



# Desktop Virtualization

Cloud-hosted or on-site. The promise of VDI, delivered.

## Overview

Desktop virtualization is an innovative way to provision and manage the Windows Operating System (OS). By allowing IT administrators to separate the OS, applications, user profile and user data from the underlying PC hardware and run it as virtual machine on high-powered servers in a data center, organizations are able to deploy and manage each component independently in response to changing business requirements and user needs. Users can then access their virtual desktop from any device, anywhere, and get the same or better experience than if the OS and applications were loaded in the traditional way.

## Why Consider Desktop Virtualization?

There are several problems with the traditional approach to provisioning and managing desktops and laptops. They are expensive to purchase and maintain, they are complex in their operation, they are inflexible and are hard to secure especially in remote location use cases.

- ◆ According to a study by analyst firm Gartner, companies spend on average \$3,500 per PC per year on

operating costs. 77% of this is accounted for by service and support alone. Desktop virtualization allows the central administration of desktops and consolidation in the data center, helping to cut administration costs significantly.

- ◆ Requiring end users to work from the office or offering limited remote access can result in lower productivity and lower job satisfaction. In the fight to attract and train talented employees, this is major concern.
- ◆ Locking-down endpoint devices to address security and manageability concerns will cause increased end user frustration due to lack of mobility.
- ◆ Physically shipping PCs to remote workers, branch offices and newly acquired companies will introduce lengthy delays to key initiatives, resulting potential lost profits, loss of first mover advantage, etc.
- ◆ Investing resources in continuously updating, patching and refreshing PCs, regularly disrupts users without any perceived benefit.

For these reasons and many more, new ways of provisioning desktops,

## Desktop Virtualization Benefits

- Improved Data Security
- Flexibility – Any Device
- Mobility – Any Location
- Speed – Provision a New Desktop in Minutes
- Improved Performance
- Improved End-User Satisfaction
- High-Availability
- Energy Savings
- Extend Hardware Refresh Cycles
- Reduce Desktop Support Costs
- Bring-Your-Own-PC (BYOPC) Enablement
- Windows 7 Adoption



including desktop virtualization, are now entering production environments in organizations worldwide.

## The Benefits of Desktop Virtualization

Trade magazines, vendor literature, research firms and technology blogs cite a wide-range of benefits for desktop virtualization, including cost savings, better resource management, improved data security and increased flexibility. Some benefits are directly attributable to desktop virtualization, while others are dependent on the selected architecture and installed solution. The major benefits include:

### Improved Security & Compliance

- ◆ Healthcare organizations with HIPAA requirements are one of the fastest growing vertical markets for desktop virtualization.
- ◆ No local data on the client devices — all data is kept within the confines of the data center. A stolen client device won't pose a security threat because it never contains the data.
- ◆ No data can be downloaded from the client device onto a USB device (unless the user has specific permissions).

### What is VDI?

Desktop virtualization or virtual desktop infrastructure (VDI) is a server-centric computing model that provides an end user experience equal to a traditional PC desktop, but is hosted and managed from a centralized data center. The virtual desktop can be accessed securely from any location, any time, on any device, offering true enterprise mobility.

### Enhanced User Experience and Employee Satisfaction

- ◆ Better performance — Desktops can run on faster server hardware with reduced latency in applications (as resources reside in the same place).
- ◆ High availability. You can run critical desktops with a much higher level of service if you move them into a data center and just give users thin clients.
- ◆ Desktop resources (memory, applications and disk) can be modified with little or no interruption to a user's workday.
- ◆ Any device, any location access without compromising security.
- ◆ Ability to incorporate two-factor authentication
- ◆ Desktop disaster recovery through regular backups of all desktop data.
- ◆ Quiet workspace — thin clients have no moving parts so there is no white noise generated from spinning fans and disk drives.

