WIRE New Mexico OVERVIEW



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WIRE NEW MEXICO- Architecture

WIRE New Mexico

This presentation outlines Governor Richardson's WIRE New Mexico infrastructure project. The infrastructure architecture can be defined as the components that enable the state to implement a high speed, high capacity communications system which will include data, voice and video throughout the state. This infrastructure will allow for state of the art connectively among state agencies ultimately helping them to better serve the citizens of New Mexico.

Business Objectives

The business objectives for the State network architecture are:

- Efficient delivery of client services by state agencies
- Continuing implementation of a single statewide, integrated telecommunications backbone for state government.
- Leverage existing state-owned resources to reduce recurring costs.
- Reduce state-wide, bottom-line costs for communications.

Technical Objectives

Technical objectives for the State network architecture are:

- Integrate existing digital microwave network and other state-owned resources into one state system.
- Protect network continuity and security.
- Ensure adequate and scalable bandwidth for present uses and future growth.

State Network Initiatives

Several major initiatives are in process working towards the goal of consolidating network infrastructure and providing high capacity backbone throughout the State. Each initiative consists of sub-projects.

• Digital Microwave Backbone

Continued build-out of digital microwave backbone throughout State and tying into fiber backbone.

• Simms Core

Upgrade core network at Simms to fully enable MPLS and to enhance high availability.

• Santa Fe MAN Backbone

Build high capacity backbone interconnecting major State facilities throughout Santa Fe and tie into fiber backbone.

• Fiber Backbone

Build fiber backbone along Rio Grande corridor then extend through southeast, northwest and northeast regions.

Albuquerque MAN Backbone

Build high capacity backbone interconnecting major State facilities throughout Albuquerque and tie into fiber backbone. The core of the State's voice network is centered around the Education and Simms Buildings in Santa Fe and the Tiwa Building in Albuquerque. Most of the PBX's in Albuquerque and Santa Fe are networked to these core locations via dedicated point-to-point T1 circuits.

PBX's and key systems throughout the rest of the State are independent islands.



Today's Legacy Architectures

Data Networks - pre-consolidation

A typical State agency network traditionally has been based on circuits that aggregate into the agency's headquarter location (usually in Santa Fe or Albuquerque). A connection to GSD (Simms Building) provides access to shared State services, such as e-mail, and to the Internet.

When replicated for each agency it is easy to see that there is little economy of scale and much duplication of circuits and geographic connectivity – which comes at a high cost for remote areas such as the southeast.







Background

The State of New Mexico owns and operates a licensed digital microwave network that services a majority of the state. The State has been upgrading its microwave network from analog to digital since 1999.

Public Safety Radio Communications

The primary purpose of the microwave network is to enable mobile radio communications for public safety (State Police), other State agencies (e.g. Game and Fish, Corrections, DOT) and for various local and federal entities. The microwave network connects dispatch centers throughout the State with radio towers that communicate with State Police vehicles and other mobile units.

Extending Bandwidth into Rural Areas

The capacity of the digital microwave systems is sufficient that in addition to servicing mobile radio communication, considerable bandwidth can be allocated for data services into rural parts of the State where such bandwidth is either unavailable or very costly.



Digital Microwave Network





Digital Microwave Network

The microwave network conversion from analog to digital has been rolled out in phases by geographic region starting with the Northeast and North Central.



Note: This diagram only reflects logical connectivity between cities serviced by the digital microwave network and does not include all intermediary DMW towers and sites.

Statewide Fiber Backbone

The Rio Grande corridor fiber initiative is the foundation of the high speed, high capacity backbone for the State. Developed as a collaborative between NM Tech, NMSU and GSD, this phase is set to become operational by August, 2006. This phase is a major component for getting Lambda Rail to all NM research universities. This phase received a \$ 2 million appropriation from the legislature.



The Southeast fiber initiative will build out a high capacity backbone through the southeast region of the State. The digital microwave network can easily be integrated to the fiber backbone to extend high bandwidth services throughout the region. This phase will create a redundant " fiber ring" for the state network. This phase was funded for \$ 4.8 million by the legislature in 2006.



The Phase 3 initiative would extent the state's fiber backbone to Raton. Under the lease agreement for the Rio Grande Fiber, the state has an option to lease the additional fiber. This option expires in August , 2006. NMSU, NM Tech and GSD are working together to obtain funding.



For this phase of the fiber initiative, GSD has negotiated with a carrier to obtain " dark fiber" from Albuquerque to Farmington. The cost to "light" the fiber for this phase is estimated around \$ 750 k.



This represents the completed fiber backbone for the WIRE NM network. The build out a high speed, high capacity backbone the State. The digital microwave network and the MANs can are integrated to the fiber backbone to extend high bandwidth services throughout much of the state.



Metropolitan Area Networks

Metropolitan Area Networks or MANs are large computer networks spanning a city. They typically use wireless infrastructure and/or optical fiber connections to link their sites. Three are currently in either planning or implementation-



Santa Fe Metropolitan Network

Metropolitan Area Networks



Albuquerque Metropolitan Network

Metropolitan Area Networks



Rural City Metropolitan Network

Implementation Schedule

	FY06			FY07			FY08				
Digital Microwave Backbone			75%				85%				
Simms Core			80%								
Santa Fe MAN			50%								
Fiber BackBone											
Phase 1			65%								
Phase 2							50%				
Phase 3											
Phase 4											
Albuquerque MAN							80%				

Wire New Mexico Overview

