

# VIRTUALIZATIONVISION

An interactive eZine from IDG Enterprise



## Virtualization 2.0: The Desktop Revolution

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IDG Enterprise Custom Solutions Group

CIO **COMPUTERWORLD** InfoWorld **NETWORKWORLD**

# Drive out complexity with desktop virtualization

By Mark Templeton, CEO, Citrix Systems, Inc.

IDG Research Services recently conducted a study that clearly illustrates how IT professionals are suffering from the complexity they are forced to deal with day to day. Of the more than 200 IT pros surveyed, nearly three-quarters said their IT environments have become so complex that it's limiting their ability to achieve strategic business goals.

I can't say I was terribly surprised by that finding, because it mirrors what we at Citrix hear every day from CIOs. It's why we've focused our entire company on helping customers simplify computing by delivering IT as an on-demand service.

One technology that can dramatically reduce IT complexity is desktop virtualization. Instead of making IT manage, secure, patch and update thousands of unique desktops individually, solutions such as Citrix XenDesktop enable it to manage everything centrally. The time required to get new users up and running is reduced from days to minutes. Moves, adds and changes are a snap. Updating and patching are simple. And security is far tighter and easier to control.

Desktop virtualization also simplifies network connectivity for employees, making them more productive. With virtual desktops, users are no longer tethered to a specific device. They simply grab whatever PC, Mac, laptop or smartphone is most convenient and get instant, secure access to their fully personalized Windows desktop and everything on it. As long as that virtual desktop is powered by our Citrix HDX technology, they can be sure they're getting a high-definition experience every time, even with voice, video and multimedia applications.

We're also making it easy for companies to get started with desktop virtualization. We realize there is a wide array of exciting desktop delivery technologies on the market today, ranging from VDI and shared virtual desktops that run in a data center to desktop streaming and client-side hypervisors that run at each endpoint. Some of these technologies are great for task workers but not for power users. Others work great for office workers but not mobile users. Figuring out which virtualization model is right for your needs

## The Magic of XenDesktop

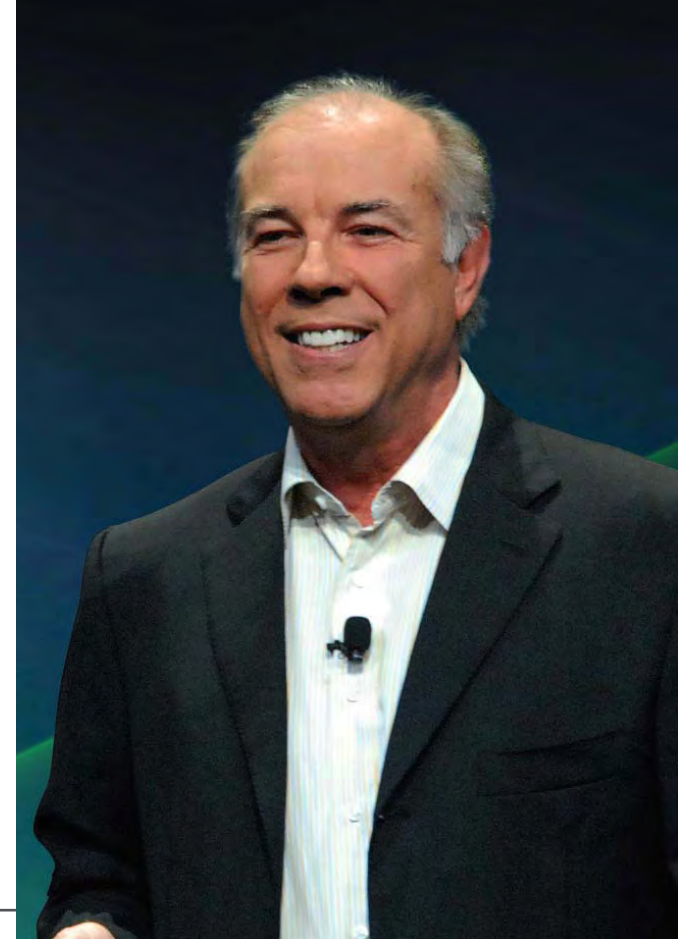
"There is no one desktop virtualization technology that will address all your unique users. But now, for the first time, there is one product that encompasses every major desktop virtualization technology."

can be confusing in its own right.

