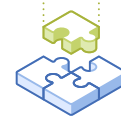


WHITE PAPER

Building Profitable Cloud Services with Nutanix

1. EXECUTIVE SUMMARY.....	3
2. INTRODUCTION.....	5
3. BETTER INFRASTRUCTURE OPTIONS FOR SERVICE PROVIDERS.....	6
Infrastructure Challenges.....	6
Reasons Service Providers Choose Nutanix.....	7
4. INTRODUCING NUTANIX CLOUD PLATFORM.....	9
Digital HyperConverged Infrastructure Services.....	10
Datacenter Services.....	17
DevOps Services.....	21
Desktop Services.....	25
5. GUIDANCE FOR SELECTED SERVICES.....	26
Managed Cloud Service Providers.....	27
Infrastructure as a Service.....	28
Desktop as a Service.....	30
Disaster Recovery as a Service (DRaaS).....	32
Database as a Service.....	34
Software as a Service.....	35



1. Executive Summary

Service providers can increase agility and minimize costs by focusing on: 1) standardizing hardware, 2) eliminating specialty equipment, and 3) choosing software that enables them to deliver new services more quickly with less effort.

By combining hyperconverged infrastructure (HCI) technology with enterprise and cloud capabilities, to create a single operating environment capable of spanning customer datacenters, service provider datacenters, and the public cloud, the Nutanix Cloud Platform offers unique opportunities for differentiation. By removing friction from datacenter, hybrid, and multicloud operations, Nutanix provides the performance and agility that service providers need while lowering total infrastructure costs by 38% on average. Nutanix Service Providers spend up to 58% less time on infrastructure operations and realize a five-year return on investment of 477%. The Nutanix AHV hypervisor reduces or eliminates virtualization licensing costs that can be a significant part of SP operating budgets.

Building on a proven and industry-leading hyperconverged infrastructure (HCI) platform, advanced features and comprehensive REST APIs give service providers the ability to offer a variety of new and enhanced services.

- Nutanix Calm provides multi-cloud application automation and orchestration
- Nutanix Era provides advanced database management and enables DBaaS
- Nutanix Flow enables on-demand, self-service consumption of application security and networking for multi-tenant environments
- Nutanix Frame enables public cloud and hybrid virtual desktop and application deployments

Service Providers choose Nutanix for simple deployment and management advanced capabilities like those summarized above, plus a security-first design, support for hardware from leading server vendors, and a distributed architecture that supports any application including Tier 1 workloads and cloud native applications that require containers and Kubernetes.

Linear, pay-as-you-grow scaling matches costs more closely to demand, while cloud integration ensures that Nutanix will continue to meet evolving service needs. With Nutanix, service providers get full-stack support from a single vendor—a company whose Net Promoter Score (NPS) has averaged over 90 for the past six years.

- [Managed Cloud Service Providers](#) focus less attention on infrastructure and more on customer needs.
- [Infrastructure as a Service](#) providers gain enterprise features that public clouds lack such as data reduction, snapshots, cloning, and support for multiple hypervisors.
- [Desktop as a Service](#) providers eliminate scaling challenges—and can even support other services on the same infrastructure.
- [Disaster Recovery as a Service](#) providers efficiently ingest large amounts of customer data with the compute capacity to quickly bring up customer applications during a failover.
- [Database as a Service](#) providers can take advantage of Nutanix Era to automate database provisioning, lifecycle management, copy data management, data protection, and more.
- [Software as a Service](#) providers focus on managing and optimizing applications rather than constantly tuning and troubleshooting infrastructure.

This paper details the distinct advantages that Nutanix delivers for service providers. Nutanix helps you stay ahead of the pack with superior service differentiation, continuous innovation, and improved cost control.



2. Introduction

Digital transformation is accelerating the pace of change in companies across all industries. Service providers play an important role in delivering IT services and helping customers achieve success in an increasingly dynamic world. By cultivating a deep understanding of the IT challenges faced by their customers, service providers help them control costs, adopt new technologies, increase agility, and focus more attention on business needs and less on IT.

To be successful, service providers must create well-differentiated and profitable offerings. However, significant infrastructure challenges stand in the way. It can be difficult to onboard customers quickly without overprovisioning and driving up costs or driving down return on investment. Many service providers spend too much time managing infrastructure and dealing with the complexity and inherent limitations of conventional IT architectures.

Service provider datacenters may rely on silos of infrastructure managed by teams of administrators, each with specialized skillsets ranging from networking to storage to virtualization. As a result, troubleshooting customer issues can require substantial effort and time, affecting customer SLAs. With many vendors involved, finger pointing is inevitable.

Nutanix dramatically simplifies infrastructure and operations for service providers, making it possible to deliver services with far less effort. Nutanix simplifies the process of creating customized offerings and optimizing existing services. Nutanix enables service providers to create differentiated offerings that add value.

By combining hyperconverged infrastructure (HCI) technology with enterprise and cloud capabilities, Nutanix Cloud Platform provides the high performance that service providers need while lowering total infrastructure costs by 38% on average. Nutanix is a clear HCI leader on both the [Gartner Magic Quadrant for Hyperconverged Infrastructure](#) and the [Forrester Wave: Hyperconverged Infrastructure](#). According to IDC, IT teams spend up to 58% less time on infrastructure operations and realize a five-year return on investment of 477% with Nutanix.

This white paper explores the challenges that service providers face, explains how Nutanix helps address those challenges, and examines the unique advantages of Nutanix Cloud Platform. The second part of the paper provides specifics and resources for some of the more popular services being deployed on Nutanix:

- Managed Cloud Service Provider
- Infrastructure as a Service (IaaS)
- Desktop as a Service (DaaS)
- Disaster Recovery as a Service (DRaaS)
- Database as a Service (DBaaS)
- Software as a Service (SaaS)



3. Better Infrastructure Options for Service Providers

INFRASTRUCTURE CHALLENGES

Many of the infrastructure challenges that service providers face are a function of competition or cost. This section examines some of the most common challenges.

Competition

The cloud service provider market is fiercely competitive due to the number and size of competitors as well as the increasing breadth of services. Public cloud providers such as Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP) are expanding services on a quarterly basis. To succeed in the face of this competition, service providers need:

- **More agile infrastructure.** To compete with public cloud, service providers need infrastructure that provides a similarly high level of agility.
- **Well-differentiated service offerings.** For service providers, the ability to offer services that competitors either can't deliver or can't provide at a competitive price is important. Conventional server and storage infrastructure fails to deliver this differentiation.
- **The ability to rapidly pilot and scale new offerings.** To stay ahead of the competition, service providers need to quickly pilot new services and scale the ones that prove successful. IT infrastructure that works well during a pilot project with a few customers may not scale, resulting in delays and re-architecting.
- **Flexibility to evolve quickly.** A service provider's core business three years from now could be very different than it is today. Existing services may need to evolve or be replaced with new ones. It can be difficult to update conventional IT infrastructure fast enough to keep pace with the rate of change, creating disruptions and adding costs. Infrastructure must be software-defined and programmable through well-defined APIs.
- **Multicloud support.** It's increasingly a multicloud world. Many companies are already using cloud services from multiple providers. Multicloud orchestration, cross-cloud mobility, and global visibility are essential. Service providers are increasingly offering services built on public cloud, and adding value in terms of customization, ease-of-management, or expertise in a particular industry.

Capital and Operating Expenses

IT Infrastructure costs are typically the largest capital expense. The floor for infrastructure costs is being set by public cloud providers with huge economies of scale. While most service providers aren't in a position to adopt the public cloud infrastructure model entirely, they can minimize costs by focusing on standardized, commodity hardware and eliminating silos of specialty hardware. Improving hardware utilization and efficiency minimizes infrastructure expenditures. Some needs can be satisfied using external public cloud services instead of adding on-premises infrastructure. For instance, a service provider can burst to public cloud to meet peak loads or unexpected needs.

Two important elements of OpEx for service providers are staff costs and indirect infrastructure costs. Increasing hardware utilization and efficiency can drive down power, space, and cooling requirements. Simplifying IT infrastructure reduces the need for expensive and sometimes hard-to-find storage and networking specialists, making it possible for each administrator to manage more infrastructure and support more customers. Spending less time on basic management tasks results in more focus on satisfying customer needs and expanding service offerings.

The cost of hardware and software upgrades is also important. Having to rip and replace infrastructure every three to five years is expensive and disruptive. Some infrastructure solutions necessitate expensive professional services for planning and implementing upgrades.

