VMware Horizon

Q. What is VMware Horizon?

A. VMware Horizon® is a modern platform for secure delivery of virtual desktops and apps across the hybrid cloud, from the market leader in software-defined data center (SDDC) architecture and digital workspaces.

Horizon offers these key benefits:

- **Hybrid delivery, management and scale** – Efficiently deploy and easily scale virtual desktops and apps across private and public clouds, all managed from a single control plane.
- **Modern platform for simplicity and speed** – Rapidly provision full-featured, personalized virtual desktops and apps with Instant Clone technology. Simplify and automate day 2 management of images, apps, profiles and policies to save time and reduce costs.
- **End-to-end security from a trusted partner** – Secure delivery of virtual desktops and apps to protect your network and data center—powered with intrinsic security built into your VMware infrastructure.
- **Unique integration with VMware technology** – Leverage VMware's virtualization heritage and SDDC and digital workspace leadership for Horizon management, networking, security and user experience benefits.
- **Best digital workspace experience** – Extend the best digital workspace experience to all apps and use cases, including remote, multimedia and collaboration.

Q. What are the key features of VMware Horizon?

A. Horizon provides IT with simple and centralized management of apps and data with the power of a modern desktop and app virtualization platform. Hybrid delivery of virtual desktops and virtual apps enables organizations to support more use cases, including remote work, security and compliance, business continuity, disaster recovery, and cloud burst.

Key features include:

Flexible hybrid and multi-cloud deployment options – Deploy and manage desktops and apps on-premises or in the public cloud, such as Microsoft Azure, VMware Cloud™ on AWS, Google Cloud, and IBM, or other partner clouds. The Horizon Control Plane delivers always up-to-date services and connects entitlement and management layers across Horizon pods and clouds.

Just-in-Time delivery – Simplify management by quickly deploying full-featured, personalized digital workspaces leveraging JIT technologies, which include Instant Clones, VMware App Volumes™, and VMware Dynamic Environment Manager™. Combined, these technologies give IT the benefits of a non-persistent cost model, while providing employees with a consistent experience.

Robust image and app delivery and management – Streamline assignments across Horizon pods and clouds with simplified image and application lifecycle management. Powered by App Volumes and VMware ThinApp®, Horizon provides faster delivery with unified application and user management while reducing IT costs by up to 70 percent. OS migrations are simplified with the ability to isolate apps, preventing incompatibility issues across Windows platforms.

Smart policies with streamlined access – Simplify authentication across all desktop and app services with the True SSO feature. Support contextual, role-based security that maps policies based on the user, device or location.

Multi-OS support for deployment of virtual desktops and hosted apps – Quickly deliver Windows and *Linux* resources at scale across multiple data centers, now with support for Linux published apps. Apps can be published from a Windows server, Linux server, or Windows 10 desktop for more flexibility and compatibility.

APIs for automation – Use REST APIs to integrate and automate rich capabilities, including monitoring, entitlements and user and machine management.

Integration with VMware technology – Horizon is tightly integrated with VMware *Cloud Foundation*™, which integrates the market-leading capabilities of VMware *vSphere*®, VMware *vSAN*™ and VMware *NSX*® to deliver hyperconverged infrastructure for on-premises or cloud deployment. This seamless turnkey solution enables just-in-time desktops and apps with Instant Clones, App Volumes, and Dynamic Environment Manager. To provide the best digital workspace experience for employees, Horizon virtual desktops and apps can be securely accessed from VMware Workspace ONE® through the Workspace ONE Intelligent Hub.

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End-to-end secure virtual workspace – Establish and verify access with optional multifactor authentication to virtual desktops and apps with VMware Workspace ONE Access integration. Support for VMware NSX *Advanced Load Balancer*™ (Avi Networks) and VMware SD-WAN by *Velocloud*® further enhances Horizon security and user experience in any data center or cloud.

Blast Extreme performance – Deliver an immersive, feature-rich user experience across devices, locations, media and network connections with the Blast display protocol. Bring secure, workstation-class performance and rich 2D and 3D graphics from the cloud to remote and mobile workers. Enable more use cases in media and entertainment with integration and support for high-end graphics and multimedia using Horizon and NVIDIA, Intel and AMD.

