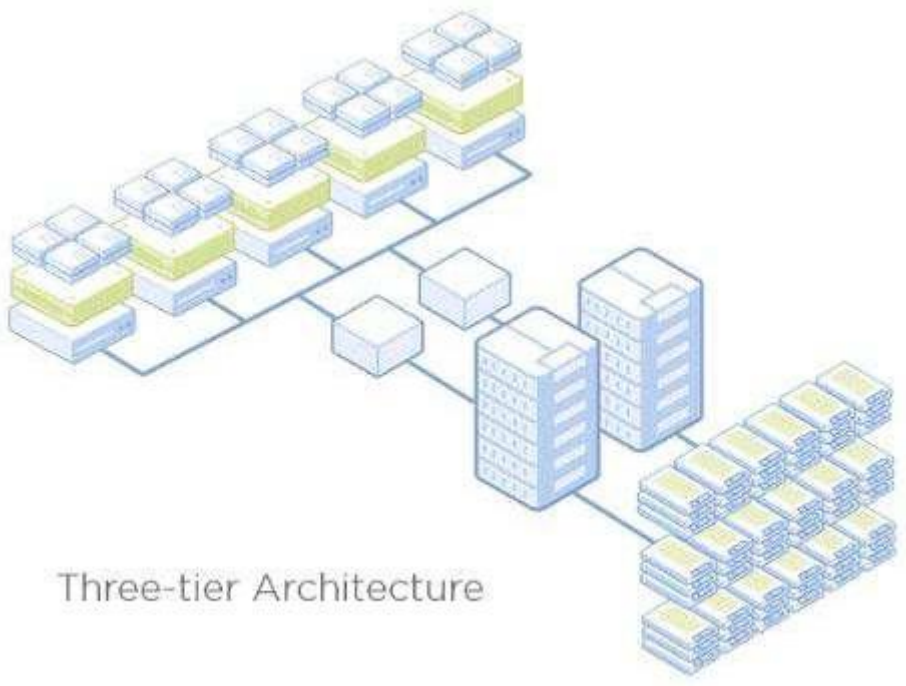
Understanding Hyperconverged Infrastructure and An Introduction to Nutanix

- The concept of hyperconverged infrastructure.
- How HCI works.
- What the Nutanix Cloud Platform is.
- What Nutanix cloud solution packages are.

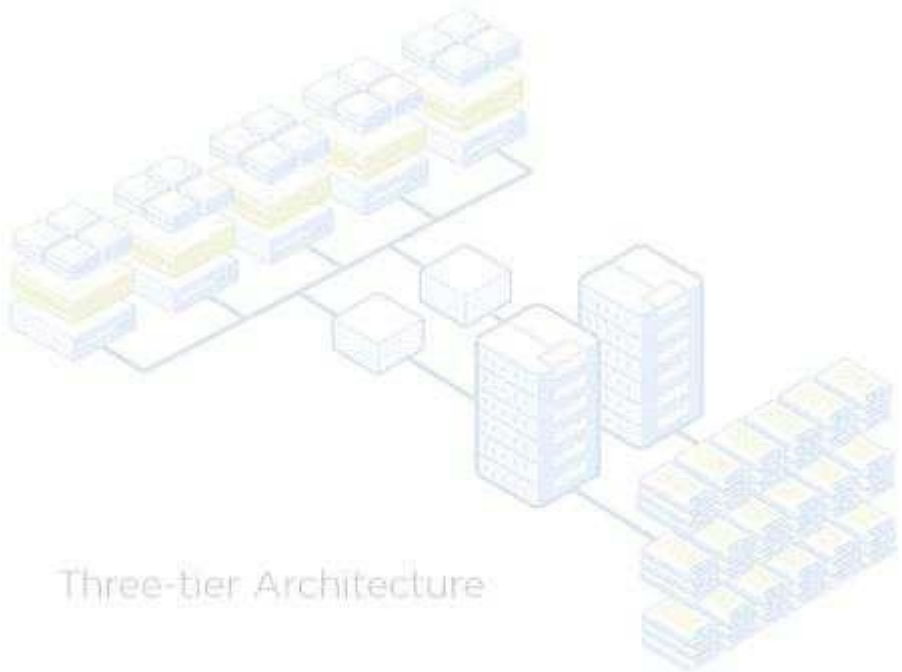
Understanding Hyperconverged Infrastructure

