PLATFORM9

Buyer's guide to

VMware Alternatives

Introduction

In recent years, the virtualization landscape has witnessed significant shifts, with enterprises increasingly seeking alternatives to VMware due to rising costs and changing market dynamics. With VMware's recent acquisition by Broadcom and subsequent price increases, many enterprise customers are reevaluating their virtualization strategies and exploring alternative solutions that offer comparable features and benefits without breaking the bank.

This white paper serves as a comprehensive buyer's guide to VMware alternatives, aimed at assisting enterprise customers in navigating the complex virtualization market and making informed decisions that align with their business objectives and budgetary constraints. By examining key features and factors to consider when evaluating virtualization solutions, we aim to empower enterprise customers to find the right fit for their unique requirements and maximize the value of their investments.

Core virtualization capabilities

Clustering: Clustering enables organizations to create a resilient and scalable virtual infrastructure by grouping multiple servers together to work as a single system. It ensures high availability and fault tolerance, allowing for seamless workload distribution and resource optimization across the cluster.

High availability: High availability ensures continuous operation of critical workloads by automatically detecting and recovering from hardware or software failures. It minimizes downtime and ensures business continuity, enhancing overall system reliability and performance.

Shared storage: Shared storage facilitates data sharing and centralized management of virtualized resources, enabling seamless migration, scalability, and data protection. It provides a unified storage pool accessible to all virtual machines, improving resource utilization and simplifying management.

Virtual networking: Virtual networking enables organizations to create and manage virtual networks, providing connectivity and isolation for virtual machines and workloads. It allows for flexible network configurations, traffic routing, and security policies, ensuring optimal performance and security in virtualized environments.

Supported guests: Supporting a wide range of guest operating systems is essential for accommodating diverse workloads and applications. It ensures compatibility and interoperability across heterogeneous environments, enabling organizations to run mission-critical applications without constraints.

Dynamic resource management: Dynamic resource management allows organizations to optimize resource utilization and performance based on workload demands. It enables automatic allocation and reallocation of resources, ensuring efficient use of computing resources and improved workload performance.

Cloud ready: Cloud readiness is becoming increasingly important as organizations adopt hybrid and multi-cloud strategies. It ensures seamless integration with public and private cloud environments, as well as support for containerized workloads, enabling organizations to embrace cloud-native technologies and architectures.

