

NUTANIX SAP DESIGN GUIDE:

Deliver More Business Value with SAP® on Nutanix



Deliver More **Business Value** with **SAP**[®] on Nutanix

Simple, secure, and scalable infrastructure with superior performance and availability. Native data protection and business continuity, consolidated data services, built-in security, and intelligent automation create the ideal foundation for SAP.

Why Run SAP[®] on Nutanix?

SAP software is critical to the success of a modern, digital enterprise. Up to 75% of all transactions worldwide pass through an SAP system.

The transition to SAP[®] HANA[®], SAP S/4HANA, and SAP BW/4HANA is creating significant infrastructure challenges with negative impacts for Basis Administrators, developers, IT architects, business units, and infrastructure teams. Maintaining infrastructure silos for classic and SAP[®] HANA[®] landscapes significantly complicates the SAP environment, increasing time, effort, and costs and adding risk.

While the public cloud is often viewed as a solution to these issues, it introduces new challenges in terms of cost, migration complexity, latency, and control. Nutanix Cloud Platform delivers the speed, fractional consumption, and simplified infrastructure management of public cloud with on-premises control and reduced cost. The Nutanix hyperconverged infrastructure (HCI) based platform delivers exceptional SAP performance and availability, and facilitates private cloud deployments capable of supporting both HANA and NetWeaver landscapes on shared infrastructure as well as the ability to extend to hybrid cloud when needed using the same software platform.

This guide explains some of the key design considerations for deploying SAP on Nutanix Cloud Platform. It is intended to assist organizations as they plan S/4HANA, BW/4HANA, and/or classic SAP deployments.



Higher Performance and Scalability

Start small and scale business applications, databases, and infrastructure as needs grow.

Superior Availability

Keep SAP application servers and databases protected and running with built-in high availability, non-disruptive upgrades, and support for native and SAP backup and DR tools.

Faster Time to Value

Get up and running in a fraction of the time it takes with traditional infrastructure.

More Confident Deployments

Certified for SAP HANA and NetWeaver landscapes, you benefit from a seamless support experience from SAP and Nutanix.

Infrastructure and Virtualization Support

The Nutanix-native AHV hypervisor is included with Nutanix HCI, providing a high-performance alternative to VMware and Microsoft at no additional cost. HPE, Fujitsu, Lenovo, and Dell EMC have certified their platforms to run SAP HANA with Nutanix Cloud Platform software and AHV.

SAP NetWeaver® landscapes currently run on AHV, VMware vSphere, and Microsoft Hyper-V on all supported hardware platforms. For the latest supported platforms, see the SAP HCI certification list [here](#).



Scalable Infrastructure for Availability and Performance

Nutanix was the first HCI vendor certified to run SAP NetWeaver and the first to be certified for SAP HANA for both scale-up and scale-out. By simplifying SAP infrastructure and eliminating silos, Nutanix puts your company on a path to greater SAP success. Nutanix Cloud Platform delivers a public cloud experience from your datacenter or colo with:

- **Faster time to value.** Deploy infrastructure 10x faster with up to 82% less staff time required.
- **Increased business agility.** Achieve greater developer productivity, and develop apps faster.
- **Maximum availability and security.** Slash unplanned downtime up to 85%, backup more frequently, facilitate disaster recovery, and ensure security with less effort.
- **Greater operational efficiency.** Manage everything from a single interface with greater efficiency while cutting IT support time in half and reducing OpEx and 5-year total cost of ownership by 62% or more.
- **Simpler path to hybrid cloud.** Extend SAP operations to the cloud without losing control, visibility, or access to enterprise capabilities.

Nutanix Cloud Platform eliminates guesswork, removing the constraints of conventional infrastructure so you can be up and running quickly and scale without disruption. Nutanix helps you eliminate silos, increase utilization, and dramatically improve scaling and availability—all while reducing costs. As management tasks are reduced or eliminated, your team has more time to spend enhancing SAP applications and delivering new services, resulting in faster time to value for the business.



Expensive, complex legacy components are replaced with simple, common 1, 2 or 4U servers that scale out one node at a time. Each node includes x86 hardware and flash SSDs to accelerate application and database performance. Depending on the applications, you can deploy:

- Hybrid clusters with enterprise-grade HDDs for capacity (not available for HANA)
- All-flash SSD clusters for performance-intensive workloads
- NVMe flash SSDs with RDMA to address the most demanding performance requirements
- Mixed hybrid and all-flash nodes to meet diverse SAP needs (not available for HANA)

Nutanix software runs on each node, making the system resilient and self-healing.