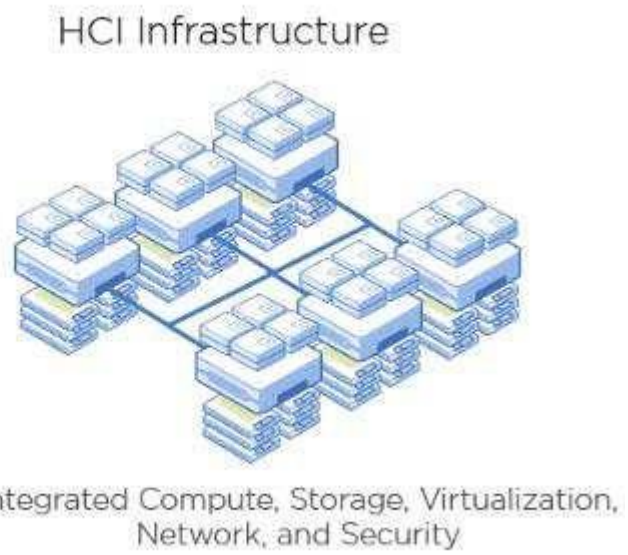
From Three-tier Architecture to Hyperconverged Infrastructure, How HCI works.



Three-tier Architecture

Understanding Hyperconverged Infrastructure





What is Three-tire infrastructure??

Three-tier or legacy infrastructure it's about organizing the architecture of a system into three functional layers. Each layer plays a specific role in managing and processing data and is supported by distinct hardware or software components within the data center. Here’s how it works:

What is Three-tire infrastructure??

1. Presentation Tier (Client or Frontend Layer)

•**What it does**: This tier is responsible for the user interaction part. It's where users send requests (like accessing a website, app, or service) and view the results.

•**In a Data Center**: The servers in this tier handle requests from user devices, such as web browsers, mobile devices, or desktop apps. These are often hosted on **web servers** or **application delivery controllers** (ADC) that serve as the gateway for user requests.

•**Example**: A web server that hosts a company's website, allowing users to enter information or request data.

•**Hardware/Software**: Web servers, load balancers, and sometimes virtual machines (VMs) designed to handle user interactions.

What is Three-tire infrastructure??

2. Logic Tier (Application Tier or Middle Layer)

- **What it does**: This layer processes data received from the presentation tier. It handles the core application logic, business rules, and data processing. It acts as the brain of the system, determining how to respond to user actions.
- **In a Data Center**: The logic tier is managed by **application servers** that perform the heavy lifting—running the actual applications or services. These servers perform calculations, process user requests, and manage the flow of data between the user interface and the data storage.
- **Example**: An application server that processes data from an online form, verifies it, and determines if the user is allowed access to specific data.
- **Hardware/Software**: Application servers, middleware, and virtualized infrastructure or cloud-based platforms that handle business logic and data processing.

What is Three-tire infrastructure??

3. Data Tier (Storage Tier or Backend Layer)

- **What it does**: This is the layer responsible for storing, retrieving, and managing the application's data. It's where databases or data repositories are housed and accessed.
- **In a Data Center**: The data tier is supported by **database servers** or **storage systems**. These systems hold the data that the application tier needs to process and send to users. Data can include files, databases, or even cloud storage.
- **Example**: A database server that stores user accounts, transaction histories, or product catalogs for an e-commerce application.
- **Hardware/Software**: Database servers, storage area networks (SAN), network-attached storage (NAS), and cloud storage services.

