# 15-MINUTE GUIDE: DELL EMC FOR SAP

Modernize IT to Run SAP in the Digital Era

# Contents

# Introduction

## The Intelligent Enterprise

### SAP's next act: Intelligent Enterprise applications

The digital era offers incredible opportunities for businesses, but it also brings formidable challenges. IT departments struggle to empower the business with fresh insights from complex, isolated systems. IT needs a modern infrastructure designed to deliver the performance, scale, protection and availability required by new mission-critical, data-driven, intelligent applications. SAP S/4HANA®, together with SAP® Leonardo, address these challenges by bringing structured business data together with big data and the Internet of Things (IoT), and replacing classic SAP enterprise resource planning (ERP) and Business Suite applications with powerful in-memory and edge processing to enable real-time insights for business processes, machine learning and artificial intelligence (AI).

SAP HANA® is the future of the Intelligent Enterprise. Since the 2010 release of the market-leading SAP HANA platform for real-time computing, adoption has grown to 27,000 customers.[1] And licensed customers for SAP S/4HANA has grown to 9,500.[1]

With the introduction of the SAP framework for the Intelligent Enterprise[1] SAP customers are planning their journey to respond to SAP's next act.

Figure 1.    SAP Framework for the Intelligent Enterprise

### The clock is ticking

SAP has announced that it will only offer mainstream maintenance for SAP Business Suite 7 core application releases until the end of 2025. SAP's HANA database and platform is a strategic foundation for next generation data-driven intelligent applications — SAP S/4HANA will run only with the SAP HANA database. So, the time is now for organizations to make plans for adopting SAP HANA as they move to SAP S/4HANA.

New IT infrastructure and models are required to run this game-changing digital core from SAP. But moving to SAP S/4HANA and SAP Leonardo is easier said than done. Many times, IT must balance reducing the resources required to maintain traditional SAP ERP and business warehouse (BW) systems, while investing in — and protecting investments for eventual adoption of — SAP S/4HANA.
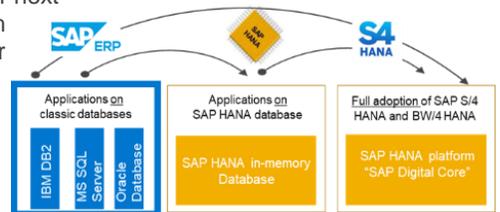
Figure 2.    Paths to SAP HANA and SAP S/4HANA

### Planning a path to SAP HANA and SAP S/4HANA

Digital transformation is a journey, with different routes for different organizations. While everyone's path to SAP HANA is unique, most customers share some common objectives in sustaining classic SAP deployments while migrating to SAP HANA and SAP S/4HANA. These objectives include the need to:

- Consolidate and simplify IT to lower total cost of ownership (TCO) and increase productivity for traditional SAP landscapes. These customers will benefit from infrastructure that's ready for SAP HANA when they are.

- Run SAP in a cloud operating model for greater agility with higher-value features including self-service, orchestration and application lifecycle management.

- Enable new data-driven intelligent applications and business processes, powered from the edge to the core.

### Target audience

This Dell EMC 15-Minute Guide is written for executives, senior IT managers, SAP applications and infrastructure IT teams. It provides an overview of how Dell EMC can help the SAP audience planning a path to SAP HANA and SAP S/4HANA while balancing the need to reduce cost and simplify IT for SAP landscapes.

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[1] *SAP Corporate Facts*, July 2018

# Set a modern IT foundation

Dell EMC has the knowledge, expertise and tools to help customers consolidate and simplify IT for SAP landscapes including adoption of SAP HANA and SAP S/4HANA. Future-proof Dell EMC infrastructure enables IT to redefine agility, performance, protection and availability for mixed workloads with varying operating profiles, such as online transaction processing (OLTP), online analytics processing (OLAP), analytics and big data.

