NUTANIX™
The Enterprise Cloud Company

Nutanix Welcome Guide

About this Guide

Welcome to the Nutanix family! We are excited to have you join our growing customer base and want to say **Thank You** for selecting Nutanix for your solution. Nutanix is dedicated to your success and wants to make sure your Nutanix experience is unequaled to any you have had before.

This guide is a quick primer for new Nutanix customers on how to get help, create customer portal accounts, general administration steps, access training, and information about products and features available. If at any time you have questions, know that everyone at Nutanix stands behind our products, so please reach out to Nutanix Support, your account team or the Nutanix NEXT Community.

We look forward to continuing to serve you.

Thank you, Nutanix

Table of Contents

New Customer Initial Checklist

1. Create a Nutanix customer portal account for each person at your organization which will manage or interact with the Nutanix environment. Include accurate contact information for all accounts (Pages 6 and 7).

2. Deploy your Nutanix clusters (Page 11).

3. Change all defaults passwords, including hypervisor, CVM, Prism Element, Prism Central, and out of band management (Page 11).

4. Enable Pulse on all clusters and configure notification email addresses (Page 13).

5. Use Nutanix Move or other third-party tools to migrate workloads (Page 12).

6. Utilize Nutanix University for operational training and certifications (Page 8).

7. Leverage available Best Practice Guides, Reference Architectures, and NEXT community information for workloads migrated to Nutanix (page 10 and 17).

Contacting Nutanix Support

Nutanix Support phone number: 1-855-NUTANIX (1-855-688-2649)

Online: http://portal.nutanix.com -> Create Case.

When creating a case, please refer to the definitions of priority levels below. By using accurate priority levels Nutanix will be able to provide a better experience for customers while still maintaining quick response times.

Definitions of Priority Levels and Target Initial Response:

Priority Level	Description	Target Initial Support Response
P1	Emergency. System is not available, and productivity has been halted. Product is not properly functioning in its current state. All data unavailability or data loss issues are assigned this priority level.	Within 1 hour (30 minutes for Mission Critical support offering)
P2	Critical. System is available but experiencing issues that have a direct impact on productivity. Major inconvenience.	Within 4 hours (2 hours for Mission Critical support offering)
P3	Normal. System is having an occasional issue that has been identified as needing to be resolved, but the issue has not greatly affected productivity. Minor inconvenience.	Software support within 8 hours and hardware replacement by next business day (4 hours for Mission Critical support offering)
P4	Low. Questions about documentation, processes, or procedures. General requests about information.	By next two business days
RFE	Requests for Enhancements. Feature requests for the product that would improve the experience or functionality for the customer	Within 2 weeks

(NTNX Pro-tip: You can print this page and hang in a helpful location.)

Nutanix Customer Portal

Accessing the Customer Portal

The customer portal is your gateway to several informative websites, tools, and support.

Using a web browser, go to: https://my.nutanix.com

Select the area you would like to access, such as:
- Nutanix Next – online community where you can access customer forums, blog posts, and activities.
- Community Edition – for information and downloads on the Nutanix CE product.
- Support Portal – to open or view support cases, access software downloads, documentation, and licensing.
- Nutanix University – for training, updates, and certifications.

How to Create a Portal Account

If you do not have an existing customer portal account you can create one following these steps:

1. Go to: https://my.nutanix.com

2. Click "Sign Up Now".

3. In the new window, input your First Name, Last Name, work email address, and a password.

4. Click "Submit".

Contact Information

Nutanix uses the contact information provided in your portal profile for all communication, such as notices, advisories, and interaction for support cases. It is important to keep this information up-to-date otherwise case resolution may be delayed. The address information assists with parts dispatches and scheduling so should also be filled in.

1. Go to https://my.nutanix.com

2. On the top right, click on your name.

3. Select "Profile".

4. Update the appropriate contact information, such as phone number, email address, and mailing address in the "Profile Information" section then select save.

5. If any of your information changes it is advisable to update it in the Customer Portal as soon as possible.

Documentation

Nutanix software and hardware documentation, along with knowledge base articles, security advisories, upgrade paths and more is located in the Nutanix Support portal.

