

TECH NOTE

Migrating VMs to Nutanix AHV

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1. Migration Overview

Methods for performing cross-hypervisor migrations vary greatly, and administrators should choose them based on their requirements, as each migration scenario has unique technical and business needs. Some factors to consider when planning a migration include:

- Downtime requirements for specific applications.
- Whether the source and target for a migration are physical operating systems or virtualized environments.
- Whether the source and target for a migration run on the same infrastructure vendor, where you can use native replication tools.
- Whether native application-level methods exist, including integrated replication technologies used for high availability and disaster recovery or backup and restore.
- Whether you need to make changes to an application as a part of the migration, such as moving to a newer version or modifying the physical layout of a database.
- Whether you need to change the physical location of the environment, which could affect existing networking configurations and data replication considerations.
- The trade-offs inherent to using third-party technologies that can simplify migrations and limit downtime but also add to the total cost of the project.
- Whether the team has the skills and experience to perform the migration with minimal impact to the business.

This list isn't exhaustive, but it outlines some of the complexities involved in running a successful migration project. We don't cover all these considerations in depth here; instead, this guide provides high-level guidance on the recommended methods for performing migrations between ESXi environments.

and Nutanix AHV. We address native Nutanix migration methods, from third-party platforms or from Nutanix platforms, as well as third-party migration software that can help simplify the process.

Nutanix also provides a workload migration offering through [Nutanix Services](#).

Table: Document Version History

Version Number	Published	Notes
1.0	February 2017	Original publication.
2.0	December 2017	Updated for AOS 5.5 and added product information.
2.1	May 2018	Updated Nutanix overview and the AHV Migration Considerations section.
2.2	October 2018	Updated product information.
3.0	April 2019	Updated product information and added support for Amazon Web Services (AWS).
3.1	April 2020	Content refresh.
3.2	November 2022	Updated the AHV Migration, Nutanix Move for AWS, and Migration Using Nutanix Move sections and added the Nutanix Move for ESXi, Nutanix Move for Hyper-V, and Nutanix Move for Azure sections.

2. AHV Migration Considerations

The most common migration method in virtualized environments involves moving an existing operating system and its applications without modification. AHV supports a wide range of operating systems that you can migrate from either physical or virtual environments. The specific recommended virtual hardware, such as SCSI or PCI bus types, depends on the operating system. For a current list of supported operating systems and recommended bus types, see the [Compatibility and Interoperability Matrix: AHV Guest OS](#).

Migrating an existing operating system to AHV involves changing the underlying virtual hardware. Among other differences, this transition includes a different virtual NIC (vNIC) and virtual SCSI (vSCSI) device than ESXi environments. Thus, you must install the drivers that support AHV virtual hardware (the VirtIO drivers) in the operating systems you want to migrate.

Nutanix offers a VM Mobility driver package, which includes Nutanix-qualified VirtIO drivers for Windows VMs. Nutanix-based environments can install the Nutanix Guest Tools (NGT) software, which already includes the VM Mobility driver package. Check Linux operating systems to ensure that the VirtIO modules are installed. We provide a link to the steps for validating Linux operating systems in the Nutanix Image Service section.

It's important to choose the best method for moving data to a Nutanix cluster with AHV, as the method can impact the availability of the applications and operating systems you're migrating. For migrations involving non-Nutanix platforms as the source, Nutanix allows NFS-, SMB-, and SFTP-based access to the underlying Nutanix storage containers to permit migrating or copying virtual disk and ISO files. In ESXi environments, you can use NFS access to perform a storage vMotion that moves the required virtual disks to the AHV environment nondisruptively. The AHV cluster's file system allowlist controls access using NFS.

Once you migrate the virtual disks, the Nutanix Image Service can convert those disks to the RAW disk format AHV uses. Once converted, the system stores the

virtual disks in the .Acropolis folder on the specified storage container as an image. You then use the image to create a VM. For more details on the image service, see the Migration Scenario: Third-Party ESXi to Nutanix AHV section.

For migrations involving Nutanix platforms as both the source and target, native replication tools can help simplify the process. For more details, see the Migration Scenario: Nutanix ESXi to Nutanix AHV section.

Regardless of source and target platform type, third-party software can perform storage- and platform-agnostic migrations. There are application-specific methods that don't involve migrating an operating system but instead move data between existing operating systems and applications running on the target system. We outline some of these third-party and application-centric options in the following sections.

3. Nutanix Move

Over time, Nutanix Move has evolved from its origins as a basic tool for transferring VMs from ESXi environments to AHV environments into a complete enterprise-grade product. Today, Move quickly and easily transfers VMs from ESXi, Hyper-V, and public cloud environments (including AWS) to Nutanix AHV. Once you deploy this free product as a VM in your AHV environment, you can use its HTML5-based interface to manage it.

AHV Migration

Nutanix Move is a VM appliance, typically hosted on the target AHV cluster. Several software services come together to build Nutanix Move, but we can group them into three major software components:

1. The management server.
2. Agents for source and target.
3. Disk readers and writers.

The architecture for each source environment that Move uses is slightly different, but Nutanix makes the difference in implementation invisible for users.

