

Incomplete Final Report
From the
Phase 3 IT Consolidation Committee
to

Provost Rick Miranda

September 14, 2017

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Background

This report contains recommendations derived from the third phase of IT Consolidation activities, as directed by Provost Miranda. The first IT Consolidation activity involved an RFP and an initial interaction with a consulting firm specializing in IT Consolidation. Early into that activity, CSU determined that contracting with a vendor for this purpose was not in our best interests, as their emphasis was a complete and comprehensive inventory of all of our IT services, both central and distributed. That would have been onerous and expensive, and we felt that collectively we had a very good handle on IT areas which might benefit from consolidation. We therefore dismissed the vendor, and in 2011 launched our Phase 2 IT Consolidation activity, that explored possible consolidation in seven areas. After an initial investigation and a meeting with Provost Miranda, it was decided to pursue consolidation in five areas (those starred, *, in the list below):

1. Data Center & Associated Hardware*
2. Applications and Licensing*
3. Web Design and Programming
4. Identity and Access Management*
5. Purchasing*
6. Helpdesk & Desktop Support
7. Networking and Networking Support*

Results achieved from the Phase 2 activities are:

1. Data Center & Associated Hardware* – ACNS devised an internal campus cloud utilizing virtualization as a cost-recovery service. This service offering remains in effect today, and is used by xxx.
2. Applications and Licensing* – Pricing and scope of RAMtech’s licensing activities were revised to transfer almost all RAMtech costs to ancillary purchases from other than CSU E&G accounts.
3. Identity and Access Management* – A small number of Microsoft Domains were consolidated, and this activity continues today (see below).
4. Purchasing* – A CSU System Strategic Business Alliance with HP resulted from this activity, and has been extremely beneficial to CSU (CSU-Fort Collins, CSU-Global, and the CSU System Office participate). In addition, last year, RAMtech diverted all of its rebates from Apple to the Provost’s Faculty Computer Refresh Subsidy, and units were encouraged to make all Apple purchases citing CSU so as to direct Apple rebates to CSU.
5. Networking and Networking Support* – Network switch operations were consolidated under ACNS, and this has resulted in great improvement in ACNS’ ability to manage, operate and upgrade CSU’s Local Area Network (LAN), including core to building upgrades, in-building upgrades, and Wi-Fi upgrades.

Phase 3

Subcommittees

The success engendered in Phase 2 motivated the Provost to charge the VPIT with a follow-on Phase 3 IT Consolidation activity. In response, an IT Consolidation Committee was formed and charged by the VP for IT. The Committee was co-chaired by Director of Internal Auditing Allison Horn and VP for IT Patrick Burns. Areas studied in this effort, with subcommittee members, included:

1. Microsoft Office 365 (O365) – subcommittee members Bryan Gillispie (chair), Candace Ryder, Kelley Branson, and Tyler Wilson
2. Standardizing Help Desk software – subcommittee members Richie Nelsen (chair), Terri Pecora, Kacie Reed, and Kelley Branson
3. Reducing MS Domains – subcommittee members Scott Baily (chair), Joe Rymski, Candace Ryder, and Kelley Branson; and two ex officio participants, Joe Volesky from ACNS and Andrew Paul from the Scott College of Engineering
4. Standardizing on a single Content Management System (CMS) – subcommittee members Joe Rymski (chair), Terri Pecora, and Dawn Paschal
5. Data center consolidation – subcommittee members Scott Baily (chair), Kacie Reed, Stephanie Wolvington, Neal Lujan, and Kelley Branson
6. TimeClock Plus usage – subcommittee members Nick Cummings (chair), Bob Engmark, Stephanie Wolvington, and Neal Lujan

Subcommittee Activities

Activities conducted by the subcommittees consisted of

1. [Microsoft Office 365 \(O365\)](#) – The subcommittee began by considering the benefits of universal use of O365, with the following results:
 - a. Seamless ability to communicate and schedule meetings
 - b. Increased operational efficiency and effectiveness
 - c. Reduced staff effort in the units
 - d. Facilitates help desk support by consolidating on one service
 - e. Lower hardware costs
 - f. Fewer email and calendaring systems reduces risks associated with hacking/IT security

Reviewed current data of O365 usage, including usage for email, usage for calendaring, and the fraction of users who redirect email from O365 to their primary email account. The subcommittee also conducted a survey, included as Appendix A. Significant findings were:

- a. At the division level, migration to O365 is complete.
- b. Only a few small groups are running independent mail servers.
- c. Only 28% of O365 users forward email or link calendar to another service.
- d. 81% of the responding IAC members surveyed support having one official system.