Optimized experience with unified communication and collaboration – Achieve a better user experience and increase productivity with optimized audio and video support for Microsoft Teams, Zoom, Cisco WebEx, and other communication and collaboration tools. Session collaboration lets multiple users view and modify the same desktop in real time.

Q. What's new with Horizon 8?

A. Horizon 8 introduces flexible deployment options and hybrid and multi-cloud capabilities that enable organizations to take advantage of the cloud. Continuously updated management services in the Horizon Control Plane let organizations unify management and entitlement across Horizon pods in different data centers and clouds.

The updated Horizon platform includes:

- Cloud platform support for the native VMware stack, including:
  – Horizon on Azure VMware Solution (AVS)
  – Horizon on Google Cloud VMware Engine (GCVE)
  – Horizon on VMware Cloud™ on Dell EMC

- Instant Clone Smart Provisioning removes the requirement for a parent VM, helping reduce costs by increasing the desktop-per-host consolidation ratio
- REST APIs to enable automation and orchestration of Horizon administration functions
- An optimized VDI experience with popular collaboration tools, including Microsoft Teams
- Linux-hosted apps to leverage Linux OS and reduce costs
- Improved smart profile policies with Dynamic Environment Manager
- Digital watermarking capabilities for data auditing and privacy perseverance
- High-resolution 8K display support for a better experience with modern display technology

See the release notes for more information. We are using a new year-month convention to refer to Horizon releases. For example, this version is named Horizon 2006 for the year 2020 and the month of June as the build release date.

Deployment Options

Q. What deployment options are available for Horizon?

A. Horizon has many different deployment options that extend across public and private clouds. The deployment options include on-premises, Microsoft Azure, VMware Cloud on AWS, Google Cloud VMware Engine, Azure VMware Solution, Oracle Cloud, IBM Cloud, and many other partner clouds. VMware Cloud on Dell EMC and Dell Technologies Cloud are additional on-premises deployment options.

Q. How can customers leverage Horizon hybrid or multi-cloud capabilities?

A. The Horizon Control Plane unifies and simplifies management across pods, addressing key challenges such as image, application, monitoring and lifecycle management. A global entitlement layer connects Horizon pods, letting end users access their desktop in any connected pod or cloud. These features, coupled with real-time desktop and application delivery and consistent end-to-end security, address key hybrid use cases, such as remote work for distributed workers, disaster recovery, high availability, and cloud burst.

Q. What is VMware Horizon Cloud Service?

A. Horizon Cloud Service is a VMware-managed virtual desktop and application solution based on desktop as a service. It delivers feature-rich virtual desktops and applications using a purpose-built cloud platform that is scalable across multiple deployment options, including fully managed infrastructure from VMware and public cloud infrastructure from Microsoft Azure or IBM Cloud. The service supports a cloud-scale architecture that makes it easy to deliver virtualized Windows desktops and applications to any device anytime.

Horizon Cloud on Microsoft Azure gives organizations the ability to connect their own instance of Microsoft Azure to the intuitive Horizon Control Plane, creating a secure, comprehensive cloud-hosted solution for delivering virtualized Windows applications and desktops. The solution brings VMware virtual applications and desktops to Microsoft Azure global data center regions, while offering customers all the benefits of Horizon Cloud, including automated service updates and an intuitive management interface.

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Q. Is there a managed service option for Horizon?

A. Yes, managed service options are available.

The VMware Horizon Cloud Service delivers feature-rich virtual desktops and applications using a purpose-built cloud platform that is scalable across multiple deployment options, including public cloud infrastructure from Microsoft Azure and fully managed infrastructure from VMware (on IBM Cloud). The service supports a cloud-scale architecture that makes it easy to deliver virtualized Windows desktops and applications to any device anytime. And with a flexible subscription model, organizations can easily get up and running and scale quickly.

In addition, partners in the *VMware Cloud Provider Program* offer an array of managed services from installation to full desktop-as-a-service options with Horizon.

