



Application-Delivery Options in VMware Horizon 6

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Introduction



Figure 1: Increasingly Diverse Applications to Deliver to Increasingly Diverse Devices

Consequently, IT no longer focuses on desktops alone when managing user activities. Especially when users work with mobile devices like smartphones and tablets, the applications on the devices are often even more central to the business than desktops. IT administrators increasingly consider software application delivery a top priority.

A multitude of application-delivery options have been developed in response to this growing need, as well as new terms to talk about those options. For the purposes of this paper, *software application delivery*—also called *app delivery*—refers to any method used by IT administrators to make applications available to their end users. For this discussion, app delivery includes methods such as streaming, where the application is not actually placed on the endpoint device at all.

Application delivery is important because everybody uses applications—from the CEO of an international enterprise to the pizza deliverer. Applications are everywhere. An ever-increasing variety of applications and online services keep the wheels of business turning. And when the applications do not work well, neither does the business. Unfortunately, if the performance of a key application degrades, often the end user notices before IT does. That can translate to loss of revenue, loss of users, or loss of funding.

“For companies that rely on technology, new and updated applications are the engine that drives business opportunity and competitive advantage. For these companies ‘business agility’ means getting faster and more efficient at the application delivery process.”

– Rich Bourdeau in his
“Why Accelerating Application
Release Delivery is key to
Business Agility” blog



Check out [Hands-On Labs](#) to learn about VMware Horizon™ 6.

Using This Document

Terminology

This paper addresses types of applications and the platforms from which they can be delivered. For the purposes of this document, app types refers to the kinds of applications such as VMware ThinApp® packages, hosted applications, SaaS and cloud applications, and Citrix published applications. Platform types refers to the VMware Horizon® platform from which applications can be delivered, such as View, VMware Workspace Portal™, and Citrix XenApp.

App types

- ThinApp packages
- Hosted applications
- SaaS and cloud applications
- Citrix published applications

Platform types

- View
- Workspace Portal
- View and Workspace sync
- Mirage

The application types can be placed on the various platforms. For example, if you want to use VDI with applications on virtual desktops, go to the View tab. If you want to centrally manage images for physical or virtual desktops, and place apps on application layers, go to the Mirage tab.

Navigation

After following an internal link, you can

Return to the previous location

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What Are the Challenges?

Application delivery is more vital than ever—and also as challenging. End users want speed, performance, and ease of use. But as an IT administrator, you need effective management, appropriate security, and reasonable cost. The seemingly opposite goals of IT and end users present the challenge.

- **Demand for a single pane of glass** – End users want easy access from a single pane of glass: one place where they can access all applications and services, from any device, from any location. You need to provide that without compromising cost or ease of management.
- **Demand for self-service** – Instead of sending a request to an overstretched IT department and waiting in the ticket queue for delivery, end users want to download an application themselves from consumer Web sites, and expect to use that application immediately. You need to be able to manage such flexibility while maintaining reasonable security.
- **Demand for better performance** – Although end users want top performance, optimizing app delivery is more than simply improving performance. You need the ability to distinguish among the different types of traffic on the network, facilitate the performance of business-critical applications, and exclude—or at least monitor—irrelevant applications.
- **Increasing variety of applications and devices** – End users want the ability to access their applications on an increasing variety of devices, including PCs, Macs, diskless computers, laptops, netbooks, tablets, smartphones, and more. You need to provide secure access from all of these devices.
- **Supporting both modern and legacy applications** – Despite recent trends toward more smartphone and tablet use, most businesses still maintain legacy applications that were not designed for smartphones, as well as data in those applications. You need to be able to manage both modern and legacy technologies simultaneously.

In the face of these challenges, application users and IT administrators alike are eager for viable options. VMware Horizon 6 meets these challenges.



Key Point

End users want quick, easy access to their apps from a variety of devices. IT administrators want top performance, effective security, and reasonable cost. The goals of IT and end users seem to clash.

VMware Horizon 6 Meets the Challenges



Watch a video about how [VMware Horizon 6](#) provides an inclusive delivery infrastructure that can cater to a wide variety of demands.

To meet the demand, VMware has expanded its software application-delivery options with the release of Horizon 6. VMware is known for providing virtualized applications through VMware ThinApp, and centralized application and desktop management through View. Horizon supported multiple app-delivery options in the past, including the delivery of ThinApp packages, integrated Citrix XenApp published applications, SaaS- and cloud-based applications, and natively installed Windows applications. Horizon 6 now adds a new option: application remoting based on Microsoft Remote Desktop Services (RDSH). The result is an inclusive delivery infrastructure that can cater to a wide variety of demands.

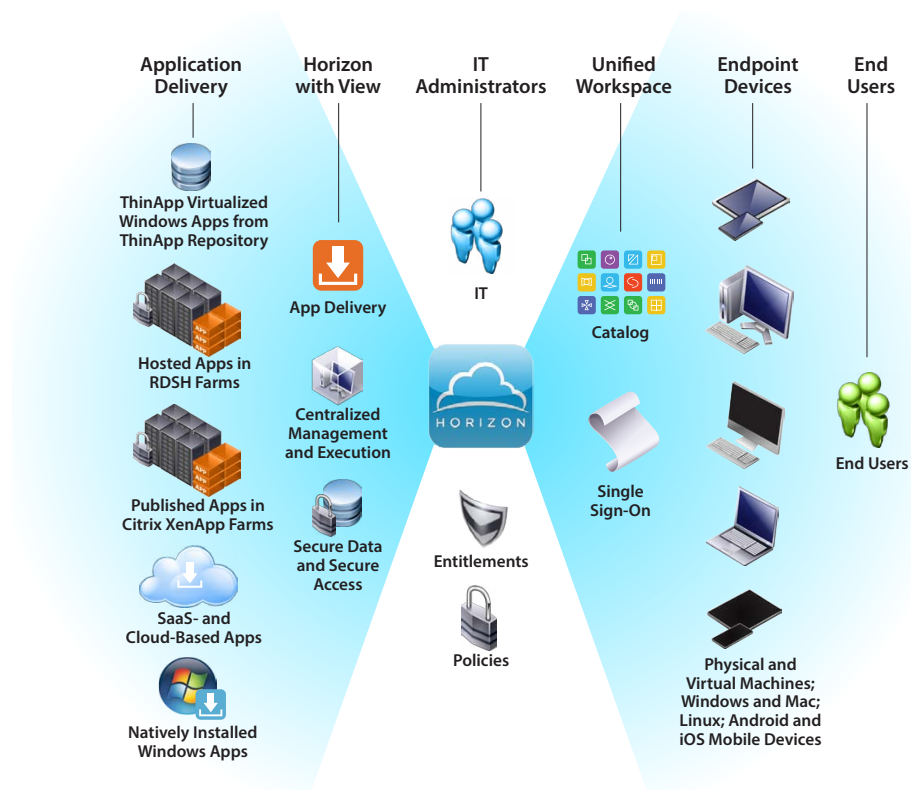


Figure 2: Horizon 6 Delivers Any App to Any Device at Any Time

RDSH, formerly known as Terminal Services, is a Microsoft technology that enables remote users to share applications installed on server hosts in the data center, as well as to share session-based desktops. RDSH hosting of applications is also sometimes referred to as *app publishing* or *app remoting*. RDSH hosting provides users with access to applications that are installed on a remote RDSH host. In Horizon 6, Remote Desktop Session hosts (RDSH hosts) deliver Windows-based applications or desktops. The RDSH host is a server containing both Microsoft RDS and View Agent™. By installing an application on an RDSH host, you can make a single instance of an application available to thousands of users, who access it remotely.

About Horizon 6 Editions

Keep the editions and platforms in mind when you purchase Horizon 6. Horizon 6 is available in three editions: VMware Horizon View Standard Edition, VMware Horizon Advanced Edition, and VMware Horizon Enterprise Edition. Horizon View Standard Edition includes View and ThinApp, and supports application delivery through ThinApp. Table 1 summarizes the application-delivery features of the three editions of Horizon 6:

		HORIZON VIEW STANDARD	HORIZON ADVANCED	HORIZON ENTERPRISE
APPLICATION DELIVERY	Application Catalog - Citrix XenApp, Hosted, SaaS, ThinApp		✓	✓
	Hosted Applications		✓	✓
	ThinApp Packages	✓	✓	✓

Table 1: Application-Delivery Features in Each Edition of Horizon 6



Watch a demo about how [VMware Horizon 6](#) helps you extend the benefits of virtualization from data center to devices.

This Discussion Is for You

If you are an IT administrator with a Horizon with View implementation or a Workspace implementation to manage, and want to know more about how to use these two products to deliver applications to your end users, this discussion is for you.

If you want to know about the benefits of integrating Workspace with View for application delivery, this discussion is for you.

If you have a Citrix XenApp implementation and would like to know more about how you can use Workspace to present your Citrix published applications, this discussion is for you.

If you have a Mirage implementation and want to know if Mirage can be used to deliver applications, this discussion is for you.



Key Point

This discussion is for you if you want to make application delivery

- Easier
- Faster
- More cost effective

Application Types

Horizon 6 supports the delivery of hosted applications (also called published or remoted applications), ThinApp packages, integrated Citrix XenApp published applications, SaaS- and cloud-based applications, and natively installed Windows applications. The result is an inclusive delivery infrastructure that can cater to a variety of needs.

Horizon 6 supports delivery from

- RDSH hosts in Horizon
- ThinApp repositories
- Citrix XenApp farms
- SaaS- and cloud-based service providers
- Natively installed Windows applications



Key Point

Horizon 6 provides an inclusive delivery infrastructure that can support delivery of a wide variety of applications.

Delivering Hosted Applications

RDS is a Microsoft Windows component that supports access to and use of remote machines and applications through a network connection. RDS transfers only the user interface to the client system, and then transmits all input from the client system back to the server to be executed there.

The RDSH-hosting option in Horizon with View provides the essentials for publishing applications. You can install one instance of an application on an RDSH host instead of on multiple individual desktops, and make it available to many end users.

- [Benefits](#)
- [Use Cases](#)



Check out this blog about how to [use Horizon 6 to create an RDSH host farm](#).

Benefits of Using RDSH Hosting

The ability to deliver hosted applications through your Horizon 6 implementation provides a number of benefits:

- Supports many-to-one access
- Reduces infrastructure cost
- Optimizes application performance
- Supports Services Provider License Agreements
- Supports both modern and legacy applications
- Provides a single-vendor alternative

RDSH hosting provides a number of advantages that, together with the other app-delivery options in Horizon 6, provides you with the tools to mitigate costs and complexities of application delivery and management.