### End User Device Cost Savings (CapEx)

- ◆ Thin clients are significantly less expensive than desktops (thin clients are \$200 – \$300, desktops can exceed \$1,000, and laptops are even more). A Forrester Total Economic Impact study indicated that virtual desktops are less than half the cost of physical desktops.
- ◆ Refresh cycle for thin clients is 7 years or more compared to 3 – 5 years for a typical desktop.
- ◆ Re-purposed PC workstations used to access a virtual desktop extends the life of that asset that otherwise would be discarded.

### Improved Desktop Management Efficiency (OpEx)

- ◆ Desktop management costs decline by simplifying and standardizing the OS image and client devices.

- ◆ Fast provisioning for new users. A new VDI workstation can be set up in less than 15 minutes compared to hours or days to procure and provision a traditional workstation.
- ◆ Fewer IT desktop resources are needed to support the same number of end users. Thin clients require little or no support. One Full-Time Equivalent (FTE) support engineer can handle 1,100 virtual desktop users compared to 200 traditional workstation users. Reports of PC support organization's reducing FTEs by 50% are common.
- ◆ Fewer help desk calls if the organization implements user self-service capabilities, e.g., password enrollment/resets.
- ◆ Fewer desktop-related problems: Support calls reduced by 60 to 70 percent on average, in some cases as much as 80 percent.

### Flexibility

- ◆ Virtualizing desktops separates your users' instances of Windows from their client device and allows the user to have the freedom of mobility and the flexibility to use the appropriate device, at the appropriate time, to access their desktop.

### Energy Savings

- ◆ Thin clients use as few as 4 watts compared to 90 to 160 watts for traditional workstations. Thin clients generate less heat so HVAC costs are less.
- ◆ In the data center, infrastructure services can lessen the impact of additional energy needs through server load balancing for batch jobs and automated shut down of idle virtual machines.

## Architecture

Desktop virtualization is available in two primary deployment models, shared and dedicated.

Shared deployments allow many users to log-on to a single, generic OS and share the resources of a server in the data center. Since the OS is shared, any changes the user makes to their desktop when logged in will not be present next time they log in. This model was formerly called Terminal Services, and is now referred to by Microsoft as Remote Desktop Session Host (RDSH). These capabilities are provided natively with Microsoft Windows Server 2008 R2.

**Advantages** – An RDSH (shared) deployment of desktop virtualization is 2x to 5x more efficient than a dedicated deployment due to efficiencies in sharing the CPU, memory and disk resources. In addition, there is only one OS and application set to install and maintain which translates to lower support costs.

**Disadvantages** – The user profile is not maintained between sessions so unique applications or settings will not be maintained when the user logs off. The users can't access their virtual desktop if they are not connected to the LAN/WAN, and the performance of all users can be negatively impacted by a single user that ties up CPU or memory resources with high-intensity usage.

Dedicated deployments of desktop virtualization allow each user log-on to an OS that is provisioned solely for them. This OS can be customized to their needs and will seem to the user like a traditional desktop since any change or customization they make will remain the next time they log-on. This deployment model is commonly referred to as Virtual Desktop Infrastructure (VDI) and the major vendors in this space are Microsoft, Citrix, AppSense and Quest.

**Advantages** – Because each virtual desktop is unique and has dedicated resources, they perform better than an RDSH desktop, they can be customized with unique applications and settings and



**Your Windows Desktop. . .**

**On any device, at any time, anywhere.**

they can be accessed from any device, even when disconnected from the network.

**Disadvantages** – More hardware resources such as memory, CPU and disk are required due to the dedicated requirements of each virtual desktop. This translates to a higher cost deployment compared with RDSH. Each virtual desktop also has to be patched and maintained just as a traditional desktop would require.

## Deployment Options

Virteva is unique in its approach to the delivery of desktop virtualization. Whether you want the system designed and built for deployment on your infrastructure, or whether you just want to use Virteva's cloud-delivered infrastructure-as-a-service, the choice is yours. We stand ready to deliver in either scenario.

