INFORMATION TECHNOLOGY
CONSOLIDATION
FEASIBILITY STUDY

Prepared by
The Office of the Chief Information Technology Architect
October 2010

http://da.ks.gov/kito/cita
EXECUTIVE SUMMARY

Senate Bill 572 authorized the Chief Information Technology Architect (CITA) of the State of Kansas to “evaluate the feasibility of information technology consolidation opportunities.” The focus of the IT consolidation evaluation is to include “facilities, staff, applications, networks, disaster recovery operations, data centers, access methods, and any other aspect of the state’s information technology architecture.”

From June 1, 2010 to October 1, 2010 the CITA facilitated meetings with state agency IT leaders, administered a survey of state agencies on the IT consolidation topic, researched other state governments’ IT consolidation initiatives, and had discussions with IT experts Forrester and Gartner on the topics of IT consolidation. The data obtained was analyzed and used to formulate the following consolidation strategies and recommendations:

DATA CENTERS: The State of Kansas should invest in two new data centers: a primary data center located in the Topeka area and a secondary data center located on, or near, one of the regent institutions. Once the data centers are built, all state agencies should begin a transition into these new data centers and abandon their old data center space.

PHYSICAL SERVER LOCATION: All state agency computer equipment should be immediately moved into the new state primary and/or secondary data center(s) when the new data center facilities are operational.

SERVER VIRTUALIZATION: State agencies should continue to virtualize all appropriate servers. The Division of Information Systems and Communication (DISC) should aggressively move forward on the Server Virtualization service they have proposed. State agencies should begin utilizing the DISC virtualization service for all appropriate servers when current servers come to end of their life and/or a new server purchase is required. If new data center space is not invested in, small and medium sized agencies along with large agencies that have not begun server virtualization should be given first priority for utilizing this service.

STORAGE: The State should invest in at least two modernized Storage Area Networks (SAN) to host critical state data. The SAN architecture should be designed for redundancy to avoid outages similar to the ones that occurred in Kansas and Virginia in 2010. DISC will provide a storage service to all state agencies with multiple data tier levels offered to give agencies flexibility on their data storage requirements. All non-centralized storage investments should be frozen and all new storage projects and investments should use the centralized storage service.

ELECTRONIC MAIL: The State should consolidate into one email solution for all executive branch agencies. Legislative and Judicial branches of government should consider using the centralized email solution once the executive branch is fully migrated to the new solution. This project should occur regardless of any other IT consolidation strategy.

UNIFIED COMMUNICATION AND COLLABORATION: DISC should continue moving forward on their Unified Communication and Collaboration (UCC) project.

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1 This study recommends that the universities in Kansas, under the direction of the Board of Regents, work to consolidate IT in each of their respective Universities. Unless directly mentioned, the recommendations laid out in this study do not apply to the Regent Universities.
IDENTITY MANAGEMENT: The State of Kansas should consolidate into one centralized Active Directory (AD) system for all executive branch state agencies. This solution should be architected to allow for agencies the ability to add, modify, and change their own employees. Legislative and Judicial branches of government should consider using the centralized AD solution once the executive branch is fully migrated to the new solution. This project should occur regardless of any other IT consolidation strategy.

OTHER MIDDLEWARE APPLICATIONS: The State of Kansas should develop a consolidation strategy and roadmap for all middleware applications used by state agencies. These applications include but are not limited to: Document Management, Workflow, Enterprise Service Buses, Business Intelligence, Call Center, Customer Relationship Management, Data Warehouse, and Master Data Management.

DESKTOP SUPPORT: The State of Kansas should move toward consolidation of the resources and support staff provide computing services to the state workforce. All devices and all products should be purchased centrally and deployed to all employees. A consistent upgrade and replacement model financed through FTE based cost recovery will provide a more stable and compatible technical environment for all workers. This approach will also bring more efficiencies to the purchasing process, reduced complexities to the technology components, and more effective support for all workers by using best practices and lessons learned once for the entire state. An advisory council should be established to guide the evolution of these resources, financial shift, and service levels to be delivered under consolidation.