Supports Many-to-One Access

RDSH hosting achieves a higher user density than many other delivery options because you can deploy a single instance of an application on one RDSH host instead of on multiple endpoints, and make it available to hundreds of end users. When connected to the RDSH server, your users can launch the applications, save files, and use network resources from that remote server—all appearing to the user to be running locally.

Reduces Infrastructure Cost

You can install a single instance of an application on a remote RDSH-enabled server, and provide access to that application to many users. This reduces software costs because you buy one application instead of many. It cuts down on maintenance as well, because you install, upgrade, or troubleshoot the one hosted application, and the next time users log in to the application, they automatically get the latest patched or updated version.

Optimizes Application Performance

When installed on an RDSH host, an application instance is in close proximity to the data center, which often resolves latency issues. Especially with multi-tier architectures, applications often perform better when all components are geographically close. When a user accesses a database remotely, large amounts of data must be transmitted over the WAN, which can impact system performance. However, if the device hosting the application is in close proximity to the



Watch a video about how to [publish hosted applications to VMware Workspace™ Portal](#).

database, this traffic is isolated and only the screen updates are sent across the WAN. You can also set up an application tier with more than one RDSH host in a farm. If one host has a problem, you can take it down, and the workload is spread across the remaining servers.

Supports SPLA Licensing

The RDSH option in Horizon 6 supports Services Provider License Agreements (SPLA), which provides a licensing advantage for RDS-based service providers. There are often restrictions on VDI service providers offering desktops on a pro rata subscription basis, so their customers must have their own licenses. SPLA licensing does not have these restrictions, so RDS-based service providers can offer access to hosted applications using the SPLA licensing model.

Supports both Modern and Legacy Applications

If you need to manage legacy applications alongside modern ones, RDSH hosting can be useful. You can install multiple versions of the same application on different RDSH hosts, and make them all available to users.

Provides a Single-Vendor Alternative

If you need to deliver individual applications as well as virtual desktops, the addition of the RDSH option to VMware Horizon 6 provides the ability to do both with a single solution. For businesses that have an existing virtual desktop infrastructure (VDI), the RDSH option in Horizon 6 extends delivery capabilities to include hosted applications as well as ThinApp packages. And for businesses that have an existing Citrix XenApp infrastructure and are re-evaluating the need for a major upgrade to that infrastructure, RDSH hosting through Horizon 6 opens new opportunities for migration or maintenance.



Key Point

Hosted apps provide a licensing advantage, support legacy applications alongside their modern versions, and deliver individual apps as well as virtual desktops with a single solution.

Use Cases Where RDSH Hosting Is the Best Option

RDSH hosting has been around for a long time and meets a real need. The addition of the RDSH option in Horizon 6 extends your ability to apply the best combination of technologies for each use case:

- Providing greater security
- Managing frequent upgrades and multiple versions
- Delivering applications without virtualization
- Supporting BYOD users
- Securely supporting distributed users
- Simplifying management of LOB applications such as SAP
- Reducing storage costs
- Delivering Windows applications to non-Windows devices

Delivering hosted applications through Horizon 6 provides many advantages, but not all applications are effective when shared, and most business enterprises do not use hosted applications exclusively. For this, Horizon 6 provides multiple app-delivery options so you can utilize the best combination of technologies for each user or use case:

- Delivery of ThinApp packages
- Delivery of Citrix published applications
- Delivery of SaaS- and cloud-based applications
- Delivery of natively installed Windows applications



Watch a demo about
[Horizon 6 hosted applications.](#)

Providing Greater Security

Medical and financial institutions, and call centers are examples where RDSH hosting often makes more sense than providing desktops to individual users, because remoting an application strengthens authentication and security. For example, the Epic System—a software suite for patient care, registration, and scheduling—is widely used by medical personnel. The medical personnel need to be able to see their Epic system, and upload data to the server, but do not typically need to store data on their local machines. IT can install the latest version on an RDSH host, update when necessary, and every nursing station has an instantly updated version. When an application is remoted, confidential information is stored in the data center instead of on user devices, and access is fully authenticated.

Managing Frequent Upgrades and Multiple Versions

Applications with frequent upgrades are good candidates for RDSH hosting, because you can move users from one version to another easily. You can also make multiple versions of the same application available to your users, as long as they are installed on separate RDSH hosts. For example, when you need to upgrade, you can set up an additional RDSH host and install the latest version of the application on the additional host while leaving the old application running. Using parallel environments, you can test the new application, and decommission or upgrade the old application when ready.

Delivering Applications Without Virtualization

If you need to deliver applications that require kernel-based device drivers or need operating system integration, virtualizing does not always work. RDSH hosting often provides the best option in these cases because the applications are installed directly on the RDSH host along with any required drivers, integration, or other elements. The applications and additional elements are all available to users who can access them remotely.

Supporting BYOD Users

For users on BYOD programs and for third-party contractors, you can use RDSH hosting to deliver applications to unmanaged machines. There is no need to install the application on unmanaged machines, and you can revoke access to the application quickly if that becomes necessary.

Securely Supporting Distributed Users

RDSH hosting is often the best option when you need to provide access to remoted applications for distributed users. For mobile users, you can use Workspace to make Windows applications available on non-Windows devices. For remote users, RDSH hosting enables you to deliver critical business applications that perform optimally because they are located geographically close to the data center.



Key Point

For applications that cannot be virtualized easily, hosting is a good option. Hosting provides security and management advantages, as well as support for BYOD initiatives and distributed users.

Simplifying Management of LOB Applications Such as SAP

App delivery grows more complex as the number of applications and endpoints increases within an environment. RDSH hosting enables you to simplify that by deploying a single instance of a line-of-business (LOB) application to thousands of endpoints, and you can update, patch, and troubleshoot once. LOB applications are typically large applications that are critical to their enterprises, and are integrated with other major systems such as database management systems and systems of record. One good example is SAP, one of the most widely used enterprise software packages for managing business operations and customer relations. You can create application farms that pool the resource load across the farm of RDSH hosts, ensuring an LOB application with optimal connectivity. By distributing the load efficiently, you can perform maintenance on specific hosts without having to bring down the application, which improves your ability to meet service-level agreements (SLAs).

Reducing Storage Costs

Similar to using ThinApp, when you leverage RDSH hosting, you can reduce the storage overhead for VDI. When you publish an application, you are installing a master instance of that application on an RDSH host, and providing many users with a shortcut to that instance. The storage overhead to support the single application instance streamed to many endpoints is a fraction of what it would take to store the application on each individual device.

Delivering Windows Applications to Non-Windows Devices

You can use the RDSH option to deliver Windows-based applications, including ThinApp packages, to non-Windows devices. You put your Windows applications and ThinApp packages on RDSH servers, and then publish those packages to any endpoint device that supports the Horizon Client. Today, that list includes Windows, Mac, iOS, Android, and Linux.



Key Point

By leveraging RDSH hosting, you can simplify management of line-of-business applications, reduce storage costs, support legacy applications alongside their modern versions on separate hosts, and deliver Windows applications to non-Windows devices.

Delivering ThinApp Packages

All editions of Horizon 6 support the ability to deliver virtualized applications to physical and virtual desktops from ThinApp repositories. You can create and manage ThinApp packages through View, including policy and entitlement settings. You can also integrate Workspace with View to present ThinApp packages in the Workspace User Portal, alongside applications from RDSH host farms, Citrix XenApp farms, and SaaS and Web application providers.

- [Benefits](#)
- [Use Cases](#)

ThinApp is an application virtualization option that packages Windows applications into portable, virtualized applications that can be streamed from a central file share, or deployed locally on individual desktops as executable files. You can use ThinApp to isolate applications, simplify application customization, deploy applications to different Windows operating systems, and eliminate application conflict.

To virtualize an application, ThinApp scans the computer before and after the installation process, and captures the difference. ThinApp then encapsulates the application files, libraries, framework, and registry settings into a single executable file that you can deploy, manage, and update independently from the underlying operating system. This process decouples the application from the underlying OS. The ThinApp application package looks the same across different machines, providing a consistent end-user experience.

The resulting ThinApp packages can be deployed in two ways. You can deploy a ThinApp package remotely by placing it on a file share and providing the shortcut to your end users. Or you can deploy a ThinApp package locally by placing the executable file directly on an individual desktop. This is useful if you have end users with poor network connections or no connection at all, such as on an airline flight. Because of the package structure, you can isolate the ThinApp package either partially or fully from other applications, and from the operating system. This is useful if you want to deliver several versions of an application that would otherwise conflict.

You also have the option of deploying ThinApp packages directly on physical or virtual machines without using either View or Workspace. For more information, see the [ThinApp documentation](#).



To find out more about ThinApp, see the [VMware ThinApp product page](#).

Benefits of Using ThinApp Packages

With ThinApp, you encapsulate an app in a portable package that is placed on a desktop or file share as an executable file, instead of being installed. ThinApp virtualization provides a number of benefits:

- Supports one-to-many
- Simplifies upgrade maintenance
- Reduces VDI costs
- Eliminates application conflicts
- Adds portability
- Runs agentless
- Provides consistent user experience

ThinApp virtualization provides a number of advantages that, together with the other application-delivery options in Horizon 6, provide you with the tools to mitigate costs and complexities of delivery and management.

Supports One-to-Many

Virtualization eliminates the need to install an application on every desktop. You can place a single ThinApp package on a file share, and many users can stream the application to their endpoints in parallel. This saves you the cost of supporting individual copies of the application on multiple desktops.

Simplifies Upgrade Maintenance

Upgrading and patching can be done on a single ThinApp package and then distributed to all users. You create an updated version, and the next time end users log in, they receive the new version.



To find out more, watch an introductory demo:
[What is ThinApp?](#)

Reduces VDI Costs

If you maintain a VDI infrastructure, you can reduce the cost and maintenance of that infrastructure by keeping the size of each gold image small. And because no single image fits every business group, you usually need more than one gold image. The fewer images you have, the lower the corresponding cost. You can use ThinApp to keep the images themselves small, and also to reduce the total number of images. You create a gold image with all the applications and components that HR, Finance, and other departments have in common, such as antivirus, browser, and so on. Then use ThinApp to containerize the applications that are unique to each business group, put them on a central file share, and connect them to the common VDI image via application shortcuts. Now each business group is using the same gold image and desktop pool, allowing you to manage one instead of multiple images. You can use Active Directory group membership or Workspace entitlements to filter the ThinApp packages that each business group can access. This keeps the total number of images down, while providing each business group with exclusive access to the applications unique to their departments.

