Desktop Virtualization: Challenges and Opportunities

Is VDI Recession-Proof?

Thin Is Still In

The Disappearing Desktop: How VDI Is Changing the Game

Tom Simmons: Virtualization and the Greening of IT

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VIRTUALIZATION REVIEW
It's not exactly breaking news that times are tough economically. The stock market is up and down like a ship in a storm, layoffs are everywhere, and credit is tighter than a face full of Botox.

None of that, of course, is good news for the IT industry. When money's tight, the emphasis turns to profitability through cost-cutting rather than expansion, and green-lighted projects suddenly change to red. Into this gloom and doom scenario, however, a small ray of sunshine may pierce through. Its name is virtualization. And one of the hottest trends within virtualization is virtual desktop infrastructure (VDI), also known variously as hosted desktop and desktop virtualization. VDI saves money and increases efficiencies, allowing IT departments to do more with less—yes it's a cliché, but in this case, it's true.

Take Mainline Information Systems, for example. Tallahassee, FL-based Mainline is a major partner of VMware, and has been doing VDI longer than most companies—about two years. “We do have more and more consulting engagements and proof-of-concept [deployments] with desktop virtualization, so we’re very confident that it’s beginning to ramp up substantially,” says Bill Nemesi, Vice-President of Mainline.

Desktop virtualization is significantly more complex than server consolidation, and can be a lot more expensive upfront. Still, the growth potential is greater than in server consolidation, since there’s a much larger market for end-user computers like desktops and laptops. That’s why large vendors like VMware and Citrix are spending a lot of effort developing their desktop virtualization solutions. VMware calls its VDI infrastructure “VMware View”, while Citrix’ implementation is called XenDesktop. Currently they lead the desktop virtualization space.

“We’re getting a lot more calls [about desktop virtualization], and we think that the solution ecosystem has really caught up with what was needed. The ecosystem and solution have started to come together and we think it’s going to be an attractive 2009 play,” says Nemesi.

In fact, desktop virtualization today is much like server consolidation was in the recent past; companies are just starting to hear about it and put in some test projects, to see what it can do. Tom Flink, VP of Channels and Emerging Product Sales...
for Fort Lauderdale, FL-based Citrix, says the recent increase in coverage of desktop virtualization gives partners a new opportunity. “It allows you to take advantage of the market awareness around virtual desktop. [Partners need to ask] ‘What gets me in the door to talk to customers?’ It’s virtual desktop.”

Once that first virtualization project is running, other opportunities present themselves, says Alternative Technologies’ Zorn. “They start down that path [of server consolidation], and then they begin looking at all kinds of things like pushing applications out in a virtual desktop environment from the datacenter. So now all of a sudden you’re not out there trying to service 500 PCs or 5,000 PCs ... It’s getting them [companies] to re-evaluate the total concept” of how business does IT.

Be forewarned, though, that desktop virtualization takes, in general, a lot more work to make a sale. For one thing, it usually requires many more contacts, and pitches. “In desktop virtualization, you have more departments from the customer involved,” says Nemesi. “It’s not just a datacenter play like server consolidation. End users are impacted, and desktop support, and networking, so there’s a lot more groups that are involved. It’s definitely a longer sales cycle.”

The payoff, though, can be big. Raj Mallempati, a group product manager at Palo Alto, CA-based VMware, says that selling VMware View licenses is only the beginning of the channel partner opportunity. “For every dollar that you sell of VMware View licenses, we expect that three to four times that [profit can be made] in hardware. It comes from additional servers needed to run the desktop virtualization component.”

Ruben Spruijt, an architect for Netherlands-based PQR who does a lot of VDI integration, agrees that the desktop virtualization market is small, but poised for big growth. His company, he says, is begging to do “a lot of projects in application virtualization and VDI. VDI is a niche. We have about 10 customers using VDI in proof-of-concept and in production environments.” The split, he says, is about 50/50 in terms of VMware and Citrix implementations. Spruijt gets more and more calls these days about desktop virtualization, and expects that trend to continue.

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Thin Is Still In
Wyse is out to show competitors that fat is not where it’s at.

