



Raising the Bar on Desktop Virtualization

Understand the important considerations and use cases to make the most of your desktop virtualization initiative

**A Market Insight by Frost & Sullivan
in collaboration with Cisco**



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Introduction

TODAY, workspaces have evolved; in particular, a paradigm shift has been witnessed from the way employees traditionally perform daily routine tasks. The days of the pen, paper and phone calls have been duly replaced by next-generation workspace paradigms, characterized by modern-day employees taking electronic notes, along with the inundation of social media and collaboration tools. This workspace evolution has propelled a distinct veer away from the PC era where computing has become now more mobile, intimate and casual. This can be attributed to five significant driving factors.

The proliferation of multiple end-user devices is fast-proving to be a game changer, especially in the manner of access of corporate IT resources. Instead of utilizing standard devices provided by the IT department, employees have developed an intrinsic selective propensity towards the preferential usage of personal endpoint devices such as notebooks, tablets and smart phones. For IT managers, the integration of multiple devices has simply presented a potential minefield of complexities as they struggle to discover strategic reconciliation between aligning evolving user requirements to security and compliance demands.

The trends that have gained critical mass – Cloud Computing, Mobility and Social Media – are putting additional demands on IT, where managers are increasingly pressured by top



management's calls to adopt Cloud services, which offer potential multi-fold benefits.

More users today are also demanding anywhere, anytime access to information, in line with the emergence of an increasingly mobile workforce. Social media, while existing as an excellent collaboration tool, has also raised new concerns in security and privacy spheres of sensitive information.

Enterprise IT architectures are witnessing increased centralization. What originated primarily as a means to bring about cost efficiencies through a utility-based pricing model has evolved; this shift is now

exerting significantly greater impact on the way IT is procured and delivered in organizations around the world today.

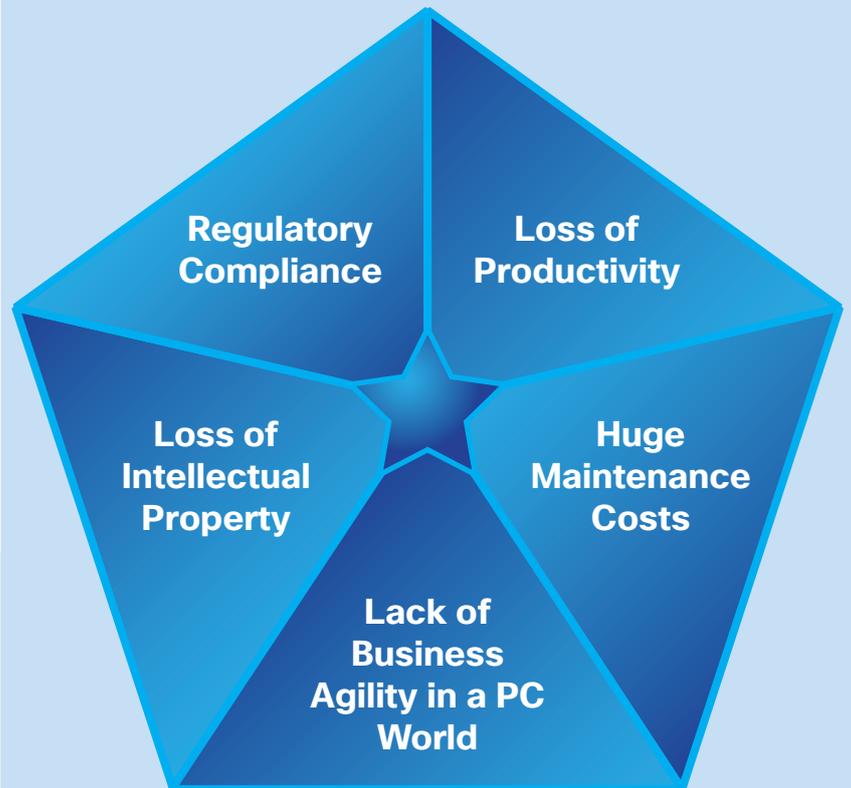
Introduction

The rapid evolution of end-user preferences, usage patterns and disruptive technologies has translated the management of endpoints into a complex exercise for IT departments, giving rise to new challenges for IT managers. The evolution of desktop virtualization is helping to address these challenges.

According to a recent end-user survey conducted by Cisco across 500 IT decision makers in Asia Pacific, more than 2/3rd of respondents stated the reduction in operational costs, improved end-point manageability and enhanced security as the key benefits of desktop virtualization. Enterprise class collaboration, mobility and security were mentioned as key considerations when buying end-point devices. Desktop virtualization solutions that allow significant control and easy, efficient management of multiple end points have become a critical imperative.

This white paper explores the five (V) important considerations while choosing desktop virtualization; ten (X) most common use cases to understand how desktop virtualization meets the demands of businesses, end-users and IT managers; and demonstrates the need for one (I) end-to-end solution provider.

