THE DEFINITIVE GUIDE TO

Nutanix Enterprise Cloud for Remote Office, Branch Office and Edge

CSPi
Technology Solutions

NUTANIX™

WHAT THIS BOOK COVERS

Meeting the IT needs of remote office, branch office, and edge locations creates significant challenges for already busy IT teams. Onsite infrastructure is often the best option but can be expensive and difficult to manage remotely. Data protection is always a challenge and delivering application performance from limited infrastructure can be problematic.

Nutanix Enterprise Cloud is designed to address these challenges, providing a full-stack infrastructure solution with options suitable for every requirement. Nutanix provides a cloud-like environment with less complexity, centralized infrastructure and operations management, flexible data protection options, and easy cloud integration. This book describes Nutanix remote office and edge solutions in detail, including customer examples that illustrate the benefits.

1 THE RISE OF THE DISTRIBUTED BUSINESS

Businesses often find it advantageous to adopt a distributed model. Having more locations can make your business more accessible and more visible to customers and help you expand into new markets. It may also help you gain access to a wider pool of potential employees and reduce your business risks. For many companies, the pace of globalization is accelerating these trends. While having many remote office and branch office (ROBO) locations may be the right choice for your business, it creates significant IT challenges. ROBO locations may have a few employees or hundreds, with IT needs that vary widely.

Remote employees need the same IT services—and the same service levels. However, supporting remote and branch offices can be difficult. Infrastructure for these locations must be:

- Suitable for remote and potentially isolated sites
- Flexible and adaptable to address unique requirements
- Resilient to connectivity problems and WAN outages

For many distributed enterprises, their cloud strategy is missing consistency and common IT tooling across multiple clouds, including a growing distributed cloud environment that includes ROBO and other edge locations. New demands require more field-based infrastructure for oil rigs, kiosks, cruise ships, forward-deployed military operations, and even airport security devices that need processing power at the point of data collection. With its simple, hyperconverged architecture, integrated management, and flexible services, Nutanix Enterprise Cloud is the ideal choice to satisfy these diverse IT needs.

This book examines the unique IT challenges and needs of ROBO and edge computing and explains how Nutanix checks every box.

MEETING THE IT NEEDS OF THE DISTRIBUTED CLOUD

Wouldn't it be great if a single IT solution could:

- Make it easy to keep up with software upgrades and patches?
- Simplify ROBO and other edge infrastructure and make it easy to manage from a central location?
- Reduce the cost of purchasing, installing, and managing infrastructure at ROBO sites?
- Streamline ROBO backups and enable disaster recovery?
- Increase application performance and availability?
- Reduce footprint so infrastructure fits more easily when space is limited?

Nutanix does all this and more, eliminating the challenges that come with deploying and managing infrastructure remotely.

WHAT IS HYPERCONVERGED INFRASTRUCTURE?

Hyperconverged infrastructure natively integrates compute, storage, and networking into a single turnkey system that reduces power and space requirements and eliminates system complexity, making IT infrastructure as easy to consume as public cloud services.

2 ROBO CHALLENGES

For many IT teams, supporting remote and branch offices is a constant challenge, putting stress on IT teams and IT budgets. Among the many challenges are:

- Controlling costs
- Ensuring file server and application performance
- Providing adequate backup and recovery
- Fitting infrastructure into available space
- Coping with high WAN costs and unreliable WAN connections

CONTROLLING COSTS

Provisioning the necessary hardware in each location to provide local compute, storage, and networking—plus other essential services such as data protection—is an expensive task. This is especially true when you have a lot of small offices. The cost of IT per employee served can be prohibitive in locations where there aren't enough employees to amortize the expense.

And it's almost never possible to train IT staff in every remote location, so your team is forced to manage the infrastructure remotely using a patchwork of tools with help from local employees who have their own job responsibilities.

The result is inefficient use of staff time, including hours of phone support, unexpected service calls, and unplanned travel when problems can't be solved any other way. This all adds up to high capital costs, high operating costs, a disgruntled IT team, and dissatisfied employees.

ENSURING FILE SERVER AND APPLICATION PERFORMANCE

When it comes to file services and application support for remote locations, you have two choices:

- Provide services from the corporate datacenter and have remote employees connect via the WAN or internet
- Host file servers and applications at the location

Neither option is without challenges. While many of your remote offices may have MPLS network service and may also be able to access corporate data-centers over the internet, throughput, latency, security, and reliability concerns often make the idea of hosting file services and ROBO-specific applications in a corporate datacenter a non-starter.

BACKUP AND RECOVERY

Of all the ROBO IT challenges, backup and recovery is probably the largest. In an ideal world, you'd back up all your remote sites to a corporate datacenter where the data is protected and secure, but WAN reliability and bandwidth are almost always an issue.

Cloud backup is attractive for remote locations, but speedy recoveries from the cloud can be expensive. Some cloud storage providers charge based upon how quickly you want your data. Even if you're backing up over the WAN or to the cloud, you may need some form of local backup to accelerate recovery. Big recoveries can take hours or days over slow network connections.

With local backups, the challenge is the backup device. Tape requires someone who can reliably manage the tapes and deal with the unique challenges of these devices. Disk-based backup eliminates tape complications and provides greater recovery speeds but may be an expensive option for a small remote site.

REDUCING SPACE REQUIREMENTS

In many remote locations, space is at a premium. When you plan infrastructure for a location, you need to consider whether the infrastructure needed—like servers, switches, storage, and communications gear—will even be able to fit. Considerations of infrastructure efficiency and consolidation are even more important for ROBOs than for corporate datacenters.

ROBO AND THE CLOUD

As your organization builds out its distributed cloud strategy, it is important to consider the cloud needs of ROBO sites, including opportunities to bring data and compute closer together. As you think about each ROBO, you'll want to ask the following questions:

- What private cloud services, if any, does this ROBO require? Can these services be supplied from corporate datacenters?
- What public cloud services does this ROBO require?
- Is this location generating IoT data that would benefit from greater local processing capacity?

As you plan your overall strategy for ROBO support, you should also consider how much time will be needed to bring new remote locations online.