REASONS SERVICE PROVIDERS CHOOSE NUTANIX

Nutanix has many service provider customers, and the number is growing rapidly. When asked why they chose Nutanix, a few consistent themes emerge:

Simplified architecture and operations. Hyperconverged infrastructure significantly reduces the number of vendors and the variety of components in service provider datacenters and on-premises at customer locations, resulting in more streamlined operations, less time spent troubleshooting, and much easier upgrades with less downtime.

Flexible platform choices. Nutanix Cloud Platform runs on multiple platforms including: Nutanix NX Series, Dell EMC XC Series, Fujitsu XF, and Lenovo HX Series. Supported third-party options include Cisco, HPE, Hitachi, and more. Both all-flash and hybrid storage options are supported. Platforms can be chosen based on the needs of the service without re-architecting or creating a new silo. Nutanix also runs in Amazon Web Services and Microsoft Azure (available in early access as of July 2021) for seamless operations. See our [hardware platforms](#) page for the latest information.

Granular and linear scalability. Start small and grow resources incrementally to align infrastructure costs with your needs. A service can scale out easily as customers are added. Nutanix accommodates almost any application without tuning and eliminates the "noisy neighbor" problems that plague conventional infrastructure.

Reduced TCO. Nutanix offers significant savings in both OpEx and CapEx. Because different types and generations of nodes can be mixed in the same cluster, service providers can always buy and deploy the latest technology. The traditional model results in upfront overprovisioning, which is expensive and leaves service providers managing older technology over a longer period. Nutanix clusters stay current without costly and disruptive forklift upgrades every three to five years.

Offer new services quickly. Service providers can deploy new service offerings on Nutanix very quickly. Complete and well-documented REST APIs make it simple to integrate Nutanix value-add capabilities. Services such as Nutanix Era for database management and Nutanix Frame for Desktop virtualization simplify the creation of new offerings

Self-service enabled. Nutanix Calm makes it simple to design and deploy advanced self-service capabilities to customers.

Easily repurpose and move equipment. Service provider businesses are dynamic by nature. Nutanix provides the flexibility to repurpose infrastructure for a different service or to remove nodes from a cluster and move them to another location as business needs dictate.

Eliminate downtime. Nutanix Cloud Platform is resilient by design and can be configured to withstand multiple drive and node failures. Should a failure occur, a Nutanix cluster automatically self-heals, restoring resiliency quickly, without operator intervention and without requiring hot spares sitting idle. This decreases risk and reduces the urgency of replacing failed hardware. Nutanix one-click upgrades eliminate the need for planned downtime when updating infrastructure software.

Easily extend to public cloud. Many service providers use public cloud resources in addition to on-premises infrastructure. Nutanix Cloud Platform takes cloud integration to the next level by offering the Nutanix operating environment in the public cloud, enabling services and applications to move seamlessly with no configuration or operational changes.

Partnerships and reference architectures. Detailed designs combined with close partnerships with leading infrastructure and application vendors simplify deployments and ensure success.

Service and support from a single vendor. Nutanix has award-winning support, comprehensive global services, and innovative education solutions. Service providers receive support for servers, storage, virtualization, and more—all from a single source with no finger pointing.

One-click, non-disruptive upgrades take the pain out of software upgrade planning and eliminate the need for planned downtime; Nutanix also eliminates the need for forklift hardware upgrades with incremental scaling and infrastructure that can be easily repurposed.

Nutanix solutions yield major benefits versus traditional infrastructure as detailed in a recent IDC study:

- 82% more efficient to deploy, manage, and support
- 62% reduction in five-year operating costs
- 85% less unplanned downtime



4. Introducing Nutanix Cloud Platform

Service providers need agility, simplicity, pay-as-you-grow economics, and security and control from infrastructure solutions. Nutanix Cloud Platform delivers the agility of public cloud infrastructure, including fast provisioning and flexible resource consumption, without sacrificing the ability to satisfy demanding SLAs or deliver tightly enforced security.

The Nutanix Cloud Platform streamlines service provider infrastructure. Nutanix delivers a full-stack operating environment that runs in customer datacenters, in service provider datacenters, and in the public cloud, making the boundaries between private, public, and distributed clouds invisible. It scales easily, offers maximum flexibility and agility, and supports a wide range of workloads including the most demanding Tier 1 applications.

Foundational elements of the Nutanix architecture include:

- **Hyperconverged infrastructure.** 100% software-defined, resilient, and distributed, delivering predictable performance for a wide range of enterprise and cloud native applications.
- **Single control plane.** Control multi-cluster and multi-datacenter Nutanix deployments from a single interface with advanced machine intelligence, extensive automation, and rich analytics.
- **Multi-cloud orchestration.** Nutanix simplifies the deployment and management of complex applications by incorporating all elements into an easy-to-use Nutanix Calm blueprint.
- **Agile development for reduced time to market.** Nutanix Cloud Platform provides complete REST APIs, enabling service providers to leverage Nutanix capabilities to enhance services and deliver self-service. Common workflows for development and production are repeatable and easily automated.
- **Mobility.** Applications deployed on a variety of virtual and cloud infrastructure can be moved between environments as needs change.
- **Security-first design.** Security is not bolted on, but an integral part of the design.

Nutanix Cloud Platform creates a turnkey foundation for delivering profitable cloud services at an unprecedented pace, reducing the time needed for service providers to achieve profitability from new and existing services.

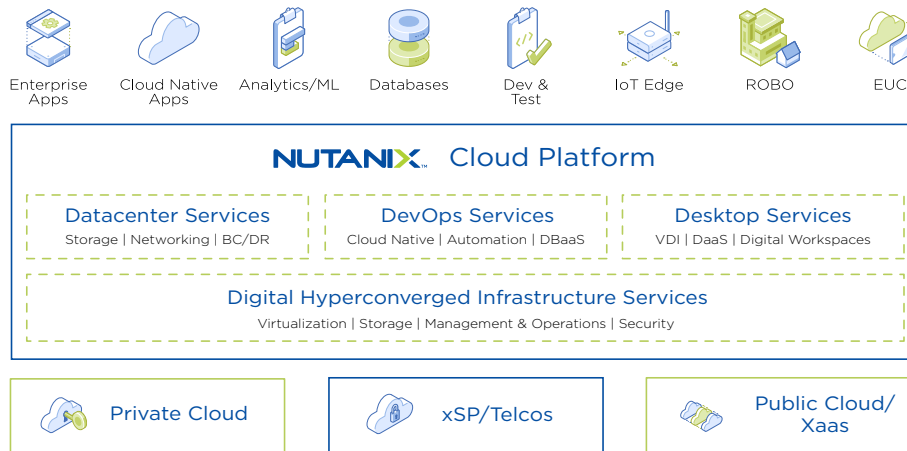


Figure 1. Nutanix Cloud Platform provides a single set of services across customer datacenters, service providers, and the public cloud

Key components of the platform include the Four Ds:

- Digital Hyperconverged Infrastructure Services
- Datacenter Services
- DevOps Services
- Desktop Services

DIGITAL HYPERCONVERGED INFRASTRUCTURE SERVICES

This category includes the foundational capabilities of the Nutanix Cloud Platform including HCI, public cloud support, virtualization, distributed storage, and built-in security—all managed from a single control plane.

Nutanix HCI

Nutanix HCI eliminates the guesswork and removes the constraints created by conventional IT infrastructure, enabling service providers to get started quickly and scale without disruption. Nutanix combines compute and storage resources with intelligent software, eliminating the pain points associated with conventional infrastructure. Service providers spend less time wrangling infrastructure and more time adding customer value.

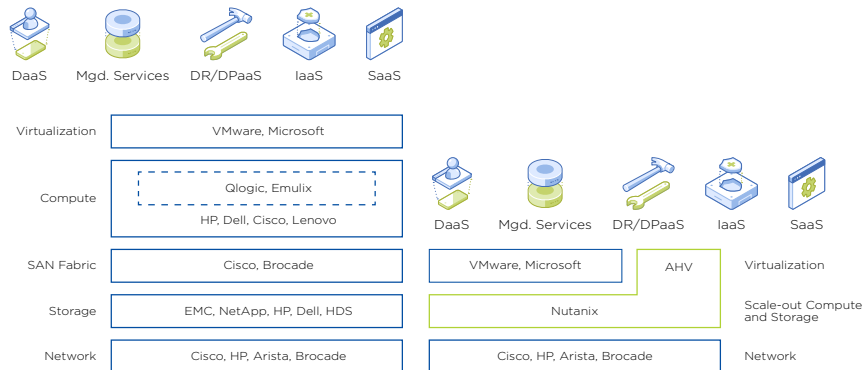


Figure 2. Nutanix converges compute, storage, virtualization, and data protection functions in simple, scalable building blocks

Nutanix Cloud Platform converges the entire datacenter stack including servers, storage, storage networking, virtualization, application orchestration, and data protection. License Nutanix Cloud Platform and purchase your hardware of choice from one of our supported platforms or choose easy-to-deploy Nutanix NX appliances, and scale one node at a time as your needs grow. Each added node supports a predictable number of virtual machines, allowing service providers to adopt a pay-as-you-grow model.

