ThinkAgile HX Series: Nutanix architecture and hypervisor introduction

ES42051

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Lenovo

Prerequisites

Before taking this course, students need to have a knowledge of hyper-converged infrastructure and basic Linux operations. For related Lenovo products, please refer to course:
ES41641H - Servicing Lenovo ThinkAgile HX Series appliances and certified nodes

Objectives

After completing the course, you will be able to:

- Describe Nutanix Core
- Describe the Prism architecture and nCLI
- Describe the NCC installation and upgrade procedures
- Describe the AHV, ESXi, and Hyper-V architecture
- Describe the useful tools and troubleshooting actions used to work with Nutanix

Nutanix Core (AOS+AHV+Prism) introduction

Nutanix platform overview

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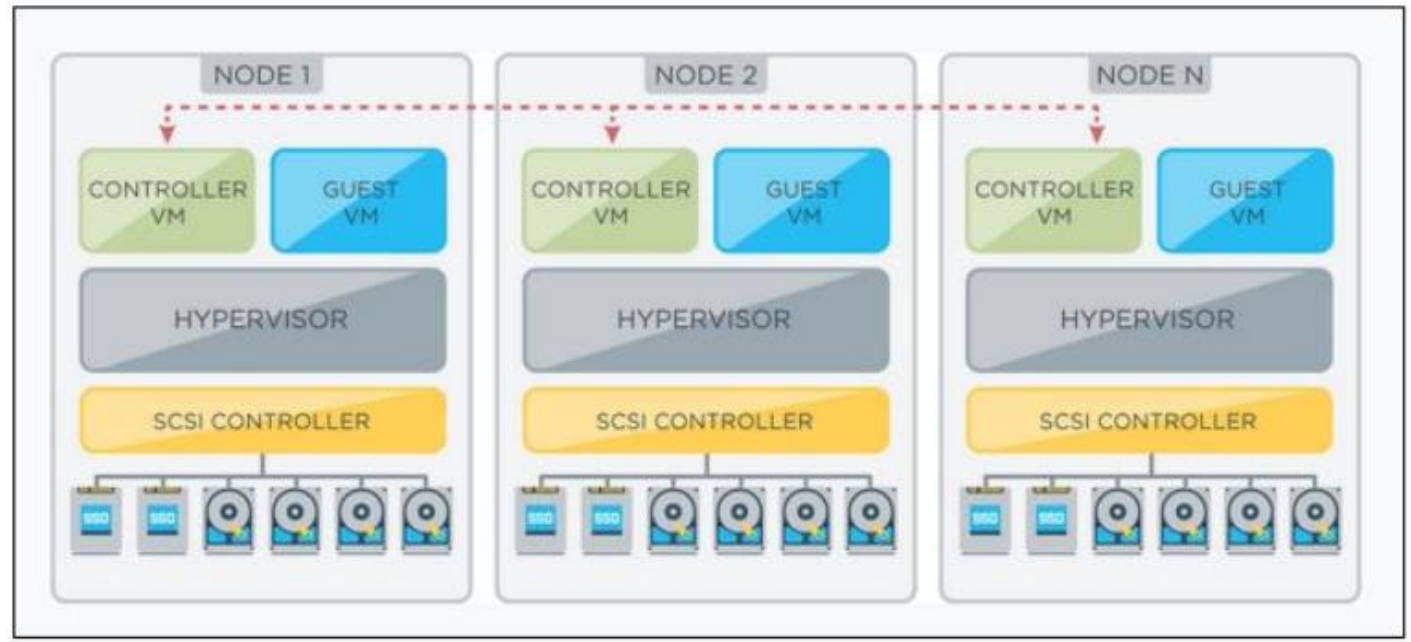
Nutanix platform overview

The Nutanix Virtual Computing Platform is a converged, scale-out compute and storage system that is purpose-built to host and store virtual machines.
All nodes in a Nutanix cluster converge to deliver a unified pool of tiered storage and present resources to VMs for seamless access. A global data system architecture integrates each new node into the cluster, allowing you to scale the solution to meet the needs of your infrastructure.
The foundational unit for the cluster is a Nutanix node. Each node in the cluster runs a standard hypervisor and contains processors, memory, and local storage (SSDs and hard disks).
A Nutanix Controller VM (CVM) runs on each node, enabling the pooling of local storage from all nodes in the cluster.

