to the in-memory database. In addition, Dell EMC offers SAP-certified solutions that provide continuous data protection and recovery consistency for interdependent SAP and non-SAP applications. Also, Dell Technologies' SAP-certified backup and restore solutions are designed to provide SAP administrators with centralized visibility and control.

Dell EMC VxBlock is built with Cisco blade and rack servers and networking, VMware virtualization, and Dell EMC storage and data protection. While a choice of multiple storage arrays is offered in a single VxBlock system, the two most often used storage arrays are PowerMax and Unity. PowerMax offers six-nines availability, 10M IOPS, and Symmetrix Remote Data Facility (SRDF), which is generally considered to be the gold standard of replication. Unity offers flexibility by supporting both file and block, and, like PowerMax, Unity integrates well with the rest of Dell Technologies' suite of products, including Dell's data protection suite also available for VxBlock. Dell EMC considers the PowerMax portfolio as the workhorse for SAP, capable of handling the most demanding SAP landscapes, whether they run on HANA or on an alternative database, including serving as the storage platform for a migration from a non-HANA database to S/4HANA.

Dell EMC VxBlock has been designed to provide:

- **Flexibility:** There is a broad choice of technologies to configure for supporting SAP and any other workloads.
- **Purpose-fit sizing for current and future needs:** Dell Technologies will spec out and architect the different servers for the various SAP modules and purpose-fit size them for the current and future needs of business.
- **Both SAP HANA and non-SAP applications in one system:** A single-system approach leverages common infrastructure across application landscapes, with new firmware and hypervisor releases, pretested for interoperability across the VxBlock system.
- **High availability and data protection:** VxBlock provides HANA system replication between two systems as well as HANA system backup; data protection is installed at the factory and is highly integrated using Dell EMC RecoverPoint.

- **Various grades of recovery time objective (RTO) and recovery point objective (RPO) windows:** VxBlock can deliver various grades of RTOs and RPOs depending on the business need, even extremely short RPO and RTO windows.
- **Services:** Dell Technologies Services helps users maximize the value of their SAP environments on VxBlock systems through system deployment and data migration services, as well as strategy consulting and implementation services for application resiliency, service-level definition, data protection, hybrid cloud, and infrastructure as code for automating infrastructure and database operations.

The sections that follow show in quantified detail how much value Dell EMC VxBlock users extract from using the platform for their SAP landscapes.

## THE BUSINESS VALUE OF DELL EMC VXBLOCK FOR SAP

### Study Demographics

IDC conducted research that explored the value and benefits of using Dell EMC VxBlock converged infrastructure solutions to run SAP environments. The project included nine interviews with Dell Technologies customers that had experience with or knowledge about the benefits and costs of VxBlock as a platform for their SAP operations. Interviewed organizations were asked a variety of quantitative and qualitative questions with regard to the impact on their IT operations, business outcomes, and costs.

Table 1 presents study demographics and profiles. The organizations interviewed had an average of 42,656 employees, indicating an enterprise-level profile, with average annual revenue of \$33.4 billion reflecting extensive business activities. The geographical regions in the study included the United States (5), Switzerland (2), Germany, and Japan. In addition, the organizations represented a good mix of vertical markets: manufacturing (3), media and communications, pharmaceutical (2), and telecommunications (3).

**TABLE 1** Demographics of Interviewed Organizations

	Average	Median
Number of employees	42,656	20,500
Number of IT staff	3,211	300
Number of business applications	1,482	275
Revenue per year	\$33.48 billion	\$2.30 billion
Countries	United States (5), Switzerland (2), Germany, and Japan	
Industries	Manufacturing (3), media and communications, pharmaceutical (2), and telecommunications (3)	

*n=9 Source: IDC, 2020*

## Choice and Use of Dell EMC VxBlock for SAP

Organizations interviewed by IDC described their use of Dell EMC VxBlock to run their SAP environments and the reasons they chose the solution. Interviewed customers cited various factors for their choice of the solution, such as the need to have an IT infrastructure platform that would allow them to maximize the value of data tied to their business-critical SAP environments and enable robust deployment of new SAP technologies, including S/4HANA. They also cited the benefit of having a single converged infrastructure platform sourced from a single vendor. According to interviewed Dell Technologies customers, their SAP environments are critical to their businesses and the ability to leverage data to create value, with one organization succinctly stating: *“Everything runs on SAP. Because all our operations run on SAP, if there is no SAP, there is no revenue.”*

Study participants commented on why they chose the VxBlock platform for their SAP environments:

