Preparing Your Remote Work Environment for the Long Haul

How to design your environment with VMware Future Ready Workforce Solutions

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The Expanding Workplace – Today's Distributed Workforce

Enabling users to work from anywhere has been a core benefit of desktop and app virtualization from the very beginning. Historically, organizations have taken advantage of this capability at a small scale, but as the workplace has evolved, more users are working from home than ever before. The reasons for this trend toward a distributed workforce aren't hard to spot:

- Recent events have made business continuity a primary concern.

- Technology no longer requires users to be at any specific place.

- Organizations can reduce the size of offices, decreasing OpEx for power, HVAC, physical security, and more.

- Many users simply prefer working from home.

To accommodate this shift, companies have expanded their desktop and app virtualization environments to include the vast majority of their end users. In some cases, this expansion was done quite rapidly, prioritizing the deployment of desktops and apps as fast as possible over other important considerations like user experience, application performance and cost.

Of course, there are many ways to use desktop and app virtualization to enable remote work, and it's increasingly common to see multiple techniques in use at the same time. For example, on-premises environments can be used as long as enough capacity exists to accommodate your users. If your on-premises environment reaches capacity, workloads can be moved to one or more clouds. In some cases, customers have even put desktop virtualization agents on physical PCs so end users could connect remotely to the PC under their desk at the office.

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Choosing any single strategy means choosing a set of problems to deal with. From an infrastructure perspective, if you expand your on-premises environment to other regions to put workloads closer to certain users, you need to ensure that the networking and interconnectivity among brokers is configured properly to eliminate hairpinning and balance loads appropriately. Or, if you're using a cloud provider, you need to ensure that there is connectivity back to your data center so that management and performance aren't affected.

Equally important, but often deprioritized, is the user experience. One mistake many organizations make when moving to the cloud is ignoring the important relationship between applications and their data.

For example, if you place all your users' desktops and applications in the cloud, but all their user and application data reside on-premises, you've got to determine how to preserve their user experience and app performance when the data is geographically separated from the compute. Similarly, if a user's physical desktop with all the bells and whistles is replaced with a thin client and a virtual desktop, you need to ensure that their experience is as close to that of their physical desktop as possible. Finally, working from home involves an increased dependence on collaboration via platforms like Zoom and Microsoft Teams, so whatever approach you choose must be able to accommodate those apps and service without a compromised experience.
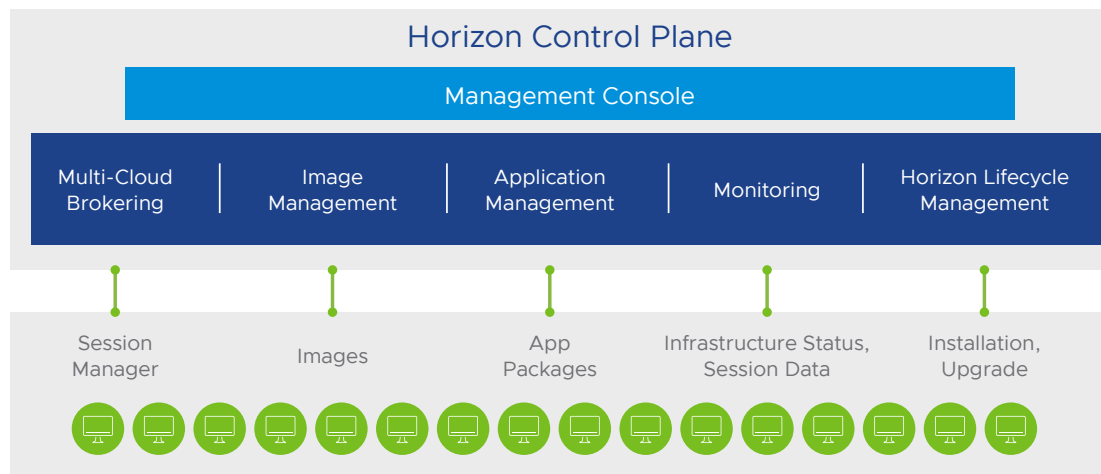
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The Path Forward with VMware Horizon
(Part of VMware Future Ready Workforce Solutions)

VMware Horizon® is an extremely powerful desktop and app virtualization platform that can help you quickly deploy a comprehensive work-from-home solution. Organizations can take advantage of cloud and on-premises resources while ensuring users have the best possible experience. Plus, Horizon can adapt to the changing workforce needs of today, providing IT a mechanism to manage on-premises and cloud-based workloads from a single pane of glass and allowing organizations to seamlessly deliver the same user interface and experience regardless of the user's location.