Availability

Nutanix exceeds the resilience of traditional datacenter infrastructure with the inherent availability advantages of an entirely virtualized environment, self-healing infrastructure, and a multi-node distribution of redundant data, ensuring continuous data availability for SAP applications. Nutanix software is designed to:

- Detect, isolate, and recover from failures
- Survive system hardware, software, and hypervisor issues
- Maintain 100 percent data availability

When a drive or node fails, full data redundancy is quickly and automatically restored without administrator intervention. In the case of host failure, VMs are restarted on other nodes.



Performance

Nutanix Cloud Platform is designed to deliver excellent SAP performance without the constant tuning required with traditional infrastructure. Nutanix HCI delivers outstanding random read/write performance for transactional workloads and excellent sequential read/write performance (bandwidth) for streaming workloads such as data warehouses (read the blog about SAP HANA scale-out performance), adapting automatically to workload changes so you don't have to waste valuable time tuning performance.

- **Data locality.** Data is kept local to the node where an SAP database or workload is running, minimizing latency, optimizing performance, and reducing network congestion.
- **Intelligent tiering in hybrid clusters.** Nutanix automatically tiers SAP data between flash and disk drives.

Database Services

Whether you're running SAP HANA or one of the legacy database options, database management complexity hurts your business. [Nutanix Era](#) is transforming Nutanix Cloud Platform into the ideal database platform, automating and simplifying database administration, bringing one-click simplicity and invisible operations to database provisioning and lifecycle management, and enabling database-as-a-service (DBaaS) from on-premises and cloud infrastructure.

Nutanix Era can help enable your teams to provision, clone, and refresh SAP databases (anyDB and SAP HANA) to any point in time. The API-first Nutanix Era architecture integrates easily with your SAP landscape, and every operation can be fully audited. It can be used to rapidly provision new SAP HANA based instances, such as a sandbox landscape for a System Integrator's S4 deployment.

Find Out More:

- nutanix.com/sap
- nutanix.com/era
- [Best Practices Guide: SAP HANA on Nutanix](#)
- [SAP HANA Scale-out certification blog](#)
- [The Definitive Guide to SAP on Nutanix](#)
- [SAP S/4HANA Resource Center](#)