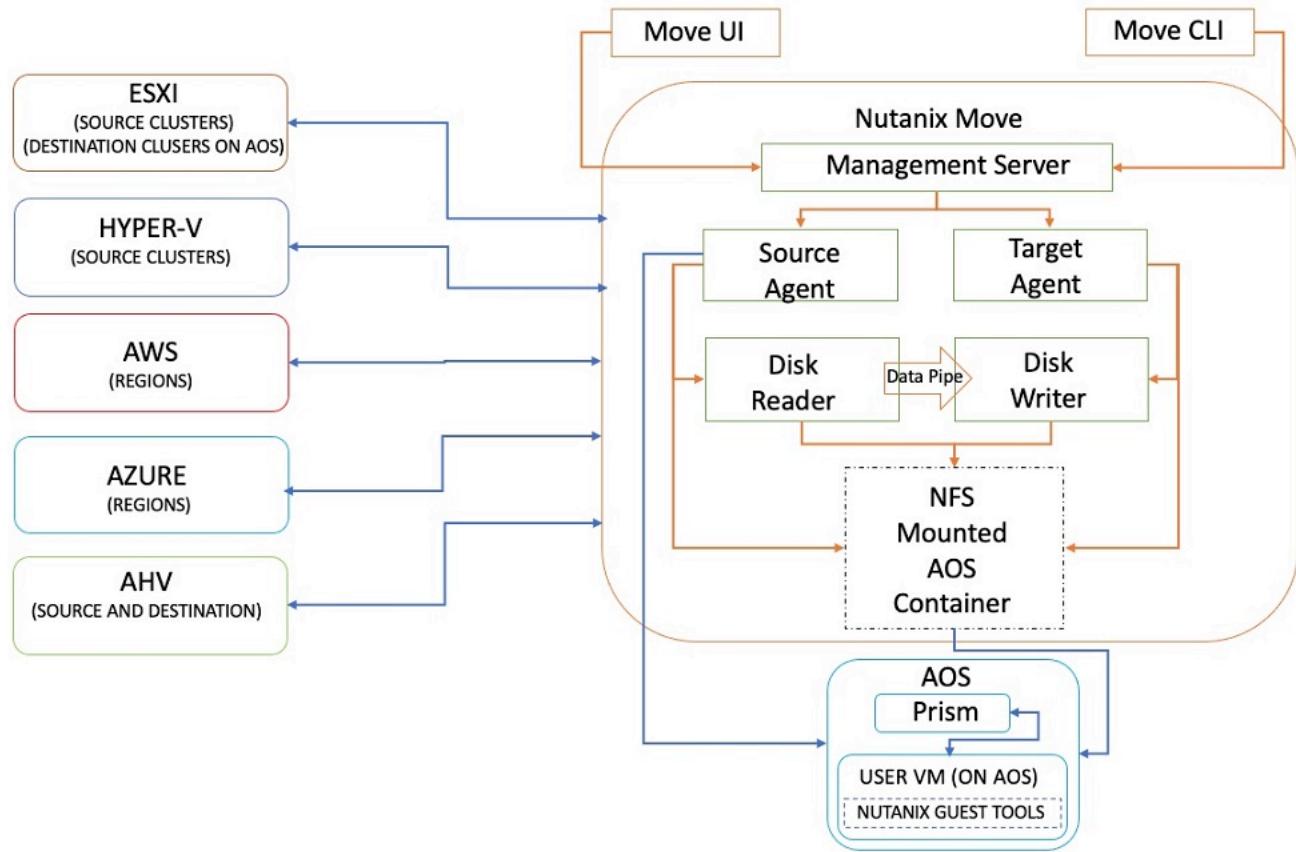


Figure 1: Nutanix Move Architecture

Management server

The management server maintains source and target cluster information, as well as migration plan details and current status. It also allows APIs and the UI to create and manage migration plans.

Agents for source and target

The source agent is a platform-specific (ESXi, Hyper-V, AHV, or cloud) software component that schedules migration copy requests through disk readers. It collects source cluster and VM details and helps the user select the VMs to migrate using the management server UI.

The target agent collects and keeps inventory information for the target cluster, allowing you to create migration plans. It also mounts the container

in the target to prepare the disk writer to copy the data. At cutover, the target agent converts disk formats to support AHV.

Disk readers and writers

Disk reader processes use source-specific APIs to read data and coordinate with disk writer processes to complete outstanding copy operations. The disk reader checkpoints copy operations to handle any failures and resume operations as needed.

Nutanix Move for ESXi

The architecture of Nutanix Move for ESXi uses vCenter for inventory collection and vSphere Storage APIs for Data Protection (VADP), the Virtual Disk Development Kit (VDDK), and Changed Block Tracking (CBT) for data migration.