With Nutanix, service providers can closely match infrastructure costs to growth, avoiding the large initial capital investments and stair-step scaling of traditional solutions.

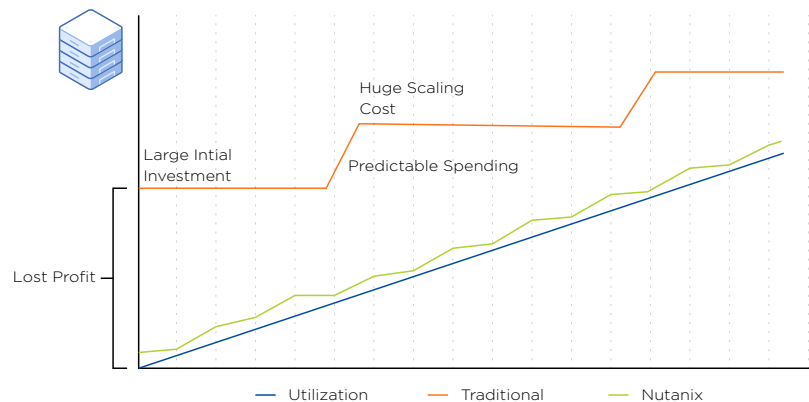


Figure 3. Nutanix Cloud Platform scales in small increments, avoiding the large initial investments and stair-step upgrades that are necessary with traditional infrastructure approaches.

Because each hyperconverged node includes both compute and storage, scaling is linear, and the network impact of adding nodes is low because most I/O is local.

For more on Nutanix HCI see:

- [Modernize Your Datacenter](#)

Hybrid and Multicloud Support

Nutanix Cloud Platform is designed to support multicloud environments, enabling service providers to architect service offerings that encompass public cloud resources much more easily. Hybrid applications that span across service provider datacenters, customer premises, and public cloud environments are possible.

Nutanix Clusters enable you to extend a Nutanix environment—running in a customer or service provider datacenter—to encompass AWS and Azure. (Azure in early access as of July 2021.) The combination of Nutanix HCI and Nutanix Clusters results in an environment with the flexibility, simplicity, and cost efficiency you need to manage services and meet customer needs more effectively.

Nutanix Clusters allows service providers to give their customers access to public cloud with the benefit of the service provider's management expertise and knowledge to fill in the gaps around utility, cost control, asset management, etc.

Nutanix Clusters delivers significant benefits versus competing approaches:

- **Operational Simplicity.** A single management plane spans private and public cloud environments. Use the same toolset everywhere and avoid retraining.
- **Seamless Application Mobility.** Move applications or entire services between datacenters and public clouds with no code changes or re-platforming.
- **Optimize Cost.** Run the same Nutanix environment with the same licenses across all supported clouds, fully utilizing your investment. Gain control of hybrid cloud spend with automated cost governance.

For more on Nutanix Hybrid and Multicloud capabilities see:

- nutanix.com/clusters
- nutanix.com/hybrid
- [Nutanix Clusters on AWS](#)

Intuitive 1-Click Management and Full API Integration

Nutanix Cloud Platform is controlled by the simple-to-use Prism management interface backed by a rich set of REST APIs and PowerShell commandlets. Nutanix Prism delivers simplicity, agility, and predictable scale to service provider datacenters. All operating functions are automatically distributed across a cluster for the highest level of performance and extremely high resilience. Since any node can assume any cluster role as needed, there is no single point of failure and management control is never affected by a failure.

Nutanix Prism provides an integrated platform for one-click management of all components of the stack with accelerated provisioning. Powered by advanced data analytics and heuristics, Prism streamlines common datacenter workflows, providing a single interface from which to manage and upgrade servers, storage, and virtualization.

Prism provides an intuitive user interface to simplify and streamline common datacenter workflows, eliminating the need to have disparate management solutions for different tasks. The platform's management functionality is accessible through REST APIs and PowerShell commandlets, facilitating automation.

Prism Pro enhances the quality and efficiency of IT operations for Nutanix environments. The Pro tier lets you intelligently optimize capacity, proactively detect performance anomalies, and automate operations tasks with ease and confidence.

Capacity Planning. Prism Pro includes a powerful application and capacity forecasting, planning, and optimization engine for large-scale operations:

- **Capacity Behavior Analytics.** Predictive analysis of capacity usage and trends based on workload behavior, enabling pay-as-you-grow scaling.
- **Capacity Optimization.** Inefficiency detection in resource usage and automated optimization of VM sizing based on VM behavioral analysis.
- **Just-in-Time Forecast.** Capacity expansion forecasts to satisfy future workload growth.

Automated Resource Optimization. Prism Pro learns the real-time performance behavior of VMs, detects anomalies automatically, and enables your IT team to automate remediation.

- **Anomaly Detection.** Predictive monitoring based on behavioral analysis to generate actionable signals and provide early warnings.
- **Bottleneck Detection.** Intelligent detection of VM performance bottlenecks using machine learning.
- **Remediation.** Create playbooks for common remediation or troubleshooting steps. Playbooks can be triggered automatically based on alert policies.

Operational task automation. Prism Pro includes a code-free, visual approach to task automation, enabling any administrator to build, maintain, and troubleshoot automations. Common admin tasks, like adjusting resources allocated to a VM in response to a constraint, are easily automated. Even the most complex, multi-step procedures can be turned into one-click operations.



Set a Trigger



Define Actions



Save & Enable

Figure 4. Nutanix Prism Pro provides a visual approach to task automation, enabling SP datacenters to take action automatically based on defined triggers.

For more information on Nutanix Prism see:

- nutanix.com/prism
- [Private Cloud Automation Design Guide](#)

[Nutanix Virtualization and Container Support](#)

Nutanix Cloud Platform supports VMware vSphere, Microsoft Hyper-V, and Nutanix AHV. For price-sensitive services, virtualization presents a significant opportunity for cost savings. By bundling the Nutanix AHV hypervisor with Nutanix Cloud Platform licensing, Nutanix minimizes the well-known virtualization tax.

[Native AHV Hypervisor](#)

AHV is the preferred hypervisor choice for Nutanix Cloud Platform because of native management integration with Nutanix Prism. Traditional hypervisors were designed for a world of monolithic non-VM-aware storage arrays and switch fabrics; they were built to accommodate thousands of combinations of servers, NICs, and drivers. They require multi-pathing policies and complex designs to mitigate issues such as storage congestion and application resource contention while still accommodating high availability and scalability. Acceptable performance often requires segregating workloads.

AHV virtualization was designed from the ground up to provide a much simpler and more scalable hypervisor and associated management platform by leveraging the software intelligence of Nutanix Cloud Platform. AHV liberates virtualization from the domain of specialists, making it easier to deploy and manage.

AHV is based on a proven open-source hypervisor to ensure support for all popular workloads and is hardened to meet the most stringent enterprise security requirements. It is fully supported by Nutanix, which means that service providers get full infrastructure and virtualization capabilities from a single vendor with no hidden costs.

For more on Nutanix AHV see:

- [Nutanix.com/ahv](https://nutanix.com/ahv)
- [Best Practices for AHV](#)

[Distributed Storage Fabric](#)

Nutanix HCI delivers a rich set of software-defined services that are VM, container, application, and end-user centric, including snapshots, high availability, disaster recovery, deduplication and more. Distributed storage is at the heart of the Nutanix architecture. All capacity across a Nutanix cluster is pooled and exported to the virtualization layer using industry-standard protocols. Nutanix provides all the capabilities expected from an enterprise storage solution without the complexity. This includes snapshots, replication, cloning, and data tiering as well as data efficiency technologies such as compression, deduplication, and erasure coding. Nutanix Cloud Platform also provides advanced features that are only available by combining storage and compute into a single platform, including data locality and deep integration into the hypervisor.