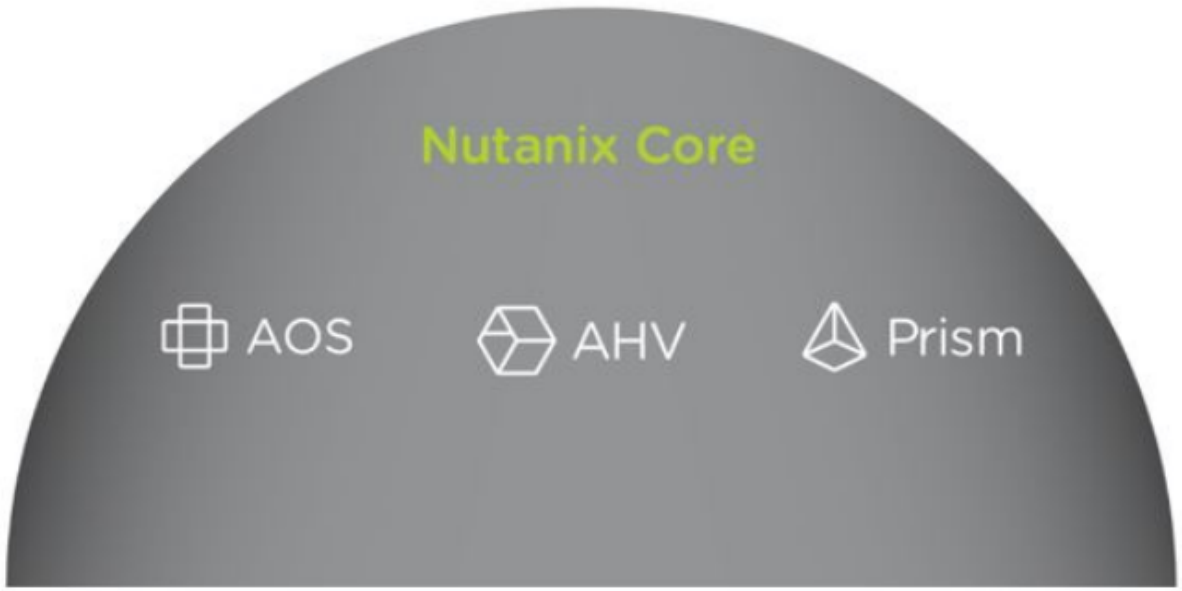


Nutanix Core

Nutanix Core includes the foundational Nutanix products that facilitate the migration from a complex three-tier infrastructure to a simple HCI platform. Acropolis Operation System (AOS) provides all of the core services – for example, storage, upgrades, and replication, Prism provides the control plane and management console, and Acropolis HyperVisor (AHV) provides a free virtualization platform though users can also use ESXi, Hyper-V, or XenServer.