Figure 2: Challenges in managing today's endpoints



Source: Frost & Sullivan

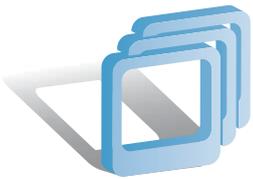
Cisco Virtualization Experience Infrastructure [VXI]

Cisco VXI is a service-optimized desktop virtualization platform that can deliver any application to any device in any workplace environment, support a rich user experience, and provide IT with additional security and control. It combines the architectural benefits of Cisco's Data Center, Borderless Networks and Collaboration architectures through a phased and synchronized roadmap and validated system-level designs that eliminate the trade-offs and scalability limitations of existing virtual desktop infrastructure (VDI) deployments.

V (5) Important Considerations

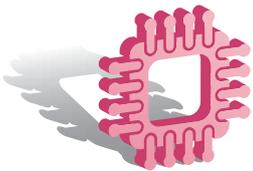
V (5) important considerations when planning desktop virtualization

Figure 3: Five important considerations when planning desktop virtualization



Enabling Collaboration Seamlessly

Collaboration and employee empowerment are at the heart of a “knowledge economy”. It is impossible for enterprises to remain in a “closed cocoon” in this information-centric world where ideas are generated everywhere. Powered by the entry of Gen-X and Gen-Y employees in the work force, an increasing number of employees are starting to adopt rich media collaboration such as VoIP, video and social media. The desktop virtualization infrastructure needs to go beyond compute and storage to accommodate growing demand for embedded collaboration.



Planning Server Infrastructure Well

Since the operating system together with data and applications is going to run on the server infrastructure, it is important to plan for sufficient capacity and optimize the server infrastructure. High memory density servers can offer better performance since memory I/O is faster than disk I/O and saves costs through efficient scaling. They ensure optimal application performance and minimize fine-tuning issues. It is equally critical to attain seamless integration between compute, network and virtualization resources to enhance application delivery.



Understanding The Importance of Network Intelligence

The promise of “LAN in a WAN” can only be delivered through an intelligent, robust network that understands application traffic. The network needs to not only support high throughput requirements but also be able to intelligently monitor, prioritize, secure and accelerate application traffic. With growing collaboration, the network should be capable of understanding and optimizing rich media traffic such as VoIP and video. Embedding virtual switches at the distributed hypervisor layer helps to meet the new network requirements of server virtualization and when combined with application acceleration solutions, can reduce latency both at the data center and in the WAN.



Embedding Security Across Technology, Processes and People

While centralization of infrastructure is bound to enhance security postures, it is equally important to ensure the security of the virtualization platform and data at rest and in motion. While traditional challenges of security such as patching, usage of anti-malware do not go away, they will become easier to manage due to centralization. Security posture needs to be managed across the organization with equal emphasis on technology, people and processes.



Extend “Green” Strategies Beyond The Data Center to The Desktop and The Network

As desktop virtualization consolidates the computing resources of the desktop at the data center, it helps businesses with their green strategies through reduced power consumption due to optimal utilization of these resources. Beyond such obvious benefits, desktop virtualization also opens up opportunities to save power at the desktop – through POE-enabled zero clients – and at the network – through energy-aware network.

X (10) Use Cases

X (10) Use cases for desktop virtualization

Use Case #1 Business needs IT to reduce cost while keeping the business agile

Desktop/PC procurement, provisioning, management and maintenance are significant cost components of the overall IT spend for an enterprise. Many CIOs are considering ways to reduce this cost, and are considering desktop virtualization as a potential alternative.

Typical Challenges & Key Considerations

As enterprises look at the desktop virtualization for reducing costs, CIOs should be mindful of:

- Compromising on the user experience which includes rich media collaboration.
- Total cost of ownership as desktops get packed into servers in a data center, which brings with it costs of servers and associated power and cooling.
- Incremental cost of bandwidth, due to additional two-way traffic between the users and the data center.

Desktop Virtualization Drivers for Cost Reduction

In this scenario, desktop virtualization offers CIOs the ability to:

- **Reduce procurement cost of desktops:** Centralized compute services in the data center eliminate the need to have desktops or laptops for all employees. Only desktop monitors and keyboards will be required, but the CPU, which is bulk of the cost, is reduced.
- **Reduce management/support cost of desktops:** With desktop virtualization, IT will be able to centrally and remotely manage the desktop and its applications, hence having more control over the device and reducing management costs.
- **Reduce the cost of provisioning desktops:** With desktop virtualization, setting up new desktops becomes very easy through the centralized management console, and provisioning of a virtualized end-point. The cost of Move-Add-Change is also reduced, as the desktops are now virtual and centrally serviced.
- **Reduce cost of refreshing desktops:** As enterprises decide to move from XP to Windows 7 (OS migration), or look to refresh old desktops with new better computing devices, the traditional approach of changing every desktop becomes very expensive. With desktop virtualization, enterprises are able to extend desktop lifecycle and manage OS migrations easily.



Cisco's VXi Approach

Cisco's approach brings the following benefits that make the cost reduction argument of desktop virtualization stronger.

