Z. SMITH REYNOLDS LIBRARY WAKE FOREST UNIVERSITY

Library

SunRay Thin Client Summer 2010 Final Report

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Overview[edit]

This report is the product of a proof of concept (POC) project involving the ZSR Library and IS using Sun Ray thin client computers. This report includes an overview of the tests done, observations about successes and challenges, and recommendations for next steps.

Review of pilot project[edit]

This project included two types of tests. The first was a pilot of student use of thin clients and the second was a test of staff use. Thin clients are viewed as a good solution for these applications for many reasons, including:

- Thin clients proved to be fast and stable and had no significant hardware or software issues during the pilot.
- Virtually no platform maintenance required during pilot period
- Simplified client management (during this time, non-pilot public windows machines required regular updating)
- Low power use
- Benefit of destruct-on-logout configuration reduced need for other programs normally used for security in windows environments (e.g. deep freeze, winselect, windows security permissions)
- Lower TCO and loss risk

Thin clients for student access in library[edit]

Three Sun Ray thin clients were put across from the circulation desk. They were configured running RedHat Linux on the desktop and were used for web browsing and printing of office documents and pdf documents. The functional expectations included:

- Automatic login
- Destruction of userdata on logout
- Preloaded tabs in web-browser to facilitate access to common resources (e.g. email, library resources, University and external websites).
- Printing to the library pay-for-print system on both Color and Black and White printers

A survey was created to gather user feedback and was placed on the desktop of the machines. Staff were also asked to gather feedback and submit to a team member. Although this survey was deployed nobody took the time to complete it. Verbal feedback was provided from staff members and is documented in the successes and challenges listed below.

Successes[edit]

- The change to a thin client and Linux based desktop did not seem to be an issue with students.
- Thin clients proved to be as fast if not faster than windows machines (particularly during boot time and reset time)
- Printing using Open Office did not appear to be a problem for students

Challenges[edit]

- Printing was challenging because the name of the desktop session (e.g. utku1, utku2) was combined with the name of the application printing. Because we use open print queues students were not always sure which print job belonged to them
    - This could be addressed by trying to implement the LPD service on linux machines [1] <http://pharos.custhelp.com/ci/fattach/get/680/>
        - Successfully tested on 9/2/2010

Thin clients for staff use[edit]

Two thin clients were configured to connect directly to Windows VMs. These Windows VMs were pre-loaded with library software including Voyager, Connexion, Pharos and library printers. One machine was placed in Circulation and served as the primary staff machine at the desk and one was placed in Resource Services and was used as a student/testing workstation. The primary applications tested were OCLC Connexion, Voyager modules (e.g. Circulation, Cataloging, Sysadmin), Pharos Remote and printing. A similar process was followed for gathering feedback from staff.

Successes[edit]

- Barcode scanner worked seamlessly in all applications
- Printing worked fine to staff printers
- Except for the issue noted with OCLC Connexion Windows Clients, the tested applications worked as expected
- The machine placed in the Circulation area was used heavily with very few problems over both summer sessions.

Challenges[edit]

- OCLC connexion proved to be slow when updating MARC records. All other Connexion functions responded adequately. Paul worked with the library to investigate this issue and helped determine that this specific function of the software was using system resources in an inefficient way. No other problems of this type were reported on other applications.
    - A possible solution for this would be to have students use the web-based Connexion client as opposed to the Windows based client

- Importing records into Voyager cataloging appeared to be slower than on desktop machines
- There were three instances where the Windows session was closed and the user was not able to reset the terminal on their own.
- Staff observed that USB jump drives and sound (in the form of listening to music) did not work
  - It is possible that this was a configuration issue but should work on Windows thin client systems.
  - The system security did not allow additional software installation by design. While the students perceived this as an issue, this is viewed as a benefit of using thin clients in these areas.
- Screen refresh rate for videos was not optimum (not a central use of the tested area)

Observations[edit]

- Public computing uses appeared to be a good fit with thin clients (e.g. thin client, Linux desktop, Open Office).
  - Open Office worked well for word printing, spreadsheet and power-point applications. There are known issues with advanced features of powerpoint but no students commented on performance issues with open office during the pilot.
- Staff computing required Windows and further testing for robustness is suggested before widespread adoption.
- The server infrastructure required to implement a thin client solution is not held by the ZSR library and IS does not currently offer this as a service (under study at the time of this report). Having a "turn-key" solution for implementing thin clients would make implementing them much easier.
- Windows sessions on thin clients for this poc project were non-destructive. This solution means that each windows session would have to be updated individually.
  - VDI might be a possible solution to this issue
- Server had to be rebooted three times during the POC. Causes tended to be related to the Windows VMs.

Next Steps[edit]

- Implement a public computing / staff computing solution given that the printing issue is addressed. Use these machines in short-term use (e.g. OPACs, thin terminals in remote storage facility or thin terminals. Apply for LSTA grant with NC State library (Basic Equipment grant up to $25K) to fund system.
  - Benefits
    - Lowered staff time for maintenance
    - Lowered TCO for OPACs
    - Significantly lower power requirements (4 watts vs 75 watts)
    - Longer term hardware (refresh every 5-10 years)
    - Positions library to adopt more complex solutions in future (e.g. use in reference area)
  - Requirements
    - Server with quad core, 8 GB ram
    - 15 thin clients for public computing - running RedHat Linux
    - Ballpark cost for 15 clients and server would be $400 per client X 15 = $6000 + $3000 for a server. No monitors (use existing). Divided over 5 years this would come to just shy of $2000 per year. This ballpark estimate is Retail based.
  - Recommendation passed to directors for consideration as upcoming goal for 2011 on 9/2/2010
- Implement limited use in appropriate staff areas
  - software based / function based limits
  - Windows requirement for most library backoffice functions is an issue
- Consider use in more advanced public computing labs
  - Currently using in Digital Media Lab with OSX/AquaConnect on 3 thin clients and Linux on 2 thin clients.