1. Go to: https://my.nutanix.com

2. Select Launch under the "Support Portal" tile.

3. Select "Documentation" from the Home screen tile or on the top left Menu Bar.

From here you can select the appropriate documentation section for the information you are looking for; software documentation, hardware documentation, knowledge base, solutions documentation, upgrade paths, compatibility matrix, and more.

Training & Certifications

Nutanix provides many avenues for training through The Nutanix University, public YouTube channels, and the Nutanix bible.

Nutanix University is the official hub for Nutanix web based training, product updates, and provides access to Nutanix certification exams.

To access Nutanix University:

1. Go to https://www.nutanixuniversity.com,
   or select Launch from the Nutanix University tile in https://my.nutanix.com.

2. If prompted, select "Sign in with your Nutanix account".

3. Select the appropriate education series under "Certifications" or "Training Catalog".

For public official Nutanix YouTube videos you can access the following two pages:

- Nutanix YouTube channel:
  https://www.youtube.com/Nutanix

- Nutanix University YouTube channel:
  https://www.youtube.com/nutanixuniversity

Nutanix also operates a public website called the Nutanix bible. It contains information on the architecture of Nutanix's products, general administration and operational actions, as well as how Nutanix is incorporated with different hypervisors like AHV, ESXi and Hyper-V.

- The Nutanix bible can be accessed by going to:
  http://nutanixbible.com/

For validating skills and knowledge, Nutanix provides several different certification levels. Information on the certification tracks, exam blueprints and more are available on the Nutanix Certification page.

- The Nutanix Certification page can be access by going to:
  https://nutanix.com/certification

Support

Nutanix provides world class support which is consistently rated as one of the best in the industry. Regardless if you have an active Production or Mission Critical support contract, Nutanix provides all customers 24/7 year-round support. Nutanix has a dedicated support portal where it is possible to create, view, and update support cases.

To access your Support Cases:

1. Go to: https://my.nutanix.com

2. Select the "Support Portal" tile.

3. On the home screen, your active cases are listed under the "Cases" tile. Alternatively you can select the top left menu -> Smart Support -> Cases.

From the Cases screen you are able to view your existing cases or create a new one.

Please note - when accessing the Support Portal for the first time, it may ask you to provide a serial number to confirm access. Simply log in to your local instance of Prism, go to Hardware, and select any node from either the table or diagram view. The serial number will be displayed on the bottom left and can be copied over to the support portal. This will only need to be performed once per customer account.

Support Escalations

If you feel an issue is not being adequately resolved through the normal case lifecycle, you have the ability to escalate the ticket to a dedicated support escalation team:

1. Go to https://my.nutanix.com

2. Select the "Support Portal" tile.

3. Select the case you would like to escalate by clicking the case in the "Cases" tile from the home screen, or select the top left menu -> "Smart Support" -> "Cases" and select the case.

4. In the top right of the case details screen, select "Escalate".

5. Select the reason for escalating in the drop down box.

6. Provide additional details and information regarding the case and escalation.

7. Hit "Escalate".

An escalation manager will mobilize the appropriate resources and communicate the expectations and timelines with you.

Downloads

Nutanix provides customers the ability to download all licensed products from the Support portal:

1. Go to https://my.nutanix.com

2. Select the "Support Portal" tile.

3. On the home screen, select the "Downloads" tile, or on the top left menu bar select "Downloads".

4. Select the appropriate download section for the desired product.

Licensing

For Acropolis and Prism Central, licensing is performed through the Nutanix support portal. To license an Acropolis cluster, log in to Prism Element for the cluster and select the Gear Icon -> Licensing and follow the instructions on the screen.

To license Prism Central, log in to Prism Central and select the Gear Icon -> Licensing and follow the instructions on the screen.

Nutanix Community

Nutanix provides several formats for community interaction, called Nutanix NEXT. Through NEXT, customers can interact with other customers and Nutanix employees in many different mediums, such as blog posts, message boards, in-person user groups, and even yearly large-scale conferences!