Understanding Hyperconverged Infrastructure

- Three-tier or legacy infrastructure - with separate storage, storage networks, and servers - has become something of a obstacle.
- Traditional infrastructure creates silos, which have become a barrier to change and progress.
- Every step of the acquisition, deployment, and management process is affected by these silos: new initiatives require approval from multiple teams.
- IT needs must be predicted three to five years in advance, and lock-in and licensing costs are stretching budgets to their breaking point.

Understanding Hyperconverged Infrastructure

- Enterprise IT teams are looking for ways to deliver their on-premise services to their internal customers with the speed and operational efficiency of public cloud services such as Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP).

- Faced all of the limitations that come with traditional infrastructure engineers developed distributed systems technologies to meet their needs for scalability, reliability, and operational efficiency.

- The distributed solution dfeveloped had applications for IT at large, and this resulted in the birth of Hyperconverged Infrastructure (HCI).

How Does HCI Work?

- HCI converges the entire datacenter stack, including compute, storage, storage networking, and virtualization.
- It does this by combining datacenter server hardware with locally attached storage (either spinning disk or flash). Each server, also called a node, includes x86 processors along with SSDs and HDDs.
- This hardware is powered and managed by a distributed software layer that eliminates the common pain points associated with three-tier infrastructure.
- The software running on each node distributes all operating functions across the cluster for superior performance and resilience.

How Does HCI Work?

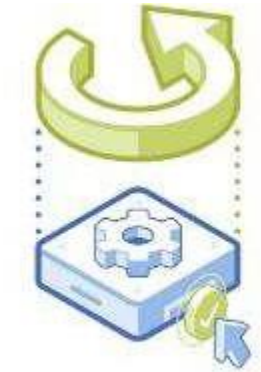
- This allows for complex, expensive, legacy infrastructure to be replaced by a distributed platform running industry-standard servers.
- Platform hardware configurations can be made available to fit any workload by scaling the resources of an individual node (CPU, RAM, storage).
- Nodes can also be provisioned with or without GPUs for graphics acceleration.
- All nodes include flash to optimize storage performance, and all-flash nodes are available to deliver maximum I/O throughput with minimum latency for all enterprise applications.
- This enables enterprises to size their workloads precisely and scale as flexibly as needed.

How Does HCI Work?

- HCI solutions also include a management pane that allow HCI resource administration and management to be performed from a single interface.

- This eliminates the need for separate management solutions for servers, storage, storage networks, and virtualization.

Benefits of HCI



Agile Operations

Sustained Innovation

Optimized Economics

Benefits of HCI: Agile Operations

HCI allows you to scale linearly and predictably due to its core architecture that automatically redistributes data as new nodes are added. This increases storage performance along with storage capacity.

Benefits of HCI: Sustain Innovation

The streamlined nature of HCI makes it possible to easily automate many of the processes that have traditionally required manual intervention

Benefits of HCI: Optimized Economics

The important financial advantages of HCI is its ability to scale dynamically with changing business needs. Gives the ability to easily change course as business needs change

Introduction to Nutanix

A single platform that unifies hybrid multicloud management

Integrates compute, virtualization, storage, networking, security, and containers

Extends from private to public clouds

Multiple hardware platforms to address varying workloads

Nutanix software is hardware agnostic

Introduction to Nutanix

- Nutanix provides a single platform that unifies hybrid multicloud management.
- The Nutanix cloud platform integrates compute, virtualization, storage, networking, security, and containers.
- simplifies day to day management of a company's IT environment.
- The Nutanix cloud platform also extends from private to public clouds, currently available on Amazon Web Services.

Introduction to Nutanix

- By running the Nutanix software on industry-standard servers, a business can gain all the benefits of the Nutanix solution while also starting with a relatively small deployment and scaling one node (i.e., server) at a time, as needed.
- Each node includes Intel-powered x86 or IBM Power hardware with flash SSDs and HDDs.
- Nutanix software running on each node distributes all operating functions across the cluster for performance and resilience.

