DAS DEPARTMENT OF ADMINISTRATIVE SERVICES
STATE DATA CENTER

SDC Consolidation Architecture

Initial Architecture Strategies and Action Plan

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Review and Approval

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1. Overview

This document addresses the SDC's initial consolidation architecture strategy and action plan. SDC architecture planning is an evolutionary process. There are some strategies that are self-evident, even before a formal architecture program can be implemented. For example, plans are underway to expand the storage environment and implement systems management tools; the SDC security section is in the process of expanding control of the firewall structure; the network group is planning a restructure of the networks; and Distributed Systems is in the process of acquiring hardware to build the distributed systems shared environment, utilizing consolidation and virtualization technologies. All areas are working on defining their business processes and procedures. Now is the perfect time to introduce an architecture program to help with coordination and visibility of those activities.

This document attempts to capture what is in progress as the architecture program formally gets underway, and recommends areas of work to include in the formal SDC Consolidation Architecture Project.

2. Background – How Did We Get Here?

2.1. CNIC Project – Architecture Planning Phase

In the first phase of the CNIC project, activity focused on architecture. Staff from the 12 CNIC agencies participated with the vendor, Accenture, in architecture sessions to define what the future environment should look like. Part of the proposed environment was implemented immediately: the new z990 mainframe for DAS and DHS; a single automatic tape library; and new Hitachi storage environments. Then the agencies were migrated to the SDC with a "lift and drop" strategy.

Some of the initial architecture plans inform the current state of consolidation planning going on today. For example:

- Security – Implementing network perimeter defenses, intrusion detection, and security administration tools
- Storage – Designing multiple storage tiers based on connectivity, redundancy, availability, performance, and scalability requirements; utilizing storage virtualization software products; utilizing system management tools
- Server – Standardizing hardware platforms, building base standards, virtualization technologies, and utilizing automated tools to configure, move, migrate, provision, and partition resources
- Enterprise – zSeries – Moving towards 24 X 7 X 365 availability over time by utilizing Sysplex; Enhancing Linux capabilities; establishing regular maintenance windows; reducing the number of utility products and system management tools
- Enterprise - iSeries – Reducing the number of boxes where appropriate
- Enterprise – pSeries – Reducing the number of boxes where appropriate
- Network – standardizing network protocols and IP addressing; utilizing standardized systems management tools; consolidating routes and delivery points;
- Chargeback/billing – an initial chargeback model has been adopted, and will be re-evaluated in February to account for an emerging shared services environment.

2.2. CNIC Project – Migration Phase

The CNIC Migration Phase focused on locating local agency infrastructure resources into the State Data Center. Migration started with Housing in April, 2006. Then the largest three agencies, DAS, DHS, and ODOT finished migration at the end of June 2006. Employment finished migration in August, 2006, followed by Veterans and Correction in September; Forestry and Revenue in November; and State Police and DCBS in December.

For each agency, migration was planned and executed as a series of waves with varying numbers of devices in each wave. It was clear very early in the migration that the greatest success would be achieved through developing and following repeatable processes for site preparation, take down, transport, installation, and testing of equipment.

Agency staff experienced stress as they had to plan and conduct migration and then operate equipment from both the old and new locations. As groups started working together, it was evident that some operational processes like Change Management, and Incident Management needed to be created. Best practices were taken from customer agencies; guided by the IT Infrastructure Library (ITIL); and blended to produce these initial procedures.

The majority of staff involved in migration experienced significant personal stress as they knew their jobs would be eliminated and they waited to hear about hiring for positions at the SDC. Having processes in place eased some of that stress. This experience should also be used as input to the architecture project.

2.3. CNIC Project – Stabilization Phase

As each agency neared the completion of their migration, they developed a stabilization or transition plan with the SDC. This plan identified the criteria that the SDC and customer agency would use to bring stabilization to a close and begin a period of normal operations. It was hoped that the stabilization phase would be completed within 90 days of migration. For some agencies, this period was longer because of greater efforts on the part of the agency to structure the work that had to be done to transition to a "business as usual" state.

During the period that customer agencies were going through stabilization, the majority of SDC hiring took place. Knowledge transfer was conducted as technical support staff left their parent agency and became part of the SDC. Work had to be separated into that which went to the SDC and that which stayed in the customer agency.

Work load made it difficult to allocate time to work on new processes in all areas. As staff was hired, procedures came with them. In many areas, the procedures used depend on who was hired.

Part of the stabilization work was getting customer relationship structures established through the assignment of Account Managers from the SDC and SDC Liaisons from the customer agencies. One of the major tasks that Account Managers were responsible for was ensuring that day-to-day service remained stable as new processes were being implemented and staff were learning new procedures.

During the Stabilization Phase, the customer Support Request process was put in place. Account Managers have responsibility for keeping their customers informed on progress with support requests.