## CONSOLIDATE AND SIMPLIFY IT FOR SAP LANDSCAPES

**Lower TCO**

- Consolidate complex SAP landscapes running on siloed infrastructure
- Reduce cost for protecting large SAP data footprints
- Ensure maximum unitization of IT assets running SAP

**Run mixed workloads on the same platform**

- Deliver performance scale for highly virtualized SAP landscapes
- Production and non-production systems
- OLTP / OLAP / analytics / big data

**Simplify SAP landscape management**

- Increase productivity automating SAP system clone, copy, and refresh operations
- Deliver full copies with the performance of SAP production instances
- Reduce storage costs for SAP copies via highly efficient data-reduction intelligence

**Meet SLAs for mission-critical SAP**

- Enable "always-on", mission-critical SAP in the digital era
- Revision data protection for operational backups, archiving and long-term retention

## Reduce the cost and complexity of SAP landscapes

Consolidate SAP landscapes

Historically, IT has run SAP production and non-production systems on siloed infrastructure, whether by design — to protect production performance — or ad hoc as new projects are added.

This results in straining valuable IT budgets and resources to maintain, monitor and manage sprawling, complex system landscapes.
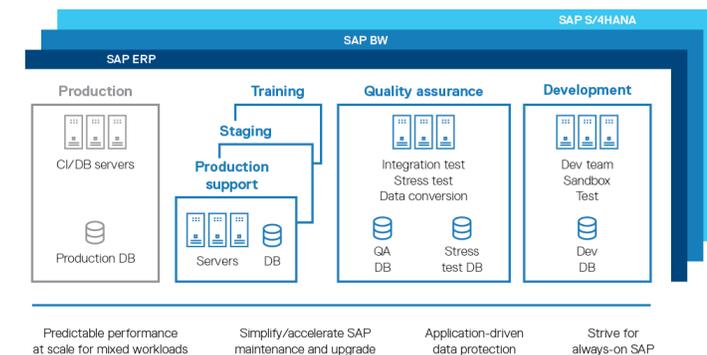


Figure 3. Invest in a modern infrastructure foundation invigorating legacy SAP ERP and ready to power SAP HANA and SAP S/4HANA

Below we have outlined several overarching essentials IT organizations consider imperative for mission-critical SAP applications.

Delivering performance for SAP systems is critical. Common SAP performance challenges and concerns include:

- Reducing the time to execute SAP ERP month-end batch jobs
- Accelerating data loads to BW and/or SAP HANA
- Meeting SAP key performance indicators (KPIs)
- Accelerating data loads for cold restarts of SAP HANA

Proven SAP mission-critical availability

In today's consumer-driven economy, excellent online experiences are critical for acquiring and retaining loyal customers. Increasingly, SAP must be "always on" to support e-business processes. Dell EMC has a history of providing high availability solutions for SAP with highly resilient no-single-point-of-failure (SPOF) architectures both within the data center and across metro locations.

Application-consistent protection and availability

Business processes typically interact with several applications. For example, an online purchase can trigger credit and inventory checks in addition to order processing and applying payment. Dell EMC solutions provide options for continuous data protection and recovery consistency for interdependent SAP and non-SAP applications, minimizing disruption and data loss from planned or unplanned events.

Reduce the costs of protecting SAP data

Production SAP ERP systems can easily grow to many terabytes in size, and customers often run multiple SAP applications along with development, test, and quality assurance copies. This leads to sprawling data footprints that are costly to protect and difficult to manage and control. Dell EMC offers SAP-certified backup-and-restore solutions that provide centralized visibility and control to SAP and database admins along with industry-leading deduplication to reduce storage requirements. *For more information check out Dell EMC Solutions for Consolidating SAP Landscapes*.

## Simplify SAP system copy/refresh cycles

One area that's ripe for simplification is SAP system clone, copy, and refresh operations. SAP Basis Admins spend a great deal of time creating and managing copies of SAP production systems to support development, test, QAS and training environments.

The process can be time-consuming with the average system copy/refresh taking up to 10 business days. Challenges include:

- Coordination among storage, server and virtualization teams
- Manual time-consuming complex post-processing steps
- Risk of manual errors and quality of copy/refresh
- Large data footprints leading to increased storage costs

These challenges are why, despite the need for SAP production copies, it's common for organizations to make copies only once or twice a year. Unfortunately, this slows innovation and increases the risk of data inconsistencies and corruption.