That's why we recently introduced XenDesktop 4, an entirely new version of our flagship desktop solution. The magic of XenDesktop 4 is our unique FlexCast™ technology, which gives IT the ability to deliver any type of desktop virtualization technology to any user, on any device. There is no one desktop virtualization technology that will address all your unique users. But now, for the first time, there is one product that encompasses every major desktop virtualization technology.

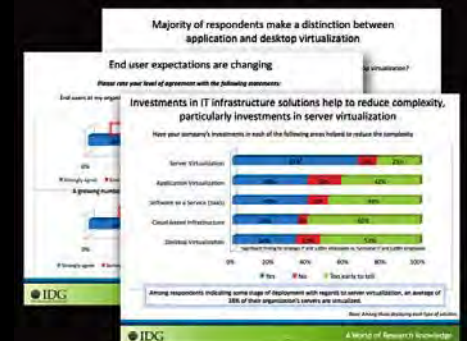
As you can tell, I'm excited about XenDesktop. I believe that it has the power to transform desktop computing, simplifying life for thousands of overworked IT pros and saving organizations a lot of money in the process.

A groundbreaking new solution that can help you deliver desktops and applications as rich, personalized, on-demand services: That's the power of Citrix XenDesktop. Read on to learn more. •



## Slide Show – New IDG Virtualization Research

How does your progress in desktop and server virtualization stack up against a research sample of more than 200 IT managers? Click here and check out the results.



[View slideshow](#)

# Desktop Virtualization: The New IT Rock Star

Simplified IT environments. Lower costs. Increased agility. Better performance. Ubiquitous access. There's a lot to like about desktop virtualization technology.

By Paul Desmond

**T**wo years ago, Scottsdale Community College managed its 2,000 college-owned desktops much like most corporations, with a mix of utilities for pushing out patches and other updates, and a staff of four IT experts to troubleshoot individual problems. Those problems abounded, given the mix of machines with different versions of applications, uncertain patch status and changes individual users made, from downloading utilities to tweaking settings.

"Desktop management was time-consuming and not 100 percent accurate in terms of delivering patches and updates," says Dustin Fennell, CIO for the Scottsdale, Ariz., college.

Today, the college is handling more applications with fewer resources. It has reallocated budget for one desktop administrator to a more strategic IT position, and when another soon transfers to a different department, he won't be replaced. The difference? Desktop virtualization technology has significantly eased the IT support burden while improving application access and performance for students, faculty and staff.

## A Familiar Story

Far too many IT shops know the kind of complexity Fennell describes, much of it due to the sheer number of applications they must support. In a survey of 480 North American and Western European IT decision-makers by Enterprise Strategy Group (ESG), almost half of the respondents supported 20 to 100 applications, with another 24 percent supporting more than 100 applications. Therefore, nearly one-third of the respondents said they spent more than 12 hours of IT staff time per client device annually on routine maintenance chores, with some devoting double that time (see Figure 1).

It's no wonder, then, that in a survey of more than 200 IT decision-makers by IDG Research Services, about three-quarters of the respondents said their IT environments were too complex and costly (see Figure 2), limiting their ability to deploy IT resources to address their organization's strategic aims and goals. Perhaps worse, 63 percent said IT complexity was "hindering innovation" at their company (see Figure 3 on page 5).

"We have 561 machines, and we're supposed to be 100 percent patched," reported an IT manager at an automobile assembly plant in Chicago, who asked not to be named. "But patching is a nightmare. It's extremely difficult to even locate some of these machines. People move around, and we lose track of their location."

Simultaneously, end users continually report desktop problems, the result of myriad issues, including viruses and corrupted operating systems, he says. "We have all these IT people running around addressing individuals' desktops—it's a huge part of the support load," the IT manager says. "I don't understand why we're not pursuing desktop virtualization."

## A Different Desktop

According to users and analysts, desktop virtualization can indeed help reduce IT complexity and deliver various benefits along the way, including simplified management; ubiquitous application access; and a more responsive, agile IT group.