- **Ability to lift business above infrastructure:** *“Basically we chose VxBlock to reduce the operational efforts related to our infrastructure. With VxBlock, we no longer take time to compare versions of individual components when upgrading. As a result, business is faster.”*
- **Having infrastructure for data-driven business:** *“One challenge is that more and more systems are on the path to SAP HANA, which is more memory intensive, and requires faster requests for servers to be delivered almost right on time . . . . We may have just a couple days to deliver the new systems and that is something we can do with VxBlock.”*
- **Platform from a single vendor to support SAP:** *“We were looking for a complete solution from a single source, not just the bricks that would need to be put together. We wanted to avoid doing a compilation of small parts again.”*

**“** Basically we chose VxBlock to reduce the operational efforts related to our infrastructure. As a result, business is faster. **”**

Table 2 shows interviewed organizations' use of Dell EMC VxBlock to run their SAP environments. They had a substantial footprint with an average of 6 VxBlock systems running an average total of 711 virtual machines (VMs) with 560TB of data for 23 SAP applications. The central role of these SAP applications in study participants' businesses is evidenced by their support of 82% of total revenue.

**TABLE 2** Dell EMC VxBlock for SAP Use by Interviewed Organizations

	Average	Median
Number of VxBlock systems	6	4
Number of virtual machines (VMs)	711	400
Number of terabytes	560	250
Number of SAP applications	23	20
Number of users of SAP workloads and applications running on VxBlock (SAP users)	11,672	7,000
Percentage of total revenue	82	100

n=9 Source: IDC, 2020

## Business Value and Quantified Benefits

Interviewed organizations discussed the strong value they have received by running business-critical SAP applications and workloads on VxBlock converged infrastructure. They stressed the operational and cost efficiencies of the platform as well as business enablement through improved agility, reliability, and performance for their SAP environments. Study participants commented on these benefits:

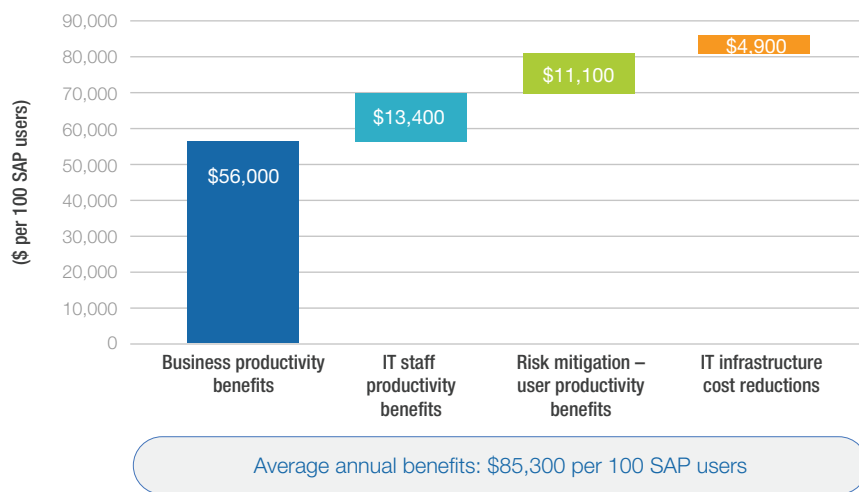
“The change in our environment was about more than just VxBlock. It was also about what else you can do when you become fully virtualized . . . VxBlock is a transformative and not just a transitional technology.”

- **Transformational impact:** “The change in our environment was about more than just VxBlock. It was also about what else you can do when you become fully virtualized . . . VxBlock is a transformative and not just a transitional technology.”
- **Performance, reliability, and increased capacity:** “The most significant benefit of VxBlock is performance. It is much faster than some of the older systems we had. The second is reliability. We don't have interruptions or failures anymore . . . We have higher internal customer satisfaction.”

Based on interviews with Dell Technologies customers, IDC quantified the value that they will achieve over five years using VxBlock to run SAP applications and workloads compared with their previous IT infrastructure at an annual average of \$85,300 per 100 SAP users (\$9.96 million per organization) in the following areas (see Figure 2):

- Business productivity benefits:** The improved agility, reliability, and performance of SAP environments enabled interviewed organizations to run more effective and proactive businesses. As a result, they win more business and improve employee productivity. IDC quantifies the value of higher productivity and revenue as worth an annual average of \$56,000 per 100 SAP users (\$6.53 million per organization).
- IT staff productivity benefits:** Infrastructure and application management teams benefit from day-to-day efficiencies, while SAP development teams benefit from a higher-performing and more agile infrastructure. IDC puts the value of IT team efficiencies and productivity gains at an annual average of \$13,400 per 100 SAP users (\$1.56 million per organization).
- Risk mitigation — user productivity benefits:** Minimizing the frequency and impact of unplanned outages affecting SAP environments significantly reduces business risk as well as costs associated with lost employee productivity and revenue. IDC calculates that interviewed organizations will benefit from higher productivity and revenue worth an annual average of \$11,100 per 100 SAP users (\$1.29 million per organization).
- IT infrastructure cost reductions:** Operating a consolidated and efficient IT foundation reduces ongoing IT infrastructure-related costs that include maintenance, power, and space costs. IDC projects that study participants will save an annual average of \$4,900 per 100 SAP users (\$569,000 per organization).