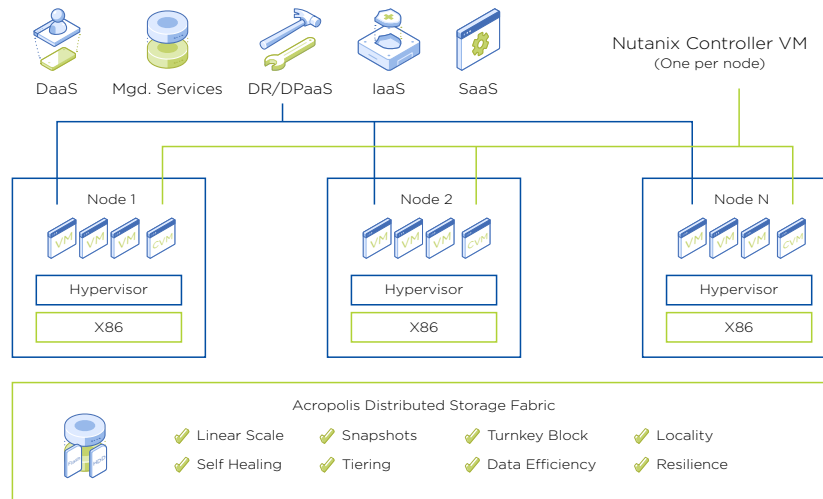


Figure 5. Nutanix Enterprise Cloud provides optimum storage performance and advanced data services

A Nutanix cluster delivers optimum performance for every workload and adapts automatically to workload changes, so service providers don't have to spend valuable time constantly tuning performance. Integrated tiering and information lifecycle management automatically places the data on the best storage tier and node based on the access pattern, providing optimal performance automatically.

Data is initially stored in the SSD tier and moves to the HDD tier (if present) as it becomes cold. Access patterns are continually monitored, and data is automatically moved back to the SSD tier as it is accessed. As much of a VM's data as possible is stored on the node where the VM is running, but all of a cluster's storage resources are available to all nodes. When a VM is moved from one node to another, its data automatically follows the VM in the background.

For more information, visit nutanix.com/acropolis.

Built-In Security

The right infrastructure is a key part of your ability to protect datacenters from cyber threats. Nutanix Cloud Platform improves your security posture and protects your business and your customers with built-in security:

- **Platform Security.** Security is a foundational aspect of product design at Nutanix starting with built-in security hardening practices. Industry best practices and government standards are incorporated into an automated configuration monitoring and self-healing process that helps you achieve your security and compliance goals more easily.
- **Security Development Lifecycle.** Nutanix has a security development lifecycle (SecDL) that incorporates security into every aspect of our software development process, from design and development to testing and hardening.

- [Security Technical Implementation Guide](#). Nutanix has developed its own STIG to enable secure installation and maintenance of Nutanix systems, including fast baseline checks and validation.
- [Data Encryption](#). Nutanix provides flexible methods for encrypting data at rest for compliance and security, including software-based encryption and self-encrypting drives.

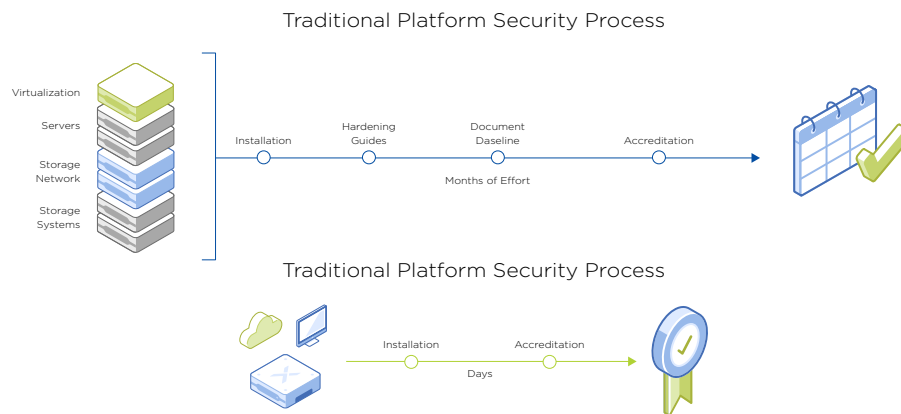


Figure 6. Nutanix shortens the time necessary for security accreditation from months to days and maintains a secure baseline after that.

[Multicloud Cost Governance and Optimization](#)

Many service providers manage resources across one or more public cloud environments in addition to their own datacenters. This not only adds management complexity, it creates opportunities for resource optimization. How can service providers ensure they are using public cloud resources optimally and not paying for idle or orphaned resources? And how can service providers enable their customers to make better multicloud decisions?

Nutanix addresses these challenges with Nutanix Beam for multi-cloud visibility, enabling you to drive financial accountability with intelligent resource sizing, cloud metering, and chargeback with one-click cost optimization across cloud environments. These capabilities can enable service providers to better understand customer workloads and guide customers to more optimal cloud architectures.

For more on cost governance see:

- nutanix.com/beam
- [Private Cloud Cost Governance Design Guide](#)

DATACENTER SERVICES

The Nutanix Cloud Platform includes essential datacenter services including advanced data services that simplify storage, a full suite of native data protection and DR capabilities, and complete network virtualization and security.

Integrated Data Services Simplify Storage

Nutanix Cloud Platform eliminates the need for traditional SAN and NAS solutions with its highly distributed infrastructure fabric. Nutanix provides all the data services necessary to support both traditional enterprise applications and cloud native applications on the same platform and enables service providers to offer value-added block, file, and object storage services without adding separate infrastructure that increases complexity:

- **Nutanix Volumes.** A native scale-out block storage service that provides direct block-level access via the iSCSI protocol.
- **Nutanix Files.** A software-defined scale-out service for unstructured file data, providing a highly available and massively scalable data repository. Files eliminates the need for separate NAS appliances.
- **Nutanix Objects.** A software-defined object storage service designed with an S3-compatible REST API interface to handle terabytes to petabytes of unstructured object data.

For more on data services see:

- nutanix.com/files
- nutanix.com/objects
- nutanix.com/volumes

Data Protection and DR

It can be difficult to create data protection and disaster recovery services to meet your customers' needs—especially if you have to incorporate diverse third-party tools. Doing so adds cost and complexity and makes integration and automation more difficult. A service provider requires a flexible set of integrated capabilities to ensure data protection and DR, and to support customers' business continuity requirements. For many service provider customers, the highest priority cloud use case may be disaster recovery (DR). Maintaining the necessary capacity in a secondary datacenter adds significant capital and operating expense.

Nutanix makes it simple for service providers to offer:

- Advanced data protection and DR for customer services
- DR as a Service (DRaaS) for applications running in customer datacenters (especially customers already running Nutanix)

Nutanix Cloud Platform delivers far greater resiliency than traditional infrastructure. The Nutanix HCI platform is fault resistant with no single points of failure and no bottlenecks. The system uses a shared-nothing architecture with data, metadata, and services distributed across all nodes within a cluster. Self-healing allows a cluster to detect, isolate, and recover from failures; survive system hardware, software, and hypervisor issues; and maintain data availability—all without operator intervention.

Built-in data protection and DR capabilities simplify infrastructure, eliminate bottlenecks, streamline management, and facilitate automation. Every capability is easily configurable using Nutanix management interfaces or via a complete set of APIs, making it simple to incorporate these capabilities as part of a service catalog. Nutanix HCI also provides full integration with third-party options. Nutanix supports leading industry vendors and offers advanced integration.

Nutanix provides data protection at multiple levels:

- **On-cluster snapshots** provide a first line of defense and the fastest and most convenient recovery.
- **Remote backup** replicates snapshots to a remote Nutanix cluster for longer-term retention, providing DR and site-level resilience.
- **Cloud backup** uses a public cloud as a remote backup target.
- **Nutanix Mine** offers a complete backup, archival, and recovery solution that integrates with leading third-party software (currently Veeam and Hycu).

For DR, Nutanix Cloud Platform offers asynchronous, near-synchronous, and synchronous replication options to support different recovery SLAs.

DRaaS options include:

- **Nutanix Leap**. A fully integrated DR-to-cloud solution with simplified automation, orchestration, and failover/failback testing. For service providers, Leap can facilitate
 - DR from customer datacenter to SP datacenter
 - DR from SP datacenter to Nutanix Clusters
 - DR from SP datacenter to Nutanix Xi datacenter (managed)
- **DR to Nutanix Clusters**. Nutanix Clusters in the public cloud can serve as a DR target for customer applications running in service provider datacenters. A small cloud footprint serves as a replication target and can be expanded rapidly if a failure occurs. Multi-tenancy enables SP customers to share the same infrastructure in SP datacenters and in the cloud, minimizing the required footprint of DR infrastructure in the public cloud.