Eliminates Application Conflicts

The virtualized application created with ThinApp does not write to the registry, OS, or file system, so you can place different versions of an application on the same desktop without conflict, each version encapsulated in its own package. This eliminates dynamic link library (DLL) issues, because the packages run without being installed.

Adds Portability

ThinApp packages are portable. The runtime is included as a small number of files inside every captured application, so you can put a ThinApp package on a USB device for offline use.

Runs Agentless

You do not need an agent to utilize ThinApp. This differs from other virtualization products that require an agent to be installed on the endpoint.

Provides Consistent User Experience

The virtual environment presented to the user is a merged view of the underlying physical and virtual resources, and the virtualization layer makes the application look as if it were fully installed. The ThinApp package looks the same regardless of which device is used to access it.



Key Point

By leveraging ThinApp packaging, you can reduce VDI costs, eliminate application conflicts, add portability, run without an agent, and provide a more consistent user experience.

Use Cases Where ThinApp Is the Best Option

With ThinApp, an application is encapsulated in a portable package that is placed locally as an executable, instead of being installed. Although no one application-delivery option works best in every situation, ThinApp virtualization provides a number of advantages in the following use cases:

- Reducing VDI storage costs
- Minimizing failure rates
- Ensuring high availability of desktop applications
- Supporting distributed users with poor network connectivity
- Mitigating migration issues
- BYOD or consultant support
- Greater mobility

ThinApp virtualization, RDSH hosting, and the other app-delivery options available in Horizon 6 provide you with the ability to utilize the best combination of application-delivery technologies for each use case.

ThinApp is included in all three Horizon 6 editions, and provides numerous benefits such as the ability to create portable virtual application packages that run without being installed on the desktop. However, not every application is a good candidate for virtualization, and not every business enterprise needs to deliver virtualized applications. For this, Horizon 6 offers alternative options:

- Delivery of hosted applications
- Delivery of Citrix published applications
- Delivery of SaaS- and cloud-based applications
- Delivery of natively installed Windows applications



Find out how to manage Windows-based applications using ThinApp and Workspace Portal in the Hands-On Lab 1453 Module 5: [VMware Workspace Portal and ThinApp Integration](#).

Reducing VDI Storage Costs

You can reduce your VDI storage overhead by leveraging ThinApp. When you create a ThinApp package and place it on a file share, you are creating a master instance of an application on a share, and providing many users with a shortcut to that instance. Because it is a shortcut, the storage overhead to support the application streamed to each endpoint is a fraction of what it would take to store the application on each individual device.

Minimizing Failure Rates

Typically any application upgrade or migration involves some rate of failure. But when you virtualize, those failure rates are effectively eliminated because you do not break the application to upgrade it, which can happen when the application is installed directly onto an operating system. ThinApp isolates the application, minimizing the failure rates that typically occur during migrations and regression testing.

Ensuring High Availability of Desktop Applications

The ThinApp option can avoid downtime caused by application conflicts. Sharing an application many-to-one can sometimes pose a problem if one user crashes the application, because everyone else using it gets kicked out too. For environments or applications that are prone to application conflicts or crashes, streamed ThinApp applications are often the best option. If a ThinApp package is stored on a file share, users access this one stored package, but bits are streamed in parallel to each local device for execution. Alternatively, you can place an executable file on each desktop to give users their own copy of the application. In either scenario, upgrading and patching can be done on a base ThinApp package and then delivered to end users so that the next time they log in, they receive the new version.

Supporting Distributed Users with Poor Network Connectivity

ThinApp provides a deployment alternative for users with a poor connection or no connection at all to the network, such as when traveling, working remotely, or working offline by choice. For these users, you can place ThinApp packages on each desktop, or on a USB device for offline access. The user can launch the local packages and work offline. If application updates occur while offline, the updated versions are accessible after reconnection.



Key Point

By leveraging ThinApp packaging, you can reduce VDI costs, minimize failure rates, ensure availability, and even support users who are struggling with poor connectivity.

Mitigating Migration Issues

Maintaining legacy software can present a problem that you can often mitigate with either virtualization or remoting. For example, some businesses depend on legacy applications that operate only in a specific browser version. They cannot replace the application because of its importance, but it depends on a legacy version of the browser. One solution is to virtualize the application. The resulting ThinApp package does not write to the registry, OS, or file system, so you can place different versions of the same application on the same desktop without conflict, each version encapsulated in its own virtual OS. This eliminates DLL issues, because the packages run without being installed. Because this process decouples the application from the OS, the resulting ThinApp package may also run on an upgraded OS. By maintaining two versions at the same time, you can often avoid recoding, regression testing, and support costs.

BYOD or Consultant Support

When you have consultants or contractors to manage, or employees in a BYOD program, you often need to support applications on unmanaged devices. You may not want to install a management agent and application natively on such a device, especially if the device is not on your domain. You can use Workspace to manage ThinApp packages, which do not pollute the device because the applications are containerized, and deliver applications through a firewall using HTTPS as the delivery mechanism. ThinApp together with Workspace can deliver Windows-based ThinApp packages using HTTPS to non-domain member clients. This includes support for app delivery to PCs outside the firewall. This does require Workspace for Windows to be installed on the end-user device.

Greater Mobility

ThinApp packages can be placed on a local file system or a USB device to execute locally. This can be more advantageous than app remoting if, for example, the application requires access to local devices such as USB scanners, or is used to create documents to store on the hard disk of the local client. You can deploy, maintain, and update ThinApp packages on USB sticks for greater portability, as well as for offline use.



Key Point

You can use ThinApp to mitigate migration issues, provide support to BYOD initiatives, and increase the mobility of your end users.

Presenting Citrix XenApp Published Applications

The Horizon Advanced and Horizon Enterprise editions support integration of Citrix XenApp farms to deliver XenApp published applications through Workspace. If you have both Horizon 6 and Citrix XenApp infrastructures, you can use them together, and reap the benefits of Workspace without losing your investment and expertise in Citrix XenApp.

Citrix published applications are created and managed through XenApp, including policy and entitlement setting. Integration of Workspace with Citrix XenApp means that Workspace aggregates XenApp published applications so that they are presented to your users in the Workspace User Portal, alongside applications from ThinApp repositories, RDSH host farms, and SaaS and Web application providers. You can also use View to display XenApp published applications through remote desktops, but View provides no formal integration.



Key Point

Enjoy the ease-of-use of Workspace without losing your investment and expertise in Citrix XenApp.

Benefits of Presenting Citrix Published Applications Through Workspace

If you already have XenApp or one of its former versions such as MetaFrame or WinFrame, you may have experienced performance or compatibility issues, or frustration with the recent upgrade to a different database structure and its resulting deprecation of some of the familiar features. Delivering Citrix XenApp published applications through Workspace enables you to utilize a legacy XenApp infrastructure. This strategy allows you to maintain a legacy investment, simultaneously broaden application-delivery options, and consolidate multiple investments to drive down costs. Or you may wish to use this integration as a preliminary step toward migrating to Horizon 6 hosted applications. Following are details on these use cases:

- [Maintaining a legacy Citrix infrastructure](#)
- [Consolidating dual investments and avoiding a costly migration](#)
- [Migrating to Horizon 6](#)

The option to deliver Citrix XenApp published applications, along with the other app-delivery options available in Horizon 6, provides you with the ability to utilize the best combination of technologies for each user or use case.

Delivering Citrix XenApp published applications into Horizon 6 enables you to continue to use a legacy XenApp investment with the additional options that Horizon 6 supports. However, application remoting through XenApp integration does not address every use case. For this, Horizon 6 offers a variety of alternative options:

- [Delivery of hosted applications](#)
- [Delivery of ThinApp packages](#)
- [Delivery of SaaS- and cloud-based applications](#)
- [Delivery of natively installed Windows applications](#)

Maintaining a Legacy Citrix Infrastructure

If your business invested in a Citrix XenApp infrastructure, and you want to maintain that investment, you can take advantage of the Workspace-XenApp integration. You can deliver Citrix XenApp published applications through Workspace—either temporarily while you transition to Horizon 6, or on an ongoing basis—while benefiting from the functionality of the Horizon 6 family of products. Instead of facing major migration and installation time, you can leverage your investment in XenApp and take advantage of the Horizon 6 features without disrupting your user workflow.



Watch this short video about [how to configure Workspace to provide access to XenApp published applications](#).

Avoiding a Costly Migration

If your business has invested in both Horizon 6 and Citrix XenApp infrastructures, and you want to consolidate, you can take advantage of the Workspace-XenApp integration. For enterprises that also use other VMware virtualization products such as VMware vRealize™ Operations for Horizon, VMware vSphere®, or View, Workspace provides an opportunity to consolidate all investments together into the same product family. You can manage all applications from a central location, and users can access XenApp published applications from the Workspace User Portal. The learning curve is low and the returns high, and you may avoid a costly migration from one version of XenApp to the next.

Migrating to Horizon 6

For enterprises faced with a major upgrade to a Citrix XenApp infrastructure, now is a good time to re-evaluate. You may decide to instead migrate from Citrix XenApp to Horizon 6. You can maintain your legacy XenApp system temporarily without going through the Citrix upgrade, and also benefit from the additional application-delivery options available in Horizon 6. You can deliver XenApp published applications to the Workspace User Portal, or to virtual desktops via View. During a migration to Horizon 6, you can temporarily deliver XenApp published applications with ease.



Key Point

By leveraging Horizon 6 and Citrix XenApp, you can consolidate your investments and avoid a costly migration to the next version of XenApp. If you do decide to migrate, you can continue to deliver Citrix published applications through Horizon 6 until the migration is complete.

Delivering SaaS- and Cloud-Based Applications

In Horizon Advanced and Horizon Enterprise editions, Workspace comes with built-in SaaS- and cloud-based applications that users can access via single sign-on. This includes subscribed services known as Software as a Service (SaaS) and unsubscribed applications that are hosted in the cloud, such as Google Docs, Dropbox, Cisco WebEx, Salesforce, and Axiom.

- [Benefits](#)
- [Use Cases](#)

A growing trend is to subscribe to such applications, services, and data from independent software vendors (ISVs) or application service providers (ASPs), instead of installing applications on premises. In fact, SaaS is also called on-demand software because users typically launch the software only when they need it, and the company pays only for what is used, making licensing customizable per user.

You can deliver SaaS- and cloud-based applications to your users in the Workspace User Portal, where they can be made available via SSO. Your users select these applications from the unified workspace, where they appear alongside applications from other sources, such as RDSH farms, ThinApp repositories, or Citrix XenApp farms.