FIGURE 2 Annual Average Benefits per 100 SAP Users



n=9 Source: IDC, 2020



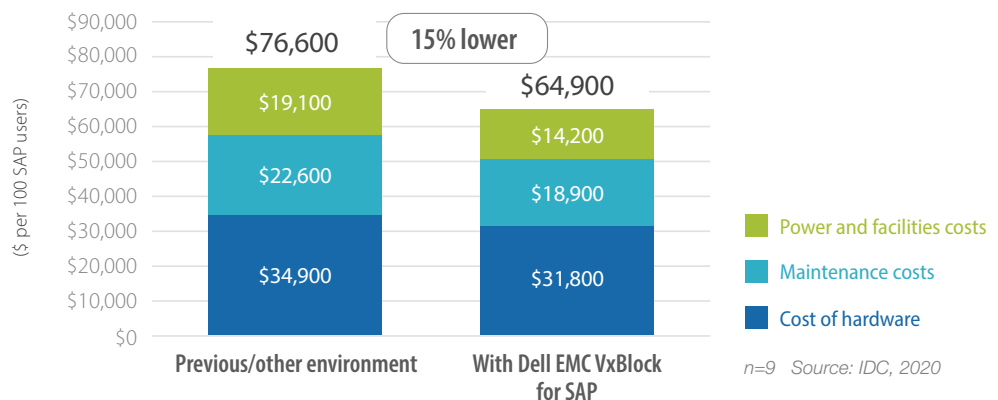
## Cost-Effective IT Infrastructure for SAP Environments

As previously described, VxBlock integrates compute, storage, network, data protection, and virtualization capabilities into a turnkey converged system that supports business-critical SAP workloads. It has been designed to help companies deliver IT resources faster, protect high-value workloads, and simplify life-cycle management for all technologies across the stack. Study participants reported that the solution provides flexible technology choices for required IT resources.

Interviewed VxBlock customers reported that the platform’s strong performance and consolidated nature enable them to run equivalent SAP workloads at a lower cost than more distributed or other IT architecture approaches. One study participant discussed how performance gained through flash storage capabilities helps the company reduce overall costs: “We are on our second generation of VxBlock and are now moving to 100% flash as a cost-savings measure . . . With the dedupe and compression capabilities of VxBlock, we are able to slash our overall costs.” Figure 3 shows the five-year cost of infrastructure per 100 SAP users including hardware, maintenance, and power/facilities expenditures. IDC calculates that study participants will spend 15% less with Dell EMC VxBlock than with their legacy or alternative solutions.

*IDC calculates that study participants will spend 15% less with Dell EMC VxBlock than with their legacy or alternative solutions.*

**FIGURE 3** Five-Year Cost of Infrastructure per 100 SAP Users



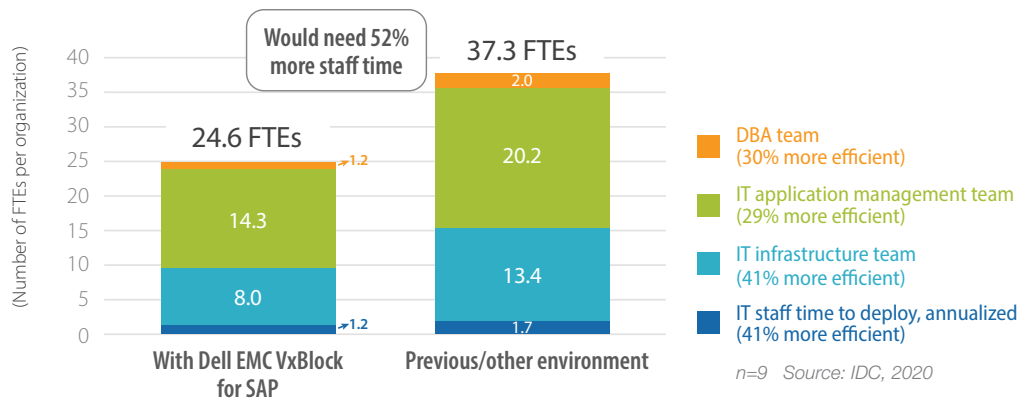
## More Efficient and Effective IT Teams

Study participants reported that using Dell EMC VxBlock to run their SAP environments has enabled substantial cross-IT staff efficiencies. They reported saving time on activities across the infrastructure and application life cycle, including deployment, management, administration, and upgrades. These efficiencies have saved valuable staff time and freed up IT teams to

“With VxBlock, we can do more project work, take care of business partners, and move our IT forward.”

work on more innovative and business-focused tasks and activities, including SAP S/4HANA implementations. One study participant explained: “With VxBlock, we can do more project work, take care of business partners, and move our IT forward. We’ll be freed up to handle a project like supporting S/4HANA, and with VxBlock, we will be ready to move to S/4HANA when the time comes.” As shown in Figure 4, IDC calculates that interviewed organizations would require 52% more staff time and resources to deploy, manage, and run equivalent SAP environments if they did not have the VxBlock platform.