With the economy diving south and IT shops increasingly interested in green technologies, Wyse Technology Inc.’s outspoken President and CEO Tarkan Maner feels that his company is poised for significant growth in 2009. Maner believes his company’s series of thin-client solutions will prove to be more energy efficient and robust than those of his fat-client competitors, which include Hewlett-Packard Co., Dell Inc. and Lenovo. Maner recently answered questions about the company’s current market strategy and future plans.

How is Wyse Technology adapting to the new challenges in the marketplace?

About a year ago we completed $200 million in financing to expand the business into other geographies where we hadn’t been in the past. We added more R&D resources. Right now we have about 300 R&D folks and all of them work on virtualization software. We don’t have any hardware designers anymore. We outsource that to the OEMs in Taiwan.

The secret sauce is not the box [the thin-client hardware]. The box is not that difficult to do. What’s difficult is to have that box leverage the data center, network and compute resources so you can give a 100 percent PC experience to the user in a device [that costs] under $200, which can be refreshed every 8 to 10 years. And it has no operating system running on it, is completely solid-state, has no hard disk or fan and is completely green.

In this economy, IT departments might want to accelerate what they’re doing in virtualization. What kind of payback can they get with a Wyse solution?

It’s very short [and depends] on location, applications or the industry involved. We have some customers that get payback in three months or six months, and some that get it in a couple of years. HP, Lenovo, and Dell have a complete mafia infrastructure. They sell a PC, which is fat and unnecessary, and you pay a couple of thousand dollars for it—and, by the way, there isn’t any such thing as a $300 enterprise PC. Your seven-year-old daughter can use that. But your enter-
There’s a lot of other stuff that has to be put on that PC, including anti-virus, anti-spam, performance-management software, backup, recovery, storage capabilities and network-management software. The list goes on. There are whole entrenched industries based on this model [with vendors like] Altiris, Symantec, Veritas, CA and IBM. And PC companies do everything in the world possible not to bring up thin clients until the customer brings it up.

Isn’t part of the challenge for Wyse this multi-core element? We’re getting more high-end applications and rich performance on PCs, so won’t thin-client suppliers be in a position of constantly playing catch up?

I don’t agree with that. Look at Citibank—90 percent of the users are task-based and knowledge-based. Less than 10 percent of the company does actual high-end applications. Right now, 5 percent of all enterprise desktops are thin clients. Up to 80 percent of a typical company’s employees are task and knowledge workers that don’t need PCs. We’re not saying every single PC has to be a thin client. You have [jobs like] CAD designers or radiology departments [at places like] Harvard Medical School that are going to use high-definition video applications. Let’s say we give them an expensive HP $7,000 blade workstation, but for the rest of the end users, from students to bank clerks to knowledge workers in a retail company you don’t need them.

At Wal-Mart we have 200,000 thin clients running. All the stores use thin clients, where it used to be PCs 20 years ago. Wal-Mart doesn’t do anything without extensive internal ROI [return on investment]. For a long time, PC companies did everything possible to create this problem themselves and then fix it. So based on what we see in the marketplace, there’s a huge change going on because all of a sudden the economy went down, green is a huge issue, oil went up and people have to find a way to cut costs. This is the reason our numbers are skyrocketing right now.

Tarkan Maner, President and CEO, Wyse Technology Inc., believes his company is poised for growth in 2009.

“We have some customers that get payback in three months or six months.”

Tarkan Maner, President and CEO, Wyse Technology Inc.

Tarkan Maner is a freelance technology writer.
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THE DISAPPEARING DESKTOP:
How VDI Is Changing the Game

Will desktop PCs in their current incarnation fade from view as they become increasingly virtualized?

Desktop IT managers are faced with a long list of challenges in today’s Windows environments. The issues range from how to deal with Windows Vista upgrades to security nightmares, to the out-of-control annual cost of per-desktop installation, patching and management, now estimated to be in the range of $4,000 to $6,000 per year, according to Gartner Inc. and IDC estimates.

One reason for the high cost of a desktop infrastructure is complexity. While PCs have become indispensable tools, they’re also increasingly complex and costly to manage from an IT department point of view. Hosted desktop virtualization, also called Virtual Desktop Infrastructure (VDI), looks to solve many of these problems.