Workspace gives you the flexibility to integrate your own SAML, non-SAML, and WS-Federation applications. SAML is an XML-based standard used by many Internet service providers to provide SSO functionality when authenticating users. Web Services Federation Language (WS-Federation) is also used by software service providers along with other protocols to provide a rich and secure Web-services environment.



Find out more about using Workspace to deliver SaaS in the [VMware Horizon 6 FAQs](#).

Benefits of SaaS- and Cloud-Based Applications

Using Workspace, you can deliver SaaS- and cloud-based Web applications alongside other delivery options. This provides a number of benefits:

- [Cost savings](#)
- [Time savings](#)
- [Mitigating risk of data loss on mobile devices](#)
- [Allowing increased use of SaaS applications](#)
- [Delivering applications via self-selection](#)

Delivering SaaS- and cloud-based applications provides a number of advantages that, together with the other app-delivery options in Horizon 6, provide you with the tools to mitigate costs and complexities of application delivery and management.

Cost Savings

Businesses of all sizes can benefit from the lower overhead costs of subscriptions to browser- or Web-based applications, and Software as a Service from ISVs or ASPs, because users access the applications on demand, and you pay only for what your organization uses.

Time Savings

The software vendor manages upgrades and maintenance, which frees your IT teams to focus on other important tasks.

Mitigating Risk of Data Loss on Mobile Devices

When users conduct business using mobile devices, they often store critical corporate data without much IT oversight. One way to mitigate this risk is to use cloud applications, where the data is stored in the cloud instead of on the mobile device.

Allowing Increased Use of SaaS Applications

For many end users, the majority of the applications they need to do their jobs are SaaS-based. Although many companies still maintain legacy applications, users actually access these applications only a few times a week, such as when submitting timesheets or expenses. Workspace consolidates all of that locally, and provides a single-sign-on capability to access all applications.



For more information, see [12 Benefits of the SaaS Model](#).

Delivering Applications via Self-Selection

Instead of sending a request to an overstretched IT department for an application and waiting in the ticket queue to receive the application, end users today expect to download an application themselves, and want to use it immediately. As the demands for self-service and compatibility are met more and more by cloud and SaaS applications, you also have a growing volume of applications to manage. With Workspace, you are able to provide and securely manage self-service applications without overstressing your own resources.



Key Point

Leveraging cloud applications gives your end users the ability to self-select an application and get to work immediately instead of waiting in the ticket queue.

Use Cases Where Cloud Delivery Is the Best Option

SaaS-based and cloud-based Web applications are the best option for the following use cases:

- [Integrating corporate applications or intranets](#)
- [Delivering non-SAML applications](#)
- [Delivering unintegrated applications](#)
- [Delivering applications on demand](#)

The option to deliver SaaS- and cloud-based applications, along with the other app-delivery options available in Horizon 6, provides you with the ability to utilize the best combination of technologies for each user or use case.

The diversity and volume of SaaS- and cloud-based applications are growing rapidly. App-delivery options are also evolving and providing more diverse alternatives. Flexibility is important in meeting future challenges because no one application-delivery option fits every situation. Not all applications can be virtualized, nor can every application be hosted. To provide the flexibility to deliver any application to any device, Horizon 6 supports a combination of other options:

- [Delivery of hosted applications](#)
- [Delivery of ThinApp packages](#)
- [Delivery of Citrix published applications](#)
- [Delivery of natively installed Windows applications](#)

Integrating Corporate Applications or Intranets

Developing your own corporate cloud-based applications or intranets can provide you with a great deal of control, but often at a high cost. It can often cost less to use existing cloud services instead of developing your own. This can simplify app delivery and maintenance as well. In addition, you can utilize the existing SaaS- and cloud-based applications that are incorporated into Workspace by default, such as Office 365, SharePoint, Outlook 365, and more. This integration simplifies end-user experience by providing single sign-on from Workspace. The Outlook native client Active Profile authentication is also supported through a Workspace-generated password in the Workspace User Portal.



Take a workshop in Hands-On Lab 1453 Module 4 to learn about [VMware Workspace Portal and Web/SaaS Applications](#).

Delivering Non-SAML Applications

You can integrate non-SAML applications into Workspace, as well as SAML and WS-Federation applications. SAML is an XML standard that provides secure Web domains to exchange user authentication and authorization information. Many Internet service providers use SAML to contact other online identity providers when authenticating users. WS-Federation Language is used along with other protocols to provide a rich and secure Web services environment. Workspace gives you the flexibility to integrate all three: SAML, non-SAML, and WS-Federation applications.

Delivering Unintegrated Applications

You can easily create Web application links that do not require user authentication, and integrate them into the Workspace catalog. You can also add links that resolve to static Web pages using the Workspace Admin Console. The result is a single application portal for end users that is easy to use and can display every application they need to get the job done.

Delivering Applications on Demand

Subscribing to applications can lower costs for businesses because users can access the applications on demand, and the business pays only for what is used. Businesses receive upgrades and maintenance from the outsourced service as well. The use of Salesforce, Dropbox, Axiom, WebEx, Office 365, and other similar Software-as-a-Service applications is increasing. Although most businesses still use some legacy applications, many users increasingly rely on cloud-based applications to do their work. Workspace consolidates such applications installed locally, on a single user console, and provides a single-sign-on capability as well.



Key Point

You can use Workspace to deliver applications on demand, including subscribed and unsubscribed applications based on SAML, non-SAML, and WS-Federation.

Delivering Natively Installed Windows Applications

Since inception, Horizon with View has provided access to natively installed Windows applications. These applications can be displayed in View desktops. See the [VMware Horizon with View Documentation](#) for details. Natively installed Windows applications are used widely, but most businesses do not use them exclusively. To provide the flexibility to deliver any application to any device, Horizon 6 supports a combination of options:

- [Delivery of hosted applications](#)
- [Delivery of ThinApp packages](#)
- [Delivery of Citrix published applications](#)
- [Delivery of SaaS- and cloud-based applications](#)



Read a blog about [updates to VMware Horizon that simplify application-delivery capabilities](#).

Horizon 6 Platforms

Horizon Advanced and Horizon Enterprise editions include four platforms that can be used for app delivery: [View](#), [VMware Workspace™ Portal](#), [Integration of Workspace with View](#), and [VMware Mirage™](#).

Although the View, Workspace, and Mirage platforms have many capabilities, only their app-delivery functionality is discussed in this paper. Each platform supports a different set of capabilities that extend the delivery infrastructure. To find out more:

- [View](#)
- [Workspace](#)
- [Integration of View with Workspace](#)
- [Mirage](#)



Read a blog about the [newest release of VMware Horizon 6](#) featuring advanced capabilities for application delivery and throughout the application life cycle.

Using View for Application Delivery

All three editions of Horizon 6 include View, one of the main platforms in Horizon 6 for delivering applications to users. At its simplest, View displays Windows applications natively installed on a virtual desktop. You can also set policies in View to control who has access to the applications.



Key Point

You can use View to remotely display

- Hosted applications
- ThinApp packages
- Applications natively installed in base images
- Citrix published applications under certain circumstances

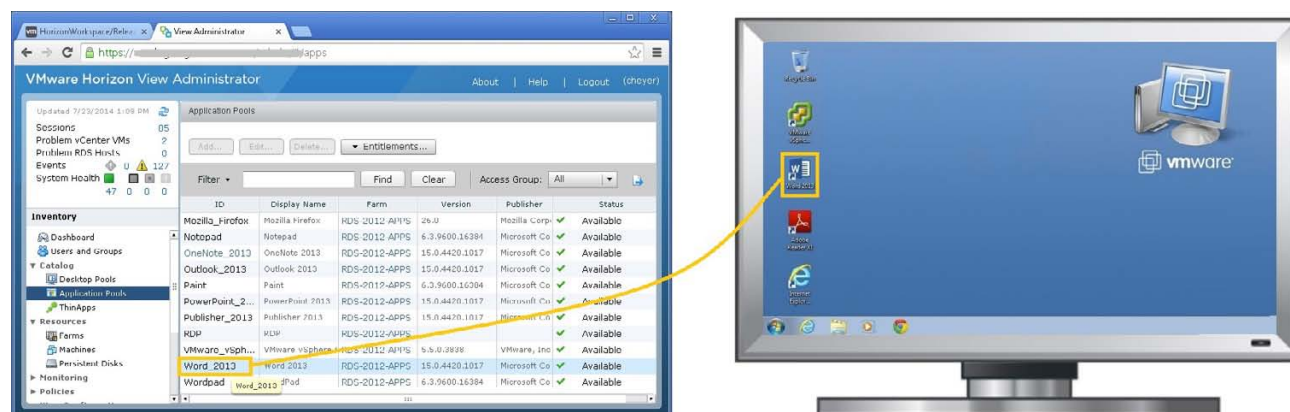


Figure 3: View Centralized Management of Applications and the Display on a View Desktop

- In Horizon View Standard Edition, you can use View to remotely display virtual desktops on endpoint devices, which includes both session-based desktops and View virtual desktops. (Session-based desktops are shared desktops on an RDSH host. View desktops are created in VMware vSphere, are not shared, and are not on an RDSH host.) You can also display ThinApp packages (virtualized Windows applications) on these desktops, as well as Windows applications natively installed in base images. Although multi-user session-based desktops are supported in Horizon View Standard Edition, hosted applications are not.
- In the Horizon Advanced and Horizon Enterprise editions, View can display hosted applications, in addition to the above.

You can use VMware Horizon Client to access View desktops on laptops, Windows or Linux PCs, thin client devices, Macs, tablets, or smartphones. Users log in and can be authorized using their Windows Active Directory (AD) credentials, or with a UPN, smart card PIN, RSA SecurID token, or other two-factor authentication token. Users then select from a list of remote desktops and applications that they are authorized to use. In addition, users can use HTML Access to open View desktops inside a browser without requiring Horizon Client. For more information, see the [View Administration guide](#).

View also includes a feature called Unity Touch, which provides a gesture-based option for accessing Windows applications on iPads or other tablets. Because of small screen size, using mobile devices for navigating applications and files can be challenging. Unity Touch makes that easier. Unity Touch allows users to browse, search for, and open virtualized and hosted Windows applications, and switch between multiple open applications, without using the Windows Start menu or task bar. The file manager, task bar, and Start menus are also responsive to touch navigation. For more information, see [Introducing Unity Touch](#).

View does not deliver SaaS- or cloud-based Web applications in a virtual desktop at this time.

For more information about View, see the [Horizon with View Documentation](#).



Find out how research shows VMware Horizon 6 to be the [Leading Virtual Desktop Platform](#).

