

Active Directory & E-Mail Consolidation Project

Category: Enterprise IT Management Initiatives

State of Missouri

Executive Summary

The State of Missouri's Active Directory/E-mail Consolidation Team consolidated the active directory (AD) and e-mail systems of fourteen state agencies, resulting in immediate efficiencies and significant cost savings for taxpayers, while positioning the State to exploit additional technologies otherwise unattainable.

Prior to this team's endeavor, each of the fourteen agencies had independent systems using different technologies. Our landscape appeared much like a poorly designed neighborhood with mansions on one side of the street, trailers on the other, and no one sharing a common infrastructure like water and phone or electrical lines. The consolidation was much like a home improvement show with the result being a clean, efficient, gated community.

Because of the diversity of each agency's Information Technology (IT) environment, the team developed a tailored consolidated blueprint to address each agency's unique needs. All the planning, testing, and consolidation had to occur without interruption in service and at minimal cost. Imagine renovating every house in an entire neighborhood in a way such that the people living there hardly noticed all the work being done around them.

Underlying this task was the challenge that very few large enterprises had taken on a similar project independently. Vendors, quick to sell a migration strategy, told state officials repeatedly that the State of Missouri personnel did not have the expertise required to complete a project of this magnitude. The team accepted the challenge in true Missouri "Show-Me" fashion.

The team's successful project resulted in reduced operational costs, increased server utilization, improved availability; and fostered an infrastructure able to respond more efficiently to the rapidly changing requirements of today's world. The immediate benefits included:

- Over \$2 million in actual savings/cost avoidance;
- Over 70% reduction in infrastructure (domain controllers, e-mail servers);
- Over 50% personnel reduction by staff reallocation to other duties;
- Over 50% improvement in email delivery response time;
- Enhanced security and reduced exposure to viruses.

In addition, many significant improvements have been realized. Examples include:

- The Department of Revenue had multiple systems with multiple passwords. The team eliminated those multiple systems and implemented a single sign-on. This made the systems easier to use and dramatically reduced helpdesk calls.
- The team drastically reduced Department of Correction's costs by eliminating 93 servers and reducing the number of domain servers from 95 to 2.
- A simplified active directory and e-mail structure has allowed inter-departmental sharing of resources, reduced troubleshooting time and improved availability.

Although the efforts of this team will largely go unnoticed by design, they have paved the way for future accomplishments. Through the dedication and expertise of the State of Missouri Active Directory/E-Mail Consolidation Team, the state will now be able to leverage technology in an unprecedented manner and reap untold benefits for many years to come.

Business Case and Project Description

The ability to easily share resources between departments and communicate in a cost effective manner is critical for the overall success of Missouri State Government, where both funding and staffing are limited. By 2004, one of the major problems that had evolved in Missouri State Government was the inability to efficiently electronically communicate internally and externally, as well as share IT resources among the state departments.

Over many decades, each individual department had implemented their own, disparate IT systems and solutions within their own departmental boundaries. These individual systems meant that hardware, software, and effort were duplicated 14 times to accomplish the same goals. Personnel and contractors who worked on different systems in different agencies had multiple logons to access all of these different systems. Underutilized resources within one department, which could be shared to benefit many departments, could not be shared due to the impossibilities of connecting all of the non-compatible systems that existed.

E-mail communication between state departments became difficult due to the lack of a current, centralized e-mail directory and also because of the extreme delay in delivering mail between the legacy systems. There was no common directory structure or address book for these agencies which made communicating with each other cumbersome, if not impossible. Many departments had different mail gateways running on multiple vendor solutions, ranging in age from extremely old and outdated to new, thus making mail delivery not only impossible to troubleshoot, but also causing large delays in mail delivery. Agencies that needed to share files had to try to transfer those items via e-mail between agencies or hand deliver them because there was no shared network resources. These inefficiencies were frustrating for both the end-user and the citizens of the State of Missouri.

In 2005, after Governor Matt Blunt directed the IT consolidation, the Missouri Active Directory/E-mail Consolidation team was formed and given the task to consolidate the systems utilized by 14 state agencies from the executive branch of government into a single consolidated active directory forest with a centralized e-mail platform. This consolidated environment would provide for numerous improvements, including an unprecedented sharing of resources, a common e-mail environment for efficient delivery of e-mail, central administration of servers/desktops/security, and provide a platform to build future enterprise solutions. The benefits derived from the successful implementation of this project would set the stage for an endless possibility of future endeavors.