Also during the Stabilization Phase, a team of SDC domain experts was lead through an architecture development process. The document, titled, "Consolidation Plan" contains substantial information about the "AS IS" environment and early thinking on the "TO BE" environment for the SDC. That work will be used as an input to this iteration of SDC architectural planning.

3. Immediate Challenges – What's Hot Right Now?

3.1. Building Customer Trust

For many customer agencies, letting go of control of the infrastructure has been a very difficult process. There was great pride in the service that captive Information Technology units provided their internal customers. Those units and their internal customers have been skeptical of the SDC's ability to provide the same or better level of service. SDC growing pains have provided opportunities to point out areas of concern. The SDC must continually improve their processes and service delivery to build customer trust.

3.2. Meeting Customer's Emerging Technical Needs

During migration and stabilization, many agencies put large infrastructure efforts on hold. It is evident now, that customer agency business needs did not stop evolving during the migration and stabilization phases. There is a significant backlog of service requests for new processing capacity. This has caused fast tracking of the implementation of the shared services environment. Customers are impatient with the time it is taking to get this environment production ready. It can also be anticipated that customers will continue to explore new technologies to satisfy their business needs, and will look to the SDC to embrace these new technologies.

3.3. Defining SDC Services

Getting SDC Term Sheets prepared and out to the customer agencies for review has been a priority activity. These term sheets define the separation of responsibilities between the SDC and customers for the services that the SDC provides. These term sheets help to provide a consistent message to customers so that it does not give the impression that the SDC is "self selecting" what will or won't be done. These term sheets are also necessary to provide a lower level of detail than was available in the original SDC Service Catalog.

3.4. Building Strategic Focus without Sacrificing Operational Focus

It is critical that the SDC continues to provide superior day-to-day service to customers while strategic and architectural planning goes on. Activity like this has been described as "changing tires without stopping the car." The challenge will be to find a way to engage people in serious planning for the future without impacting current delivery. A second, related, challenge will be to infuse strategic thinking abilities into management and technical staff that have had an operational perspective in the past. It will also be a challenge to change customer agency and SDC employees support model or expectations from being a "job shop" to providing specific utility services.

3.5. Evolving Governance Structure

The CNIC Project came to an end on June 30, 2007. The governance structure that was in place for the project will be replaced with a new structure for ongoing operation. The intent is to change the governance from a body that steers a project to more of a business-based board of directors. A new governance model has been proposed and is awaiting approval.

3.6. Establishing Charging Structure Rate Model

The CNIC Finance committee has developed initial charging rates for the 07-09 biennium. For some agencies, these charging rates represent higher costs that the customer paid when managing their own infrastructure. There are several factors that contribute to this misperception:

1. Agency IT shop budgets did not represent the entire cost of doing IT business. It has been a common practice in agencies to find large sums of additional funding when anything from an IT crisis, (i.e., major mainframe upgrade needed) to small to large IT projects needed to support a specific department that had not been planned.

2. Many agencies were never able to identify specific or detailed cost in the past. Without this, a comparison becomes emotionally based versus fact-based.

3. The past migration efforts to transfer knowledge proved out the concept of a large number of "shadow" IT resources. "Shadow" IT resources are people performaing a job function that were either not in scope or were note part of the agency IT infrastructure – therefore, the cost was not accounted for.

4. Capital expenditures for building the SDC and initially staffing and equipping it must be paid.

While customers may be tolerant of the pricing structure for a while, there is an expectation that the SDC will result in cost savings over time. Efforts in the 07-09 biennium need to focus on reaching the savings point quickly. At the same time, it is recognized that further expenditure will be needed to create the shared environment that will save money in the long run. The SDC will need to be sensitive to customer satisfaction levels. Cost will be a significant factor in customer satisfaction.

3.7. Green Computing

As fuel costs rise and concerns over global warming increase, the SDC needs to keep watch on its environmental impact. As choices are made for building the shared environment, consideration should be given to this area of concern.

4. Initial Vision – Where Do We Want to Go Right Now?

In November of 2006, Mark Reyer, the SDC Administrator, presented a vision document titled, "Where we are". It presented the vision for consolidation within the SDC. This vision is the baseline for SDC architectural planning. Over the coming months, it will be fleshed out into actionable activities and projects.

There were three phases to the consolidation approach:

1. **Establish & Migrate – 1/06 – 12/06**
   - Planning and relocation of equipment
   - Transfer of Hardware assets to the SDC
   - Transfer of licenses and maintenance agreements to the SDC
   - Establish basic operating processes
   - Establish Service Levels
   - Establish Agency Account Planners
   - Recruit and hire SDC staff
   - Establish departmental responsibilities
   - Account Planning
   - Build team and SDC culture
2. **Process & Standards – 1/07 – 12/08**
   - Define Technical Architecture
   - Common policies and procedures
   - Standard configurations
   - (Evolve) storage architecture
   - Streamline hardware and software
   - (Implement) configuration management
   - (Implement) provisioning system
   - Converged Network Redesign
   - (Implement) New Chargeback System
   - (Implement) Incident and Problem Management
   - (Implement) Change Management
   - (Implement) Enterprise Operations Center Customer Service Desk
3. **Automate & Optimize – 7/07 – 12/10**
   - Define Technical Architecture
   - Server Farm
   - Storage Farm

- (Implement) hardware/software on demand
- Shared Middleware
- Enterprise Management
- Comprehensive Process Framework (ITIL)
- Architectural Compliance
- Service Level Management
- Performance/Capacity Management
- Single IT Management Solutions (Batch, Storage, Provisioning, etc.)

