

2014 NASCIO Recognition Award Nomination

TITLE: Network Communication Partnerships for Public Safety and Economic Opportunity

CATEGORY: Cross Boundary Collaboration and Partnerships

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Network Communication Partnerships for Public Safety and Economic Vitality

Executive Summary

In November 2010 the Idaho Transportation Department's (ITD) Enterprise Technology Services' staff initiated a project designed to improve public safety, facilitate economic vitality, and improve the quality and cost effectiveness of ITD's communication network. The project, which aligns with ITD's strategic plan, included the following objectives:

1. Expand fiber-optic broadband services to areas with limited internet access
2. Share the costs of fiber and conduit installations with public and private sector partners
3. Improve business continuity by creating seamless network redundancy in the event of network failures
4. Consolidate services, circuits and hardware to reduce ITD's communication costs

The project expanded ITD's fiber-optic network and consolidated disparate circuits and hardware to address rising costs and an increased need for network bandwidth. **As a result, operational improvements have significantly increased ITD's bandwidth statewide and created cost savings of more than \$947,000 to date.**

ITD also developed an innovative partnership to share network infrastructure resources with the Idaho Military Division (IMD) whose network infrastructure is often co-located with ITD at county courthouses and ITD district offices. The co-location of the two agencies networks provided the opportunity to share network capabilities. ITD provides traditional leased, carrier-based data circuits to IMD while IMD provides access to the statewide microwave system to ITD. ITD and IMD now have a redundant communications network for high-risk areas at minimal cost. **If ITD or IMD had built a redundant network independently, the estimated yearly cost would have been \$203,000 for each agency.**

ITD worked with industry, public, and political leaders in Idaho's LinkIDAHO Broadband Advisory Team (LBAT) to identify partnership opportunities to expand broadband capabilities to remote Idaho locations. **This provided opportunities to improve the economic vitality in communities with limited broadband services and also improved public safety communications.**

ITD developed partnerships with telecommunication providers, using a "fiber banking" model and a strategy of "only dig once." This allowed telecommunication providers to install conduit and fiber in ITD's highway right-of-way during approved road construction projects, and allowed ITD the same opportunities during telecommunication company projects **resulting in reduced costs and increased capacity for all parties.**

BUSINESS PROBLEM AND SOLUTION

Problem

Reliable communication networks are essential to business operations and critical to public safety for Idaho agencies responding to the demands of extreme conditions, disasters and emergencies. Ensuring that communication networks operate when necessary can be costly, but through a recent partnership, two Idaho agencies reduced that cost while maintaining the uninterrupted continuity of day-to-day critical services.

The Idaho Transportation Department (ITD) maintains a fiber-optic communication network throughout the state, connecting all ITD offices and buildings, county assessors, county sheriffs' offices and many other state agencies. Business continuity of the communication network is critical as ITD relies on the fiber-optic network to provide many of its primary services, including:

- Traffic management
- Network-based phones and video
- Division of Motor Vehicle services
- Ports of Entry
- Closed-circuit TV cameras
- Voting
- Websites
- Intelligent Transportation Systems

The Idaho Military Division (IMD) is directed by Idaho law to acquire and install all state public safety radio and microwave systems in support of state emergency communications. Without business continuity capabilities Idaho citizens are at greater risk in the case of a public safety emergency.

Both agencies require a dependable, high bandwidth network infrastructure during extreme conditions and emergencies. Each agency requires reliable network connectivity for voice and data communication and fast access to resources. These networks must be working and available at all times, including regularly scheduled maintenance when the system goes offline.

Expansion of network capabilities and increasing bandwidth to support new services is costly. When operational costs increase there is less money to improve Idaho's roads. ITD's challenge was to find a way to expand and improve communication services while reducing network costs so that money is not taken away from our core mission of maintaining Idaho's roads.

Solution

In response to the need to have efficient and effective communication networks, three years ago, ITD's Enterprise Technology Services (ETS) began the implementation of the **Network Communications Partnerships for Public Safety and Economic Vitality Project**. ITD staff members needed to look for innovative solutions when they recognized that network outages were causing a significant impact on the day-to-day operations at the district offices and mitigation of outages was beyond control of the ITD network staff. The solution to this challenge was to develop an inter-agency partnership

that allowed ITD to share network services with the Idaho Military Division (IMD) to provide continuity of business services.