Developer cycles are at a premium during upgrades, migrations and/or deployment of new functionality. Leveraging Dell EMC storage snaps and integrated copy management accelerates SAP development, testing and deployment by instantly creating on-demand, space-saving, high-performance copies without impacting production performance.

As SAP environments can have dozens of non-production systems — like development, training and sandbox — automating management of SAP system copies using SAP Landscape Management, together with trusted storage-based cloning technologies:

- Increases productivity by enabling SAP Basis Admins to focus on higher-value work versus time-consuming, error-prone manual tasks

- Enables faster delivery of high-performance copies with minimal to no impact on production

- Lowers costs by reducing the size of storage footprints for SAP copies via highly efficient data-reduction intelligence

*For more information check out Dell EMC Solutions for SAP Landscape Management.*

## Moving to SAP HANA and SAP S/4HANA

SAP HANA and SAP S/4HANA are disrupting IT. Dell EMC invests in SAP's HANA Certification Program for hardware designed to help IT fast track implementations with reduced risk.

Dell EMC has partnered with SAP since the release of SAP HANA in 2011, when SAP announced the HANA Appliance delivery model for targeted workloads. Since then, Dell EMC's portfolio has expanded to SAP's Tailored Data Center Integration (TDI), converged infrastructure (CI) and hyper-converged infrastructure (HCI) models, paving a path to run SAP HANA like any other database on shared infrastructure.

Figure 4.    Leverage your preferred Dell EMC infrastructure

While Dell EMC supports all SAP paths to deploying SAP HANA infrastructure on-premises, running SAP HANA on shared infrastructure has become the preferred model — it provides more flexibility with lower TCO as you scale deployments.

Dell EMC offers comprehensive choice in SAP HANA – certified infrastructure options, data protection and availability, and professional services for SAP HANA deployment, migration and re-platforming projects. *For more information check out Dell EMC Solutions for SAP HANA Infrastructure.*
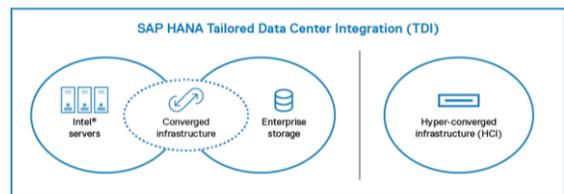
# Running SAP in a cloud operating model

Increasingly, SAP customers want to transform IT for faster innovation with accelerated time to market using mobile consumer-grade apps and real-time analytics and reporting, and to enhance the customer's experience in real-time.

As a result, enterprise IT is being pressured from all sides — developers, end users, line-of-business owners — to eliminate complexity by quickly delivering the right IT services and applications to support the business, no matter what their projects require.

But how do you get there, and what does it really mean?

Organizations continue to look for ways to modernize their infrastructures for traditional and emerging applications. The reality for most organizations is that workloads come in various shapes and sizes including operating profiles and SLA requirements. This is especially true in massive, dynamic IT environments that consist of multiple mission-critical applications leveraging the same underlying infrastructure.

## Cloud-enabled reference model

According to the Organization for the Advancement of Structured Information Standards (OASIS), a *reference model* is an abstract framework for understanding the significant relations among the entities of some environment, and for the development of consistent standards or specifications supporting that environment.

The blueprint for a cloud infrastructure capable of delivering a cloud-like experience while continuing to meet the needs of a dynamic business is shown through a cloud-enabled reference model.

The model is designed specifically to describe and align the layers and cross-functions that should be considered when designing and deploying a cloud environment.

- Five logical layers include entities that may be present: physical, virtual, control, service orchestration, and the services themselves.