Project Timeline

PHASE I – Governor Mandates IT Consolidation

In 2004, State of Missouri Governor, Matt Blunt, directed the consolidation of the 14 executive state agencies IT funding and personnel into one IT Division under the Office of Administration. Among one of the Governor's top initiatives was to consolidate e-mail for the state. The state's Chief Information Officer (CIO) and the senior management of the new IT Division then initiated the formation of the Active Directory/E-mail Consolidation team and gave their full support to the this project.

PHASE II – Active Directory/Exchange Consolidation Team

With the Governor's mandate and top management support, the Active Directory/E-mail Consolidation Team was formed, and technical personnel representing several of the agencies involved in the consolidation were selected as team members. In addition, advisors who were not part of the consolidation were appointed from the judicial and legislative branches of government. This combination of personnel gave the team a good representation from all faucets of Missouri government.

The team met twice a week beginning July, 2005 and was tasked with completing their initial analysis, research, documentation, and implementation plan by October 1, 2005. The team was responsible for creating a plan that would result in a single Active Directory forest and a centralized e-mail platform

The team was also tasked with developing standards for the new systems and to determine how to migrate all data to a single Active Directory structure and e-mail platform through in-house developed solutions with minimal funding and disruption to the end-user. Management, maintenance, and governing structure for this new environment would also be developed. The anticipated goals for the successful completion of this project were to improve security and availability, reduce servers and licensing, better utilization of computing resources among all departments, standardization, scalability, and position the State of Missouri to exploit future opportunities such as consolidated desktop management.

After much research and testing, the team delivered a plan as required by October 1, 2005 that would successfully meet all of the objectives.

PHASE III – Consolidation Implementation

During January 2006, this team moved into the implementation stage, migrating domain and e-mail data through scheduled, phased migrations. The implementation stage was successfully completed ahead of schedule on December 7, 2007. These migrations resulted in cost savings/cost avoidances for the State of Missouri of over \$2 million. These savings/avoidances were realized by eliminating hardware and software that was duplicated in agencies or no longer needed, and by the sharing of computer hardware between agencies versus purchasing new equipment.

IT staff assigned to the team assisted agency staff during the consolidation thereby eliminating the need for additional staff and minimizing customer service interruptions. No outside vendors were utilized to accomplish this goal.

The team met their objectives and set an example of success, efficiency and effectiveness that will be leveraged for future IT consolidation projects. They have proven that when agencies consolidate their resources, personnel, hardware, software, and work closely as one team; large tasks can be accomplished in a timely manner with little interruption to the customers, and provide significant savings. This is an example being noted and reviewed by numerous vendors and other States.

Significance of the Project to the Improvement of the Operation of Government: The Active Directory and E-mail consolidation project has had a major impact upon the way Missouri does business. The resultant shared infrastructure has streamlined Missouri State Government by simplifying access, improving security and providing the robust communications capability necessary for conducting the day-to-day business of Missouri State government. This project has changed the face of Missouri Government business in ways that will be realized for many years to come.

Faster Mail Delivery: By consolidating e-mail and implementing a single mail gateway built on new technology, the state improved our ability to fight virus and spam mail while significantly improving e-mail delivery times. Mail that was taking days to deliver now arrives in seconds. By centralizing this function, the administration and the ability to maintain the resultant environment was also improved.

Modern Environment: The consolidation is built upon modern technology that is much more efficient, recoverable and reliable. Most of the e-mail environment is built upon blade center technology that has a SAN attached for disk storage. The servers are clustered to provide fail-over capabilities and to minimize downtimes. The consolidated Active Directory forest and e-mail systems are built as centralized models which allow for management and maintenance to be performed by a centralized management structure, eliminating the need for duplicate staff in each agency to perform the same functions. This centralized environment also provides easier and better patch management, virus protection, and upgrades paths.

Public-Access to Forest: Missouri Government needed to allow citizens the ability to obtain access to data and resources the State provides. Because of this need, we created a public forest, that is separate from the private forest, which enables citizens to authenticate in one location and gain access to many different resources available to them. This has eliminated the need for members of the public to use multiple locations and logons to obtain access to resources. Thus providing easier public access to government by removing the complexity which caused delays and confusion in the past.

Business Continuity and Disaster Recovery: By consolidating 14 agencies into one active directory forest and subsequently one e-mail environment, we have eliminated 13 disaster recovery issues. Now, instead of needing to recover 14 separate systems, we only need to be able to recover one. This has also facilitated business continuity by providing one place for the participating agencies to collaborate and share resources.

In-House Tools Developed: The team developed several tools to automate the consolidation and to assist our customers with moving from their old environment to the new environment. This eliminated customer delays, eliminated the inevitable mistakes made during manual processes, afforded us the opportunity for a faster migration, and saved the state considerable dollars that would have been used to purchase third-party tools. One of the tools developed was an application for automatically updating customers Outlook profiles without losing their PST data attached to their old profiles. This eliminated the need for technical staff to manually manipulate over 30,000 customer profiles during migration thereby saving considerable time and money.