Core virtualization capabilities	Proxmox	Nutanix AHV	Microsoft Hyper-V	Platform9 OpenStack	Platform9 KubeVirt
Virtualization technology	KVM	AHV (based on KVM)	Microsoft Hypervisor	KVM	KVM
Clustering	Proxmox VE Cluster supports clustering, although its implementation may not be as seamless as VMware's. Multi-cluster management is underdeveloped and considered a work in progress. There are also upper limits on the number of hosts per cluster. Additionally, it lacks support for integrating multiple clusters across different sites into a unified management interface.	Offers strong clustering capabilities with features like Nutanix Cluster Services (NCS), providing enterprise-grade availability for virtualized workloads.	Supports clustering with features like Failover Clustering. "Some users have expressed difficulties with clustering and HA, but generally it is mentioned to be reliable".	Supports clustering through Nova Compute and Nova Scheduler, Additionally provides a SaaS Management cluster management capability which makes the setup experience easy.	SaaS Management cluster management capability, with dedicated management and monitoring.
High Availability (HA)	Provides HA with automatic failover, but the implementation may not be as mature or seamless as VMware's HA.	Offers strong HA capabilities with automatic VM restart and failover, providing enterprise-grade availability for virtualized workloads.	Offers high availability through Failover Clustering feature, but the setup and management may not be as user-friendly as VMware's HA.	Provides out of the box HA. We added a pf9-hamgr service for node failure detection using consul. It utilizes masakari for node evacuation once failure is detected.	HA is available for the clusters OOB. Users are provided with control to migrate VMs to desired nodes via the UI/API.
Shared storage	Supports shared storage with options like Ceph and NFS, but the implementation may require additional configurations compared to VMware.	Offers shared storage with Nutanix Distributed Storage Fabric (DSF), providing scalable and resilient storage for virtualized workloads. This might get limited by the underlying storage if purchased from another vendor	Supports shared storage with features like Storage Spaces Direct (S2D). "We have customers with Hyper-V. When it comes to the S2D, it really disappointing. That's why most users using 3rd party software for storage like hardware SAN, Starwinds vsan, etc."	Shared storage through Cinder.	Platform9 supports and certifies leading CSI storage solutions on kubernetes for Kubevirt and provides assistance in setup and deployement of storage through support services.
Virtual networking	Supports virtual networking with options like Linux bridges and Open vSwitch (OVS).	Offers virtual networking with features like Nutanix Flow, providing network security and micro-segmentation capabilities within Nutanix clusters.	Supports virtual networking with features like Hyper-V Network Virtualization (HNV).	Supports virtual networking through Neutron, offering flexibility with various plugins and SDN solutions.	Platform9 provides advanced network capabilites on Kubenetes and Kubevirt with its Advanced Networking Operator Luigi in combination with upstream multi CNI support. Supports featues such as OVS, DPDK, SRIOV, Whereabouts, IPAM etc. OOB.
Supported guests	Supports various guest operating systems, including Windows and Linux distributions, but may require additional configurations for certain applications. Windows workloads compatibility is still problamatic at times.	Supports a wide range of guest operating systems, ensuring broad compatibility for virtualized workloads within Nutanix clusters.	Supports popular guest operating systems like Windows and Linux.	Supports a variety of guest operating systems, but compatibility may vary depending on the hypervisor used and guest requirements.	Supports popular guest operating systems like Windows and Linux, but compatibility with some enterprise applications may require additional configurations.
Dynamic resource management	Only available at startup. Ongoing DRS is not available.	Offers dynamic resource management with features like Nutanix Prism and Acropolis Dynamic Scheduling (ADS), enabling automatic workload placement and resource optimization within Nutanix clusters.	Supports dynamic resource management with features like Hyper-V Dynamic Memory and Dynamic Optimization	Supports dynamic resource management through Nova Compute and Nova Scheduler.	Dynamic resource management can be achieved through Kubernetes mechanisms in Kubevirt, but might require additional configuration such as separate schedulers etc. Platform9 provides dedicated management dashboards and configuration to manage resourcing for VM workloads.
Cloud ready	Can be adapted for cloud environments with features like integration with cloud management platforms, but may require additional configurations for scalability.	Is cloud-ready with features like Nutanix Clusters, providing seamless integration with public and hybrid cloud platforms.	Is suitable for cloud environments with features like Azure integration and support for hybrid cloud scenarios.	Is designed for cloud environments with features like flexible APIs and multi-tenancy support.	Is designed for cloud-native environments with Kubernetes integration and tested across clouds such as AWS.

Management capabilities

Management appliance: A management appliance provides a centralized platform for configuring, monitoring, and managing virtualized resources. It offers a user-friendly interface and streamlined workflows, simplifying administration tasks and improving operational efficiency.

Web UI: A web-based user interface allows administrators to access and manage virtualized resources from any web-enabled device, providing flexibility and convenience in management tasks. It offers graphical visualization and interactive controls for monitoring and troubleshooting purposes.

CLI: A command-line interface (CLI) enables administrators to automate tasks and perform advanced configuration and management operations using scripts and commands. It provides granular control and flexibility in managing virtualized environments, facilitating efficient deployment and maintenance workflows.

API: An application programming interface (API) allows for integration with third-party tools and systems, as well as automation of management tasks through programmatic interfaces. It enables seamless integration with existing IT infrastructure and custom development of management applications and workflows.

Monitoring: Effective monitoring is essential for maintaining optimal performance and availability of virtualized environments. It provides real-time visibility into resource utilization, performance metrics, and system health, enabling proactive identification and resolution of issues.

User access: Granular user access controls and authentication mechanisms ensure security and compliance in virtualized environments. They enable administrators to define and enforce role-based access control policies, restricting unauthorized access to sensitive resources and data.

Permission management: Permission management ensures proper authorization and access control for users and groups in virtualized environments. It allows administrators to define and enforce fine-grained access policies, ensuring data integrity and confidentiality while facilitating collaboration and productivity.