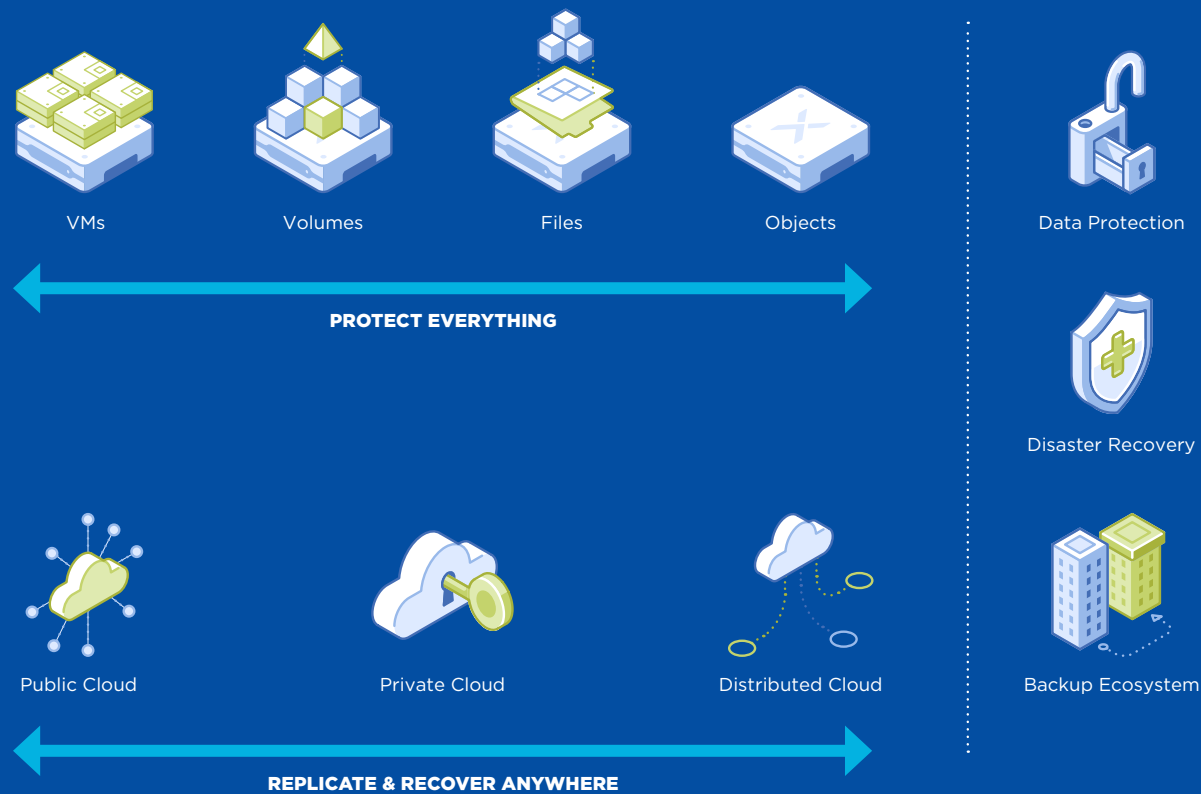
Business Continuity

SAP landscapes require a flexible and cost-effective approach to data protection and disaster recovery (DR) to address the needs of an increasingly digital business environment. Based off the deployed application, Nutanix Cloud Platform can offer three options for customizing data protection and DR:

- Native Nutanix tools
- Nutanix advanced features and services
- Integration with SAP tools and third-party vendors

You can combine any or all of these approaches to meet diverse needs across production, development, and QA environments.

Native tools, advanced services, and full integration with SAP tools enable more flexible, cost-effective data protection and disaster recovery.



Native Nutanix Data Protection and DR

Nutanix native backup and disaster recovery capabilities, working alongside SAP replication such as HSR, can ensure that valuable data and critical workloads are always protected and quickly recoverable. Flexible replication options address a broad range of needs. Nutanix Cloud Platform offers:

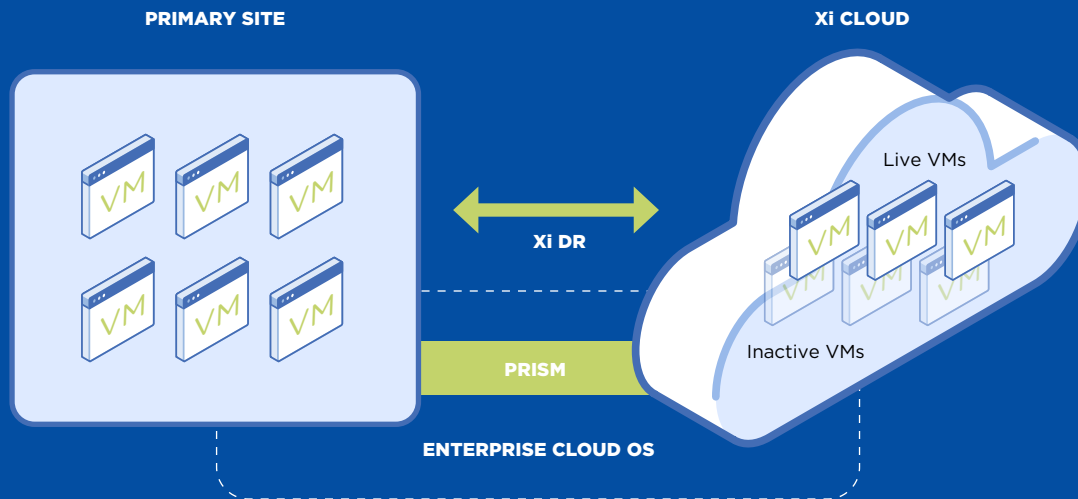
- Integrated, cross-hypervisor backup and DR
- Local, remote, and cloud backups with one-click data protection
- Synchronous, near-synchronous, and asynchronous replication for DR
 - NearSync for near synchronous replication with an RPO as low as 1 minute
 - Metro Availability for synchronous replication across metropolitan distances with an RPO of zero
 - Working in conjunction with HSR

Nutanix Advanced Capabilities and Services

Nutanix offers a number of advanced features and services that further enhance SAP data protection and DR options:

- [Nutanix Era](#) integrates advanced data protection and data management features for many popular anyDB databases and supports an increasing range of landscape functionality for SAP HANA. Era Time Machine enables you to meet the most demanding service-level agreements (SLAs).
- [Nutanix Mine](#) unifies primary and secondary SAP data protection, enabling cloud-like scalability and one-click simplicity to address SAP backup needs, in partnership with leading data protection vendors.
- [Xi Leap*](#) offers a fully integrated DR-to-cloud solution that protects business-critical SAP legacy applications and data in your Nutanix environment without the need to purchase and maintain a separate infrastructure stack, simplifying deployment and reducing TCO.