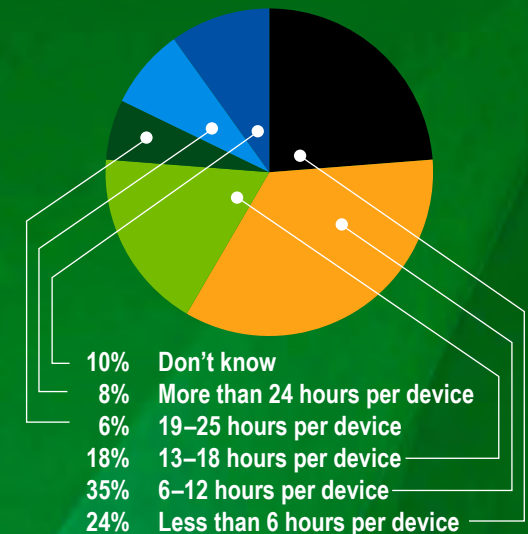
For starters, by hosting desktop images and applications on centralized servers, desktop virtualization dramatically reduces the number of operating system, application and desktop images IT has to manage.

Scottsdale Community College now centrally hosts

Fig. 1. Time consumed annually by routine PC management tasks

On average, approximately how many IT person-hours per client access device are consumed annually for routine management and maintenance tasks such as device configuration, software installs, upgrades, patches, etc.?

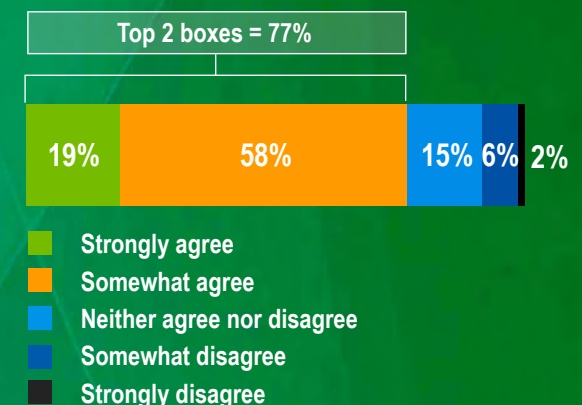
(Percentage of respondents, N=480)



SOURCE: Enterprise Strategy Group 2008

Fig. 2. Has IT infrastructure grown too complex and costly?

Please rate your agreement with the statement: "IT infrastructure has grown too complex and costly." (214 respondents)



SOURCE: IDG Research

some 100 applications, using Citrix virtualization technology, and consequently no longer has to worry about issues that used to routinely plague end users. “Maybe an update failed or somebody didn’t get a download, so people have different versions of applications and different patch levels,” Fennell says. “Then you add the applications and nefarious content employees may download—little utilities that conflict with other apps, patches we haven’t tested, changes they make in Control Panel. Rather than managing one instance of an application, as in the Citrix environment, we may be managing it 2,000 times.”

The school can also deliver new applications far more quickly by hosting them on a virtual application server and testing with a few users. Once an application is deemed ready for production, it can be immediately published for all to use—no need to distribute it to 2,000 desktops, with the inevitable handful of failed installations.

With all applications, desktops and data hosted centrally, desktop virtualization also offers an

inherent business continuity and disaster recovery plan, because it enables users to access their applications and desktops from anywhere. “Users can work from home if they can’t get to the office,” says Natalie Lambert, principal analyst with Forrester Research, Inc. “If a user spills coffee on a device, nothing is lost, because there’s no data on client devices—it’s all in the data center.”

Hosting all data centrally also improves security, because loss or theft of a laptop won’t compromise corporate data, if a proper authentication mechanism exists. And once IT is alerted to the loss, it can simply shut down access from that laptop.

“Improving security is what helps companies make the business case for desktop virtualization,” says Sumit Dhawan, vice president of product marketing for XenDesktop at Citrix Systems, Inc. “It’s No. 1 in some industries and a great benefit in others.”

Desktop virtualization also means that users can employ any device, because the technology is operating-system-agnostic. That’s especially

important, given the changing nature of the workforce, with younger workers who expect to be able to use the device of their choosing, Lambert says.

“Because it helps enable the concept of bringing your own PC, desktop virtualization is going to be a huge help for retention,” she says. As an attendee at a recent event mentioned to her, “If this is a competitive advantage today, it becomes a requirement tomorrow.”

