JOURNEY TO DESKTOP VIRTUALIZATION

From Provisioning Devices to Provisioning Users

Enterprise-scale desktop virtualization project at EMC drives toward IT control, end-user freedom

Kenneth Stambaugh heads the client virtualization project for cloud computing technology leader EMC Corp., but he says his job isn’t virtualization. It’s empowering productivity. The project is one of the most satisfying of Stambaugh’s 22-year IT career, in part because it’s driven by big goals and enjoys top-down support.

Productivity in the Cloud

EMC views client virtualization as a key step toward a private cloud environment that will transform the enterprise and improve productivity for its global workforce. “Part of the reason I’m enjoying this project so much is that virtual computing at EMC isn’t a little point project that we’re doing simply to check off a box or gain the great efficiencies and economies,” Stambaugh says. “It’s one component of an overall strategy that’s meant to provide our users with more choice, enhance their productivity, and give them the flexibility to do their jobs from almost any device at any time and in a high-performing fashion. Of course it’s also meant to provide unified management for IT and maintain a strong security posture.”

Client virtualization at EMC is a response to changing workforce trends. “The consumerization of IT is not a buzzword for us,” Stambaugh says. “It’s real. We have to be on top of it or we’re not going to bring in and keep the talent that’s going to help us continue to succeed as a company. We also have a huge demand to provide mobile users with universal access to their desktops from whatever devices they want to use. Ultimately, I don’t care about managing devices. I care about enabling productivity. We really are at an inflection point that’s taking us from provisioning PCs to provisioning users.”

Stambaugh expects the client virtualization project will deliver a big payoff for IT by streamlining desktop management, simplifying the migration to Microsoft Windows* 7, lowering the number of unmanaged client platforms, enhancing security, and providing other benefits.

“The most important thing is the fact that you have to know your users. Virtual desktops aren’t necessarily the right solution for everyone. You’ve got to understand who your users are and what their compute requirements are, and then map the right solutions to them.”

Kenneth Stambaugh, Director of Global Client Computing, EMC
Two years into the project, EMC IT is moving into large-scale deployment after an ongoing process of planning, pilots, and proof-of-concept (POC) demonstrations. The project relies on a core team of six to eight people, joined by another dozen or more as the project requires specialized expertise in the various technologies, support areas, and operational functions. The team has worked closely with its vendor community; it pulled in VMware Professional Services at key points throughout the project and recently held peer-to-peer discussion with some of Intel’s IT professionals.

EMC’s project began with user discovery and led to a user segmentation model and use cases that the team continues to refine. Users are slotted into one of five categories based on application set, connectivity requirements, and other characteristics. The team offers recommended platforms and configurations, generally thin clients for task workers, and either intelligent or thin clients for office-bound users, telecommuters, power users, and mobile workers. But there’s considerable leeway to accommodate user preferences. “We’re trying to get away from the model of, ‘You can have anything you want as long as it’s Laptop A or B,’” Stambaugh explains. “We’re trying to say, ‘Here’s our menu. Based on what we know about you, we think this is probably best for you. So if you like that, take it. If not, customize it within a given set of parameters.’”

When Do You Virtualize?
The EMC team has identified close to a dozen use cases for client virtualization and continues to expand the list. Stambaugh, who joined the project 10 months ago, says training centers, users with multiple devices, and Windows 7 migration are some of the easiest to justify. “With virtual desktops in the training center, you can do whatever you want on the machine during the day, and as soon as you log out, it gets re-created as the pristine image you start the day with,” he comments. “For the users who have two or three or four machines under their desk, it makes sense to say, ‘Keep your best one or most important one and we’ll replace the others with virtual machines.’”

Virtual desktops offer both forward and backward application compatibility as EMC migrates from Windows XP to Windows 7. “For folks who want to test out their applications in a Windows 7 environment, we can provide them virtual desktops to do that,” says Stambaugh. “For applications that just aren’t Windows 7 compatible and won’t be because we’re planning to retire or replace them, we can provide Windows XP virtual desktops for backwards compatibility.”

Other EMC use cases target business process outsourcing, disaster recovery, and remote office operations. Two recently added scenarios meet specialized security needs. One uses virtual desktops to restrict access to sensitive applications data and servers. Another provides a locked-down image for users working on sensitive activities.

Scalable Architecture and a Blend of Virtualization Technologies
EMC collaborated with Cisco to form VCE, the Virtual Cloud Environment Company, with investments from VMware and Cisco, and EMC’s client virtualization team wanted to follow the VCE reference architecture. The team chose the VCE Vblock* 2 architecture, which is designed for large-scale deployment
Client virtualization at EMC is a response to workforce trends. It’s a way to increase productivity and choice for users while improving security and efficiencies for IT.

and combines building blocks of pooled resources for compute, storage control, and network control.

“For the hardware, our biggest criteria were solution performance, scalability, and cost,” Stambaugh states. “We wanted to have an infrastructure platform that we could grow as demand for virtual computing grew. The Vblock type 2 architecture allows us to add both compute and storage as we need them.” EMC uses Cisco Unified Computing Systems (UCS) and EMC Symmetrix VMAX* high-end storage arrays, both incorporating the Intel® Xeon® processor 5600 series to maximize energy-efficient performance, density, and cost efficiency.

On the software side, EMC’s choices are driving toward a hybrid environment that provides the manageability, security, and cost benefits of server-based virtual images while ensuring flexibility, choice, and performance for users. VMware View* and VMware ThinApp* play leading roles, and while virtual desktop infrastructure (VDI) is a preferred option, the team also deploys virtual applications and other approaches that take advantage of intelligent clients. “Virtual desktops aren’t for everyone,” Stambaugh says. “We feel that a significant percentage of our workforce will be a good candidate for a virtual desktop over time, but the beauty about ThinApp is that the application can run on a physical machine or a virtual machine.”