Mgmt. Capabilities	Proxmox	Nutanix AHV	Microsoft Hyper-V	Platform9 OpenStack	Platform9 KubeVirt
Management Appliance	Offers management appliances like Proxmox VE Management Console, providing centralized management and monitoring for Proxmox environments.	Provides management appliances like Nutanix Prism, offering centralized management and monitoring for Nutanix clusters.	Offers management appliances like Windows Admin Center, providing centralized management and monitoring for Hyper-V environments. Supported in SCVMM which make hyperv useful, othereise it is difficult to manage. Ecosystem of tooling is large but can also be too much to handle: Microsoft End Point Configuration Manager (including SCCM) System Center Data Protection Manager (DPM) System Center Virtual Machine Manager (SCVMM)	Provides dedicated SaaS Management cluster management for management of the Openstack Platform. Provides a SaaS control plane for management of on-prem resources, with PF9 support.	Provided SaaS Management control plane with multi-cluster and VM management capability, with dedicated monitoring. Nor equirement of any other appliance.
Web UI	Offers a web UI with Proxmox VE Management Console, providing management and monitoring capabilities for Proxmox environments, but may not be as feature-rich as VMware's web UI.	Features a web UI with Nutanix Prism, offering management and monitoring capabilities for Nutanix clusters, but may not be as feature-rich as VMware's web UI.	Features a web UI with Windows Admin Center, offering management and monitoring capabilities for Hyper-V environments, but may not be as feature-rich as VMware's web UI, proxmox etc.	Provides dedicated SaaS managed control plane with PF9 Clarity UI which has a much better user experience as compared to the upstream openstack Horizon UI.	Provides dedicated UI with dedicated spaces Infrastructure, Kubernetes and Kubevirt managamen, helping users differenting between layers and focus on specific items.
CLI	Supports command-line management through tools like Proxmox VE CLI, providing automation and scripting capabilities for Proxmox environments, but may not be as extensive as VMware's CLI.	Supports command-line management through tools like Nutanix Command-Line Interface (NCLI), providing automation and scripting capabilities for Nutanix clusters, but may not be as extensive as VMware's CLI.	Supports command-line management through tools like PowerShell and Hyper-V Manager, providing automation and scripting capabilities for Hyper-V environments, but may not be as extensive as VMware's CLI.	Supports command-line management through tools like OpenStack CLI, providing automation and scripting capabilities for OpenStack environments.	Supports command-line management through tools like PF9ctl, terraform to manange nodes and clusters & kubectl and virtctl to manage clusters and VM workloads respectively.
API	Provides APIs like Proxmox VE API, enabling integration and automation with third-party tools and cloud platforms, but may not be as extensive as VMware's APIs.	Provides APIs like Nutanix REST APIs, enabling integration and automation with third-party tools and cloud platforms, but may not be as extensive as VMware's APIs.	Provides APIs like Hyper-V WMI and PowerShell Remoting, enabling integration and automation with third-party tools and cloud platforms, but may not be as extensive as VMware's APIs.	Provides RESTful APIs like OpenStack APIs, enabling integration and automation with third-party tools and cloud platforms.	Provides APIs like Kubernetes API, enabling integration and automation with third-party tools and cloud platforms, but may not offer the same level of features and usability as dedicated virtualization solutions like VMware.
Monitoring	Offers monitoring capabilities through tools like Proxmox VE Metrics, providing insights into the performance and health of Proxmox environments, but may not be as extensive as VMware's monitoring.	Offers monitoring capabilities through tools like Nutanix Prism Pro, providing insights into the performance and health of Nutanix clusters, but may not be as extensive as VMware's monitoring.	Offers monitoring capabilities through tools like Windows Admin Center and System Center Operations Manager (SCOM), providing insights into the performance and health of Hyper-V environments, but may not be as extensive as VMware's monitoring.	Pf9 Openstack supports the ceilometer, aodh and gnocchi opensource services.	Provides dedicated monitoring capabilities through Prometheus and Grafana, intergated in Platform9 SaaS Mangement plane. Also provide 24/7 always assurance monitoring for the Kubevirt Clusters.
User Access	Offers user access control with features like Proxmox VE Authentication Server, enabling granular control over user permissions and access to Proxmox environments, but may not be as extensive as VMware's user access control.	Offers user access control with features like Nutanix Prism Central, enabling granular control over user permissions and access to Nutanix clusters, but may not be as extensive as VMware's user access control.	Offers user access control with features like Active Directory integration, enabling granular control over user permissions and access to Hyper-V environments, but may not be as extensive as VMware's user access control.	Offers role-based access control (RBAC) through Keystone, enabling granular control over user permissions and access to OpenStack resources.	Offers user access control through Kubernetes RBAC with SAML SSO integration, enabling granular control over user permissions and access to Kubernetes resource with a dedicated UI console.
Permission Mgmt	Offers permission management with features like Proxmox VE Authentication Server, enabling administrators to define custom roles and permissions for Proxmox environments, but may not be as extensive as VMware's permission management.	Offers permission management with features like Nutanix Prism Central, enabling administrators to define custom roles and permissions for Nutanix clusters, but may not be as extensive as VMware's permission management.	Offers permission management with features like Active Directory integration, enabling administrators to define custom roles and permissions for Hyper-V environments, but may not be as extensive as VMware's permission management.	Provides fine-grained permission management through Keystone RBAC, enabling administrators to define custom roles and permissions for OpenStack resources.	Offers permission management through Kubernetes RBAC, enabling administrators to define custom roles and permissions for Kubernetes resources with a dedicated UI console.