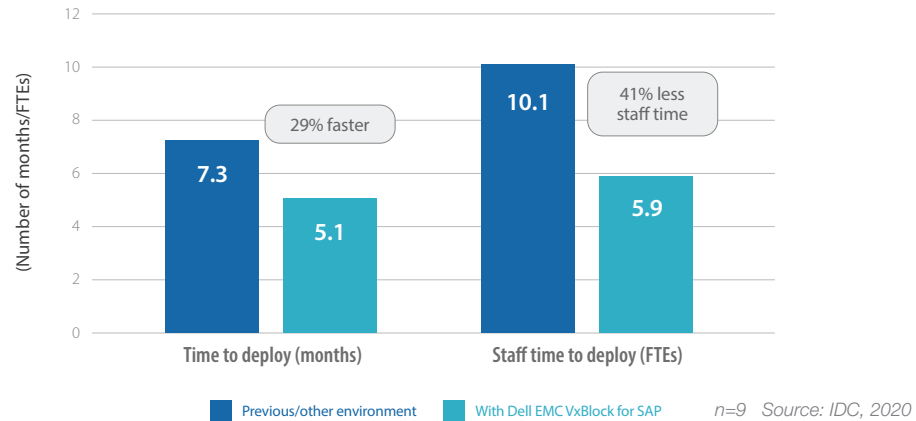
FIGURE 4 Overall Impact on IT Teams



“VxBlock is a complete design system that we can run out of the box.”

Staff efficiencies with VxBlock begin with deployment. Study participants reported requiring less staff time to deploy VxBlock for their SAP environments than comparable more distributed or alternative solutions (41% less staff time) as well as completing deployment in less time (29% faster) (see Figure 5). One study participant commented on the time savings enabled by VxBlock: “VxBlock is a complete design system that we can run out of the box. We stood it up in half a week, and it would have taken two weeks on the previous system, which was smaller.” Another Dell Technologies customer noted: “It took us about three months to deploy each VxBlock. The previous solution would have been a nightmare; months of lab work, months racking and stacking, probably at least six months — and wouldn’t have been deployed as well as VxBlock.” Thus study participants not only required less valuable IT team time to deploy VxBlock but also provided their businesses with enhanced agility, reliability, and performance associated with having the upgraded infrastructure platform at an earlier time than they otherwise could have.

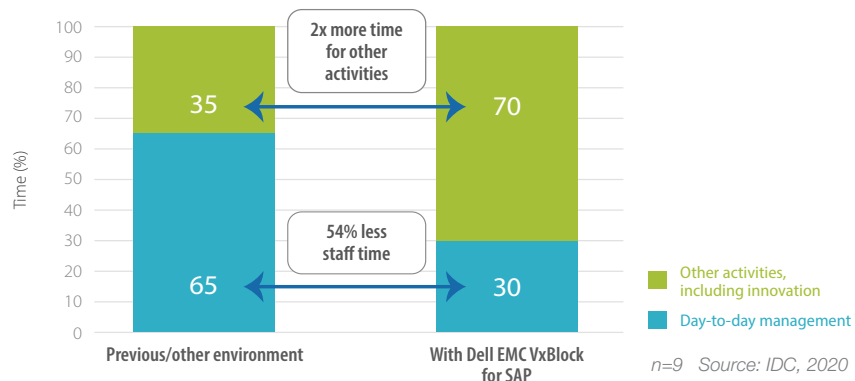
FIGURE 5 Impact on Time and Staff Required to Deploy



“ We used to spend about 60% of our team’s time keeping the lights on. It is now down to 10% with VxBlock. ”

Study participants reported that running SAP environments on Dell VxBlock has significantly changed the nature of the work that IT infrastructure teams carry out on a day-to-day basis. With VxBlock, these teams spend significantly less time on day-to-day activities, freeing up more time for business- and innovation-related activities. One study participant commented: “VxBlock is preassembled and preconfigured, which doesn’t require a large staff . . . .With VxBlock, we’ve freed up time to work on other systems and services, including VxBLOCKS not supporting SAP.” Another participant said: “One of the big benefits of VxBlock are the low maintenance efforts for IT staff . . . . We used to spend about 60% of our team’s time keeping the lights on. It is now down to 10% with VxBlock. So much of the system runs on its own. We can step back from that day-to-day hands-on activity and work on more strategic projects.” Figure 6 illustrates how study participants have reduced the amount of time the IT infrastructure teams must spend on day-to-day activities by more than half (54%) and doubled the amount of time these teams have available for other project work and initiatives.