Q. What is Horizon Apps?

A. *Horizon Apps* is a packaging offer that securely delivers and manages published Remote Desktop Services (RDS) apps, including session-based desktops. Its tools and features simplify management and provide a great user experience. It is offered in two editions: Standard and Advanced. Horizon Apps Advanced further streamlines app management with just-in-time app delivery powered by VMware Instant Clone technology, and uses VMware App Volumes to reduce the number of required images to manage.

Q. What is the difference between Horizon and Horizon Apps?

A. Both Horizon and Horizon Apps offer reliable and secure published RDS application delivery and management that include session-based desktops. Horizon additionally provides virtual desktops, which deliver a highly reliable, high-performance, personalized desktop. Session-based desktops are sufficient when high performance, reliability and personalization are not critical.

Supporting Features

Q. What management services are available from the Horizon Control Plane?

A. The Horizon Control Plane delivers management services that address the toughest IT management challenges.

- **Image management** – Streamlined rollout of updates and assignments across on-premises pods with marker technology and centralized image repository (hybrid and multi-cloud support coming soon)
- **Application management** – Real-time application delivery with streamlined assignments and management of the entire application lifecycle, from packaging to updating and retirement

- **Monitoring** – Visibility of capacity, usage and health within and across connected pods, regardless of the deployment environments in which the individual pods reside
- **Lifecycle management** – VMware-managed Horizon infrastructure management
- **Universal broker** – Global entitlement layer that seamlessly brokers end users to their desktop in any connected pod across data centers and clouds

We are continually enhancing the services for different deployment options. Visit *techzone.vmware.com* for the latest information.

Q. What is Blast Extreme?

A. Blast Extreme is a display protocol built by VMware to deliver an immersive, feature-rich experience for end users across devices, locations, media and network connections. Blast Extreme is included with VMware Horizon.

Blast Extreme provides:

- End users access to their personalized virtual desktop or remote applications from a company laptop, home computer, thin-client device, tablet, or smartphone
- A consistent user experience across devices and locations while keeping corporate data compliant and securely stored in the data center
- Ability to meet performance requirements for visually demanding applications when used with NVIDIA Tesla GPU-based hardware acceleration in the host
- Broad client support, including Windows, Linux, macOS, Android, iOS, Chrome and web (HTML Access) clients
- Ability to use either the TCP or the UDP network transport
- Intelligence to determine and accommodate varying network conditions

For a list of Blast Extreme features, see the *VMware Blast Extreme* topic in the *VMware Horizon Architecture Planning* guide.

Q. What are just-in-time desktops and applications?

A. Just-in-time desktops and applications, also referred to as non-persistent or stateless desktops, are virtual desktops and published apps provisioned in real time. They are enabled by technologies such as Instant Clones, App Volumes, and Dynamic Environment Manager, which untangle the operating system, applications and user profile and personalization. All the component pieces are automatically assembled on demand to deliver just-in-time desktops and apps to any device. This one-to-many approach simplifies and centralizes management.

Q. What is Instant Clone technology?

A. Instant Clone technology dramatically accelerates provisioning of virtual machines (VM) in VMware vSphere. With Instant Clone technology, a booted-up parent VM can be halted and "hot-cloned" to produce child VMs rapidly. By leveraging the same disk and memory of the parent VM, the clone starts in an already booted-up state. This process bypasses the multiple power cycles and reconfiguration calls made with traditional cloning. When combining Instant Clone technology with VMware App Volumes and Dynamic Environment Manager, desktops that retain the user's customization and persona from session to session can be made available rapidly, even though the desktop is destroyed when the user logs out.

Q. Does Instant Clone technology support published applications?

A. Yes, Instant Clone technology supports RDS-published applications, leveraging the same storage and memory footprint as the original master image to create a live copy of an application-publishing host in seconds. New and updated applications can be quickly rolled out to a large number of clones with no downtime. Scaling is also simple—a new clone can spin up as needed to elastically support peak demand.

