

2009

Computing & Communications Services



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Hosted Virtual Desktops



Executive Summary

The cost of personal computing equipment (desktops/ laptops) is a large, continuing, University expense. Maintaining currency and supportability as well as reducing energy costs and being environmentally conscience requires scheduled equipment replacement. Personal responsibility for the systems consumes user's time. Departmental and central IT support is magnified by the diversity of systems and configurations, expanding the cost of periodic renewal. Hosted Virtual Desktops (HVD) is a new technology that promises significant reduction of these equipment costs and improved support of IT resources for information workers.

A survey of EDUCAUSE resources and Gartner reports and an interview with a Gartner consultant provided a clear industry perspective of HVD technology today. The information and recommendations of the consultant were clear and provided the basis for this report. The variety of desktop requirements and performance expectations across the University does not lend itself to a one-size-fits-all solution. There are examples of effective use of HVD to enhance the learning and research environments, providing access to specialized expensive applications to students. This use of HVD is *not* considered in this report. Introduction of HVD will produce immediate savings for administrative areas supported by the CCS *Managed Desktop* service. This investigation considers CCS opportunities to invest in a Hosted Virtual Desktop strategy to reduce costs and improve support, both for CCS and user departments. This report provides short term, tactical and strategic recommendations to initiate projects to improve administrative and support readiness to take advantage of the technology when it becomes cost effective.

Cost savings will accrue over time as workstations are replaced with smaller systems designed to support HVD with minimal configuration.

While achieving cost and support savings, HVD delivers centrally-managed workstations with specific controlled configurations. Users will not be able to configure their own workstations nor use them for personal purposes. Selection of Apple MACs for personal workstations may not fit this model initially.

Recommendations

Hosted Virtual Desktops (HVD) is a strategic technology with significant promise. CCS should begin planning and develop expertise now, adopting HVD when it becomes cost effective.

- 1. Immediately - Develop experience with a small scale pilot to build readiness and inform procurement decisions.***
- 2. Next year – With a client unit partner, build on the pilot to develop experience to gain experience with deployment and remote management tools.***
- 3. Re-assess cost picture in Fall 2010 to develop a multi-year deployment plan.***
- 4. Ongoing – Build awareness of value with senior management and departmental IT leaders to expedite wide-scale deployment in 2011/12.***

Observations

Gartner reports

- The 2009 “Hype Cycle for Virtualization notes that HVD is just starting the slide into the “trough of disillusionment” and will reach mainstream adoption in 2-5 years.
- HVD is a very strategic technology with a lot of interest and pilots providing feedback. The consultant’s position is that **“Benefits are real but not yet affordable”**.
 - Not enough savings at the real desktop (still need basic desktop unit).
 - Virtualization efficiencies are still low to reduce server costs enough.
 - Added cost of software w/o savings (e.g. Windows VECD licenses / mgnt tools).
- Most pilots indicate HVD products, management tools, and deployment strategies are not yet mature.
 - Lacking manageability yet, HVD can result in additional support effort.
 - Allocation of resources with current “broker” implementations still tricky.
- Start now! With free base software, develop experience and knowledge through pilots.
- Begin deployment in 2010 in well defined, controlled application areas.
- Maturity of HVD will link with Window 7 maturity in 18-24 months.HVD is not for all applications; avoid CPU intensive applications and rich media.
- VMware and Citrix cover 90% of market. VMware simpler; Citrix more functionality.

A quick assessment of CCS readiness indicates

- Client Solutions do not have a documented profile of requirements, applications, and configurations of user desktops which can use used for planning decisions.
- Managed Desktops clients control their own desktops and may use them for personal purposes. A HVD solution aimed at cost reduction will require a significant change to user expectations for personal use and ability to customize their workspace
- Managed Desktops supports 400 desktops over 14 departments with different applications and requirements. Planning can reduce the differences across units and support buy-in from managers and departmental IT support.
- Many departments have their own, sometimes home-grown “mission critical” applications which may or may not be compatible with HVD. Early consideration should be given to adapting or re-deploying these applications.
- CCS is rapidly developing expertise in virtualization on the server side. This experience can extend to support the servers for HVD. The Virtual Server

Platform can be extended to support HVD. While choosing the best HVD platform, consideration of this existing experience is a factor.

- CCS is providing leadership in the deployment of Windows 7 on campus. Deployment may occur over the next few years as desktops are replaced and locally developed applications are verified or upgraded to work with Windows 7.

Noted

- Some applications will not perform well in a VHD environment, especially if compute intensive (e.g. larger financial spreadsheets) or graphic intensive (e.g. graphic design). These will be solved in the future with better software or special hardware. For initial VHD deployment, the strategic plan should evaluate alternatives.
 - Special configurations for users with these requirements.
 - Selection of alternative VHD-compliant application tools.
 - Redevelopment of the application as a network (browser) application.
- Some research notes that running an internet browser in a virtual environment creates performance problems. Applications such as Gryph Mail need to be thoroughly tested.
- Support for workstation platforms other than Microsoft is a promise of VHD, not yet mainstream. However, to minimize costs and support effort, only one or two system platforms would be deployed.