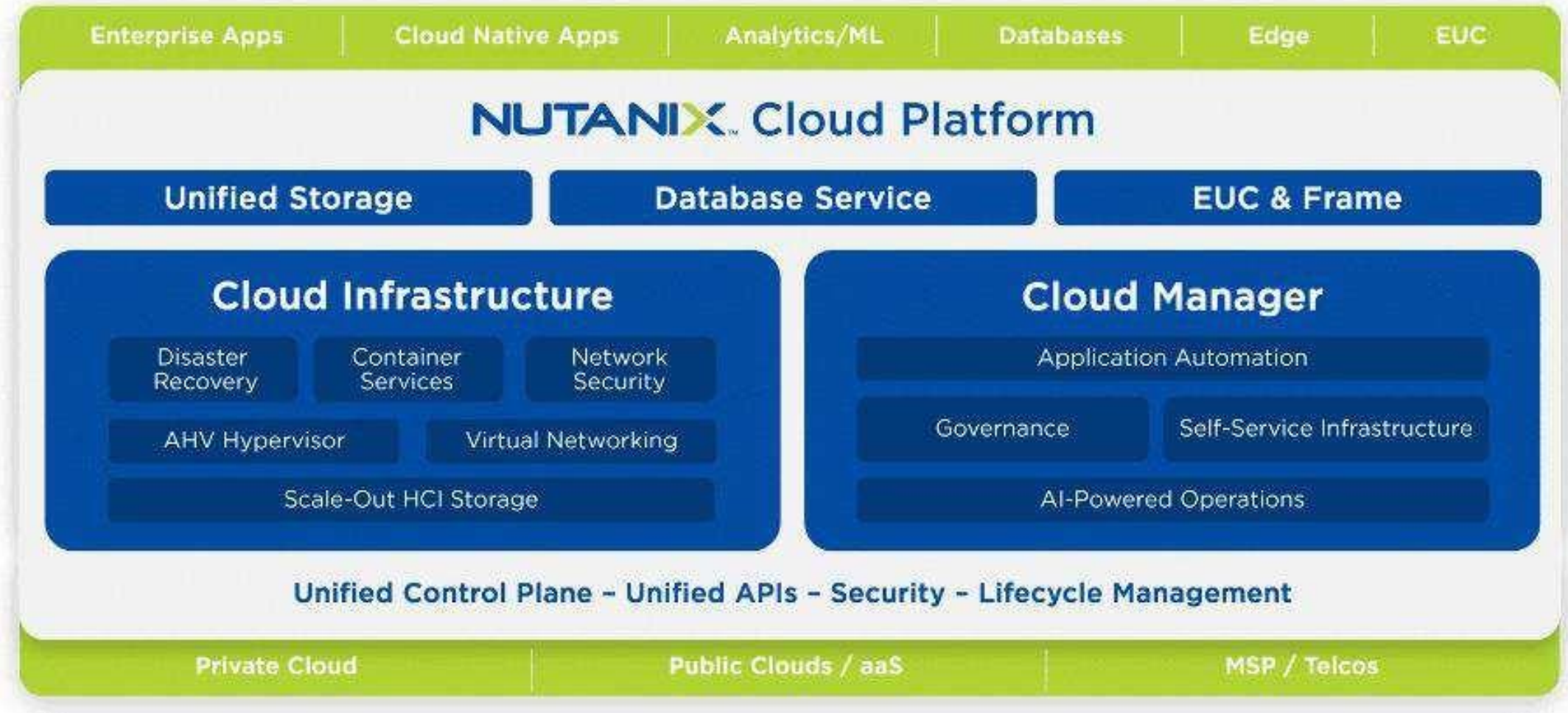
Introduction to Nutanix

- A single Nutanix cluster can scale as large as the hypervisor cluster it is on.
- Different hardware platforms are available to address varying workload needs for compute and storage.
- Nutanix software is hardware agnostic, running on hardware from vendors such as Dell, Lenovo, Cisco UCS, HPE ProLiant, and more.