To access the Nutanix NEXT community resources:

1. Go to https://my.nutanix.com

2. Select "Launch" in the Next community tile.

Managing Your Nutanix Environment

General Administration

Nutanix provides detailed documentation in the customer support portal for how to manage your environment. For instructions on specific tasks:

1. Go to https://my.nutanix.com

2. Select "Support Portal".

3. Select "Documentation" from the Home screen tile or on the top left Menu Bar.

4. Select the related topic that is relevant for your product or environment.

Initial Cluster Deployment

Nutanix installs AHV and the Acropolis software, which runs in the Controller VM or "CVM", at the factory for prebuilt appliances such as NX, HX, and DX gear. Customers can use the Nutanix Foundation tool to perform the initial configuration which allows you to configure IP addresses, hypervisor, and other cluster level settings, regardless of hardware manufacturer.

Nutanix typically recommends first time customers utilize professional services from either Nutanix or a channel partner to deploy their clusters and assist with initial migrations. Either method will provide a certified installer to get your environment online quickly and correctly.

For more information on the installation process please review the Nutanix Field Install Guide, available on the support portal:

1. Go to https://my.nutanix.com

2. Select "Support Portal".

3. Select "Documentation" from the Home screen tile or on the top left Menu Bar then "Software Documentation".

4. Select "Foundation" as the software type.

5. Select the "Field Installation Guide".

Workload Migration

Nutanix provides all customers access to a migration tool called Nutanix Move. Move is able to seamlessly migrate workloads from existing ESXi, Hyper-V, and Amazon AWS environments to a Nutanix AHV cluster, from Nutanix AHV to Amazon AWS, and also from any ESXi environment to a Nutanix ESXi cluster. Nutanix Move simplifies the process of migrating workloads to your new Nutanix clusters.

To access Nutanix Move:

1. Go to https://my.nutanix.com

2. Select "Support Portal".

3. In the top left menu, select "Downloads".

4. Select "Nutanix Move".

Prism

Prism is the primary Nutanix interface. It is a web-based, HTML5 management console that can run on any modern browser and any modern device without requiring plugins. All of the main administration of a Nutanix environment is performed in Prism, such as monitoring and alerting, virtual machine management, storage configuration, hardware, and Acropolis configuration. Prism runs as a service on every CVM in the cluster (see CVM section) so is highly available.

Prism can be accessed by going to the IP address or DNS entry of the cluster in a web browser. No HTTPS or specific ports are required as the appropriate redirection is in place to ensure easy access.

For more information on Prism architecture and management, please refer to the Nutanix bible and Nutanix Documentation in the customer portal.

Acropolis (AOS)

Acropolis, also called AOS (and sometimes NOS), is Nutanix's core resource manager for cloud infrastructure. It can be thought of as the engine for the cloud architecture. While it has many pieces and parts it is primarily broken into three main components:

- Distributed Storage Fabric (DSF), manages and services all aspects of the distributed storage which is core to the Nutanix Acropolis architecture.

- Application Mobility Fabric (AMF), which abstracts workloads from the hypervisor to allow them to move seamless across architectures, such as different hardware, hypervisors, or even between cloud providers.

- Acropolis Hypervisor (AHV), to abstract hardware from the workloads. Which is an optional product, as customers can chose to utilize ESXi or Hyper-V for legacy support.

For more information on Nutanix Acropolis architecture and Prism management, please refer to the Nutanix bible and Nutanix Documentation in the customer portal.

Pulse

Nutanix includes a built-in monitoring and alerting system, which is called Pulse. When the Acropolis software finds an issue with the environment, such as a failed power supply, bad hard drive, or low available storage space, it will simultaneously attempt to automatically resolve the issue while also sending a notification to Nutanix to create a support ticket and to any additional email addresses you have configured.

To enable Pulse:

1. Log in to Prism.

2. Go to Gear Icon -> Pulse.

3. Tick the boxes for "Enable" and "Include Additional Support Information".

4. Click the "Additional Info" button.

5. Tick the box for "Nutanix Support".

6. Fill in the email box with email addresses from your organization which should be notified of critical issues.

Controller VM (CVM)

Regardless of hypervisor, Acropolis and Prism run in dedicated Controller VMs (also called "CVM"). Typically, a single CVM will reside on each and every host in a cluster providing a scalable, resilient and distributed system. The CVMs are critical to the Acropolis solution and are self-managing which means they typically do not need any direct interaction from a customer.