Q. What is session collaboration?

A. Session collaboration lets multiple users view and modify the same desktop, such as for peer reviews, design iterations, and training. The desktop owner can invite multiple users to collaborate in real time on their desktop with a great user experience for all users.

Q. What is cloud pod architecture?

A. Cloud pod architecture links together multiple pods to form a single, large desktop and application brokering and management environment called a pod federation. It can span multiple sites and data centers, simplifying the administration effort required to manage a large-scale Horizon deployment. The cloud pod architecture feature uses standard Horizon components to provide cross–data center administration, global and flexible user-to-desktop mapping, high-availability desktops, and disaster recovery capabilities.

Q. What is SSO?

A. Single sign-on, or SSO, permits a user to use one set of login credentials to authenticate and access different applications. As part of VMware Workspace ONE Access included in Horizon subscription offers, end users can use SSO to access web and SaaS apps through the Intelligent Hub browser or the Workspace ONE app catalog. Additionally, True SSO, a Horizon feature, streamlines the login experience to virtual desktops and applications. End users bypass Active Directory with an automatically generated short-lived certificate.

Supporting Technology

Q. Does Horizon support NVIDIA vGPU?

A. Yes. Horizon supports NVIDIA GRID vGPU with vSphere to deliver secure, immersive 3D graphics from the cloud via virtual desktops or RDS-hosted applications, which can be easily accessed across devices and locations.

Q. What is NSX, and is it included with Horizon editions?

A. NSX is VMware's software-defined networking solution. It delivers a complete L2-L7 networking and security virtualization platform, providing the ability to manage the entire network as a single entry from a single pane of glass. In addition to greatly simplifying network deployment and management, NSX provides microsegmentation, which restricts east-west network traffic and enhances security in virtual desktop and application environments.

NSX is not bundled in perpetual Horizon editions. You can purchase *NSX for Horizon* as a standalone license per user. One license type covers both concurrent and named user license types. NSX is typically included in VMware-based infrastructure-as-a-service solutions, such as VMware Cloud on AWS, Google Cloud VMware Engine, and Azure VMware Solution.

Q. Is there a preferred load balancer for Horizon?

A. *NSX Advanced Load Balancer powered by Avi Networks* provides a software solution for modern VDI design, giving enterprises better automation and operational simplicity for Horizon deployments at a lower TCO. It provides a next-generation application services fabric that delivers flexible, centrally managed load balancing and security services across data centers and clouds. NSX Advanced Load Balancer can identify and prioritize Horizon traffic and deliver analytics-driven automation. You can deploy load balancing services with one click and troubleshoot issues instantly with detailed application and end-user insights.

Q. What is vSAN, and is it included in any bundle?

A. VMware vSAN is VMware's software-defined storage solution. When combined with vSphere, you can reduce the cost and complexity of traditional storage and take the easiest path to hyperconverged infrastructure (HCI) and the hybrid cloud. HCI joins compute and storage resources on industry-standard x86 servers and uses software to abstract and pool cluster resources with unified management software. HCI transforms data centers by simplifying operations through automation, lowering TCO by leveraging industry standard servers, and scaling incrementally. HCI has been *widely adopted for VDI workloads* because of its scalability and high IOPS performance because it uses storage local to the appliance.

VMware vSAN typically is included with hyperconverged appliances, such as Dell EMC VxRail and vSAN Ready Nodes, and VMware-based infrastructure-as-a-service solutions, such as VMware Cloud on AWS, Google Cloud VMware Engine, and Azure VMware Solution. You can also purchase vSAN for Desktop as a standalone license per user. One license type covers both concurrent and named user license types.

Q. What can I use to monitor my Horizon environment?

A. Customers can use vRealize Operations for Horizon with their Horizon 7 deployments, but vRealize Operations for Horizon is not supported with Horizon 8 deployments. Alternative monitoring options for Horizon 8 include:

• VMware has partnered with ControlUp to offer Horizon customers monitoring, reporting, deep in-guest troubleshooting and root cause analysis for their Horizon deployment. Customers can purchase VMware Advanced Monitoring powered by ControlUp as an add-on to Horizon and Workspace ONE Enterprise.