3 WHY CHOOSE NUTANIX ENTERPRISE CLOUD?

Many IT teams are tempted to deploy the same conventional infrastructure they use in corporate datacenters for remote offices and other edge locations. Traditional multi-tier infrastructure, with separate servers and storage, is usually a bad fit. The different tiers of infrastructure take up too much space and drive up CapEx for small environments, while the complexity drives up OpEx. Application performance and scaling can be problematic, and troubleshooting can be too complex. However, few IT teams are willing to challenge the status quo. This is where the Nutanix Enterprise Cloud architecture comes in. By dramatically simplifying the infrastructure needed, Nutanix completely changes the economics of onsite infrastructure, while providing a solution suitable for every location including environments requiring ruggedized solutions.

INTRODUCING THE NUTANIX ENTERPRISE CLOUD

Nutanix Enterprise Cloud is based on a hyperconverged architecture. Industry-standard servers with internal SSDs for performance act as simple infrastructure building blocks that eliminate infrastructure complexity, simplify management, and accelerate application performance. Nutanix offers the ideal platform for virtualized applications in both distributed and datacenter locations, challenging the logic of the traditional approach.

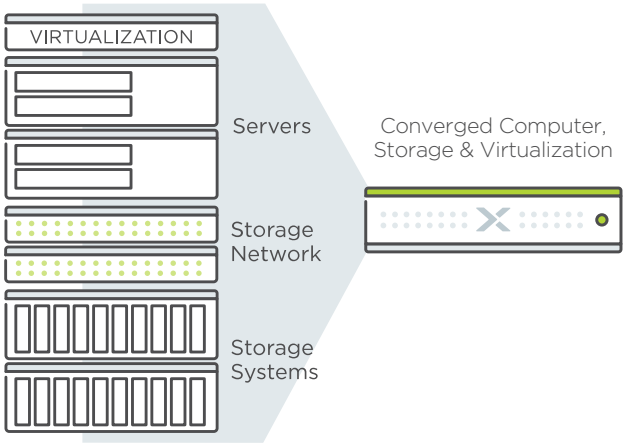


Figure 1. Nutanix Enterprise Cloud integrates, storage, storage networking, servers, and virtualization in simple-to-deploy and simple-to-manage building blocks.

Benefits of the Nutanix Enterprise Cloud for ROBOs include:

- **SSDs in each server provide storage performance**. Placing SSDs in each server puts the storage closer to the application for lower latency and more predictable performance, eliminating ROBO performance problems.
- **Full virtual machine (VM) awareness simplifies operations**. Nutanix provides VM-centric data services that dramatically simplify the operation of remote environments. Nutanix includes its native hypervisor, AHV, with your hardware purchase at no additional cost, eliminating licensing costs for virtualization.
- **100% software defined**. Intelligent software allows Nutanix servers to operate as a coordinated system. For example, the storage from multiple servers is managed as a single, flexible storage pool with superior resilience and advanced services. This provides the same or better sharing and resiliency as a storage array, with higher performance and lower cost and complexity.

Nutanix Enterprise Cloud provides all the infrastructure services remote locations need including:

- Advanced digital workspaces including VDI with multi-hypervisor support and Desktop-as-a-Service (DaaS)
- File, block, and object storage services to address diverse storage needs
- Self-service for sites that need immediate access to infrastructure and other IT services
- Data protection and disaster recovery
- Advanced security functions

Nutanix Calm™ simplifies application deployment across multiple locations with easy-to-use deployment blueprints, while Nutanix Xi Cloud Services enable disaster recovery, digital workspaces, multi-cloud management, IoT, and more.

WHO IS NUTANIX?

In today's dynamic business environment, IT plays a larger and larger role in businesses of all sizes and types. Nutanix was founded with the goal of simplifying IT infrastructure and reducing routine management, elevating IT teams to focus attention on critical applications and processes. Throughout this book, you'll see case studies of customers who have transformed their IT operations—and their businesses—with Nutanix.

By focusing tirelessly on customer needs and customer service, Nutanix has created a new and simpler approach to IT infrastructure designed to propel IT into the next era of computing. Nutanix Enterprise Cloud offers the agility of the public cloud, without sacrificing security, predictable costs, or high levels of service.

Compared to traditional infrastructure, Nutanix solutions are easier and faster to source, simpler to deploy and manage, easier to upgrade and scale, and more reliable and economical. Eliminating management tasks, simplifying data protection, and increasing availability minimizes operational expenses for significant ongoing savings.

Nutanix is the acknowledged leader in hyperconverged infrastructure. Thousands of organizations across nearly all industries—including retail, finance, healthcare, professional services and more—rely on Nutanix technology. Gartner named Nutanix a leader in its 2018 Magic Quadrant for Hyperconverged Infrastructure.

Nutanix Enterprise Cloud is changing the face of IT. Nutanix is uniquely positioned to help you take the first step toward the IT of the future.

WHAT NUTANIX ENTERPRISE CLOUD MEANS FOR REMOTE LOCATIONS

With Nutanix Enterprise Cloud, all your remote offices and edge locations from the smallest to the largest have a full-stack infrastructure solution with zero compromises. Rather than acting as an obstacle to IT productivity, remote infrastructure becomes an extension of your core datacenters. Nutanix makes it affordable to deploy onsite infrastructure to all of your ROBOs to create a distributed cloud. Most companies find they reduce rack space requirements by up to 70% and power requirements by up to 50%, making Enterprise Cloud a perfect option for remote locations with limited space and power.

For remote sites you're currently supporting from a corporate datacenter or the cloud, Nutanix Enterprise Cloud gives you a cost-effective, space-efficient, and resilient option for onsite IT infrastructure, eliminating bottlenecks and outages to deliver higher levels of service and increasing productivity at remote sites.

For remote locations that already have IT infrastructure deployed, Nutanix overcomes existing limitations:

- If you're currently using separate servers and storage in your ROBOs, Nutanix Enterprise Cloud will consolidate and simplify the hardware environment. All management tasks are greatly simplified, making remote management and troubleshooting much easier.
- If you rely on servers with direct-attached storage in your ROBOs, you likely face even greater challenges with capacity planning, provisioning, and back-ups. By creating a single, flexible pool of storage, Nutanix Enterprise Cloud simplifies provisioning, data management, and backup tasks, reducing the burden that ROBO puts on your IT team.

Big savings result from reduced help desk calls, easier troubleshooting, simplified purchasing and installation, improved system availability, and reduced management overhead.

