



# The Technical Differential:

Why Service Providers Choose VMware for  
Cloud-Hosted Desktops as a Service

TECHNICAL WHITE PAPER

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## Executive Summary

The business desktop world is changing quickly, responding to forces of bring your own device (BYOD) and mobility, platform updates, high costs, and security concerns. More and more businesses are looking to centralize management and provisioning of desktop environments and are stumped by either technical complexity issues or the upfront costs required for the transition. Service providers who want to address these needs by offering virtual desktops as a service (DaaS) are increasingly turning to VMware. VMware is the only virtual desktop technology provider whose DaaS delivery platform was built from day one for service providers and cloud delivery. We provide the essential components for a successful cloud-hosted desktop service: 1) a comprehensive blueprint that enables service providers to dramatically simplify and accelerate time-to-market; 2) a highly cost-effective and scalable multi-tenant platform built on proven, patented technology; and 3) unparalleled expertise that enables our partners to quickly onboard, successfully service and continually grow revenue from customers.

## Partnering With VMware Makes Business Sense

One of the primary reasons service providers rely on VMware is that our business is all about ensuring success for your business. VMware is a software company focused on delivering a platform purpose-built for service providers like you, who want to offer virtual desktops as a service. That's why we built a solution that is inherently cost-effective. This includes using Open Source technology so you don't have to pay licensing fees for Microsoft solutions such as SQL Server or Windows Server, and don't have to spend time and money managing third-party software. We also made sure that our platform is extremely easy for your customers to try and buy. This is key, because many companies want to test the waters with 20 to 50 desktops before deciding whether to commit to a broader virtual desktop implementation.

We believe that you shouldn't have to build out or dedicate infrastructure for these pilots, and with VMware's multi-tenant platform there is no need for that. You don't spend any time or money getting infrastructure ready for pilots or deployments, and your customers can very easily, quickly and cost-effectively self-serve trials of any size. Because of the expertise VMware has built over the years, we have an unparalleled understanding of what service providers need to compete and thrive in this market. We make sure that you reap the benefits of this knowledge.

## The VMware DaaS Blueprint: Operationalizing our Expertise; Speeding your Time-to-Market

To help you get to market fast, realize returns quickly and keep your business growing, we organized and documented our expertise into a comprehensive VMware DaaS Blueprint that details how to rapidly provide a compelling, profitable DaaS offering.

Our DaaS Blueprint contains information on everything from the optimal infrastructure configuration, components, and best practices for building and managing a scalable, high-performance DaaS solution, to +1 value-add services that you can offer customers and sales tools that help you go-to-market.

**We show you how to optimize your infrastructure** to drive down your bill of materials (BOM). For instance, through our experience we learned that using advanced features of NetApp storage can cut the amount of storage required by 85 percent and IOPS by 25 percent. We built this knowledge into the DaaS Blueprint.

**We recommend strategies and best practices for expanding beyond desktops as a service** to provide other add-on offerings to which customers will naturally gravitate. You'll learn how to incrementally migrate customers to cloud services that include storage, compute, database, directory services, messaging and unified communications, all the way through licensing, printing, helpdesk and end point support.

**We provide you with top-quality sales and marketing tools**, including packaged webinars, customer proof-of-concept capabilities, white papers and marketing campaigns, so you can quickly reach and begin communications with your target audiences.

## The VMware Technology Advantage: 5 Key Differentiators

While our DaaS Blueprint is critical for speeding time-to-market and building optimized solutions, VMware's technical differentiators are what make it possible for you to provide the most robust DaaS offerings.

### 1. Multi-tenancy

Multi-tenancy is a must for cloud delivery. No other desktop virtualization vendor has multi-tenancy. Unlike traditional virtual desktop infrastructure (VDI) solutions that require service providers to build and maintain separate, siloed infrastructures for each customer, with VMware DaaS multi-tenancy you leverage a shared platform for all customers, while still providing the dedicated virtual high-performance desktops that customers need. Many believe that you cannot leverage multi-tenancy for desktops because of Microsoft licensing. This is false. Shared compute is the only issue to be aware of. VMware provides full multi-tenancy across four levels: management of tenant desktop brokers; provisioning storage (all clients are securely on the same system); networking via a central management point for all virtual networks assigned to tenants; and compute.

Of the four multi-tenancy levels that VMware provides, compute is the one optional component – and it is critical when enabling your customers to run virtual, dedicated Windows 7 desktops. Unlike server – and Linux – based desktops where licensing allows for shared hosts, Microsoft's Windows 7 client licensing explicitly forbids sharing hosts. Therefore, without the ability to provide dedicated compute, Service Providers cannot provide hosted Windows 7 desktops. We are the only desktop virtualization vendor that enables Service Providers to benefit from shared infrastructure while also enabling dedicated compute, the one component needed to maintain compliance with Microsoft for Windows 7.