Horizon Control Plane

The VMware Horizon story starts with the Horizon Control Plane, which provides a common set of services that can be leveraged by on-premises and cloud-based deployments of VMware Horizon. These include Horizon on-premises, VMware Horizon Cloud on Microsoft Azure, VMware Horizon on VMware Cloud™ on AWS, VMware Horizon on Microsoft Azure VMware Solution, and more. Horizon management services include:

- App management
- User environment management
- Monitoring
- Brokering

Horizon Control Plane

Management Console

Multi-Cloud Brokering	Image Management	Application Management	Monitoring	Horizon Lifecycle Management
Session Manager	Images	App Packages	Infrastructure Status, Session Data	Installation, Upgrade

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Application management

VMware App Volumes™ can be used to package and deploy applications across Horizon environments. Apps are packaged and placed in an app catalog, which can also contain apps that have been packaged by other solutions (VMware ThinApp®, Microsoft MSIX app attach, etc.). Then, from the Horizon Control Plane, admins can assign those applications to end users. When a user logs in, those apps are delivered in the appropriate way, ensuring the apps a user needs are always there for them, regardless of where they happen to be connecting from or which platform they're connecting to.

User environment management

VMware Dynamic Environment Manager™ builds upon the industry-standard FSLogix technology from Microsoft. FSLogix solves the problems of roaming profiles, folder redirection, and Microsoft Office data roaming, while Dynamic Environment Manager enables admins to enforce user policies, map drives and printers, configure privilege elevation for specific processes, and more. This combination of approaches is essential for a scalable desktop virtualization environment that works across multiple platforms and delivers an excellent user experience.

Monitoring

VMware Cloud Monitoring Service adds desktop virtualization-specific monitoring and help desk capabilities to all Horizon environments via the Horizon cloud control plane. This service provides a capacity dashboard that shows application metrics, including which apps were accessed by which users, resource utilization per app, and historical data. Admins can also provide remote assistance, stop or end sessions, and access quick troubleshooting capabilities for support—all from a single UI for all platforms.

Brokering

Brokering in hybrid and multi-cloud environments can be a challenge when the broker lives in each environment. In those situations, complex networking and expensive GSLB must be used to enable the environments to talk to one another. The VMware Horizon Universal Broker is a brokering service that lives in the Horizon Control Plane, so it has visibility into all Horizon environments. Users connect to Universal Broker, which routes the user to the appropriate desktop or application based on admin-configured policies, regardless of the platform the desktop or app is running on. This approach avoids hairpinning, complex networking, and GSLB, while ensuring the best user experience.

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Hybrid and multi-cloud deployment options

VMware Horizon hybrid and multi-cloud capabilities open up a wide array of possible deployment scenarios that can enable your users to work in whichever way makes the most sense. Each environment leverages the same client, so you can deliver a common set of capabilities, like Blast Extreme, Microsoft Teams optimizations, smart card authentication, and more regardless of which platform you're using. With that in mind, let's take a look at the different platforms VMware Horizon can run on.

On-premises

VMware Horizon has a long history in on-premises desktop virtualization, even coining the term *virtual desktop infrastructure* (VDI). When run on-premises, VMware Horizon is managed entirely by your organization, including:

- Acquiring and deploying the physical server hardware

- Installing and configuring the Software-Defined Data Center components (VMware vSphere®, VMware NSX®, VMware vSAN™ and others)

- Installing and configuring the Horizon infrastructure

- Building, managing and deploying the desktops and applications

Deploying virtual desktops and applications from VMware Horizon on-premises gives organizations the most control over their environment, while ensuring that user and application data that resides in the data center is geographically close to the applications and desktops that are working with that data.