End users will notice improvements in both performance and availability, making employees more productive and improving the experience of your customers.

CarMax Upgrades Retail Locations with Nutanix

CarMax is the largest used car retailer in the United States. Aging infrastructure at retail sites was hampering its digital transformation efforts. It needed to upgrade infrastructure for hundreds of locations to support applications running under Citrix XenApp, improve availability, and facilitate remote management. By partnering with Nutanix, CarMax tailored a solution for its remote locations. With five nodes in each store, two nodes can fail and the Nutanix cluster continues to operate without disruption.

Additional benefits include:

- **Increased performance**. Faster performance and improved reliability for core retail applications improve the customer experience.
- **Faster time to market**. Agile development and continuous delivery methods let CarMax deliver new software features and services more quickly.
- **Central management.** With Nutanix Prism Central, the company can manage its entire environment—across all locations—from a single pane of glass.
- **Improved security**. Nutanix Flow simplifies network and security policy management with an application-centric approach.

> "We're operating in a much more agile environment, and Nutanix is helping us do that. We can quickly try out new experiments and innovative ideas we think our customers will love. It's also a very flexible platform. No matter what type of workload we want to use, we can quickly deploy it to Nutanix and then get it out in front of our customers and see what they think."
>
> – Ken Shaffer, Assistant Vice President for Enterprise Systems, CarMax.

4 NUTANIX REMOTE OFFICE AND EDGE SOLUTIONS

Nutanix uses enterprise cloud technology to address the IT needs of ROBO and the distributed enterprise through simple, risk-free deployment, ease of management, and lower total cost of ownership (TCO). Nutanix solves your immediate needs to:

- Simplify and unify infrastructure across all edge sites
- Enable multi-hypervisor operations and reduce licensing costs
- Streamline file services for remote locations
- Facilitate cloud and IoT integration

This section explores these capabilities in detail. The following two sections explain how Nutanix enables centralized management and facilitates data protection for remote locations.

INFRASTRUCTURE RIGHT-SIZED FOR ANY DEPLOYMENT

Many sites are too small for traditional three-tier datacenter infrastructure due to CapEx, OpEx, power, and space constraints. And at some sites, the physical environment may be too harsh for standard equipment due to temperature, humidity, shock, vibration, or dust. Nutanix supports infrastructure configurations for any deployment need.

- Single-node clusters are available for the smallest edge deployments, providing full data redundancy and superior performance in a compact form factor.
- Two-node clusters are the next step up, delivering high availability for locations that need it. If one node fails, the remaining node assumes its workload.
- Clusters with three or more nodes provide a scale-out environment for sites where infrastructure needs grow over time.
- Ruggedized hardware is available for environments with harsh environmental conditions such as oil rigs, vehicles, and others.

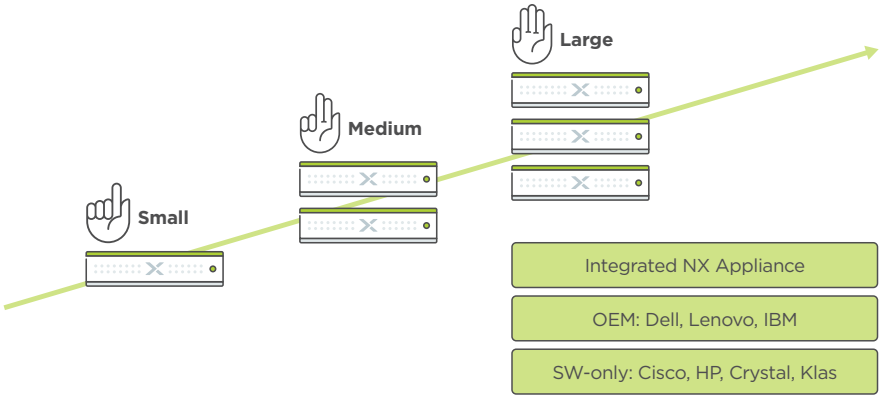


Figure 2. Nutanix solutions are available in a wide range of flexible configurations to meet the needs of all edge sites.

Nutanix Enterprise Cloud OS runs on multiple hardware platforms, including those from Dell EMC, Lenovo, Cisco, and HPE—in addition to Nutanix-branded NX hyperconverged platforms. This means you can continue to honor purchasing agreements with your hardware vendor of choice, buy directly from Nutanix, or work with a ruggedized hardware vendor for special needs.

Nutanix lets you adopt a pay-as-you grow model to meet end-to-end infrastructure needs across all your distributed sites. A Nutanix solution can run all of your local applications, such as Microsoft SQL Server and Exchange, custom applications, virtual desktops, and services including DHCP, DNS, file and print, WAN optimization, and security-focused virtual appliances. It can also be deployed as a flexible solution to support special-purpose applications such as point-of-sale or edge analytics.

By deploying Nutanix Enterprise Cloud, you immediately:

- **Take the risk out of infrastructure deployment**. A fully integrated, turnkey solution eliminates complicated IT integration and setup and eliminates the need for separate file servers. Built-in hardware and software redundancy saves space, simplifies management, and ensures reliability.

- **Gain the advantages of resiliency and self-healing**. Remote sites rarely have dedicated staff to respond to hardware failures. With built-in self-healing, Nutanix infrastructure recovers from many hardware failures and restores full data redundancy without operator intervention. By decreasing the urgency around hardware failures, self-healing protects your data and your business. And because the hardware is designed for simplicity, individuals without technical skills can perform drive and other hardware replacements if necessary.

- **Increase the security of your infrastructure**. Legacy infrastructure solutions were not designed with security as a primary consideration. The Nutanix architecture takes a security-first approach. Built-in features deliver defense in depth so that data is always protected. Nutanix provides:
  - Built-in two-factor authentication, cluster lockdown, and software or hardware-based data-at-rest encryption
  - Secure installation and simplified security maintenance
  - Nutanix Flow for microsegmentation and enhanced network visibility
  - Deep integration with a broad ecosystem of security partners including SIEM, firewalls, and other security applications

- **Benefit from full infrastructure support from a single vendor**. Because Nutanix supports the entire infrastructure— including virtualization and many popular applications—support is simple and there's no finger-pointing between vendors. One call gets you the help you need, saving time and accelerating problem resolution.