Great care should be taken if making **ANY** changes to a CVM in an environment. **Unless specifically directed by a Nutanix Support Engineer, CVMs should not be modified in <u>any way</u>.** This includes changing virtual hardware, command line interaction, installing antivirus, or changing the power state. CVMs are automatically configured at cluster creation and managed automatically by Acropolis. If any changes are made to a CVM's virtual hardware, the guest OS, virtual networking, or services your environment could become unstable or experience data and service interruption.

Hypervisor

The Acropolis suite includes the Nutanix hypervisor called AHV. Designed for use in hyperconverged deployments, it does not have the legacy requirements or bloat that other hypervisors have from trying to support massive amounts of legacy configurations. Because of this, AHV is lightweight and highly performant, while also being simple to manage. Unless there are legacy support issues, it is recommended to leverage AHV as it supports all modern guest operating systems and does not need to be managed during day-to-day operations.

Both VMware ESXi and Microsoft Hyper-V are supported as well. Nutanix greatly simplifies management of environments when any hypervisor is used. Though, when utilizing ESXi or Hyper-V there is additional overhead as you will still need to leverage the appropriate management services from each product, such as VMware vCenter and Microsoft Virtual Machine Manager. Depending on the deployment and configuration these may introduce single points of failure so be sure to analyze the architecture for potential risks and follow the best practices from those vendors.

Remember, the Nutanix software (Acropolis and Prism) runs in virtual machines across the cluster. This means the Nutanix solution is reliant on a stable and correctly configured hypervisor environment. When using Nutanix AHV, the hypervisor management is handled automatically, whereas with VMware ESXi or Microsoft Hyper-V more configuration and care is required. Nutanix provides hypervisor deployment guides for both ESXi and Hyper-V in the customer support portal.

Please be sure to verify hypervisor version and licensing edition requirements before deploying and upgrading your environment. Nutanix provides a compatibility matrix in the customer support portal for reference.

Network

Like most technology deployments, Acropolis requires a stable and high performance networking infrastructure to communicate and function properly. The actual requirements vary from design to design but in general Nutanix only requires a pair of 10Gbps Ethernet connections per node. 25Gbps and 100Gbps are supported in specific configurations too.

Regardless of speed, Nutanix requires the network infrastructure to be:
- True switches
- Line-rate
- Non-blocking
- Utilize large buffers

No specific brand, model or version is generally required, outside of the above requirements. The use of devices that do not perform local switching, have small buffers, or don't perform at line-rate will increase the risk of poor performance, especially as the environment grows, and are not supported. (Please note the above requirements are NOT met with "fabric extenders", sometimes called "FEX").

Though not a requirement, but highly suggested, the switching infrastructure should be deployed in a highly available design. A single switch being unavailable should not take down the entire environment. Make sure the networking team at your organization understands the criticality of the networking infrastructure for your Nutanix environment.

Nutanix provides networking best practice guides, available in the customer support portal.

Server Hardware

As Nutanix Acropolis and Prism are software solutions, it supports many different hardware vendors such as Dell, Cisco, HPe, Lenovo, IBM, Intel, and more. For convenience, Nutanix also provides its own branded appliances, based on SuperMicro hardware, called "NX".

For customers that have NX equipment they will always contact Nutanix for hardware and software related issues (see Contacting Support section). For all other hardware solutions the hardware manufacture itself should be contacted for any hardware related problems and Nutanix for software specific troubleshooting. If it is unclear what an underlying issue is, please contact Nutanix Support and we will guide you through the appropriate steps.

For non-NX hardware solutions, Nutanix provides a specific hardware compatibility list for each vendor which is certified to run Nutanix software. The HCL's are available in the customer support portal and are required to be met to run a supported configuration. Running any non-HCL hardware may result in environment instability and is not supported by Nutanix.

Nutanix supports mixing generations and models of hardware in the same cluster, as long as the running hypervisor also supports it and is configured correctly. Nutanix does not currently support mixing different hardware manufacturers in the same cluster (for example Dell with Cisco). Though Prism Central is able to manage multiple clusters, even if each cluster is a different hardware vendor or hypervisor.
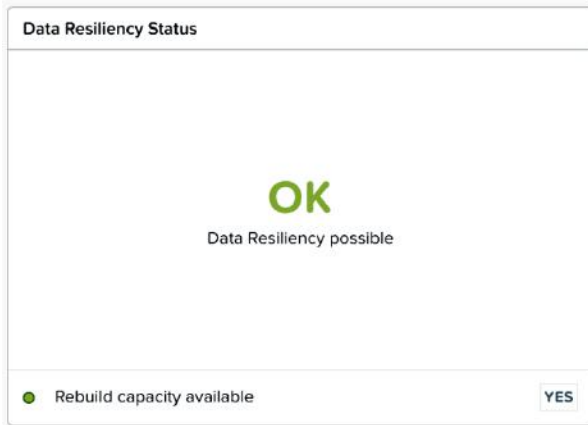
Resiliency