- [Nutanix Clusters*](#) enables you to use a public cloud region as a secondary backup site and replicate your on-premises entities that need to be protected through our unified management plane. Use existing tools available within the Nutanix stack without adding more complexity arising from stand-alone DR solutions. Create high availability policies for on-premises data and applications by using public cloud to provide additional resources.

**Not yet available for SAP HANA.*

Recover to any point in time

Nutanix Era Time Machine technology automates database backup and recovery while providing advanced copy data management. It automatically discovers and maps your database and creates a protection schedule based on the specified SLA, enabling rapid, automated recovery to any point in time.

Find Out More:

- [Nutanix data protection & DR solutions](#)
- [Nutanix Mine: secondary storage](#)
- [SAP HANA on Nutanix](#)



Advanced Data Services

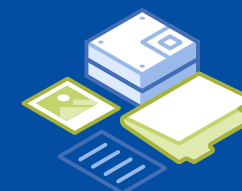
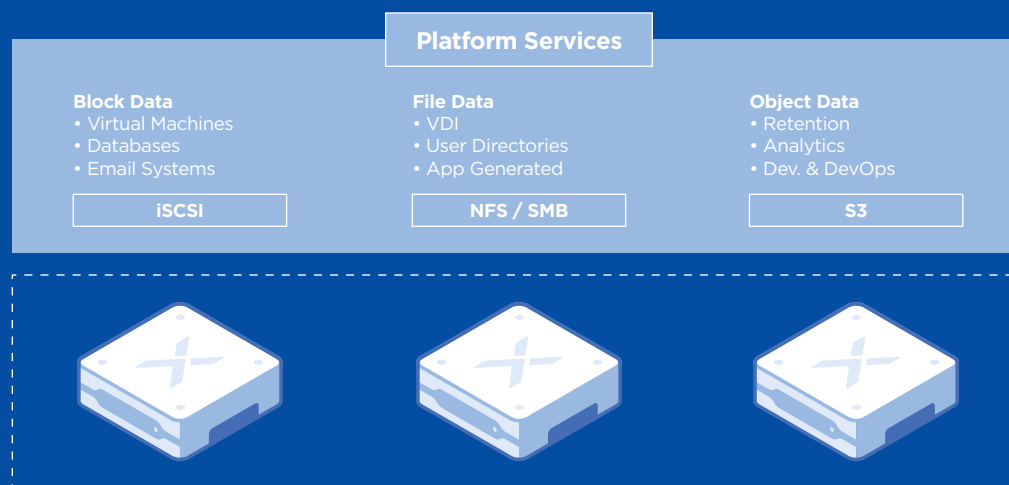
Nutanix HCI integrates data services as part of the platform reducing complexity and cost.

A variety of software-defined storage and data services enable Nutanix Cloud Platform to function as a flexible data services platform without the complexity of adding third-party hardware:

- **Nutanix Volumes** provides direct, block-level access via the iSCSI protocol to support applications running on servers outside the Nutanix cluster.
- **Nutanix Files** provides a secure, shared file system accessible to all SAP systems.
- **Nutanix Objects** enables application development teams to consume S3-compatible storage as a high performance, on-demand service. Write-once-read-many (WORM) functionality provides immutability and chain of custody control.
- **Nutanix Karbon** lets you have a production-ready Kubernetes cluster up and running in less than 20 minutes.

Find Out More:

- [Data Services](#)
- [Data Services Solution Brief](#)
- nutanix.com/volumes
- nutanix.com/files
- nutanix.com/objects



Intelligent IT Operations, Automation, and Self Service

Transform your SAP operations, enable self-service, and meet the needs of developers and business teams.