- **UCS memory architecture means fewer servers:** Cisco can pack 60% more virtual machines on a server, thus providing the ability to reduce costs further as more desktops can be handled by a single server. From a data center standpoint, this means fewer servers, less power & cooling costs, and less management costs.
- **EnergyWise drives even lower power costs:** Cisco's Virtualization Experience Clients (VXC) are PoE devices. With Cisco's strength in the network, it can recognize the power consumption of all virtualized devices, and its EnergyWise solution can then manage and reduce the power consumption of the devices based on their usage state.
- **Best of breed partnership:** Cisco's partnership with leading vendors such as VMware and Citrix allows it to leverage on the proprietary protocols of these vendors that makes desktop delivery a seamless experience across any platform, using limited bandwidth.
- **End-to-end solution:** Cisco operates across networks, data center and collaboration solutions, and can leverage on its breadth of offerings to deliver a single solution to the customer by integrating best-of-breed partners to enable a seamless delivery and experience of desktop virtualization. Due to its breadth of portfolio across networks, data center and collaboration, Cisco can help reduce the total cost of ownership for a customer.

X [10] Use Cases

Use Case #2 Enhancing IT staff productivity and simplifying IT management

IT staffs of companies in a non-virtual environment usually are divided into many disciplines such as server management, network etc. As the size of a company network infrastructure grows, so does its requirement for IT staff. This puts a strain on the resources of a company and makes day-to-day management complex. There is also the issue of keeping IT staff productive through varying cycles of deployment and servicing requests.

Typical Challenges & Key Considerations

As enterprises look at desktop virtualization for IT staff productivity, CIOs should be mindful of:

- VDI changes the IT infrastructure significantly, and IT disciplines that were once distinct need to work much closer together to ensure best performance.
- IT staff may be required to learn new skills due to introduction of new concepts and integration of multiple IT aspects in VDI.

Desktop Virtualization Drivers for IT Staff Productivity

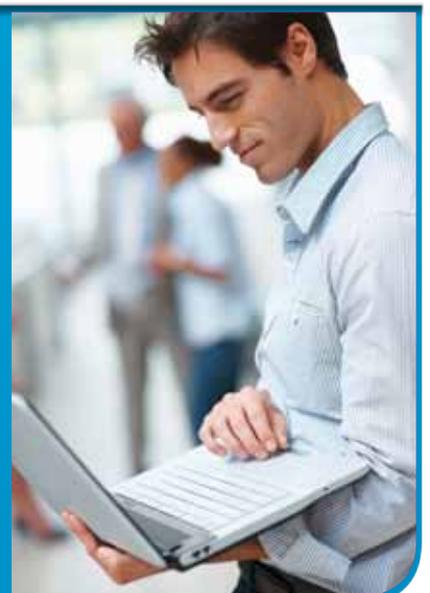
In this scenario, desktop virtualization offers CIOs the ability to:

- **Centralize support:** In a non-virtual environment, IT support staffs are usually located in each branch office to service requests from local users. A VDI environment reduces the need for local support staff by having a centralized architecture. This enables support staff sitting in the headquarters of a company to easily manage virtual desktop images and service requests at remote locations.
- **Centralize procurement:** Procurement of IT hardware and software is usually done according to the local or regional policies of each organization. This can sometimes be a challenge in terms of application or hardware compatibility and reduce efficiency of IT. With VDI, all IT requirements can be procured from a central location, thus increasing homogeneity and simplifying the procurement process.
- **Centralize maintenance:** With VDI, client hardware is simplified while the software can be managed from a central location with much greater control and precision. This saves time and reduces the need to have a large IT workforce.

Cisco's VXI Approach

Cisco's approach brings the following benefits that make the desktop virtualization proposition for IT staff productivity stronger.

- **VDI services portfolio:** Once customers have decided to implement Cisco solutions, they have the option of utilizing the complete portfolio of Cisco services that can assist customers through the entire lifecycle of deployment process. This starts from planning and design to implementation and operation.
- **Better blade density with UCS:** Cisco unified computing system provides 60% better virtual machine density per blade. This ensures cost savings as a larger number of desktop images can be stored in the same amount of space.
- **Tight integration:** Due to its market leading solutions in networking and data centers, customers using Cisco for both needs will see a stronger synergy and performance.



X (10) Use Cases

Use Case #3 Ensuring secure access and compliance

Organizations face a variety of regulatory requirements to keep information private and confidential, with controlled access. This is even more important today, in light of the recent instances of attacks on similar data stored with large global organizations. Security is not limited to access of sensitive information; it also encapsulates malware that are highly prevalent today.

Compliance is another key necessity for businesses. Most businesses need to adhere to multiple local and international regulatory requirements – these may include industry, state, or country requirements. With businesses today witnessing rapid growth, it is critical to ensure that these regulations are met constantly.

Cisco's VDI Approach

Cisco's approach brings the following benefits that make the desktop virtualization proposition for secure access and compliance stronger.