- e. There is some support for migrating the students from Google Apps for Education (gmail) to O365, including unanimous support from CiTAC
- 2. **Standardizing help desk software** – The subcommittee comprehensively first consider the value proposition, and identified the following benefits of consolidation on a single help desk software
 - a. Bulk pricing
 - b. Standardized user experience
 - c. Campus-wide analytics and reporting would inform on “trouble” areas that may require additional attention, including possible professional development training for help desk staff
 - d. Alignment with best practices for increased operational efficiency and effectiveness
 - e. Common problem identification and management would facilitate ability to and timeliness of help
 - f. Seamless interoperability to transfer help desk tickets across all operational boundaries, promoting additional operational efficiency and effectiveness

The subcommittee then collected data via a survey (Appendix B) on usage of help desk software across CSU. Results indicated a current spend of about \$45,000 per year, across the campus, on a wide variety of help desk software packages (some free, but of limited utility). The subcommittee then researched help desk software for applicability in CSU’s decentralized IT environment, and selected three vendors for on-site presentations, presented below with annual costs to cover the campus:

- a. Remedyforce - \$135,000/yr.
 - b. Freshservice - \$117,000/yr.
 - c. Servicewise - \$89,000/yr.
 - 3. **Reducing MS child domains** – The subcommittee identified the benefits of consolidating on fewer MS child domain consolidation:
 - a. Fewer usernames/passwords eases the burden for users
 - b. Reduced operational complexity for system administrators
 - c. Reduced staff effort in the units
 - d. Lower hardware costs
 - e. Fewer domain controllers reduces risks associated with hacking/IT security
- The subcommittee then reviewed the history of the number of MS domains, and the incremental consolidation over time. A survey was conducted that illustrated:
- a. In 2011 when this topic was previously addressed, thirty-four (34) child domains existed.
 - b. During this Phase 3 exercise, twenty-five (25) child domains remained in existence.
 - c. Step I in a consolidation process is to begin using central eID’s for login in their Microsoft child domains:
 - i. Currently using or planning to use eIDs – 14
 - ii. No - 5
 - iii. No response or Not Applicable - 5

- d. When asked if they would consider eliminating their child domain, responses indicated:
 - i. Yes – 5
 - ii. Maybe – 9
 - iii. No – 5
 - iv. No response – 1

However, the subcommittee concluded that some MS child domains should be retained due to their utility in management and operations of specialized environments in the colleges. Also, where the MS child domain is ensconced, mature, and well developed, the staffing costs of eliminating the MS child domain may be prohibitive, and thus not represent an adequate value proposition for elimination.

- 4. **Standardizing on a single Content Management System (CMS)** – The subcommittee first discussed the benefits of CMS consolidation:
 - a. Improved operational efficiency, “branding,” and accessibility through the sharing of standard templates
 - b. Sharing of staff expertise and possible joint professional development opportunities
 - c. Improved efficiency and effectiveness in the ordering and deployment of CMS services (akin to a “shrink-wrap” deployment).
 - d. Improved technical support through focus on a single platform/service, including possibly an automated, centralized solution for scanning for immediate updates (IT security is a particular concern, as the product selected, WordPress, has been subjected to numerous exploits if the system is not patched and updated expeditiously)
 - e. Cost was not a consideration, as the preferred platform is freeware.

The subcommittee considered four levels of consolidation: full, hybrid (two models), minimal, and none. They then surveyed (Appendix D) to ascertain i) which CMS platforms are in use and why, ii) what are the cost and time requirements to implement a CMS solution, and iii) concerns with levels of IT security. Finally, the survey also requested additional comments. Findings from the survey were:

- a. Twenty-two (22) of the thirty (30) responses already are using or are planning to use WordPress
- b. Additional CMSes in use are SharePoint, Kentico, Drupal, Modx, dotCMS, and “home grown”
- c. Not everyone is using a CMS
- d. Environments seem mostly secure, but there are some concerns
- e. There is some interest in defining a common platform
- f. There is some interest in obtaining more shared and central IT support
- g. No CMS accommodates one-size-fits-all. Special integrations and other special needs obviate a required mandate here. Especially, public-facing vs. intranet (internal facing) websites have significantly different needs. Data-driven sites and web applications also have different needs not all accommodated by WordPress.

5. [Data center consolidation](#) – This activity was addressed in Phase 2 in 2011, with the result that ACNS implemented an internal shared cloud, as a cost recovery service, and invited units to install their hardware in their racks in the main data center on a space available basis. Benefits of consolidation include
- a. High quality space, high availability and uptime;
 - b. Very high-quality access control, firewalls, video surveillance, etc.;
 - c. Redundant power and cooling, reducing and even eliminating downtime due to electrical outages;
 - d. Reduced capital and operational costs due to centralization;
 - e. Reduced energy usage and cost to CSU, as smaller data centers are less efficient for a variety of reasons;
 - f. Free vs. low-cost doesn't seem to be an issue;
 - g. Some IT managers want additional redundancy, at various levels; and
 - h. The “convenience factor” of having a dedicated, local data center/server room was less important than suspected

Current analysis indicated that considerable progress has been made in both of these areas, but there is still room for significant additional consolidation. The subcommittee invited Facilities Management to participate, due to their tremendous expertise in energy and resource management, and Carol Dollard and Stacy Baumgarn from Facilities joined the subcommittee. They invited the Brendle Group to perform a detailed analysis, a service offered for free by Plate River Power Authority to CSU due to its potential to save energy and reduce demand on electricity. They identified the following opportunities from consolidation:

