Lackawanna County PA | A Smart Network Initiative
'Budget neutral' project earns revenue that moves the cash flow to positive!

Lackawanna County Government was a high cost and limited access operation with respect to broadband and telecom services. Downtown corridors had fiber service, but building out to rural or remote service locations was costly. A careful look at the composite annual communications expense showed that yearly county spend was about to break $500,000 – while the service didn't fully meet the growing county demand!

The PA County Commissioners Annual Conference shared information about a unique wireless network in Cumberland, Maryland and the firm, Conxx, Inc. that had built additional wireless government networks. Lackawanna County officials discovered a cost effective, multi-user and carrier-grade wireless network that earned a federal 'best practice' designation. The network delivered fiber quality technology without the fiber's cost and was shared among users whose data connection was secure and prioritized, allowing for public safety, government, institutional and public access on a single, secure, multiservice data network.

HOW TO PAY FOR IT?
Even great ideas need to pay for gas in the tank, and here county officials used some innovative financing.

County Chief Information Officer, Jeffrey Mando crafted a savings-based financing plan that yielded the upfront project funds without a bond issue or borrowing guarantee that would impact the county's debt limit.

Both Fidelity Deposit and Discount Bank and M&T Bank evaluated the concept and tendered offers to fund the project cost – leverage by non-appropriated lease payments that would come from the savings in the county telecom budget. The savings were greater than the payments, meaning immediate financial benefit to the county.

Game-changing technology and budget-neutral funds fueled a design-build engagement with Conxx that guaranteed project completion, performance and cost.

ON BUDGET
Conxx, agreed to a guaranteed maximum cost contract to build a 10-tower, 1Gbps, high reliability, low latency, MPLS core network, and install Last Mile connections for 50 county offices and service locations across a 465sq mi landscape. Conxx added two tower locations for improved network design but the project cost stayed right at $2.8M. Numerous local businesses were integrated into the project supply chain and local labor was hired to assist.

PERFORMANCE EXCEEDS EXPECTATION
The expectation for high reliability is fulfilled with five-nines engineering riding on a multipath ring, self-healing licensed microwave backbone – built with Ceragon IP20 licensed microwave radios.

The key to the technology, which is also the key to the business plan, was the implementation of Conxx MPLS over wireless. This technology enables diverse and even mission-critical users, public safety,

government, corporate, education and Internet Service Providers to use the same network without interference – reducing every user's cost while providing superior service. This is a very Smart Network.

This technology also features prioritization, encryption, QoS, VLAN, TDM, SCADA, VOIP, Wi-Fi and VPLS designed to enable Carrier Ethernet transformation data across the service access network via Alcatel Lucent 7210 SAS network switches. In short, the Conxx network delivers fiber quality performance far below the cost and far beyond the physical limits of fiber cable. Last Mile connections utilize Radwin point-to-point and point-to-multipoint radios in licensed and non-licensed spectrum and provide service in as little as the same day it is ordered for VLAN or business class broadband. The Radwin system made channel management efficient as the software based radio gear can be tuned to available spectrum between 4.9-6.0 GHz.

A two-man crew implemented 50 off-site last mile connections that included County Courts, District Attorney and Sherriff, all District Justices, county authorities and utilities, remote offices and parks in about 40 work days.

A CLOSER LOOK AT THE SAVINGS
The actual savings calculations that Lackawanna County used to secure budget neutral system financing are shown. In addition, County officials created a unique business model to generate significant revenue from network users.

GAME CHANGING FOR PUBLIC SAFETY
As the network build came online, County 911 officials secured a Department of Justice Grant to replace its police radio system, called LMR or land mobile radio. Director Dave Hahn wanted the new P25 compliant, IP-based Motorola GTR8000 Base Station.

Initially, the project would not fit within the grant budget – the project was saved by using the new county wireless network, which was designed to snap on public safety backhaul for next generation 911 LMR communications and First Net requirements. County 911 trimmed the budget by integrating base stations onto a top-priority VLAN on the wireless network – and saw performance that exceeded the Motorola specifications for jitter, latency, capacity and reliability. In addition, minimal funds were needed to easily add 'spur', or off-core LMR repeaters that resolved long standing gaps in 911 radio coverage. 911 is now switching fire and EMS radio from leased circuits to the wireless network and anticipates annual savings of $100,000.

IMMEDIATE BENEFITS TO BUSINESS
When an office park developer ordered a 20mpbs internet connection for the just-opened TekRidge Center in suburban Jessup PA, the cost of the short fiber build from the traditional telecom carrier exceeded $35,000.

For a build out fee at a cost of $1500, the county installed a higher speed, lower latency connection and provides carrier grade broadband at less than half of the 'on-going' monthly cost. Quick and cost-effective connectivity is now readily available as an advantage for business and economic development all across Lackawanna County.

IMMEDIATE BENEFIT TO EDUCATION

The county network is now a gateway to the new Pennsylvania Research and Education Network, or PennREN, the 1,600-mile broadband network connecting PA's community anchor institutions and major universities.

The network delivers low cost broadband, private network services and programs targeted to education, medical and non-profit organizations.

Lakeland School District in rural Scott Township is already linked via the county wireless network, and all 14 public libraries are scheduled for connection in 2015. Additional school districts are evaluating a move to the network as current broadband contracts mature. Regional colleges and technical schools now also have an affordable path to connect to PennREN.

IMMEDIATE BENEFIT TO RECREATION

All county parks and a growing number of municipal parks now feature free public Wi-Fi, networked offices and security video backhaul, even from remote, difficult to reach locations across the county. A growing number of towns are also lighting up parts of their retail shopping areas with popular public Wi-Fi hotspots.

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