Giving end users more computing device choice meshes with another benefit of desktop virtualization: improved productivity. When users are more comfortable with their client device, they get more done. What’s more, end users typically suffer less downtime when applications and desktops are hosted and managed centrally by IT. And users enjoy a vastly increased level of self-service, with IT able to automate the process of distributing applications to users on demand, much as users download applications, music and videos from the Web for personal use.

“People are looking at the desktop from an

## Citrix assures the best virtualization fit

No single desktop virtualization technology can address all user requirements in an enterprise, so your chosen product should be flexible enough to meet all your needs.

That’s why Citrix recently introduced XenDesktop 4 with FlexCast™ delivery technology. FlexCast enables a single product—XenDesktop 4—to support different use cases for desktop virtualization:

- **OFFICE AND REMOTE WORKERS.** Virtual desktop infrastructure (VDI) and blade-PC-based desktops, where all desktop images, applications and data reside and execute on centralized servers, are well suited for office workers and remote workers who may need access to their desktops from anywhere. The blade model is especially beneficial for high-

end, processor-intensive applications such as 3-D modeling.

- **TASK WORKERS.** When many users need to share the same application, it makes sense to host that application on a centralized server, where as many as 500 desktops can access one application image.
- **DESKTOP STREAMING.** Streaming can extend the life of powerful PCs already in the field, while reducing the burden on servers. The application is streamed to the desktop when the user logs on and executes on the endpoint, not the server.
- **MOBILE WORKERS.** With forthcoming Citrix XenClient technology incorporated into XenDesktop, users can load corporate applications onto a virtual machine on their laptop, segregating business and personal applications and data. Users can work offline, and when they connect back to the corporate network, all applications automatically

update and data is backed up.

XenDesktop 4 includes an enhanced version of Citrix HDX technology, providing a quality user experience, regardless of users’ location and devices. “Enhanced HDX as part of XenDesktop 4 offers rich multimedia, rich Voice over IP and rich 3-D application access while consuming one-tenth the bandwidth of any competing technology,” says Sumit Dhawan, vice president of product marketing for XenDesktop at Citrix Systems, Inc.

Citrix is offering existing XenApp customers an attractive upgrade option to XenDesktop. For a \$15 premium over the regular upgrade price, users get two XenDesktop licenses for every XenApp license they own, to make it simple and cost-effective for organizations to deliver the benefits of XenDesktop to all their end users.

As Dhawan puts it, “XenDesktop 4 delivers the best desktop for every user and the best-possible user experience, with the best application management built in.

operational perspective, including the amount of time and the number of full-time employees they have dedicated to managing desktops and how inefficient it's become," says Mark Bowker, senior analyst with Enterprise Strategy Group. "It's now business-driven."

Consider a hospital scenario, Bowker says, where doctors complain that it takes two minutes to log onto a PC inside a patient's room. "I've seen IT looking at different options and using desktop virtualization to address log-on time," he says, with a user ID/password providing access to all applications doctors need. "Ultimately, doctors can put more billable hours back into the business."

Scottsdale students and faculty also exemplify the power of classic virtual desktop infrastructure technology. Scottsdale uses Citrix XenDesktop for applications demanding high performance, including a CAD application, Google SketchUp and Adobe Create Suite 4. Whereas once students had to be on campus in a lab to access such applications, now they simply log on via a Web interface, using whatever computer they like, wherever they may be.

### Improved IT Efficiency

IT likewise realizes benefits from desktop virtualization, beginning with reduced costs. "For us it decreases total cost of ownership," says Fennell. Instead of spending \$25,000 upgrading a lab with new hardware, for example, he can spend half that on a new server for the Citrix farm and licenses. And whereas the lab upgrade would benefit only students using the lab, the server supports applications that can be utilized anytime by any student or faculty or staff member.

Scottsdale is also preparing to deploy a new CAD application that employs desktop streaming technology, where the application is streamed to a user's desktop on demand but actually runs on the local machine. That will enable the school to take advantage of high-end hardware it already has in place while reducing the burden on its servers.

Additionally, the virtual environment has proven so much easier to manage than individual desktops that Fennell has been able to reallocate IT resources. When

the school opened a new building in July, IT was given budget for an additional computer technician to support it. "I didn't fill that position, because the virtual environment allows us to support the new building with the same staff," Fennell says. "I was able to take that line item and use it to fill a more strategic need," namely an additional Web developer to support the school's growing Web presence.

