Capacity Crowd Enjoys Desktop Virtualization Summit in East Lansing

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Technology leaders and computer professionals from across Michigan gathered in East Lansing for Merit Professional Learning's sold-out Desktop Virtualization: A Summit for Decision-Makers on December 1. The event featured presentations, real-time demonstrations and roundtable discussions covering key issues related to the implementation, support and effectiveness of desktop virtualization.

Keynote Speaker

While the positive effects of server virtualization are well-known, the benefits of desktop virtualization are less obvious and harder to quantify, according to Terrence Cosgrove of Gartner Research. During his keynote address, Cosgrove stated that the four primary reasons for implementing desktop virtualization are: lowering the costs of providing services to end users, security, user flexibility, and workplace performance reliability and support.

IT support staffs are becoming less efficient and burdened by long-standing application conflicts, Windows issues, and new complications in desktop support involving mobile devices, according to Cosgrove. Desktop virtualization is viewed as a way to provide greater control of desktop deployment and management in a campus environment, and many organizations have used the release of Windows 7 and the need to upgrade their campus desktop systems as catalysts for considering desktop virtualization.

There are four basic kinds of desktop virtualization, according to Cosgrove:

- **Hosted Virtual Desktops (HVD):** Uses virtualization on a server to deliver user environment to the desktop. Lots of potential benefits and complexity. HVD has been shown to reduce help desk transactions, but it requires constant network connectivity, can often involve high infrastructure costs, and is limited to static desktops.

- **Virtual Work Space:** Separation of user data from the rest of configuration.

- **Client Hypervisors:** Allows for lower-level management and control, but not widely adopted. Fewer than 15% of enterprise PCs will ship with a client hypervisor in 2011.

- **Application Virtualization:** Helps reduce packaging costs and has been adopted by more than 50 percent of large organizations (greater than 5,000 computers). Application Virtualization reduces the average help desk call by 18%, but not all applications can be virtualized. Only 10%-25% of applications can be virtualized. Microsoft's App V is currently the most widely adopted application virtualization software.

An important consideration when implementing desktop virtualization is performance. Cosgrove believes that a hosted virtual desktop environment must perform as good or better than a physical PC environment or else the end users will reject the virtual environment. Users will often fault the virtualized environment for performance issues, whether the problems are caused by the virtual desktop environment or not, so getting end users to buy-in can be very important to the success of an HVD deployment.

Another important factor is determining who will implement or manage a desktop virtualization environment within an organization. A department's silos can sometimes cause unexpected conflicts, according to Cosgrove. Normally an IT department has a server support team and a desktop support team, but desktop virtualization is a hybrid technology that often requires servers and desktops. The technology can spur organizations to invest in additional training, and IT management should break down client computing silos for long-term success.

Case Studies & Demonstrations
A major benefit of the Desktop Virtualization Summit was the opportunity for IT leaders to learn from the struggles and successes of professionals at peer organizations. Informative presentations from higher education, K-12 and research organizations provided a glimpse of desktop virtualization choices and implementations, and attendees gained further insight during several roundtable discussions and demonstrations led by featured speakers.

- **Stan Pope, Roger Rehm and Mel Taylor from Central Michigan University** - CMU's College of Business Administration implemented its first Virtual Desktop Infrastructure (VDI) using VMware Workstation in 2001 and has used VMware Server and VMware View implementations in recent years. Stan Pope said that VDI is being used for open computer labs, instructional labs, and classrooms within the College of Business Administration. The College's physical PCs have non-persistent virtualized desktops that use thin applications streamed over the network and also have applications installed that do not run within a virtualized environment.

CMU's College of Science and Technology has used Citrix since 2000 to provide virtualized environments. The primary goal is to provide content application access outside of the traditional lab setting and implement within some traditional computer labs. Xen Desktop is used to deliver a Windows 7 environment to both PC and Mac computer labs.