NETWORK SUPPORT: The State of Kansas should continue with the successful strategy of network modernization of core network to merge data and voice networks. In addition, the state should consider consolidating all KANWIN and agency voice and data network technicians under DISC. In this model, DISC would be responsible for the full network and component delivery in all non-regent institution state facilities. The State should create a new Network Governance structure with two levels. The top level, an Information Technology Executive Council (ITEC) subcommittee would coordinate all state network efforts. This subcommittee would consist of representatives from state and local government and the private sector. The next level, a KANWIN oversight committee, will oversee the KANWIN roadmap, performance, and prioritization. The state should also consider two network re-architecture efforts: an effort to allow more data and application sharing within state government and an effort to allow counties to become more efficient and to reduce cost.

AGENCY DEVELOPMENT STAFF: State agencies should always maintain their own unique development staff. Regardless of consolidation strategies, it is best practice to leave developer, data owners, data administrators, and business analysts as employees of each agency. These positions require intimate knowledge of agency business processes. However, the development model will change under IT consolidation in order to take advantage of consolidated services like enterprise service bus, document management, and workflow solutions. This changing development model will require very specific skill sets. It would be unfeasible for every agency to hire this type of specialized employee. DISC, working with all branches of government, should research the demand for a centralized pool of application developers hosted by DISC that could be available to state agencies and in all branches of government. Also, current application development staff should be adequately trained on advanced architecture and design skills in order to leverage the new technologies available to them in a consolidated IT environment.
While obtaining the data for this study there were a number of non-technology concerns articulated by industry experts, technology leaders from other state governments, and our own state IT leaders. These concerns and risks must be solved or mitigated before IT consolidation in Kansas could be successful:

LEADERSHIP AND GOVERNANCE: IT consolidation projects fail without proper executive leadership. The Governor of Kansas should sign an executive order mandating IT consolidation for executive branch agencies in Kansas. The Governor’s leadership role is foundational for IT consolidation success. In addition, the role of the Executive branch Chief Information Technology Officer (CITO) should be expanded. All current responsibilities of the CITO would remain, but the role would expand to include approval authority on all Information Technology purchases by state executive branch agencies, and to provide direction and coordination of the statewide shared services outlined in this Study. Other states have shown that a properly empowered CITO shifts the discussion of IT towards business driven initiatives and project coordination. States with the most IT consolidation success have the executive branch CITO as a cabinet position. This shift allows Kansas to focus on project prioritization, financial shifts and to better serve our citizens and businesses. A cabinet level CITO is recommended but not required for success if the CITO is given appropriate authority and has the support of the Governor.

DISC’S ABILITY TO EXECUTE: Under these IT consolidation strategies, DISC would retain and expand its role as the central IT agency for Kansas. IT consolidation’s success will be predicated on DISC’s success. Historically, DISC is a leader in providing state IT services, and has a successful track record with previous IT consolidation projects. Under the recommendations outlined in this study, DISC would expand its role in providing IT services for the state. Agencies are concerned the quality of received services will diminish when they are provided through a consolidated model and that direct loss of control of resources will make services less responsive to agency business needs. To address these concerns, DISC must work hard to maintain and build the confidence of other state agencies. DISC must foster a culture of collaboration and facilitation with state agencies. DISC should renew its focus on outstanding customer service, communication, and complete transparency. Finally, DISC must have the resources needed to deliver high quality and reliable services under a consolidated model. Expecting DISC to operate a much larger equipment base in the existing physical facilities with their constrained environmental attributes will place the entire state at significant risk. In addition, expecting DISC to take responsibility for the increased tasks inherent in a consolidated model without a significant staffing increase will only result in the worst agency fears being realized.

SECURITY: State IT leaders are concerned that the unique requirements each agency has to secure their data and computer equipment will be marginalized in a consolidated IT environment. While security requirements are complex and vary by agency, other state’s IT consolidation projects have found these complexities can be managed with a combination of organizational, policy, and governance changes.