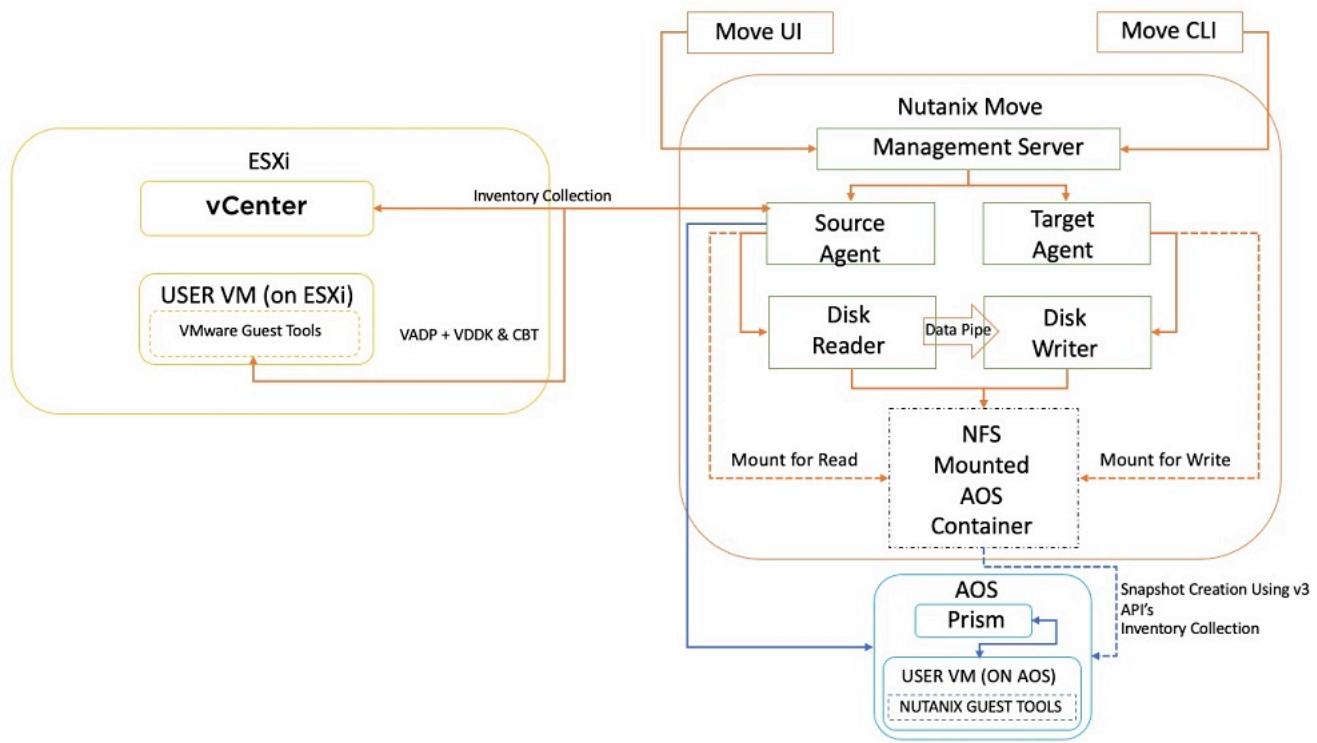


Figure 2: Nutanix Move for ESXi Architecture

Nutanix Move for Hyper-V

The architecture of Nutanix Move for Hyper-V has an agent on each Hyper-V server that makes up part of the Hyper-V cluster. It then uses the agents to move data and uses the Hyper-V Manager to collect inventory.

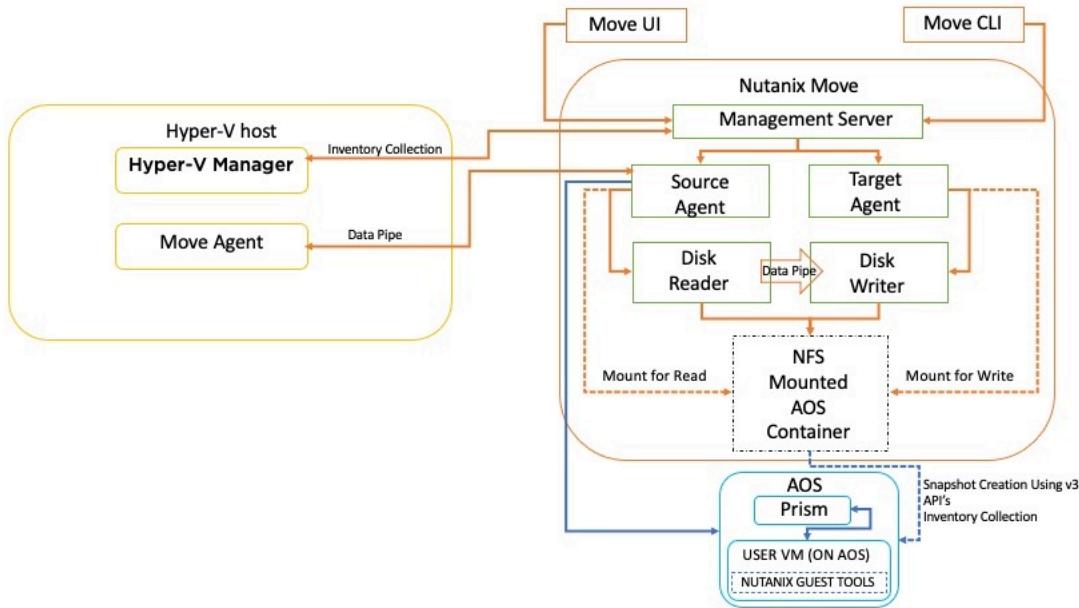


Figure 3: Nutanix Move for Hyper-V Architecture

Nutanix Move for AWS

The architecture of Nutanix Move for AWS is somewhat different from Move in other environments. When you add AWS as an environment, the Move appliance makes connections to AWS for inventory and uses the Elastic Block Store (EBS) direct APIs for data migration. Move no longer creates an agent VM as it did in earlier versions.