The basic model is simple enough. Hosted desktop virtualization moves desktops to the data center by virtualizing those machines and then giving each user access to those desktop images over either a LAN or WAN network, using a display protocol such as Remote Desktop Protocol or Independent Computing Architecture. From end users’ perspectives, they execute their apps and use personal settings just as if the machine were physically located on their desktops.

VDI can use PCs and laptops, or a new generation of products—thin and zero clients—that can replace the legion of Windows-based desktops scattered throughout corporate enterprises. Typically, thin clients are downscaled compute resources that lack hard drives, fans and RAM, but have drivers and operating systems. Zero clients such as those offered by companies like Sun Microsystems Inc. and Pano Logic Inc. take the thin-client concept one step further: They have no drivers and embedded OSes, requiring less management and further reducing costs—according to the vendors offering them.

VDI effectively creates a form of re-centralization, harkening back to the days of mainframes and dumb terminals; skeptics say thin-client computing is basically old wine in new bottles. Still, in-
Industry leaders VMware Inc. and Citrix Systems Inc. have already seen successes in implementation. VMware points to a number of successful implementations in the health-care industry like Huntsville Hospital, where some 1,600 desktops have been converted. And Citrix has had significant success over the years selling server-based computing solutions such as Presentation Server, basically a forerunner of a hosted desktop geared toward specific applications.

The main target market for VDI is knowledge workers; the question is whether they would fight a move to thin or zero clients. In fact, the manner in which IT shops deal with important issues such as customization and personalization will have a major impact on VDI adoption rates. Taking control away from users can make buy-in difficult or impossible. That's why many observers believe that providing the same level of customization that users now have will be critical. Aly Orady, CTO of Pano Logic, calls it “change acceptance”—whether users will accept these new approaches. This will be a tricky area for IT managers to contend with because the hosted desktop gives much greater control over policy enforcement.

An IT No-Brainer
While the pros and cons of VDI for end users are still being debated, the benefits to IT departments are more obvious. According to VMware's Jeff Jennings, VP of desktop products and solutions, the top three drivers for hosted desktop solutions are, in order of priority: cost, management and security. Cost relates to both capital outlays for new computers—which can be reduced if thin clients are used—and lowered costs for ongoing management.

Improved security is another highly touted benefit, and one that's particularly useful in regulated industries like financial services and health care. High-profile laptop thefts over the last several years—some involving highly sensitive data—have shined a bright spotlight on the need for new approaches. With hosted desktop virtualization, security can be monitored more closely and virus threats reduced. Further, if a thin or zero client is lost or stolen, no loss of valuable data occurs because the device is stateless.

As this market grows, IT departments may have other options as well—for example, off-premise hosting, which is basically a form of cloud computing. Instead of anchoring virtual desktops in the enterprise data center, hosting is done by a services provider—often a telecom carrier such as Verizon or the services arm of an IT supplier like IBM Corp. or Hewlett-Packard Co. Vendors selling these types of solutions, such as Deskto ne Inc., refer to this as Desktop as a Service, or “DaaS.”

Small, but Growing
While there's considerable buzz around VDI, much of the market is still embryonic. But most analysts expect the market to experience robust growth. One market researcher, IDC, is predicting that the market for desktop virtualization software will grow to $1.7 billion by 2011. “The potential market is huge,” says Rachel Chalmers, research director with analyst firm The 451 Group.

Besides Citrix and VMware, other suppliers include Sun, Microsoft, Parallels Inc. and Hewlett-Packard Co. (largely through resale of VMware and Citrix products as well as its thin-client business). In addition, there are a slew of start-ups in the game including Deskto ne, Pano Logic and Qumranet (recently acquired by Red Hat Inc.).

VMware was the first company to market with VDI. According to Jennings, “the reason why VMware got into the VDI space was because of our Citrix customers who were asking for options because they felt there were gaps in what they had.”

VMware VDI (re-named VMware View) is a combination of products that work in concert. The three main elements are the ESX hypervisor, VirtualCenter management layer and Desktop Manager. But other VMware products, such as VMotion, play important roles. VDI was augmented last January with Virtual Desktop Manager 2, which provides desktop-specific management capabilities and serves as a connection broker.