• Cloud Monitoring Service for unified visibility, health monitoring, and usage across multi-cloud deployments, available with Horizon subscription offerings.

• New cloud solutions and offers from VMware can be evaluated as they become available, in order to support performance monitoring for on-premise, cloud and hybrid-cloud deployments.

Q. Does Horizon require endpoint protection?

A. Like any desktop environment, Horizon virtual desktops can also benefit from endpoint protection. Next-generation antivirus (NGAV) solutions take traditional antivirus software to an advanced level of endpoint security protection, beyond known file-based malware signatures and heuristics by using a system-centric, cloud-based approach.

Our preferred NGAV solution is *VMware Carbon Black Cloud™*, which provides support for persistent Horizon desktops and previews non-persistent clones. Carbon Black uses predictive analytics driven by machine learning and artificial intelligence, combined with threat intelligence, to:

• Detect and prevent malware and fileless non-malware attacks

• Identify malicious behavior and tactics, techniques and procedures from unknown sources

• Collect and analyze comprehensive endpoint data to determine root causes

• Respond to new and emerging threats that previously went undetected

Carbon Black audit and remediation features let admins easily access artifacts from all devices on demand, enabling quick, confident decisions that improve your security posture.

Q. What if my WAN performance is not good enough for Horizon virtual desktops and applications?

A. *VMware SD-WAN by VeloCloud* provides performance and reliability for virtualized applications and desktops by overcoming network impediments like latency, packet loss, and bandwidth limitations.

VMware SD-WAN with VMware Horizon offers the following benefits:

• Reliable, secure and efficient access to virtualized apps and desktops, all done dynamically without operator intervention

• Rich user experience delivered by prioritizing real-time Horizon VDI client traffic over lower-priority applications

• Auto-selection of an optimal, low-latency path to connect Horizon clients to VDI applications in the cloud, leveraging cloud-hosted SD-WAN gateways

• Application-aware visibility to help troubleshoot poor user experience at any remote location and analyze historical trends

• Secure segmentation of user traffic within SD-WAN to isolate VDI clients from one another

• Flexible security via a built-in firewall or using third-party security services

Packaging and Licensing

For more information, see:

• *Feature comparison for perpetual Horizon editions*

• *Feature comparison for Horizon subscription licenses*

Q. How is Horizon licensed?

A. Horizon is available in two license models.

• **Named User (NU)** – For virtual environments with staff that require dedicated access to a virtual machine (VM) throughout the day.

• **Concurrent Connection User (CCU)** – For virtual environments with a high number of users who share machines throughout the day, such as students and shift workers. A concurrent connection is defined as a powered-on VM and connected virtual desktop session.

All components in the Horizon bundles are licensed for up to the total number of Horizon NUs or CCUs that you have purchased.

For both NU and CCU models, the bundle components cannot be split among users—although a bundle has individual components, they are considered a single product. For example, if an end user is connected only to a virtual desktop, the other associated components of the bundle, such as vSphere Desktop or Workspace ONE Access, are considered attached to that user and not entitled to other users.

Q. What types of packaging and licensing options are available for Horizon?

A. Horizon is available as subscription, term or perpetual offering.

A Horizon subscription provides a single, flexible entitlement to all Horizon technology, services and deployment options: on-premises, in the cloud, or for hybrid and multi-cloud use cases. You can choose from these subscription licenses:

- **Horizon Universal** – Desktop and application delivery for on-premises or cloud deployment
- **Horizon Apps Universal** – Application delivery for on-premises or cloud deployment
- **Horizon Subscription** – Desktop and application delivery for cloud deployment
- **Horizon Apps Subscription** – Application delivery for cloud deployment

If you prefer a term license:

- **Horizon Term Enterprise Edition** – 3-month and 1-year term SKUs based on the Horizon Enterprise Edition license entitlements. Includes production support.