BUILT-IN HIGH AVAILABILITY
AHV delivers high availability with minimal configuration and no additional software purchase. Should a node fail or go offline, AHV automatically restarts VMs on other nodes in the cluster.

MULTI-HYPERVISOR OPERATIONS

Server virtualization often entails some cost and deployment hurdles for remote locations. However, the significant advantages in efficiency, availability, and overall business agility are impossible to ignore. Nutanix supports the broadest range of hypervisors of any vendor, giving you more choice to meet your ROBO deployment needs. In addition to full support for VMware vSphere, Microsoft Hyper-V, and Citrix XenServer, Nutanix includes its own AHV virtualization as part of your purchase with no additional licensing costs. AHV is a perfect choice for remote locations where hypervisor licensing costs might otherwise be prohibitive, or where virtualization management isn't something you want to think about.

AHV is based on the proven Linux KVM hypervisor and has been hardened to provide stringent security. It is designed to take advantage of the intelligent storage services of Nutanix Enterprise Cloud. Because all data services such as snapshots, clones, provisioning, and data protection are performed at VM granularity, AHV is much leaner than other hypervisors. Advanced features include live migration, dynamic scheduling, and built-in high availability.

A SIMPLER APPROACH TO FILE SERVICES

Providing reliable file services for remote locations can be a significant challenge. File servers in corporate datacenters are unlikely to meet the requirement, but deploying on-site infrastructure adds complexity, consumes additional space, and introduces new management challenges.

Nutanix Files solves these challenges by delivering reliable file services from Nutanix infrastructure, eliminating the need for separate file servers or NAS systems at remote locations. Nutanix Files is a software-defined scale-out file storage solution that improves storage services by providing high availability, massive scale, simplified self-service management, and self-tuning and self-healing.

You can easily provision shares for home directories, content management, and other needs. Nutanix Files deploys in minutes, creates shares in a single click, and scales up and out as your needs grow.

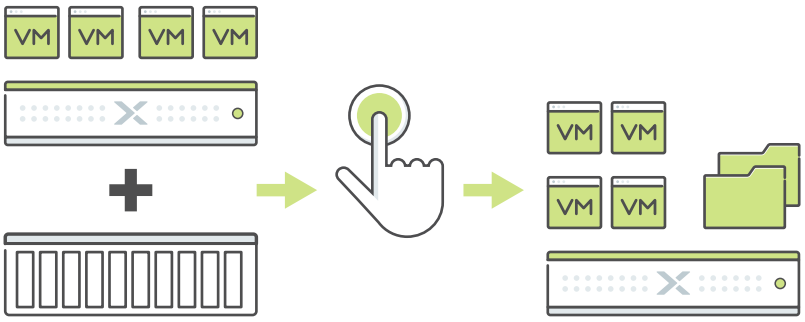


Figure 3. Nutanix Files flexibly addresses file services needs for ROBOs and other edge sites.

TOP 10 ADVANTAGES OF DEPLOYING APPLICATIONS ON NUTANIX AHV

- Natively integrated
- No additional licensing costs
- Built-in high availability
- Tighter quality assurance
- Dramatically reduced attack surface for security
- Built on proven open-source technology that is Nutanix-hardened
- Leaner infrastructure stack with no hypervisor bloat or shelfware
- Up to 80% lower virtualization costs
- Integrates virtualization management and infrastructure management
- Intelligent storage services to protect data

Xi Beam
Optimize cloud spend and ensure security compliance in multi-cloud environments

Xi Epoch
Monitor the health of multi-cloud applications and improve reliability by quickly troubleshooting issues.

Xi Frame
Run secure, software-defined virtual desktop workspaces in any cloud environment

Xi IoT
Build and operate IoT applications and infrastructure

Xi Leap
Natively integrated cloud based disaster recovery

Figure 4.
Nutanix Xi Cloud Services

EASY CLOUD INTEGRATION

Just like the rest of your business, your remote sites need easy access to the cloud and full integration with value-added cloud services.

Nutanix enables you to build and operate powerful multi-cloud architectures to support ROBO and datacenter needs. Nutanix software runs across different cloud environments to harmonize IT operations and bring frictionless mobility to your applications.

Nutanix Xi Cloud Services enable you to operate hybrid and multi-cloud environments with cloud services delivered by Nutanix, creating an integrated environment that can be instantly provisioned and automatically configured.

Choose the Xi Cloud Services you need for each remote location, whether it's Xi Frame for Desktop-as-a-Service, or Xi Leap for cloud-based disaster recovery. Choose Xi Epoch to increase application observability, or Xi Beam to monitor and optimize multi-cloud operations.

ADVANCED SUPPORT FOR THE INTERNET OF THINGS (IOT)

In the last few years, many of your remote locations may have transformed. Retail locations that once had just a few point-of-sale (POS) systems are seeing a proliferation of devices: tablets, scanners, customer kiosks, video surveillance, and more. Manufacturing and distribution sites generate a steady stream of IoT data. Lighting and HVAC systems in every location may be sensor-based and remotely controllable.

All that data can be analyzed to improve your operations and the efficiency of your business. However, it's often impractical to stream data to a central datacenter or the cloud for processing. If your remote or edge locations need to incorporate IoT capabilities, Nutanix Xi IoT streamlines IoT deployment and enables data processing and data reduction to be done at the edge.

Xi IoT eliminates complexity, accelerates deployment, and elevates developers to focus on business logic powering IoT-based applications and services. Rather than processing data exclusively in the cloud, the Xi IoT platform incorporates local compute, machine learning, and intelligence for IoT devices, creating an application development platform that meets the needs of both developers and operators.

Easier Data Management for Remote Locations
Nutanix provides a single platform to support diverse storage needs in any location without adding infrastructure complexity:

- **Nutanix Files** is a software-defined scale-out file storage solution that supports both SMB and NFS.
- **Nutanix Volumes** is a native scale-out block storage solution that provides direct block-level access.
- **Nutanix Buckets** is a software-defined object storage solution with an S3-compatible REST API interface.