FIGURE 6 Impact on IT Infrastructure Team Activities



## Improved Agility, Reliability, and Performance

Interviewed Dell Technologies customers reported that VxBlock has provided the agility, reliability, and performance required for their business-critical SAP environments. As a result, interviewed organizations can create more value through the SAP environments that sit at the center of their business operations and encourage the creation of more value through their operational data.

Study participants spoke with IDC about the impact that agility provided by VxBlock has on their IT and business operations. In particular, the ability to move around compute, storage, and networking resources to match business demand is critical to delivering flexible and robust IT services to their businesses. One interviewed Dell Technologies customer described the impact of VxBlock on its agility and scalability: *“VxBlock helps us capitalize on data because its scalability enables growth . . . . We can add more resources more easily when we need them.”*

While improved agility has benefits across business operations for interviewed organizations, it has a direct impact on application development teams’ activities. These teams, which are responsible for delivering timely and relevant SAP functionality to customers and employees, rely on the ability to access compute and storage resources to test, develop, and release new applications and features. IDC found that on average, development teams working in SAP environments at interviewed organizations were 11% more productive with VxBlock. As shown in Table 3, this increased level of productivity is reflected in their ability to deliver more new applications/major features (9% more) and new features (22% more) while condensing the respective development life cycles (15% faster for new applications and 20% faster for new features).

*“VxBlock helps us capitalize on data because its scalability enables growth . . . . We can add more resources more easily when we need them.”*

**TABLE 3** Impact on Application Development

	Previous/Other Solutions	With Dell EMC VxBlock for SAP	Difference	Efficiency with Dell EMC VxBlock (%)
<b>New applications</b>				
Number of new applications/major new features per year	13.3	14.5	1.2	9
Development life cycle per new application (number of weeks)	14.0	11.8	2.2	15
<b>New features</b>				
Number of new features per year	307	375	68	22
Development life cycle per new feature (number of weeks)	5.8	4.6	1.2	20

n=9 Source: IDC, 2020

Study participants also reported benefiting to a significant extent from improving the reliability of their SAP environments with Dell EMC VxBlock. As a result, they have greatly reduced business risk and productivity losses associated with the use of SAP applications. They cited greater resiliency and faster recovery when their workloads experience problems, the integrated nature of the platform, as well as more limited risk related to data because of their ability to meet data recovery objectives (i.e., RTO and RPO) more consistently. Study participants commented on these benefits:

- **Reduced operational impact of outages:** *“VxBlock is more resilient. Before, when outages affected more distributed physical servers, memory, or hard disks, it would take 30 minutes to 1 hour to get back online. We wouldn’t lose money, but internal users got quite annoyed ... and we lost productivity for internal services by about 15%.”*
- **Strong integration means fewer problems with systems and software:** *“In the past, we had to deal with the integration of software and systems. Now, with VxBlock, the software works together and runs on the system without problems.”*
- **Real-time recovery and consistently meeting RPOs/RTOs:** *“We use the synchronous replication functionality of VxBlock. For workloads on replicated remote storage, we have an RPO near zero and an RTO near 4 hours. We are now meeting our RPOs and RTOs 100% of the time.”*

“ We use the synchronous replication functionality of VxBlock. We are now meeting our RPOs and RTOs 100% of the time. ”

As shown in Table 4, study participants have achieved a substantial improvement in both the number of unplanned outages affecting SAP applications (83% fewer) and the overall impact in terms of lost productivity (96% less). This translates to significant value for interviewed organizations from both an absolute perspective and a relative perspective. They save an average of 2.5 hours of lost productivity per user, which is worth an average of \$1.08 million per organization per year, and as importantly, the amount of productive time lost per user due to these types of outages is reduced to less than 10 minutes per user per year.