5. Goals and Principles to Guide the State Data Center

This material was recently prepared by Mark Reyer, SDC Administrator and approved by Lindsay Ball, DAS Director. This information is critical to establishing the governance and directions of the SDC, so it has been included here in its entirety. This section will become a stand-alone document in the SDC architecture artifact repository.

5.1. Introduction

It is the responsibility of State Data Center to provide state agencies and the citizens of Oregon with the highest quality technical services at the lowest possible cost. Every dollar saved in providing technical support to SDC customers without sacrificing quality is a dollar available to the citizens of Oregon. To address the legislated reductions in IT budgets and expenditures, a review of IT spending at an enterprise level determined where opportunities existed to reduce expenses and gain operational efficiencies. At that time, IT budgets and expenditures seemed to be unnecessarily expensive, due to a lack of a uniform approach to IT investments. This ad hoc IT budget and investment approach has resulted in the inability to easily share IT infrastructure investments and support costs between governmental agencies.

In 2004 the decision was made to build the State Data Center and to consolidate individual agency data center operations into a single physical structure and support organization. In early 2006 the new State Data Center was ready for occupancy. In 2006 individual agency IT infrastructures were relocated into the new data center and a team hired to provide IT support. Relocation and migration of infrastructure, associated servers, and support teams was the first of three phases in the journey to a consolidated IT vision.

5.2. Scope of SDC Responsibilities

This document represents a first step in the definition of the Oregon State Data Center Information Technology Enterprise Architecture. The scope of this document and the architecture is limited only within the scope of the SDC's responsibilities. Specifically, the SDC has the responsibility for the installation, maintenance, and support of IT Infrastructure including network, security, platforms (servers, mid-range, and mainframe computers), operating systems, subsystems, middleware, and the licensed software products used by agency application developers and other Information System organizations in state agencies. Enterprise Architecture (EA) in this document refers only to the architecture and standards associated with the SDC responsibilities listed above.

Within the technical responsibilities listed above, the SDC architecture includes associated:

- Standards
- Common Operating Environments (COE)
- Processes

- Procedures
- Governance

5.3. Current Challenges

With regard to information technology, we find ourselves in challenging times. Fiscal constraints, resource limitations, security concerns, and ever-increasing demands for new, improved and better government services have created a challenging environment. Investments in infrastructure have traditionally been made based on individual applications that serve internal agency business or the public. The lack of defined architectures and standards has resulted in an eclectic array of technology that is difficult to manage, costly to support, inflexible to enterprise needs, inefficient in utilizing assets, and an obstacle to interoperability. As a result of the consolidation of IT infrastructure into a single State Data Center (SDC), the opportunity now exists to define infrastructure architecture and associated standards for the statewide enterprise.

5.4. Goals of the State Data Center

- Improve the quality and reliability of the IT infrastructure
- Provide flexible and scalable IT infrastructure able to reliably adapt to growth and changes in the business environment
- Improve the productivity and efficiency of IT professionals
- Ensure that IT systems are flexible enough to adapt quickly to new agency requirements.
- Decrease the amount of hardware and software necessary to operate the enterprise, making possible further efficiencies in purchasing, maintenance, and licensing
- Reduce the variety of skills required by IT professionals within the enterprise, promoting greater flexibility of staff deployment and mitigating the effect of skills loss due to "aging-out" of the workforce.
- Facilitate greater resource sharing and interoperability within the enterprise, leading to operational efficiency and improved service delivery.
- Bring order into the otherwise chaotic world of information systems.
- Create the model for shared services for state government.

The **benefits** of a shared service model like the State Data Center are considerable. However, to accomplish these goals and realize the benefits, significant change and re-engineering is required. Planning for this mission requires governance mechanisms where decisions and compliance are based on the greater good of the state enterprise.

There is a compelling case that can be made for setting and enforcing standards. IT infrastructure and the associated operational functions are ubiquitous. Understandably, these assets and functions would benefit from having a similar set of standards to promote interoperability, increase usability and reduce IT maintenance costs. Standards will help us achieve greater efficiencies internally which can then be passed directly on to the taxpayers.

