

IT Cost Reduction Strategies Report: Managed Environments and Virtual Desktops

Background: In April, V.C. Marc Hoit requested an investigation of potential savings across campus from the use of managed environments and virtual desktops. A working group was formed to examine ways that such savings could be found and how programs to achieve them could be implemented. The material below reflects the findings of the working group.

Background

- NC State has many managed computing environments for machines on campus; this includes Windows, OSX, and Linux.
 - Microsoft Windows: Some are making use of Novell Directory Services and Novell Zenworks, while some are managed using Microsoft's Active Directory. Many are standalone machines with little or no administration.
 - OSX: There are a significant number of Apple machines on campus; many of these are running OSX. There is a managed kit available for these machines although many are running local installs.
 - Linux: Campus offers a Linux kit based on RHEL.
 - The campus kit loads can be more easily kept up to date for patches and offer a way to distribute a more secure environment than is present on many of the standalone machines.
- While there are a significant percentage of desktops that are part of some managed environment on campus, there are still thousands of machines that are not part of a management infrastructure. The level of support available for these machines varies widely across the university.
- The workstation hardware itself is as varied as the management of the machines. Many model lines from multiple vendors are represented, with purchasing distributed across the university populace. Unplanned hardware acquisition can complicate systems administration of the machines and lead to the expenditure of both funds and personnel to support them.

Proposal:

- Explore Consolidated Purchasing - The most likely initial source of savings the working group found will likely come from some form of consolidated purchases of workstations and other IT equipment as a campus. Given recent experience, the number and frequency of consolidated purchases needs to be determined as well as the proper degree of customer, vendor and purchasing interaction. While the "MarketPlace" is useful tool, better discounts have been available working directly with a vendor. Traditionally, we've had problems where vendors need to know the scale of the purchase to set the terms, but campus is unwilling to commit until the terms are known. Further, there have been problems of coordination of bulk purchases on campus in terms of timing and configuration.
 - Purchase initiatives are being run at the State, University, and unit levels.

- Estimates for purchases from Dell may run from tens of thousands up to as much as half a million dollars per year.
 - Apple is close to having a program in place where machines purchased through the Bookstore will pass an additional discount to the buyer. In addition, Apple has a program in place that would also provide Campus Development Funds that would have gone to the Bookstore; last year that may have exceeded \$100,000. Details may have to be negotiated with Purchasing to finalize this.
- Explore VDI - There needs to be a proof of concept of virtual desktops to evaluate end-user experience. The most likely initial populace would be the current Client Services users and other administrative staff. A VDI is not a “one size fits all” solution and the target populations must be considered with care. Moving from physical desktops to a combination of Thin Clients and repurposing older hardware can have significant cost avoidance in not replacing desktops, extending hardware lifespan, and reducing power costs. The initial cost is significant and there is committee worry about user acceptance, however, this longer term source of savings could exceed three hundred thousand per year, understanding that there is an overlap with the consolidated purchasing proposal outlined above. Support for VDI implementations should be carefully examined to ensure that it is adequate and addresses end user needs.
- Develop a set of power savings standards for campus. A very large percentage of computers are left on 24x7 and do not go into power saving mode. While many servers or machines running simulations need to be running constantly, the average desktop computer does not need to be. Estimations of savings on power usage alone are in the tens of thousands of dollars per year. Another aspect of a managed power environment is the ability to realize power saving and still provide updates to be pushed out to those machines.
- While there are a significant percentage of desktops that are part of some managed environment on campus yet there are still hundreds of machines that are unmanaged. By requiring the vast majority of computers to be in a management infrastructure, NCSU can have a more secure environment on campus as well as saving on configuration and management of machines. Exceptions to participation in such a management structure should be possible but exceptions should be examined carefully to ensure that the machines exempted are properly administered and will be kept current. By providing access to services for the currently unmanaged machines, there it may be harder to measure these savings but we should provide a light touch managed environment for anyone on the campus network, to reduce setup and PC maintenance by groups without formal IT staff. A minimum level of service should be defined (e.g. "perform the following steps and central IT will provide Anti-virus/patch services and the helpdesk will be able to offer remote assistance). If possible, the workstations acquired through the consolidated purchasing proposal should come pre-configured for this light-touch environment. Groups with IT staff can provide additional software and services once the workstation is bootstrapped into the

environment or make use of a separate management infrastructure if there are specific needs requiring it.

- Enhance usage/availability of current Citrix/terminal services infrastructure. The current environment is underutilized, and can meet needs for which IT staff on campus is currently developing alternative solutions. The Citrix environment has been historically used only to provide access to software needed for the administrative functions of the university; we should consider a proof of concept with Citrix. There are many uses on the academic side that Citrix could solve, especially if used in conjunction with application virtualization, which would make it easier to deploy applications remotely to multiple client platforms. The primary savings for this would be the cost avoidance in developing more remote access solutions for campus.

Appendix 1: Task Group:

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Billy Beaudoin	COE
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Danny Davis	TSS/OIT
Joey Jenkins	COD
John Klein	ISO/OIT
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Appendix 2. Unit and Vendor Input

OIT and units that are participate in AITD were queried about the number of machines that are not currently managed. A brief summary of respondents reveals that about 800 machines are unmanaged from this subset.

CHASS	293
COM	198
COD	68
DELTA	0
OIT	0
Libraries	250

809

Two major campus venders were approached to try and understand the aggregate level of purchases. Last year from one purchases were in excess of \$2,000,000 and the other somewhere between \$1,700,000 and \$2,200,000. Since this is proprietary information, details are available upon request.

Appendix 3: Other concerns:

While the material above represents the views of the task group as a whole, there were ideas of merit that were not consensus views. However, they should not be lost

1. Where justified, we should consider offering a more heavily managed environment to those who need the services but do not have the IT support to adapt the 'light touch' to a local environment or in supported environments that want to use it. An effort will have to be made to determine where such an environment is applicable and what should be included within it.

In units across the University, IT support has been asked to perform increasing tasks and in many cases with reduced staff. The import of such an environment

would be to offer considerable functionality to the end user with little intervention on the part of the desktop support personnel. This may require the creation of a developer pool to support this environment that is not the sole responsibility of a single unit.

2. We should not lose track of the impacts of changes such as VDI on support staff and end users. Although such technology may yield cost savings in some areas there is the potential of creating a burden on IT staff if the number of different deployed desktops proliferates; The ability for helpdesk personnel to determine what version is available to the specific user may impact the level of service provided. Further, the initial end user experience will be critical in the acceptance of such technologies and should be carefully crafted and tested prior to release.

Appendix 4: Revision Record

pe/jk/wrb 5.04: pe 5.05: pe 5.7: pe 5.8