WHITE PAPER

Quantifying the Business Value of VMware View

Sponsored by: VMware

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May 2011

EXECUTIVE SUMMARY

An analysis of organizations adopting a centralized virtual desktop (CVD) computing environment with the use of VMware View shows that investment in the technology can result in significant business value with very high return on investment (ROI). Our analysis also yielded the following observations:

- Organizations deploying VMware View saved on average over $610 per supported end user per year compared with organizations using unmanaged PCs. Savings came from lower device and IT staff support costs — over $480 — and improved productivity (reduced downtime) — over $130.
- Organizations leveraging the advanced capabilities available in VMware View Premier, such as ThinApp application virtualization and View Composer image management, saved an additional $122 per year compared with organizations that had not deployed ThinApp and View Composer with VMware View.
- With companion technologies, VMware View effectively creates a platform that can address disconnected PCs and mobile and nonstandard devices. This platform can facilitate the growth of consumerization of IT within the enterprise and promote organizational synergy.
- To maximize the value associated with the adoption of centralized virtual desktops, organizations must be aware of the limitations of the platform, such as performance, mobile access, and datacenter capacity.

METHODOLOGY

IDC's ROI model draws upon surveys conducted of IT professionals who have deployed VMware View as their CVD platform. IDC's estimate of ROI is determined through the following three-step process:

- Measuring the savings from reduced operational costs (consolidation of hardware and software, avoided staff hired), increased operations efficiency, increased revenue, and improved user productivity
- Ascertaining the investment made in deploying the solution and the associated training and support costs
- Projecting the costs and savings over a three-year period and calculating the ROI and payback for the deployed solution

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IDC uses the net present value (NPV) of the savings over three years in calculating the ROI and payback period for the deployment. The NPV of the savings is determined by subtracting the discounted three-year investments from the discounted three-year benefits. IDC uses a 12% discount factor to account for opportunity cost.

IDC uses the following assumptions in its calculations:

- To quantify savings from IT efficiency, IDC multiplies time values by burdened salary (salary + 40% for benefits and overhead).
- Because the full benefits of the solution are not available during the deployment period, IDC prorates the benefits on a monthly basis and subtracts the appropriate amount for the deployment time from the first-year savings.

The ROI and payback period estimates presented within this white paper represent IDC's estimate of the general business value realized through the successful deployment of VMware View either as a platform used to manage users who otherwise are difficult to control with traditional tools or as a desktop computing platform for a homogeneous segment of the overall desktop environment for which a server-based computing architecture is appropriate.

IN THIS WHITE PAPER

This white paper provides a quantitative measurement of the business value, defined as the expected ROI, associated with the use of VMware View as a platform for the targeted deployment of a CVD computing architecture. It further provides an analysis of the View Composer and ThinApp features of VMware View, including a quantification of the value associated with the features and an overview of how they work.

SITUATION OVERVIEW

To ensure that PCs continue to be operational in order to maximize the productivity of employees, IT must perform a range of tasks. Although the extent to which these tasks pose challenges to IT varies significantly depending on the number of desktops in the environment and the regulatory requirements that must be met, the requirements for maintaining a desktop environment are fairly consistent and are often viewed in the framework of a PC life cycle. The PC life cycle includes the following tasks:

- Acquisition
- Deployment
- Maintenance
- Retirement

To simplify the tasks that make up the PC life cycle, technology vendors have developed a range of solutions that have been adopted in significant number, including configuration management databases (CMDBs), electronic software distribution (ESD) tools, asset management tools, and virtualization enabled through the use of hypervisors, among many others.

The push for client virtualization technologies really came from organizations that successfully implemented server virtualization. The fast ROI period and immediate reduction of capital expense on hardware have IT organizations looking at other pain points that can be addressed by virtualization. Existing hindrances to effective desktop management, combined with reduced IT budget during the past recession, have the organizational IT leadership turning to virtualization to reduce end-user management complexities and the associated costs.

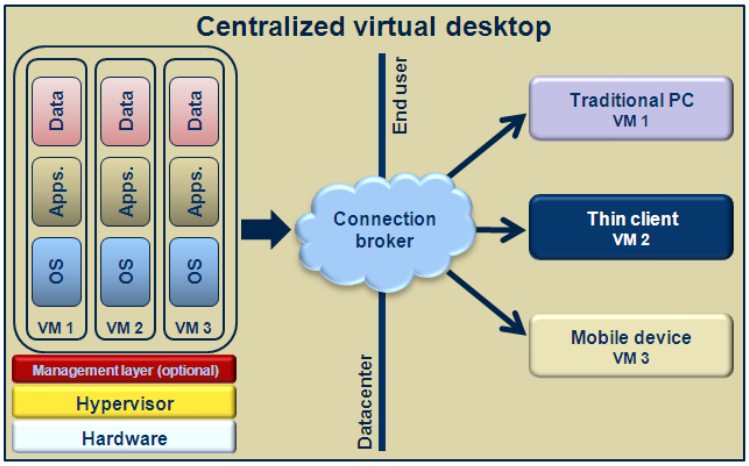
Simplifying PC Management Through Virtualization

Of the desktop technologies currently available, client virtualization technologies represent the most recent addition to the set of tools that can be used to efficiently manage PC environments. After the tremendous growth in server virtualization, which enabled hardware consolidation as well as other capabilities, virtualization technologies are now being applied to the desktop environment in various ways.