TOP TEN ADVANTAGES OF THE NUTANIX REMOTE AND BRANCH OFFICE SOLUTION

- **Simple, out-of-the-box deployment**. Deploy all remote virtual applications and desktops on a single platform in just an hour.
- **Reduced need for IT specialists**. Hyperconverged platforms create a full-stack solution that eliminates the need for storage and server experts at every site.
- **Centrally managed**. Manage multiple locations from a single management interface. Aggregate health and usage statistics across multiple sites, with ability to zoom into individual locations.
- **Affordable platforms**. Bring the power of web-scale to remote office and branch locations at an affordable starting price.
- **Pay-as-you-grow IT**. Start small and scale by adding individual nodes as needed.
- **Consolidated infrastructure**. Reduce space and power requirements up to 80% by utilizing standard branch office power and networking infrastructure (110 volt and 1 GbE, respectively).
- **High availability**. Integrate workflows for VM-centric backups and failover between branch offices and central datacenters.
- **Predictable performance**. Get optimal performance for critical apps right out of the box. No complex configuration or tuning.
- **World-class services and support**. A single call reaches support for the entire infrastructure stack: servers, storage, virtualization, and more, eliminating vendor finger-pointing.

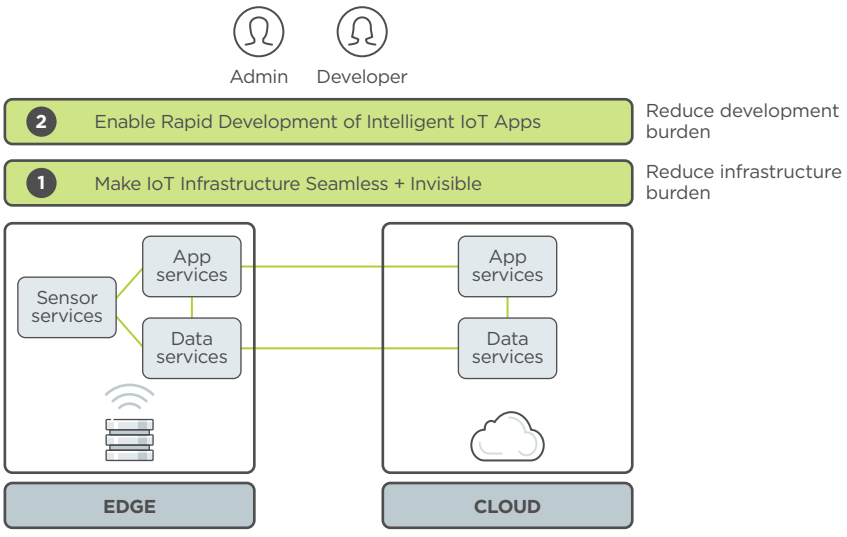


Figure 5. Xi IoT is designed to reduce the burden on both developers and operators.

ISC goes all in on Nutanix

International Speedway Corporation (ISC) is a leading promoter of motorsports-themed entertainment activities in the United States. It owns or operates 13 premier sports entertainment facilities, including Daytona.

When it came time to refresh IT infrastructure, ISC set itself some aggressive goals including reducing VMware, Oracle, and other licensing costs, reducing the amount of on-premises infrastructure, and reducing the operational effort to keep systems running.

After a careful proof-of-concept, ISC deployed Nutanix Enterprise Cloud at 11 remote track offices and two corporate datacenters to meet these goals and recognized immediate benefits.

- Increased availability and performance for tier-1 applications
- 50-90% faster completion times for Oracle database processes
- Simplified operations giving IT freedom to focus on new initiatives
- Greatly simplified file services

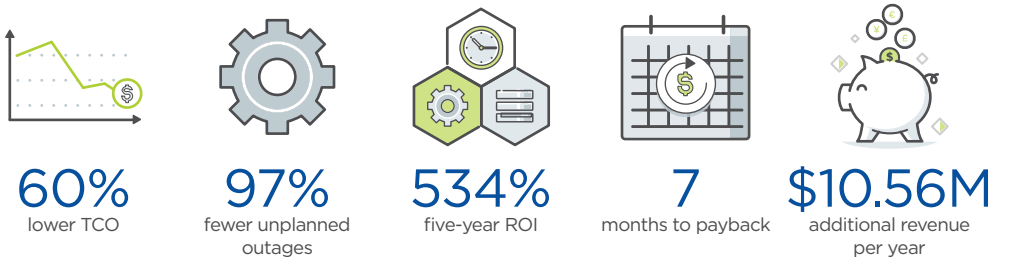
ISC has reduced licensing costs by replacing VMware with Nutanix AHV. It has also replaced a cumbersome file service environment with Nutanix Files, which greatly simplifies the management of file services, enabling them to easily see how much runway the environment has for planning purposes. A one-click performance optimizer with Files provides useful insights and recommendations on scaling the solution.

> "The Nutanix platform performs so well that we are now able to accomplish other IT projects that often got overshadowed by operational issues in the past. Moving to Nutanix was one of the smartest IT decisions we have ever made."
>
> – David Luke, Director of IT Engineering, International Speedway Corporation

5 CENTRALIZED INFRASTRUCTURE, OPERATIONS AND APPLICATION MANAGEMENT

One of the biggest advantages of Nutanix is that it makes infrastructure at the edge as simple to deploy and consume as public cloud services. The infrastructure can be installed, configured, and ready to run virtualized applications in 60 minutes or less. Nutanix delivers a number of immediate advantages:

- **Eliminates the need for special skills**. Eliminating separate storage arrays and storage networks—with complicated LUN provisioning, zoning, and masking—greatly simplifies ROBO environments. Virtualization is also greatly simplified, especially for those who choose to run Nutanix AHV. Initial setup of a Nutanix cluster at a remote site can be accomplished in minutes versus days with traditional multi-tier infrastructure.
- **Simplifies the management environment**. Traditional infrastructure has a painful and disjointed management experience that further complicates the management of infrastructure spread across multiple remote sites. The Nutanix Prism™ management platform delivers consumer-grade simplicity to IT management, making it easy to keep infrastructure up and running while facilitating remote management.
- **Reduces total cost of ownership**. An IDC study looked at Nutanix customers who either migrated workloads from conventional infrastructure or deployed new workloads on Nutanix. IDC measured TCO savings of 60% and payback in just 7 months. The Nutanix environment was also 61% more efficient to deploy, manage, and support.



Source: IDC White Paper, sponsored by Nutanix, Nutanix Delivering Strong Value as a Cost-Effective, Efficient, Scalable Platform for Enterprise Applications, August 2017.

