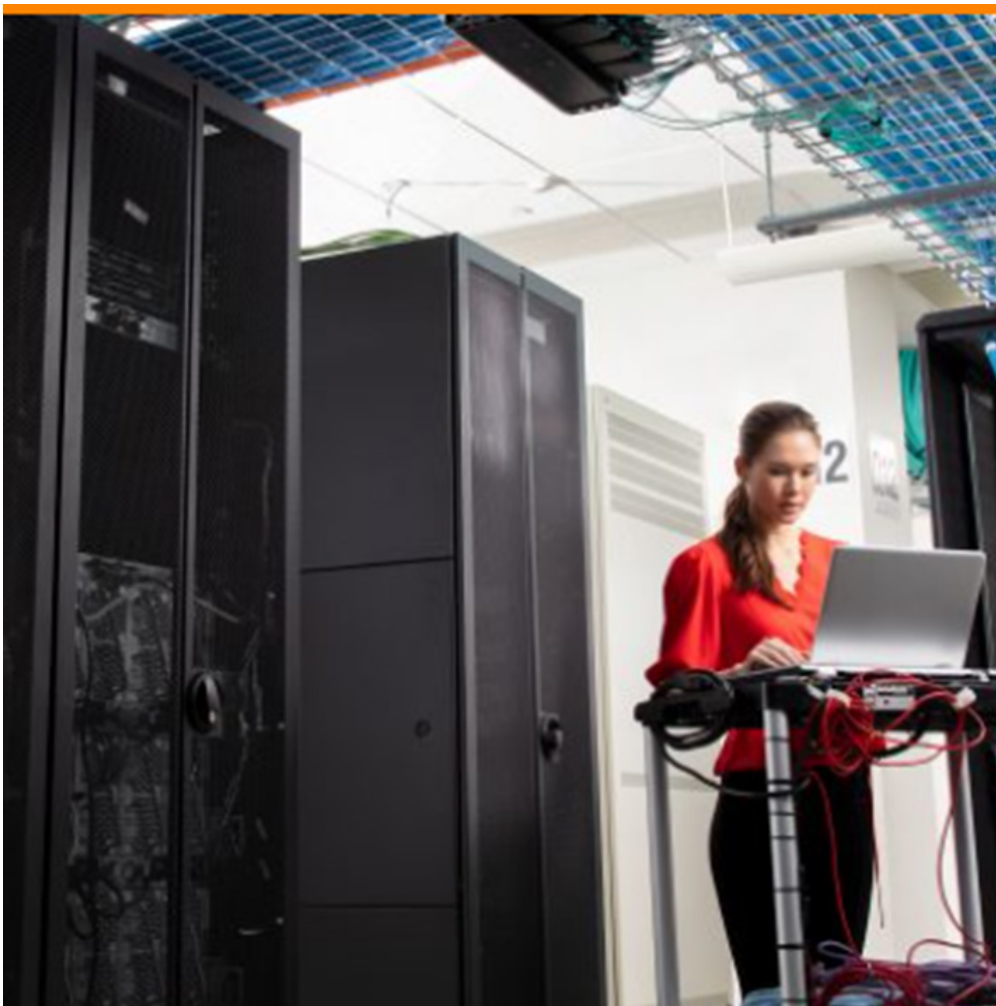


HPE GreenLake for SAP HANA with HPE GreenLake for Block Storage

Scalable infrastructure to support SAP solutions



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Executive summary

Since the introduction of SAP HANA® customers have been challenged to find the best method for implementing and managing the hardware required to run this next-generation business solution. As supported configurations and the applications have evolved, customers have more choices than ever. SAP® has announced that 2027 will be the end of support for SAP applications running on databases other than SAP HANA. As result, Hewlett Packard Enterprise has introduced [HPE GreenLake for SAP HANA](#) to provide customers the simplicity and convenience of migrating to SAP HANA while reducing risk and managing cost.

Intended audience

Hewlett Packard Enterprise, its partners, and customers who are running or need to migrate to SAP HANA can use this document to understand and evaluate HPE GreenLake for SAP HANA for their implementation.

The reader is assumed to have a working knowledge of the following products and technologies:

- HPE storage products
- SAP HANA architecture
- SAP HANA tailored data center integration (TDI)

The evolution of SAP HANA infrastructure

SAP HANA-supported hardware has undergone significant changes since it was first introduced. While adding flexibility for the customer, it has made the process of selecting infrastructure more complex. To understand those choices and how HPE GreenLake for SAP HANA helps simplify this decision, we need to understand the evolution and the choices customers currently have.