Centralized virtual desktop (more commonly known as VDI) is a form of server-based computing; it utilizes server-grade hypervisor to host multiple unique and isolated client operating systems aboard a single server or group of servers in the datacenter. The virtual desktops are delivered to end users' devices via the network (see Figure 1).

FIGURE 1

Centralized Virtual Desktop



Source: IDC, 2011

The use of hypervisor technology as an infrastructure for desktops enables a far more flexible architecture. The elimination of the logical bond between physical PC hardware and the applications delivered by the PC can significantly simplify the many tasks necessary for the management of the PC. By using this architecture, IT organizations can more effectively and efficiently manage their desktop environments, particularly for end users who are largely outside the lasso of existing desktop management tools.

The Benefits of Centralized Virtual Desktops

Enterprises have quickly discovered that the use of virtualization to support desktop workloads creates a range of significant benefits. These benefits include improved IT management efficiency, improved price efficiencies, and improved capabilities. IDC defines these benefits in one of the following three buckets:

- **Quantifiable benefits.** Centralized virtual desktops can drive benefits that are directly measureable, as showcased in this white paper. Virtual machines (VMs) rely less on the horsepower of the endpoint devices themselves, thus creating an opportunity for IT to significantly drive down the cost of endpoint hardware either by extending the life span of existing PCs by repurposing them as CVD endpoints or by replacing PCs with a thin-client device. The simplified management model of CVD can further drive down the total IT costs by enabling IT to work more efficiently. Additionally, CVD can make users more productive by improving desktop reliability, lessening the need to contact support.

- **Functional benefits.** Certain key functions of desktop management can be improved with CVD. The ability to move data from the edge of the IT environment into the datacenter inherently reduces the security risks to an IT organization. Data backup is improved because CVDs reside entirely within the datacenter. These security and backup improvements make it easier to ensure full compliance. Disaster recovery is significantly simplified because central IT staff can effortlessly revert virtual desktops back to their last known good states.

- **Organizational benefits.** Traditional tension between IT and the rest of the organization can be lessened with CVDs. Because virtual desktops are easier to manage and secure than traditional desktops, IT can provide end users more freedom and promote goodwill. CVDs can also improve the user experience, especially when compared with aging physical PCs. Additionally, CVDs can allow users ubiquitous access to their virtual desktops on any devices, which can improve overall user satisfaction.

Challenges for Centralized Virtual Desktops

Understanding desktop virtualization and the cost of deployment as long-term investments can create the right mindset and expectations when exploring this technology. The effort to deploy and manage desktop virtualization technology is somewhat involved, both technically and organizationally. Datacenter capacity constraints can significantly limit the extent to which an organization can support centralized virtual desktops internally. Inadequate storage, network, and server capacities can severely limit the effectiveness of a CVD implementation. At the same time, the requirement for desktop operations management to rely on server

administrators within the datacenter can create a challenge for those looking to leverage CVD within their desktop environments. Additionally, organizations should bear in mind issues that wouldn't be apparent until a scaled deployment is under way, such as VM density, VM boot storm, network load, and storage I/O blending.

Long-term strategy can be another challenge for centralized virtual desktops. CVD is a tool to improve the overall desktop management paradigm. The inherent benefits are results of an improved long-term desktop management strategy. Organizations utilizing CVDs as a stopgap measure to plug various holes in their desktop environment will ultimately fail in their desktop virtualization endeavors.

Enabling Centralized Virtual Desktops with VMware View: Understanding the Value

There are different platforms through which an organization can deploy an end-to-end CVD architecture. One of the platforms, VMware View, is available from VMware. VMware View dates back to 2005, when it was known as VMware VDI. As a result, VMware View is a relatively mature and scalable product, with a significant CVD market share.

VMware View is available in two editions, Enterprise and Premier. IDC believes that both editions of the platform can provide a very strong base with which to architect a CVD environment, with the latter platform adding features that quickly become valuable as the environment scales.

VMware View Enterprise

The Enterprise version of VMware View is the base offering and includes all of the components necessary to deploy centralized virtual desktops. These components include:

- **VMware vSphere for Desktop.** The hypervisor and its embedded services enable multiple unique virtual desktops to be executed by a single piece of hardware. This technology is similar to that which has been used by many organizations to virtualize parts of the datacenter.
- **VMware vCenter Server.** The platform allows for the monitoring and management of a virtual environment. vCenter gives administrators control over capabilities such as vMotion, Distributed Resource Scheduler, Fault Tolerance, and High Availability. This is the same vCenter Server that has been used by many organizations to virtualize parts of the datacenter.
- **VMware View Manager.** This product provides a second level of administrative control specifically as it relates to virtual desktops within the environment. It provides necessary capabilities for the management of a virtual desktop environment such as session management, group policies, and authentication.

In combination, each of the preceding components represents a primary building block necessary for a robust and manageable CVD architecture. From IDC's perspective, the Enterprise edition of VMware View is ideal for those organizations that are either making their first foray into centralized virtual desktops or building an environment that will be used to provide desktops to a smaller number of end users.