- **Enhanced visibility of the network:** Cisco UCS and VN-Link technology provide enhanced visibility of the network to the virtual machine. This visibility eliminates the complexity for the IT staff to enforce VM level security policy, which would have been highly complex without it.
- **Inter VM traffic is secured:** The Cisco Nexus 1000V and Cisco VSG secure inter VM traffic and allow user segmentation and isolation from mission-critical applications. They allow end points to be placed in multiple zones, with differing levels of security policies in place at each zone.
- **Secure access, anytime, anywhere:** Cisco AnyConnect Secure Mobility and Cisco ASA provide always on secure connectivity to virtual desktop environment, ensuring continuous, IT defined, policy control and enforcement.
- **Flexible policy enforcement:** Role-based access control with Cisco ISE provides the visibility necessary across user identity, device type and posture to allow granular policy based control and enforcement.
- **Compliance with corporate, industry, and governmental regulations:** The Cisco UCS and the VDI broker enable provisioning of desktops through pre-defined templates that ensure consistent deployment in compliance with regulations.

Typical Challenges & Key Considerations

As enterprises look at the desktop virtualization for secure access and compliance, CIOs should be mindful of:

- Centralized user data under desktop virtualization translates into one point of failure for an external attack on the organization's IT systems. It is essential to have significant safety measures around this.

Desktop Virtualization Drivers for Secure Access and Compliance

In this scenario, desktop virtualization offers CIOs the ability to:

- **Enhance threat detection and isolation:** Because all data resides centrally, it is easier to detect threats or malware and isolate it, eliminating the chances of expansion of the threat vector. In this manner, users are able to access only the content that is identified to be safe to use by the security solutions in place.
- **Complete control over end points reduces risk:** Desktop virtualization shifts control of end points to IT. With all data being tunneled through a secure network

and the organization's firewall, the IT team can restrict usage and better manage potential security risks. Also, the loss of data through physical drives is eliminated.

- **Agile policy implementation:** Any changes in IT policies can be instantaneously implemented with desktop virtualization. The IT staff needs to replicate the policy across all the desktop templates and they assume immediate effect.
- **Ensure compliance:** With desktop virtualization, ensuring compliance is easier given that all systems are centralized in the data center. Applying controls and policies to ensure compliance can be centrally implemented on all end-point VMs.

X (10) Use Cases

Use Case #4 Ensuring business continuity planning and disaster recovery

Driven by regulatory compliance and in the aftermath of natural disasters such as the Japanese earthquake and Queensland floods, business continuity planning has emerged as a key priority for CIOs. Providing access to corporate ICT resources on a 24 x 7 x 365 basis is a monumental challenge due to the complexity of IT environments and the likelihood of unforeseen disasters.

Typical Challenges & Key Considerations

As enterprises look at desktop virtualization for ensuring business continuity planning and disaster recovery, here are a few considerations to be mindful of:

- The limitations of operating system licensing make it possible only for certain types of organizations to consider desktop virtualization for the purpose of business continuity planning.
- Building a business case for Bridge Control Protocol (BCP) and providing a solid ROI model can often be challenging for many organizations.
- In the case of an external service provider providing VDI as a service, issues of trust, compliance and data sovereignty assume high importance.

Desktop Virtualization Drivers for Business Continuity

In this scenario, desktop virtualization offers CIOs the following ability:

- **“Always on” desktops:** Centralized compute services in the data center ensure that desktops are available for use from wherever the users are. If the data center infrastructure is run in a redundant mode (with primary and backup centers), the IT resources are available to employees on an on-demand basis, even in case of disasters.
- **Adherence to compliance:** By making critical systems available on a continual basis, organizations will be able to comply with corporate governance guidelines pertaining to availability of critical infrastructure.
- **Enhanced productivity:** By mitigating loss of business continuity, organizations can be resilient even in the event of natural disasters, thereby minimizing any potential loss of revenues. Desktop virtualization enables IT organizations to rapidly recover user desktop environments and get them up and running on a new device. In the case where an office is closed, users can leverage desktop virtualization to access their work from a desktop environment on their home PC or other computing devices.
- **Speedy recovery from disasters:** Organizations have an option of using a traditional approach to computing under normal circumstances and can leverage an external service provider during disasters. Such a hybrid approach will ensure access to desktop environments on an “as needed basis” but yet giving users access within a fraction of time to the same desktop and applications that they are used to.

Cisco's VXi Approach

Cisco's approach brings the following benefits for business continuity.

- **Platform and device independence:** Cisco works with a wide variety of partners supporting diverse compute devices, client operating systems and hypervisors, thereby offering customers' flexibility in deployment.
- **Delivering the “rich user experience”:** While most vendors tend to address the user experience from a desktop standpoint, Cisco can deliver an end-to-end rich experience that embeds unified communications into desktop computing and business applications. In case of a disaster, the users are empowered by having access to not only their compute environments but also to messaging, voice and video that allows them to collaborate and solve critical business issues.
- **Offers location independence through business tablet:** Cisco's Cius is a business tablet PC that offers location independence yet access to an integrated environment consisting of desktop, applications and unified communications. The device can be extremely handy to use in Disaster Recovery (DR) scenarios due to its mobility and ability to offer seamless access to corporate applications.