The ITD and IMD partnership allowed both agencies to share network infrastructure resources. This resulted in a robust, redundant network for both agencies while at the same time reducing operational costs. ITD provides access to traditional leased, carrier-based data circuits while IMD provides access to the statewide microwave system. With ITD and IMD sharing their unique types of infrastructure, both agencies gained a diversified network environment with minimal cost. The total cost of the solution was approximately \$12,000 with both agencies sharing the cost. In the event of an outage, each agency's network is designed to immediately "failover" to the other agency's network. The failover system is designed to switch to the other network without users experiencing any downtime. This allows network communication to continue in the event of a major outage at ITD or IMD. This project leveraged state assets to provide shared network redundancy, eliminated downtime for staff and the public, and dramatically improved customer service.

The project also created partnerships with industry, the public and political leaders in Idaho's LinkIDAHO Broadband Advisory Team (LBAT) to identify opportunities to expand broadband capabilities in remote Idaho locations. The project created standard processes, a standard agreement and a single point of contact for all who want to put fiber in ITD's highway right-of-way. This provides a predictable and reliable process for our partners that have resulted in the expansion of fiber across Idaho benefiting both the private and public sector.

The project transitioned the responsibilities for broadband and fiber expansion to a newly created Fiber Management Program within ITD that continues to support the goal of providing adequate bandwidth at a reasonable cost and providing a mechanism to improve the economic vitality in communities that have limited broadband services.

SIGNIFICANCE

Network communication partnerships allow the Idaho Transportation Department (ITD) to provide vital public safety services through a shared, redundant network that eliminates downtime due to network failures. The Idaho Military Division's (IMD) services are provided in the same manner, with the same ability to instantly switch networks in the event of a network failure.

Diversified redundant circuits increase "uptime," employee productivity, safety, and help ensure that no single event would likely take down both networks. If ITD's fiber-optic network is inoperable in a district, the network automatically switches to the microwave network and vice versa for IMD. The switch happens without human intervention and without disruption to customers. Once the outage is resolved, staff can switch back to the agency network and business continues as usual. Since launching this service, ITD and IMD have experienced numerous independent outages. However, customers experienced little or no impact.

Recently a network outage was caused by the main network carrier and created a three-hour service interruption during the middle of a workday all across northern Idaho. The network connection to ITD's District 1 Office suddenly became unavailable and without human intervention the fiber optic network successfully failed over to the microwave network. As a result, daily operations of the district staff were not impacted by the outage. ITD's phone system, computer systems, traffic monitoring, and electronic interstate highway message signs continued to operate. If the 200 district employees had been without network communications, it would have cost ITD more than \$18,000 in lost productivity for the single event. In other words, the project's cost was more than offset by the avoidance of one network failure.

ITD will continue to expand the fiber-optic broadband services to areas that have limited broadband access, allowing telecommunication providers to install conduit and fiber in ITD's highway right-of-way during approved construction projects.

BENEFITS OF THE PROJECT

- The ability to instantly switch to another network if the Idaho Transportation Department or the Idaho Military Division experiences a network failure.
- To date, the targeted cost-saving measures have created savings for ITD of more than \$947,000.
- Partnerships continue to allow development of a long-term plan that defines the future of ITD's video, voice, and data network to grow and adapt to future needs in a cost effective manner.
- ITD continues to work with industry, public and political leaders in Idaho's LinkIDAHO Broadband Advisory Team (LBAT) to identify opportunities to expand broadband capabilities to remote Idaho locations that have limited broadband services. Existing and developing businesses in these areas will have opportunities for access to a high-speed fiber-optic network, a vital tool for all businesses. Students will have access to educational opportunities and the public will have access to broadband services.
- Collaborative partnerships with telecommunication providers, using a "Fiber Banking" model, allows telecommunication providers to install conduit and fiber in ITD's highway right-of-way during approved road construction projects and allows ITD to install fiber in telecommunication company projects using the strategy of "only dig once".

Fiber installations for all partners are “banked” to ensure equal compensation for all parties. This stabilizes expanding communications costs for telecommunication providers and public entities through shared resources. ITD has successfully used this process across the state and additional opportunities continue to surface as the project’s benefits are better understood by the private sector.

- The project leverages available fiber-optic assets between ITD partners to create economic opportunities, stabilize rising communication costs, and barter assets and services rather than exchanging dollars and using restrictive contracts.

ITD’s network communication partnerships leverage state assets to provide shared network redundancy, eliminate downtime for staff and the public, and dramatically improve customer service. By partnering with another government agency and sharing resources, both agencies now have a redundant communications network for high-risk at minimal cost. ITD’s partnership with IMD will save taxpayers more than \$400,000 each year and ensure that both agencies continue to fulfill their public responsibilities.

In summary, ITD’s innovative approach to managing and operating its network communications can easily be adapted by other public sector agencies interested in improving the quality and cost effectiveness of their network and expanding opportunities for network broadband services across their state.