- **Prasad Calyam, Ohio Supercomputer Center and OARnet** - Since June 2009, the Ohio Supercomputer Center and OARnet have hosted VMLab, a virtual sandbox powered by VMware that enables participants at Ohio's universities to experiment with virtualization over a high-speed network. Recently, seven Ohio universities used VMLab as an administrator sandbox with separate storage and firewall resources, and several departments at Ohio State University have used VMLab to host classroom computer labs. Requests for access and demo applications are available through the VMLab web site.

Researchers have used VDBench Toolkit to measure user experiences and server performance. Data collected about opening an application, closing an application, and other tasks while using a virtualized environment helped researchers determine what works well and what doesn't. According to Calyam, the experience of users is subjective and is critical to the success of a virtualization installation.

- **Alex Berryman & Prasad Calyam, Ohio Supercomputer Center and OARnet** - Researchers used VDBench to measure the effectiveness of virtualization deployments, simulate user load, and gauge user application performance. Important factors, such as the available memory on virtual machines, the size of downloaded images, and video latency, were used as benchmarks for determining bandwidth consumption and network health. CPU usage, bandwidth usage and memory usage were then compared to determine the performance of applications in the virtual environment.

- **Gary Wroblewski, Central Michigan University** - Technology, user expectations, vendor product evolution, and licensing are among the factors that could impact the future of virtual desktops, according to Gary Wroblewski.

During his afternoon presentation, Wroblewski highlighted several campus technology trends:

- Over 90% of students bring their computer to campus.
- A number of new computer platforms are setting customer expectations, including iPads, mobile devices, and Google Apps.
- Server virtualization has been very successful.
- A Microsoft TCO study indicated that a virtual desktop infrastructure is 11% more expensive than traditional PCs. Wroblewski stated that the increased cost of Microsoft licensing is one reason for the added expense.

Numerous challenges face IT departments that are considering desktop virtualization, according to Wroblewski. Providing virtual desktops from the cloud is an option, but the challenge then becomes providing the optimal end-user experience with an acceptable level of network latency. Another issue with virtual desktops can be compatibility with multiple devices, such as iPads or mobile devices. Also, the current support and management processes used on a college campus do not accommodate virtual desktops well.

- **Michael Zimmerman, Martin Kohl and Jim Lofquist, Macomb Community College** - When presented with the challenge of implementing an online certification course, Jim Lofquist investigated the service offerings of several cloud-based providers for a pilot virtualization project. After choosing Skytap, he set up a virtualized environment running Red Hat Linux and then duplicated it 24 times to provide each student with a standard desktop environment for the Linux course. The instructor could use a feature provided by Skytap for over-the-shoulder views to keep track of students work, and when a student mistakenly deleted his Linux environment, the instructor returned the student's desktop to its original state with a simple click on the administration tool. Macomb Community College has been very pleased with the results of the pilot course, and Zimmerman indicated that there are plans to use the cloud technology for future courses.

- **AJ Cook and Pete Young, Rockford Public Schools** - The district deployed 350 virtual desktops, targeting secondary computer labs, media centers, and support staff. The key reasons for implementing desktop virtualization were to improve productivity, increase network access, save energy, and enable support staff to quickly implement desktop changes.

- **Ryan Henyard, University of Michigan** - The Virtual Desktop Infrastructure (VDI) at the University of Michigan is composed of four areas: virtual sites, server virtualization, shared desktop image, and enterprise storage. Henyard said that VDI reduced redundancy and would save the University money as a centrally provided service. For U-M's virtual sites, Information Technology Services (ITS) manages the virtual environment and provides remote access to common and course-related applications. The service allows Macintosh computer users with a way to use Windows-only software and enables campus units to make their own custom desktop images available through
VDI. The service is fee-based with units charged each month for their desktop pools. The University uses VMware with a compact server architecture. A VDI network is provisioned to each new customer, and ITS can create a new VDI network in two weeks, with the customer choosing the specifications of the virtualized machines. The virtual sites system is currently deployed on 300 machines and could be expanded to over 500 machines in the future.

For an archive of the event's presentations, please visit the Desktop Virtualization: A Summit for Decision-Makers web page.