

# THE ROAD TO SAP HANA

6 incremental steps on your way to SAP HANA can deliver impressive benefits now while helping you prepare for a full SAP HANA implementation.

# THE BENEFITS OF MOVING TO SAP HANA MIGHT BE CLOSER THAN YOU THINK

How can you modernize and deliver on-demand services while keeping your existing SAP landscape optimized and your risks minimized? How can you invest in new innovations when it can take 70–80 percent of your already flat budget just to keep the lights on?

Many SAP customers face this dilemma. For those customers and for you, deploying SAP HANA can be an essential part of an IT-modernization strategy. When properly planned, the steps along the road to an SAP HANA implementation can supply tangible benefits to your IT operations while paving the way for your eventual full implementation of SAP HANA.

SAP HANA can help any organization that is running SAP software to speed up mission-critical business processes and deliver faster access to vital data. But by taking incremental modernization steps along the way, you can reduce costs and free up resources for innovation. These steps can bring performance gains, simplify your infrastructure, and consolidate applications.

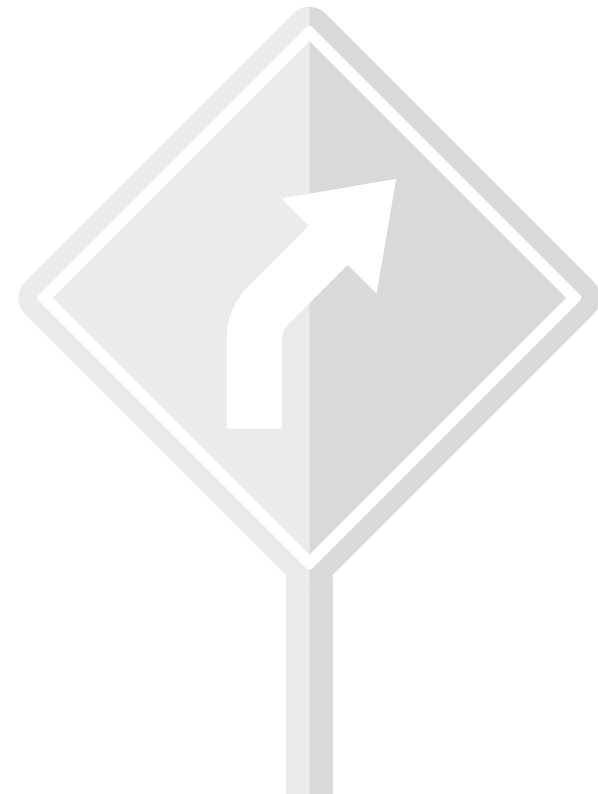
Moving to SAP HANA is a journey, not a walk across the street. This paper provides a roadmap of the journey's crucial milestones which can help you achieve tangible business benefits on the road to SAP HANA.

## Before Embarking: Know Your Business's Drivers for SAP HANA

Before you start the journey, it can be a challenge to justify to senior management the investments required for SAP HANA licensing, software, hardware, and deployment. You need to be able to articulate a solid business case for the investment, and you need to anticipate any objections, including the fact that the process of re-platforming and modernizing from traditional databases to SAP HANA can be disruptive for the business — sometimes with significant business impact.

You can assure your managers that the investment and the disruptions for SAP HANA will pay off through potentially enormous performance gains and consolidation benefits. At Pure Storage, we have seen customers report up to 60–70 percent reductions in the time needed to close quarter-end and year-end financial reports with SAP HANA. Customers can experience a reduced sales-cycle time and increased deal sizes as a result of 50-percent faster access to analytical data, enabling more accurate real-time decisions.

But anecdotes won't convince your chief technical officer (CTO). You need to perform a thorough analysis of your existing business processes and define the drivers that are important to your business and industry. This is true even for SAP customers who turn to cloud-based SAP HANA solutions to further reduce their capital expenditures (CapEx) and free up resources. In reality, these cloud solutions are not cure-alls: the vast majority of SAP customers will only use cloud-based SAP HANA solutions for specific workloads.