Figure 6. IDC has identified significant performance, ROI, and TCO improvements versus traditional infrastructure.

NUTANIX PRISM

Managing a traditional IT environment—even one that has been scaled down for ROBO—is a complex experience. You have to manage different point products, including backup solutions. This often requires skilled IT personnel that aren't available in most ROBOs. Nutanix Prism takes the pain out of IT management. It makes it easy for your IT team to manage ROBO infrastructure from a central location, and it also makes it easy for untrained staff at the ROBO to perform management tasks when necessary.

Powered by advanced data analytics and heuristics, Prism streamlines common IT workflows, providing a single interface for managing servers, storage, data protection, virtualization, and more. Prism makes configuring, monitoring, and managing Nutanix solutions remarkably simple. One-click management reduces the administrative burden and the potential for operator error. For ease of automation, any task that can be performed via Prism can also be performed using REST APIs or a library of PowerShell Commandlets.

Figure 7. Nutanix Prism lets you manage the entire infrastructure stack. Rich data and analytics support decision-making.

Nutanix Prism takes the pain out of the most cumbersome management tasks. The benefits of these capabilities for IT teams managing dozens or hundreds of remote sites cannot be overstated. Now all your locations can run the latest and most secure code, and troubleshooting problems is vastly simplified.

One-click software upgrades. A consistent pain point for any IT environment is keeping system software and firmware up to date. Prism takes the pain and disruption out of upgrades, allowing operating software, hypervisor, and firmware upgrades to be executed during normal business hours. Intelligent software does all the heavy lifting, eliminating the need for detailed upfront planning.

PRISM IS HIGHLY AVAILABLE BY DESIGN

Because Prism runs on every node in a Nutanix cluster, there are no external servers or databases to configure. Unlike other management products, Prism is always highly available. You don't have to deploy and manage extra VMs to ensure it remains accessible.

LARGE-SCALE DEPLOYMENTS

Because of its ease-of-configuration, Nutanix Enterprise Cloud is ideal for large-scale deployments. For example, a large federal customer configured hundreds of systems at a central location before distributing them to remote sites where they were installed without onsite IT support. Once installed, all systems were managed from a central location using Prism.

One-click remediation. In the event of alerts or failures, Prism suggests remediation actions that you can initiate to correct problems quickly. With one-click remediation, the mean time to repair and restore services is greatly reduced, significantly improving availability while saving IT staff time.

Centralized management. Nutanix Prism streamlines management of remote infrastructure with Prism Central, enabling your IT team to manage Nutanix clusters across all locations from a single pane of glass. For example, a global retailer might utilize Prism Central to manage remote IT resources in hundreds of stores. Prism Central provides you with an aggregate view of the health and resources across locations, while allowing you to easily drill down to perform individual, per-cluster management tasks when necessary.

PRISM FEATURES FOR REMOTE AND EDGE SITES

Prism incorporates a number of features that are specifically designed to address the needs of IT teams managing infrastructure at remote sites.
These features include:

- **1-click centralized upgrades**. Schedule upgrades for all your remote sites. Execute upgrades in parallel or stagger them.
- **Scheduled upgrades**. Schedule upgrades to occur in the future. Set your maintenance window, pre-fetch the necessary software, and receive regular reminders.
- **ROBO view**. A network view provides a visual representation of network connections and traffic flows, enabling you to visualize end-to-end networking, report on each environment's configuration, make changes, and troubleshoot networking issues.
- **Cluster tagging**. Easily manage a large number of remote environments from a central location by creating tags for different classes of sites and viewing just the clusters that have a specific set of tags. For example, you could immediately identify all medium-sized ROBOs in the state of Ohio, or all IoT infrastructure deployments in the UK.

NUTANIX CALM

Nutanix Calm™ adds native application orchestration and lifecycle management to Nutanix Enterprise Cloud. Calm decouples application management from the underlying infrastructure. Advanced application management turns common tasks into repeatable automations.

Calm simplifies the deployment and management of applications by incorporating all elements of each application into an easy-to-use blueprint, making the deployment and lifecycle management of applications automated and repeatable across datacenters, remote offices, and public cloud environments. If you need to install and manage the same set of applications across multiple remote locations, Calm greatly simplifies the job and eliminates the risk of error that manual installation and configuration creates. With Nutanix Calm, a new or updated application can be deployed quickly in multiple locations with everything configured automatically and correctly.

Kinepolis Group Relies on Nutanix for Cinema Operations

Kinepolis Group is a Belgium-based cinema chain with 50 cinemas across Europe and 44 cinemas in Canada. The company has two Nutanix clusters in its main datacenter for ERP, financial applications, Active Directory, and file and print services. An additional 22 Nutanix clusters are deployed at remote theater sites across Europe, providing a high-performance solution that is easy to configure and manage centrally. The cinemas use the Nutanix systems for all local ticketing applications, food and beverage services, security, and heating control systems. All of Kinepolis' essential applications and services are now hosted on Nutanix.

Nutanix has delivered substantial benefits, including:

- Reduced system management time by 5x
- Shortened upgrades from hours to minutes
- Eliminated the need for IT specialists at remote sites
- Freed up IT to focus on more strategic projects

> "Prism has given us excellent insight into how our systems are performing and enables us to accurately plan for the future. In the past, storage and server management was very time-consuming and complex since we had to log into each separate system individually. Having just one dashboard for our entire environment makes IT management a breeze."
>
> – Bjorn Van Reet, CIO, Kinepolis

6 BACKUP/RESTORE AND DISASTER RECOVERY

The complexity and cost of data protection is a particular challenge for remote locations. Nutanix Enterprise Cloud includes integrated protection to help you guard your remote business operations against component failure, node failure, or a site-wide outage. Because Nutanix provides a wide range of options, it is able to meet the data protection and DR needs of diverse remote locations. All Nutanix data protection capabilities are based on efficient VM-centric snapshots that provide production-level data protection without sacrificing performance. Because Nutanix snapshot provides a first line of data protection without requiring separate dedicated hardware or appliances, it simplifies your infrastructure, eliminates bottlenecks, streamlines management, and reduces costs.

Nutanix also makes replication an affordable option for disaster recovery at remote offices.