VMware View Premier

The Premier version of the View platform introduces four additional features that add significantly more scalability, manageability, security, and flexibility to the View product line. The added features in Premier are as follows:

- **VMware View Composer.** View Composer is an image management technology that works to drastically simplify the software updates and changes made to virtual desktops that are necessary for their continued productivity, such as OS and application patches, application upgrades, and other tasks. Additionally, the View Composer architecture significantly reduces storage requirements by using VMware's linked clone technology to consolidate multiple unique images for each virtual machine down to one shared image.

- **VMware ThinApp.** ThinApp application virtualization enhances the simplification and scalability provided by View Composer by isolating and separating applications from the OS in the base virtual desktop image. The virtualized application can then be stored on a file server so that it can be streamed into a virtual or physical desktop, enabling the sharing of a single application package by multiple users and simpler management of the application.

- **VMware vShield Endpoint.** A part of the VMware vShield family of products, vShield Endpoint offloads antimalware capabilities to a dedicated virtual machine. This enables a one-to-many security model, which requires far fewer computing resources than the traditional solutions that are built into the individual desktop VMs.

- **VMware Offline Desktop.** Offline Desktop utilizes VMware Player technology (type 2 hypervisor) to enable end users to "check out" personalized virtual desktops running on the CVD environment to a notebook computer for use offline and then "check back in" to the same desktop running in their CVD environment.

Standalone Products

- **VMware View iPad Client.** Released in March 2011, the View client for iPad is VMware's first solution to bring a true desktop experience to mobile devices. VMware has implemented many content creation features in the View iPad client, such as the virtual touchpad, virtual page control keys, and custom gesture controls. The iPad client for View is available free in the iPad App Store for all VMware View customers, regardless of edition.

- **Virtual Profile.** VMware acquired Virtual Profile from RTO in 2010. Since then, VMware has made Virtual Profile a standalone product. Virtual Profile is an advanced end-user profile management solution that can manage user settings and applications beyond the Documents and Settings folder. IDC believes that VMware did not include Virtual Profile with View because VMware does not believe that all customers will utilize the advanced features of the solution.

Enabling Centralized Virtual Desktops with VMware View: Quantifying the Value

The use of centralized virtual desktops is optimized in certain use cases where there is a high density of end users needing to uniformly access business applications. In all scenarios, CVD architecture has two primary value propositions:

- **Improved operational efficiency.** The deployment and maintenance of PCs throughout their life cycle involve a series of steps as outlined at the beginning of this document. The use of centralized virtual desktops can drastically improve the efficiency with which many of the tasks are performed.

- **Improved control over data and users.** By centralizing the storage and execution, IT can better manage its access, thereby eliminating potential security risks and in some cases more easily complying with government regulations. Centralization of the desktop, and in particular the deployment of thin clients, can also vastly simplify support for geographically distributed end users and contract workers. As one distributed banking firm manager pointed out, "It's actually cheaper now for us to provide a remote user with a virtual desktop and a thin client than to give them a normal client."

To quantify the value associated with the benefits experienced with the particular application of CVD technology using VMware View, IDC interviewed 14 customers, nominated by VMware, to articulate their experiences using the platform. These companies represent the typical virtual desktop user across a range of business sectors and sizes. IDC quantified the value that these organizations have received through the use of VMware View and compared it with the costs of migrating from the traditional desktop model to the centralized virtual environment. The following sections discuss the findings from IDC's research.

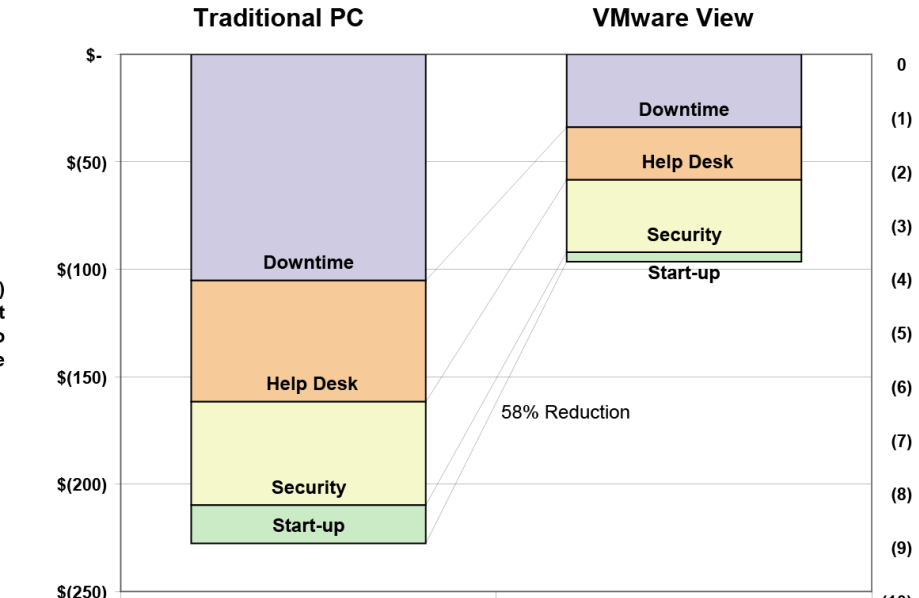
Delivering Desktop Uptime

Although often not taken into consideration in cost analysis done by IT organizations because of their indirect nature, and because the costs do not show up on any balance sheet, employee hours lost due to either the maintenance or the failure of employee PCs certainly impact the business.