What is the Nutanix Cloud Platform?

- Delivers a consistent operating model across public, private, and hybrid clouds.
- Supports any application and workload in any location.
- Offers choice and flexibility so that businesses can implement the right cloud operating model for them.

What is the Nutanix Cloud Platform?



What is the Nutanix Cloud Platform?

The five Nutanix cloud solution packages are:

- Nutanix Cloud Infrastructure (NCI)
- Nutanix Cloud Manager (NCM)
- Nutanix Unified Storage (NUS)
- Nutanix Database Service (NDB)
- Nutanix End User Computing Solutions (EUC)

Nutanix Cloud Infrastructure (NCI)

- Provides a complete software solution including virtual compute, storage and networking for virtual machines and containers.
- can be deployed in private data centers on the hardware of customer choice or in public clouds.
- built-in resilience, self-healing, performance, disaster recovery capabilities, and security.

Nutanix Cloud Infrastructure (NCI)

Solution package includes the following products:

- AOS Storage: A highly-automated, hyperconverged storage solution that scales with your data.
- AHV Virtualization: A secure, enterprise-grade virtualization solution that streamlines operations.
- Nutanix Kubernetes Engine: simplify lifecycle management.

Nutanix Cloud Infrastructure (NCI)

- Nutanix Disaster Recovery: DR solution that minimize downtime and data loss, customer can replicate to an on-prem DR site or the cloud.
- Flow Network Security: automate and protect against cyber threats by creating software-based firewalls for critical apps and data.
- Nutanix Cloud Clusters (NC2): migrating, extending applications and data between on-premises and clouds.

Nutanix Cloud Manager (NCM)

- Delivers monitoring, insights, and automated remediation making it easier for enterprises to deploy, operate, and manage their applications.
- Drives financial accountability and cost governance with intelligent resource optimization, and accurate visibility into cloud metering and chargeback.
- Unifies security operations for workloads and data across clouds, automating incident response with intelligent analysis and regulatory compliance.

Nutanix Cloud Manager (NCM)

Intelligent Operations: this solution optimizes capacity, proactively detects performance anomalies, and automates operations tasks with ease and confidence.

Self Service: this solution streamlines how teams manage, deploy and scale applications across hybrid clouds with self-service, automation and centralized role-based governance.

Nutanix Cloud Manager (NCM)

- Cost Governance: this solution allows you to drive financial accountability with intelligent resource sizing and accurate visibility into cloud metering and chargeback.
- Nutanix Security Central: Allows you to unify security operations for your workloads and data on any cloud type while automating incident response with intelligent analysis and regulatory compliance.

Nutanix Unified Storage (NUS)

- **Delivers distributed, and software defined storage** for multiple protocols (volumes, files, objects) to support a variety of workloads deployed anywhere – private, public, or hybrid cloud – with license portability in between.
- **A single point of management for all storage resources** eliminates complexity of multiple interfaces and enables non-storage experts to handle most day-to-day storage and data management tasks.
- **Intelligent analytics** integrated into the solution provide data visibility and deep insights for governance and security of data.

Nutanix Unified Storage (NUS)

Solution package includes the following products:

Files Storage: Allows you to centrally manage, scale and adapt to changing file-storage needs from on-premises to multiple clouds.

Volumes Block Storage: Bridges physical and virtual infrastructure, combining them into one unified platform with the simplicity that enterprises have grown to rely on.

Objects Storage: Delivers secure S3-compatible object storage at massive scale to hybrid cloud environments.

Mine Integrated Backup: Minimize downtime and consolidate your backup operations into one turnkey solution that is simple, scalable and natively integrated.