For more on Nutanix DR and data protection see:

- [Private Cloud DP/DR Design Guide](#)
- [The Definitive Guide to Data Protection and Disaster Recovery \(v2.0\)](#)
- [Xi Leap Admin Guide](#)

[Network Virtualization](#)

One of the most critical concerns in service provider environments is secure multi-tenancy, the ability to securely isolate each tenant while empowering customers to request and provision isolated logical network segments for themselves. Nutanix simplifies network and policy management for service providers, enabling applications and multiple tenants to be governed independent of the physical infrastructure. [Nutanix Flow Networking](#) delivers advanced networking and security services that give service providers independence from the underlying physical network infrastructure with full visibility, granular control, and ubiquitous security leading to a better security posture.

Nutanix network virtualization capabilities include:

- [Network segmentation with virtual private clouds \(VPC\)](#). Nutanix provides the ability to create isolated logical network segments completely driven by applications and/or APIs, enabling customers to consume network infrastructure via self-service. This gives service providers further independence from the underlying physical network infrastructure with complete freedom to choose best-of-breed network infrastructure and optimize on cost without being locked-in to a particular network equipment vendor.
- [Application microsegmentation](#). Nutanix provides the ability to abstract the expression of security intent. Nutanix microsegmentation is application-oriented and API-driven with flexible and fine-grained security policies. This enables defense-in-depth, effectively limiting the attack surface and preventing horizontal spread of malware and ransomware.
- [Threat intelligence and detection](#). Nutanix allows you to further enhance network security by inserting best-of-breed partner network functions into the virtual network environment.
- [Identity-based security](#). A user's identity can be used to control network access to applications and services in end-user-computing (EUC) environments.

Nutanix has deployed its network virtualization functionality since 2017 for use in the Nutanix Xi Cloud, our cloud environment that hosts Xi Leap and other Nutanix services. As a result, these capabilities are all fully proven, and we're the full stack of network virtualization to customers and service providers for use in on-premises and public cloud environments to harmonize and virtualize the underlying physical networks in those environments.

Microsegmentation

Network microsegmentation provides a zero-trust policy enforcement model that simplifies and automates the application of granular network policies between VMs. You can easily create security policies to secure applications or VDI groups by controlling access to specific sets of application/user VMs or you can isolate sets of VMs from one another by blocking communication between them.

Flow isolation policies make it possible to isolate environments from one another with a few clicks. For example, you can isolate development from production. Using Flow monitoring, you can quickly discover and visualize traffic flows in a multi-tier app and make adjustments when needed. VMs that have been infected with malware or are otherwise misbehaving can be quarantined to prevent problems from spreading.

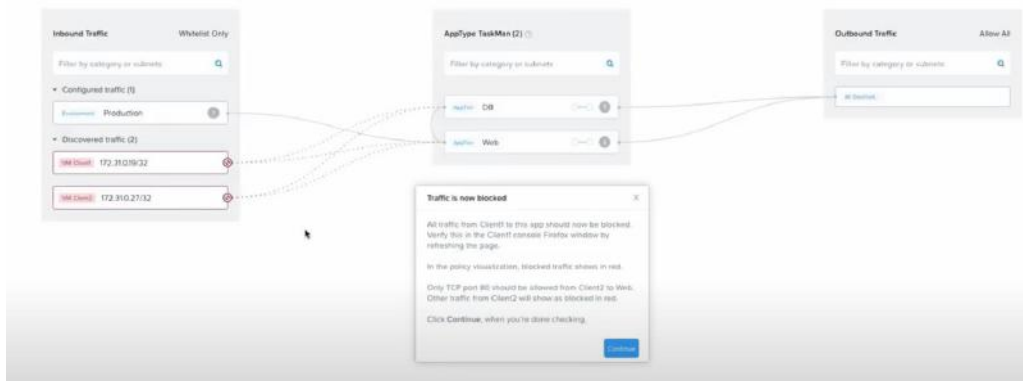


Figure 7. Nutanix Flow visualization lets you visualize and adjust traffic flows.

Flow Networking and VPC

Software-based, multi-tenant networking is a key requirement to provide network-level isolation between different tenants while offering the same agility that public cloud providers offer—independent of underlying hardware.

Nutanix's Flow Networking (available in Early Access at the time of this writing, and Generally Available starting August 2021.):

- Provides full tenant isolation with VPC
- Offers clean separation between provider and tenant space
- Eliminates the need to implement multi-tenancy in the physical network
- Extends the benefit of VPC networking to customer and service provider data centers
- Requires no physical network changes

Flow Networking brings VPC and other virtual networking constructs together to bridge traditional and cloud-native network models. The use of a software-defined approach simplifies the infrastructure and removes the need for costly hardware segmentation solutions or more complex and static physical network architectures. Flow Networking takes the pain out of creating, managing, and connecting virtual networks between multiple Nutanix environments.

Flow Networking makes networking invisible by automating deployment and simplifying configurations to ensure proper network connectivity is maintained and does not require time-consuming manual configuration. Service Providers will be able to quickly create new VPCs and subnets, and define DHCP, NAT, routing, and security policy right from the Prism interface or via APIs to enable automation and self-service.

DEVOPS SERVICES

Nutanix DevOps service includes infrastructure and application automation, full lifecycle management for popular databases that greatly streamlines provisioning and management and enables DBaaS, and advanced support for cloud native applications including containers and Kubernetes.

[Automation, Orchestration, and Lifecycle Management](#)

Nutanix Cloud Platform provides a single point of control for managing infrastructure and applications across a service provider's entire operational footprint. As described above, Nutanix Prism Pro provides advanced capabilities for datacenter task automation.

Nutanix Calm is designed to address the challenges of automation in dynamic environments, adding native application orchestration and lifecycle management to Nutanix Cloud Platform. By approaching applications as complete entities, Calm orchestrates how applications are created, consumed, and governed. It delivers simple, repeatable, and automated management of infrastructure and applications across a range of environments, including customer and service provider datacenters, Nutanix Clusters running in public clouds, and public clouds without Clusters. Calm provides a foundation for automation for any cloud service provider developing and deploying customer-facing services or applications.

Calm simplifies the set-up and management of custom applications by incorporating all elements of each application, including relevant VMs, configurations, and related binaries, into an easy-to-use blueprint, making the deployment and lifecycle management of common applications automated and repeatable. The result is a value-added service that service providers can offer to their customers, enabling those customers to level up their IT sophistication.

A unified application language provides a single flexible construct to improve collaboration between teams and avoid errors between development and operations disciplines.

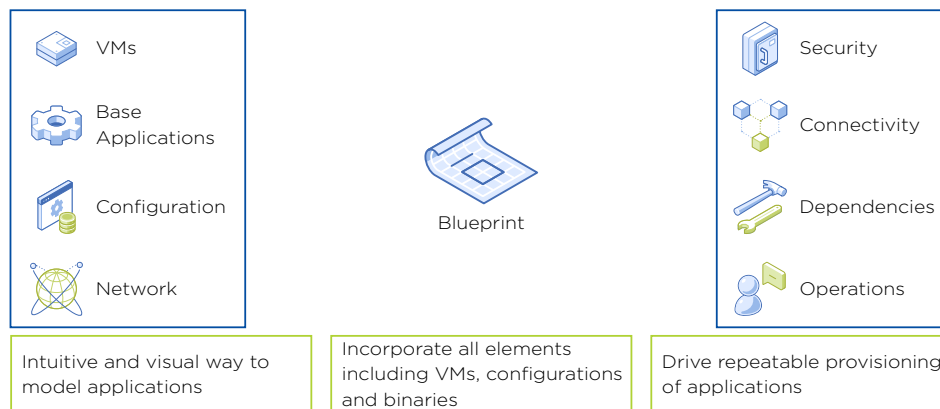


Figure 8. Calm blueprints incorporate all the elements needed to deploy and manage a custom application.

For more on automation see:

- nutanix.com/calm
- Nutanix Private Cloud Automation Design Guide

Database Lifecycle Management and Database-as-a-Service

Many companies want to adopt a database-as-a-service (DBaaS) model for managing and operating databases, because DBaaS is efficient, agile, cost-effective, and scalable. This creates a unique opportunity for service providers to fill this niche with managed or co-managed DBaaS. Nutanix Era enables you to offer DBaaS for developers and business teams from your datacenters.

Forrester Consulting conducted a Total Economic Impact™ (TEI) Study to examine the return on investment (ROI) enterprises achieve with Nutanix Era. Key benefits identified include:

- Increased speed of database provisioning by 97%
- Decreased storage requirements for copies and backups by 60%
- Reduced the need for DBA overtime by up to 50%
- Automated database patching and management, avoiding downtime losses averaging \$35,000 per hour

Nutanix Era transforms the Nutanix Cloud Platform into an ideal database platform, automating and simplifying database administration, and bringing one-click simplicity and invisible operations to database provisioning and lifecycle management. Era provides full support for different production and dev/test use cases.