Figure 2 presents our findings of the relative loss in employee hours and their respective value in dollars of lost productivity. The analysis presents the employee time and dollars lost due to issues related to PC **downtime** (software and hardware and configuration issues), **help desk** (time to resolve issues), **security** (virus removal and the like), and then the time involved in restoring the client to full operation. The numbers thus represent time consumed, on an annual basis, for the average desktop user because of issues with or maintenance of the user's PC.

FIGURE 2

Differences in Annual Employee Productivity Loss Due to PC Issues: Traditional PC Versus VMware View



	Traditional PC		VMware View	
	$ Lost	Hours Lost	$ Lost	Hours Lost
Start-up	($18)	(0.7)	($4)	(0.2)
Security	($48)	(1.8)	($34)	(1.3)
Help Desk	($56)	(2.2)	($24)	(0.9)
Downtime	($105)	(4.0)	($34)	(1.3)
Total	**($228)**	**(8.7)**	**($97)**	**(3.7)**

Notes:

- Calculations assume a professional end user with fully loaded annual compensation at $50,280.
- Model assumes end users remain partially productive (on average 50%) during outage times.

Source: IDC's Business Value Research, 2011

As would be expected, user downtime and time spent dealing with the help desk are reduced by 68% and 57%, respectively. This reduction is largely due to the benefit associated with having desktop software executed on a virtual environment, with its inherent high availability, and, in most cases, the provisioning of a highly fault-tolerant and practically stateless thin-client device with the user. Thin-client devices drastically reduce hardware maintenance issues that spawn help desk calls and user downtime, and centralized virtual desktops are highly available and in the event of a malfunction can be reverted back to working states very speedily and efficiently.

As can be seen, by provisioning centralized virtual desktops with, in many cases, thin-client devices at the edge, organizations can accrue significant soft-dollar savings.

Delivering Lower Platform Costs

The costs for building and maintaining a desktop environment tend to have a much more direct impact on IT budgets than any other IT operation. These costs include not only the entirety of the physical infrastructure but also the payroll costs associated with the human IT resources necessary to maintain and support a desktop environment.

Figure 3 represents a comparison between the annual platform costs for traditional PCs and centralized virtual desktops deployed through the use of VMware View over a five-year period. Note that the consumption of available and existing resources (such as network bandwidth) is not included in this analysis because of the arbitrariness associated with any quantification of these costs and because they are often counterbalanced with savings in comparison with the alternate platform (i.e., bandwidth savings from the elimination of delivering applications and patches to a traditional PC are offset by the bandwidth consumed by a remote display protocol used with a centralized virtual desktop).

IDC has categorized IT labor into three buckets:

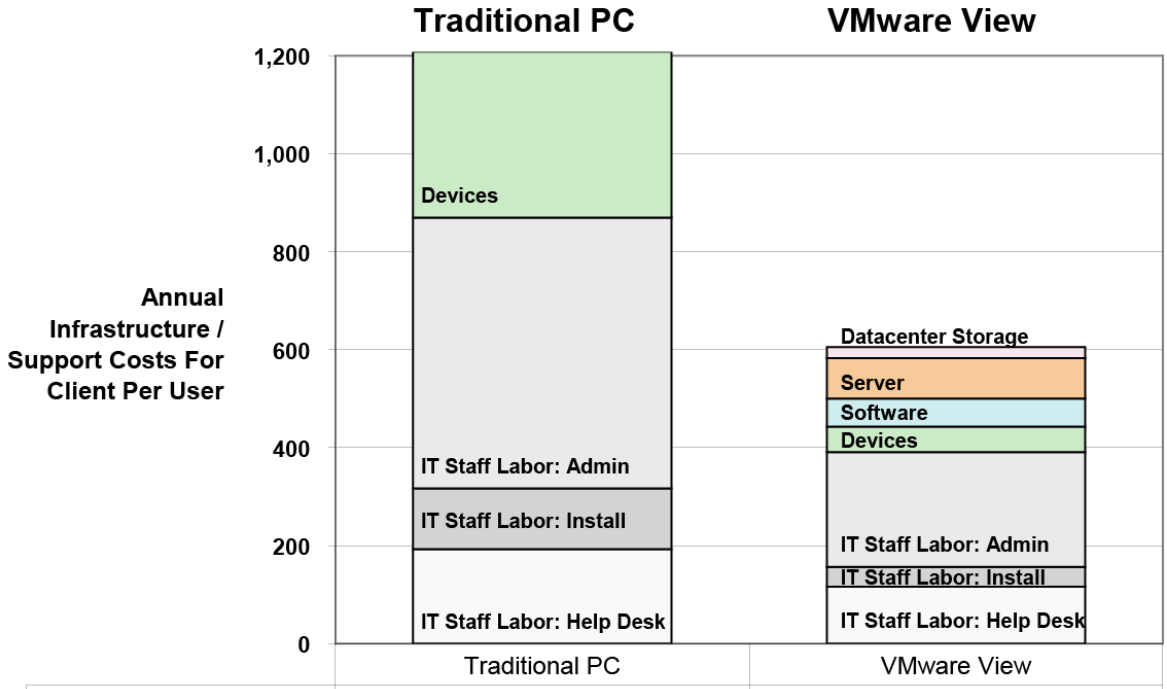
- **Administration labor.** These tasks usually consume the bulk of desktop IT's time and resources. The administration labor tasks measured in this white paper are security management of data or access, application testing and provisioning, desktop imaging and management, and hardware configuration.