The SAP HANA appliance

When first released, SAP HANA supported only the appliance implementation model. SAP HANA appliances were predefined and configured combinations of servers, network, and storage. SAP HANA appliances initially relied on network file system (NFS) for shared storage for scale-out configurations where each SAP HANA “node” stored a portion of the database. Storage that could support a large number of nodes was important because a single server could have a maximum of 512 GB.

Scale-up appliances could also be used where the entire SAP HANA database could be contained in a single server with direct-attached storage. Some vendors used flash memory cards to support the low latency and high throughput requirements of the HANA database log volumes.

Customers were required to have an appliance for each system in their SAP HANA landscape. Typically these were the same size and configuration of their production system. This model gave you a great deal of security as these appliances were preconfigured and also certified by SAP. However, it was expensive to buy multiple appliances and upgrading or expanding their environment could be even more expensive.

Later on, they were given the option to choose Fibre Channel (FC) as the protocol for their scale-out systems. This was helpful to both customers and vendors who had a great deal of experience with this protocol running their current SAP applications, as well as other enterprise systems in their data centers.

One of the challenges with the appliance model was the lack of flexibility. Customers were locked into a certain vendor for both servers and storage. Though it was delivered as a complete unit, they were forced to migrate and learn new hardware vendors’ toolsets to manage these new systems, which is why SAP decided to release SAP HANA Tailored Datacenter Integration.

The SAP HANA Tailored Datacenter Integration

Shortly after the release of SAP HANA, SAP introduced the Tailored Datacenter Integration (TDI) model for SAP HANA infrastructure. This allowed customers to choose servers, storage, and networking from a list of certified products from different vendors and combine them to support their SAP HANA applications.

This gave customers the freedom to choose their preferred vendors and better manage their implementations. It also opened the possibility of running mixed workloads where SAP HANA and other applications coexisted on the same storage. This enabled them to take advantage of the performance and capacity of modern storage infrastructure. Both NFS and FC were supported in the model, which gave them yet another choice to make.



SAP HANA becomes virtualized

An important fact about supported infrastructure for SAP HANA is that any restrictions apply only to production environments. Customers were free to run their SAP HANA non-production environments on non-certified infrastructure if they wanted to, with the understanding that if something happened, SAP would not support any issues if they occurred. As a result, many of them chose only to use certified and supported hardware for all their systems. However, for some testing, they may choose something else. Virtualization was a perfect candidate for small experimental SAP HANA environments.

For years customers had been running their Production SAP Business Suite applications on various databases using hypervisors from companies like VMware® and Microsoft. The logical question to ask is why couldn't SAP HANA be implemented in a similar fashion? There are some tradeoffs to consider when using virtualization. VMware worked with SAP to quantify and detail the proper way to deploy SAP HANA on their hypervisor. In the end, SAP introduced support for Production SAP HANA systems using VMware.

This would technically be a TDI implementation and there were limitations to the amount of memory any single SAP HANA system could use in a virtual environment. The restriction of only NFS or FC protocols also remained. However, there are many benefits to this type of environment for both customers and service providers. Today we see that the number of bare metal and virtualized SAP HANA implementations are nearly equal, especially as support has come for virtual SAP HANA instances in the 6 TB range.

SAP HANA reaches for the clouds

The next obvious evolution for SAP HANA would be the cloud. Companies have been looking to the cloud for years to help manage costs and support a growing list of changing requirements for applications. Capital purchases must be planned well in advance and approval for purchases can take months. Add that to the asset depreciation and implementation time and companies can find themselves left behind trying to meet the changing needs of their business and customers. As a result, SAP works with many cloud vendors to enable them to deliver SAP HANA in the cloud.

SAP also has a variety of their own cloud offerings for SAP HANA. They can offer a variety of tiers and levels of support—from turnkey software as a service to more traditional infrastructure as a service.

While the flexibility and speed of the cloud has been a great gateway to SAP HANA migration for smaller and mid-size customers, it poses its own challenges for consistent service levels, control, and data repatriation.

Hyperconverged Infrastructure joins the SAP HANA party

Hyperconverged Infrastructure (HCI) was developed during the time that SAP HANA was maturing and many customers found it to be a valuable infrastructure for not only their SAP environments, but for other applications as well. Logically, it made sense for HCI vendors to look at how SAP HANA would work on their solutions. HCI solutions are like an appliance in that they contain servers, storage, and networking configured in predefined configurations to support a workload. They also use virtualization to efficiently use all the resources contained in the building blocks. Those building blocks can then be grouped together to expand compute and storage resources.

However, there were some unique characteristics to how HCI systems consumed resources that led SAP to create a separate certification process for HCI architectures. [HPE SimpliVity](#) is an example of an HCI product that has achieved SAP HANA certification and customers around the world have deployed SAP HANA on this platform.