Low Impact Transition to Agencies: One of the major criteria for this consolidation effort was to provide a low impact transition to agencies. The team is extremely proud of the fact that we were able to develop a migration plan for both the active directory and e-mail projects that had very little impact (i.e., interruption of business) to our customers. Ninety-six percent (96%) of the active directory migrations were conducted during the normal business hours without causing downtimes for an individual customer of more than an average of 20 minutes. One hundred percent (100%) of the e-mail migrations were conducted on a Friday evening, and mail for these customers was operational within two minutes of making the switch to the new environment. The historical data moved from the old e-mail systems into the new e-mail system was available to all customers by Monday morning following the switch over to the new system. These migrations had a success rate of approximately 98%.

Single sign/access to multiple systems: A simplified active directory and e-mail structure has allowed sharing of inter-departmental resources. This also reduced redundant authentication requirements. For example, the Department of Revenue had multiple systems with multiple passwords, which greatly increased the complexity of people's jobs. The team eliminated those multiple systems and reduced complexity to a single sign-on. This made the systems easier to use, and dramatically reduced helpdesk calls for password and permissions issues.

Reduction in Hardware/Software Costs: This consolidation has resulted in a major reduction in hardware and software. By consolidating servers for both the active directory migration and the e-mail migration, the team eliminated 93 servers for the Department of Corrections, which reduced the number of servers from 95 to two. This drastically reduced costs for server management, licensing, and hardware/software.

Public Value of the Project

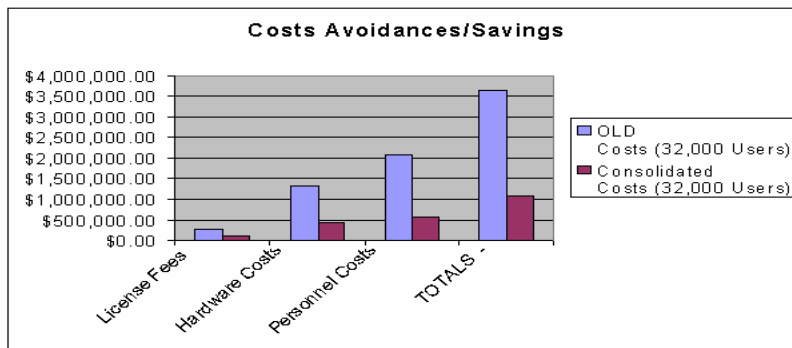
One of the major benefits of this project was the benefit it provided to the citizens of the State of Missouri. This project has not only given the citizens of Missouri a more efficient and easy model to access the data they want to obtain, but this project provided real cost avoidance/savings to the taxpayers of Missouri. Examples of the project reductions/avoidances/savings include:

- Over \$2 million actual savings/cost avoidance;
- Over 70% reduction in infrastructure (domain controllers, E-mail servers, and licenses);
- Over 50% personnel reduction by staff reallocation to other duties;
- Over 50% improvement in email delivery response time;

Enterprise-Wide Antivirus Solution for Mail: In the past, each agency negotiated with vendors to obtain antivirus protection for their own e-mail environment. By consolidating 14 e-mail systems into one system, we were able to negotiate for one solution. The consolidation of an antivirus solution saved the State of Missouri \$67,444 in the first year, and \$91,570 in years two and three. Therefore, the three year savings for this item will be \$250,584.

Leveraged Existing Resources: Start-up costs for any project are historically the hardest to obtain and the highest costs involved in a project. This project was undertaken with a very minimal budget so the team had to utilize existing personnel and technology resources. Hardware and software from agencies were reused, where possible, to eliminate costs for new equipment,

and existing, internal personnel were utilized versus the use of consultants. This efficient use of resources already available saved the state over \$1.5 million dollars in cost avoidances.



This chart shows the three major areas in which this project has realized a cost avoidance/savings for the State of Missouri.

Because fewer personnel were needed to support the resultant enterprise environment, the ITSD was able to realize a considerable decrease in personnel cost by reallocating the personnel used to support the legacy environments to new projects. Over a five-year period, the enterprise solution will result in cost avoidances/savings of approximately \$12,800,000.

Consolidation Time Line: An active directory and e-mail consolidation is a large project requiring considerable time and planning. However, this team was required to provide results in a very short timeframe while minimizing impact so that cost avoidances/savings could be realized quickly. The chart below shows the number of customers migrated to the new, consolidated environment over a very short period of time.