Using View to Deliver Hosted Applications

You can use View to deliver RDSH-hosted applications. In a View-only deployment without Workspace, the end user logs in to View. View authenticates the user, and sends the policy and entitlement information to the RDSH farm. Unlike RDSH host farms in Microsoft, which are based on Microsoft clustering technology, an RDSH host farm in Horizon 6 is simply a group of RDSH hosts that are managed in View. The RDSH host then launches the application.

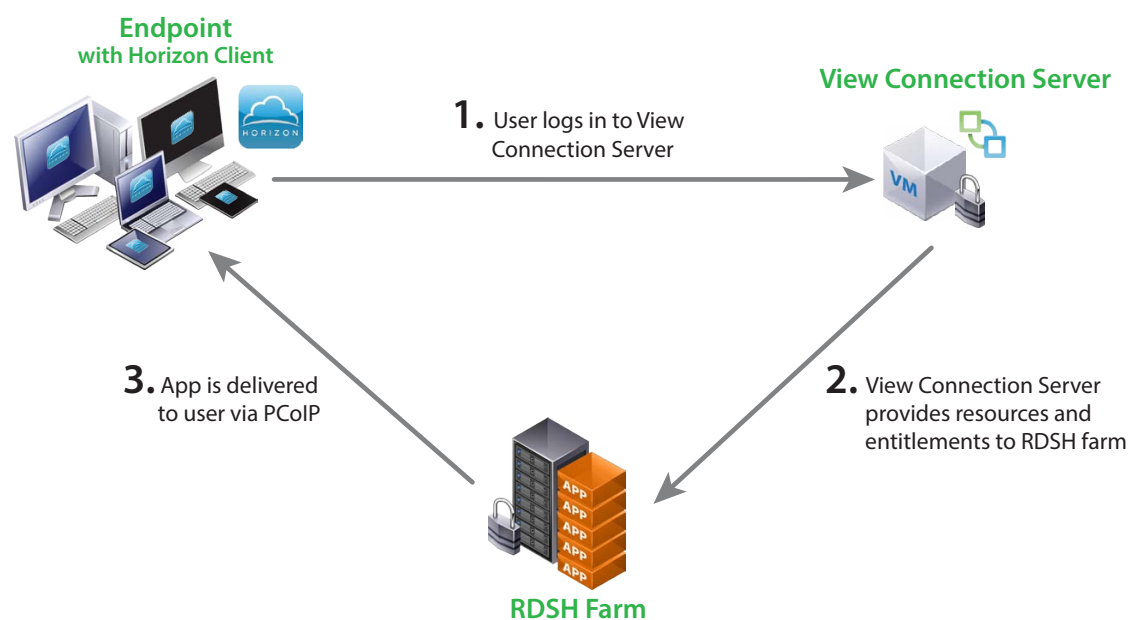


Figure 4: Hosted Application Delivery Through View

You can use View to apply policies and entitlements, as well as to display hosted applications. View presents the applications using the PCoIP protocol over the network.

See [View Administration](#) for more information about View.

Using View to Deliver ThinApp Packages

Entitlement capabilities for ThinApp packages are broader using View integrated with Workspace, but it is also possible to entitle users to ThinApp packages using View alone. View delivers virtual desktops as a managed service, including ThinApp packages on the desktop.

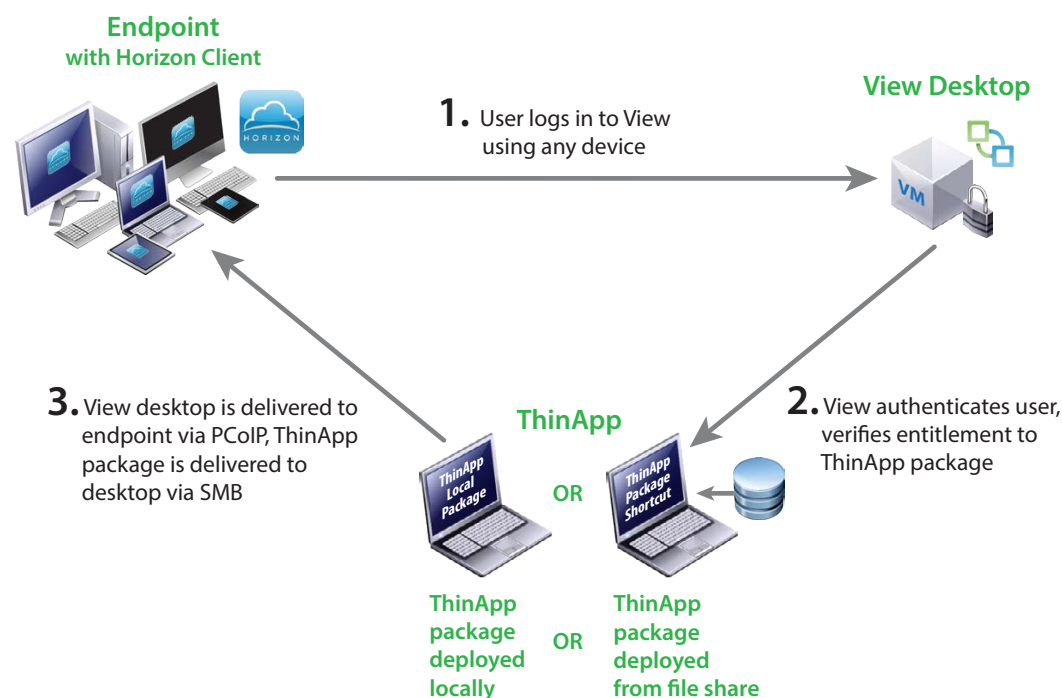


Figure 5: Delivering ThinApp Packages Through View Alone

Using View, you can assign ThinApp packages from a ThinApp repository to individual desktops or pools of desktops. This enables you to deploy ThinApp packages to many desktops at once. Because View does not enable you to entitle specific users, every user who launches a desktop in the desktop pool has access to all ThinApp packages assigned to that pool. Because the user accesses a Windows desktop instead of the ThinApp package directly, the user can access the virtualized Windows application from a variety of physical endpoint devices, including Windows, Mac, Linux, Android, and iOS. For more information, see *Managing ThinApp Applications in View Administrator* in [View Administration](#).

Using View to Present Citrix Published Applications

You can use View to display Citrix XenApp published applications within a virtual desktop, although this option in View contains no special integration with XenApp. To use View to deliver XenApp published applications to the desktop, you install the Citrix Receiver in a View desktop. All policy and entitlement settings are handled in XenApp, not in View. The delivery of XenApp published applications through View results in additional steps for users to access the application, and therefore is not ideal on an ongoing basis. This arrangement is sometimes used when migrating from Citrix to Horizon 6. For more details, see [Avoiding a costly migration](#).

Note: This option is not an integration or aggregation through Workspace. Integration with Citrix XenApp is supported only through Workspace. Even if you integrate Workspace with both View and XenApp, the XenApp published applications are not automatically displayed in View desktops.

For more information, see [Integrating VMware View and VMware ThinApp with Citrix XenApp](#).



Key Point

Horizon 6 supports integration with Citrix XenApp through Workspace only. Even if you integrate Workspace with both View and XenApp, the XenApp published applications are not displayed in View desktops automatically.

Delivering Natively Installed Windows Applications

Since inception, View has provided access to natively installed Windows applications. These applications can be displayed in View desktops. See the [VMware Horizon with View Documentation](#) for details. Natively installed Windows applications are used widely, but most businesses do not use them exclusively. To provide the flexibility to deliver any application to any device, Horizon 6 supports a combination of options:

- [Delivery of hosted applications](#)
- [Delivery of ThinApp packages](#)
- [Delivery of Citrix published applications](#)
- [Delivery of SaaS- and cloud-based applications](#)

Using Workspace for Application Delivery

VMware Workspace Portal, one of the platforms in Horizon 6 for delivering applications to users, is included in the Horizon Advanced and Horizon Enterprise editions, but not in Horizon View Standard Edition. Workspace provides a central, unified portal where applications of all types can be displayed to your end users through an HTML browser.



Key Points

Workspace aggregates and displays

- Hosted applications when Workspace is integrated with View
- ThinApp packages
- Citrix XenApp published applications
- SaaS- and cloud-based applications

Workspace works on

- View desktops and session-based desktops
- Physical and virtual machines
- Both Windows and non-Windows devices (Mac, Linux, iOS, and Android)

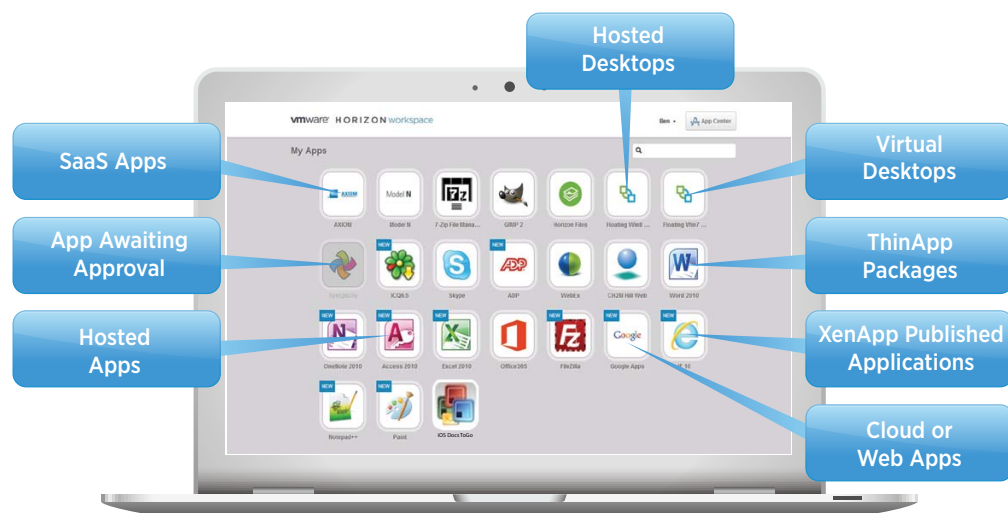


Figure 6: Workspace Provides One Portal for Applications and Desktops from Any Device

Workspace provides a single pane of glass that gives users convenient access to all of their applications and desktops, regardless of type. You can make applications available by default in the VMware Workspace User Portal, the end-user interface of Workspace. In the Workspace User Portal, users can see all of the applications that you entitled them to access and arrange the applications as they like, as shown in [Figure 6](#).