**TABLE 4 Impact on Unplanned Downtime**

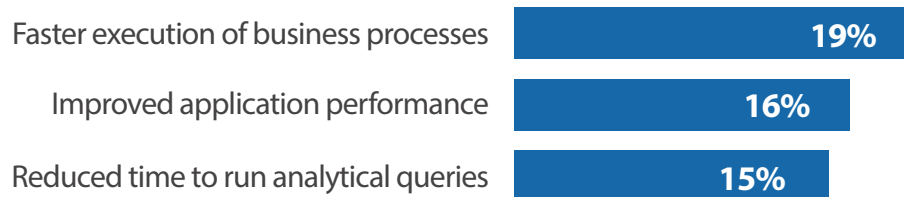
	Previous/Other Solutions	With Dell EMC VxBlock for SAP	Difference	Efficiency with Dell EMC VxBlock (%)
Number of unplanned outages per year	11.9	2.1	9.8	83
MTTR (hours)	3.1	0.6	2.5	81
Lost productive time per year per SAP user (hours)	2.6	0.1	2.5	96
Value of lost productive time per organization per year (FTEs)	16.0	0.6	15.4	96
Equivalent value of lost productive time per organization per year	\$1.12 million	\$42,200	\$1.08 million	96

n=9 Source: IDC, 2020

*Study participants reported tangible improvements in the performance of their SAP environments running on Dell EMC VxBlock.*

Study participants reported tangible improvements in the performance of their SAP environments running on Dell EMC VxBlock. As previously noted, they run many of their most business-critical applications on VxBlock, with more than four-fifths of their revenue on average relating to these workloads. Thus their ability to deliver high-performing SAP-based workloads and applications and create value through the data in their SAP ecosystems is paramount to their business operations. Study participants reported important improvements in terms of SAP performance with Dell EMC VxBlock, including faster execution of business processes (19%), improved application performance (16%), and reduced time to run analytical queries (15%) (see Figure 7).

**FIGURE 7 Impact on SAP Performance**



*n=9 Source: IDC, 2020 (% of improvement)*

*For study participants, these improvements translate into better business results in the form of higher revenue and more efficient business operations in the form of higher employee productivity.*

## Business and Operational Enablement Benefits

The benefits described thus far for interviewed organizations from running their SAP environments on Dell EMC VxBlock include improved agility, reliability, and performance. For study participants, these improvements translate into better business results in the form of higher revenue and more efficient business operations in the form of higher employee productivity. Overall, these benefits reflect the ability of interviewed organizations to create more value through their SAP environments in terms of:

- Meeting customer demand in a timely and robust manner
- Providing employees with high-performing and relevant SAP applications
- Upgrading to newer and more functional SAP environments
- Leveraging data to create actionable insights in support of business activities
- Establishing and maintaining competitive differentiation

The extent to which interviewed organizations' businesses depend on their SAP environments means that they have large numbers of end users who depend on business-critical SAP

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applications. Thus, when these SAP applications perform better and have more functionality, these employees work more effectively and are better positioned to use and apply data to drive improved business results:

- **Moving to real-time SAP data:** *“We’re working on taking advantage of real-time access to data with SAP HANA running on VxBlock. We’re changing to real-time processes and not waiting on getting data overnight and then having to wait another day to get the second part of the data.”*
- **Performance for real-time data:** *“The biggest thing for us with VxBlock is performance ... applications perform better. One of our biggest complaints has been getting data that’s required such as product and sales data and syncing between our back-end SAP and external-facing applications. VxBlock helps with this because of the speed. We can get out real-time data.”*

Table 5 summarizes these business benefits and revenue gains in terms of the three classes of improvements:

- Improved agility, reliability, and performance
- Gains from higher productivity for employees who use SAP workloads and applications on a regular basis to do their jobs
- Reduced business losses from unplanned outages

All three factors combined synergistically to optimize business operations and results for Dell Technologies customers running their SAP environments on VxBlock. IDC quantified the impact of higher net user productivity as worth \$4.85 million per year per organization, which is the equivalent of almost a 2% net productivity gain for all SAP users. Further, study participants were able to translate these benefits to improved business results, in terms of both winning new business and losing less revenue during unplanned outages. IDC calculates a higher gross revenue of \$15.30 million per year through business enablement with VxBlock in addition to avoiding total revenue losses worth an average of \$2.25 million per year per organization.

**TABLE 5 Business Productivity Benefits: Higher User Productivity and Revenue Gains**

	Per Organization	Per 100 SAP Users
<b>Impact of higher user productivity: Improved performance and agility</b>		
Number of impacted users	3,956	34
Higher gross productivity	12.0%	12.0%
Higher net productivity of SAP users*	1.8%	1.8%
Net productivity gain (FTEs)	69.0	0.6
Value of higher net productivity	\$4.85 million	\$41,500
<b>Impact of higher revenue: Improved performance and agility</b>		
Higher gross revenue	\$15.30 million	\$131,100
Higher net revenue*	\$2.30 million	\$19,700
<b>Impact of higher revenue: Reduced business losses from unplanned downtime</b>		
Higher gross revenue	\$2.25 million	\$19,200
Higher net revenue*	\$336,800	\$2,900

n=9 Source: IDC, 2020

\*IDC model assumes a 15% margin assumption for recognizing revenue gains by converting higher gross revenue into higher net revenue.