Nutanix Cloud Platform streamlines management activities across the infrastructure lifecycle. Intelligent, one-click operations take the pain and effort out of daily tasks, including installs, upgrades, and workload placement.

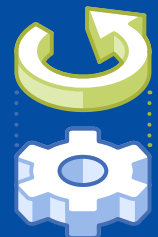
- Identify and eliminate inefficiencies such as under-utilized resources, overprovisioned VMs, and other hidden cost sinks
- Gain instant visibility into IT planning information, including utilization and consumption rates
- Simplify capacity planning and streamline expansion with just-in-time forecasting

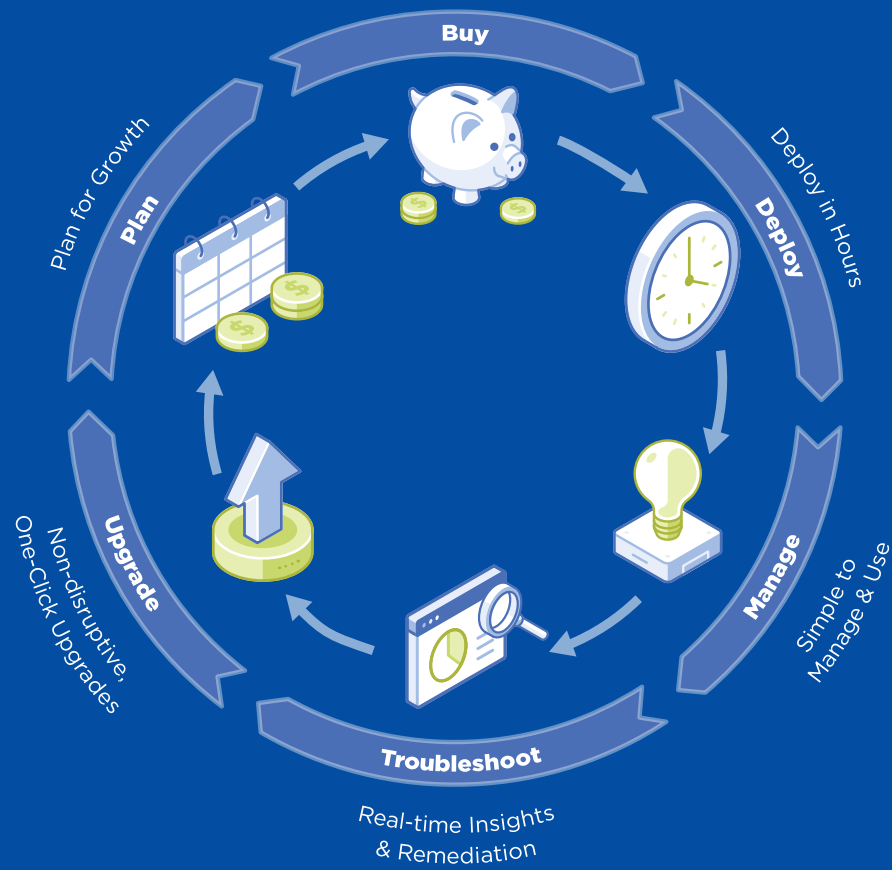
Nutanix improves the efficiency of your IT operations by adding meaningful automation, IT-as-a-Service (ITaaS), and easy integration with development pipelines.

Enable autonomous IT

Nutanix X-FIT detects performance anomalies and identifies inefficiencies, triggering X-Play Playbooks. Simple but powerful approaches like this allow your operations to evolve from manual tasks and written procedures to autonomous IT operations.

Nutanix Calm adds native application orchestration and lifecycle management to the Nutanix Cloud Platform. Calm decouples application management from the underlying infrastructure—enabling SAP applications to be easily deployed into both private and public cloud environments.





For example, suppose you need to spin up additional application servers to meet end-of-month demands. Nutanix Calm makes it fast and easy to scale application servers by leveraging a standard template. Making processes repeatable at scale, eliminates the risk of manual errors.

Integrate with ServiceNow

Many IT teams rely on ServiceNow for ITSM. Deep integration enables you to view HCI assets and launch Nutanix Calm blueprints from the ServiceNow service catalog, creating synergy between the two.