Behind the scenes, you control what your users can access through the Workspace application catalog, the repository of all the resources that you can entitle to your users. The availability of particular resource types in your catalog is controlled by which modules are enabled in Workspace. For example, if you enable the Web Applications module, you can entitle your end users to SaaS- and Web-based applications; enabling the Citrix Published Applications module gives you the ability to make XenApp applications available, too. You can entitle users and groups to specific applications and desktops through Workspace, and allow users to self-select from the menu of resources that you have pre-approved.



Read a blog about provisioning new applications with [Workspace Portal](#).



Watch a demo about using [Workspace Portal](#) as a unified workspace for more effective application delivery.



Using Workspace to Deliver Hosted Applications

For hosted applications to be available in Workspace, Workspace must be integrated with View. To find out more about this option, see [Integrating Workspace with View to Deliver Hosted Applications](#).

Using Workspace to Deliver ThinApp Packages

Entitlement capabilities for ThinApp packages are broader using View integrated with Workspace, but it is also possible to entitle users to ThinApp packages using Workspace alone. Workspace provides the flexibility of assigning a ThinApp package to a specific person or group of people. Because you entitle users rather than desktops, a user can run the ThinApp package from any physical or virtual Windows machine. This endpoint must be Windows-based if you use Workspace without View, because ThinApp packages are virtualized Windows applications, and must be used on Windows systems.



Watch a demo about how the [unified workspace in Horizon 6](#) allows end users to seamlessly launch and operate all their apps from one place.

Windows Endpoint with Workspace for Windows



1. User logs in to Workspace from Windows device, may use SSO

VMware Workspace



2. Workspace authenticates user, brokers access to ThinApp package

3. ThinApp package is delivered to desktop via SMB or HTTPS

ThinApp



OR



ThinApp
package
deployed
locally

OR

ThinApp
package
deployed
from file share

Figure 7: Delivering ThinApp Packages Through Workspace Only

To access a ThinApp package in a Workspace-only environment, the end user must log in to Workspace from a Windows device. Workspace authenticates the user, and Workspace brokers access to the ThinApp package on the file share. The ThinApp package can be deployed from a network file share, or deployed locally as an executable file, and launched directly on the user's endpoint device. If the endpoint is on a LAN inside a firewall, the ThinApp package is delivered using the SMB protocol. If the endpoint is on the Internet outside of any firewall, the ThinApp package is delivered using HTTPS through Workspace.

After the user has launched the ThinApp package, the connection between Workspace and the user ends. Nothing is tunneled through Workspace, so if Workspace were to fail, the existing connection between the end user and the application would remain connected. The user would not be able to reconnect or re-authenticate, but any existing sessions would stay connected until timed out.

See [VMware ThinApp Documentation](#) for more information about ThinApp.



Key Points

- You can use Workspace to aggregate your ThinApp packages with other apps in your infrastructure.
- Workspace displays your ThinApp packages alongside other apps, such as hosted applications, Citrix XenApp published applications, SaaS- and cloud-based applications, session-based desktops and View desktops, and even static Web links.

Using Workspace to Present Citrix Published Applications

Citrix XenApp is an RDSH-based virtualization product that presents applications to end users. Workspace can aggregate Citrix XenApp published applications, making it possible for an enterprise with an existing Citrix XenApp farm to deliver XenApp published applications into the Workspace catalog. You can leverage legacy hardware and software from an existing Citrix infrastructure, and still gain the productivity advantages of Workspace. This also enables your end users to launch XenApp published applications from their Workspace User Portal, using their single sign-on credentials.

To use Workspace to provide access to XenApp published applications, you enable the Workspace Citrix Published Applications module, and provide the location of your XenApp published applications. No scripting is required, and no changes are needed on your XenApp system. You simply install the Workspace Integration Broker for communication between Workspace and your XenApp farms. For more information, see [Installing and Configuring VMware Workspace Portal](#).

XenApp policy and entitlement permissions are managed through XenApp, not in Workspace. There is no VMware code on the XenApp server or the Citrix Receiver. Workspace has a read-only connection; it reads the policy information in XenApp and reflects that information in the Workspace User Portal. Moreover, there is no dependency on load balancers, and the Workspace-XenApp integration can be deployed without accessing the XenApp administrative environment. See the [VMware Workspace Portal Administrator's Guide](#) for more information.



Key Point

Workspace aggregates Citrix XenApp published applications, so you can utilize an existing Citrix XenApp farm to deliver XenApp published applications through the Workspace unified workspace along with other types of applications.

Delivery Workflow

In the XenApp and Workspace integration, end users log in to Workspace using single sign-on if that is set up. Workspace authenticates the users, and opens a read-only connection with the Workspace Integration Broker, which uses built-in functionality to access the policy and entitlement information from the XenApp farm.



Key Points

- You maintain investment and expertise in Citrix XenApp infrastructure.
- Your end users use Workspace as a single point of entry for all their apps, including Citrix published applications.

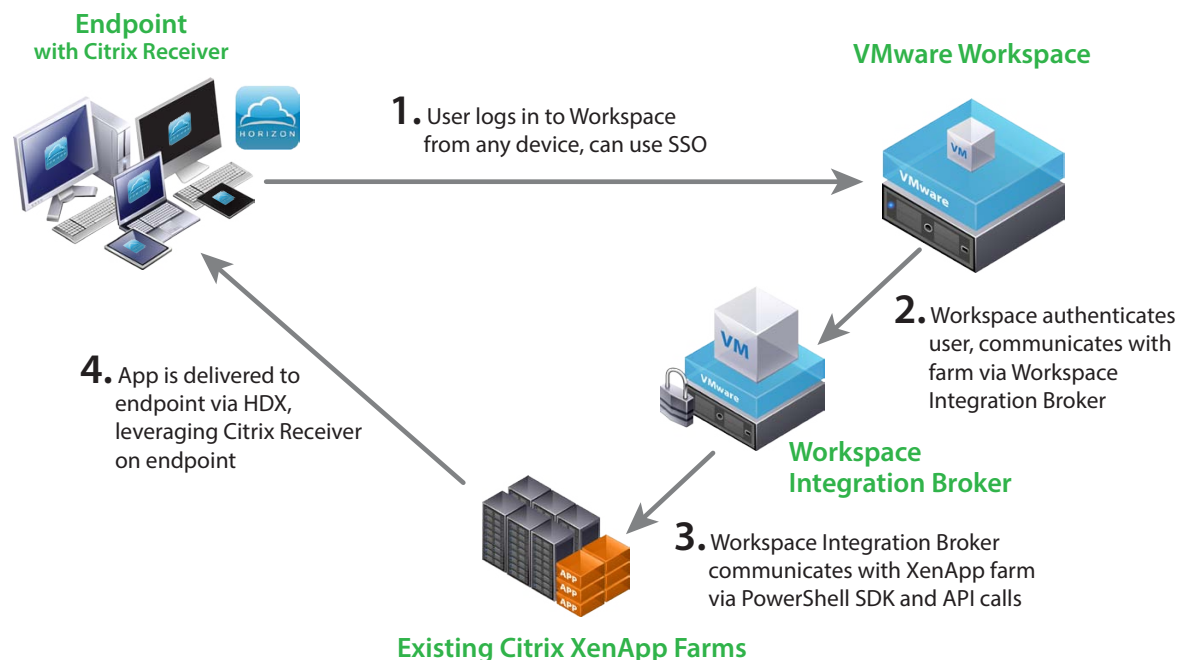


Figure 8: Citrix XenApp Integration with Workspace

Workspace uses the Workspace Integration Broker component and the Citrix SDK to handle single sign-on between Workspace, XenApp farms, and XenApp published applications. Workspace does not send any data or make any modifications to your XenApp system or applications.

The application is launched from XenApp via the Citrix High-Definition Experience (HDX) protocol, previously called Independent Computing Architecture (ICA). The connection between XenApp and the user is maintained, and the connection between Workspace and the user ends at that point. Nothing is tunneled through Workspace, so if Workspace were to fail, the existing connection between the end user and the XenApp published application would remain connected. The user would not be able to reconnect or re-authenticate, but any existing sessions would stay connected until timed out.

Using Workspace to Present SaaS- and Cloud-Based Web Applications

Workspace ships with a pre-defined application catalog that is populated by default with a variety of the most popular SaaS- and cloud-based Web applications, such as Google Docs, WebEx, Microsoft Office 365, Salesforce, Axiom, and more. This collection of pre-defined applications is dynamic and is expanded continually. Your end users see only those applications that you have enabled them to see. Single sign-on authentication and entitlement to cloud-based applications can be handled through Workspace. The vendors set policies about how SaaS- or cloud-based applications behave.

To enable a *pre-defined* SaaS- or cloud-based Web application in the default catalog, you need a subscribed and licensed account with the specific application vendor. You must also enable the Web Applications module in Workspace. Then with the Web-based wizard, you can enable the specific application and entitle your users. Any entitled user can then access the application through any supported browser.

If you have a new or proprietary SaaS- or cloud-based Web application that is not *pre-defined* in the Workspace catalog, you can build the integration yourself manually, or request assistance from the [VMware Professional Services Organization](#) (PSO). To provide single sign-on, the application must be SAML-enabled or based on WS-Federation.

You can also add SaaS- and cloud-based application links that are not included by default. Workspace can integrate Web application links for applications that are either SAML or non-SAML. You can also easily create Web application links that do not require user authentication, such as links to a widely used Web site or Web application, and integrate them into the Workspace catalog. These static links behave like the login page of an application, and resolve to a static Web page link in the catalog. Single sign-on is not automatically included when adding a static link in this way, but you can either build the authentication yourself manually, or [VMware PSO](#) can integrate an application to support single sign-on.

The result is a single application portal for end users that is easy to use and includes every kind of cloud application. For more information about Workspace, see the [VMware Workspace Portal Administrator's Guide](#).



Key Point

You can use SaaS- and cloud-based apps from the pre-defined catalog, add your own apps, or add static Web links without requiring user authentication to access those static links.



Find out how Web applications are integrated into Workspace Portal, how to add standard Web applications, and how to configure SSO using SAML in the Hands-On Lab HOL-MBL-1453 Module 4: [VMware Workspace Portal and Web/SaaS Applications](#).

Delivery Workflow

With SaaS- and cloud-based application delivery in Workspace, the end user logs in to Workspace, where you can set up single sign-on. Workspace authenticates the user and verifies that user's entitlement to the cloud-based app. Workspace then opens a read-only connection directly with the software vendor, which provides all policy information. Workspace does not send any data to the vendor.



Learn how to use Workspace to manage applications and users in Hands-On Lab 1453 Module 3: [A Day in the Life of VMware Workspace Portal](#).