Nutanix Acropolis provides a self-healing solution, which means even with a component failure the environment should be able to re-protect all data to the desired healthy state. Obviously if a hard drive dies, Acropolis will not be able to automatically replace the disk, but what it can do is automatically re-protect all data the failed disk was storing, without human intervention, by leveraging the remaining capacity in the cluster. The same is true even if an entire node fails, and if configured correctly an entire block or rack failure can be automatically protected and recovered from as well.

The main concept for resiliency is configured with a setting called replication factor, or "RF", which can be set to RF2 or RF3. RF2 means there are two distributed copies of every data block while RF3 means there are three distributed copies of every data block.

RF2 can protect against a single simultaneous component failure (i.e. 1 disk, 1 node, etc). RF3 can protect against two simultaneous component failures (i.e. 2 disks, 2 nodes, etc). The "Data Resiliency Status" badge on the home screen of Prism provides information on the current status and activity regarding resiliency. The badge is clickable and will provide additional information when selected.

Example of a healthy environment from the "Data Resiliency Status" badge:

Data Resiliency Status

OK
Data Resiliency possible

● Rebuild capacity available   **YES**

If the "Data Resiliency Status" badge does not appear as above, then action should be taken to resolve the issue. When performing maintenance, the "Data Resiliency Status" badge should always be verified as healthy *before* maintenance begins or between maintenance tasks. This is true for maintenance activities inside and outside of Nutanix, such as networking, hardware, or power maintenance.

Performance

Overall

Nutanix is capable of providing a very high amount of bandwidth and IOPS at low latency for correctly configured applications and workloads on a well architected solution. Because "performance" is generally required to be "good", care must be taken when designing an environment to ensure it is done in a manner which meets your organization's needs. Maintenance should be performed periodically to ensure your environment is kept healthy. Outside resources, such as networking, will also directly impact the performance achieved with your Nutanix environment; care must be taken to keep all reliant services and systems in a healthy state.

Application Specific Guidelines

Nutanix provides best practice guideline documents for many common applications such as Oracle Database, Exchange, SQL Server, SAP, and VDI environments. The recommendations will always depend on your requirements, environment, and hypervisor, as well as the underlying hardware providing the resources. To access the application specific recommendations:

1. Go to https://my.nutanix.com

2. Select "Support Portal".

3. Select "Documentation" -> "Solutions Documentation".

4. Find the document for your specific application.

Note that not every application has guidelines provided by Nutanix. Be sure to also check with the OEM provider of the application for their recommendations as well as recommendations from the hypervisor vendor when not running Nutanix AHV. It must also be said that best practices are a starting point and not applicable for every situation and must be modified to suite the environmental needs.

Additional Products

Since Nutanix's founding in 2009, we have continued to push the envelope and drive change through our vision of simplifying infrastructure and empowering IT, regardless of where and what is running your workloads. To drive our vision and help our customers we have additional software solutions to simplify more use cases than just core infrastructure. Please ask your Nutanix account team for more information on the products and use cases below:

- **Files:** Simple, scalable, and reliable network storage for NFS and SMB/CIFS file shares. Also adds powerful auditing and analysis tools to Prism.

- **Volumes:** Provides native scale-out and highly performant block-level storage to virtual machines, containers, and physical servers.

- **Flow:** Expands AHV networking services by adding automation and security tools such as microsegmentation and service chaining.

- **Calm:** Comprehensive automation and orchestration engine with a self-service portal, audit trails, and even a blueprint marketplace.

- **Mine:** Unifies primary and secondary data protection operations by integrating 3rd-party backup tools within Prism and Acropolis.

- **Beam:** Enables optimization of cost and resource use through visibility, governance, and intelligent usage planning. Also provides a compliance policy management engine.