- **Installation labor.** This bucket refers to tasks involving packaging and deploying applications, OS/application patching, and upgrading and supporting applications. In this bucket, time is the most wasted resource.

- **Help desk labor.** End-user support has traditionally been the biggest headache for IT, which is why this bucket is significant to the overall cost of desktop IT operations. IDC categorized providing help desk support for users, user administration, and deskside service for users as the most wasteful to desktop IT labor in this bucket.

FIGURE 3

Differences in Annual PC Infrastructure/Support Costs per User: Traditional PC Versus VMware View



	Traditional PC	VMware View
Datacenter Storage		$23
Server		$83
Software		$58
Devices	$339	$52
IT Staff Labor: Admin	$553	$235
IT Staff Labor: Install	$124	$40
IT Staff Labor: Help Desk	$193	$116
Total	**$1,209**	**$606**

Notes:

- Costs represent annual costs averaged over a five-year period.
- VMware View sample includes a mix of both Enterprise and Premier implementations.
- Server and datacenter storage costs refer to the costs of that hardware devoted to the CVD.
- Software refers to the server operating system and virtualization software required to operate the CVD.
- IDC assumes that customers are Microsoft Software Assurance (SA) for Volume Licensing customers; therefore, they are entitled to virtualized Windows at no additional cost. Non-SA customers must add a $100 VDA license per desktop virtualized.

Source: IDC's Business Value Research, 2011

Although no direct costs are associated with server, datacenter storage, and software to host a traditional desktop environment, it should be noted that there are indirect costs associated with these technologies. For example, the delivery of applications and the recording of asset inventory and desktop configurations require the use of storage devices, server hardware, and other software. However, for purposes of this comparison, we are assuming that there are limited existing desktop management tools beyond those inherent within Microsoft Windows client and server platforms. Certainly, depending on the assumptions made, it is clear that there is an incremental cost for these components when deploying centralized virtual desktops because of the network-based storage, server infrastructure, and licensing costs associated with the architecture.

Nevertheless, it is clear from IDC's research findings that savings in IT staff labor and hardware devices are the most important component of ROI, and maximization of these savings is absolutely essential to the cost-effective deployment of centralized virtual desktops. When these savings are not realized, as can occur when the technology is deployed for the wrong purposes or is designed inefficiently, the operational cost savings can be significantly reduced and result in lower, if not negative, ROI.

Reducing the IT staff labor costs normally required to manage desktops accounts for 79% of the cost savings delivered by the CVD environment. Centralizing the desktops in a secure and integrated environment reduces the hours IT staff spend in traditional desktop management by 55%. Table 1 presents a more detailed view of the specific desktop initialization, deployment, configuration management, support, and retirement tasks that respondents indicated are directly affected by the centralized desktop approach. It presents how much less time IT staff needed to spend on each desktop management task category after they implemented the centralized desktop solution.

TABLE 1

VMware View's Effect on Desktop Management and Support Labor Tasks

Desktop Management and Support Task Category	Percentage Less Labor Required for VMware View Versus a Traditional PC Infrastructure	Annual Hours Saved per Desktop	Reason for Improvement (Examples Cited by Survey Participants)
Providing deskside service for users	94	1.47	Fewer images, as well as centralized patching and application deployment, mean that there are very few reasons to visit desktops.
Desktop imaging/reimaging	85	1.03	There are fewer images, and all images can be pushed out without having to visit the desktop.
User administration (moves/adds/changes [MACs])	68	0.89	MACs are centralized without having to visit the desktop.
Hardware configuration	65	0.51	Not only are there fewer machines, but companies tend to extend the life of the machines and run fewer applications. So the hardware becomes easier to maintain.
OS/application patching	65	0.50	Application patching is simply a copy command with a newly installed version of the application. OS patching is simplified because it's not Windows on the desktop anymore. It's Windows XPE, and it's a locked-down image.
Patching, upgrading, and supporting applications	58	0.51	IT no longer has to visit individual desktops.
Packaging and deploying applications	57	0.70	Applications are given an MSI and then copied to a remote site server. The command file will copy the MSI to all of the desktops.
Application testing and provisioning	39	0.20	Applications can be tested and provisioned centrally without having to test each machine.
Providing help desk support for users	32	0.70	Although software issues do not change, hardware issues that used to result in a reinstall now take minutes instead of hours.
Security management of data or access	30	0.24	IT is able to access all desktops at any time to push patches without having to wait for individual machines to be online or offline.
Managing and supporting the desktop images	25	0.23	IT is able to reduce the number of images and the time required to tweak each image.