Figure 5. Cloud-enabled Infrastructure Reference Model

- Further, three cross-layer functions are essential to reliable secure cloud services: service management, business continuity, and security.
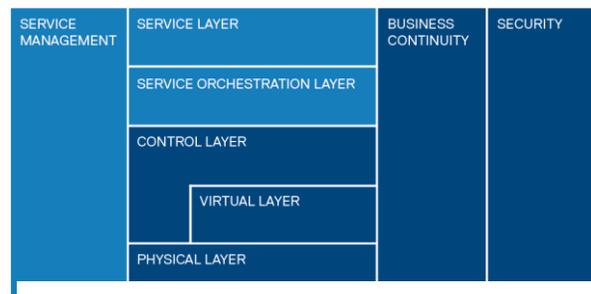
In this guide, we briefly introduce how Dell EMC's cloud-enabled infrastructure supports and participates in five specific aspects of the cloud-enabled reference model: physical, virtual, control layers, business continuity and security functions.

## Setting an on-premises foundation

Many SAP customers run (and plan to continue to run) "core" SAP applications on-premises. As SAP customers modernize their IT infrastructures, they are looking for solutions that provide agility, high availability, operational efficiency, and optimized control for the most mission-critical and demanding SAP enterprise production environments.

Running SAP in a cloud operating model starts with a future-proof infrastructure foundation designed to run traditional SAP ERP and BW with emerging intelligent applications powered by SAP HANA and SAP S/4HANA.

[According to an ESG Survey, by modernizing IT using converged infrastructure/hyperconverged infrastructure (CI/HCI), organizations find they can fulfil their requirements.]



Figure 6. Create Foundation with Dell EMC Converged and Hyper-converged Infrastructure

Physical/virtual layers

The infrastructure pieces of the reference model act as the foundation for the entire cloud environment.

- The *physical layer* includes all physical components of the environment — compute, network and storage — as well as any protocols, tools and processes used to operate them. These entities are also responsible for satisfying requests made by the other layers.
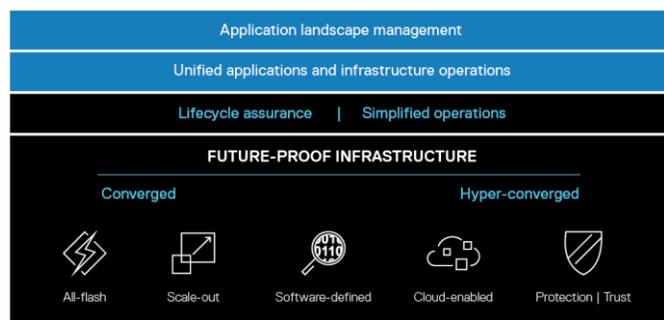
- The *virtual layer* is deployed on top of the *physical layer* to virtualize the resources provided by the physical layer, creating pools of virtual resources.

- Dell EMC underpins modern infrastructure platforms with key technology pillars such as all-flash scale-up and -out architectures, software-defined infrastructure and cloud-enabled systems, all wrapped in protection and trust. Dell EMC industry-leading converged and hyper-converged platforms — including SAP HANA–certified hardware — make adoption of these pillars faster, simpler and more efficient with less risk and cost.

Control layer

The *control layer* is responsible for management and configuration of all physical and virtual resources. The technology that enables this functionality is deployed on either the virtual or physical layer and handles requests from IT administrators or top-level services. Dell EMC together with VMware provide an integrated software stack unifying application management and IT operations.

- Lifecycle assurance and simplified operations: Regularly stabilized and optimized infrastructure with firmware/ software upgrades is key to providing ongoing lifecycle assurance that SAP systems are running on compliant and healthy infrastructure. This includes simplifying infrastructure operations by monitoring infrastructure health — including compute, storage, network and virtual technologies — as a unified pool rather than as a collection of discrete components. With CI and HCI, Dell EMC has done the heavy lifting, so customers can enjoy a faster, simpler and less risky lifecycle-assurance approach.

- Unified SAP applications and infrastructure operations: Providing a complete view of the health and performance of SAP systems and components is imperative for proactive remediation based in actionable explanations of underlying problems with recommended corrective actions.

- Dell EMC CI and HCI, working together with VMware® and Blue Medora® Management Packs, enable out-of-the-box dashboards that deliver a holistic view of SAP systems and components.

Business Continuity

*Business continuity*, acts as a cross-layer function in the model to take measures against potential infrastructure downtime. These measures are either proactive or reactive depending on the nature of an outage.