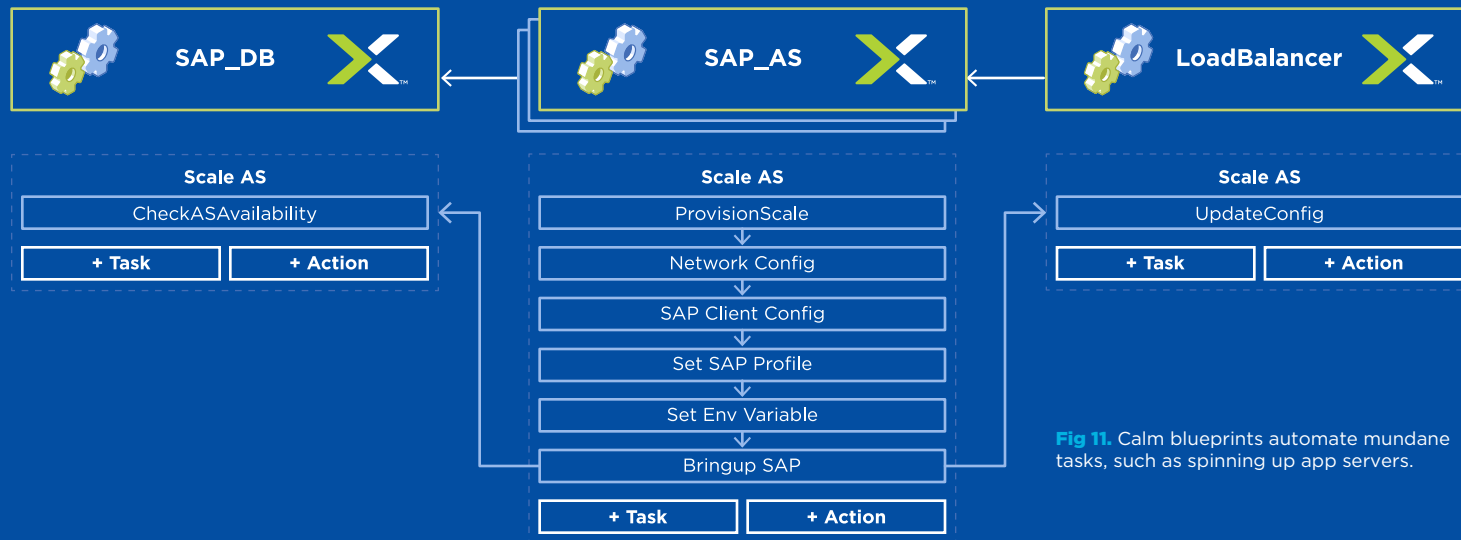


Fig 11. Calm blueprints automate mundane tasks, such as spinning up app servers.

Streamlining Software Development

Enable self-service for developers, simplify deployments, and decrease time to market for new services and features, providing substantial benefits for SAP development and test teams, including:

- **Rapid provisioning.** SAP teams depend on the ability to set up and tear down development and test environments. Nutanix Cloud Platform enables users to create new test environments—including space-efficient production data copies—in minutes by cloning instances on demand.
- **Simplified data refresh.** Production data copies used in development and test processes must be as up to date as possible to ensure code quality. Nutanix cloning makes it simpler to keep test data up to date and eliminates the wasted storage capacity that results from physical copies.

- **Developer self-service.** Nutanix Calm gives developers self-service access to the development environments and others they need.
- **Full support for DevOps.** Nutanix HCI simplifies DevOps with the required agility and flexibility at all layers. Nutanix Calm can deploy both non-production and production application environments, and integrate with the development tools your teams use.
- **Simplified CI/CD.** Deploy and maintain a fully automated CI/CD pipeline with continuous application deployment across multiple on-premises and cloud locations.

Find Out More:

- [Nutanix Prism](#)
- [Nutanix Prism Pro](#)
- [Nutanix Calm](#)

Security and Governance

Security designed to satisfy the most stringent government and business regulations.

Nutanix includes native capabilities for security and governance that greatly simplify infrastructure security for SAP. Nutanix Cloud Platform enables you to maintain a continuous security baseline across your SAP environment and satisfy regulatory requirements more easily. Powerful security automation monitors the health of your storage and VMs, automatically healing any deviations from the baseline.

Nutanix complies with the strictest international security standards, and an ecosystem of security partners makes it simple to add security services to your environment.

Many cyberattacks seek out known vulnerabilities on infrastructure that has not been patched. Nutanix provides one-click nondisruptive upgrades that take the pain out of patching infrastructure software, making it far easier to stay up to date.