Specific Recommendations

1. Immediately (this year), initiate an HVD pilot to develop expertise.

- i. Target internal CCS areas such as Help Centre and some manager desktops.
- ii. Try both VMware and Citrix to understand products.
- iii. Investigate HVD performance for applications such as FootPrints and Gryph Mail.
- iv. Investigate HVD performance for work-at-home use.
- v. Evaluate an advanced suite of management (monitoring and control) tools to leverage supportability.

2. Next year, budget for a limited-deployment HVD project in selected departments.

- i. Focus on deployment of HVD on existing desktop installations.
- ii. Continue evaluation, evaluating Citrix/VMware and investigating management tools. Provide key input to a procurement decision by Winter 2010.

- iii. Develop a Workstations Profile of managed desktop services applications and requirements to understand opportunities and risks. Integrate profile as operations and planning resource for managed desktops to provide visibility. FootPrints may be a suitable platform for this.
- iv. Develop a Partnership with 1 or 2 user departments to ensure buy-in and support for departmental application deployment in HVD.

3. Start now to deploy HVD widely in 2 years.

- i. Understanding that non-technical issues such as the “culture of personal desktops” take additional effort and time, develop a Communications Plan, starting next year to communicate the value of HVD and involve users in the change management.
- ii. In conjunction with the communications plan (3.i.), expand the desktops profile (2.iii.) to un-supported units to identify opportunities and encourage buy-in by departmental IT admins and management.
- iii. Based on the desktops profile (2.iii.), identify mission critical or departmentally important applications that don't work well under HVD and develop plans (with the affected units) to re-develop those applications for compatibility.
- iv. CCS engagement with owners of enterprise services is important, identifying critical desktop applications and providing adequate lead time for re-development.
- v. Use TCO as a key reported KPI for the multi-year deployment.
 - In Fall 2010, with additional input from Gartner, develop a TCO comparison for the UoG to understand project potential.
 - Coupled with budget planning, the TCO can indicate appropriate university timing for deployment and builds a case for additional funding.
 - Update TCO annually to track industry and deployment improvements.
- ii. Develop a detailed managed desktop support strategy, including
 - Revised lower-cost desktop hardware refresh strategy.
 - Windows 7 deployment strategy.
 - Procurement processes for servers, HVD software and mgmt tools.
- vi. If CCS is ready as an early adopter, special partnerships with vendors may be possible. Consider an early strategic procurement process. Other neighbouring universities may be planning HVD adoption' partnerships could leverage cost savings and expertise.

Possible Projects

Rather than having many small projects, the HVD deployment should be developed as longer projects with several sub-projects defined by milestones. Adjusted to align with CCS skill sets, one of the ways of defining this could be

1. User Awareness and Readiness
 - User Communications Plans
 - Building partnerships with client units
 - Assessing client application needs; assessing application re-deployment
2. Client Solutions Capacity Readiness
 - Pilot Projects; Managed Desktop Strategy
 - Training; Management Tools
 - Desktop Asset and Application management database in FootPrints
3. Financial Readiness
 - TCO analysis including overall cost assessment
 - Building a Case to senior management; input to CCS budget
 - Tracking and reporting KPIs
 - Enabling partnerships with vendors and other institutions.

Appendix - Background Papers

Gartner

- G00155498 *good starting point for CCS TCO estimates*
Total Cost of Ownership Comparisons of PCs with Hosted Virtual Desktops
Margevicius, Silver, Troni; 4 August 2008
G00160383
Defining Four Desktop Virtualization Markets
Gammage, Margevicius; 29 August 2008
G00160447 *linking maturity cycles of HDV and Windows 7*
Skip Windows Vista for Hosted Virtual Desktops
Silver, Gammage; 28 October 2008
G00165252 *includes "What HDV is ..."*
Best Use Scenarios for Hosted Virtual Desktops
Margevicius; 25 February 2009
G00166851
Do New Virtualization and Streaming Use Cases Bend or Break Software Licensing Rules?
Stewart Buchanan; 23 April 2009
G00168186
Why, How and When to Personalize Hosted Virtual Desktops
Gammage; 18 June 2009
G00168811
VMware View and Citrix XenDesktop Battle for your Hosted Virtual Desktops
Margevicius, Troni; 7 July 2009
G00168837
Hype Cycle for Virtualization, 2009
Gammage, et al.; 21 July 2009

Vendor Papers

- DELL Virtual Desktop Infrastructure Study**
Dell Enterprise Solutions Engineering; 2008 Whitepaper, online
Extending Benefits of Virtual Remote Desktops Using VMware and Dell EqualLogic SANs
Sherbak T., Banson C.; *Dell Power Solutions*, November 2008
Citrix XenDesktop: The Best Desktop Delivery System For Today's Demanding Business Needs
Citrix; 2009 Whitepaper, online