ORGANIZATIONAL CHANGES: The State of Kansas needs several preparatory activities in order to manage the proposed consolidation efforts outlined in this study. These activities deal with enhancing the tools, processes, and skills DISC and agencies will leverage to provision, manage, and administrate consolidated IT services. DISC should be the central coordinator for the deployment of these tools, processes, and skills. Also, it should develop consistent training programs to support the evolution in each consolidation effort. DISC and state agencies must participate and engage in conversations for each consolidation effort and identify
the combination of best practices that should be used by the State of Kansas. DISC’s organization will change dramatically in size and scope of activities. It is believed that in order to absorb this dramatic change in size and complexity that significant reorganization will need to occur to make DISC more effective and efficient. The reorganization will be a multiyear multi-step process, but will be critical for IT consolidation success.

BUY-IN: IT consolidation is not a universally popular notion across state agencies. The status quo gives them the flexibility to solve their own problems in the way that makes sense for their individual agencies, but allows for redundant, siloed, and incompatible solutions. In a consolidated IT environment many of our IT employee’s roles will change. The possibility of change leads to uncertainty. Other states have told us this uncertainty can slow down, and even destroy, consolidation activities. The human factors associated with IT consolidation must be accounted for and mitigated if there is any hope for successful consolidation. These strategies revolve around an empowered executive branch CITO, an effective and responsive central IT organization, a focus on customer service and communication, and preparing state IT employees for their new roles and giving them adequate training.

If the IT consolidation strategies and recommendations are implemented successfully, the benefits for Kansas will include:

**IMPROVED GOVERNMENT EFFICIENCY AND EMPLOYEE PRODUCTIVITY:** The State of Kansas has an exceptional employee base. Efforts to consolidate and streamline IT will enable them to be more productive. Instead of having redundant agency IT teams all performing the same duties, there could be one single team maintaining consolidated solutions. All state employees need basic capabilities in order to achieve maximum efficiency. Successful IT consolidation projects involving email, identity, data sharing, and unified communications and collaboration have the ability to revolutionize the way state employees perform their jobs. In a consolidated environment employees will have modernized tools and capabilities allowing them to perform their jobs better, more accurately, and more effectively.

**IMPROVED GOVERNMENT INTERACTION WITH BUSINESS AND CITIZENS:** Kansas is underutilizing its ability to support businesses and individuals in Kansas. Agencies develop their own unique ways to communicate, regulate, license, and support their customers. IT consolidation projects can help with this transition. Currently there is no easy way to share data across agencies. With a common identity solution and a modern enterprise data bus, it will be easier to share data and communicate between state agencies. Having these foundational components in place will allow for the next generation of business applications to be developed that utilize this enhanced functionality.

**IMPROVED INFORMATION ACCESS AND DECISION MAKING:** The State of Kansas has outstanding information available to its workforce. However, in almost all cases, the access to this information access is limited to a small set of agency workers. If information access was improved between agencies the state workforce could make better decisions and more effectively support Kansas citizens and businesses.

**MODERNIZED TECHNOLOGY AND SUPPORT INFRASTRUCTURE:** The investments in IT solutions that have occurred over the last several decades are mostly still in use today. These “legacy” infrastructures require specialized knowledge, tools, and vendor support. Kansas constantly adds on and expands these legacy systems without removing or modifying the old portions of
the system. With the Kansas Information Technology Architecture (KITA) and agency IT architects, Kansas has the opportunity to design and implement solutions statewide. The commitment to an enterprise set of architecture options can be achieved if agencies are not allowed to “opt out” of statewide solutions. KITA can deliver a solid set of targets and solutions that agencies can use that would lead to a dramatic decrease in the cost and complexity associated with the current technical architecture, while still giving agency choices. This modernized infrastructure will bring several benefits in the area of reduced energy costs, decreased carbon footprint for IT data centers, ability to support agency continuity of operation plans, and ability to recover from disaster.

**REDUCED COST OF IT OPERATIONS WITH MORE FUNCTIONALITY:** The cost of information technology in Kansas has grown at roughly 3% a year for the last ten years. In 2002, Kansas spent $192 million on IT. In 2010, Kansas spent $248 million. If the current trend of 3% growth remains stable, in 2020 Kansas will spend $335 million. The rapid growth of consultant expenses and the growth of host systems are the major contributors to this growth trend. The IT consolidation projects outlined in this study have the potential to help stabilize this growth curve. With the proper leadership, authority, and facilities other states have proven that there can be a substantial cost savings by mandating IT consolidation. If the State of Kansas takes the necessary steps to make IT consolidation successful it could conservatively avoid spending $350 million dollars in the next 10 years.