Source: IDC's Business Value Research, 2011

All of the data presented in this white paper is representative of the deployment of CVD technology by, in IDC's opinion, sophisticated IT managers. Most of the individuals surveyed have consolidated desktop images and adopted an efficient management model for virtual desktops. As a result, Table 1 shows significant IT labor savings in the area of desktop imaging (85%) and deskside service (94%). Less dramatic reductions are found in areas such as data management and application testing, which are less affected by the move to a virtual and centralized environment.

The Case for View Premier

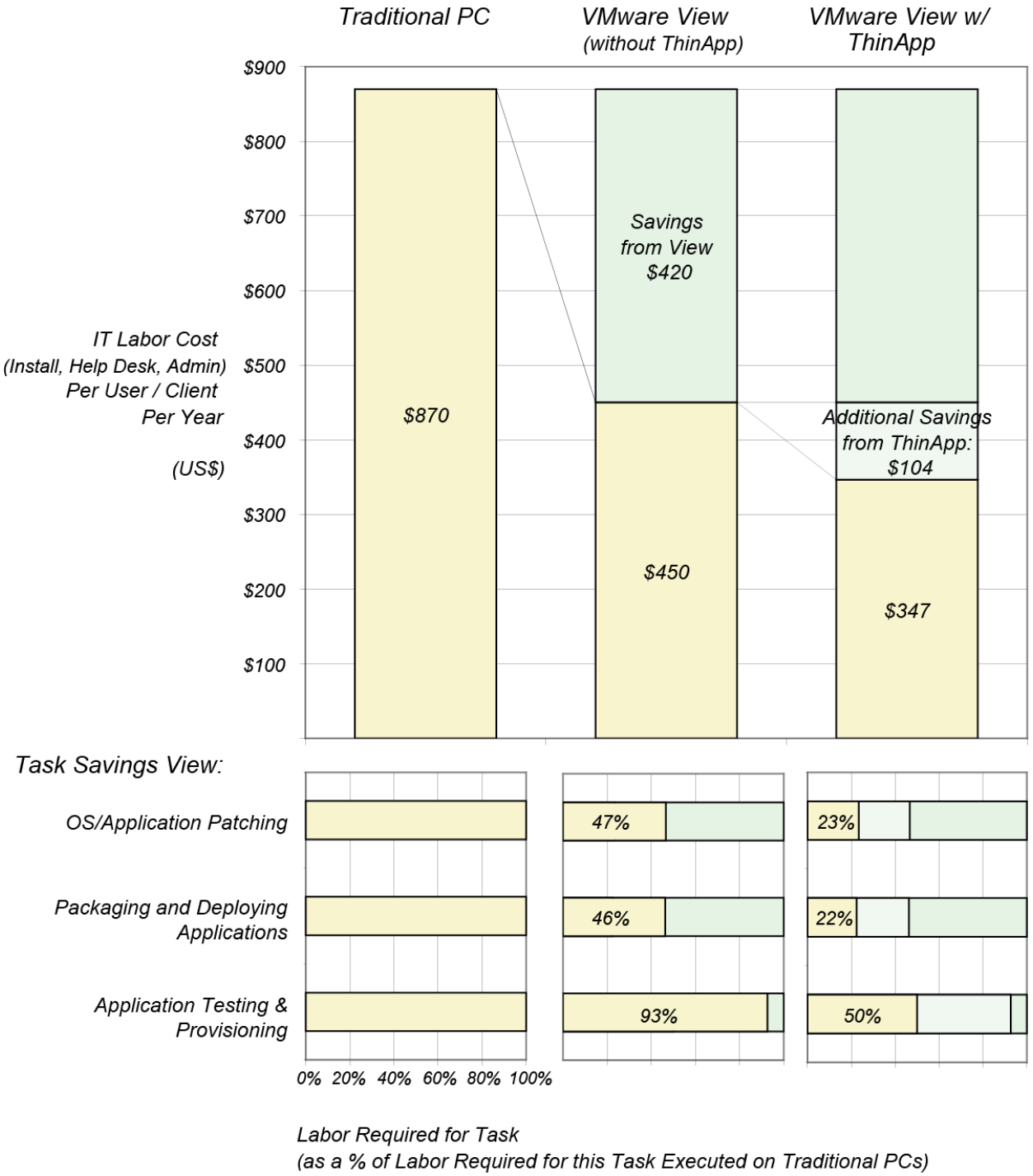
IDC also compared the costs incurred by companies that had deployed the View Premier package (the version of VMware View that includes View Composer and ThinApp) with the costs incurred by companies that had not implemented the View Premier package. The analysis revealed that View Premier delivers major benefits.

Compared with companies that had not deployed View Composer, companies using View Composer reduced datacenter storage costs required to support the CVD architecture by 36%. This reduction in datacenter storage cost translated to a savings of $18 per year per desktop.

Figure 4 shows that using the ThinApp capabilities significantly increased the automation and control of all tasks associated with application management. As one manager put it, "I don't have to use tools like SMS to deploy the package. I can just get this executable that I've created, put it out on file share, create a link, and everyone has access to it. It gives me some disaster recovery because when I put it in this one location, it replicates out to my DR [disaster recovery] site. So I have that application in DR, without really having to do anything except copy the file." The reduced IT labor costs yield an additional $104 per desktop annually (19%) in comparison with non-ThinApp implementations.