Horizon is available in five perpetual editions:

- **Horizon Standard Edition** – Simple, powerful VDI with a great user experience
- **Horizon Advanced Edition** – Cost-effective delivery of virtual desktops and applications through a unified workspace
- **Horizon Enterprise Edition** – Desktops and applications delivered with closed-loop management and automation
- **Horizon Apps Standard Edition** – Simple, powerful application virtualization with a great user experience
- **Horizon Apps Advanced Edition** – Powerful application virtualization with closed-loop management and automation

For customers who already have vSphere, perpetual add-on licenses are available for Horizon Standard, Horizon Advanced and Horizon Enterprise, which provide the Horizon infrastructure for use on top of their existing VMware SDDC.

Q. If I have perpetual licenses, can I upgrade them to subscription licenses?

A. Yes, you can use the *Horizon Subscription Upgrade Program* to upgrade your perpetual licenses to Horizon Universal subscriptions.

Q. Which VMware vSphere edition does VMware Horizon contain? How many licenses are included?

A. Horizon editions include VMware vSphere Desktop, which has the same features and functionality as VMware vSphere Enterprise Plus Edition. With vSphere Desktop, you can deploy as many hosts as needed to support the number of named or concurrent connection users for which you are licensed.

Q. Can I run other server workloads on the vSphere component included in Horizon editions?

A. The Horizon vSphere and VMware vCenter® components are restricted to desktop infrastructure. Components that make up the Horizon VDI include VMware View® Manager™, VMware vCenter Server®, and any desktop management, performance monitoring, and automation tools used solely for hosted desktop virtual machines for RDS hosts.

Q. Is Horizon Enterprise Edition equivalent to the View Enterprise Edition?

A. No. Horizon Enterprise Edition is different from Horizon View Enterprise Edition, and they vary greatly in their entitlements. View Enterprise Edition reached its end of availability in 2013. Customers with View Enterprise with current support and subscription continue to receive feature updates and support. Active View Enterprise customers can also upgrade to any new Horizon edition.

Purchasing

Q. How do I purchase VMware Horizon?

A. VMware Horizon is available through *VMware sales reps*, authorized *VMware resellers* and desktop competency partners, or through the *VMware Store*. For more information, visit *https://www.vmware.com/go/horizon*.

Q. What happens if I am using an earlier version of Horizon, like VMware Horizon View?

A. All customers with a valid VMware SnS contract are eligible to upgrade to the latest version of Horizon at no cost. If you do not have a current SnS contract and want to reinstate your contract, contact VMware Support or visit *https://www.vmware.com/support/questions.html*.

Q. How do I get a Horizon client for my devices, and how much does it cost?

A. Horizon clients for different devices and operating systems are included as part of the Horizon solution at no additional cost and are available in the *product download portal*. Additionally, the Horizon Client for iOS is available from the App Store, and the Horizon Client for Android is available from Google Play.

Q. Which Horizon bundle components can be purchased standalone?

A. You can purchase the following as a standalone license: ThinApp, App Volumes, Dynamic Environment Manager, vSphere for Desktop, and Horizon for Linux.

Support

Q. What kind of technical support is available for Horizon?

A. VMware requires Basic (12x5) or Production (24x7) support for all components included in the Horizon editions. Additionally, VMware Professional Services is available for Horizon consultations or to deploy Horizon in your organization. For more information, visit *https://www.vmware.com/support/horizon*.

Q. Do I need to buy a VMware support contract for the Horizon offerings?

A. To ensure that you realize the benefits of Horizon quickly, a minimum of 1 year of Basic or Production VMware SnS is required with the purchase of any perpetual Horizon edition. Multiyear discounted offerings for all VMware support levels are also available.

Subscription licenses include support and do not require a separate support contract.

Q. Do you have extended support for Horizon?

A. Yes. We offer Extended Service Branch (ESB) releases, which provide a stable Horizon platform with all the security updates but no new features. Starting with the next Horizon 8 ESB release, support will extend to 3 years (from previously 2 years). The additional year allows customers who use Horizon in conjunction with business-critical applications to have a highly stable environment across a longer timeline.

Q. Where can I get more information on desktop End of Availability (EOA) and lifecycle management?

A. For more information on EOA and support policies, visit *https://www.vmware.com/support/policies.html*.