Virtual machine operations

High availability: High availability ensures continuous availability of critical workloads by automatically restarting virtual machines on healthy hosts in the event of host failures. It minimizes downtime and ensures uninterrupted service delivery, enhancing overall system reliability and performance.

Backup/Restore: Backup and restore capabilities are essential for protecting against data loss and ensuring business continuity in the event of disasters. They enable organizations to create and manage backups of virtualized workloads, as well as restore data to previous states in case of errors or corruption.

Migration: A Migration capabilities enable organizations to move virtual machines and workloads between hosts and data centers seamlessly. They allow for workload mobility, resource optimization, and hardware maintenance without disruption to service availability or performance.

Live migration: Live migration allows organizations to move running virtual machines between hosts without interrupting service availability. It enables workload balancing, hardware maintenance, and performance optimization, ensuring optimal resource utilization and responsiveness.

Storage live migration: Storage live migration enables organizations to move virtual machine disks between storage devices without disrupting service availability. It facilitates data mobility, storage optimization, and disaster recovery, ensuring data integrity and resilience in virtualized environments.

Snapshots: Snapshots enable organizations to capture the state of virtual machines at a specific point in time, facilitating backup, recovery, and testing activities. They provide a point-in-time copy of virtual machine data, allowing for easy rollback and recovery in case of errors or data corruption.

Templates: Templates streamline the process of provisioning virtual machines by providing pre-configured images and configurations. They enable organizations to create standardized templates for rapid VM deployment, ensuring consistency, and efficiency in workload provisioning.

Replication: Replication enables organizations to create redundant copies of virtual machine data for disaster recovery and high availability purposes. It ensures data protection, resilience, and business continuity in virtualized environments, mitigating the risk of data loss and downtime.

Affinity rules: Affinity rules allow organizations to specify relationships between virtual machines and hosts, ensuring optimal performance and resource allocation. They enable workload optimization, fault tolerance, and compliance with regulatory requirements, enhancing overall system efficiency and reliability.

Integration services: Integration services provide enhanced functionality and performance optimizations for virtualized workloads. They facilitate interoperability, seamless integration, and management of virtual machines across different operating systems and environments, improving overall system performance and user experience.

Virtual Machine operations	Proxmox	Nutanix AHV	Microsoft Hyper-V	Platform9 OpenStack	Platform9 KubeVirt
Backup/Restore	Proxmox Backup Server is an enterprise backup solution which supports backup and restore operations, .	Provides efficient backup and restore capabilities, ensuring data protection and recovery for virtual machines without the need for third-party solutions.	Offers backup and restore functionality, but it may involve additional setup and integration with third-party tools for comprehensive data protection and recovery compared to VMware.	Offers backup and restore functionality, but the process may require integration with third-party tools and additional configuration, potentially leading to complexity.	Offers backup and restore functionality through Kubernetes-native features, but it may require additional configuration and integration with external tools, potentially increasing complexity.
Migration	Offers migration functionality for virtual machines, but it may require manual intervention and configuration, potentially increasing complexity and management overhead.	Features efficient migration options, enabling seamless movement of virtual machines across nodes and storage tiers without downtime, ensuring workload agility and resource optimization.	Supports migration features like Live Migration, but the process may require additional configuration and management compared to VMware.	Provides migration capabilities through services like Nova Live Migration.	Offers migration capabilities through Kubernetes-native features.
Live migration	Offers live migration capabilities, allowing seamless movement of virtual machines between hosts. Supports live migration regardless of local or shared storage.	Features efficient live migration functionality, enabling seamless movement of virtual machines across nodes without downtime, ensuring workload agility and performance optimization.	Supports live migration.	Supports live migration of virtual machines.	Offers live migration via UI , API and CLI to the users.
Storage live migration	Offers storage live migration for virtual machines, enabling seamless movement of storage volumes between datastores.	Features efficient storage live migration capabilities, allowing live movement of virtual machine storage without downtime, ensuring storage optimization and flexibility.	Supports storage live migration.	Supports storage live migration, but the process may require manual intervention and additional configuration.	Offers storage live migration through Kubernetes-native features.
Snapshots	Supports snapshots for virtual machines, allowing point-in-time recovery and backup.	Features efficient snapshot functionality, enabling quick and reliable point-in-time recovery for virtual machines without downtime, ensuring data protection and operational efficiency.	Supports snapshots for virtual machines.	Provides snapshot functionality for virtual machines.	Offers snapshot functionality through Kubernetes-native features.
Templates	Offers template creation and deployment for virtual machines, enabling rapid provisioning and consistent configuration.	Supports VM templates, enabling quick and consistent provisioning of virtual machines, enhancing scalability and operational efficiency.	Supports VM templates.	Supports VM templates.	Support instance types via UI and API.
Replication	Supports replication for virtual machines.	Provides efficient replication options for disaster recovery, ensuring data protection and business continuity with automated failover and failback mechanisms, enhancing resilience and availability.	Offers replication functionality.	Offers replication functionality.	Offers replication capabilities through Kubernetes-native features.
Affinity rules	Supports affinity rules for VM placement, allowing administrators to define placement policies.	Supports affinity rules for VM placement, enabling administrators to optimize resource utilization and performance, enhancing workload efficiency and scalability.	Supports affinity rules for VM placement.	Provides affinity rules for VM placement.	Offers affinity rules for VM placement through Kubernetes-native features.
Integration services	Supports integration with third-party tools and services.	Provides integration services with third-party tools, enabling seamless interoperability and ecosystem support, enhancing flexibility and scalability for virtualized environments.	Offers integration with third-party tools and services.	Offers integration services with third-party tools, but the process may require manual intervention and additional configuration.	Offers integration with third-party tools and services through Kubernetes-native features.