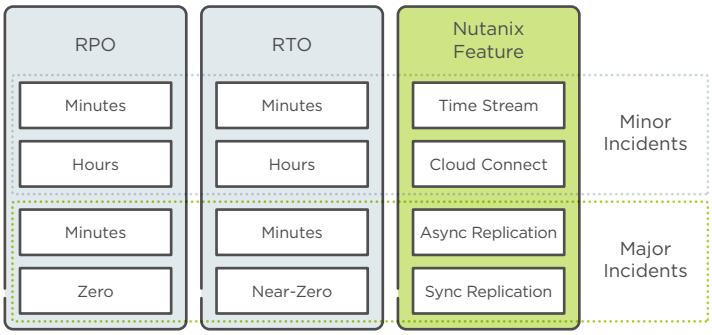


Figure 8. Nutanix data protection options.

DATA PROTECTION, API SUPPORT, AND PARTNER INTEGRATION

Nutanix solutions integrate with popular offload capabilities, including VMware API for Array Integration (VAAI) and Microsoft Offloaded Data Transfer (ODX), to create clones in a matter of seconds with minimal overhead.

Additionally, with support for vStorage API for Data Protection (VADP) and application-level consistent snapshots using Volume Shadow Services (VSS), Nutanix backup and DR capabilities integrate with third-party tools such as Symantec NetBackup, CommVault Simpana, HYCU, Veeam, and more.

LOCAL BACKUP AND RESTORE

Even if you have the necessary network bandwidth to restore quickly from the cloud, fast restores from cloud storage can be expensive. Don't ignore the cost element of cloud-based rapid file recovery. Some form of local backup is often a necessity for remote locations in order to accelerate the speed at which restores occur and to minimize potential downtime. Nutanix snapshots serve as the first line of defense and the fastest and most convenient recovery point for application problems or user errors.

Nutanix Time Stream uses VM-centric snapshots to provide production-level data protection without sacrificing performance. Nutanix utilizes a redirect-on-write algorithm that dramatically improves system efficiency for snapshots.

NUTANIX 1-NODE REPLICATION TARGET

Nutanix makes it simple and convenient to replicate snapshots for longer-term retention and site-level resilience. The Nutanix 1-Node Replication Target is a local backup solution aimed at solving ROBO backup challenges. The Nutanix backup target is a separate appliance with a single node and raw capacity up to 40TB, designed purely for backup purposes. A single click is all it takes to recover your data with Prism Central.

The 1-Node Target is highly available and durable. It can withstand single disk failure without downtime or loss of data. The node runs AHV, eliminating third-party license fees, and the solution is ready to go out of the box. It uses native Nutanix snapshots and can be managed from a centralized location with Nutanix Prism. Integrated backups on your Nutanix infrastructure eliminate the need for separate backup products, giving your team one less thing to worry about.

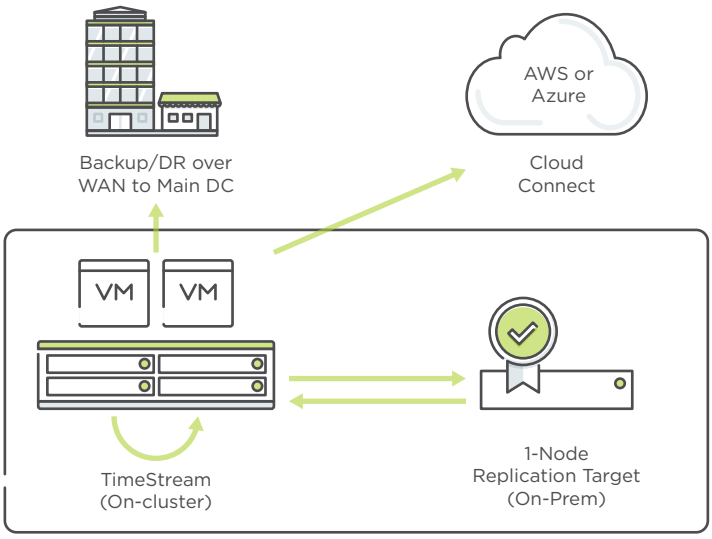


Figure 9. Nutanix Enterprise Cloud offers diverse data protection options to meet a range of needs.

SELF-SERVICE FILE RESTORE

Waiting for IT to restore a lost file is a major headache for users and a waste of valuable admin time. Nutanix data protection includes self-service file restore, which allows users to recover individual files from VM snapshots without getting an administrator involved. Self-service file restore is easy to set up and manage and, in most cases, eliminates the need to recover an entire VM.

NUTANIX CLOUD CONNECT

Cloud backup—with or without local backup—is particularly popular for ROBO. Cloud Connect lets you use public cloud services, such as Amazon Web Services (AWS) and Microsoft Azure, as a long-term backup destination for all types of workloads, making the cloud a logical extension of your remote site. Cloud Connect allows you to back up to and recover from the cloud with just a few clicks.

DISASTER RECOVERY

Nutanix remote office and edge solutions offer asynchronous, near-synchronous, and synchronous replication for disaster recovery. With asynchronous and near-synchronous replication, snapshots are taken periodically based on your schedule and replicated to a corporate datacenter. This VM-granular replication makes it possible to create an affordable DR solution. Groups of related VMs can be replicated together and brought up in the corporate datacenter if a ROBO site is down.

Synchronous replication ensures continuous data availability across separate sites. Synchronous replication is simple to set up and manage. Because it doesn't rely on secondary solutions, it takes much of the complexity out of disaster recovery. Data is written synchronously to both sites, so it is always available to applications in the event a site fails or needs to undergo maintenance. You can non-disruptively migrate virtual machines between sites for planned maintenance events or other needs.

NUTANIX XI LEAP FOR DISASTER RECOVERY

With Xi Leap disaster recovery service, Nutanix brings the ease of one-click operations to disaster recovery. Xi Leap instantly protects your applications and data. You do not need a separate disaster recovery solution.

Implement DR in minutes. Simply select a subscription plan that meets your business objectives. The intuitive onboarding process automatically tailors your recovery site and ports network and workload profiles to Leap.