Hosted SDDC from VMware Cloud on AWS, Microsoft Azure VMware Solution, or Google Cloud VMware Engine

Organizations that want to retain ownership and management of the desktop virtualization infrastructure and the desktops and applications themselves, while leaving the Software-Defined Data Center (SDDC) and hardware components to partners, can take advantage of hosted SDDC offerings from VMware Cloud on AWS, the Microsoft Azure VMware Solution, or Google Cloud VMware Engine. These platforms offer managed vSphere environments that work for any vSphere workload, not just virtual desktops and applications. So, customers that want to move vSphere-based workloads to AWS, Microsoft Azure or Google Cloud can do so by simply replicating their on-premises environment in either environment (or two or three environments!).

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In this scenario, the same VMware Horizon environment that runs on-premises can run in the cloud, giving admins identical capabilities without the hassle of building and managing the underlying infrastructure. This enables quick migrations to the cloud, and gives organizations the ability to burst on-premises workloads to the cloud when the need arises. And because these environments also leverage the Horizon Universal Console, you can manage them from the same pane of glass as all the other Horizon environments.

VMware Cloud Foundation, powered by Dell EMC VxRail

Combining the benefits of on-premises virtual desktops and applications with the scalability of the cloud, VMware Cloud Foundation™ on VxRail gives customers an integrated hardware and software stack that includes automation and built-in lifecycle management to help quickly scale on-premises Horizon environments. Dell EMC VxRail, the Dell Technologies Cloud Platform, is a hyperconverged infrastructure (HCI) platform that is available as a subscription model, so organizations can easily scale their environments.

Because Dell EMC VxRail is part of VMware Cloud Foundation, organizations can take advantage of a true hybrid management by taking advantage of other VMware Cloud Foundation-certified environments like VMware Cloud on AWS. This hybridity goes beyond desktops and applications. With VMware Cloud Foundation, organizations can scale any workload on-premises or in the cloud.

Microsoft Azure

Different from the Azure VMware Solution mentioned previously, Horizon Cloud on Microsoft Azure is a native platform that leverages Azure virtual machine instances directly rather than using vSphere. Horizon Cloud on Microsoft Azure transfers ownership and management of the Horizon desktop virtualization infrastructure away from the customer as part of a desktop-as-a-service model. Because of its cloud-native architecture and a partnership with Microsoft, Horizon Cloud on Microsoft Azure can leverage your Windows Virtual Desktop benefit to provide access to Windows 10 Enterprise multi-session and Windows 7 with free Extended Security Updates until January 2023.

The combination of Horizon Cloud and Windows Virtual Desktop has proven to be extremely effective at supporting massive work-from-home projects, in terms of both scale and cost containment. For example, a customer in the insurance industry deployed 38,000 desktops in less than a week. Windows 10 Enterprise multi-session and favorable Azure instance pricing via Windows Virtual Desktop, combined with the capabilities of VMware Horizon, will enable the organization to save hundreds of thousands of dollars per month when compared to running persistent single-user VDI desktops.

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A Better Experience for Users and IT

Because VMware Horizon is available via a single license that allows you to leverage the Horizon Control Plane and all supported platforms, IT departments and users alike can benefit from consistent management capabilities and user experience across the board, while keeping costs low.

No third-party tools necessary

With VMware Horizon, organizations are entitled to industry-leading capabilities that they would otherwise have to purchase. For example, App Volumes, Dynamic Environment Manager, and Cloud Monitoring Service are all included with the Horizon Universal subscription—a savings of several dollars per user, per month. Plus, because Universal Broker removes the need for GSLB, that cost can be eliminated as well.

Hybrid cloud

It's an inconvenient fact: Companies can't move to the cloud overnight. While technical challenges relating to applications that run on-premises are an oft-cited roadblock, confidence or regulatory concerns can also stand in the way. VMware Horizon enables organizations to operate in a hybrid manner. For example, you could take advantage of your Windows Virtual Desktop entitlement for new desktops, while still leveraging the investment you've made in your on-premises environment. This arrangement allows you to potentially save money and time while deploying new desktops, or to shift workloads that don't have on-premises dependencies to the cloud.

Likewise, VMware Horizon hybrid capabilities allow you to burst users to the cloud in situations where you've exhausted your on-premises capacity. This arms you with the tools you need to maintain business continuity in the unpredictable near-term future of the workplace.