VDI can be configured with either
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PCs or thin clients. If the latter, VMware has a large number of partners including HP, IGEL Technology Inc., NEC Corp., Pano Logic, Sun and Wyse Technology Inc. Laptops tend to be a bit of a monkey wrench in the works, but the company is working to fix that. According to Jerry Chen, senior director of desktop products and solutions, VMware is working on a project called “offline VDI.” “This is the ability to stream the virtual machine from your server, check it onto your laptop, work offline and then check it back in,” explains Chen.

The company also unveiled its vClient initiative at VMworld 2008, which includes the concept of universal clients. The key idea is that desktops and data follow users, regardless of which endpoint device is used. Other VDI products on the roadmap for 2009 include VMware View Composer, for image management and offline VDI.

The ‘Big Three’
VMware is the market leader, but competitors are racing to catch up. For the short term, both Citrix and VMware are considered to be the best-positioned companies to capture market share over the next few years. Competition will be robust.

Although VMware can claim to be the market leader in this space, it’s a claim that has yet to be fully validated because the market is so immature. Citrix could quickly become a major VDI player, for example. Its long-term record of success with Presentation Server gives it a strong base of Fortune 500 companies along with small to midsize businesses.

Citrix’s VDI prospects were boosted by the acquisition of XenSource in late 2007. XenSource included a product for full-hosted desktop virtualization (rebranded XenDesktop). XenDesktop was formally announced in October 2007 and has a pricing structure designed to undercut VMware’s offerings.

Rounding out the “Big Three” offerings is Microsoft. But just as the company is playing catch-up in server virtualization, it’s lagging even further behind in hosted desktop compared to the competition. A key issue is whether Microsoft will continue to rely on its partnership with Citrix to fulfill this area or will develop its own products internally. At this time Redmond taps Citrix for both a connection broker and XenDesktop, says Zane Adam, senior director of Integrated Virtualization at Microsoft. According to Adam, a partial hosted desktop solution is currently available for Windows Vista desktops under a new license called the Vista Enterprise Centralized Desktop (VECD).

Looking Ahead
Unlike the market for server virtualization, which has a relatively straightforward value proposition, the market for hosted desktop virtualization has its uncertainties. Will users warm up to having their PCs replaced with thin clients or other options, or to decreased control over how they use, select and configure apps?

Mobility is another issue that has to be addressed. By some estimates, the number of laptops being purchased is at around 35 percent and increasing. It’s unclear how this trend will square with growing deployment of thin or zero clients for knowledge workers. If VMware’s vClient initiative and offline VDI option is successful—still only on the drawing board at this stage—many of the challenges involving mobile workers will have been addressed.

Before hosted desktop virtualization becomes widely deployed in enterprises, these and other issues will need to be sorted out. Hosted desktop virtualization will clearly not be as straightforward as server virtualization. For example, a recent Yankee Group survey noted that “desktop and application virtualization...will experience slower, more measurable adoptions rather than the tidal wave of deployments that characterized the server virtualization market.”

The survey said that “just over one-third or 34 percent of the survey respondents indicated that they plan to virtualize their desktop PCs and laptops; and only 32 percent of the 34 percent said they have already deployed or are currently in the process of virtualizing their desktops.”

But regardless of the speed of adoption, it seems clear that IT shops will need to find viable solutions to the increasing complexities of the traditional client/server model that has bloated both the operational efficiency of PCs as well as their management costs. In the eyes of its proponents, hosted desktop virtualization can be a major part of achieving this goal.

Tom Valovic is a freelance technology writer.
Tom Simmons: Virtualization and the Greening of IT

Virtualization is a hot topic these days, as is green computing. So it is little surprise that the two would go well together. One of the biggest advantages offered by virtualization is the promise of more energy-efficient and environmentally friendly information technology systems. Government is developing IT strategies at the federal, state and local levels to support green initiatives along with their missions. Tom Simmons, area vice president of federal systems at Citrix Systems, which offers virtualization technology, spoke recently with GCN about the challenges and opportunities of green IT.