- a. Improved energy efficiency
 - i. The Brendle Group estimates \$1,650/year savings for consolidating medium-sized data centers;
- b. Reduced maintenance costs (cooling, and power);
- c. Improved physical security & monitoring;
- d. Potential for improved data security (firewall);
- e. Efficient and consistent compliance controls; and
- f. Economies of scale for equipment purchases

Their work began in April 2017. Additionally, Steve Lovass, our Chief Information Security Officer, review IT security for the main data center, and found it to be highly secure from a variety of perspectives. Special attention was given by Steve to sensitive information, especially Personally Identifiable Information such as Social Security numbers, Driver License numbers, dates of birth, FERPA-protected data, and controlled unclassified data as defined by the federal government. To identify where servers may be stored around the campus, the subcommittee queried KFS for purchase of computer equipment costing more than \$10,000 (they acknowledged that this was a pretty “high bar,” and they may have missed identifying some data centers using this threshold). Forty-four (44) potential server rooms were identified, but a small number of those were not IT server rooms. The subcommittee that there may be an additional 30 or so smaller “server rooms.” A survey yielded only twelve (12) respondents! Information garnered was good, but incomplete. Some special circumstances were identified:

- a. Server room requiring HIPAA protection (a higher level of protection than provided in the main datacenter); and
 - b. A server room in CS used in their instructional environment; and
 - c. A large server room designed especially for weather and climate modeling.
- Opportunities for consolidation remaining that were explored included expansion in the Walter Scott Jr. School of Engineering's data center, and additional consolidation in central IT's main data center.

6. **TimeClock Plus** – The deployment of TimeClock Plus was underway when this subcommittee was charged, so this activity was one primarily of validating the fit of TimeClock Plus over the current systems and environments. The subcommittee identified the following benefits of consolidation to a single platform:
- a. Provides a central solution for CSU supported by professionals in Human Resources and Information Systems;
 - b. Replaces our current outdated time clock system;
 - c. Provides electronic timesheet entry for non-exempt (overtime-eligible) salaried employees;
 - d. Provides sick/annual leave request and approvals;
 - e. Offers electronic timesheet/leave solution to many areas (most of campus) that currently have none;
 - f. Creates consistent and centrally accessible audit trail; particularly important with potential increased focus on FLSA compliance (depending on court results and the Federal administration);
 - g. Ensures consistent application of central policies, including overtime and comp time; and
 - h. Reduces need for resources in departments with homegrown or third-party solutions.

The subcommittee met with

- a. Current users of home-grown and/or third-party systems; and
- b. Departments with unusual time and leave requirements (Housing and Dining, Facilities Management, CEMML, CSU Police).

The subcommittee also developed central policy guidelines to meet the needs of all units and avoid any unnecessary disruption of business practices.

Recommendations

The subcommittees met with Provost Miranda on August 4 to present their finding, and discuss preliminary recommendations. Based upon the discussions at that meeting, the Subcommittees have finalized their processes, and final recommendations, enumerated by area of consideration, are as follows:

1. **O365**
 - a. **eMail** – Require all faculty and staff to use first.last@colostate.edu (which may be easily redirected to any location where the user prefers to handle email) to assure interoperability and proper display in CSU's online directory, which may be directed to another mail account elsewhere.

- b. Calendaring - Require all faculty and staff to be schedulable by their O365 account for calendaring. But, the O365 calendar is to be solely used for all CSU internal scheduling.
 - c. Student Usage – Over the forthcoming year, the VP for IT shall conduct a process to determine the advisability and feasibility of incrementally including students in the O365 environment, consulting the IAC, UTFAB, CITAC, the University’s CFT Committee, ASCSU, ISTE, and others as may be appropriate.
2. Standardizing help desk software – The recommendation is to adopt Remedyforce as CSU’s standard help desk software, to provide excellent help desk functionality, business intelligence in terms of data collected on the back end of the system, and interoperability. The recurring cost for a comprehensive site license is \$135,00/yr., and the subcommittee recommends the following financial model, and request into the Planning and Budgeting activity for FY 19.
 3. Reducing MS Domains – As this initiative is proceeding, this activity is considered to be concluded insofar as additional IT Consolidation is concerned. However, ACNS shall continue to work with units to transition their MS Domains, as appropriate. Should this require a development project, that request should be brought to the attention of the Advisory Committee for Academic Applications through its standard application process.
 4. Standardizing on a single Content Management System (CMS) – It is recommended that WordPress be adopted as the “standard” web Content Management System, but as an opt in tool not as a required tool. ACNS shall
 5. Data center consolidation – The subcommittee recommends that ACNS determine a model and methodology for sharing rack space in the main data center, as its first priority. As this space is exhausted, ACNS should apply for one-time funds to implement water-cooled racks in the south portion of the main data center for expansion. ACNS is charged with determining fiscal models for both of these activities, as they progress and emerge.
 6. TimeClock Plus – As no “stoppers” were found for implementation, and the implementation is proceeding well, this activity is considered to be concluded insofar as additional IT Consolidation is concerned.