Networking

Virtual switch: A virtual switch provides connectivity and traffic isolation for virtual machines within a hypervisor environment. It allows for flexible network configurations, traffic routing, and security policies, ensuring optimal performance and security in virtualized environments.

Distributed switch: A distributed switch extends the capabilities of a virtual switch across multiple hosts in a cluster, enabling centralized management and configuration of virtual networking resources. It simplifies network administration, enhances scalability, and improves network performance in large-scale virtualized environments.

NIC teaming: NIC teaming aggregates multiple network interface cards (NICs) into a single logical interface, providing fault tolerance and increased bandwidth for virtual machines. It enhances network reliability, availability, and performance, ensuring seamless connectivity and workload scalability.

Port security: Port security controls access to virtual switch ports based on MAC addresses, IP addresses, or other criteria, preventing unauthorized access and network attacks. It enhances network security, compliance, and data protection in virtualized environments, reducing the risk of security breaches and data loss.

VM firewall: A VM firewall provides network-level security and traffic filtering for virtual machines, protecting against unauthorized access, malware, and other threats. It enables granular control over network traffic, ensuring compliance with security policies and regulatory requirements in virtualized environments.

SDN: Software-defined networking (SDN) decouples network control and data forwarding functions, enabling centralized management and programmable network configurations. It enhances network agility, scalability, and flexibility, enabling organizations to adapt to changing business requirements and application demands.

Micro-segmentation: A micro-segmentation divides the network into smaller, isolated segments, allowing organizations to enforce fine-grained security policies and access controls for individual workloads. It enhances network security, isolation, and compliance, reducing the attack surface and mitigating the risk of lateral movement and data exfiltration.

IPAM: IP address management (IPAM) automates the allocation and administration of IP addresses in virtualized environments, ensuring efficient resource utilization and network provisioning. It streamlines IP address assignments, DNS configurations, and DHCP services, reducing administrative overhead and potential configuration errors.