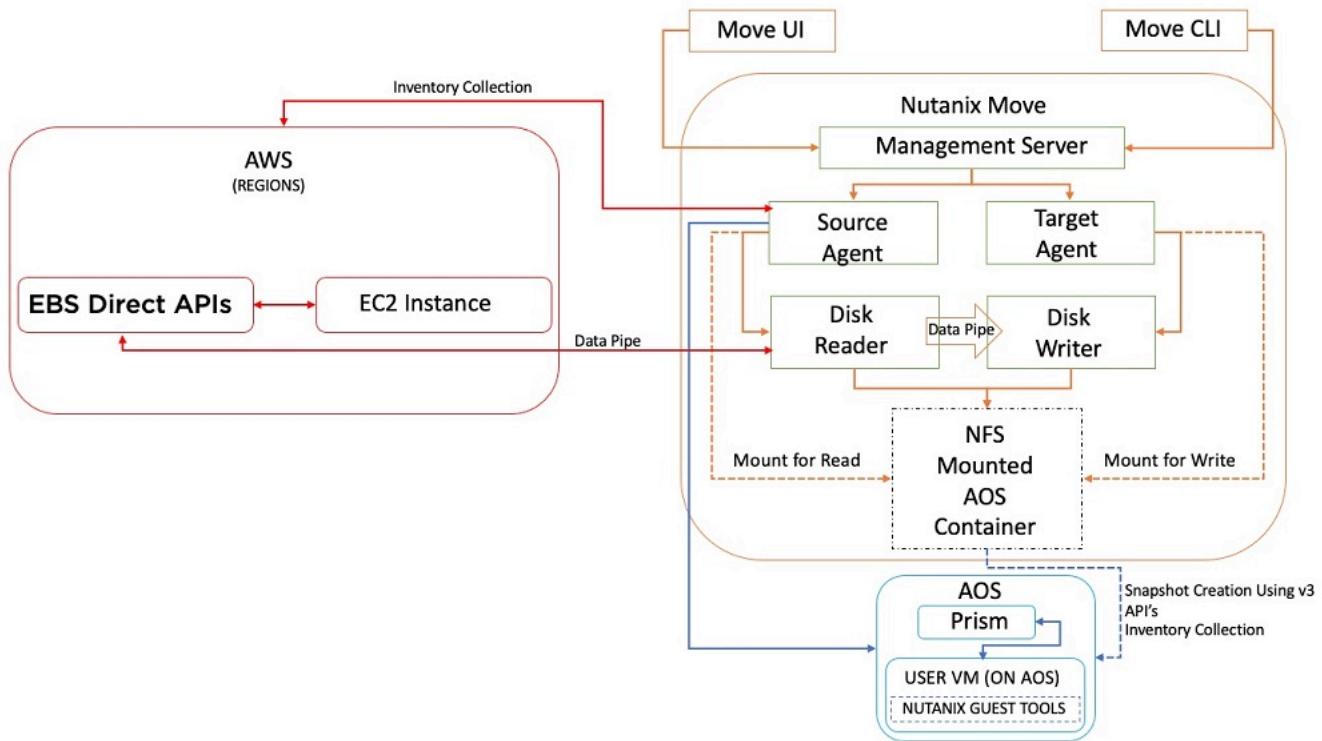


Figure 4: Nutanix Move for AWS Architecture

Nutanix Move for Azure

The architecture of Nutanix Move for Azure is similar to the architecture for AWS in that it leverages the Azure Public Cloud REST APIs to collect inventory and access storage.

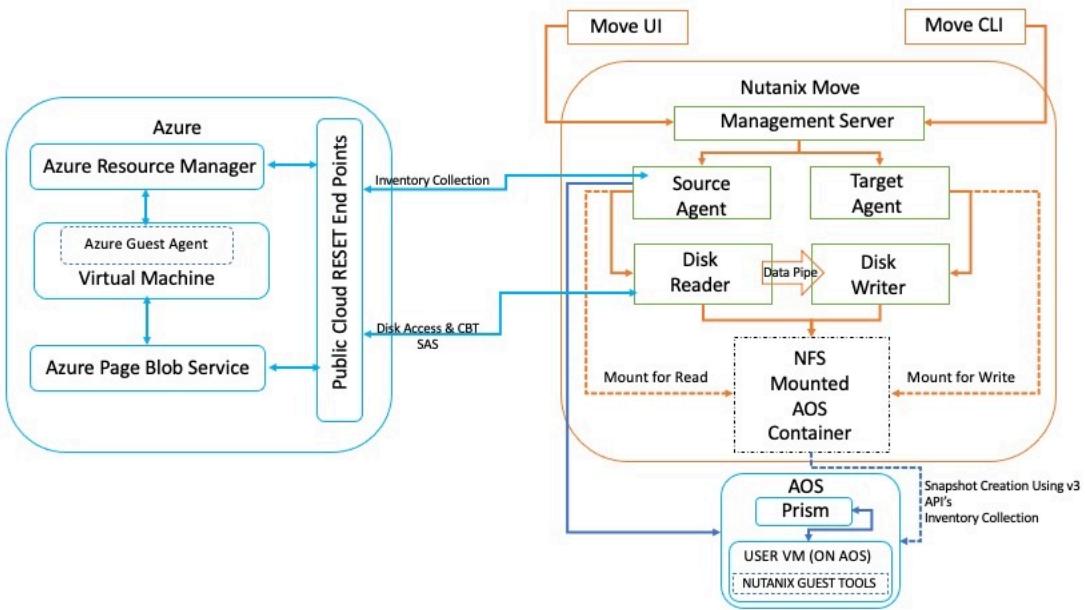


Figure 5: Nutanix Move for AWS Architecture

Migration Using Nutanix Move

To use Nutanix Move for migration, follow these steps:

1. Download the Move image and launch it as a VM from the Prism console of a target cluster.

2. Register your environments (ESXi, Hyper-V, AWS, Azure, or AHV) with Move to be used as source and targets from migrations.
 - a. To register an ESXi environment, connect to your vCenter instance and supply the name or IP address and the appropriate credentials.
 - b. To register an AWS environment, provide your account ID, username, password, access key, and secret keys.
 - c. To register a Hyper-V environment, connect to your Hyper-V server or cluster instance and provide the name or IP address and the appropriate credentials.
 - d. To register an AHV environment, connect to the AHV cluster (Prism Element) or to a Prism Central instance name or IP address with the appropriate credentials.
 - e. To register an Azure environment, provide your environment name, subscription ID, tenant ID, client ID, and client secret.

Once you have defined your environments, you can create migration plans. Plans enable migrations to target a subset of VMs in a source.

Migration Plans					
VMs can be grouped into plans and migrated in batches. Plans can be scheduled to run immediately or in the future.					
PLAN NAME	VMS	DATA SIZE	MIGRATED DATA SIZE	ELAPSED TIME	STATUS
App Migration Plan	4	473.0 GiB	249.3 GiB	1 Hours 0 Minutes	Migration In Progress

Figure 6: Move Migration Plans

Move checks that the target environment has enough compute and storage resources to support the VMs added to a migration plan. Move can sort VMs by whether you can migrate them and provides a summary to indicate why you can't migrate certain VMs (for example, if the VM doesn't have VMware tools installed or meet virtual hardware version level minimums). Move supports the same virtual guest operating systems that AHV supports. A full list of supported operating systems is available in the [Move documentation](#).

For ESXi sources, Move uses VMware VADP to manage the replication process, so you don't need to install agents in the VMs or the ESXi hosts.

For Hyper-V sources, Move uses the agent installed on the Hyper-V hosts to manage the replication process. For AWS and Azure sources, Move uses the storage APIs to manage the replication process.