### On-site

Virteva has considerable experience at every layer of the VDI software and hardware stack. Our years of experience running highly available IT infrastructures for Fortune 500 corporations allows us to minimize design time and assures you of the most cost efficient deployment.

### Cloud-delivered

Take the "I" out of VDI. Virteva has deployed a Private Cloud infrastructure within a highly secure 3rd party data center. The Virteva Private Cloud (VPC) has been constructed with the highest performance hardware and uses advanced, high-availability design elements for the delivery of virtual desktops to our customers. Virteva has staff and systems that monitor and maintain the systems 24x7 and our expertise in desktop management can be leveraged as a backup to your staff, or as the primary level of desktop support, allowing your staff to work on more strategic IT initiatives for your business.



## From Wow To How

Architecting the right solution requires an understanding of many vendor offerings and how they can be integrated to address specific business needs. Unlike server virtualization, desktop virtualization is not a technology-driven project but an end-user initiative to meet the demands of dynamic organizations and demanding end users as they access and process their data.

Building the right solution for your organization starts with understanding end user needs for access, application usage, printing, security and mobility. A use case or scenario-based approach is the best method for systematically identifying the needs and understanding the workflow and process requirements of all user types, which then drives the architectural design and desktop virtualization components.

Virteva's Assessment Service will guide you through this process and will provide a roadmap that helps organizations move successfully into production.

**Step 1:** Define Goals and Objectives.

There are many reasons for implementing a desktop virtualization solution. Many organizations want improved mobility, efficiency, improved data security and compliance, lower costs and lower energy consumption.

**Step 2:** Inventory Applications and Develop End User Profiles. Leverage existing application inventories to map applications to end-user roles will speed the development of profiles. Virteva uses an automated tool-set that gathers user profile, hardware performance and application usage data. Once consolidated, this information forms the foundation for use case profile development.

**Step 3:** Define Use Cases. Creating use cases that address scenarios that are specific to your environment will ensure that applications function properly in the new desktop virtualization environment. Examples may include application access, application usage, device contention, user mobility, printing, audio/video and digital image display.

**Step 4:** Build application/OS images and establish a desktop virtualization test environment. A typical desktop

virtualization test environment will be a scaled-down version of a production environment, making use of existing hardware, network and virtual desktop infrastructure where possible. The test environment may incorporate both static (persistent) and dynamic (non-persistent) virtual machines associated with your user profiles.

**Step 5:** Execute Use Cases.

Representatives from IT and the user community should exercise the functionality of the applications in the test environment following development the use case scenarios. This is helpful in making sure that all aspects of application use and workflow are tested.

**Step 6:** Enhance the Desktop virtualization solution. At this time, the team may introduce other technology components to support the organization's overall solution in order to enhance functionality or address additional use cases requirements.

**Step 7:** Pilot in one unit, gather feedback, and refine the configuration as needed.

The number of successful implementations is growing and with the right approach and blend of operational and technical expertise, the work of designing and implementing the right desktop virtualization solution can be done within a few months yielding a quantifiable ROI in as little as one year.

## Why Virteva?

Virteva provides a full spectrum of design/build/run services to assist in your transition to desktop virtualization. By supporting all four major providers of desktop virtualization technology, we take a vendor agnostic approach which allows us to focus on you first and technology second.



Virteva is also unique in its approach to delivery of desktop virtualization. We will build it for you on-site at your location or you can use the Virteva Private Cloud delivery and skip past the capital expenditure and design/build phase. Either way you can be assured of a successful implementation and gain all the advantages of desktop virtualization.

## The Bottom Line

Desktop virtualization works well for many organizations. It provides a broad range of economic and efficiency benefits that outweigh the additional costs. It reduces the cost, complexity and pain of desktop provisioning and management, and extends the life of aging hardware. Especially important for security conscious organizations, desktop virtualization protects sensitive data, devices and core services, and enables secure access from anywhere. End users enjoy the same user experience and have the added flexibility to quickly move their session from one device to another.