To achieve SDC's statewide (enterprise) goals the key vision for the Oregon State Data Center encapsulates:

- Shared Services
- Shared Infrastructure
- Simplification and Streamlining
- Standard Infrastructure Components
- Scalability
- End-to-End Enterprise Management Systems
- Modular Component-based Architecture
- Common Operating Environment
- Reduced Total Cost of Ownership
- System/Component Interoperability

5.5. Enterprise Principles for the State Data Center

This section defines the principles associated with two primary goals – maximizing cost-effectiveness and reducing complexity - that are fundamental "business drivers" impelling us to implement enterprise architecture for the State Data Center. The infrastructure architecture addresses the underlying enabling hardware, software, security, and network that support agency applications.

5.5.1. Cost Effectiveness

The Enterprise Architecture will maximize the cost-effectiveness of its information technology efforts. The SDC will strive to reduce procurement, implementation, integration, and support costs associated with duplicative architectures and obsolete or unused technologies by providing a common architecture that is flexible, reusable and cost effective across the enterprise

Future enterprise applications and technologies will leverage Oregon's existing enterprise technology assets (e.g., SOEN, State Data Center) where available and applicable. Opportunities for additional cost savings and operational efficiencies through further centralization of IT resources and functions will be explored. Decisions concerning further centralization of resources should be based on the results of formal analyses and empirical data on total cost of ownership and impact on the agencies included in the enterprise.

5.5.2. Reduced Complexity

The Enterprise Architecture will reduce the complexity of Oregon's information technology environment. Wildly diverse hardware platforms, networks, system software, and licensed software make change especially difficult, if for no other reason than creating the fear of breaking the whole complex mess by changing some small inter-related part of it. As complexity is reduced, the ability of the enterprise to adapt and change is increased. Reduced complexity should also reduce the cost of licensed products and their support through the leverage of enterprise-wide buying power and the efficient use of skilled technical labor. Lastly, support efficiencies are

gained by reducing the reliance on individual knowledge workers for customized infrastructure management, while at the same time quality of service improves.

As a practical matter, this principle implies the need to impose and maintain the discipline to reduce the number of platforms, configurations, and products in the enterprise, thereby reducing training and support requirements. This calls for the definition, migration, and compliance to enterprise-wide technical standards for the infrastructure.

5.5.3. Common Infrastructure Solutions

The SDC enterprise architecture will facilitate common solutions for agency IT requirements and needs shared by multiple agencies. This is in contrast to the traditional process of merely converting a set of physical requirements, without further analysis, into delivered (silo) solutions.

Clearly, an inventory of these products and components, as well as methodologies for maintenance of these components, will need to be established if this principle is to be achieved in practice.

5.5.4. Common Services for the State Data Center

The Oregon State Data Center is in effect an in-sourced IT service delivery business. As such it achieves maximum efficiency, value, and quality by having a consistent set of services and responsibilities for all customers. With a well defined set of responsibilities, common processes, standards, and service levels can be developed and achieved. Appropriate investments in consolidation opportunities are lost without common services within the SDC. Furthermore, consistent quality, customer service, and cost effectiveness are compromised if services and the associated systems are siloed and customized. The governance mechanism needs to ensure that all customers receive the same portfolio of services at the same cost and at the same levels of quality.

5.5.5. Standard Set of Information Technology Tools and Services

The SDC architecture will define standards for basic information technology tools and services (e.g., email, voicemail, internet access) that employees should have available to them, consistent with available resources and job functions.

Employees across the enterprise who perform relevant job functions should be given access to training tools and/or facilities to all system services, to the extent permitted by available resources. This will allow for greater volume discounts to be realized by the entire enterprise, as well has having a larger pool of similarly trained technical employees. It will also allow for an easier integration of new employees into the SDC.

5.5.6. Partitioning, Decoupling, and Virtualization of Infrastructure Components

The SDC architecture will develop and implement solutions that are highly partitioned, modular in design, that are comprised of components that are maximally decoupled, and that use standards-based protocols.

An essential part of the strategy to reduce complexity and enhance flexibility in enterprise architecture is to break down the traditional monolithic systems and to reduce the coupling of different components. Modular implementation will allow for the upgrade, exchange, and reuse of licensed products with minimal retooling or disruption to the overall environment. Scalability is enhanced and optimized with modular and interoperable components. Modularity will reduce the complexity and upgrade time of IT assets while providing the Enterprise with business application independence, skill-leveraging, and improved functionality.

The implications of this approach include:

- Abstracting enterprise computing, networking, storage, and security infrastructure.
- Enterprise management will become a core competency.
- Virtualization will be a key technology to manage components as a single utility to maximize efficiency, quality, and supportability.
- Modular components will be shared across agency boundaries, to the maximum extent permissible.

5.5.7. Common Operating Environment (COE)

The SDC architecture will establish a common operating environment for enterprise infrastructure. Standardization will facilitate consistency and uniformity across systems. It will simplify system operations and management, improve system maintenance and support, and thus reduce total cost of ownership. Existing IT platforms must be identified and documented then compared to enterprise-wide configuration standards. A review process must be developed for setting standards, reviewing and revising them periodically, and granting exceptions where appropriate.