Customers need to assess all the various benefits desktop virtualization provides when assessing the cost of an implementation, Dhawan says. If you merely want to reduce the cost of your end user hardware, you may find it's a wash. "We ask customers to look further and see the reduced costs in management and responsiveness to user requirements," he says. "That's where desktop virtualization really helps."

Customers also need to consider that, as Scottsdale has found, it's beneficial to use different types of desktop virtualization to fulfill differing user requirements. It is with just that issue in mind that Citrix, for example, recently announced its FlexCast™ delivery technology, which makes it easy for IT to deliver any type of virtual desktop to any user, on any device (see sidebar on page 4).

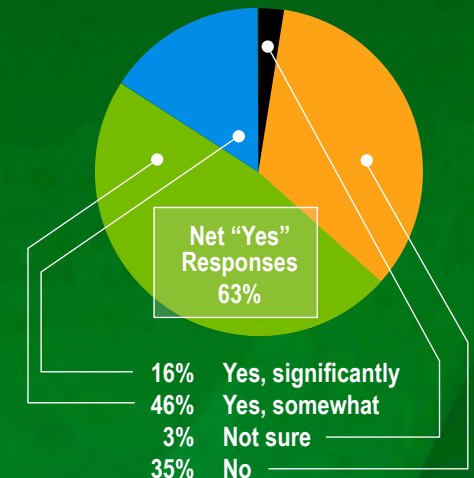
### Conclusion

As the IDG research shows, the complexity that has crept into their environments is thwarting IT groups' ability to dedicate resources to strategic projects that can deliver business benefits to organizations. Desktop virtualization technology can reduce that complexity while lowering costs and improving productivity for end users and IT, meaning a more agile organization.

Enterprises are getting the message, Bowker says. An ESG survey of some 400 North American and European companies found that 21 percent were already using desktop virtualization in production environments. "It's not necessarily across the entire company, but the fact that upwards of 20 percent are already using it makes me believe that more and more companies are willing to look at desktop virtualization and to consider deploying it," he says. •

Fig. 3. Is the complexity of IT infrastructure hindering innovation?

Do you believe that the complexity of maintaining and managing your organization's IT infrastructure is hindering innovation at your company? (214 respondents)



The public sector (28%) is significantly more likely than the private sector (12%) to say that the complexity of maintaining and managing IT infrastructure is significantly hindering innovation.

SOURCE: IDG Research

## Why is desktop virtualization glowing white-hot today?

Experts John Gallant of IDG and Gordon Payne of Citrix get right to the heart of this new IT phenomenon in this insightful, targeted video on the brave new world of client virtualization.



> Watch video now

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# Building the Future of IT

Bechtel Corporation's bold IT makeover offers a graphic illustration of the efficiencies made possible by virtualization. *By Rich Freeman*



Have you ever fantasized about rebuilding your IT infrastructure from scratch?

Of course you have. Most companies, in fact, look at the superefficient data centers run by Internet giants such as Amazon.com and YouTube and wish they had one too. Few, however, possess the courage to act on that wish.

Count Bechtel Corporation among that brave few. Looking to improve the efficiency and agility of its IT operations, the San Francisco, Calif.-based construction, engineering and project management firm gave its infrastructure an extreme makeover. Drawing heavily on server and desktop virtualization, along with operational best practices pioneered by cloud computing leaders such as Google Inc. and salesforce.com, the company erected a brand-new set of cutting-edge data centers. The results include major power savings, a more than 3,000 percent improvement in server utilization, and a sneak peek for the rest of us at what just may be the future of corporate IT.

## New from the Ground Up

Much of the impetus behind Bechtel's IT transformation stems from the challenges of supporting a highly mobile workforce. At any given time, Bechtel has employees at dozens of project sites around the globe, all of whom require

instant access to applications, customers, colleagues and suppliers. Satisfying those needs would have been difficult even if the company's data centers had been running at peak efficiency. But three years ago, Bechtel's average server utilization rate was a mere 2.3 percent and allocating IT resources to new projects could take as long as 30 days, an eternity as far as Bechtel's business managers were concerned.