Nutanix Database Service (NDB)

- Simplifies database management across hybrid multicloud environments for database engines like PostgreSQL, MySQL, Microsoft SQL Server, and Oracle Database with automation for provisioning, scaling, patching, protection, and cloning of database instances.

Solution package includes the following product:

Nutanix Database Service: Easily operate fleets of Microsoft SQL Server, MongoDB, MySQL, Oracle, and PostgreSQL databases at scale on-premises and in the cloud.

Nutanix End User Computing Solutions (EUC)

- Enables the delivery of virtual apps and desktops to users worldwide from public, private, and hybrid cloud infrastructure.
- Provides a per-user licensing option for NCI that simplifies capacity planning by matching the infrastructure cost model to that of the end user computing platform.
- Includes a simple, fast, and flexible Desktop-as-a-Service (DaaS) platform that can run end user workloads on Nutanix Cloud Infrastructure (NCI), on public clouds or on hybrid clouds.

Nutanix End User Computing Solutions (EUC)

Solution package includes the following products:

- Virtual Desktop Infrastructure (VDI): A complete software stack to unify your hybrid cloud infrastructure including compute, storage, network, and hypervisors, in public or private clouds.
- Frame (Desktop-as-a-Service): Deliver virtual apps and desktops to users worldwide, either in the public cloud with AWS, Azure, or GCP, or on-prem with Nutanix AHV.

Building upon the Solution

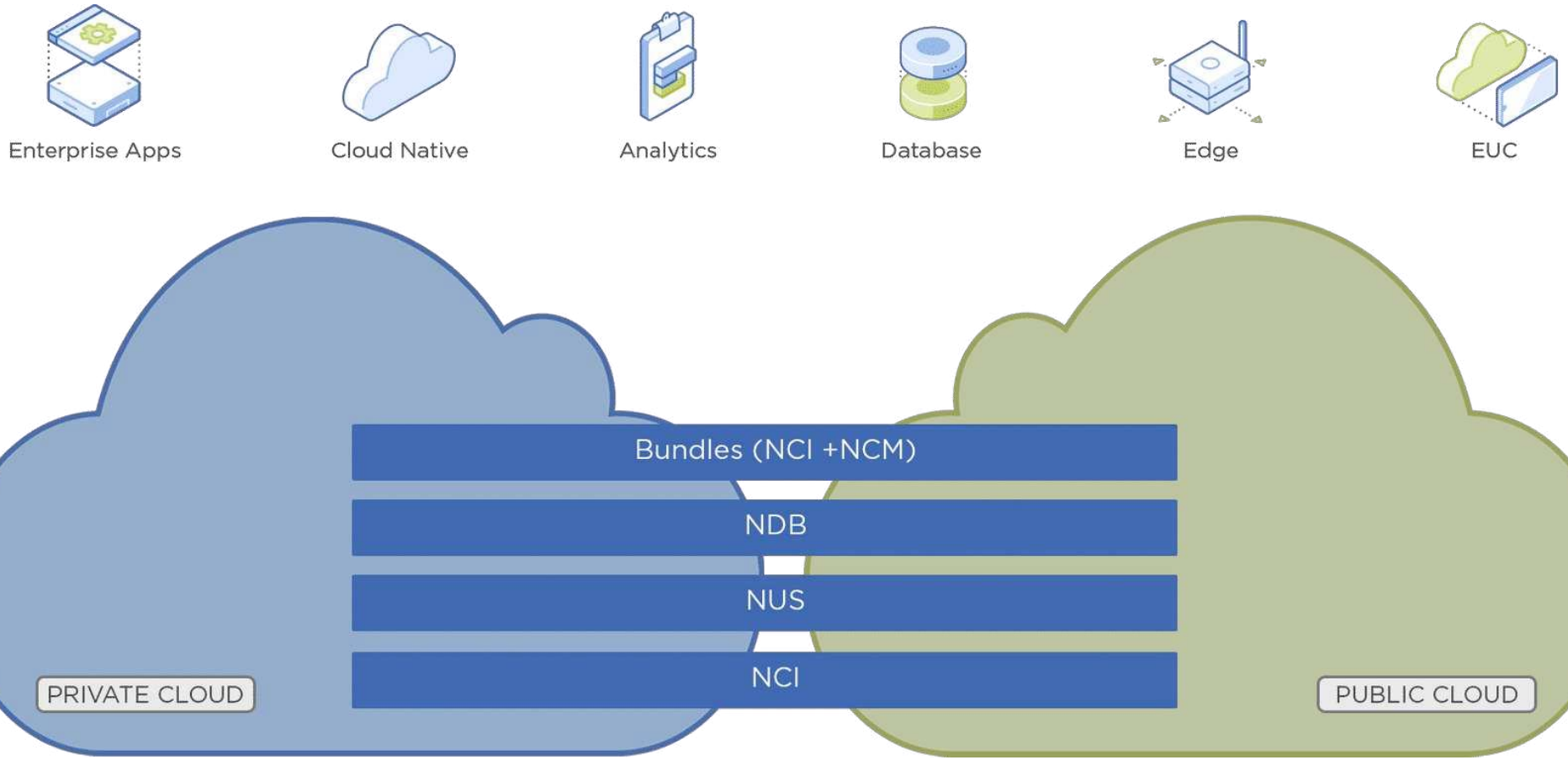
- Each product represents a key component of the Nutanix platform. AOS, AHV, and Prism **are the foundation**. Every other product can be layered on top and integrated with this foundation.