# THE JOURNEY TO SAP HANA

How long and how challenging your path to SAP HANA is will depend on your preparation, planning, and execution — and on your existing SAP infrastructure. Every organization's journey has its own unique details, but the overall arc often includes these steps:

1. Optimize any existing SAP environments
2. Plan to make the most of existing investments
3. Plan the size of the deployment
4. Finalize decisions about virtualization
5. Consider cloud-based solutions carefully
6. Make a data-protection plan

## STEP 1: Optimize Any Existing SAP Environments

The first solid step toward SAP HANA is to modernize your existing SAP environment for improved performance, simplicity and agility. Modern IT-infrastructure components, such as all-flash storage arrays, can accelerate SAP software running a traditional relational database by as much as 10x.<sup>i</sup> At the same time, updating your infrastructure can help reduce the cost of maintaining existing software environments.

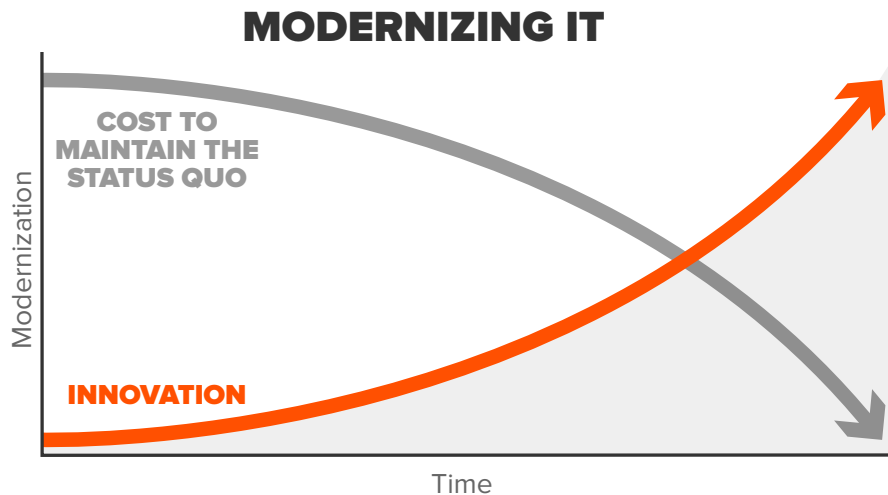


Figure 1. When you modernize your IT infrastructure, your innovation can increase while driving down the costs associated with maintaining existing software environments.

By upgrading your existing SAP environment first, you provide a foundation that increases your resources for further innovation: all-flash technology is not disruptive, it can be deployed with no downtime, and many customers realize an immediate benefit of consolidation. Many customers still run their SAP production environments separate from their test, dev, and quality-assurance (QA) environments in order to avoid the performance hit of running multiple systems on the same infrastructure. Using all-flash storage does away with this constraint because it provides scalable and predictable performance regardless of application or process. It is easy to consolidate various SAP environments and applications onto the same platform simply by re-platforming onto all-flash technology.

Beyond shifting to all-flash technology, you can modernize your existing SAP environment further with converged infrastructure. All-flash storage technology is available as a full-flash stack: a converged-infrastructure solution that includes server, storage, and network components that are pre-configured and optimized for SAP environments. As a result, you can greatly reduce time to deployment and investment risk. Additionally, Pure Storage offers a Right-Size Guarantee to ensure that you receive the effective capacity that you need for your SAP implementation, and that you can therefore benefit 100 percent from Pure Storage's leading data-reduction technology, without risk.<sup>ii</sup> This type of converged-infrastructure solution can help you protect your investments during your ongoing journey to SAP HANA because you can use the same infrastructure for all your SAP systems, whether they run on SAP HANA or traditional databases.

Once in place, your all-flash technology is easy to keep current. With the Evergreen™ Storage model by Pure Storage, your all-flash array can be modularly upgraded in place, non-disruptively, even across array generations. You can deploy it once and keep expanding and improving it for 10 years or more, all without any downtime, performance impact, or data migrations.<sup>iii</sup> Evergreen Storage also includes a business model that stays focused on expansion and modernization. With Evergreen Storage, you'll never re-purchase a terabyte (TB) that you already own for your SAP landscape.

## STEP 2: Plan to Make the Most of Existing Investments

While SAP HANA can be deployed as an appliance, a more flexible option is to deploy it through the SAP HANA Tailored Datacenter Integration (TDI) program. The TDI program enables SAP HANA customers to make use of their existing hardware and infrastructure components for their SAP HANA environments. The TDI program provides increased flexibility, greater efficiency, higher ROI, and reduced TCO. A TDI solution enables these benefits because it uses existing hardware, software, and processes, it requires limited new training, and it supports multiple workloads of different types on the same infrastructure.