Find Out More:

- [Nutanix Security](#)
- [Nutanix Flow](#)



Data Encryption. Nutanix provides flexible methods for encrypting data at rest for compliance and security, including:

- Software-based encryption with local key management
- Self-encrypting drives with external key management

These methods can be combined to deliver optimal data-at-rest security.



Policy-based Microsegmentation. Nutanix Flow protects individual applications, and groups of applications, from internal and external security threats with fine-grained microsegmentation rules controlling east-west traffic between VMs. Policy definition is made simple with Nutanix's ability to visualize traffic flows within the SAP environment.

Security Standards and Certifications

Nutanix employs multiple security standards and validations programs. It complies with the strictest international standards, including the SP800-53 guidelines, to assure governments worldwide that Nutanix products perform as expected and work with their existing technology.



Enable Hybrid Cloud

Enable your SAP operations to easily extend from on-premises to cloud locations without loss of control.

Many enterprises that rely on SAP want or need to extend SAP and supporting operations into the public cloud in order to increase development agility, accommodate new geographic regions, burst capacity, provide business continuity, etc. However, hybrid cloud operations create significant new challenges for already stretched teams in terms of complex migration, additional operational silos, high costs, and complex management.

Nutanix Cloud Platform enables SAP teams to work more seamlessly across environments using the same tools, enabling them to focus on applications rather than the intricacies of infrastructure management and refactoring.

Nutanix hybrid cloud solutions unify management across clouds while enabling seamless mobility of applications and data between disparate environments. Deliver each application from the right cloud without added complexity.

Avoid vendor and cloud lock-in with portable software that can move with your SAP applications and data across clouds. Standardize operations across private and public environments with a common set of services that includes:

- **Orchestration and self-service:** Automate provisioning and application lifecycle management. Give IT users one-click self-service so they can easily deploy applications in public and private clouds.
- **Cost optimization:** Get visibility into your cloud consumption across both public and private clouds to understand all your cloud infrastructure costs. Identify idle and under utilized resources and get reserved instance recommendations for deep cost savings.
- **Security compliance:** Identify and fix security issues in real time. Automate compliance checks for cloud operations using 500+ audits including HIPAA, PCI-DSS, NIST, and others.

Find Out More:

- www.nutanix.com/solutions/hybrid-cloud
- [Nutanix Clusters Hybrid Cloud Product Page](#)

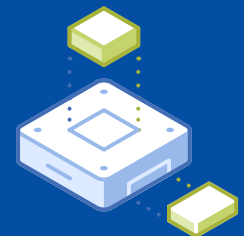


Getting Started with SAP on Nutanix

Nutanix Cloud Platform is uniquely suited to meet SAP infrastructure needs. Because Nutanix eliminates IT complexity, simplifies management, integrates data services, and improves data protection and security, it enables SAP landscapes to be more agile, more scalable, and—ultimately—more effective. Nutanix Cloud Platform reduces the cost of deploying and operating SAP, while increasing service levels.

To begin designing your SAP deployment, start by answering a few simple questions:

- Refresh or new deployment?
- SAP HANA or legacy database?
- Which hardware approach do you prefer?
 - OEM platforms
 - Nutanix NX Appliances
 - Third-party servers(See [Hardware Platforms](#) for the latest information)
- What virtualization software do you prefer?
 - Nutanix AHV, VMware vSphere, Microsoft Hyper-V
- What level(s) of data protection and DR are needed and how will you meet those SLAs?
 - Nutanix-native capabilities
 - Nutanix services
 - SAP-native capabilities or third-party
- What additional security measures are required?
 - Encryption
 - Microsegmentation



- What infrastructure and database services will help make your developers, DBAs and Basis teams more productive?
 - Self-service
 - Application lifecycle management
 - Database clones
- Is cost governance and chargeback important?
- Fully on-prem private cloud or hybrid cloud requirements?

Using the information discussed in this guide, you can begin thinking about and planning an SAP deployment that meets your needs. Use the links provided in each section to dig deeper into specific topics.

To learn more about how Nutanix can help you transform your approach to SAP infrastructure visit nutanix.com/sap. You can contact Nutanix at sap@nutanix.com, follow us on Twitter [@nutanix](https://twitter.com/nutanix), or send us a request at www.nutanix.com/demo to set up your own customized briefing.