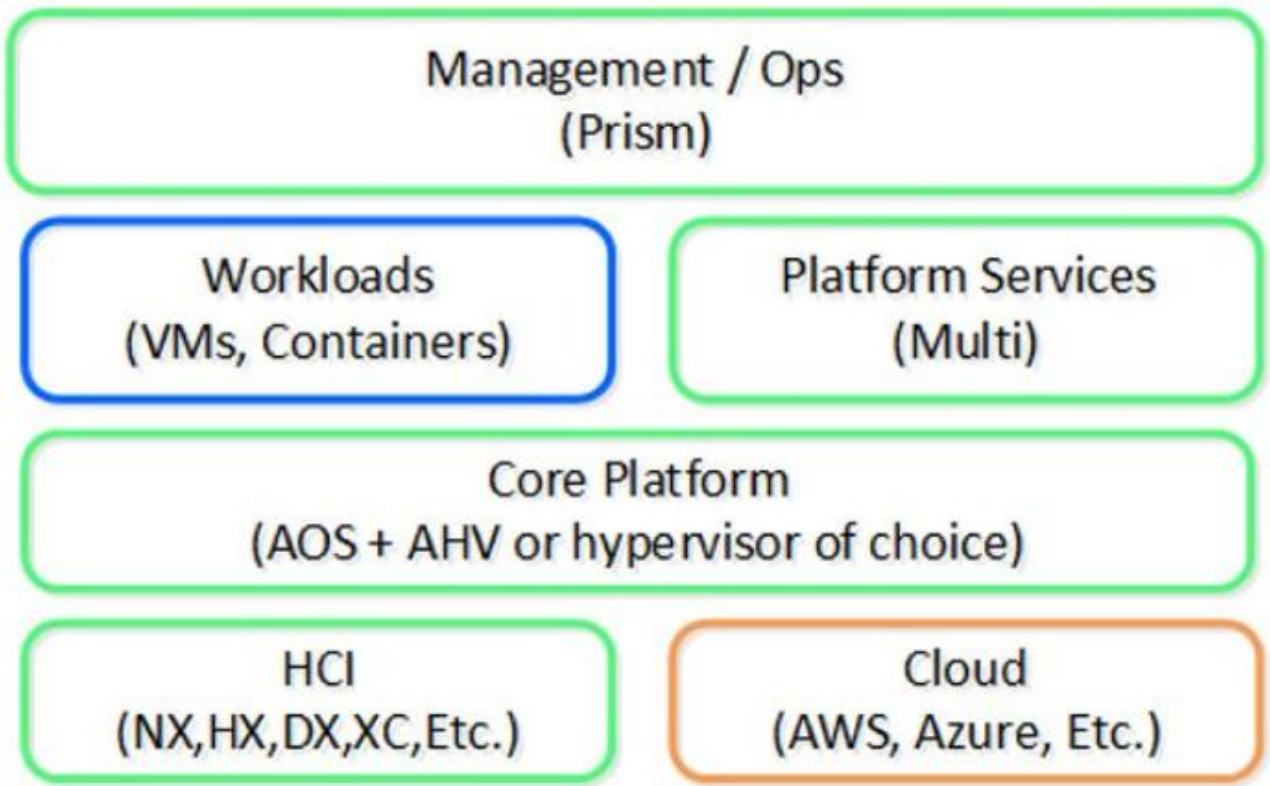
Nutanix Core capabilities include:

- Core Platforms (Hyper Converged Infrastructure, HCI)
- Storage Services
- Virtualization
- Centralized Management & Operations
- Upgrades
- Replication / Disaster Recovery



Nutanix platform architecture

Nutanix can now support different hardware platforms and multiple hypervisors – for example, AHV, ESXi, and Hyper-V. It is also working more closely with all of the major cloud vendors: AWS, Azure, and Google Cloud Platform. This gives customers a greater ability to implement the solutions that work best for them.
The diagram shows a high-level view of the Nutanix platform architecture.