- NCI is the foundation of the Nutanix Cloud Platform, it gives customers the ability to manage applications, storage, VMs, and more, while also providing a robust and highly available infrastructure.

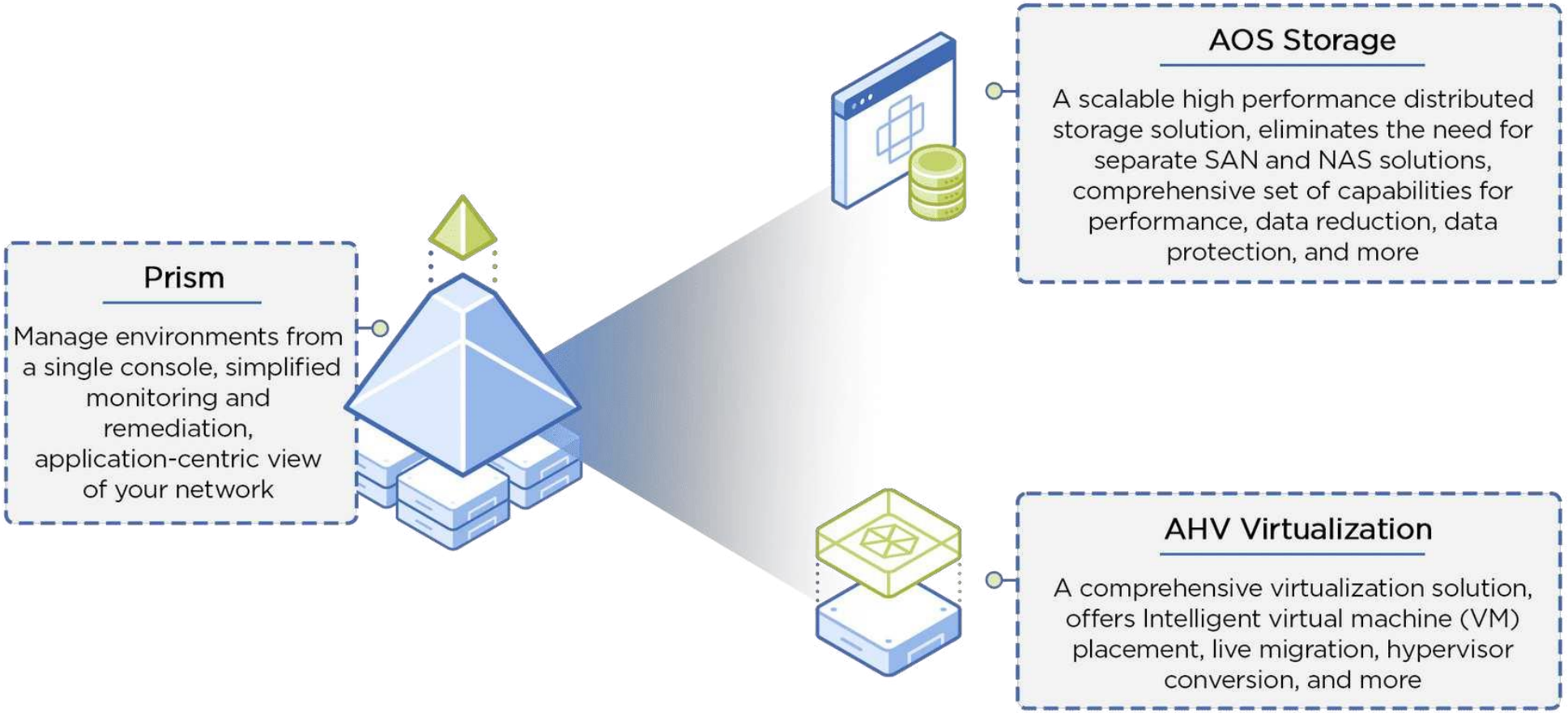
Building upon the Solution

- Depending on the license you choose, you will get a minimum of the core set of software functionality, which includes basic core storage and virtualization services.
- A higher tier gives you access to additional products and services.
- With NCI as the foundation you can layer other licensed services, such as NUS, NDB, and even VDI (NCI VDI) on top on NCI.
- For advanced use cases, the NCP bundles (NCI and NCM) are available.

Building upon the Solution



The Core Components of the Nutanix Solution



The Core Components of the Nutanix Solution

Three products form the core of the Nutanix solution,

- AOS Storage,
- AHV Virtualization,
- Prism.

AOS Storage

- AOS Storage is a scalable, resilient, high performance, distributed storage solution.
- provides enterprise-grade storage services for applications, while eliminating the need for separate SAN and NAS solutions.
- Includes a comprehensive set of capabilities for performance acceleration, data reduction, data protection, and more.

AOS Storage

- Resilient and secure storage. Utilizing advanced distributed software algorithms, AOS Storage protects data against everything from bit rot and hardware failure to physical theft and total site failure.

- Flexible and scalable cloud infrastructure. Easily size and deploy infrastructure at any scale, for any workload, and scale out quickly. Mix and match hardware configurations seamlessly, so you can adapt over time.

AHV Virtualization

- AHV Virtualization is a virtualization solution that offers Intelligent virtual machine (VM) placement, live migration, hypervisor conversion, and cross-hypervisor high availability.

- Ease of management. With AHV Virtualization, virtualization management is combined with the simplicity of the Nutanix Cloud Platform - Easily manage everything all from the same console.

AHV Virtualization

- Native security. Take the burden off your teams with factory-applied security best practices, network microsegmentation, and built-in configuration audit and remediation.
- Low operational costs.
- Exceptional performance.

Prism

- Prism lets you manage your entire environment from a single console.

- Simplify monitoring and remediation with an end-to-end, application-centric view of your network.
- Maintain control over resources with role-based access control (RBAC),
- click management simplicity. Eliminate the complexity of IT infrastructure.

Prism

- Automate operations. Automate day-to-day operational tasks with insights into infrastructure and applications. Improve operations productivity with zero coding.
- Optimize resources and cost. Create accurate forecasts for business demands. Prism learns real-time performance behavior of VMs, detects anomalies, and shows all infrastructure costs in one place.

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