Bechtel Senior Vice President and CIO Geir Ramleth knew that simply updating the company's existing systems and processes wouldn't put much of a dent in those numbers. To get the job done, Bechtel would have to reinvent its entire approach to IT. "We had to start from the infrastructure up," Ramleth says.

Bechtel's IT overhaul would eventually touch everything from networking to applications. At the core of the project, however, was a total rebuild of the company's server farm. Ramleth looked to Google for inspiration. Research indicated that the Mountain View, Calif.-based company was employing one administrator for approximately every 20,000 servers in its cavernous data centers. A single Bechtel administrator, in contrast, was supporting just 100 servers.

Ramleth soon recognized that the key to Google's remarkable efficiency was its ruthless commitment to standardization and virtualization. In 2007 he made the daring choice to follow suit by scrapping Bechtel's seven data centers and

## Game Changer: Desktop Virtualization

Desktop virtualization is poised to revolutionize the user experience as well as the way IT manages and secures PC resources. Just be aware that not all client virtualization solutions are created equal.

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replacing them with three state-of-the-art facilities in Europe, Asia and the United States. Each one uses identical server hardware and makes extensive use of XenServer virtualization software from Citrix Systems, Inc.

The results have been undeniably impressive. Today server utilization stands at 70 percent and Bechtel has increased processing capacity tenfold without raising total operating costs. Meanwhile, virtualization has helped the company slash its power spending and shrink what was once 30,000 square feet of floor space down to approximately 1,000 square feet. And because virtualization makes recovering from service outages dramatically easier, availability has never been better. “We are more resilient than we ever were, and we have better capabilities for business continuity,” Ramleth says.

### Moving to the Desktop

Building on its success with server virtualization, Bechtel has more recently begun virtualizing the employee workspace as well. “We have a very nomadic workforce,” Ramleth explains. “What you want in the end is that, regardless of where they are, everything looks and works the same.” In pursuit of that goal, Bechtel is using Citrix XenDesktop to deliver global access to virtual desktops. In the future, the company will supplement that foundation with application virtualization and advanced user profile functionality, so that an employee’s software, data and personalized settings can follow that person seamlessly around the world as well. In the interim, to enable its goal of a more “consumerized” user experience, Bechtel has integrated multiple access methods into a customizable portal interface, providing users a personalized experience for securely accessing their applications and services.

According to Ramleth, it’s no accident that Bechtel uses Citrix software for both server and desktop virtualization. He appreciates the functionality that Citrix products offer and the commitment Citrix employees have consistently shown to helping Bechtel succeed. “They’ve just been very good partners,” he says.

For its part, Citrix views Bechtel as a model customer. “It’s expanding the way the capabilities of virtualization can be realized,” says Sumit Dhawan, vice president of product marketing for XenDesktop at Citrix. In the data center, Bechtel’s story shows how organizations can use server virtualization not just to reduce their server inventory but also to save serious money on power and administration. “And the company’s vision hasn’t just stopped at the data center,” Dhawan notes.

On the desktop side, Bechtel’s efforts underscore the employee satisfaction gains that virtual clients make possible. Today’s tech-savvy knowledge workers increasingly expect corporate applications to offer the same anytime, anywhere access that Web sites such as LinkedIn and Facebook deliver. With desktop virtualization, that’s just what they get. “If you can provide the same corporate workspace for users wherever they are, you’ve met their expectations and, as a result, increased their satisfaction,” Dhawan observes.

## At any given time,

Bechtel has employees at dozens of project sites around the globe, all of whom require instant access to applications, customers, colleagues and suppliers.

### Boldly Forward

Not surprisingly, Bechtel has even-more-ambitious plans for the future. Ramleth’s long-term goal is to connect Bechtel’s suppliers directly to the company’s employees and customers, so that everyone can exchange information in real time. It’s a grand undertaking, but, thanks in part to Bechtel’s new data centers, the company has exactly the kind of flexible infrastructure it needs in order to bring its vision to life. “We could have done it before, but it would have been very cumbersome and costly,” Ramleth says. “Now we can do it very efficiently.”

Such are the rewards available to companies bold enough to wipe the IT slate clean and start over. “There’s too much change in the world on all fronts to accept that things should always be the same,” Ramleth concludes. •