5.5.8. Standard Configurations

The SDC architecture will define a small number of standardized, easily-reproducible system configurations for deployment in the State Data Center. Establishing configurations that are easily reproduced will cut down on costs associated with support and maintenance as well as simplifying training and knowledge transfer. This will also mean that any proposed changes must function correctly and consistently throughout the entire organization.

This principle also makes possible the end-to-end systems management that is a necessary part of reliable delivery of technology services to our customer agencies. This will require a change in some decision-making standards. For example, we will deploy agency applications on uniformly configured servers. Licensed software products used in standardized system configurations will be maintained at vendor-supported version levels.

In the short run, this means that we will strive to replace multiple, non-standard configurations with a smaller number of consistent configurations. In the longer run, this means that we plan for the retirement and replacement of obsolete platform components and configurations.

5.5.9. End-To-End Enterprise Management

Enterprise Manager is a suite of management tools that allows simple configuration, control and management of components and elements. It is a set of systems management tools, processes, and technologies to unify the management of elements into an enterprise view. It allows access to multiple sites and systems from a single interface improving recovery times, lowering business costs and increasing staff productivity. The centralized approach to monitoring large numbers of systems, devices, networks, and associated software allows a small number of skilled engineers to monitor accurately and efficiently, focusing in on the critical problems that arise rather than fire-fighting issues after they have been escalated by the end user. Historical views of technical issues can be analyzed to spot trends, systemic problems, gauge how customers are being serviced, and how to improve support operations of the SDC.

5.5.10. Statewide Network Backbone

The State of Oregon Enterprise Network (SOEN) will be used as a statewide network backbone for Enterprise applications and services. Among the implications of this principle:

- Implement a robust, fault tolerant, low cost backbone network for the State of Oregon.
- Create optimal routing and connectivity to maximize throughput and minimize costs.
- Standardize network devices and management software.
- Replace old legacy hardware with devices supporting current protocols and strategic requirements.

5.5.11. Use of Industry-proven Technology

Enterprise applications and infrastructure will use commercially viable, industry-proven, widely-used technology to the maximum extent possible. Use of industry-proven, widely-used technology allows for easier access to affordable skills and a large base of proven software solutions. It can reduce risk, and helps ensure robust product support. Wherever practical, the enterprise should strive to implement commercial-off-the-shelf technology as a first preference.

5.5.12. Open Standards

The SDC will favor products and solutions that use open standards to facilitate interoperability of system, storage, security, and network components. Open standards are technology specifications that are publicly available and affirmed by an industry-recognized standards body.

5.5.13. Disaster Recovery Planning

Appropriate disaster recovery processes and plans will be implemented to ensure the stability and integrity of the infrastructure supporting those agency applications and data deemed critical.

5.5.14. Evaluation of New Technologies

The SDC will review and assess the potential impact of advances in infrastructure technology and industry trends. The SDC will ensure the integrity of the architecture and the optimization of shared services when evaluating technology solutions.

6. Initial Strategies

Several strategies are already being employed to reach the baseline vision. Appendix A shows the projects that are currently active or have been proposed for the near future. The chart also shows the domains affected by these projects and the strategies that drive these projects.

- **Technical Standards** – The strategy calls for identification of domain standards and standard configurations to simplify service offerings. Work is underway to collect standards information from the SDC domain areas and from industry best practices. By offering standard configurations, build processes can be simplified.

- **Technical Roadmaps** – The strategy calls for development of technical roadmap diagrams to show the evolutionary path of a technical domain. Developing these tools solidifies thinking on actions required to reach a goal. The diagrams are also very useful for conveying direction and timelines to staff and customers.

- **System Management Tools** – The strategy calls for selection and implementation of tools to automate system management procedures for technical domains. Effective application of these tools reduces staff time spent in system management and increases the equipment to support staff ratio.

- **Server Consolidation** – The strategy calls for reduction of unneeded reserve or wasted capacity in the existing server environment. New server hardware being purchased will go into the shared server environment, rather than expanding the current server pool. Efforts will be starting soon to collect information about underutilization of servers in the existing pool and targeting applications for migration into the shared environment.

- **Server Virtualization** - The strategy calls for providing logical isolation of applications in a shared physical environment. Work will be starting soon on building this capability in the new shared server environment. Part of the architectural work in this area will be identifying criteria for customer applications that would be best suited by this environment.

- **Open Source Products** – The strategy calls for looking at Open Source software products when investigating potential solutions. This is a state directed strategy that the SDC fully supports. Although Open Source does not mean “no cost”, these products can produce cost savings and leverage with vendors of proprietary products.

- **Customer Relationship Management** – The strategy calls for continued development of customer services and customer satisfaction. One of the basic tools for the SDC – Customer relationship is the Service Level Agreement. Work is under way on Service Term Sheets which show the division of responsibilities between the SDC and customers. Technical architecture efforts will help define patterns for services the SDC offers.