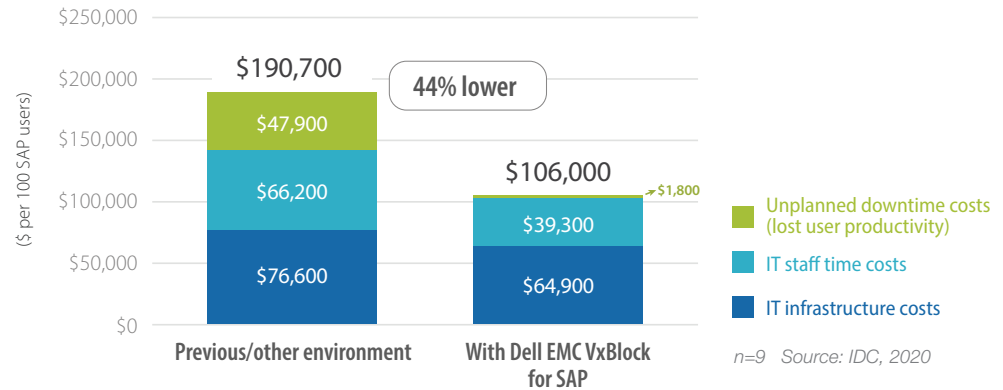
*Study participants reported that Dell EMC VxBlock has served as a cost-effective IT platform for their SAP environments.*

## Cost of Operations

Overall, study participants reported that Dell EMC VxBlock has served as a cost-effective IT platform for their SAP environments. They benefit from operating a converged and efficient IT platform that lowers IT infrastructure-related costs, including operational costs such as maintenance, power, and space costs, while requiring less staff time to run and support the solution on a day-to-day basis. In addition, VxBlock has served as a very reliable and high-performing SAP platform for interviewed organizations, thereby significantly reducing operational costs associated with employee productivity losses from unplanned outages. As shown in Figure 8, IDC calculated the five-year cost of operations per 100 SAP users including IT staff time costs, IT infrastructure costs, and the cost of unplanned downtime as 44% lower with VxBlock for SAP than previous or comparable environments, thus saving an average of \$84,700 per 100 SAP users over five years.



FIGURE 8 Five-Year Cost of Operations per 100 SAP Users



*IDC calculates that, at these levels of benefits and investment costs, these organizations will achieve a five-year ROI of 408% and break even on their investment in 10 months.*

### ROI Summary

Table 6 presents IDC’s analysis of the financial and investment benefits related to study participants’ use of Dell EMC VxBlock for SAP environments. IDC calculates that interviewed organizations will achieve total discounted five-year benefits of \$35.1 million per organization (\$300,700 per 100 SAP users) in terms of lower IT infrastructure costs, increased productivity for IT teams and business users, and revenue gains. These benefits compare with projected total discounted investment costs over five years of \$6.91 million per organization (\$59,200 per 100 SAP users). IDC calculates that, at these levels of benefits and investment costs, these organizations will achieve a five-year ROI of 408% and break even on their investment in 10 months.

TABLE 6 Five-Year ROI Analysis

	Per Organization	Per 100 SAP users
Benefits (discounted)	\$35.10 million	\$300,700
Investment costs (discounted)	\$6.91 million	\$59,200
Net present value	\$28.19 million	\$241,500
ROI (NPV/investment)	408%	408%
Payback period	10 months	10 months
Discount factor	12%	12%

n=9 Source: IDC, 2020

## CHALLENGES/OPPORTUNITIES

### For Organizations

Modernizing an ERP environment onto SAP, or modernizing an existing SAP landscape, is about developing a new IT environment in which massive amounts of data flow faster, safer, and in a way that yields richer real-time insights at lower cost. But such a modernization effort is — in many cases — not for the faint of heart, often consisting of multiple step-by-step initiatives that require very precise planning combined with comprehensive support from highly skilled staff, systems integrators or consultants, and vendors. There is the permanent risk of business disruption, complications, missed deadlines, or less-than-expected ROI.

The variables that businesses need to decide on as part of these modernization initiatives are numerous, including moving from non-SAP ERP to SAP or moving from a non-SAP database in an SAP landscape to SAP HANA and/or directly to S/4HANA; remaining on premises or partially — or even entirely — migrating to the cloud; and launching initiatives as greenfield or brownfield, or a combination thereof. As one IT director, interviewed outside of the context of this white paper, told IDC about the organization's 18-month S/4HANA migration: *"If we screw up anywhere, it's going to bring our entire operations to a halt."*

In these modernization projects, thousands of which are underway today, any part of the new environment that contributes to improving performance, driving integration, delivering simplification, and protecting the data is of the utmost value. This is the reason why businesses increasingly embrace converged infrastructure for SAP — it gives them at least one less major dimension of their SAP initiative to worry about. Converged infrastructure for SAP is pre-integrated and vendor certified and provides consolidation, less complexity, lower TCO, and greater agility.