The API-first Nutanix Era architecture integrates easily with existing service provider and customer database operations. Era makes it easier to keep database software up to date, reducing risk, and enabling your team to provision, clone, and refresh databases to any point in time. Every operation is fully audited.

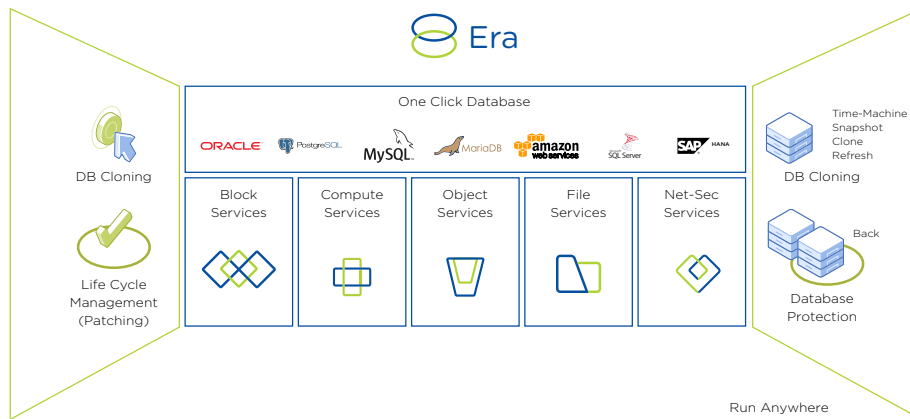


Figure 9. Nutanix Era creates a full-featured database environment that can simplify and accelerate the ability of service providers to offer DBaaS.

Key Era capabilities include:

- **One-Click Provisioning.** Create a standardized catalog of database services with uniform compute, network, and database parameter sizing. Era makes databases cloud-ready, enables mobility, and offers the ability to create instant clone copies.
- **One-Click Backup.** Back up any size database in a full, database-consistent manner in just minutes with space and time-efficient database snapshots and one-click database snapshots.
- **One-Click Patching.** Streamline software maintenance with immediate or scheduled updates for all provisioned database instances.
- **Copy Data Management.** Capture all database states for any given service-level agreement (SLA). Create fully functional database copies, and quickly refresh existing copies.

Era software profiles

Era software profiles make it simple to deploy different versions of operating systems and databases. Era includes built-in profiles for supported databases out of the box. You can also create your own customized profiles; profiles for already-deployed databases running on Nutanix can be imported into Era for re-use. This approach makes it possible to deploy standardized infrastructure and databases in minutes and hours instead of days and weeks.

Nutanix Karbon

Companies are rapidly adopting Kubernetes as they undertake large-scale digital transformation projects. While software developers speed ahead leveraging containers, microservices architecture, and cloud-native technologies, IT operations become a roadblock as teams struggle to deploy and manage the required on-premises Kubernetes infrastructure. This creates a new opportunity for service providers.

But few service providers have the expertise or resources to build and manage production-ready Kubernetes environments. Kubernetes presents major challenges across cluster configuration, persistent storage, availability, and lifecycle management that can take weeks—even months—to solve.

Most commercially-available Kubernetes solutions are expensive and involve proprietary elements which impact application portability and choice. Karbon is Nutanix's integrated Kubernetes solution that enables turnkey provisioning, operations, and lifecycle management of Kubernetes. Karbon integrates seamlessly with the entire Nutanix cloud-native stack, and dramatically simplifies Kubernetes without vendor lock-in. Karbon is included in all AOS software editions.

Capabilities include:

- **Easy configuration of persistent storage.** Karbon natively integrates with Nutanix Volumes and Nutanix Files to easily provide persistent storage for containerized applications. S3-compatible storage is easy to set up with Nutanix Objects.
- **Scale seamlessly, without limit.** Add Kubernetes worker nodes with a single click. When additional physical resources are needed, you expand a Nutanix cluster using familiar one-click processes.
- **Upgrade without downtime.** Streamline node operating system patching and upgrade Kubernetes to the latest version with no disruption to production applications.
- **Monitor, log, and get alerts.** Karbon integrates best-in-class open-source tools for cluster monitoring, logging, and alerting, including Prometheus, Elasticsearch, Fluent Bit, and Kibana (EFK stack).

For more on Nutanix Karbon see nutanix.com/karbon.

DESKTOP SERVICES

Nutanix supports a range of innovative desktop and application virtualization solutions, delivering seamless access to apps, virtual desktops, and protected data. Nutanix solutions enable you to provide Desktop as a Service (DaaS) at any scale from your service provider datacenters or the cloud—to customers in any location working on any device—all delivered with simplicity, security, and speed.

Nutanix solutions:

- **Are inherently hybrid and multicloud.** Service providers gain greater flexibility to tailor services to meet unique customer requirements.
- **Deliver enhanced security.** Nutanix solutions help prevent data theft and loss from ransomware and malware; adhere to regulatory, compliance, and data privacy requirements.
- **Simplify operations.** Nutanix desktop solutions enable predictable performance and consistent access to apps and data while supporting more end-users with less management complexity.
- **Enable faster deployments.** React quickly to deliver a consistent and delightful end-user experience, even as you customers' needs change.

Solution options include:

- Hybrid and Multicloud Solutions
 - Citrix Virtual Apps and Desktops
 - Xi Frame
 - Service provider or customer premises only
 - VMware Horizon



5. Guidance for Selected Services

The following pages provide specific guidance for six services: managed cloud service provider, IaaS, Desktops as a Service, DR as a Service, Database as a Service, and Software as a Service. To utilize this section:

- Review the content for each service of interest including the questions at the end of the section
- Be sure to download and read additional resources provided on topics of interest
- The uber resource for any service provider deploying Nutanix infrastructure is:
 - [The Nutanix Hybrid Cloud Reference Architecture](#)

In addition:

- Review Service Provider case studies and blogs on [Nutanix.com](#)
- Download the following IDC report: [IDC TCO study](#)
- Learn about Nutanix security: [Information Security with Nutanix](#)
- Connect with Nutanix for a complementary session
- Connect with Nutanix and Nutanix customers on [next.nutanix.com](#)
- Follow Nutanix on Twitter [@nutanix](#)

When you are ready to talk to Nutanix directly:

- Email serviceprovider@nutanix.com for more information
- Call Nutanix directly at (855)-Nutanix
- Find more ways to contact Nutanix at our [contact page](#)

MANAGED CLOUD SERVICE PROVIDERS

According to the IDC Worldwide Managed Cloud Forecast, the managed cloud services market is growing at 15.3% annual rate and expected to exceed \$100B in 2024. Today's managed cloud services providers offer a variety of cloud services that are fully managed by the provider (offloading the customer IT team) or co-managed. By providing a simple, scalable, and highly available cloud platform, Nutanix makes it easier for managed providers to create and offer cloud services, freeing staff to focus more time and effort on meeting customer needs and expanding offerings.

Reasons Managed Cloud SPs Choose Nutanix

- Any application, any cluster. Nutanix Cloud Platform can support both enterprise and cloud native applications in customer or provider datacenters and the public cloud, delivering high performance in any location without constant infrastructure tuning.
- OpEx savings. Reducing administrative overhead and meeting SLAs reduces operating expenses. In particular, managed providers benefit from:
 - Rapid provisioning and self-healing
 - Application orchestration and automation with Nutanix Calm
 - One-click upgrades
 - Ability to identify problems proactively
- Ability to focus on customers not infrastructure. The key to success in managed cloud services is focusing on the customer and customer needs.

Resources for Cloud Service Providers

Reference Architectures and Best Practices

- [Best Practices for AHV](#)
- [Nutanix Calm Reference Architecture](#)
- [Enhance Security with a Nutanix Private Cloud Design Guide](#)
- [Best Practices for: Microsoft Exchange, SQL Server, Oracle](#)
- [Technical Notes for: SAP, SQL Server](#)
- [VMware vRealize Automation Reference Architecture](#)

eBooks

- [The Definitive Guide to SAP](#)
- [The Definitive Guide to Microsoft SQL Server](#)
- [The Definitive Guide to Oracle](#)

Design Guides

- [SAP on Nutanix](#)
- [Private Cloud on Nutanix](#)
- [Splunk on Nutanix](#)

Questions for Cloud Service Providers to Consider

- How many different management interfaces does your team use every day (for virtualization, networking, storage, data protection, etc.)?
- How many times have you ended up in the wrong tool for the task you needed to accomplish?
- How much of your team's daily tasks are automated vs. manual?
- How long does it take to upgrade capacity?
- How long does it take to upgrade infrastructure software (virtualization, firmware, OS, etc.)?
- How efficiently can you orchestrate application deployments and lifecycle events?