- **Best Practice Processes** – This strategy calls for researching and implementing applicable processes from the IT industry to provide a more effective service management environment. The Project Management Institute Body of Knowledge (PMBOK) is being integrated into SDC project management processes. The IT Infrastructure Library (ITIL) processes are being used to build data center service delivery and service support processes. The SDC Architecture Team will be using several Architecture frameworks and reference models as resources for the Consolidation Architecture project.

- **Product Currency** – This strategy calls for keeping licensed software in a vendor supportable state. As vendors produce new versions of products, they will expire support for older versions. Adhering to this strategy will make sure the SDC does not have critical software that is not vendor supported. Several projects are underway for this strategy. There are upgrades to CICS, DB2 and the z/OS underway in Enterprise Systems.

- **Stability/Availability** – This strategy calls for keeping the environment in a highly stable an available state. This means that equipment should be observed for failures and replaced before significant outages can occur.

- **New Services/Technology** – This strategy calls for identifying and implementing new services and technologies that can increase revenue to the SDC or meet significant customer needs. Not every new technology will be adopted and provided to customers. There may be cases where the SDC needs to help customers find a different source for these services.

7. Interim Action Plan

Appendix A. shows the projects that are currently active or have been proposed for the near future.[1] SDC Plans and Controls has a draft template for documenting project proposals. Projects under consideration should be documented in a proposal; reviewed for approval by SDC Management; and then committed to a project queue where they would wait until resources are available to start the project.

7.1. Strategic Initiatives/Projects through 12/2007

The following active and proposed projects are due to be completed by the end of 2007. This list should be reviewed by the SDC Management Team to make sure that these projects meet strategic needs and that resources are appropriately focused. This list is long and it is questionable whether all of this work can be accomplished in the given time frame.

- **SDC Wireless Project** – ECD 8/31/07 - Creates the infrastructure to allow customers to request wireless LAN access.
- **Cisco Network Infrastructure Implementation Engineering Project** – ECD 9/12/07 - Remediates deficiencies in the network in preparation for future network convergence.
- **Distributed Systems Shared Environment creation –** ECD 10/12/07 **–** Creates the virtual and blade server environments that will be the foundation of the shared environment for servers in the SDC
- **SDC DSS Anti-Virus Project** – ECD 12/4/07 - provides an enterprise Anti-Virus solution for all SDC managed servers and systems against system security vulnerabilities and ensure correct virus protection is achieved and maintained.
- **SDC DSS Patch Management Project** – ECD 12/4/07 - provides an enterprise Patch Management solution for all SDC managed servers and systems against operating and other software system security vulnerabilities and ensure correct patch levels are achieved and maintained.
- **Mainframe z/OS Upgrade 1.7** – ECD 12/31/07 – Keeps z/OS mainframe on a vendor supported version of the operating system.
- **Mainframe CICS Upgrade 3.1** – ECD 12/31/07 – Supports z/OS upgrade and keeps CICS on a vendor supported version.
- **Mainframe 3745 Elimination** – ECD 12/31/07 – Removes the IBM 3745 Communications Controller from the Network environment, thereby simplifying it.

[1] The source of this information was the SDC Master Schedule. The schedule was recently purged of all projects that were proposed but not yet active. Prior to that purge, information was captured and used to build appendix A.

- **SDC Internal Solaris Consolidation Phase I** – ECD 10/31/07 – Removal of Sun Solaris AIX boxes to simplify the pSeries environment
- **Enterprise Firewall Project** – ECD 10/31/07 – Identifies standards for firewalls; transitions control of firewall devices from customer agencies to SDC; and pilots the replacement of non-standard firewalls with the new standard firewall
- **Firewall Management Tool** – ECD 11/1/07 – identifies, procures, and installs a firewall rule and configuration management tool
- **Define SDC Term Sheets** – ECD 8/31/07 – Defines what the SDC Services are and the division of responsibilities for these services between the SDC and its customers.
- **CIMS/IUAM Project** – ECD 9/4/07 – Provides a billing mechanism for the SDC
- **Develop 07-09 strategic Plan** – ECD 10/1/07 – Provides strategic direction for the SDC as a business unit.
- **Develop eLibrary Structure** – ECD 12/31/07 – Provides a standardized naming structure for shared folders used by SDC staff
- **Develop SDC Standard Templates** – ECD 12/31/07 – Provides a repository of templates for SDC staff to use
- **Job Scheduler Consolidation Procurement** – ECD 12/31/07 – Will create an RFP to select a single scheduler to replace the multiple scheduler software products to run on the Z-Series, I-Series, and P-Series systems.

7.2. Strategic Initiatives/Projects for Rest of 07-09 Biennium

The following active and proposed projects will be completed sometime during the 07-09 biennium, but after then end of 2007. These projects should be reviewed by the SDC Management Team to make sure they fit strategies and directions now. They should be reviewed against strategies and directions again in three to six months to make sure they still fit. Appendix A shows many other potential projects and the strategies associated with each. Many of these projects could end up on the Initiative/Project schedule for 07-09.