- Mission-critical availability: In today's consumer-driven economy, the online experience means everything for acquiring and retaining loyal customers. Increasingly, SAP must be "always on" to support e-business processes. Dell EMC CI and HCI with VMware, help enable continuous availability for SAP by reducing risk from single points of failure (SPOF) within the data center and across stretched metro-clusters.

- Application consistent protection and availability: Business processes typically interact with several applications to properly complete a transaction. An online purchase can trigger a credit check in finance, perform an inventory check for product availability, process the order and collect payment.

- Dell EMC CI and HCI provide options for continuous data protection and recovery consistency for interdependent SAP and non-SAP applications, minimizing disruption and data loss from planned or unplanned events.

Security

The *security function* specifies the adoption of administrative and technical mechanisms that can mitigate or minimize security threats and provide a secure cloud environment. This cross-layer function supports all the layers — physical, virtual, control, orchestration, and service to provide secure services to consumers.

At the *physical and virtual layers*, while virtualizing SAP systems can reduce TCO and enhance the agility for SAP systems, this freedom of movement and mobility can lead to compliance and protection concerns at the network layer. SAP applications in a cloud operating model require:

- The ability to ensure network security policies are maintained and enforced wherever the SAP VM travels.

- Dell EMC CI and HCI systems provide network virtualization with VMware NSX® delivering networking and security in software. One of the compelling capabilities is micro-segmentation enabling network security policies to be defined at the SAP virtual machine (VM) level in the context of the SAP application, user and workload.

## Accelerating decision making: edge to core

Emerging use cases for data-driven applications and processes means combining SAP HANA business data with external big data, machine learning and AI to fuel intelligent application and business processes. This results in a proliferation of data being aggregated, pipelined, managed and stored, from the edge to the core.

[IT needs a data management strategy and scalable framework so data is strategically managed as an asset. Your IT framework must enable agile data management operations across complex SAP landscapes, from edge to core to cloud. This foundation will serve as the platform for building and deploying SAP Leonardo–based industry use cases.]



### Managing diverse data sources and applications at the "core"

Figure 7.   Establish an IT Foundation for Data Management

We know that SAP's HANA in-memory database is foundational for data-driven Intelligent Enterprise applications, but not all data is stored in SAP HANA. What about big data located outside SAP HANA?

Dell EMC and SAP have you covered;

First, SAP Data Hub provides governance and orchestration to refine and enrich data by pipelining data processing operations like blockchain and machine learning.

- SAP Data Hub is a containerized application and uses Kubernetes.
- To deploy SAP Data Hub on-prem, run Red Hat and SUSE containers on Dell EMC infrastructure or as a managed service with Virtustream Enterprise Cloud.

Second, Dell EMC OneFS provides a secure scale-out platform to build a data lake and persist enterprise files of all sizes that scale from terabytes to petabytes in a single cluster.

### Accelerate decision making at the edge

Not all IoT data will be processed at the core data center in SAP HANA. IoT edge computing will include SAP applications and use cases supporting decisions that need to be made locally with smaller subsets of aggregated data being transmitted to the core. SAP Leonardo IoT edge computing works together with SAP-certified Dell EMC gateways — tested and validated with SAP Leonardo software for running SAP IoT applications at the edge.

## Summary

Dell EMC stands ready to work with IT organizations on the journey to achieving better outcomes — accelerating innovation in an increasingly digital era — innovation powered by intensive data-driven use cases and SAP Intelligent Enterprise applications.

These next-gen SAP platforms are fast becoming critical to improving customer experience and driving differentiation, but require infrastructure that delivers resources with superior performance, protection and agility, wherever and whenever needed.

With Dell EMC solutions for SAP, IT can run mixed workloads of classic and next-gen applications, get greater IT agility in managing complex SAP landscapes, accelerate SAP projects, and enable new data-driven intelligent SAP applications and business processes — from the edge to the core — leveraging big data, machine learning and AI.

Learn more about  Dell EMC SAP solutions.

Contact a Dell EMC expert.

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