Healthcare Company Chooses Nutanix Managed Cloud Service Provider for Performance and Simplicity

When a provider of healthcare software services needed a hosted private cloud, it turned to a well-known Nutanix managed cloud service provider partner to increase performance of critical workloads in production and enable a more robust DR strategy to protect critical healthcare data and services. The company appreciated the Nutanix-based solution's ease-of-management and fast time-to-value.

INFRASTRUCTURE AS A SERVICE

IaaS providers offer virtualized computing resources for customers—in direct competition with public cloud providers. As a result, the ability to offer flexible, agile, and reliable services is critical. Nutanix allows providers to offer enterprise features that public cloud providers may lack, such as data reduction, efficient snapshots and clones, and support for multiple hypervisors.

Reasons IaaS Providers Choose Nutanix

- **No “noisy neighbor” problems.** Providers have little or no visibility of the applications running on their infrastructure. By providing data locality, Nutanix eliminates the problems that occur when using conventional infrastructure with shared storage. At the node level, no single VM is allowed to consume all controller resources.

- **Cluster flexibility.** Nutanix Cloud Platform gives service providers more flexibility and a selection of available platforms so services can be tailored more closely to customer needs:
 - Mix platforms. Nutanix provides a broad range of platforms: compute-heavy, storage-heavy, and storage-only. Multiple types can be mixed in the same cluster if needed.
 - Create all-flash or hybrid (HDD and SSD) clusters.
 - Choose hypervisors: vSphere, Hyper-V, Nutanix AHV (AHV is included with Nutanix Cloud Platform licensing, eliminating separate virtualization license costs).
 - Migrate VMs from one hypervisor to another.
- **Advanced data services.** Integrated data services including Volumes (block data service), Files, and Objects, enable service providers to provide diverse storage-as-a-service capabilities without having to add separate, expensive components such as SANs, NAS, or object stores that add complexity.
- **Hybrid and multicloud.** Transparently extend your datacenter to use public cloud resources with Nutanix Clusters.
- **Ability to repurpose equipment.** Switch a node from one hypervisor to another. Take nodes offline and move them to other locations.
- **Rapid, automated cluster deployment.** New clusters can be up and running in minutes.
- **Less space, power, and cooling.** Reduce expenses and reclaim space in crowded datacenters.
- **Built-in self-service.** Create blueprints for common infrastructure configurations and make them available with Nutanix Calm.
- **Advanced security.** Maintain strict security with less effort.

Resources for IaaS/Private Cloud

Reference Architectures and Best Practices

- Best practices for: [AHV](#), [Docker Containers on AHV](#), [AHV networking](#), [vSphere](#), [vSphere Storage](#), [vSphere networking](#)
- [VMware vRealize Automation Reference Architecture](#)
- [Nutanix Calm Reference Architecture](#)

eBooks

- [The Definitive Guide to Private Cloud](#)
- [Hybrid and Multicloud Management \(O'Reilly\)](#)

Private Cloud Design Guides

- [General](#), [Automation](#), [Security](#), [Cost Governance](#), [Storage](#), [DP/DR](#)

Questions Private Cloud/IaaS Providers Should Consider

- How do you plan for customer growth? How quickly can you scale your infrastructure?
- Would you like to simplify the use of public cloud resources to address short-term needs?
- How quickly can you allocate more resources to a customer if needed?
- Are planning and managing hardware and software upgrades a pain point?
- What manual tasks are you doing today that should be automated?

Distributor Chooses Nutanix Service Provider for IaaS

When this industrial distributor needed to stand up two datacenters in a short time—complete with compute infrastructure—it turned to a Nutanix Elevate Service Provider partner. The choice came down to strong capabilities in multiple markets, the flexibility of the partnership between customer and provider, and an innovative solution backed by a tight relationship and collaboration between the service provider and Nutanix.

DESKTOP AS A SERVICE

DaaS providers host virtual desktop infrastructure (VDI) and virtualized application deployments for their customers offloading what can be a time-consuming and resource-intensive workload. With DaaS, the greatest challenge is often scaling infrastructure to accommodate growth. A traditional infrastructure solution that works well for a pilot project may not scale, resulting in unexpected expenses. By converging compute and storage on the same node, Nutanix eliminates scaling difficulties, allowing your DaaS offerings to scale without surprises. The same infrastructure that hosts DaaS can also host IaaS or other services.

Reasons DaaS Providers Choose Nutanix

- **Predictable costs and growth.** Eliminate guesswork and simplify capacity planning.
 - Start small and scale to any size.
 - Each node supports a predictable number of desktops.
 - Choose VM sizes and go.
- **Choice.** A range of platform choices satisfies almost any requirement.
- **HCI is better for virtual desktops.** And Nutanix is an HCI leader according to the [Gartner Magic Quadrant](#) and [Forrester Wave](#). Nutanix delivers predictable performance for VDI and DaaS as you scale.
- **Integrated data services.** Desktop environments need shared file storage. Nutanix Files lets you provision multiple file shares and object shares using the same hardware as VDI.
- **Repurpose nodes.** Downsize if needs change or move nodes between sites to balance load.

- [Enable hybrid](#). Support hybrid operational models using Nutanix Frame with the control plane running in the cloud and virtual desktops running in service provider or customer datacenters. Virtual desktops running in the cloud can support geographies far from a datacenter.
- [Adapt to customer needs without affecting the status quo](#). Customize VM sizes or add GPU-acceleration on some nodes without changing the overall design.
- [Leverage validated solutions](#). Deploy proven solutions for [Horizon View](#) or Citrix Virtual Apps and Desktops, simplifying deployment and reducing risk. Citrix solutions are validated on AHV, eliminating hypervisor licensing costs.

Resources for DaaS

Reference Architectures and Best Practices

- Best practices for: [Citrix Virtual Apps and Desktops](#), [Securing Citrix with Nutanix Flow](#), [Horizon 7](#)
- [Reference architecture for Horizon 7](#)

eBooks

- [Definitive Guide to DaaS with Xi Frame](#)

Private Cloud Design Guides

- [The Total Economic Impact of Nutanix for End User Computing](#)

Questions DaaS Providers Should Consider

- How flexible is your current infrastructure solution?
- When you add seats are you worried about noticeable changes in performance?
- Are you dedicating infrastructure specifically for special requests?
- Do you need to implement a hybrid model to provide desktop services to multiple geographies?
- How much staff time is dedicated to manage and support your DaaS offering?

[North American Retailer Turns to Nutanix Service Provider for DaaS-Enabled eCommerce](#)

A brick-and-mortar retailer needed to stand up an innovative eCommerce platform quickly when the COVID-19 pandemic hit. Because the retailer's customers create their own designs, the company needed a solution that went far beyond the capabilities of typical eCommerce.

A Nutanix Elevate Service Provider partner helped the company build a solution that combines the capabilities of Nutanix Cloud Platform, Flow, and Frame. Frame provided in-browser application presentation using HTML5 with GPU-acceleration on the backend, smoothly handling the computing requirements created by the company's design software. This enabled customers to do online designs using almost any device with no special computing requirements. Nutanix Files efficiently stores the output design files and Nutanix Flow provides security for each client desktop session.

DISASTER RECOVERY AS A SERVICE (DRAAS)

Because of the expense of maintaining a disaster recovery (DR) site, many enterprises want to use the cloud for DR. DRaaS fills this need. The challenge is to create secondary infrastructure that can efficiently ingest large amounts of customer data while also providing the necessary compute capacity to bring up customer applications during a failover. Nutanix offers flexible platform options to scale compute and storage separately and the ability to repurpose infrastructure quickly to address failover scenarios.

Reasons DRaaS Providers Choose Nutanix

- Backup from any customer deployment
 - Storage-heavy and storage-only nodes provide capacity.
 - Compute-heavy nodes can be used to support customer VMs during failovers.
 - Compression and deduplication reduce total storage requirements.
 - No tuning needed. Customer applications run well in the Nutanix environment.
 - Support for multiple hypervisors (vSphere, Hyper-V, Nutanix AHV) to match customer needs.
 - Analytics quickly identify any bottlenecks and predict growth rates and needs.
 - A single interface for infrastructure management.
 - Full API integration.
- Get up and running fast. Nutanix environments are simpler to plan, deploy, and configure.
- IaaS and managed cloud services providers can add value. Nutanix software includes innovative and easy to use backup/restore and DR features including local and remote snapshots and asynchronous and synchronous replication. These tools are the foundation for backup and DR for hosted applications.
- Support for native replication. The Nutanix customer base is growing. SPs can offer DR and data protection services to Nutanix customers using the Nutanix tools customers are familiar with.