- **Phase 2 Data Migration and TSM Implementation** – ECD 3rd quarter, 2008 – This project provides a review and assessment of Storage Hardware Architecture; relocates the Burns Archive Center capabilities; expands capacity for both the Hitachi disk storage and the Automated Tape Library; and implements systems management tools.
- **Mainframe z/OS System Managed Storage** – ECD 2nd quarter, 2008 – Enhances mainframe storage management capabilities.
- **Single DB Management Toolset for Mainframe** – ECD 2nd quarter, 2008 – This project will reduce the number of database management tools used on the zSeries mainframe environments.

- **Mainframe z/OS Upgrade 1.9** – ECD 3rd quarter, 2008 – Keeps z/OS mainframe on a vendor supported version of the operating system.
- **Mainframe DB2 Upgrade (v8)** – ECD 3rd quarter, 2008 – Keeps DB2 on a vendor supported version.
- **Mainframe zSeries System Tool Consolidation** – ECD 3rd quarter, 2008 – This project will reduce the number of system management tools that perform similar functions for mainframe technicians and operators within the SDC.
- **Mainframe zSeries Developer Tools Consolidation** – ECD 3rd quarter, 2008 – This project will reduce the number of tools that perform similar functions for mainframe developers across multiple agencies.
- **ISeries Hardware Installation** – ECD 3rd quarter, 2008 – Installation of new iSeries equipment that will take the place of the three boxes being used currently.
- **P-Series Consolidation** – ECD 2nd quarter, 2009 – This project identifies and implements consolidation opportunities in the P-Series Unix environment.
- **Develop Security Processes and Procedures** – ECD 2nd quarter, 2008 – This project creates standard processes for SDC security
- **SDC Service Continuity Project** – ECD 2nd quarter, 2008 – This project addresses the SDC Business Continuity Planning to support agency Disaster Recovery.
- **SDC Operational Process Project** – ECD 3rd quarter, 2008 – This project implements some of the ITIL processes that the SDC needs.
- **Enterprise Citrix Shared Services Solution –** ECD 2nd quarter, 2009 – Create a shared services environment for Citrix and consolidate existing Citrix applications into it.

8. Future Architecture Efforts

8.1. Continue Strategic Planning

In the Consolidation Architecture project, work should focus on refining the directions and strategies that are already active while continuing to look for new opportunities for enhancing SDC effectiveness. Ideally, an SDC Strategic Plan should be documented for sharing with staff and customers. This could be a one-page document for the sake of simplicity. Several templates exist for this type of work.

Strategic planning should also consider the developing culture at the SDC. Thought should be given to how to increase cohesion of staff and management at the SDC. There is need for keeping communication open and letting it give everyone power, not just a select few. SDC management needs to actively work on dissolving any remaining fear that was created in staff during the CNIC project.

8.2. Continue Architecture Development

Further architecture work for the SDC should include consideration of the SDC as a business unit. An SDC Strategic Plan can be developed as part of the project. The strategic plan is an output of business architecture planning and an input to technical architecture planning.

General Architecture principles should be documented. Domain specific principles were included in the Consolidation Plan document created last December. These should be generalized, reviewed and approved by the SDC Management Team, and shared with staff in all areas of the SDC.

The Architectural vision needs to be solidified. Framework and technical domain models need to be built to describe the SDC and its domains. These will communicate the vision to staff and customers.

The SDC Consolidation Architecture project needs to create standards for technical interfaces, protocols, provisioning and build processes; processes and procedures for key work done at the SDC; application patterns for optimal utilization of SDC infrastructure; implementation roadmaps; and SDC policies where applicable. These will help create an environment with repeatable processes which in turn create greater stability.

The SDC would benefit from approaching architecture as a process that needs to mature over time. Use of architecture maturity models can help determine where to focus architectural efforts with each iteration of the architecture process.

A. Appendix A

The following pages show the current SDC project queue, identifying affected SDC domain and strategies driving the project.