### 2. Elastic Scalability

VMware uniquely employs a grid-based architecture that enables virtually unlimited scalability. With VMware everything is deployed in a High Availability pair; as you scale within a data center you simply add more nodes to the grid. There is no single point of failure. Everything self-replicates with a theoretically unlimited number of desktops. Because desktop brokering and desktop management are separate and scale at different numerical levels, we designed our platform to allow you to scale as needed at either level. This approach is in direct contrast to traditional VDI vendors where all points lead to a central database. In addition to being a potential central point of failure, this approach is restricted in scalability since the database can only handle a fixed, limited number of connections.

In addition to scaling within a data center, VMware technology enables geographic scalability across data centers. This is important for two reasons:

**Service customers with geographically dispersed users:** Whether your customers have global footprints or bicoastal U.S. workforces, by enabling their employees to connect to data centers that are close to their desktops, you eliminate potential latency issues and provide extremely high-performing desktops.

**Business continuity:** You can ensure that customers are never affected by natural disasters by hosting a portion of their desktops in another data center. If one data center goes down, employees can access desktops via the other data center, with no interruption in their work.

While ensuring there is no single point of failure and allowing you to scale across multiple data centers, VMware's technology still provides single-pane-of-glass benefits. Service providers use one interface for provisioning/management, and end-point customers have a single pane for handling desktop consumption. You get all the simplicity without any of the risk.

### 3. Enterprise Integration

VMware technology, which provides every tenant with their own Virtual Local Area Network (VLAN), is designed to make it easy for your customers to integrate your hosted desktop solution into their own corporate environment. In contrast to traditional VDI vendors, who require you to stand up separate infrastructure silos for every customer, the VMware platform allow you to take advantage of multi-tenancy while still providing secure integration with enterprise assets.

**Easy customer adoption:** Your customers don't have to change anything related to their network or copy anything, such as security systems, into the cloud in order to take advantage of your DaaS offering. To the customer, it simply appears like you are an extension of their network. This makes it really simple for prospects to test and trial your hosted virtual desktops.

**Incremental adoption of cloud resources:** As businesses get comfortable hosting their desktops in your cloud, and begin enjoying the cost savings and flexibility benefits, they will likely want to migrate more of their assets to your cloud and consume more of your offerings as a service. Our technical focus on enterprise integration allows for this transition, making it easy for your customers to start with virtual desktops as a service and then progress to file share, document storage, profile storage and patch management, and move to collaboration servers, taking advantage of Exchange as a hosted service.

### 4. Comprehensive Security

VMware provides complete network separation between tenants at layer 2 and layer 3 of the OSI stack, unlike traditional VDI as a service vendors where the customer and the service provider hold the same security keys to the VDI software and infrastructure resources (in case either part has to access them for diagnostic or operational tasks). There is also a non-bridgeable network between the tenant and the service provider, preventing any risk of address collisions and ensuring that the service provider cannot access the tenant network and vice versa. This allows the customer to securely integrate back with their corporate environment for authentication and authorization.

We enable resource separation on a number of levels:

- Storage: every tenant is assigned its own unique storage unit
- Connection brokers/web application
- Databases, including tenant passwords for encryption
- Hypervisor, which is required for Windows 7 licensing
- Directory Services: each tenant is able to use its own AD system without any risk of improper security privileges leading to a security breach

VMware's robust security also includes secure communications, secure access and minimal node functionality. The VMware Horizon™ DaaS® Platform uses hardened Linux appliances that are extremely locked down: all communications to the appliances are restricted with very defined roles. Nodes cannot be accessed without explicit permissions.

### 5. Tiered Role Separation

VMware provides several levels of clearly defined role separation for service providers, resellers and your customers, and gives customers the ability to further define tenant roles. Unlike traditional VDI, where there is no separation and service providers can get access to their customers' desktops, with VMware DaaS technology you can assure customers that their desktops – and their data – are inaccessible by anyone other than them. Customers can choose exactly how much, or how little, access they want you to have. This affords customers the privacy they need and enables them to incrementally add services that they want you to manage, such as storage, messaging, helpdesk and patch management. It makes it easy for you to expand your offerings and revenue without compromising customer privacy and control.

Service provider role: Service providers can manage the infrastructure, monitor service levels and provide capacity to customers without having any access to the desktops.

Customers/tenant roles: VMware allows for two core tenants:

**IT Administrator:** This role can be within the customer's IT organization or at a third-party outsourcer designated by the customer. It includes gold pattern management, VM provisioning, pool management, authorization, user entitlements and workload management. Customers can even assign IT staff to different levels of access and actions, such as a Level 2 Admin who is not able to view user statistics or who can map groups to pools; or an outsourced helpdesk that only has the ability to view where users are mapped to and reboot machines for the users.

**End User:** Using a self-service model, users can define how they consume the desktop; according to the entitlements they have been given. For instance, they may be allowed to choose to access their desktop from various types of clients, such as thin clients, web portals or mobile. They can determine the type of protocol they want to use. And they can reboot their desktop without involving IT.