X [10] Use Cases

Use Case #5 Going Green, saving energy

In addition to enabling improved security, administration and centralization of data, desktop virtualization solutions can serve as an enabler to a number of carbon-footprint reducing measures.

Typical Challenges & Key Considerations

As enterprises look at desktop virtualization to enable green practices, CIOs should be mindful of:

- **Focusing on the benefits:** Going green has enormous benefits for the profitability of the company, however enterprises should look at performing pilot projects or and calculate return on investment (ROI) to get senior executive buy-in.
- **Flexibility:** With virtualization, some companies may find it challenging to provide sufficient network and storage connectivity, which allows for maximum flexibility on virtual machine deployments.

Desktop Virtualization can Offer users a Better Experience and Services that will help Drive their Productivity

In this scenario, desktop virtualization offers CIOs the following ability:

- **Greener end user IT:** Desktop virtualization is used to transfer some or all of the tasks typically performed by a conventional PC – for example, processing or data storage – from the client-side access device to the data center. Conventional PCs can either be re-deployed as ‘thin’ clients, thus extending their lifespan and reducing the frequency of hardware disposal, or replaced with low-function, energy-efficient dedicated thin-client devices.
- **Environmentally friendly work practices:** The decoupling of the user profile from a single end-user device (typically an office-based PC) implied by desktop virtualization facilitates access to the end user experience from a variety of devices and locations.
 - In this way, desktop virtualization serves to enable work-from-home initiatives, which, in turn, enable organizations to reduce the volume of desktop IT infrastructure, space, power and cooling provisioned to the workplace, while the environment – not to mention local transport infrastructure – benefits from fewer commuter miles and associated CO2 emissions.

Cisco's VXi Approach

Cisco's approach brings the following benefits that make desktop virtualization a good way to go Green:

- **Universal POE switches:** Deployed in the Cisco Catalyst series of switches, POE provides data as well as power to the workspace end-points, network administrators now have flexibility to respond to changing business needs to provide access to employee, guests, or contractors.
- **Cisco virtualized POE endpoints:** Cisco POE-enabled Virtualized Experience Clients (VXC) help business to lower power consumption at the desktop. It also facilitates energy management through EnergyWise.
- **EnergyWise & EnergyWise Orchestrator:** Cisco EnergyWise is an energy management protocol based on Cisco IOS® Software for monitoring, controlling, and reporting the energy use of information technology (IT) and facilities equipment. It is available and configurable across the entire current Cisco Catalyst® switching and Cisco Integrated Services Router Generation 2 (ISR G2) routing portfolio.
- **Cisco EnergyWise network-wide policies** can then be developed to control device power management, eliminating the need for separate IT and building energy systems across different enterprise borders to be able to work with each other



X [10] Use Cases

Use Case #6 Task workers need secure application access

Task workers form a large piece of our enterprise workforce. Depending on the nature of our business, they can account from 20% to 60% of the enterprise workforce. Hence, it is essential to ensure security of the data and applications that are accessed by the task workers.

Cisco's VXi Approach

Cisco's approach brings the following benefits that make the desktop virtualization proposition for task workers (and contact center/BPO) stronger.

- **Cisco's virtualization-aware security:** Cisco has a virtualization aware security network which ensures security policy is enforced across the virtualized desktops.
- **Cisco Cius (Mobile Supervisor):** Cisco Cius is a virtualization client which is an enterprise tablet with an Apps market, AppHQ. In the contact center/BPO market, supervisors and team leaders can use the Cius as a mobile device as they walk on the agent floor to monitor agents, while keeping a tab on the key performance indicators for their team or group.
- **Cisco's collaboration suite (Expert On-demand):** Cisco's breadth of collaboration solutions are also available on a virtualized desktop environment, and hence the virtualized desktops can also deliver rich collaboration tools. In the contact center/BPO environment, this would help the agents to instantly conference in or communicate with their supervisors and experts within the organization.

This becomes especially relevant in the contact center or in business process outsourcing (BPO) environments. Contact center agents access sensitive customer information and in many industry sectors there are strong compliance and regulatory requirements to secure that data.

Typical Challenges & Key Considerations

As enterprises look at desktop virtualization for task workers, CIOs should be mindful of:

- Latency in application access (especially in contact center/ BPO or other real-time application access scenarios)
- Latency or inability to use rich collaboration tools (especially in the contact center/BPO environment where an agent might need to collaborate with an expert inside the organization for a resolution)

Desktop Virtualization Drivers for Task Workers

In this scenario, desktop virtualization offers CIOs the ability to:

- **Reduce cost of desktops:** Task workers contribute between 20% - 60% (depending on the nature of your business) of the total workforce within an enterprise, and hence reduction of cost in procuring, managing and provisioning these desktops via desktop virtualization is a big cost saver.
- **Secure access to applications and data:** With desktop virtualization, IT can control the applications as well as the level of access to the data that is being shared with the user, hence preventing data leakage. In the case of contact centers and BPO, virtualization can block certain user actions (such as Print Screen) or limit the way users can action on the data that is visible to them.
- **Enable remote and home working:** With desktop virtualization, it becomes easier and cost effective to enable remote and home working. In the case of contact centers and BPO, this is a critical advantage as remote agent capability enables the organization to reduce labor costs (as wages for home agents are cheaper), drive employee motivation (by allowing work from home), and access a larger labor pool by including at-home mothers and others for whom commuting to the main office is a challenge.