DAS DEPARTMENT OF ADMINISTRATIVE SERVICES
STATE DATA CENTER

SDC Active and Proposed Project Queue

Affected Domains and Strategies

				Domain										Strategies												
Project/Initiative	Proposed or actual start	Proposed Finish	In progress	Network	Distributed Sys	Storage	Enterprise systems	Security	Voice Services	Plans & Controls	customer support center	operations/command center		standardization	roadmap definition	System Management tools (automation)	Consolidation	Virtualization	Open source products	customer relationship mgmt	Best Practice Processes	Product currency	Stability/Availability	New Services/Technology	
SDC Wireless Project	1/8/2007	8/31/2007	Y	X													X							X	
Cisco Network Infrastructure Implementation Engineering	1/9/2007	9/12/2007	Y	X																			X		
Agency Network Consolidation Project	TBD	TBD	N	X				X						X			X						X		
Core Network Upgrade Project	TBD	TBD	N	X				X						X								X	X		
Frame Relay Replacement	TBD	TBD	N	X																			X		
SDC Floor Redundancy	TBD	TBD	N	X																			X		
Upgrade Statewide Network Equipment	TBD	TBD	N	X																			X		
Distributed Systems Shared Environment Creation	5/1/2007	10/12/2007	Y	X	X	X		X		X	X	X		X	X		X	X			X	X	X	X	
SDC DSS Anti-Virus Product	3/26/2007	12/4/2007	Y		X																		X		
SDC Patch Management Project	3/26/2007	12/4/2007	Y		X																		X		
Enterprise Citrix Shared Service Environment	TBD	2Q, 2009	N		X									X			X	X							
Novell Test Lab Migration	TBD	TBD	N		X																		X		
DHS-Oregon Access Server Migration	TBD	TBD	N		X																		X		
Phase 2 Data Migration and TSM Implementation	1/8/2007	3Q,2008	Y			X								X	X	X	X				X	X	X		
Remaining Agency Storage Consolidation	TBD	TBD	N			X											X						X		
Enterprise Backup Project	TBD	TBD	N			X										X	X						X		
SDC MF z/OS Upgrade to 1.7 (zSeries)	1/29/2007	12/31/2007	Y				X															X	X	X	
SDC MF CICS Upgrade 3.1(zSeries)	1/29/2007	12/31/2007	Y				X															X			
3745 elimination (zSeries)	6/1/2007	12/31/2007	N				X										X								
SMS Project - System Managed Storage (z Series)	7/13/2007	2Q,2008	N				X															X			
Single DB Management Toolset (zSeries)	TBD	2Q,2008	N				X										X					X	X		
DB2 Update to v8 Project (zSeries)	9/1/2007	3Q,2008	N				X															X	X		
SDC MF z/OS Upgrade to 1.9 (zSeries)	TBD	3Q,2008	N				X															X			
z Series System Tool Consolidation (zSeries)	TBD	3Q,2008	N				X										X					X	X		
z Series Developer Tools Consolidation (zSeries)	TBD	3Q,2008	N				X										X					X			
RACF Standard Design Project (zSeries)	TBD	TBD	N				X															X	X		
Install P6 Chip Hardware System (iSeries)	TBD	1Q,2008	N				X															X			
DOC Upgrade to v5r4 (iSeries)	TBD	TBD	N				X															X			
Consolidate DOC onto iSeries 570	TBD	TBD	N				X										X								
Consolidate ODVA onto iSeries 570	TBD	TBD	N				X										X								
SDC Internal Solaris Consolidation Phase I (pSeries)	4/2/2007	10/31/2007	Y				X							X			X					X			
P-Series Consolidation (pSeries)	TBD	2Q,2008	N				X							X			X					X			
SDC Internal Solaris Consolidation Phase II (pSeries)	TBD	TBD	N				X							X			X					X			

SDC Active and Proposed Project Queue
Affected Domains and Strategies

				Domain										Strategies												
Project/Initiative	Proposed or actual start	Proposed Finish	In progress	Network	Distributed Sys	Storage	Enterprise systems	Security	Voice Services	Plans & Controls	customer support center	operations/command center	standardization	roadmap definition	System Management tools (automation)	Consolidation	Virtualization	Open source products	customer relationship mgmt	Best Practice Processes	Product currency	Stability/Availability	New Services/Technology	
Enterprise Firewall Project	3/1/2007	10/26/2007	Y					X					X			X						X		
Firewall Management Tool	5/15/2007	11/1/2007	Y					X					X							X		X		
Develop Security Processes & Procedures	11/1/2006	2Q,2008	Y					X					X							X		X		
Administrative Remote Access Project	TBD	TBD	N					X														X		
Wireless Security Project	TBD	TBD	N					X												X		X		
Wide Area Network Security Project	TBD	TBD	N					X												X		X		
Network Intrusion Detection Project	TBD	TBD	N					X												X		X		
Define SDC Term Sheets	1/29/2007	8/31/2007	Y							X			X						X	X				
CIMS/IUAM Project	1/2/2007	9/4/2007	Y							X			X						X	X				
Develop 07-09 Strategic Plan	TBD	10/1/2007	N							X			X	X	X	X	X	X		X	X	X	X	
Develop eLibrary Structure	12/1/2006	12/31/2007	Y							X			X											
Develop SDC Standard Templates	12/1/2006	12/31/2007	Y							X			X						X					
SDC Service Continuity Project	1/2/2006	2Q,2008	Y							X										X		X		
Develop SDC Web Portal	TBD	TBD	N							X			X			X		X	X	X				
Job Scheduler Consolidation Procurement	2/21/2007	12/31/2007	Y									X	X			X				X		X		
SDC Operational Process Project	1/2/2006	Q3,2008	N									X								X				
(Implement) Production Support (processes)	TBD	TBD	Y									X	X						X					
Enterprise Monitoring Project	TBD	TBD	N									X	X				X		X	X		X		