Networking	Proxmox	Nutanix AHV	Microsoft Hyper-V	Platform9 OpenStack	Platform9 KubeVirt
Virtual switch	Supports virtual switch functionality for networking.	Offers a comprehensive virtual switch functionality, providing advanced networking features and management flexibility, enhancing network performance and security.	Provides virtual switch functionality.	Offers virtual switch functionality.	Offers virtual switch functionality through Kubernetes-native features.
Distributed switch	Supports distributed switch functionality for networking, enabling centralized management and advanced features.	Provides a distributed switch functionality, allowing centralized management and advanced networking features, enhancing network scalability and performance.	Offers distributed switch functionality.	Offers distributed switch functionality.	Offers distributed switch functionality through OVS and is integrated in Platform9 advanced Networking operator and is available OOB. Supports configuration via UI and API.
NIC teaming	Supports NIC teaming for network redundancy.	Provides NIC teaming functionality for network redundancy and load balancing, ensuring network resilience and performance optimization, enhancing network reliability and scalability.	Supports NIC teaming.	Offers NIC teaming functionality.	Offers NIC teaming through Kubernetes-native features.
Port security	Supports port security features for network protection.	Provides port security features like VLAN tagging and micro-segmentation, enhancing network security and compliance, ensuring data confidentiality and integrity.	Supports port security features.	Offers port security features through security groups management.	Offers port security through Kubernetes-native features.
VM firewall	Supports VM firewall functionality for network security.	Provides VM-level firewall functionality for network security and micro-segmentation, enabling granular control over traffic flows and access policies, enhancing network protection and compliance.	Supports VM firewall functionality.	Offers VM firewall functionality through security groups management	Offers VM firewall through Kubernetes-native features.
SDN	Supports SDN integration	Integrates with SDN solutions, providing advanced network virtualization and automation capabilities, enhancing agility and scalability for virtualized environments.	Integrates with SDN solutions.	Integrates with SDN solutions. Provides neutron SDN with OVS.	Integrates with SDN solutions through Kubernetes-native features.
Micro-segmentation	Supports micro-segmentation for network security.	Provides micro-segmentation capabilities for network security and policy enforcement, ensuring workload isolation and compliance, enhancing overall network security posture and threat mitigation..	Supports micro-segmentation.	Offers micro-segmentation capabilities.	Offers micro-segmentation through Kubernetes-native features via with OVS flat/vlan networks (using multus CNI). Also supports also supported with Calico but has limitations like single network can be used.
IPAM	Supports IPAM integration.	Supports IPAM integration, enabling centralized management and automation of IP addresses, enhancing network scalability and efficiency.	Supports IPAM functionality.	Offers IPAM functionality via Neutron.	Supports IPAM via OOB which is integrated in the Platform9 advanced Networking operator.

Scalability

Cluster scale: Cluster scale refers to the ability of a virtualization platform to scale out by adding additional compute, storage, and networking resources to a cluster. It enables organizations to accommodate growth, handle increased workloads, and ensure performance and availability as demand fluctuates.

VM scale: VM scale refers to the ability of a virtualization platform to support a large number of virtual machines (VMs) within a single environment. It enables organizations to deploy and manage a diverse range of workloads and applications, ensuring scalability and flexibility in resource allocation and utilization.

Upgrades

Ease of upgrade: Ease of upgrade refers to the simplicity and reliability of upgrading the virtualization platform to newer versions or patches. It includes factors such as automated upgrade processes, compatibility checks, rollback options, and minimal disruption to service availability and performance.

Container integration

Kubernetes: Kubernetes is an open-source container orchestration platform that enables organizations to deploy, manage, and scale containerized workloads with ease. It provides automated deployment, scaling, and resource management capabilities, allowing organizations to embrace cloud-native architectures and modernize their applications for increased agility and efficiency.

Enterprise support

Enterprise support is essential for ensuring timely assistance, troubleshooting, and resolution of technical issues in virtualized environments. It provides access to expert guidance, proactive monitoring, and dedicated resources, minimizing downtime and maximizing the value of virtualization investments. OpenStack and KubeVirt offer enterprise-grade support options, including service-level agreements (SLAs), priority access to support engineers, and ongoing maintenance and updates, ensuring peace of mind and confidence in the reliability and performance of the virtualization platform.

Support and pricing

	Proxmox	Nutanix AHV	Microsoft Hyper-V	Platform9 OpenStack	Platform9 KubeVirt
Support	Limited commercial support options.	Dedicated support with Nutanix AHV licenses.	Comprehensive commercial support with SLAs.	Dedicated 24/7 support with always-on-assurance monitoring.	Dedicated 24/7 support with always-on-assurance monitoring.
Pricing	Free open-source, with Paid licence support with multiple tiers per core. Pricing for premium(fit for enterprise) is 2x that of standard subscription.	Bundled pricing structure, often part of a broader Nutanix hyperconverged infrastructure. Included with Nutanix hardware and licensing. The per core/socket cost is determined by the specific hardware purchased. Pricing can escalate with scale and additional products and services.	License included with Windows Server Datacenter and Standard editions. Bundled pricing structure. Pricing can escalate with scale and additional products and services. May requires per Guest licences if using Windows.	Pricing includes complete bundle of platform, deployment and support.	Community support (paid support options exist).

Native container integration & K8s

	Proxmox	Nutanix AHV	Microsoft Hyper-V	Platform9 OpenStack	Platform9 KubeVirt
Native container integration	Does not provide Native container integration.	Nutanix AHV provides integration with Kubernetes through services like Karbon, but it may require additional configuration compared to native Kubernetes solutions, potentially impacting ease of use and compatibility.	Provides very limited integration to run containers inside VMs.	Does not provide Native container integration.	Platform9 integrates kubevirt in Plaform9 Managed Kubernetes Plane with dedicated Management and monitoirng, making it a native Kubernetes solution, providing seamless integration and management of Kubernetes clusters, ensuring compatibility and ease of use within the Kubernetes ecosystem.