Among other solutions, the team is using VMware Fusion*, which allows Windows applications to run on Apple Macintosh* computers, and the Common Internet File System (CIFS) protocol, which provides remote access to user data from a variety of devices and operating systems. VMware Virtual Desktop Manager* with EMC’s RSA technology enables flexible access to applications and data while protecting the company’s intellectual property. EMC Avamar* technology offers self-service backup and restore capability with deduplication. The team is testing VMware View Local Mode as another option for combining intelligent client performance with the benefits of server-based management.

Testing It Out
EMC has conducted several pilots and POC demonstrations to test the architecture and validate use cases. An early POC in Q3 of 2009 ran VMware View 3.0 with 250 users. A 2010 POC expanded to 600 users and used VMware View 4.0. In November 2010 EMC began moving to production with VMware View 4.5.

Reflecting the project’s strategic importance, EMC has included senior executives, managers, and other power users in its pilots and POCs. Those users have turned out to be an important source of input and support, and their inclusion raised the stakes for the project team. “Some very senior people in the company were some of the most active users,” Stambaugh says. “They kept us on our toes because we wanted to make sure the environment was always up and tuned and available for them.”

Lessons and Surprises
Stambaugh reports that the project has been remarkably free of trials and tribulations, but has still brought some lesson and surprises. “One of the big lessons was that delivering a full, rich, multimedia environment or doing Voice over IP over highly latent networks on a server-based virtual desktop isn’t realistic today,” he says. “By utilizing the power of a rich desktop, using a camera that’s built in or attached to it, and taking your virtual machine into local mode, that’s where you’re going to really see some improvements.”

Another key learning is that the virtual world brings a shift in responsibilities for IT staff. “You have to think about roles and responsibility differently, because the way people support a virtual world is different from how they do a physical world,” Stambaugh explains. “Where you used to have silos of server people and storage people and network people, now people are expected to know a little bit about all those matters. You’re not necessarily adding or removing head count, but adjusting your skill sets.”

One surprise was a happy one: frequent users rapidly became wholesale enthusiasts. “We were surprised at how quickly the heavy-duty users became dependent on this environment,” says Stambaugh. “The people who are regular users are constant users, and they’re very positive. There are a lot of us who never run a fat desktop unless we have to swap out for something like a desktop video conference.”

Among other functionality, frequent users like the always-on availability provided by session persistence. “If you’re on your virtual desktop
“Our pre-sales folks who are doing a lot of demos and have multiple virtual machines running on their devices at any given time—they’re really looking for a lot more power. They’re looking for the [Intel®] Core™ i7 processor, looking for more memory, looking for solid state drives.”

Kenneth Stambaugh, Director of Global Client Computing, EMC

On the other hand, user acceptance overall has been a bit slower than anticipated. “There’s what I think of as the path of least resistance,” Stambaugh says. “It’s easier to turn on your PC and start working than turn on your PC and connect to your virtual desktop and start working. When people use the virtual environment, they love it, but you have to get them to go around that path of least resistance. And if you introduce things like latency or some of these rich media issues, that’s when the experience becomes a little less than optimal and people are a little less happy.”

The virtualization team promotes adoption by staying flexible and working to deliver the best experience for each user segment. “We’re learning as we go that there are some use cases where VDI might not make as much sense, but that there are other options for providing virtual access,” says Stambaugh. “We try to keep in mind that it’s not the virtual desktop that’s the goal, but providing virtual access to the applications and information. Whether we do that through a virtual desktop, thin app, published app, or software as a service (SaaS), that’s the direction we’re going. It’s a piece of the puzzle to enable productivity.”

Client virtualization hasn’t halted the demand for more desktop performance. “Our pre-sales folks who are doing a lot of demos and have multiple virtual machines running on their devices at any given time—they’re really looking for a lot more power,” says Stambaugh. “They’re looking for the [Intel®] Core™ i7 processor, looking for more memory, looking for solid state drives. We have those in one of our core offerings and as options within any of our offerings.”

Stambaugh says the team plans to deploy VMware Horizon® Application Manager for features that over time will help admins better manage the range of application delivery methods, including published applications, thin applications, and SaaS applications. He’s looking at Intel® vPro™ technology for its virtualization, remote management, and security capabilities.1

He’s also eager for improvements that will bring persona management into the virtualization platform and better utilize the capabilities of intelligent clients. “We’re looking at several different ways of extracting some of those rich media streams and using the local compute power of the device you’re on, yet maintaining that virtual desktop experience,” Stambaugh says.

Stambaugh is committed to using a variety of virtualization options to achieve EMC’s goals. “If someone has a valid use case and they’re a good candidate, if we’ve got room in our environment for them to have a virtual desktop, I want to give them one,” he says. “If their application can be provided via ThinApp, that’s what I want to do. I want to work to model where nobody would want to install a physical application on their own machine. I’d like to create a utility where rather than you going and running a setup.exe, you drop the setup.exe into the utility and it delivers a Thin App version of the app for you, and that app will be available to you whatever device you log in on. We’re not there yet, but the technologies are getting better every day.”

For information on EMC IT’s Journey to the Cloud: www.emc.com/emcitproven

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1 Intel®-vPro™ Technology is sophisticated and requires setup and activation. Availability of features and results will depend upon the setup and configuration of your hardware, software, and IT environment. To learn more visit: www.intel.com/technology/vpro/

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