You can specify network mappings to match the source and destination networks for the VMs and set up a test network so that you can test the migration beforehand. We recommend using a nonroutable test network so that it doesn't interfere with the source VM because the test process leaves the source VM turned on.

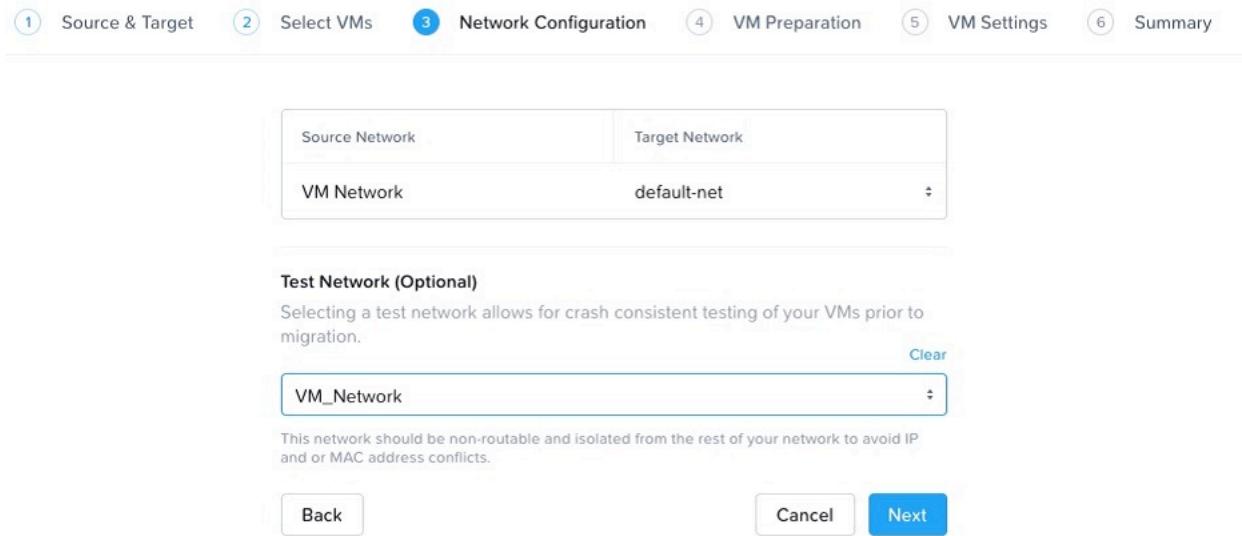


Figure 7: Move Network Configuration

Automatic preparation mode allows Move to connect to VMs directly to install the VirtIO drivers compatible with AHV and to capture network settings to carry over to the target environment. You can specify the credentials to connect to the VMs selected in a plan either for all VMs at once or individually as needed. If the target VM is migrating to ESXI, Move can uninstall the VMware guest tools from the target VM when the migration is complete.

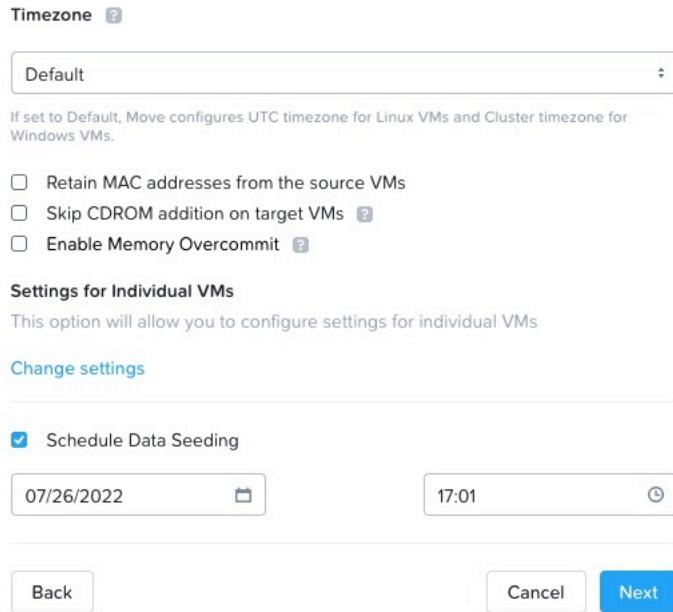


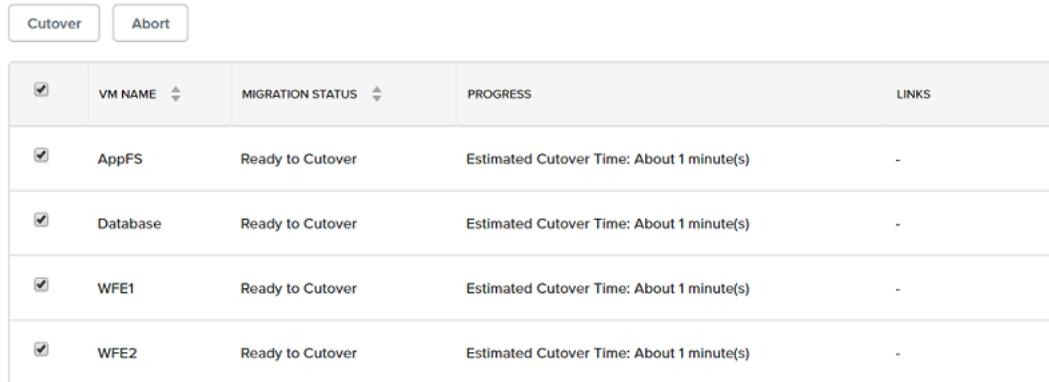
Figure 8: Configure Timezone and Individual VM Settings

By defining a migration schedule, you can set data seeding to start in a predetermined window.

Once you have configured the options described, the migration can begin to seed the data to the AHV cluster. This process involves creating snapshots for each VM, then replicating the virtual disks to the specified AHV container. You can pause or abort migrations in progress at any time. Move stores the virtual files for the migrating VMs in a temporary folder and incrementally uses changed-block tracking (CBT) APIs and continued snapshot operations to keep them up to date.