Now is the right time for the State of Kansas to pursue IT consolidation. In 2007, the National Association of State Chief Information Officers (NASCIO) contended that 62% of the states are pursuing some type of IT consolidation. Recent conversations with NASCIO and State CIOs lead us to believe the number of states pursuing IT consolidation is now greater. Missouri began consolidation in 2006 by creating a state CIO in charge of all IT in the state. Nebraska began consolidation in 2007 with a Governor’s mandate to centralize email and identity. Indiana began consolidation in 2005 with a customer centric service philosophy and has reduced its cost to provide IT services by 31.7% in five years. California is in the beginning stages of IT consolidation and is focused on the same recommendations this study outlines: data centers, server virtualization, and email.

IT Consolidation is not new in Kansas. This state has a long and successful history of IT consolidation. It began in the 1970’s with the KAN-SAN telephone system, it continued in the 1980’s with mainframe and network consolidation, and in the 1990’s and 2000’s with limited data center consolidation, and centralized Human Resource and Accounting systems. The Judicial Branch’s Full Court system and Legislative Branch’s KLlSS application are additional recent successes in consolidating critical applications. Executing the recommendations of this study can help write another successful chapter of IT consolidation in Kansas.

Kansas should begin its next major IT consolidation project by moving towards a common electronic mail and identity solution. As other states have proven, this project is relatively simple to execute and sets the stage for future consolidation projects. A common statewide email solution achieves significant cost savings, reduces needless technology complexity, and makes communication and collaboration within state government easier.

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At the same time, two new state-of-the-art data centers should be invested in. It is estimated that the cost of these facilities will be from $58 to $96 million. A complete engineering study on data center needs must be completed to get more accurate cost estimates. When the data center facilities are running, the state should aggressively move all computer equipment to these locations using virtualized servers and shared storage whenever possible. With this centralized infrastructure in place, more aggressive IT consolidation strategies like middleware application consolidation can be obtained.

If done successfully, IT consolidation can make the State of Kansas’ government run more efficiently, and at the same time serve Kansas’ citizens more effectively.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Value To Kansas</th>
<th>Upfront Cost</th>
<th>Cost Savings</th>
<th>Employee Impact</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invest in new Data Centers</td>
<td>High</td>
<td>High $55-95 million</td>
<td>Neutral</td>
<td>Low</td>
<td>Begin Immediately</td>
</tr>
<tr>
<td>Server and Storage Virtualization</td>
<td>Medium-High</td>
<td>Medium</td>
<td>Moderate</td>
<td>Medium Some FTE shift to DISC</td>
<td>Continue Agency Server Virtualization Move to DISC centralized service when new Data Centers completed</td>
</tr>
<tr>
<td>Electronic Mail and Identity</td>
<td>Medium-High</td>
<td>Medium</td>
<td>Moderate</td>
<td>Medium Some FTE shift to DISC</td>
<td>Begin Immediately Does not require new Data Centers completed</td>
</tr>
<tr>
<td>Unified Communications</td>
<td>Medium-High</td>
<td>High</td>
<td>Neutral</td>
<td>Low</td>
<td>DISC continue to move forward on this project</td>
</tr>
<tr>
<td>Middleware</td>
<td>Medium</td>
<td>Medium</td>
<td>Moderate</td>
<td>Medium Some FTE shift to DISC</td>
<td>Each solution needs to be planned for, architected, and a road map developed</td>
</tr>
<tr>
<td>Desktop Support</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>Large Major FTE shift to DISC</td>
<td>Begin Immediately</td>
</tr>
<tr>
<td>Network Support</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>Some FTE shift</td>
<td>Begin Immediately</td>
</tr>
<tr>
<td>Application Development</td>
<td>N/A</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Retain Status Quo</td>
</tr>
<tr>
<td>Governance</td>
<td>Medium-High</td>
<td>Medium</td>
<td>Low</td>
<td>2-5 new FTE</td>
<td>Begin Immediately</td>
</tr>
</tbody>
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