FIGURE 4

Relative IT Desktop Labor Savings: Traditional PCs, VMware View Without ThinApp, and VMware View with ThinApp

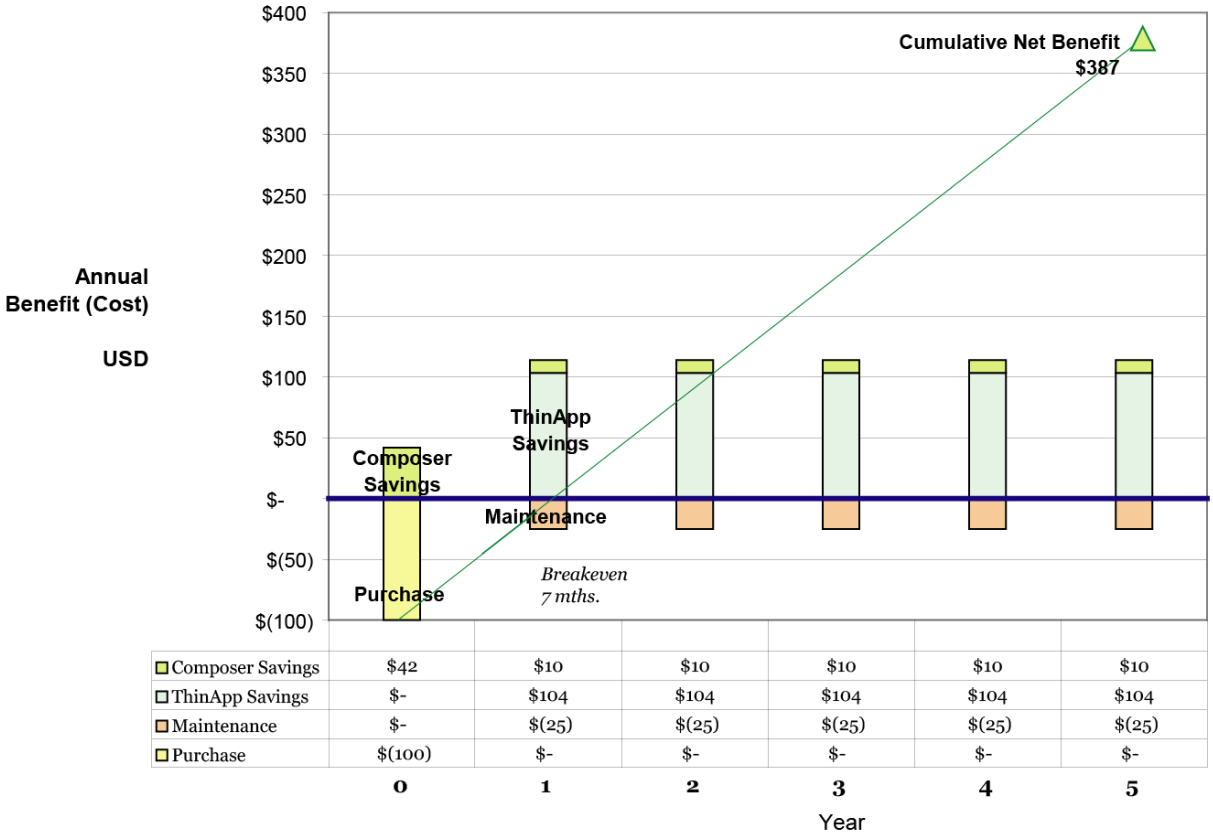


Source: IDC's Business Value Research, 2011

The combination of ThinApp and View Composer in the View Premier package generates a total of $612 in incremental benefits per desktop over a five-year period. VMware charges a $100 premium for the package, which in turn increases annual maintenance costs by an additional $25 for a total five-year cost of $225. Figure 5 shows that View Premier pays for itself in a little over seven months.

FIGURE 5

View Premier (ThinApp and View Composer) Costs and Benefits per User Pro Forma: Five-Year View



Source: IDC's Business Value Research, 2011

Quantifying the ROI of VMware View

Table 2 represents the estimated ROI per desktop associated with migrating a traditional PC environment to centralized virtual desktops deployed through the use of VMware View for five years. The analysis takes into consideration the cost increases and cost savings associated with the investment as outlined in the preceding figures and discounts those cost savings, or cost increases, by a rate of return that represents the return on capital that could reasonably be anticipated with an alternative investment (opportunity cost).

TABLE 2

Five-Year ROI Analysis of VMware View

Total benefits	$4,634
Total investment	$924
Discounted benefits	$3,322
Discounted investment	$711
NPV	$2,612
ROI	367%
Payback	5.61 months
Discount rate	12%
Deployment time	2.74 months

Note: Deployment time refers to the time to deploy once a firm has decided to move ahead with CVD; it does not include time for "proof of concept" or prototyping phases that occur before production deployment.

Source: IDC's Business Value Research, 2011

It should be noted that the preceding ROI analysis represents a collection of assumptions, outlined at the beginning of this white paper, that IDC believes are prudent and provide us with what we believe to be a reasonably accurate measure of a median ROI.

As can be seen in Table 2, the proper tactical applications of CVD technology through the use of VMware View provide IT organizations with a significant return on monies invested. Even more important in today's economic environment, with its limited access to capital, the payback period in which dollars invested are equal to dollars saved is a very short 5.61 months following deployment.