When it's time to cut over and complete the migration, Move turns off the source VMs and disconnects the virtual NICs. Incremental data then synchronizes over to the AHV cluster. Once all data replication is complete, Move uses the AHV image service to convert the source virtual disk files to the native RAW format used by AHV. (For more details on the image service, refer to the Migration Scenario: Third-Party ESXi to Nutanix AHV section.) Because the disk formats are the same, conversion from the source virtual disk

to RAW is extremely fast—each disk converts in just a few seconds, limiting downtime. Move also provides an estimated cutover time, so you can determine any maintenance window in advance.



	VM NAME	MIGRATION STATUS	PROGRESS	LINKS
<input checked="" type="checkbox"/>	AppFS	Ready to Cutover	Estimated Cutover Time: About 1 minute(s)	-
<input checked="" type="checkbox"/>	Database	Ready to Cutover	Estimated Cutover Time: About 1 minute(s)	-
<input checked="" type="checkbox"/>	WFE1	Ready to Cutover	Estimated Cutover Time: About 1 minute(s)	-
<input checked="" type="checkbox"/>	WFE2	Ready to Cutover	Estimated Cutover Time: About 1 minute(s)	-

Figure 9: Move Cutover Time Estimates

You can choose to cut over VMs in a plan together or separately. To complete the migration, Move turns the VMs on in the target environment and removes all temporary VMDK files and converted images in the AHV image service. Although the source VMs are now turned off and disconnected from their networks, they persist in case you need them for any reason.

Move keeps track of which VMs you have migrated and which VMs remain to be transferred, so if you create additional migration plans, it's easy to know what's left to be done.

Nutanix Move Pros

Nutanix designed Move to be intuitive, simple, and fast while reducing the risk and cost of migrations. For migrations with ESXi, Hyper-V, Azure, or AWS as the source, we recommend using Move for migrating to Nutanix AHV.

Nutanix Move Cons

Move doesn't currently support all hypervisor environments as migration sources or non-AHV environments as targets, so heterogeneous source and target environments currently require other migration methods.

4. Migration Scenario: Third-Party ESXi to Nutanix AHV

In this section, we walk through a few ways to migrate VMs from third-party ESXi to Nutanix AHV. For a short description of how to use Nutanix Move to migrate VMs from AWS to AHV, refer to the [Migration Using Nutanix Move](#) section.

Nutanix Image Service

The Nutanix Image Service feature enables you to import images (ISO files, disk images, or any images supported in ESXi or Hyper-V) directly into AHV for virtualization management. Nutanix supports the RAW, VHD(X), VMDK, VDI, ISO, and QCOW2 disk formats.

For migration, you can use this feature to convert virtual disks to the RAW format that AHV uses. As an example, the image service converts the flat virtual disks (*.flat.vmdk) that ESXi uses to RAW.

To minimize downtime, a storage vMotion can use NFS connectivity to move the ESXi virtual disks to the Nutanix cluster. Once the virtual disks are stored on AOS storage, the user can import the disk by pointing the image service to the migrated files using an NFS source URL and a loopback address, as in the following figure.

Create Image

NAME
Migrated_vDisk

ANNOTATION

IMAGE TYPE
DISK

STORAGE CONTAINER
ctr1

IMAGE SOURCE

From URL nfs://127.0.0.1/ctr1/Migrated_VM/vmdisk-flat.vmdk

Upload a file Choose File No file chosen

Cancel **Save**

The screenshot shows the 'Create Image' dialog box. At the top, it says 'Create Image' with a question mark and an X icon. Below that, there's a 'NAME' field containing 'Migrated_vDisk'. An 'ANNOTATION' field is empty. Under 'IMAGE TYPE', 'DISK' is selected. In 'STORAGE CONTAINER', 'ctr1' is chosen. Under 'IMAGE SOURCE', the 'From URL' option is selected, with the value 'nfs://127.0.0.1/ctr1/Migrated_VM/vmdisk-flat.vmdk'. The 'Upload a file' option is available but not selected. At the bottom right are 'Cancel' and 'Save' buttons.

Figure 10: Image Creation from a Migrated Virtual Disk

You can also import virtual disks directly from an external HTTP or NFS source URL or upload them from your local machine. The import process creates a RAW virtual disk and stores it as an image. You can then create a new VM set to reference this stored disk image.

The general migration process uses the following steps:

1. Ensure that you have met the VM migration prerequisites.
2. Install Nutanix VM Mobility drivers or validate that the VirtIO driver modules are installed.
3. Migrate the VM disks to AOS storage.
4. Use the image service to convert the VM disks.
5. Create a new VM and attach the converted disks.

Nutanix Image Service Pros

The Nutanix Image Service is an excellent tool for testing VM migrations and for performing small-scale or staged migrations to Nutanix AHV. The ability to perform a storage vMotion from ESXi helps eliminate downtime while migrating data. The conversion process from *.flat.vmdk to RAW is extremely fast (just a few seconds), as it doesn't require additional copies of the virtual disk.

Nutanix Image Service Cons

The previous steps are manual, which makes using the image service for large-scale migrations potentially cumbersome. Virtual hardware changes during conversion, so you must manage network settings such as static IP addresses within VMs after the migration.

Third-Party Tools: Sureline

Sureline Systems offers a migration solution for heterogeneous environments. Their SUREedge Migrator supports migrating operating systems and data from any physical or virtual environment to Nutanix, with the option to use AHV.

To use this solution, install SUREedge Migrator on a node in the Nutanix cluster. Add systems, including physical hosts and VMs targeted for migration. Create plans to target specific systems to migrate; these plans also run migrations.

SUREedge captures system images that you can modify as a part of the migration by changing the memory, CPU, or network, including IP addresses. SUREedge injects the VirtIO drivers as required so the migrated operating system can discover the AHV-based virtual hardware. SUREedge replicates incremental changes that you can apply before migration, minimizing downtime.

on final cutover. SUREedge also supports testing prior to migration, which helps minimize risk.