X (10) Use Cases

Use Case #7 Enhancing user productivity and empowering mobile workers

Our workspace has changed significantly over the last decade. We no longer just work from our desks in a central office, but we also work from airport lounges, homes, and hotel rooms. Over 25% of the workforce in a typical enterprise can be defined as mobile (i.e. they spend more than one-fifth of their time outside the office).

The need to enable this workforce with the same set of tools and applications as if they were at the office becomes a key priority to ensure employee productivity and business agility. Many of the mobile workers are senior executives and sales teams for whom staying connected with the enterprise applications and collaboration tools is critical for the business.

CIOs need to be able to provide to the mobility needs of these users, and also, in some cases, manage and support these mobile devices.

Typical Challenges & Key Considerations

As enterprises look at desktop virtualization for mobile workers, CIOs should be mindful of:

- High latency or inability to use rich collaboration tools (including video collaboration) can become a major challenge.
- Mobile workers are used to quick response times for desktop applications, and hence latency in application access will become counter-productive for the users.
- CIOs need to consider the option of user-owned mobile device or enterprise-owned mobile device depending on the nature & frequency of mobile access. Enterprise-owned devices can be managed better and are more secure.

Desktop Virtualization Drivers for Mobile Workers

In this scenario, desktop virtualization is a good solution for mobile workers as it provides:

- **Consistent application experience:** As mobile workers toggle between their desktop/laptops to their mobile or tablet devices, desktop virtualization can ensure a consistent application and desktop experience for the users.
- **Secure access to applications:** Desktop virtualization enables applications to be accessed by the authorized user, and the security policies of the enterprise are enforced on any virtualized end-point.
- **Virtual workstation anytime anywhere:** Desktop virtualization allows users to access their desktop workstation anytime from anywhere. The users could be outside the office, at a remote location (such as an airport lounge, home, or hotel room) and still access the same desktop experience.

Cisco's VDI Approach

Cisco's approach brings the following benefits that make the desktop virtualization proposition for mobile workers stronger.

- **Cisco Cius:** Cisco Cius is an enterprise-grade tablet that runs on the Android OS and is a desktop virtualization client. Cius offers a significant advantage of centralized procurement and delivery of applications (via the AppHQ market) instead of requesting the users to manually download and install the apps on their personal mobile devices. Cius can be supported like any other enterprise IT equipment (as compared to personal tablet devices), and has better video delivery capabilities for rich collaboration.
- **Cisco's collaboration suite & Jabber:** Cisco's breadth of collaboration solutions are also available on a virtualized desktop environment, enabling virtualized desktops to deliver rich collaboration tools. The ability to use Cius for rich video collaboration sessions becomes important for executives and sales teams.
- **Cisco's application acceleration solutions:** Cisco's ACE and WAAS solutions enable seamless access to corporate applications over both the public (Internet) and private networks (MPLS, Metro Ethernet). The ACE optimizes application availability, security and delivery to users accessing business applications running on server farms. The WAAS can accelerate access to applications across a corporate WAN through compression, caching and protocol optimization techniques. The WAAS is also available as a client that can be installed on the endpoint devices to accelerate application access.

X (10) Use Cases

Use Case #8 Businesses require agile and flexible infrastructures

Cisco's VXI Approach

Cisco's approach brings the following benefits for agile businesses.

- **Support for VMware, Citrix and others:** The Cisco approach encapsulates the virtualization solutions from the two major virtualization players – VMware and Citrix. Also, the ability to integrate open source solutions makes the Cisco solution highly flexible and allows it to be replicated across locations with ease. Furthermore, in the case of post merger integration, this support will enable enterprises to significantly reduce integration and roll out time.
- **Cisco enables rapid deployment:** The Cisco and VMware solution dramatically speeds policy-based deployment and enables just-in-time provisioning of both virtual desktops and the underlying Cisco UCS infrastructure. After VMware View templates have been configured, multiple desktops may be instantaneously provisioned from the same template.
- **Cisco UCS and unified fabric enhances agility:** The Cisco UCS allows IT managers to rapidly deploy multiple desktops and ensure scalability. It allocates memory and processing resources on demand, elastically, offering unique flexibility in allocating the appropriate resources to the associated user virtual desktop (for example, knowledge worker, task worker, or executive user virtual desktop). Cisco Unified Fabric provides a transparent, scalable, and intelligent data center that delivers the levels of storage throughput and I/O operations per second (IOPS) necessary to help ensure application responsiveness during peak periods.