HPE GreenLake for SAP HANA – the logical evolution for SAP HANA infrastructure

The reason you need to understand the evolution of SAP HANA hardware before you learn about HPE GreenLake for SAP HANA is because HPE GreenLake for SAP HANA is the next logical step in that evolution. Without knowing the past, it is hard to appreciate the future. HPE GreenLake for SAP HANA takes the best of all the previous options and combines it into a solution that can meet the needs of every customer.

HPE GreenLake for SAP HANA is a solution that is delivered and supported like an appliance, but flexible like TDI in that it allows you to customize the servers, storage, and networking you want. Hewlett Packard Enterprise offers both bare metal and virtualized configurations, depending on your requirements. It is sold in a cloud-like way in that you only pay for what you use with the ability to expand and reduce what you consume to meet your SAP HANA needs. It uses a cloud-based console to provision and manage the infrastructure. Customers have access to a portal where they can monitor and predict their usage and growth.

Hewlett Packard Enterprise also offers services and support depending on what makes sense for your business. It could be delivered as a turnkey software as a service where HPE manages the infrastructure and application or simply just the infrastructure that you manage.

The hardware and data reside in the customer's data center or a secure co-location of your choice. There is no doubt about the location, security, or compliance of the data. We do offer integration with public cloud providers, but customers will never be charged to repatriate their data from the cloud, because the cloud is in their building.



Information is power and data is currency

There is no doubt the amount of data created and consumed has grown in the last ten years, but the fact is that data growth has been a challenge for companies for decades. Each year managers and project teams work with their infrastructure and administration teams to determine what infrastructure is required to support their business in the next fiscal year. This includes additional or upgraded servers, backup software and materials, and of course storage. When asked how much we needed my response was “buy as much as we can afford and I sure we will find a way to use it.” The answer is the same today for administrators and infrastructure managers around the world, no matter what application they are running.

Back then, disks were measured in megabytes and a 100 GB SAP® R/3® system was considered outrageously large. Now, SAP HANA systems average over a terabyte. Despite the advances in storage technology and modern storage arrays capable of storing petabytes of data and flash media, customers still struggle to manage and plan to meet the growing needs of their businesses. Businesses must keep as much data as possible to accurately predict future trends and react quickly to changing demands as well as company and government regulations for data retention. Without the right data—easily accessible and the tools to analyze it—companies will lose their competitive advantage resulting in loss of revenue or market share.

While retaining all the data required to react to and predict trends, processing the volume of data being stored was also a challenge. Server technology matured and yet analyzing the data started to take many hours or days. This is one of the primary reasons SAP HANA was developed. SAP Business Warehouse (BW4 HANA) was designed to analyze large volumes of data and provide visual insights into trends in their business. However, those databases grew into hundreds of terabytes and again, processing took more time. There had to be a way to analyze that data more efficiently so that customers could react quickly. Soon thereafter SAP HANA was developed.

Even though SAP HANA is an in-memory database that can process and analyze billions of records in seconds, the data has to be kept on persistent storage so that it is available in case of a server or power failure. It also needs to be backed up and replicated to secondary locations in case of a complete data center outage. The storage arrays used must be able to meet the performance requirements of a database and application running in-memory.

These are just the types of challenges that HPE GreenLake for SAP HANA aims to solve. HPE GreenLake for SAP HANA enables you to correctly size and grow your data capacity while maintaining the performance required for an environment running SAP HANA. All Hewlett Packard Enterprise storage products are certified for SAP HANA. Because they are certified, they will meet even the most demanding customer's performance requirements. They support a wide range of SAP HANA instances and server memory sizes. These are the arrays that make up the HPE GreenLake for SAP HANA offering.

Building the foundation for HPE GreenLake for SAP HANA

Just as data forms the foundation for enterprises, [HPE GreenLake for Block Storage](#) can be the foundation for any SAP HANA implementation. HPE GreenLake for Block Storage is a solution that allows you to focus on results rather than spending time worrying about what is in the array. It is purchased as a subscription service that works much like a cloud offering. Customers are able to choose storage based on availability, performance, and capacity requirements. Included in this choice are the number and size of their SAP HANA environments. Because all HPE storage products are certified for SAP HANA, you can be confident that the storage array you receive will meet your needs.

When compared to other cloud solutions for SAP HANA, one of the biggest differences is availability. Customers using HPE GreenLake for Block Storage have the option to choose mission critical, which has a 100% availability guarantee, or business critical, which offers 99.9999% availability guarantee. This is significantly higher than public cloud. And because this is dedicated infrastructure in your own data center or co-location facility, it is flexible. There are no per-system contracts and you can add or remove systems to support new projects anytime without worrying about additional costs or penalties. Customers are also not charged data ingress and egress fees that can be quite expensive depending on how these systems are used. There is also no charge for snapshots or data that needs to be encrypted.