SUREedge Migrator Pros

Sureline Systems is a Nutanix Technology Alliance partner. SUREedge Migrator is a Nutanix-Ready solution that supports migrations from any platform to Nutanix, including the option to use AHV. Nutanix Services has validated SUREedge for migrating to AHV. SUREedge is a scalable solution that helps simplify the migration of large environments to AHV. Migration orchestration, including the ability to modify system images and network addresses, eliminates additional steps that you otherwise need to complete manually after migration.

SUREedge Migrator Cons

SUREedge is a third-party product that requires its own licensing outside Nutanix. Although it's simple to use, administrators need to learn how to use the product and master its best practices.

Application-Centric Migration

Many migration methods focus on moving an operating system or VM between environments. There are also application-specific methods that can move data without moving the operating system itself. The general process for this data migration involves installing a VM on Nutanix AHV along with a new installation of the application you want to migrate. You can then use native application-based migration, backup and restore, or disaster recovery methods to move data from the source system to the AHV target.

In some cases, you can migrate to a newer version of the application running on an updated operating system. Examples of such upgrades include:

- Microsoft Exchange Server: Install newer versions in parallel with existing production environments, then move user mailboxes from the old system to the new one.
- Microsoft SQL Server: Back up databases and restore them between systems, including between older and newer SQL Server versions. Always On availability groups can also replicate databases between SQL Server

instances, not only to migrate data but also to implement a high-availability solution at the same time.

- File shares: Copy files between a source and a target with a tool like Robocopy to run a migration. In environments that use Microsoft Distributed File System (DFS), you can add new servers to a DFS namespace and use them to host new copies of DFS replicas. After DFS performs the replication, you can remove the replicas from the old systems.

Application-Centric Migration Pros

Application-centric migration options enable movement between heterogeneous environments. Differences between environments could include the underlying hardware, virtualization layer, operating system versions, and application versions. You can generally stage, test, and run migrations for specific users, files, and databases as required. Many migration options are free or included as a part of the base licensing of the application.

Application-Centric Migration Cons

Application-centric migrations can add complexity to the overall migration process. Each application has different migration requirements and processes, including networking configuration and user or application connectivity. In some cases, existing application licensing levels may not include the feature you want to use for the migration. If you don't need a newer operating system or application version, migrating operating systems or VMs instead may ultimately be a simpler process.

5. Migration Scenario: Nutanix ESXi to Nutanix AHV

Nutanix VM Mobility

Nutanix VM Mobility provides a simplified method for replicating Windows- and Linux-based VMs bidirectionally between a Nutanix ESXi cluster and a Nutanix AHV cluster. Nutanix VM Mobility uses native Nutanix snapshots to replicate data between clusters. Acropolis provides NGT to install the appropriate drivers and communicate with the Nutanix cluster to confirm mobility support. The mobility process is straightforward and includes the following high-level steps:

1. Enable and install NGT for the VMs you want to replicate.
2. Create a remote site in each Nutanix cluster. This step includes network mapping between the AHV and ESXi networks.
3. Create an asynchronous protection domain and schedule it to replicate the required VMs.
4. Move or create VMs using one of several workflow options:
 - a. For planned mobility, move all VMs in a protection domain using the migrate option. This option unregisters the VMs from the source cluster, replicates any incremental changes since the last snapshot, and registers the VMs in the target cluster.
 - b. For unplanned mobility, where a source cluster is offline, the activate option moves all VMs in a protection domain. This option registers the VMs in a protection domain in the target cluster using the most recently available local snapshot.
 - c. The snapshot restore option clones individual VMs. A snapshot restore to a new location operates as a clone and registers the VM in the target cluster. This option enables test and development scenarios and allows you to target individual VMs in a protection domain.

Requirements and limitations:

- You must install NGT so that the appropriate drivers are available in the VM. This one-time operation allows for communication between the Controller VM (CVM) and Nutanix cluster to validate driver installation.
- ESXi delta disks aren't supported.
- VMs with SATA or PCI devices aren't supported.

Prism sends an alert if VM Mobility can't convert specific VMs because of delta disks or virtual hardware. In Prism, you can find these recovery details under the VM Recovery column of a given local or remote snapshot. Also, because a VM targeted for conversion must have VM Mobility drivers installed, Prism gives a warning if the installation status is unknown.

For additional details, including instructions on how to use Nutanix VM Mobility, see the [Prism Web Console Guide](#).

Nutanix VM Mobility Pros

Nutanix VM Mobility offers a VM-centric method for migrating from ESXi to AHV. If your existing ESXi environment is Nutanix-based, VM Mobility is a good option for performing migrations to AHV at any deployment size.

The ability to test the conversion process without impacting production also makes VM Mobility a strong option. You can discover any potential issues ahead of time and address them during the final cutover process.

Using integrated orchestration to perform testing or final migration cutover simplifies the process and minimizes risk. You can stage migrations by grouping a subset of the total environment into a protection domain that you can replicate and subsequently migrate as needed.

VM Mobility maintains data replication between clusters incrementally, which helps limit downtime on final cutover. VM conversion, including converting virtual disks, is a very fast process, measured in a few seconds per VM. VM Mobility converts VMs in batches of 10 during the cutover process.

Nutanix VM Mobility Cons

Virtual hardware changes during conversion, so you must manage network settings, such as static IP addresses, in the VMs after the migration.

Cluster Conversion

Nutanix offers a native method for performing an in-place conversion of an existing Nutanix cluster from ESXi to AHV. You can also convert a cluster from AHV to ESXi if it was previously converted from ESXi. This cluster conversion process preserves existing data, hypervisor networking settings, and VM settings.