## STEP 3: Plan the Size of the Deployment

The size of your SAP HANA deployment defines the server hardware that you will need. Even though SAP HANA is an in-memory data platform, storage solutions are still an important part of SAP HANA as save points, and log information must still be written to the persistency layer in case of planned or unplanned downtime. SAP HANA is measured like T-shirt sizes: XS to L.

Table 1 shows the standard sizes for SAP HANA.

Table 1. Standard sizes for SAP HANA deployments

	<b>XS</b>	<b>S AND S+</b>	<b>M AND M+</b>	<b>L</b>
Compressed data in memory	64 GB	128 GB	256 GB	512 GB
Server main memory	128 GB	256 GB	512 GB	1 TB
CPUs	2	2	4	8
SAS/SSD for data volume	1 TB	1 TB	2 TB	4 TB

You can use the SAP Quick Sizer tool to conduct your initial sizing and to get accurate information about your current SAP database size. SAP HANA requirements are calculated using the following formulas provided by SAP:

### MEMORY

$$\text{Memory}_{\text{Static}} = \frac{0.5 * (\text{Disk size from QS [in GB]} * 1.2 + 50 \text{ GB})}{7^{iv}}$$

$$\text{Memory}_{\text{Dynamic}} = \text{Memory}_{\text{Static}} \quad \text{Total Memory}^v = \text{Memory}_{\text{Dynamic}} + \text{Memory}_{\text{Static}}$$

### CPU

$$\text{CPU} = (\text{Disk-based SAP Application Performance Standards from SAP Quick Sizer Tool}) * 4$$

### DISK

$$\text{Disk} = \frac{\text{SAP HANA Memory (in GB)}}{2}$$

## STEP 4: Finalize Decisions About Virtualization

One architectural decision that you have to make is whether to deploy SAP HANA on bare metal or virtualized. Virtualized instances of SAP HANA are currently limited in size to 4 TB per virtual machine (VM). However, according to SAP co-founder Hasso Plattner, more than 86 percent of all current SAP customers' workloads would fit on 1 TB SAP HANA deployments.<sup>vi</sup> Moreover, using Pure Storage's all-flash storage in conjunction with SAP HANA can reduce the size of a deployment by an additional 40 percent due to highly efficient data-reduction technologies. If your SAP environment is already standardized on virtualization, then a virtualized SAP HANA deployment is just another logical SAP workload, and it is fully supported with up to 4 TB per VM.

## STEP 5: Consider Cloud-based Solutions Carefully

Many SAP cloud providers offer several sizes of SAP HANA deployments in their cloud environments with the promise of reduced cost and complexity and increased agility. In many cases, these benefits can be at least partially realized, but it is a misconception to believe that SAP HANA in the cloud will solve your challenges for SAP HANA or accelerate the migration of your entire business to SAP HANA. The reality is that some SAP workloads — such as smaller workloads like business planning and consolidation (BPC) — are natural candidates for the cloud, but ultimately you need to have the flexibility to dynamically move any SAP workload to the cloud. A prerequisite for this kind of agility is an on-premises or hybrid-cloud approach that lets you efficiently manage all your SAP workloads, both on-premises and off-premises.

FlashStack is Pure Storage's answer to complex, time-consuming, and resource-consuming environments. Based on Cisco server and network components, Pure Storage technologies, and VMware's virtualization stack, this proven converged-infrastructure solution provides everything needed to run traditional and SAP HANA workloads on the same platform.

Beyond high performance and simplicity, this converged-infrastructure solution helps accelerate the migration of traditional SAP workloads to SAP HANA and runs mixed workloads, including production, test, and development environments, on the same platform.

## STEP 6: Make a Data-Protection Plan

SAP HANA protects the data running on it in several ways. These range from standard backup and restore capabilities to high-availability and disaster-recovery solutions using the latest replication technology. All of these methods of data-protection have their benefits and their drawbacks, but in order to assure proper data protection, many customers use the built-in SAP HANA system replication or storage replication. The advantage of storage replication with built-in protection groups is that more than one system can be replicated and synced at the same time, which provides application consistency across SAP landscapes.

Pure Storage snapshots provide a robust and simplified way to create copies or clones of entire SAP databases. These snapshots have a small data footprint and nearly no impact on performance for a snapped production system. As such, they can help you to rapidly create backups or test/development environments, to debug errors or to create new, innovative SAP functionality. Among many other use cases, snapshots can be used to create frequent temporary backup environments, which can limit the need for other backup processes or solutions.