Scale & upgrades

	Proxmox	Nutanix AHV	Microsoft Hyper-V	Platform9 OpenStack	Platform9 KubeVirt
Cluster scale	Proxmox VE supports clustering without a limit but may depend on hardware on networking. While this is suitable for many medium to large-scale deployments, it may be limiting for very large environments.	Nutanix AHV supports large cluster scales. A scaled-out implementation of Prism Central on AHV can manage up to 400 clusters, 2,000 nodes, or 25,000 VMs (whichever limit is hit first).	Hyper-V supports clustering with a maximum of 64 nodes per cluster, similar to VMware vSphere. This offers good scalability for medium to large deployments.	OpenStack's cluster scale depends on the underlying hypervisor and the architecture of the deployment. While it can support large-scale deployments, the practical limit may vary based on the specific setup and configuration.	Kubevirt's cluster scale depends on the underlying Kubernetes infrastructure and the capacity of the underlying nodes. While Kubernetes itself can support large clusters, the practical limit may vary based on configuration and resources available.
VM scale	Proxmox VE does not have a limit per host. However, the practical limit may vary based on factors like hardware resources and workload characteristics.	A scaled-out implementation of Prism Central on AHV can manage up to 400 clusters, 2,000 nodes, or 25,000 VMs (whichever limit is hit first).	Hyper-V supports a 8,000 VMs per cluster.	OpenStack's node scale depends on the underlying hypervisor and the architecture of the deployment. While it can support a large number of nodes in theory, the practical limit may vary based on the specific setup and configuration.	Kubevirt's VM scale depends on the underlying Kubernetes infrastructure and the capacity of the underlying nodes. While Kubernetes itself can support a large number of VMs, the practical limit may vary based on configuration and resources available.
Ease of upgrade	Proxmox upgrades are generally straightforward, with built-in tools like the Proxmox VE Manager facilitating the process. However, upgrades may still require manual intervention and careful planning.	Nutanix AHV upgrades are streamlined and non-disruptive, with features like 1-click upgrades allowing for seamless updates of the entire infrastructure stack, minimizing downtime and operational overhead.	Hyper-V upgrades are typically straightforward, especially when integrated with Windows Server Update Services (WSUS) for automated patch management. However, upgrades may still require careful planning and validation.	Platform9 Openstack upgrades the SaaS management control plane and its features and the OpenStack version along with other dependedent openstack projects deployed and the operating systems supported. Upgrades are supported and monitoired by Platform9 24/7 support.	Platform9 provides OOB seamless upgrades for Kubernetes clusters and kubevirt. Kubevirt and Advanced networking upgrades are intergraded in the Kubernetes upgrades it self. Provides automated UI and API upgrade options with different upgrade types.

Third party tools: Enhancing virtualization capabilities

Third-party tools play a pivotal role in enhancing the capabilities and extending the functionality of virtualization platforms such as OpenStack and KubeVirt. These tools offer a wide range of features and benefits that complement the core functionalities of virtualization solutions, providing organizations with additional tools and capabilities to optimize their virtualized environments. Below are five leading third-party tools and their significance in virtualization environments:

Veeam: Veeam is a renowned provider of backup, recovery, and data management solutions tailored for virtualized environments. Its comprehensive suite of features includes image-level backups, instant VM recovery, and automated data replication. By leveraging Veeam, organizations can ensure the protection, availability, and resilience of their virtualized workloads. With fast, incremental backups and global deduplication capabilities, Veeam helps organizations minimize data loss, reduce downtime, and streamline recovery processes. Moreover, its advanced data management capabilities enable organizations to meet regulatory compliance requirements, safeguard critical data assets, and maintain business continuity in the face of unforeseen disasters or disruptions.

Nakivo: Nakivo offers simple yet powerful backup, replication, and disaster recovery solutions designed specifically for virtualized environments. Its intuitive interface and flexible deployment options make it an ideal choice for organizations seeking reliable data protection and recovery capabilities. Nakivo provides fast, incremental backups, global deduplication, and flexible recovery options, empowering organizations to minimize data loss, optimize storage utilization, and streamline recovery operations. Additionally, its multi-tenancy support and cloud integration features enable organizations to extend their virtualization capabilities to hybrid and multi-cloud environments, ensuring seamless data protection and availability across diverse infrastructure platforms.