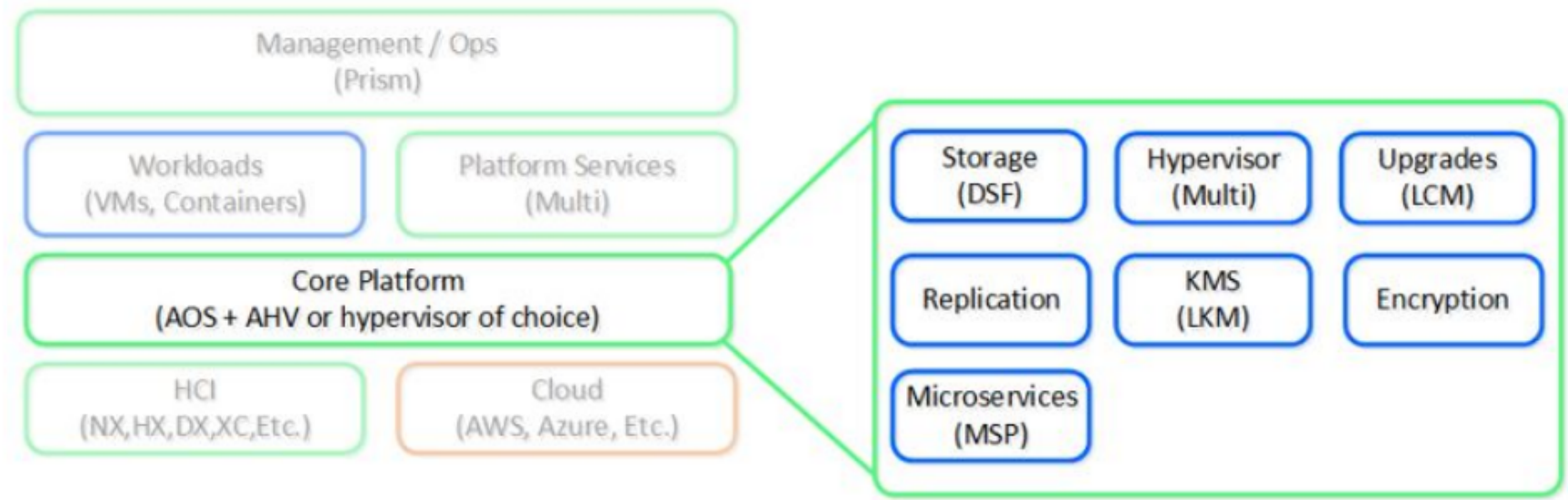
Acropolis Core services

The Runtime: Acropolis (AOS + AHV/Hypervisor)

- Core Services: Foundational services
- Platform Services: Services building upon core services providing additional capabilities and services

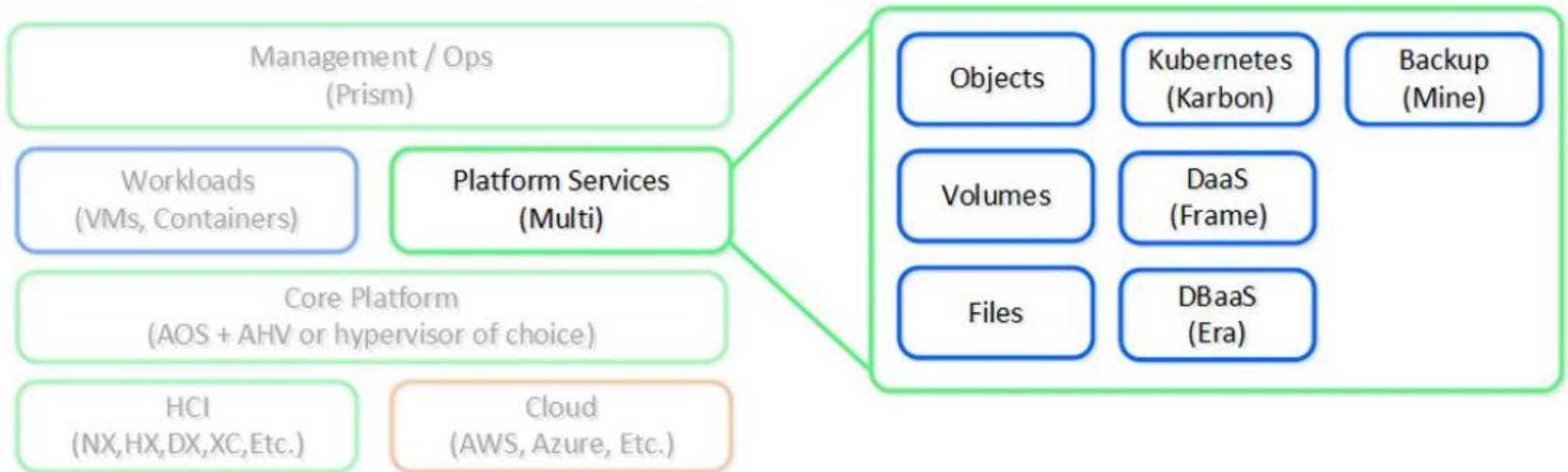
Core provides the foundational services and components that facilitate the running of workloads (VMs/Containers) and other higher-level Nutanix services. This was originally just the DSF product, but the platform's capabilities have been expanded to help simplify and abstract the stack.