### For Dell Technologies

The market for on-premises infrastructure solutions for SAP platforms and applications is extremely competitive. More than a dozen server OEMs are competing in the SAP-certified server and storage markets, with several of them offering both server and storage solutions, including various options for converged systems. These offerings are all tailored for the requirements of SAP HANA.

At the same time, SAP has been very active in moving its customers to the cloud for a variety of SAP platforms and applications. There are hundreds of SAP applications, and today, most of them are either cloud only or available both on-premises and in the cloud. For a server or storage OEM, cloud deployments offer little in terms of business opportunity, but they do

present an opportunity to market on-premises solutions with strong private/hybrid cloud capabilities. IDC has found that for many businesses, a significant on-premises portion for the SAP landscape remains very important even as they build out cloud-based SAP landscapes.

The baseline for a converged SAP infrastructure offering is strong server and storage performance and optimal server-storage integration. Differentiation can be achieved with tailored configurations, customer-focused sizing, high availability, data protection and recovery, security, and customer support. The latter should not be underestimated: Modernizing an SAP landscape is one of the most impactful IT projects that organizations can initiate, requiring comprehensive support from consultants, systems integrators, and infrastructure vendors.

Ultimately, an SAP solution needs to be about data, which is a customer's most important asset. IDC believes that the OEM that builds its SAP solutions around the critical importance of data mobility, availability, and protection will be a highly competitive participant in this market.

## CONCLUSION

Businesses that are moving to SAP for their business solutions, or that are modernizing their SAP landscape, have a complex journey ahead of them. IDC has found that amid the numerous decisions that IT leaders need to consider during such an SAP modernization project, they tend to prefer converged infrastructure for SAP. The advantages of converged infrastructure for SAP are powerful: They are pre-integrated, vendor-certified systems containing server hardware, storage, networking, and systems management software. They also deliver consolidation, reduced complexity, lower TCO, agility, and the ability to run mixed workloads on the same platform. In this market, Dell Technologies offers a compelling solution with its VxBlock for SAP.

IDC's research demonstrates the significant value that VxBlock can deliver to organizations as a platform for running their business-critical SAP applications that capture and process large volumes of important operational data. Through improved infrastructure agility, reliability, and performance, interviewed Dell Technologies customers reported better leveraging data from their SAP environments in support of their businesses. The result for them has been increasing revenue by creating and winning more business opportunities and achieving operational efficiencies in the form of higher productivity by providing employees with better-performing and more relevant data and insights. Meanwhile, customers also benefit from having a consolidated, high-performing infrastructure platform with VxBlock to capture

operational and cost efficiencies related to deploying, running, and supporting their SAP environments. Taken together, these business- and operations-related benefits result in strong value, with IDC quantifying the average benefits that interviewed Dell Technologies customers will achieve per year at \$85,300 per 100 SAP users (\$9.96 million per organization) and a higher gross revenue of \$15.3 million per organization per year, which would result in an average five-year ROI of 408%.

## APPENDIX

### Methodology

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from current users of Dell EMC VxBlock for their SAP environments, applications, and workloads as the foundation for the model. Based on interviews with organizations using Dell EMC VxBlock for SAP, IDC performed a three-step process to calculate the ROI and payback period:

- 1. Gathered quantitative benefit information during the interviews using a before-and-after assessment of the impact of Dell EMC VxBlock.** In this study, the benefits included IT cost reductions and avoidances, staff time savings and productivity benefits, and revenue gains.
- 2. Created a complete investment (five-year total cost analysis) profile based on the interviews.** Investments go beyond the initial and annual costs of using Dell EMC VxBlock for SAP and can include additional costs related to migrations, planning, consulting, and staff or user training.
- 3. Calculated the ROI and payback period.** IDC conducted a depreciated cash flow analysis of the benefits and investments for the organizations' use of Dell EMC VxBlock for SAP over a five-year period. ROI is the ratio of the net present value (NPV) and the discounted investment. The payback period is the point at which cumulative benefits equal the initial investment.

IDC bases the payback period and ROI calculations on a number of assumptions, which are summarized as follows:

- Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and productivity savings. For purposes of this analysis, IDC has used assumptions of an average fully loaded salary of \$100,000 per year for IT staff members

and an average fully loaded salary of \$70,000 per year for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours).

- The net present value of the five-year savings is calculated by subtracting the amount that would have been realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. This accounts for both the assumed cost of money and the assumed rate of return.
- Because Dell EMC VxBlock requires a deployment period, the full benefits of the solution are not available during deployment. To capture this reality, IDC prorates the benefits on a monthly basis and then subtracts the deployment time from the first-year savings.

*Note: All numbers in this document may not be exact due to rounding.*

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