- **Nutanix Clusters:** Extends Acropolis and Prism to run natively in public cloud providers such as AWS and Azure.

- **Move:** Simple migrations between ESXi, Hyper-V, AWS, Azure and AHV.

- **Era:** Brings database management capabilities to Prism with snapshot, restore, clone and provisioning capabilities.

- **Frame:** Lightweight and powerful cloud based desktop-as-a-service, supporting AWS, Azure, and AHV environments.

- **Karbon:** Simplifies Kubernetes lifecycle management which scales just like Acropolis; without limits and seamlessly.

- **Leap:** Automated disaster recovery leveraging native Nutanix replication with policy based protection for failover & failback capabilities between cloud and on-premise environments.

- **Objects:** Extends Acropolis to support S3-compliant object storage across a single namespace for archival, WORM, and DevOps workloads.

Miscellaneous

Common Terms

- **Block:** A block is a Nutanix rackable unit containing up to four nodes. A block is typically either 2RU or 1RU in size.

- **Node:** Each node runs a standard hypervisor and contains processors, memory and usually local storage, which can be comprised of NVMe, SSD and HDD storage.

- **Cluster:** A cluster is the set of Nutanix blocks and nodes that form the Nutanix Distributed Filesystem (DFS) and pool compute resources for workloads.

- **Prism Central**: The HTML5 multi-cluster management interface for a Nutanix environment which is hypervisor, hardware, cloud, and location agnostic.

- **Prism Element**: The HTML5 management interface for a single cluster.

- **Storage Pool:** A storage pool is a group of physical storage devices, including NVME, SSD, and HDD devices, for the cluster. The storage pool can span multiple Nutanix nodes and is expanded automatically as the cluster scales. In most configurations, only a single storage pool is leveraged.

- **Storage Container:** Containers are a logical segmentation of the storage pool and contains a group of VMs and associated files such as vDisks and configuration files. Configuration options such as compression and replication factor are configured at the container level, and applied automatically to the VMs and vDisks within it.

- **Controller VM**: The CVM is where Acropolis and Prism services run. CVMs are deployed automatically by Foundation and also fully managed by Acropolis.

Version Control

Version Number	Date Modified	Author	Comments
1	Jan 15, 2019	Kevin Laine Eric Wamsley	Initial Release
2	Oct 10, 2019	Eric Wamsley	Updates to processes and rewording for clarity
3	Oct 24, 2019	Jill Liles Eric Wamsley	Updates to Education and migration sections, fixed formatting
4	Mar 25, 2020	Jill Liles Angelo Luciani Eric Wamsley	Updates to Education, formatting changes, added NEXT and additional software sections
5	May 29, 2020	Jill Liles Eric Wamsley	Updates to Education, formatting changes, updates to new URLs
6	Feb 1, 2022	Dave Weber Eric Wamsley	Updates to URLS, product names, and processes

References

Nutanix Worldwide Product Support:
https://www.nutanix.com/support-services/product-support

Nutanix Support Quick Reference Guide:
https://www.nutanix.com/viewer?type=pdf&path=/content/dam/nutanix/resources/support/nutanix-support-quick-reference-guide.pdf

1 Million IOPS in 1 VM with Nutanix:
http://longwhiteclouds.com/2017/11/14/1-million-iops-in-1-vm-world-first-for-hci-with-nutanix/

Nutanix AHV Networking Best Practices Guide:
https://portal.nutanix.com/page/documents/solutions/details?targetId=BP-2071-AHV-Networking%3ABP-2071-AHV-Networking

vSphere Administration Guide for Acropolis:
https://portal.nutanix.com/page/documents/details?targetId=vSphere-Admin6-AOS-v6_0:vSphere-Admin6-AOS-v6_0

Hyper-V Configuration Guide for Acropolis:
https://portal.nutanix.com/page/documents/details?targetId=HyperV-Admin-AOS-v6_0:HyperV-Admin-AOS-v6_0

The Nutanix bible
https://www.nutanixbible.com/

Nutanix License and Legal Agreement
https://www.nutanix.com/legal/eula

Disclaimer

Please note this document may contain outdated or incorrect information. Be sure to verify the correct processes and procedures with the most updated and relevant documentation for your environment from the appropriate OEM.