

BCCS

Keeping You Connected

PROJECT HERCULES

Category: Information Communications
Technology (ICT) Innovations

NASCIO
Recognition Award
Submission

Executive Summary

In 2003, the Governor of Illinois challenged the Department of Central Management Services (CMS), the purchasing arm for all agencies, boards and commissions beneath the purview of the Governor's Office to increase government efficiency without raising sales or income taxes.

The Bureau of Communication and Computer Services (BCCS), the body within CMS that manages the computer and telecommunications needs of most of state government, as well as, schools, universities, libraries and other local entities, was a logical place to meet the governor's challenge. BCCS chose to fulfill the mandate by improving the State's telecommunications infrastructure, while offering new services to state agencies and various other constituents.

While state agencies utilized a vendor-provided frame relay network for data, the video network also remained independent.

CMS/BCCS already managed the Illinois Century Network (ICN), a state-owned MPLS IP network originally designed and built to provide a communications network for state colleges, universities and K-12 institutions, museums, libraries, hospitals, local government, and other non-profit entities. With a 99.999% reliable backbone, the ICN was and is a robust, high-speed statewide network providing access to data, video and audio communications throughout the state of Illinois. The ICN was the logical avenue to pursue.

Project Hercules was conceived and completed to upgrade the ICN and migrate the State's frame-relay data circuits and video network to the state-owned network in order to provide faster, lower-cost services to state agencies and the people of Illinois.

By project completion in 2005, the State of Illinois had migrated mission critical data running on more than 1700 frame-relay data circuits leased from the then SBC (now AT&T) to the state's upgraded ICN MPLS IP communications network. This migration paved the way for the future delivery of enterprise services to State of Illinois agencies. As State of Illinois agency sites migrated to the ICN, CMS was also able to leverage the new network connectivity to complete an IP video migration project. The IP video migration project focused on moving more than 150 Illinois Video Network endpoints utilizing ISDN connectivity to IP video over the ICN, thus reducing agency costs by eliminating the need for additional ISDN circuits. At an estimated capital cost of \$10 million in 2004-2005, Project Hercules has saved the State of Illinois over \$7 million each year and remains among the outstanding accomplishments in Illinois state government.

Description of the Business Problem and Solution

Prior to 2003, many of the 50 state agencies beneath the Governor's Office leased expensive private circuits to carry their mission-critical data and relied upon contractual staff provided by SBC (now AT&T) to support and maintain those circuits.

Illinois needed to decide to either move the legacy ICN constituents to SBC or move what we leased from SBC to our state owned and managed network. We decided to improve upon what we already owned and hired an outside consultant to manage the project.

Prior to the consolidation and migration of the circuits in 2003, the circuits were managed independently by contractual staff provided by SBC.

By project completion in 2005, police report, inmate tracking, traffic and highway safety, revenue and other critical service data running on approximately 1600 circuits had been migrated from a high cost, leased frame-relay network to the State's upgraded MPLS IP backbone communications network. The independent video network of more than 150 ISDN circuits was also migrated to IP Video over the ICN.

The initial stages of the migration met with some resistance by the agencies who had established long-time relationships with their SBC contractual staff. Not only was CMS challenged with the technical tasks of the upgrade and migration, they had to devise a marketing plan to foster enthusiasm for the changes.

CMS had to convince the agencies that the ICN could handle the increased traffic and that it would provide higher-speed service at a lower cost, while maintaining the same high level of quality.

In order to gain acceptance of the project and support among the new agency users, kick-off meetings were scheduled. Hercules was outlined to the agency CIOs and the project timetable reviewed. An inventory of circuits to be migrated was validated and the project approach described. Internal agency contact staff was established as a communications vehicle to be used during the migrations.

A state-wide and comprehensive project plan was followed. Circuits were inventoried, information identified and the migration planned for each agency. Each cutover was accomplished during work shifts least likely to disrupt business at the agencies and then tested. With these precautions in place and the successful migrations completed ahead of schedule, CMS gained the trust of the agencies.

Among the technical challenges, the project team had to create a comprehensive picture of all the data traffic originating with numerous transmitting entities utilizing various leased systems and circuits.

Significance to the Improvement of the Operation of Government

State and local agencies, colleges, universities, K-12 schools, libraries, museums, health care facilities and hospitals use the Illinois Century Network (ICN) every day to meet the needs of the people of Illinois.

Project Hercules was a significant contributor to the IT and Telecommunications savings realized by the State of Illinois beginning in fiscal year 2005 and continuing today. The project met the challenge the Governor set to improve efficiency in state government without raising taxes.

Critical data is managed by security cleared state employee staff from one central location with visibility into an entire statewide network. The backbone that carries critical and personal data is 99.999% reliable and most issues are recognized and resolved by network staff before a constituent or agency even notices or is affected.

The first fully state-managed network, the Illinois Century Network is a model for other state governments and corporations around the country.

Benefit of the Project

The migration of the data traffic and video network were completed without losing data or interfering with the daily business operations of the state agencies. The upgraded network provides higher-speed services at a lower cost, while enabling new applications to be delivered.

CMS chose to support the network internally, no longer relying on AT&T to provide a managed service. The migration from the outsourced frame-relay network to the internally managed, MPLS enabled, ICN backbone provided greater connectivity capabilities, security, and reliability.

Multi-Protocol Label Switching (MPLS) network technology was chosen as an industry direction and a vehicle to enable our varied customer set to connect all offices in a reliable and efficient manner, while providing centralized service networking, hub-and-spoke networking and any-to-any connectivity. By moving to MPLS, the ICN became a carrier-class provider and positioned itself to provide and support new initiatives within the state.

Creating an MPLS enabled backbone resulted in several benefits to State of Illinois agencies. First, the framework of an MPLS architecture allowed for a smooth transition

of agency connectivity as it was an efficient way to emulate the legacy frame-relay network over the ICN. Second, the MPLS architecture served as a foundation to support the hundreds of server moves from legacy agency data centers to the centralized enterprise data center as part of the Statewide IT Rationalization and Consolidation efforts. Last, but not least, the scalability and flexibility that is inherent in the MPLS design is of great benefit in quickly recovering during disaster scenarios. For example, if a State Agency building were to sustain damage due to a fire, flood, or other natural disaster, the network does not have to be redesigned when the agency moves into a different building. The enterprise network configuration is such that customer, wide-area network (WAN) equipment can be quickly configured to make that same office WAN “appear” at any location. MPLS capability supports a more efficient use of time in managing the network, which means improved service and reduced costs.

As a result of this project, the Illinois Video Network (IVN) was able to be migrated from ISDN video to IP video over the ICN, The video migration from ISDN to Internet Protocol allows the more than 150 video endpoints used by the state agencies to utilize the same State Agency WAN connections that are used for other agency data communications traffic. Quality of Service (QoS) configuration is implemented on the ICN to insure the stability of IP video conference calls across the WAN circuit. Completion of the IP video migration project resulted in the disconnect of legacy ISDN circuits resulting in additional cost savings to agencies.

Project Hercules, the first of its kind in any state, has been used as a model for other governments and private sector enterprises.

CMS and the State of Illinois upgraded the State's backbone network to accommodate applications for 57,000 state employees of dozens of agencies and the more than 2 million Illinois citizens who have traditionally relied on the ICN at the public and private colleges, universities, schools, libraries, health care facilities and local governments across the state.

The backbone is managed 7x24x365 by security cleared state personnel who are familiar with the importance and confidentiality of the data that travels across our network.

The agency community served by the upgraded network has been able to take advantage of the increased bandwidth and QOS with consistent reliability at a reduced cost.