FUTURE OUTLOOK

The virtual client computing industry has been rapidly evolving over the past few years. The technology will become increasingly mature over the next 12–24 months. IDC believes the success stories and use cases from the early adopters, as well as the maturing technology, will facilitate wider adoption of client virtualization technologies and drive more scaled implementations in the next 12–24 months.

IDC also anticipates that the use of virtualization as an infrastructure used to manage desktop environments will continue to expand in tandem with the growth in the capabilities and maturity of virtual desktop platforms. The preceding ROI analysis of VMware View provides evidence that growth in management capabilities will drive adoption of hypervisors as a desktop management platform. Customers expect this advancement. As one executive put it, "The goal is to have all employees on virtual desktops…but that's the dream. It will take time. We'll wait for technology to catch up with us." Although there is a strong ROI associated with the use of VMware View Enterprise, the use of View Premier offers equivalently high returns on investment while making the platform more scalable and making it applicable to a larger percentage of end users in the organization.

IDC sees the growth in capabilities of virtual desktop platforms as a two-tier model, with growth coming through evolutionary improvements in CVD platforms such as VMware View and revolutionary improvements taking the form of type 1 hypervisors[1] becoming available for desktop PCs to host virtual desktops at the edge. IDC's understanding of the nature of these changes is noted in the following sections.

The Evolution of Virtual Desktops

Early adopters of CVD technology will continue to provide a proving ground for software vendors that will be investing heavily in what they perceive to be a very high-growth market. An increasing number of CVD platforms will become available within the market, driving competition in pricing as well as products and features. Additionally, smaller vendors that have developed niche products to address certain problems with server-based computing and consolidated image management will continue to be acquired and their products will be integrated into existing CVD platforms, creating more seamless, simple, and comprehensive platforms.

The Revolution of Virtual Desktops

Desktop virtualization has enabled several innovations that might fundamentally change the way enterprises approach IT:

- **Client hypervisor.** Like VMware with its Offline Desktop mode, ISVs have begun to offer clientside hypervisors in both type 1–based and type 2–based solutions. Regardless of the technology, clientside hypervisors can host VMs without network connectivity, effectively addressing the notebook market and bringing it into the desktop virtualization discussion. In addition, client hypervisors are the catalyst for the bring your own computer (BYOC) model, where a secure and managed corporate image lives side by side with an unlocked personal image.

- **Desktop as a service (DaaS).** For many organizations, resources and expertise aren't available to implement clientside virtualization. This is where virtual desktops hosted by managed service providers or cloud providers become a viable solution. DaaS can reduce the initial investment by requiring little, if any, onsite datacenter capacity. At the same time, DaaS can be deployed quickly, and end-user management can be outsourced to the hoster too. The user experience with DaaS, however, may not be as good as the user experience with onsite CVD solutions because of WAN bandwidth limitations. The actual Windows licensing for DaaS at this moment is also a bit hazy.

- **Consumerization of IT.** Personal and nonstandard devices have been making inroads to the enterprise lately. Managing nonstandard devices has been a pain point for IT, which spends much time on either keeping the devices out or supporting them. Desktop virtualization has created a platform where any device (mobile, personal, nonstandard) can access the same data and desktop environment while

[1] Type 1 (or native, bare-metal) hypervisors run directly on the host's hardware as a hardware control and monitor, which in turn allows "guest" operating system(s) to run on another level above them.

ensuring security. Considering that many enterprise leaders are now some of the most vocal advocates of nonstandard devices, IT will have a hard time supporting the influx of devices without virtualization.

CHALLENGES/OPPORTUNITIES

Organizations looking to virtualize their client environments should carefully analyze their own organizational needs, develop a specific client virtualization strategy, and then adopt the most appropriate types of client virtualization technologies that fit their needs. However, that's not to say that organizations are limited to one specific client virtualization technology; more often than not, better results can be realized through combining technologies, as depicted in this white paper.

Because the use of centralized virtual desktops is still considered fairly new, IT organizations will find that testing and proofs of concept take longer and cost more for CVD technology than for many other technologies that they deploy. To maximize ROI on these projects, organizations must have a comprehensive testing phase so that there are no significant surprises when the technology is put into production. Furthermore, there are many potential "gotchas" associated with centralized virtual desktops that can be easy to miss unless the proofs of concept take into consideration all of the variables that exist in the production environment.

To address the complexities associated with the use of CVD architecture, IT organizations should take a conservative approach regarding the setting of expectations with their management teams. This will ensure that projects are not "oversold" and that the reputation of the technology is not hindered if certain objectives are not met.

Not every organization will have the capability to accomplish a desktop virtualization project internally. IDC encourages IT management to find service providers that have the right expertise and resources in planning and implementing a virtual desktop environment.

CONCLUSION

An analysis of customers deploying centralized virtual desktops enabled with the VMware View platform in production clearly shows that IT organizations can expect to yield significant value when deploying the technology appropriately. Because CVD leverages the benefits associated with a flexible foundation, made possible through hypervisors, IT organizations can begin to manage users and desktop use cases that typically were difficult to control before the advent of centralized virtual desktops.