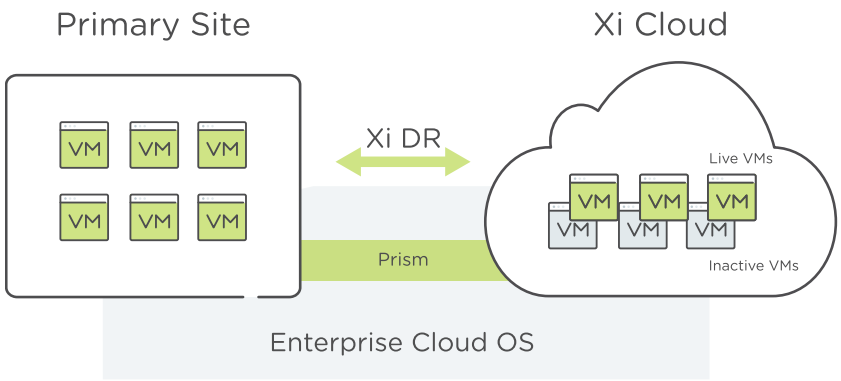


Figure 10. Nutanix Xi Leap disaster recovery service.

Credit Andorra Transforms with Nutanix

Crèdit Andorrà

Credit Andorra is a financial group with operations across Spain and around the world. When the company needed to modernize smaller data centers in Panama, Luxembourg, and Miami, it turned to Nutanix hyperconverged infrastructure. The built-in Nutanix hypervisor, AHV, looked very attractive versus the high licensing costs for VMware, and the team saw that Nutanix Prism would be a significant benefit for managing remote operations. The first location to be brought online was Panama. Setup and configuration was performed remotely without any problems and the team saw great results.

> "I would recommend Nutanix for its scalability and the ease of implementation. The experience with the AHV hypervisor has been very good and it's undoubtedly a better solution and more scalable. I believe it has a great future."
>
> – Alfred Alcon, CTO, Credit Andorra

7 WHAT APPLICATIONS RUN ON NUTANIX AT THE REMOTE AND BRANCH OFFICE?

Because of its unique, hyperconverged architecture, Nutanix Enterprise Cloud delivers high performance for nearly any business application or service, including file services, popular Microsoft apps, Unified Communications, infrastructure services (DHCP and DNS), and general VM workloads. You can run all applications simultaneously on a single cluster, including transactional databases, critical business application servers, and messaging and collaboration workloads.

When used with multi-threaded, multi-core servers, modern hypervisors deliver database performance comparable to bare metal. For popular databases, such as Microsoft SQL Server, Nutanix provides great performance and availability and is simple to deploy, manage, and scale.

- Consolidate on a single platform with the performance of local SSDs
- Remove storage complexity and reduce storage costs without giving up availability, scalability, and manageability
- Eliminate unplanned downtime and protect against unplanned events

MESSAGING AND COLLABORATION APPLICATIONS

Nutanix provides superior support for messaging and collaboration applications such as Microsoft Exchange. For Exchange, Nutanix delivers high performance by keeping data local to each server, aligning with Microsoft's recommendations. Nutanix delivers scalable and responsive Microsoft Exchange services without the excessive costs and complexity of traditional systems. With Nutanix you can:

- Virtualize all Exchange servers alongside other workloads for higher efficiency
- Eliminate complexity and reduce deployment time
- Cut operating expenses by as much as 50% and physical footprint by 90%

GENERAL IT VIRTUALIZATION

In addition to important business applications and industry-specific applications, your remote sites may rely on a variety of other custom applications and services such as Active Directory, file and print, and management servers. For smaller or less important applications, the goal is often to provide adequate performance and data protection at the lowest cost and with the least management overhead.

Nutanix helps you accomplish this by virtualizing large numbers of applications on the hypervisor of your choice, using tools you already know. Nutanix AHV can help reduce your virtualization costs and management overhead when you have a lot of applications to support across many ROBO locations.

Digital Workspaces

Managing physical desktop systems at ROBO locations is another significant challenge. With no onsite IT personnel, desktop problems can be a big drain on the productivity of ROBO employees and your IT team.

For this reason, VDI is a popular choice for meeting the desktop infrastructure needs of ROBOs. Employees can access their virtual desktops from a variety of devices, and the desktop can follow them from one location to another.

Nutanix Enterprise Cloud is a great choice for VDI at remote sites because it delivers high performance and supports other workloads on the same platform. Depending on your needs and your network capabilities, you might choose to deploy VDI services locally in each ROBO or from a centralized datacenter.

For situations where VDI is not ideal, the Nutanix Xi Frame Desktop-as-a-Service platform can allow you to offload desktop and application support entirely to the cloud, simplifying IT operations and enabling a bring-your-own-device (BYOD) approach.

Utility Relies on Nutanix for VDI

Black Hills Energy serves 1.2 million natural gas and electric utilities customers in eight states. When it needed to refresh infrastructure for Citrix XenDesktop, the IT team chose Nutanix HCI to replace its traditional infrastructure, increasing stability, improving the user experience, and cutting management time and total cost.

With Nutanix Enterprise Cloud Black Hills was able to:

- Increase virtual desktop stability and improve user experience by moving to AHV
- Decrease time to perform monthly image updates from up to 16 hours to just minutes

> "Before moving to Nutanix, we had to use several different consoles to manage our XenDesktop environment. Now we manage AHV and the Nutanix infrastructure from a single console, since it's completely integrated, which saves time and improves efficiency."
>
> – Paul Farrell, Senior Manager of IT Infrastructure, Black Hills Energy

GETTING STARTED WITH NUTANIX

As a leader in hyperconverged infrastructure, Nutanix understands the challenges IT teams face in managing diverse remote locations. Nutanix Enterprise Cloud is uniquely suited to meet your distributed infrastructure needs. Because Nutanix eliminates IT complexity and simplifies management, it is ideally suited for remote environments. Nutanix Enterprise Cloud reduces the cost of remote IT, while increasing the level of services you are able to deliver to remote office, branch office, and edge locations.

If you're ready to learn more, CSPi Technology Solutions at (800)-940-1111 or email tech_solutions@cspi.com or click here to request a customized briefing and demonstration to see how Nutanix can help.

CSPi Technology Solutions

CSPi Technology Solutions, a Nutanix Registered Partner, provides the expertise and service scope - including Managed IT Services, Professional Services, and Cloud Services - to help you architect and manage a high-performance, highly available, and highly secure IT infrastructure.

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Nutanix makes infrastructure invisible, elevating IT to focus on the applications and services that power their business. The Nutanix enterprise cloud platform 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.