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Single management interface

Being able to deploy virtual desktop and application environments to many platforms is useful only if those environments are easy to manage, which is why the Horizon Universal Console has management capabilities for each platform. From a single pane of glass, admins can make configurations, assign desktops and applications, manage images, package and assign applications, and enforce policies in the user environment in the same motion, saving administrative time and money.

Power management

In the cloud, every second a desktop is running costs money, and at scale those costs can add up quickly. VMware Horizon has power-management capabilities that allow you to configure rules that ensure that the amount of resources running in the cloud closely matches the number of resources in use. This resource management eliminates waste and ensures an excellent user experience, while saving organizations significant costs when compared to always-on 1:1 VDI instances.

Consistent client

Because VMware Horizon uses the same client with the same capabilities across platforms, and that client is supported on a wide range of endpoints, you can be sure that you'll get the same user experience no matter where your users are logging in from. With full support for Windows, Linux and macOS clients, as well as all popular mobile platforms, users won't miss a beat.

Workspace ONE Access

Formerly VMware Identity Manager™, VMware Workspace ONE® Access™ is an industry-leading identity and access management platform that increases security and user engagement by providing a consistent application and service experience across all devices. It integrates with third-party IdPs, allowing you to leverage existing identity providers, including Azure Active Directory, Ping, and Okta. Workspace ONE Access is the backbone of the VMware Workspace ONE Intelligent Hub, which serves as the user interface to corporate applications, information and alerts.

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Taking the Next Step

VMware has the tools to advance your desktop virtualization capabilities with additional VMware Future Ready™ Workforce Solutions, including VMware SD-WAN by VeloCloud® and VMware NSX Advanced Load Balancer™ (formerly Avi Networks). These technologies further insulate your desktop virtualization environment from changing demands by providing prioritization, load balancing, and security.

VMware SD-WAN
VMware SD-WAN optimizes VDI performance by identifying, prioritizing and mapping the different usage requirements of desktops and applications to business priorities, ensuring always-on availability and the best possible user experience. SD-WAN can prioritize VDI traffic and ensure treatment of other real-time traffic, such as voice and video, during brownouts or congestion, and it supports workloads that reside on-premises, in the cloud, or in hybrid or multi-cloud scenarios. This means that IT networking teams do not have to redesign their network to accommodate remote users with unmanaged connectivity.

VMware NSX
VMware NSX is a network security virtualization platform that allows you to microsegment the VDI environment. With NSX, organizations can deliver fast, easy and extensible security that protects against zero-day threats, hacks and compromised websites. IT can quickly and easily administer networking and security policies that dynamically follow end users' virtual desktops and apps across infrastructure, devices and locations. The Avi Networks web application firewall (WAF) protects applications from vulnerabilities through positive security model, application learning, bot detection and optimized signature-based engine.

VMware NSX Advanced Load Balancer (formerly Avi Networks) is a multi-cloud, enterprise-grade solution that delivers on-demand elasticity, application availability, and business resiliency to ensure reliable application delivery. NSX Advanced Load Balancer's simplified central management and analytics helps scale application operations, simplify troubleshooting, and pinpoint application performance insights to enable turnkey Horizon VDI deployments in any data center or public cloud.

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Get Started with VMware Future Ready Workforce Solutions

With cross-platform, hybrid and multi-cloud capabilities, and management, plus the incredible value provided by the Horizon Universal License, VMware Horizon is the powerful, scalable and flexible desktop virtualization your organization needs. You're free to run workloads in the most appropriate locations for your business, thanks to partnerships with Dell, VMware Cloud Foundation, AWS, and Microsoft, and you can do it securely using VMware SD-WAN and NSX. Finally, when combined with the exceptional device management and security capabilities set of VMware Workspace ONE, there is no better end-user computing platform offering.

From endpoint management to virtual desktops and applications, Future Ready Workforce Solutions accommodate your changing workforce enablement needs—today and well into the future.

We invite you to learn more by reaching out to your local *VMware representative* or *partner*, or by taking advantage of these resources:

- *VMware Tech Zone* – Technical blogs, best practices and more.

- *Hands-on Labs* – Easily consumable guided labs.

- *VMware TestDrive* – Get your hands dirty in a live environment.

- *Horizon* and *Horizon Cloud* websites – Resources to help you learn, evaluate, plan, design, optimize and much more.

- *Pathfinder Trial Experience* – See how it works and access our free trials.

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