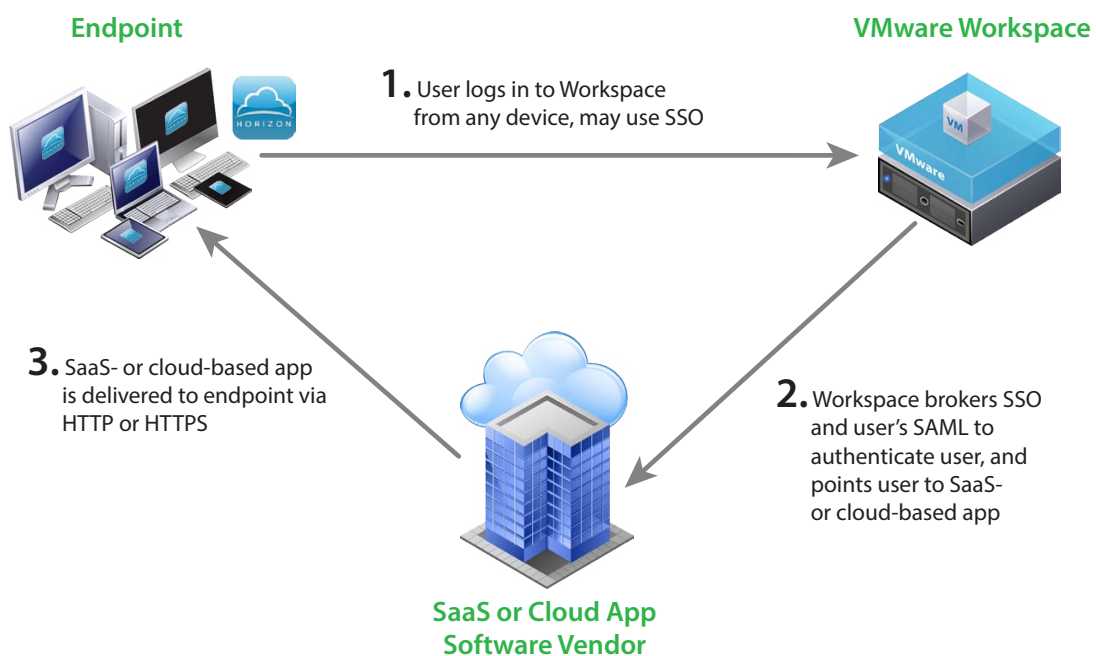


Figure 9: SaaS- and Cloud-Based Web Application Delivery Through Workspace

The application is launched from the vendor, and the connection between Workspace and the user ends. Nothing is tunneled through Workspace, so if Workspace were to fail, the existing connection between the end user and the application would remain connected. The user would not be able to reconnect or re-authenticate, but any existing sessions would stay connected until timed out.

Policies that govern how a SaaS- or cloud-based application behaves are set by the vendor. Workspace reads that information, and provides the ability to entitle or unentitle users to access the application, and to enable single sign-on.

Delivering Natively Installed Windows Applications

Since inception, View has provided access to natively installed Windows applications. These applications can be displayed in View desktops. See the [VMware Horizon with View Documentation](#) for details. Natively installed Windows applications are used widely, but most businesses do not use them exclusively. To provide the flexibility to deliver any application to any device, Horizon 6 supports a combination of options:

- [Delivery of hosted applications](#)
- [Delivery of ThinApp packages](#)
- [Delivery of Citrix published applications](#)
- [Delivery of SaaS- and cloud-based applications](#)

Integrating Workspace with View for Application Delivery

Integrating Workspace with View adds single-sign-on (SSO) capability and the Workspace catalog. Workspace aggregates your ThinApp packages with all applications and desktops in your delivery infrastructure, including hosted applications, Citrix XenApp published applications, SaaS- and cloud-based applications, session-based desktops and View desktops, and even static Web links.

To integrate View with the Workspace platform, you must configure Workspace with the View information, and configure View to delegate responsibility for authentication to Workspace. Workspace and View must be integrated using the Security Assertion Markup Language (SAML). This establishes mutual trust, which is essential for single-sign-on functionality. With SSO enabled, users who log in to Workspace with Active Directory (AD) credentials can launch applications and desktops from View without having to log in a second time. For more information, see [Integrating VMware Horizon Workspace and VMware Horizon View](#).

You create a SAML Authenticator in View to contain the trust and metadata exchange between View and Workspace. After completing the configurations, you add SAML Authenticator information in View, and use VMware Horizon Connector™ to make sure the information is saved and synchronized. After this, any time you make changes in View—such as adding, removing, or modifying applications or desktops—you must sync Workspace with View. The sync process can be done manually, or based on a pre-defined schedule.

After Workspace and View are integrated and synced, your end users can access hosted applications, View and session-based desktops, SaaS- and cloud-based applications, and even static Web links through Workspace. To include Citrix XenApp published applications, the Citrix Receiver is required on the endpoint. To include ThinApp packages, Horizon Client is required on the endpoint to enable access to View desktops, and Workspace for Windows is required on the endpoint for Workspace entitlement of ThinApp packages on the View desktop. Over HTTP or HTTPS, Workspace can deliver ThinApp packages, and View allows remoting of desktops (via the HTML5).



Key Point

The benefits of integrating Workspace with View include the following:

- SSO capability
- Flexibility of managing entitlements on a per-user or per-group basis through Workspace
- Ability to display all types of apps on Workspace, including ThinApp packages, hosted applications, Citrix XenApp published applications, SaaS- and cloud-based applications, session-based desktops and View desktops, and even static Web links



Find out more about providing access to View desktops and application pools in [Setting Up Resources in VMware Workspace Portal](#).

Integrating Workspace with View to Deliver Hosted Applications

To offer hosted applications in Workspace to your users, you must integrate Workspace and View. This enables your entitled end users to see an aggregation of all their applications in the Workspace User Portal. These applications can include hosted applications, desktops, ThinApp packages, and SaaS- and cloud-based Web applications.

You can set policies and entitlements for hosted applications only in View, and then you must synchronize Workspace with View. You can apply View policies to all client sessions, or to specific desktop pools or users, to enable multimedia redirection, USB access, and so on. Workspace reads the policy information from View and aggregates the hosted applications into the Workspace User Portal for the entitled users to access.

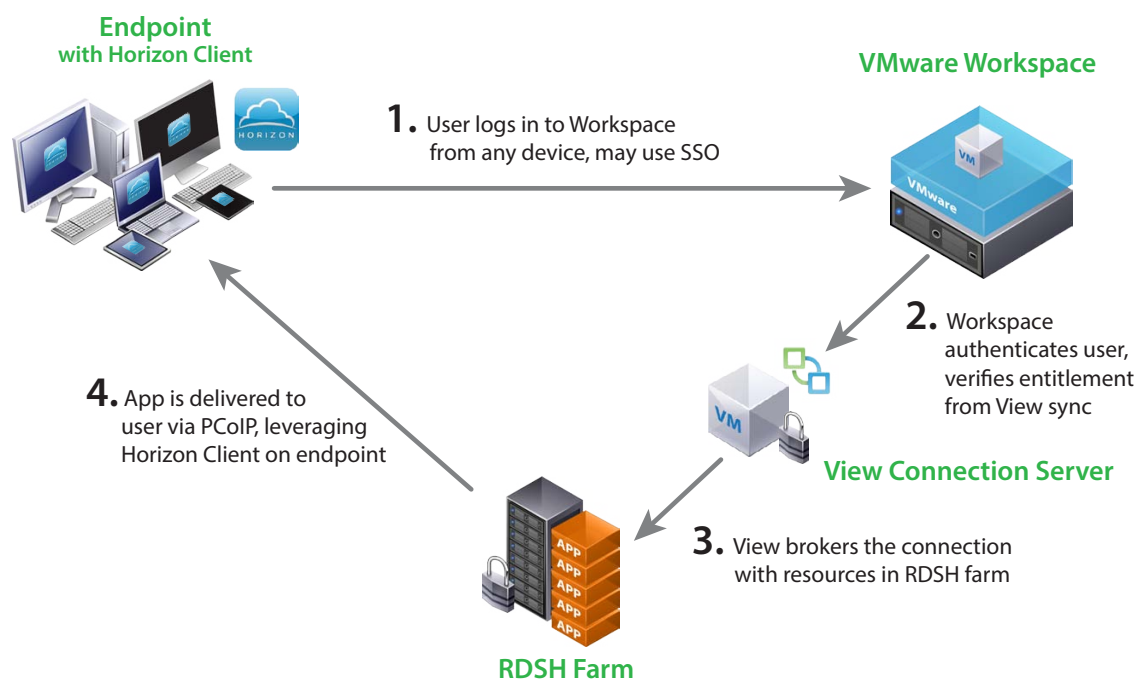


Figure 10: Hosted Application Delivery Through View and Workspace

In an environment where Workspace and View are integrated, the end user logs in to Workspace, and can use single sign-on for applications where SSO is set up. Workspace authenticates the user, and opens a read-only connection with View Connection Server, which communicates the policy and entitlement information to the RDSH host farm. The application is launched from the RDSH host in the farm. The connection between the RDSH host and the user is maintained, and the connection between Workspace and the user ends. Nothing is tunneled through Workspace, so if Workspace were to fail, the existing session between the end user and the application on the RDSH host would remain connected. The user would not be able to reconnect or re-authenticate, but any existing sessions would stay connected until timed out.

For more information about Workspace, see the [VMware Workspace Portal Administrator's Guide](#). For more information about View, see the [Documentation for VMware Horizon with View](#).



Learn how to publish and provision hosted applications in [Published Horizon 6 Applications](#) in VMware Hands-On Lab 1453 Module 2.

Integrating Workspace with View to Deliver ThinApp Packages

In addition to managing ThinApp packages with View or Workspace alone, you can also use an integration of View with Workspace to manage them. Your end users can then access their ThinApp packages from View desktops from within Workspace, and you can use Workspace to set entitlements.

View supports entitlement per desktop or per desktop pool, whereas Workspace supports entitlement on a per-user or per-group basis. This includes users and groups imported from Active Directory, as well as Workspace groups. This flexibility provides you with two ways to grant entitlements. You can select a user or group, and then indicate the resources that user or group can access. Conversely, you can select a resource, and then indicate the users or groups who can access that resource.

The appropriate parameters for integration with Workspace are set during the ThinApp capture and build processes. You then enable the ThinApp Packages module in Workspace, and indicate where ThinApp packages are located. You can determine whether a ThinApp package is streamed from a network share, or copied locally to a virtual machine. Workspace for Windows must also be installed on each View desktop to execute and receive entitlements to the ThinApp packages.