The business environment today is highly dynamic. This is making increasing demands on the organization's internal infrastructure; which needs to scale rapidly to meet the increasing business demands. Scale is no longer the sole criteria, infrastructure today needs to be highly agile and flexible, i.e., rapid response and the ability to change according to evolving business requirements, while at the same time keeping costs low.

Typical Challenges & Key Considerations

As enterprises look at desktop virtualization for business flexibility, CIOs should be mindful of:

- Migration to a virtualized environment can be a challenging activity and needs to be carefully planned to ensure a smooth transfer of all user data into the virtualized environment.
- Slow or unreliable connectivity may lead to latency and reduce performance. It is necessary to ensure that the network infrastructure is secure.
- Training is very important, helping users work efficiently in a virtualized environment and leveraging the flexibility it offers.



Desktop Virtualization Drivers for Business Flexibility

In this scenario, desktop virtualization offers CIOs the ability to:

- **Rapidly roll out new desktops:** Virtualization allows businesses to rapidly roll out desktops for a growing work force with complete automation. Hence, the time to go live at new locations is significantly reduced.
- **Meet changing business demands:** Since the compute and storage takes places at the server, there is no need to constantly upgrade user hardware. It can easily be provisioned at the server by the IT staff. This also lowers hardware refresh cycles.
- **Limited requirement for local support:** Desktop virtualization is enabling businesses to set up remote offices in a swift manner, with limited IT staff.
- **Anywhere anytime access:** With desktop virtualization, businesses are finding it easier to integrate their virtual desktops with the underlying hardware, based on preferences of the global workforce. The hardware agnostic nature allows compatibility with a myriad of end-user devices, providing anywhere anytime access to users.

X (10) Use Cases

Use Case #9 Branch office enablement

IT infrastructure in branch offices gives users excellent application availability and performance, but managing a distributed IT environment can be complex and expensive. A distributed IT environment also increases the security risk of information loss, if proper controls are not enforced.

An increasingly viable alternative is to consolidate the branch-office IT resources into a centralized datacenter to simplify management and decrease operating costs while maintaining reliability and performance.

Typical Challenges & Key Considerations

As enterprises look at desktop virtualization for branch office enablement, CIOs should be mindful of:

- Ensuring a LAN like speed in a WAN is extremely challenging due to the laws of physics and latency that is created due to round-trip time between the users and the applications.

Cisco's VXi Approach

Cisco's approach brings the following benefits for branch enablement.

- **Branch and desktop virtualization planning and design:** Cisco branch and desktop virtualization planning and design service helps customers to virtualize the branch-office and desktop infrastructure as well as assess important applications that are suitable for the virtualized infrastructure. It helps them to develop a financially viable strategy and create a phased roadmap, and supports them through design and deployment. This integrated approach is vital to increasing response times and productivity.
- **Integrated application delivery infrastructure:** Apart from the UCS platform that eases delivery of applications through its memory density, Cisco's ACE and WAAS platforms can accelerate delivery of applications to users both on the internet and corporate intranet. The ACE and WAAS platforms are capable of delivering caching, compression and protocol optimization to enhance application delivery and offer LAN-like speeds across a WAN.
- **Cisco Branch-Office-in-a-Box:** This is a unified routing, switching, and server solution for the lean branch office that combines a WAN access router, a Gigabit LAN Switch, and an x86 blade server in a single Cisco Integrated Services Routers (ISR G2) router. Branch-Office-in-a-Box is an ideal solution for providing access to the WAN and the Internet, enabling LAN connectivity between local devices, and hosting popular Windows services such as active directory, DHCP and DNS.

- Cultural and linguistic challenges may hamper adoption, particularly in scenarios where users are accustomed to a local support team that speaks their language and are available in person.

Desktop Virtualization Drivers for Branch Office Enablement

In this scenario, desktop virtualization offers CIOs the following ability:

- **Centralization and control:** By centralizing the server and storage, the IT team can have complete control over data. Centralization also helps in enforcing policies to users, in line with the corporate governance framework, thereby ensuring adherence to regulatory compliance laws.
- **Standardization:** By making the desktops centralized, IT managers are now able to standardize the desktops that can be delivered to users over the networks, allowing them to maintain easier control over licensing, patch management and application usage.
- **Rapid application roll-out:** Due to centralization, application installation and upgrades can happen in a short span of time with no or little downtime to end-users. Organizations are able to save considerable costs through reduced downtime and quicker time to market.

X (10) Use Cases

Use Case #10 Windows 7 migration

As businesses look to upgrade to Microsoft Windows 7 to take advantage of its latest features, enhanced security, and simplicity, two key concerns emerge: cost and complexity. Upgrading an operating system usually requires a hardware refresh, which can be very expensive, and also requires all existing applications to be tested in the new operating system to ensure maximum compatibility.

This is necessary to ensure the new operating system can run older or custom applications with better performance.