The diagram shows a high-level view of the AOS Core Platform.



Acropolis platform services

The Acropolis platform provides services such as virtualization through hypervisor (AHV), simplifying upgrades, and other essential services like security and encryption. It also provides additional services such as file shares, object storage, and containers. For backup, Nutanix has partnered with vendors including Veeam and HYCU.
The diagram shows a high-level view of Acropolis platform services.



Note: When working with software vendors such as Veeam and HYCU, Support should collect both software logs and Nutanix logs if there are any compatibility or operation issues.

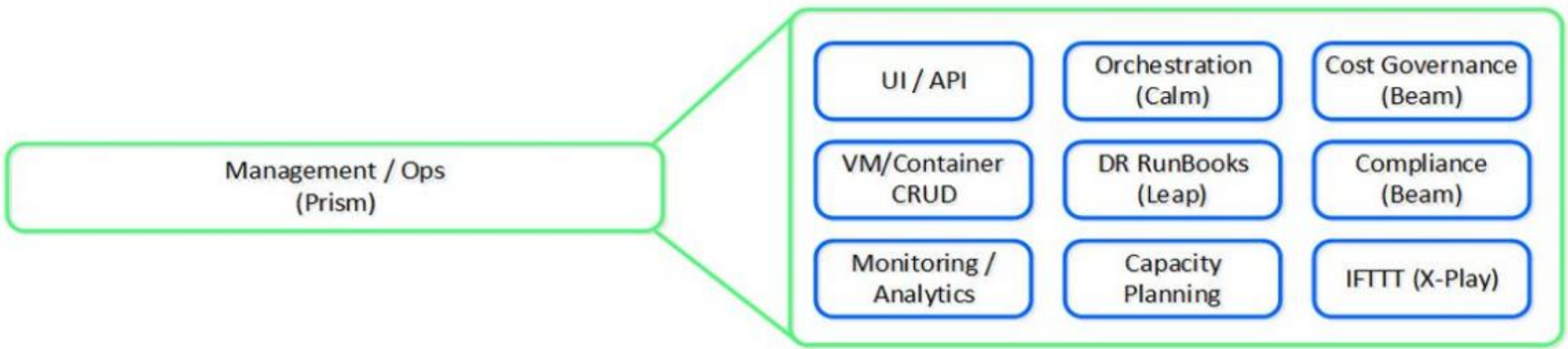
The Prism interface

The main management features of Nutanix Prism include:

- Ability to manage, scale, and non-disruptively upgrade clusters
- Management of virtual networking
- VM-level management, including the ability to set per-VM policies for compression, deduplication, redundancy, disaster recovery, snapshots, and clones

The main monitoring and analytics features of Nutanix Prism are:

- Customizable dashboards that provide views into application performance and resource utilization
- An instant search feature that allows users to use search terms and then quickly call up information and perform actions
- Predictive capacity and CPU behavior trends
- Optimization recommendations that are able to pinpoint VMs or snapshots that could be deleted to free up capacity, as well as provide scale-up recommendations for specific workloads



Hyper-converged platform

For a video explanation, watch this video.
The hyper-converged system performs the following functions:

- Virtualizes and moves the controllers to the host
- Provides core services and logic through software
- Distributes (shards) data across all nodes in the system

The Nutanix solution is a converged storage + compute solution which leverages local components and creates a distributed platform for running workloads.
Each node runs an industry-standard hypervisor (ESXi, AHV, Hyper-V, and XenServer) and the Nutanix CVM.
The Nutanix CVM runs the Nutanix software and serves all of the I/O operations for the hypervisor and all VMs running on that host.
The diagram provides an example of what a typical node logically looks like.