If View and Workspace are integrated, your end user logs in to a View desktop through Workspace, and looks for the ThinApp package. Behind the scenes, Workspace checks entitlements and displays only those ThinApp packages that the user is entitled to run. The appropriate ThinApp package is deployed either locally to the desktop as an executable file, or streamed to the desktop from a network file share via Server Message Block (SMB), a network file-sharing protocol. The View Connection Server brokers the access to the View desktop, which is delivered to the endpoint via PCoIP. Users who are outside the firewall can also access their desktops from a Web browser, supported by the HTML5 protocol, in which case, the Horizon Client is not needed on the endpoint. To manage entitlements through Workspace, you must install Workspace for Windows on View desktops.



Key Points

- You can use an integration of View with Workspace to manage ThinApp packages.
- Your end users can access their ThinApp packages from View desktops from within Workspace.
- You have more flexibility when setting entitlements in Workspace than in View alone.

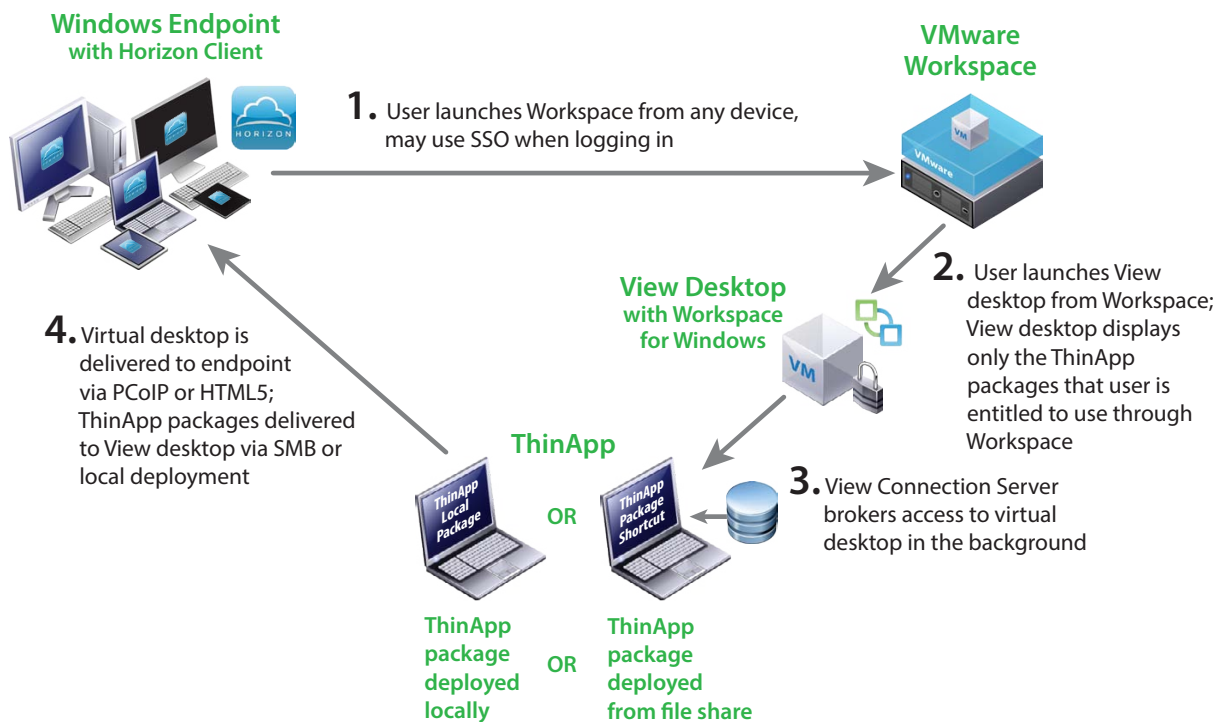


Figure 11: Delivering ThinApp Packages on a View Desktop Through Workspace

After the user has launched the ThinApp package, the connection between Workspace and the user ends. Nothing is tunneled through Workspace, so if Workspace were to fail, the existing connection between the end user and the application would remain connected. The user would not be able to reconnect or re-authenticate, but any existing connections would remain until timed out.

See [Integrating VMware Horizon Workspace and VMware Horizon View](#), and *Providing Access to VMware ThinApp Packages* in the [VMware Workspace Portal Administrator's Guide](#).

Integrating Workspace with View to Present Citrix Published Applications

Horizon 6 supports integration with Citrix XenApp through Workspace. If you integrate Workspace with both View and XenApp, the Citrix published applications are displayed through Workspace, and not in View desktops.

Note: Independent of Workspace, you can deliver XenApp published applications via View desktops. This is sometimes done when migrating from Citrix to Horizon 6. To use View to deliver XenApp published applications to the desktop, you install the Citrix Receiver in a View desktop. The delivery of XenApp published applications through View results in additional steps for users to access the application, and therefore is not ideal on an ongoing basis. All policy and entitlement settings are handled in XenApp, not in View. For more details, see [Using View to Present Citrix Published Applications](#) and [Avoiding a costly migration](#).

See [Integrating VMware View and VMware ThinApp with Citrix XenApp](#) for more information.



Key Point

Horizon 6 supports integration with Citrix XenApp through Workspace only. Even if you integrate Workspace with both View and XenApp, the XenApp published applications are not displayed in View desktops automatically.



Integrating Workspace with View to Deliver SaaS- and Cloud-Based Web Applications

By integrating View with Workspace, you can provide access to SaaS- or cloud-based Web applications through Workspace in View desktops. Your end users first log in to their View desktops, then launch Workspace, and finally access their cloud apps through Workspace on the View desktop.

Delivering Natively Installed Windows Applications

Since inception, View has provided access to natively installed Windows applications. These applications can be displayed in View desktops. See the [VMware Horizon with View Documentation](#) for details. Natively installed Windows applications are used widely, but most businesses do not use them exclusively. To provide the flexibility to deliver any application to any device, Horizon 6 supports a combination of options:

- [Delivery of hosted applications](#)
- [Delivery of ThinApp packages](#)
- [Delivery of Citrix published applications](#)
- [Delivery of SaaS- and cloud-based applications](#)

Using Mirage as an Application-Delivery Platform

VMware Mirage is one of the platforms in Horizon 6 for delivering applications to users. Mirage is available in the Horizon Advanced and Horizon Enterprise editions only, and not in Horizon View Standard Edition.

One of the features of Mirage is layered images: base layers and application layers. The Mirage base layer includes the operating system and can also include applications you want everyone to have. You can also use Mirage to create discrete app layers that contain applications only, and you can deliver these app layers to Mirage-managed devices, independently of the Mirage base layer. These app layers provide customized sets of applications for specific groups of users.

App layers can contain ThinApp packages and natively installed Windows applications. App layers cannot contain hosted applications, XenApp published applications, or SaaS- or cloud-based applications.



Watch [VMware Mirage Overview](#), a video about using VMware Mirage to manage applications with speed, control, and customization. Gain centralized, zero-touch physical and virtual desktop management with full native performance and flexibility for end users.



Learn how to capture a Mirage application layer in [VMware Hands-On Labs](#).



Figure 12: Mirage App Layers Support Applications That Include Drivers and Other Elements

Mirage app layers provide an alternative app-delivery platform to mitigate many of the difficulties that traditional app-delivery methods are vulnerable to, such as network issues, mismatched configurations on the endpoint, interruption during installation, and so on. Mirage app layers can also include application elements that cannot be virtualized with ThinApp, such as device drivers.

See the [VMware Mirage Documentation](#) for more information about Mirage app layers.

Using Mirage to Deliver ThinApp Packages

Mirage supports delivery of ThinApp packages and Windows applications using base and application layers. Use of Mirage layers supports both local deployment and network access to applications in a ThinApp repository.

You can create Mirage base and app layers for both physical and virtual desktops. ThinApp packages or Windows applications delivered through Mirage layers cannot be aggregated into Workspace.

See the [VMware Mirage Documentation](#) to find out how to create and deploy base and app layers using Mirage.



Read a blog about
[integrating ThinApp packages
into Mirage app layers.](#)

Using Mirage to Deliver Other Application Types

Mirage does not currently support delivery of hosted applications, Citrix published applications, or SaaS- and Cloud-based Web applications.

Summary

You must consider a wide variety of variables when you choose an app-delivery option. For example, you need to consider the types of applications to be delivered, requirements such as device drivers, whether any applications are restrictively licensed, and whether any are from an external vendor or SaaS provider. You need to consider how your end users work, whether they are stationary or traveling, or working on premises or remotely. You need to consider the endpoint devices, whether your users provide their own in a BYOD program, or use mobile devices in the field. And you need to consider environmental factors such as support for legacy infrastructure, legacy applications, multiple versions of the same application, and frequency of upgrades or license renewals.

If you conclude that you actually need a combination of app-delivery options and not just one, you are not alone. Most enterprises need a combination of options to deliver diverse types of applications to diverse sets of endpoint devices.

Horizon 6 provides that combination. VMware has long provided options for application delivery of virtualized applications through ThinApp, delivery of SaaS- or cloud-based applications from individual software providers, and more recently, delivery of Citrix published applications from XenApp farms. Now, Horizon 6 adds RDSH-based app remoting to this mix.

All editions of Horizon 6 include View, which supports RDSH app remoting as well as delivery of virtual applications and desktops. In addition, Horizon Advanced and Enterprise editions include Mirage, which provides support for app delivery of ThinApp packages and natively installed Windows applications in app layers.

Horizon Advanced and Enterprise editions also include Workspace, a unified workspace where your end users can log in once from any type of device, and launch any supported application type: ThinApp packages, XenApp published applications, SaaS-based or cloud-based applications, and—now—hosted applications.



Watch this video about how you can [leverage VMware Horizon 6](#) to support today's mobile workforce while driving down costs and streamlining management.

Additional Resources

To find out more about software application-delivery options, take a look at the following resources:

- [Introducing Unity Touch](#)
- [Setting Up Desktop and Application Pools in View](#)
- [VMware Horizon – A Closer Look At Application Remoting](#)
- [VMware Horizon FAQs](#)
- [VMware Mirage Reviewer's Guide](#)
- [VMware Mirage Documentation](#)
- [VMware Horizon With View Documentation](#)
- [VMware Workspace Portal Documentation](#)
- [VMware Professional Services Organization](#)
- [VMware Self-Service Knowledge Base](#)
- [VMware ThinApp Application Virtualization Made Simple](#)
- [VMware ThinApp Documentation](#)

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