Portworx backup: Portworx is a leading provider of container storage and data management solutions for Kubernetes environments. Portworx Backup enables you to backup and restore KubeVirt Virtual Machines (VMs) running on Kubernetes clusters. this feature allows users to backup and restore VMs migrated from VMware environments and VMs running on KubeVirt. Portworx Backup detects these VMs to provide end-to-end data protection for VMs, VM disks, resource configuration, and network configuration data.

Trillio: Trillio offers comprehensive data protection and disaster recovery solutions for cloud-native environments, including Kubernetes and OpenStack. Its advanced features include application-centric backup and recovery, policy-based data management, and automated disaster recovery orchestration. Trillio enables organizations to protect their mission-critical workloads, ensure data availability, and meet compliance requirements in dynamic and distributed cloud environments. With its native integration with Kubernetes and OpenStack, Trillio provides seamless data protection across hybrid and multi-cloud architectures, empowering organizations to leverage the full potential of their virtualized infrastructure.

Velero: Velero is an open-source backup and restore tool for Kubernetes clusters, providing data protection and disaster recovery capabilities for containerized workloads. It offers features such as volume snapshots, incremental backups, and off-site backups to ensure data integrity and availability in Kubernetes environments. Velero enables organizations to protect their applications and data against data loss, corruption, and accidental deletion, providing peace of mind and confidence in the resilience of their Kubernetes deployments. With its extensible architecture and community-driven development, Velero offers flexibility and scalability to meet the evolving backup and recovery needs of Kubernetes users.

Third-party tools such as Veeam, Nakivo, Portworx Backup , Trillio, and Velero play a crucial role in enhancing the functionality and resilience of virtualization platforms. By offering comprehensive backup, recovery, and data management solutions, these tools address critical requirements such as data protection, availability, and regulatory compliance. Additionally, they provide organizations with advanced features such as image-level backups, instant recovery, and global deduplication, enabling them to minimize data loss, reduce downtime, and ensure business continuity in the face of unforeseen disasters or disruptions. Furthermore, the flexibility and scalability of third-party tools allow organizations to adapt to evolving business needs and infrastructure requirements, ensuring long-term success and competitiveness in today's dynamic IT landscape.

Third Party Tools	Proxmox	Nutanix AHV	Microsoft Hyper-V	Platform9 OpenStack	Platform9 KubeVirt
Veeam	No	Yes	Yes	No	No
Nakivo	Yes	Yes	Yes	No	No
Portworx Backup	No	No	No	No	Yes, provides backup and restore functionality on same as well as other clusters.
Trillio	No	No	No	No	Yes (Prod for Openshift only)
Velero	No	No	No	No	Yes, but in nascent stage.

Why Platform9?

Migrate to a modern, smarter, and a more cost effective way to manage your virtual environments with Platform9. As a cutting-edge VMware alternative, Platform9 offers two robust solutions: Platform9 Managed OpenStack and Platform9 Managed KubeVirt.

Platform9 Managed OpenStack: A full-featured VMware replacement with a unified UI for both containers and VMs, making it the ultimate choice for those seeking simplicity and comprehensive control requirements, safeguard critical data assets, and maintain business continuity in the face of unforeseen disasters or disruptions.

Platform9 Managed KubeVirt: Offers cutting-edge features including VM HA, Live Migration, and more, all accessible through a unified UI that manages both your containers and VMs effortlessly.

Simplify your operations with one license for both OpenStack and KubeVirt solutions, providing flexibility and reducing complexity.

Data service provider uses Platform9 Managed OpenStack to save 4x cost and boost efficiency.

Read the case study

0-60 with OpenStack: Explore Platform9 OpenStack through an 8-session video series tailored for VMware adminis interested in KVM/OpenStack as an alternative hypervisor.

Watch the video

PLATFORM9

Platform9 empowers enterprises with a faster, better, and more cost-effective way to go cloud native. Its fully automated container management and orchestration solution delivers cost control, resource reduction, and speed of application deployment. Its unique always-on assurance™ technology ensures 24/7 non-stop operations through remote monitoring, automated upgrades, and proactive problem resolution. Innovative enterprises like Juniper, Aeromexico, Mavenir, Rackspace and Cloudera achieve 4x faster time-to-market, up to 90% reduction in operational costs, and 99.9% uptime. Platform9 is an inclusive, globally distributed company backed by leading investors.

Follow us on:

Headquarters: 84W Santa Clara St Suite 800, San Jose, CA 95113.
India office: 7th Floor, Smartworks M Agile Building, Pan Card Club Road, Baner Pune, 411045 Maharashtra, India.

Phone:
+1 650-898-7369

Website:
https://platform9.com

Email:
info@platform9.com