How much of a life cycle extension is there? For typical desktop equipment, we can see it go to the five- to seven-year range, so you can extend it at least double and in some cases more than that.

How is the federal government involved in green IT? It varies but is increasing. There is a presidential directive to leverage [the Electronic Product Environmental Assessment Tool] in procurement policy.

[The General Services Administration], as the chief acquisition arm of government, is implementing initiatives across the board. We’re seeing government-sponsored recycling days. We’re seeing more interest by [the Defense Department] in the green aspect of acquisition plans, although we haven’t seen it as a mandate yet.

There are mandated telework initiatives. A lot of the interest in telework started when everybody was concerned that the price of a gallon of gas was nearing $2. We are seeing a greater interest [by] government workers in using telework programs.

What impact are these efforts having on the environment and IT industry? It’s probably too early to quantify the impact on the environment. But if you look at the demands on landfill space and on energy consumption, it will reduce the impact on the environment.

In industry, we are seeing new initiatives and partnerships. We just completed our industry event, Synergy ’08, where onstage with us we had senior representatives from Intel, [Hewlett-Packard] and Microsoft.

Intel and Citrix getting together is a huge change. As a leading manufacturer of processors and a company known primarily for thin clients, there was not a lot of reason for Citrix and Intel to get to-
“The cultural aspects of the user’s experience has to be taken into consideration.”

Tom Simmons, Area Vice President of Federal Systems, Citrix Systems

Where are the big IT waste centers, and where are the greatest opportunities for improvement?
Desktops and data centers are the two big ones, and it’s hard to say which is bigger. It is hard to go into an office environment and not see a PC dedicated to an individual.

The practice for most PC users is to leave it on; you don’t completely power it down. And that is a huge energy drain.

You’re talking about a power supply in the PC, in the monitor, and who knows what else is plugged into it. We’re working with GSA and [the Environmental Protection Agency] and the likes of HP and Intel on a Power IT Down Night, an awareness campaign.

Over the last four or five summers, we have instances of brownouts during high demand for power, and we want to be able to show empirical data on how we can reduce demand on the grid during the hottest time of the year. It will be a 24-hour period where we try to use IT as little as we can.

What is virtualization?
Virtualization is the separation of the hardware component, the operating system, the application and the data, and recombining those on demand to meet specific workloads.

We can virtualize desktops and servers, applications and application suites, and authentication.

On one physical server, I can load multiple iterations of an operating system or multiple operating systems and make one server look like 10 servers.

The average server in a data center today runs at 30 percent utilization. Data centers are built out to handle peak time, so for most of the day, you’ve got 60 to 70 percent of your server capacity sitting idle, drawing power and waiting for that peak demand.

With virtualization, I can dynamically repartition servers and have them run on average at 60 or 70 percent utilization, and as workloads change, I provision the servers to change with them.

That creates a lower demand for the number of physical machines I have to have in the data center.

What other technologies contribute to greener IT?
You’re seeing a lot of innovation by the computer manufacturers in power management and cooling. [They are emphasizing] overall energy efficiency, not only from computer manufacturers but in designing your solutions so that there is less of a demand.

In the past, if I needed more capacity, I just bought more servers. Now the federal government, especially, is looking at ways of using existing IT resources more efficiently. As more applications move to [the] Web, you see technologies that increase utilization of bandwidth and processing power.

In a Citrix white paper you say, ‘Green IT can be achieved without compromise to performance.’ But there is no free lunch. Where is the trade-off?
In reality, there is a trade-off. Anytime you are changing a paradigm, there is going to be a cost of transition.

In desktop virtualization, we’re moving the cost from the desktop to the data center. That can produce a reduction in the overall cost, but there is an acquisition cost and the start-up cost of moving things to a central site. But the reason most organizations are looking at doing it ‘beyond the benefits of green IT’ is the total cost of ownership.

It is far cheaper to run, manage and maintain. Far more organizations need to pay more attention to the user side of the equation.

It is easy to justify virtualizing a user’s environment, but the cultural aspect of the user’s experience has to be taken into consideration if you are going to have a successful migration.

That means training and a good implementation plan. Change is not something the stereotypical government organization is very good at.

William Jackson is a senior writer for GCN.