## The VMware Horizon DaaS Platform: Packaging our Technical Advantages

VMware's technical differentiators – including our patents for cloud-hosted desktop, provisioned virtual computing, multi-tenant data center design, and virtual computing services network, among others – come to life in the VMware Horizon DaaS Platform. They can be seen in its four major components: Resource Manager, which is used by service providers to manage the infrastructure; Access Manager and Desktop Manager, which are used by tenants to manage user connections and virtual desktops respectively; and the Service Grid Backbone, the essential ingredient for ensuring conflict-free connections and security between the Service Provider and tenant components.

### Resource Manager

This is where service providers manage both infrastructure capacity and tenant entitlement. You define the desktop options that tenants can purchase, such as Windows 7, Windows Server Workstation, Windows XP or Linux; how much memory and CPUs a particular virtual desktop has; and whether it is persistent or dynamic (and whether the customer will be allowed to choose the option they prefer). You then manage the capacity, including the ratio of virtual to physical machines and the amount of memory over-allocation.

This is also where you choose whether to share a host or dedicate compute to the virtual desktop. This unique feature is what makes it possible for you to offer Windows 7 virtual desktops while remaining in compliance with Microsoft. Only VMware supports both models: sharing hosts for Linux desktops or dedicating a host for a cloud-hosted Windows 7 desktop offering.

Based on the desktops that a tenant chooses, the VMware Horizon DaaS Platform also calculates how much resource, such as storage and compute, you need to meet the tenant's needs. You'll see whether you have enough compute assigned to the tenant and enough capacity in the service grid overall to meet tenant needs.

Using the Resource Manager, you provision the tenant: register the tenant, provide a unique password, upload a custom look and feel, and assign a unique VLAN. The VMware Horizon DaaS Platform then auto-configures an Access Manager and Desktop Manager specific to the particular tenant.

## Access Manager

This front-end to the customer enables the tenant to manage the connection broker for mapping users to desktops, and provides the portal access by which the customer's users connect to their desktops.

## Desktop Manager

Each customer uses its own Desktop Manager to provision pools of desktops and to continuously monitor and manage the desktop session state.

## Service Grid Backbone

This lies between the Service Provider (i.e., Resource Manager) and tenant (i.e., Desktop Manager and Access Manager) layers. This technology, which is unique to the VMware Horizon DaaS Platform and critical to Service Provider success, has the Resource manager living in both the Service Provider network and the Service Grid Backbone. Likewise, the Access and Desktop Managers live in both the tenant network and the Service Grid Backbone. Packets can't cross the network, but the address space used by the Service Provider and the tenant can be identical without any issues. We built this as a non-routable network so that both the Service provider and the tenant can run the same subnet IP ranges without conflict.

The Service Grid Backbone also contributes to the comprehensive security provided by the VMware Horizon DaaS Platform. Service providers and tenants cannot bridge into each other's networks but they can still communicate with each other because the tenant appliances (Access manager / Desktop Manager) and the Service Provider appliance (Resource Manager) are dual-homed on the non-routable network.

## The DaaS Service Provider Management Experience

Once a service provider has been through the VMware Horizon DaaS Platform rapid installation and deployment process, the service provider can use the VMware Horizon DaaS Platform to add and remove infrastructure resources such as add a new Data Center, and add additional management appliances, storage, and compute hosts. The service provider adds tenants by associating them with storage and compute infrastructure and declaring the network VLANs for that tenant. When creating tenants, the service provider selects which data centers that tenant will exist in, adds security certificates, and defines the desktop models and quotas available for each data center. The service provider can integrate management and monitoring using CIM (Common Information Model) to monitor for exceptional events requiring attention. To aid in troubleshooting, service providers have access to most common appliance logs from the Service Center Interface.

## The DaaS Customer Experience

VMware customers get the benefit of quick proof of concept and rapid account deployment, without the hassle of data center resource planning and the time lags involved with customer-hosted VDI deployment or on-premise preparation and installation. The VMware Horizon DaaS Platform also enables the customer to select to connect their desktops to their corporate enterprise environment via VPN – to leverage application, file and security services.

Once on-boarded, DaaS customer admins can leverage the service provider's VDI-optimized gold images or use their own to quickly create pools of desktops and map them to users or user groups (from an Active Directory Service). DaaS customers can create both persistent and non-persistent desktops, supporting a mix of use cases in their organization. DaaS customers can manage desktops in one or more datacenters – ensuring desktops are deployed as close as possible to their end users. DaaS customer end users can leverage a multitude of access devices, from existing desktops /laptops to specialized thin-client devices to mobile tablets and smartphones. End users have the full ability to control power states of their machines.

## Conclusion

Desktops as a Service has unique requirements that cannot be met by simply employing traditional desktop virtualization technology in a service provider-hosted environment. The VMware Horizon DaaS Platform was created for the sole purpose of providing DaaS through service providers. Refined during the past five years to maximize service provider success, it is distinguished by technical advances that enable a uniquely robust, secure, scalable and cost-effective platform for delivering cloud-hosted virtual desktops.

To learn more about delivering DaaS with the VMware Horizon DaaS Platform visit: <http://www.vmware.com/products/daas-vspp>



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