HPE storage arrays can also meet the capacity needs of any customer. We have arrays that scale from tens of terabytes to multiple petabytes. We understand that data grows and so we make it easy to expand storage capacity without downtime. HPE GreenLake for SAP HANA also comes with a built in reserve capacity. This reserve capacity can be tailored to your unique requirements and becomes available immediately when you need it. But the best part of HPE GreenLake for Block Storage is that the customer only pays for what they use. As result, you can subscribe to the service and grow into the capacity without the up-front capital expense of storage they might not use for years.

That infrastructure planning process mentioned earlier suddenly becomes much simpler. There is no need to predict how much capacity you might use and ask the business for money. Each month you get a bill for what you are using and you have instant access to trending information from the HPE GreenLake Console to see how your data growth is trending so you can determine when that bill will increase and by how much.



What can HPE GreenLake for SAP HANA do for you?

HPE GreenLake for SAP HANA has the ability to change the way nearly everyone in the organization looks at infrastructure and business. It can simplify the way you do business, make decisions, and reduce risk.

Executives

Executives throughout the organization are responsible for providing direction and making sure the company is profitable. They have to manage budgets and balance expenses with income. To accomplish this, many organizations have implemented a “cloud first” method for deploying applications. However, with that comes risk.

Things like service levels and legal requirements for data sovereignty come into play. SAP asked customers about this and was surprised by the number of customers around the world in different industries that wanted to keep their mission-critical data on-premises. But infrastructure for SAP HANA is expensive and data is growing.

Being able to manage your expenses while having predictable and constant service levels is the key to staying profitable. Being able to increase or reduce the size of your environment can mean the difference between a good quarter and a bad one.

Directors

Directors are the people who generally manage the direct budgets and overall operation of these critical systems and infrastructure. They manage the groups of administrators and application owners who keep the business running. They answer to the executives and also have to request money to support different initiatives.

For them, the key to success is having the ability to meet the needs of the business without having to often ask for more resources. When new requirements emerge or current requirements change, they need to determine whether the needs can be met with what they have, or if additional resources are needed. Unfortunately, too often this means that they have to create a business case for a capital purchase. Infrastructure to support a SAP HANA system can cost hundreds of thousands of dollars.

With HPE GreenLake for Block Storage, the resources are there and the cost of growing is not tied to an approval for capital spending. It can be as simple as an additional monthly expense for another virtual machine or additional capacity. It allows them to address the business needs faster without being bogged down with the capital approval process.

Administrators

Administrators are on the front line every day keeping applications and infrastructure running smoothly. Requests from directors and business teams keep them busy trying to do more with less. They need to plan ahead, sometimes a year in advance, for changes and growth they have no control over.

HPE GreenLake for SAP HANA and HPE GreenLake for Block Storage gives administrators a view of their applications and infrastructure quickly and easily so they can let their managers know when problems might arise. They can effectively predict when resources could run out. When they need to provision more resources to support a new initiative or project, they have the tools to accomplish that task quickly so they can focus on more innovative solutions.

Summary

The challenges facing SAP customers have not drastically changed in over thirty years. Whether running SAP R/3 or SAP HANA, customers still have to worry about capacity and performance. However, the technology has changed as well as the way that technology is consumed. They now have to decide between multiple SAP HANA deployment options and price models. HPE GreenLake for SAP HANA is tailored to remove those concerns. By utilizing HPE GreenLake for Block Storage, it enables them to tailor a solution to their business with a cost and consumption model that meets their availability, performance, and capacity requirements at a cost lower than the public cloud. It is a SAP HANA-certified solution with the proven track record of Hewlett Packard Enterprise behind it. HPE GreenLake for Block Storage has reserve capacity and performance built in that customers can utilize immediately without additional capital expense. It also allows them to pay only for what they use and provides analysis and trends to help them understand what they will use in the future.



Resources, contacts, or additional links

HPE GreenLake for Storage

hpe.com/us/en/greenlake/storage.html

HPE GreenLake for Block Storage

hpe.com/us/en/greenlake/block-storage-service.html

SAP Solutions – SAP applications, SAP HANA, S/4, C/4, BW/4

hpe.com/us/en/solutions/sap-hana.html

HPE Storage for SAP HANA: Disaster recovery, backup, and data archiving

hpe.com/us/en/storage/sap.html

HPE and SAP Alliance

hpe.com/us/en/alliance/sap.html

Learn more at HPE GreenLake for SAP HANA

hpe.com/us/en/greenlake/sap-hana.html

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Contact our presales specialists.



Chat now (sales)



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