Typical Challenges & Key Considerations

As enterprises look at desktop virtualization for Windows 7 migration, CIOs must be mindful of:

- Porting applications from a previous version of Windows can be challenging, especially when using custom application that require older software versions.
- Moving to a VDI solution requires a re-orientation of the expectation of the users and their interaction with the system.

Desktop Virtualization Drivers for Windows 7 Migration

In this scenario, desktop virtualization offers CIOs the ability to:

- **Lower long-term costs:** In a VDI environment, client machines no longer need to be full-fledged desktop systems. Thin or zero clients that are directly connected to a centralized data center can help reduce costs on hardware in the long term by a significant amount. This extends the hardware refresh cycle that is usually necessary when upgrading the operating system.
- **Application virtualization:** In a VDI environment, business have the option of virtualizing existing applications, which removes the dependency of applications from the underlying operating system. Users are able run older applications such as Internet Explorer 6, which is sometimes necessary when running custom-built software.
- **Centralized administration and management:** Moving to a VDI environment will separate the underlying hardware from the software. This makes it easier to handle software or hardware issues and provides the ability to run a single windows 7 image across different hardware types.
- **Reduce implementation process time:** Implementing a new operating system requires a significant amount of time due to the extensive testing required, as well as rolling out upgrades to hundreds of desktops. With VDI, this process is greatly simplified due to its centralized architecture and updates can be rolled out all at once.

Cisco's VDI Approach

Cisco's approach brings the following benefits that make the desktop virtualization proposition for Windows 7 migration stronger.

- **Application acceleration:** Cisco Wide Area Application Services (WAAS) offers WAN compression and acceleration of remote desktop sessions and of rich media transport and print services, while the Cisco Application Control Engine (ACE) for SSL offload increases virtual desktop density. This can help businesses that need to accelerate legacy or custom applications within a virtual environment.
- **System Integration:** Cisco provides solutions in networking, collaboration, and data centers. Partnering with Cisco can provide a fast and painless migration with maximum compatibility. It also provides tighter integration of Windows 7 with key Cisco collaboration solutions such as video, thus enhancing user experience.
- **Rich Media Clients:** Cisco desktop clients are available in a variety of form factors, from thin clients integrated into an IP phone to mobile clients such as the Cisco Cius tablet. This provides a high amount of flexibility of deploying Windows 7 according to user needs, and also improves morale with the usage of cutting-edge solutions.



I (1) Integrated Solution

I (1) Integrated Solution – The Bottom Line

Desktop virtualization is a major trend in the industry and is being considered by many CIOs across the globe as a way to reduce costs, manage and support desktops easily, and enable better security measures on desktops and application/data access.

Cisco's VXI solution brings together best-of-breed virtualization technologies along with networking, data center and collaboration applications. This aims to ensure smooth, seamless delivery of virtualized desktops. The Cisco solutions have been pre-tested and validated for virtualization platforms from major vendors such as VMware, Wyse and Citrix. By recognizing the nature of desktop virtualization where multiple solutions and vendors are coming together to deliver the solution, Cisco is taking the initiative to provide end-to-end support and to offer a single integrated solution for the customer. In addition to its broad product portfolio, Cisco also offers services such as VXI Design Services, VXI Planning and implementation Services, optimization services and support services to help customers transition seamlessly to a virtualized environment.



Conclusion

While desktop virtualization brings some obvious benefits, CIOs should consider a few things as they embark on this initiative.

- **Our workspace is changing:** we no longer work just at our desks, and we are collaborating a lot more. Hence, it is critical for CIOs to consider that their desktop virtualization initiative enables mobility as well as delivering a rich media collaboration experience.
- **User expectations are high:** we expect things to work now. Latency on application access and a LAN-like performance in a WAN are becoming base expectations from enterprise users. CIOs need to ensure that the desktop virtualization initiative does not become counter-productive for users. The need to focus on network and application acceleration is just as critical.
- **Not just virtualization, it's also about network, data center and applications:** in order for desktop virtualization to be successful, CIOs need to consider the entire IT infrastructure that will be responsible for delivering the virtualized desktops.

About Cisco and Frost & Sullivan

For more information about Cisco VXI, please visit the following sites:

- Cisco VXI (*html*)
- Cisco VXI Solution Brochure (*pdf*)
- Raising the Bar on Desktop Virtualization (*Video: Techwise TV, 67 min*)
- Cisco Desktop Virtualization Solution with Citrix XenDesktop (*pdf*)
- Cisco Desktop Virtualization Solution with VMware View (*pdf*)
- Cisco Virtualization Experience Clients (VXC) (*html*)



About Cisco

Cisco, (NASDAQ: CSCO), is the worldwide leader in networking that transforms how people connect, communicate and collaborate. More information about Cisco can be found at <http://www.cisco.com>.

About Frost & Sullivan

Frost & Sullivan enables clients to accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best-practice models to drive the generation, evaluation, and implementation of powerful growth strategies. We leverage 49 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from more than 40 offices. For more information, please visit www.frost.com.