Resources for DRaaS

Reference Architectures and Best Practices

- [Best Practices for AHV](#)
- [Data Protection and DR Tech Note](#)
- [Veeam: Best Practices, ESG White Paper, Nutanix Mine with Veeam](#),
- [Commvault Best Practices](#)

eBooks

- [The Definitive Guide to Data Protection and Disaster Recovery \(v2.0\)](#)

Design Guides

- [Private Cloud DP/DR Design Guide](#)

Other

- nutanix.com/leap
- [Xi Leap Solution Brief](#)
- [ESG White Paper: Veeam and Nutanix](#)

Questions DaaS Providers Should Consider

- How do you currently balance compute and storage requirements for DRaaS infrastructure?
- How do you predict when you'll need more equipment to support a growing customer base?
- When deploying infrastructure, how many months do you plan ahead?
- Are your customers asking for data protection and DR services you can't currently provide?
- Are your infrastructure costs for DRaaS too high?

Service Provider Chooses Nutanix to Deliver DR

This service provider offers 24/7 cloud-based managed services for backup and DR to other SPs, VARs, SIs, and Telcos. The provider had been facing significant challenges with its aging legacy 3-tier IT infrastructure, including high costs, multiple points of failure, and complex management that placed a significant burden on a small team.

The company chose Nutanix for ease-of-management and fast time to value, and quickly saw additional benefits from the Nutanix solution:

- Significant costs reductions on hypervisor licensing
- Flexible support for encryption
- Drastic reduction in rack space
- Linear scalability that improves service delivery
- Simplified IT operations and management with a single pane of glass to manage the whole infrastructure and enable fast provisioning
- Reduced time spent planning and forecasting from weeks to hours
- Industry-leading support

DATABASE AS A SERVICE

The accelerating pace of digital transformation means that companies need more database instances than ever—and many want to move to a DBaaS model. Nutanix Cloud Platform and Nutanix Era make it simple for a service provider to offer DBaaS, providing fully managed or co-managed access to popular databases including SQL Server, Oracle, and SAP while minimizing the management overhead for your team.

Reasons DBaaS Providers Choose Nutanix

- Nutanix Era. Era greatly simplifies the effort necessary for a service provider to deploy and run a DBaaS offering.
- Better infrastructure. Nutanix HCI delivers good database performance for databases of all types without constant tuning. Scale up with compute-heavy nodes to support demanding database instances and scale out to support large numbers of less demanding instances.
- Rapid provisioning with Era profiles. Standard and customized profiles ensure that database deployments are correct and deployed according to best practices and customer needs. In combination with Nutanix Calm, you can offer customers a marketplace of database services to be deployed automatically.
- Copy data management. In traditional environments, storage is wasted on physical copies of the same data to meet dev/test and other needs. Nutanix Era uses space-efficient clones to create database copies, reducing storage consumption and increasing the number of copies that a customer can have and the speed with which they are available. Both are significant differentiators for a DBaaS offering.
- Simplified patching. Regular software patching is essential to protect against CVEs, but downtime can be expensive and hard to schedule. Nutanix Era automates the patching process, minimizing downtime and making it easier to stay ahead of patches and updates.

Resources for DBaaS

Reference Architectures and Best Practices

- [Best Practices for AHV](#)
- [Nutanix Calm Reference Architecture](#)
- [Best Practices for: SQL Server, Oracle](#)
- [Technical Notes for: SAP, SQL Server](#)

eBooks

- [Database Solutions Pocket Book](#)
- [The Definitive Guide to SAP](#)
- [The Definitive Guide to Microsoft SQL Server](#)
- [The Definitive Guide to Oracle](#)
- [Data Services Platform](#)

Other

- [Nutanix Era Solution Brief](#)
- [Forrester Total Economic Impact Study of Nutanix Era](#)
- [ESG Era Database Benchmarking Study \(Oracle and SQL Server\)](#)

Questions that DBaaS Providers Should Consider

- Are you unable to provide DBaaS or are your services limited due to the complexity of managing multiple database platforms?
- Does your DBaaS environment require silos of infrastructure to support unique database and customer needs?
- How many hours a week does your team spend on database-related tasks? How much overtime is required?
- How much of your storage capacity is consumed by physical database copies?

Nutanix Era Critical Success Factor in Service Provider Selection by Marketing Company

When a marketing company needed to downsize its datacenter, it chose a Nutanix Elevate Service Provider partner to help it modernize infrastructure, simplify management, and accommodate its critical Oracle environment. The existing datacenter consisted of 40-45 racks of diverse equipment and 8 VMware clusters. The customer IT team found it necessary to use Google Sheets to keep track of everything in this complex, multi-vendor environment.

All customer workloads were consolidated onto just 20 Nutanix NX nodes hosted by the service provider—and occupying a single rack. Nutanix Era was key to reducing the overhead of Oracle database management. The ability to use Nutanix Era to provision new databases, clone database instances, and manage backups and replication was a big plus for the company's database team.

SOFTWARE AS A SERVICE

SaaS providers deliver internet access to hosted software and need to focus on delivering value in terms of differentiated software features, not spending time managing infrastructure. By greatly simplifying IT infrastructure provisioning and management while providing superior scalability and availability, Nutanix frees SaaS providers to focus on software. Nutanix features support ongoing software development

Reasons SaaS Providers Choose Nutanix

- Cloud-like experience without the cost. Eliminate guesswork and manual tasks. Nutanix HCI adapts to the workload, reducing the need for tuning.
 - Nutanix sizer determines what infrastructure is needed.
 - Analytics can quickly identify any bottlenecks that arise.
 - One interface covers all infrastructure management needs.
 - Full REST APIs facilitate automation and integration with software.
 - One-click software upgrades simplify management and eliminate downtime.
- Application automation and orchestration. Nutanix Calm turns application deployment and lifecycle management into a simple, repeatable automation.
- Intelligent tiering puts data where it's needed. For optimal performance, hot data is automatically stored on flash local to each running VM.
- Integrated data protection. Local and remote snapshots, asynchronous or synchronous replication, cross-hypervisor DR to optimize costs.
- Simplified database management. Nutanix Era is a suite of software which automates and simplifies database management, bringing one-click simplicity and invisible operations to database provisioning and lifecycle management.
- Tools to support dev/test and DevOps. Clones and snapshots facilitate all tasks requiring data copies, reducing cost and decreasing time to market. Combined with integrated data protection, your dev/test environment can run using an exact copy of production data on a different hypervisor, optimizing costs.

Resources for DBaaS

Reference Architectures and Best Practices

- [Best Practices for AHV](#)
- [Docker Containers on AHV](#)
- [Nutanix Calm Reference Architecture](#)
- [Best Practices for: Microsoft Exchange, SQL Server, Oracle](#)
- [Technical Notes for: SAP, SQL Server](#)
- [VMware vRealize Automation Reference Architecture](#)

eBooks

- [The Definitive Guide to Enterprise Apps](#)
- [The Definitive Guide to SAP](#)
- [The Definitive Guide to Microsoft SQL Server](#)
- [The Definitive Guide to Oracle](#)

Other

- [Solutions Pocket Book](#)
- [Database Solutions Pocket Book](#)
- [SAP on Nutanix](#)
- [Private Cloud on Nutanix](#)
- [Splunk on Nutanix](#)

Questions SaaS Providers Should Consider

- [How fast is your business growing?](#)
- [What will happen to your infrastructure costs as you grow?](#)
- [Are costs for adding infrastructure predictable, or are their unpredictable large expenditures?](#)
- [How much time do you spend managing infrastructure?](#)



serviceprovider@nutanix.com | www.nutanix.com
 @nutanix

Nutanix makes infrastructure invisible, elevating IT to focus on the applications and services that power their business. The Nutanix Enterprise Cloud OS leverages web-scale engineering and consumer-grade design to natively converge compute, virtualization, and storage into a resilient, software-defined solution with rich machine intelligence. The result is predictable performance, cloud-like infrastructure consumption, robust security, and seamless application mobility for a broad range of enterprise applications. Learn more at www.nutanix.com or follow us on [Twitter @nutanix](https://twitter.com/nutanix).