Requirements and limitations:

- As with Nutanix VM Mobility, you must install and enable NGT to ensure that the proper drivers are available.
- You must enable ESXi HA and DRS.
- An ESXi cluster supports only one external virtual switch.
- All uplinks must be homogenous (that is, they must have the same adapter speed—all 10 Gb or all 1 Gb).
- LACP-based virtual switch load balancing isn't supported.
- You can't convert VMs with delta disks from ESXi to AHV.

The general conversion process is as follows:

1. Select Convert Cluster from Prism Element.
2. Select the target hypervisor and VM boot options.
 - a. You can choose to keep the original power state of the VMs post conversion or turn off VMs before conversion.
3. Cluster validation determines whether the cluster meets requirements or if there are limitations.
4. If there are no blocking limitations, the conversion process may proceed. Prism displays warnings when applicable, including:
 - a. If an existing active-active network team is going to become active-passive on conversion.
 - b. If specific VMs don't have NGT enabled, preventing confirmation of VM Mobility driver installation.

5. Once the conversion begins, the following high-level steps occur:
 - a. The Acropolis conversion process collects and saves hypervisor information. The cluster remains manageable during the conversion process.
 - b. User VMs live migrate from the node targeted for conversion to other nodes in the cluster.
 - c. Acropolis converts the node evacuated in the previous step to the targeted hypervisor.
 - d. The process restores user VMs to the newly converted node one by one. Each VM is then also converted. Running VMs experience downtime similar to the duration of one turn-off and one turn-on cycle.
 - e. Once the targeted node and all original VMs have been converted, the process moves on to the next node.
 - f. When all nodes are using the targeted hypervisor, the conversion is complete.

For additional details, including instructions for using cluster conversion, see the [Prism Web Console Guide](#).

Cluster Conversion Pros

Cluster conversion is a good choice for repurposing existing Nutanix-qualified hardware that's currently running ESXi to run AHV. You don't need to replicate data or have another Nutanix cluster available.

Cluster Conversion Cons

While safeguards are in place to ensure a successful conversion, there is currently no test option for validating the process before proceeding. Conversion currently targets the entire cluster; working with the whole cluster impacts the ability to apply a phased approach to the migration.

Third-Party Migration Tools: Sureline

You can use Sureline when migrating between Nutanix-based ESXi and Nutanix AHV. As the process is very similar to that outlined in the Migration Scenario: Third-Party ESXi to Nutanix AHV section, see that section for details.

Application-Centric Methods

You can use application-centric methods when migrating between Nutanix-based ESXi and Nutanix AHV. As the process is very similar to that outlined in the Migration Scenario: Third-Party ESXi to Nutanix AHV section, see that section for details.

6. Migration Scenario: AWS to Nutanix AHV

Nutanix Move version 2.0.2 introduced migrating VMs from AWS to Nutanix AHV as a tech preview feature. Migrating VMs from AWS is very similar to migrating from other sources, but the technical implementation is somewhat different. We briefly describe this architecture in the Nutanix Move for AWS section. Refer to the Migration Using Nutanix Move section for a short description of how to use Nutanix Move to migrate VMs from AWS to AHV.

Costs Involved in Migrating from AWS

Migrating VMs out of AWS involves additional AWS costs. We provide the cost details in this section.

AWS: Internet Data Transfer Out Cost

AWS currently charges \$0.09 per GB for transferring data out of their storage. For example, moving a 1 TB VM out of AWS costs approximately \$92 for the data transfer alone.

AWS: Regional Data Transfer Cost

Nutanix Move launches the move-agent as one t2.micro VM instance per region. While migrating VMs, data transfer from AWS to AHV occurs through the move-agent. Therefore, if source VMs are hosted in a different availability zone than the move-agent, the AWS regional data transfer cost applies. AWS currently charges \$0.01 per GB for crossing a region boundary. For example, moving a 1 TB VM between regions incurs a regional data transfer cost of \$10.24.

AWS: EC2 Instance Cost for move-agent VM

Nutanix Move automatically launches an EC2 instance for the move-agent VM (t2.micro) when a migration plan involves AWS. Because this EC2 instance runs until the migration is complete, we must also factor in its cost (about \$2 per

day). If Move has future AWS migrations scheduled, it leaves the EC2 instance running, but terminates it when all migration plans involving AWS are complete or have been removed.

Sample Cost Estimation for Migrating from AWS

The data transfer rate across AWS to AHV may vary greatly because of various factors like WAN delay. In the following table, we are transferring a 1 TB VM from AWS to AHV at the conservative WAN speed of 50 Mbps.

Table: Example Cost Estimate for Migrating from AWS

Details	Cost (USD)
AWS: internet data transfer out (\$0.09 per GB)	\$92.16
AWS: regional data transfer cost (\$0.01 per GB). (If the move-agent VM (t2.micro) and source VM are in the same region (which they usually are), this cost is zero. We have included this figure to demonstrate what the cost impact of different regions could be.)	\$10.24
AWS: EC2 cost for move-agent (t2.micro) VM (approximately \$2 per day). (With an estimated average throughput of 50 Mbps, migration takes about 48 hours (2 days) to complete.)	\$4.00
Total	\$106.40

Third-Party Tools for Migration: Sureline

You can use Sureline when migrating between AWS and Nutanix AHV. As the process is very similar to that outlined in the Migration Scenario: Third-Party ESXi to Nutanix AHV section, see that section for details.

7. Conclusion

Migrations are necessary to ensure that organizations can replace aging systems while taking advantage of stronger technologies that add business value. A robust migration methodology lowers risk and ensures minimal disruption. The processes we outlined in this document represent an array of supported migration options, each with advantages for specific use cases.

Speak with [Nutanix Xpert Services](#) to help you select the best migration method for your environment.

About Nutanix

Nutanix is a global leader in cloud software and a pioneer in hyperconverged infrastructure solutions, making clouds invisible and freeing customers to focus on their business outcomes. Organizations around the world use Nutanix software to leverage a single platform to manage any app at any location for their hybrid multicloud environments. Learn more at www.nutanix.com or follow us on Twitter [@nutanix](https://twitter.com/nutanix).

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