## HOW TO KNOW YOU HAVE ARRIVED: MEASURING SUCCESS

Your ability to accurately assess the success of your SAP applications running on SAP HANA depends on the key performance indicators (KPIs) and the business use cases that you define before the migration. Customers approaching migration in an incremental fashion have a higher success rate and a reduced risk of failure because they have more opportunities to define meaningful KPIs and realistic thresholds for success.

## An Incremental Approach

The journey to SAP HANA can be long and winding. It is advisable to plan for smaller, approachable steps instead of one large migration project. The majority of customers start by moving SAP Business Warehouse to SAP HANA instead of SAP Business Suite because it is less mission critical in many cases than enterprise-resource-planning (ERP), customer-relationship-management (CRM), or supply-chain-management (SCM) systems. In order to further minimize risk, many customers also start SAP HANA as a side project, where data will be extracted from an existing SAP Business Warehouse system into SAP HANA. Some users then use the SAP HANA system to gain confidence, experience, and insight on SAP HANA itself.

After the side projects are successfully completed and users have experienced the benefits of SAP HANA, customers usually migrate their entire SAP Business Warehouse systems to SAP HANA. In the meantime, smaller applications can also be candidates to be tested and migrated to SAP HANA (for example, BPC). If you are already using virtualization technology, all these migration steps should be performed on your standardized hardware platform.

Once you have migrated SAP Business Warehouse onto SAP HANA, you can continue the migration process with more and more SAP workloads until all systems are running on SAP HANA. It is advisable to migrate SAP Business Suite last because it can be the most complex migration.

The flexibility of your initial SAP HANA deployment is an important aspect of measuring your success because that efficiency will grow over time and continue to provide value on two fronts:

- New chipsets can provide more efficiency, better performance, and lower operational costs down the road — if the deployment is flexible enough to take advantage of them.
- It is essential to maximize the benefits of modernization while minimizing downtime, business disruption, or even data loss or corruption.



## WHEN DOES YOUR JOURNEY BEGIN?

When looking to the future, your fundamental question must be when, not if, will you start your journey to SAP HANA. After all, SAP has announced that it will discontinue support for databases other than SAP HANA in 2025. With this in mind — and knowing that SAP migration and modernization projects can take years to complete — you might have less time than you think.

Identifying the business case for SAP HANA might be one of your biggest obstacles. High-performing technology alone cannot be the sole answer and justification for an SAP HANA migration. However, you can lay the groundwork for that justification early by modernizing your current SAP environment to use all-flash storage. Increased efficiencies from flash storage can free up resources for further innovation projects and can create a track record of tangible benefits that can help justify more incremental progress toward migrating to SAP HANA.

Incremental progress is critical in this journey. Beyond dividing such a large project into manageable pieces, incrementally working toward SAP HANA also enables you to minimize your risk.

To see how Pure Storage can help accelerate your journey to SAP HANA while protecting your investment and minimizing your risk, contact your local Pure Storage SAP specialist or visit **[WWW.PURESTORAGE.COM/SAP](http://WWW.PURESTORAGE.COM/SAP)**.

- <sup>i</sup> Pure Storage. “SAP: Pure Storage® SAP solutions deliver transformational performance and simplicity for SAP and SAP HANA deployments.” <https://www.purestorage.com/company/technology-partners/sap.html>.
- <sup>ii</sup> Pure Storage. “Introducing the Newly Expanded Evergreen Storage – Guaranteed Capacity That Stays Modern and Dense.” June 2016. <http://blog.purestorage.com/introducing-the-newly-expanded-evergreen-storage-guaranteed-capacity-that-stays-modern-and-dense/>.
- <sup>iii</sup> Pure Storage. “Evergreen™ Storage. A Perfect 10.” <https://www.purestorage.com/why-pure/evergreen-storage.html>.
- <sup>iv</sup> This is the typical SAP HANA compression ratio.
- <sup>v</sup> Total memory can also be directly computed as:  $((\text{Disk size from SAP Quick Sizer [in GB]} * 1.2 + 50 \text{ GB}) / 7)$
- <sup>vi</sup> Hasso Plattner. “Your Road to SAP S/4HANA and Beyond.” SAP 2016 SAPPHERE NOW keynote. <http://events.sap.com/sapanddasug/en/session/26970>.



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