Washoe County

Discussion on Regional FirstNet Implementation

TECHNOLOGY
SERVICES

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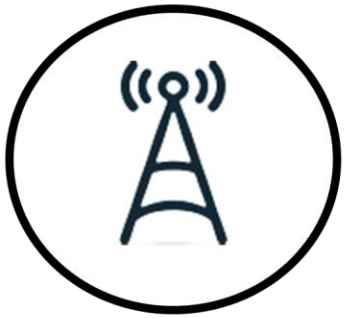
What is FirstNet

The First Responder Network Authority (FirstNet) of the United States was created in 2012 as an independent authority within the National Telecommunications and Information Administration (NTIA). The purpose of FirstNet is to establish, operate, and maintain an interoperable public safety broadband network.

Congress designated Band 14 for public safety use, giving first responders dedicated access to the 700MHz wireless radio spectrum, which provides outstanding propagation in both rural and urban areas and in-building penetration.

The goal of FirstNet nationally is to construct a Radio Access Network within every state within the country that will connect to FirstNet's network core to enable unified nationwide public safety communication capabilities.

FIRSTNET NETWORK – CORE, TRANSPORT BACKHAUL, RAN



CORE NETWORK

- Six primary functions: switches data, processes information, reformats information, stores data, maintains data and keeps it secure
- Core covers all of United States and is connected to radio access networks in each state via the backhaul layer of the network

TRANSPORT BACKHAUL

- **These are the links that carry user traffic, such as voice, data, video, and signaling from the radio base stations to the core network**

RADIO ACCESS NETWORK

- Consists of the radio base station infrastructure that connects to user devices
- Includes cell towers and mobile hotspots embedded in vehicles that backhaul to the core network over satellite or other types of wireless infrastructure

USER TYPES – DEFINING PRIORITY LEVELS

Primary Users

Fire
Law Enforcement
Rescue / EMS
Emergency Management

Extended Primary Users

Hospitals
Utilities
Transportation
Public Works

Volunteer Users

Volunteers for a primary agency, but maintains service responsibility
Volunteer Fire Fighter
Auxiliary Police

Public Safety Broadband Wireless

The current FirstNet project that is still in early stages of roll out is the creation of a nationwide high-speed broadband wireless network to provide a single interoperable platform for law enforcement, fire fighters, paramedics and other public safety officials (such as public works agencies).

In 2017 FirstNet selected AT&T as their technological partner to build and manage this broadband network across the nation.

This Broadband network will provide first priority to wireless services to public safety operations. Meaning: MDTs in public safety vehicles, and phones and tablets in use by public safety agencies will receive priority routing on the wireless broadband system.

Project Kick Off

On January 24, 2017, AT&T presented information to representatives of the Washoe County Sheriff Department and Technology Services Department on their role in implementing broadband access for FirstNet, the advantages of the system for public safety communications, and their roadmap for the Washoe County region.

On February 12, 2017, AT&T met with staff from the Enterprise Infrastructure Division and Regional Communications System at Washoe County Technology Services to begin discussions of the technological framework and specifications required to build out the system in this area.

Advantages to the AT&T proposal

- QPP - Expedited and prioritized routing from public safety devices connecting to Regional Dispatch system.
- Enable the use of apps on cellular devices to access the standardized FirstNet Radio Access Network.
- Access to regionally housed deployable vehicles equipped with Band 14 Satellite Cells on Light Trucks (SatCOLTs) for business continuity and disaster recovery operations during emergencies, as well as to provide coverage extensions to cover large special events.
- Local Control

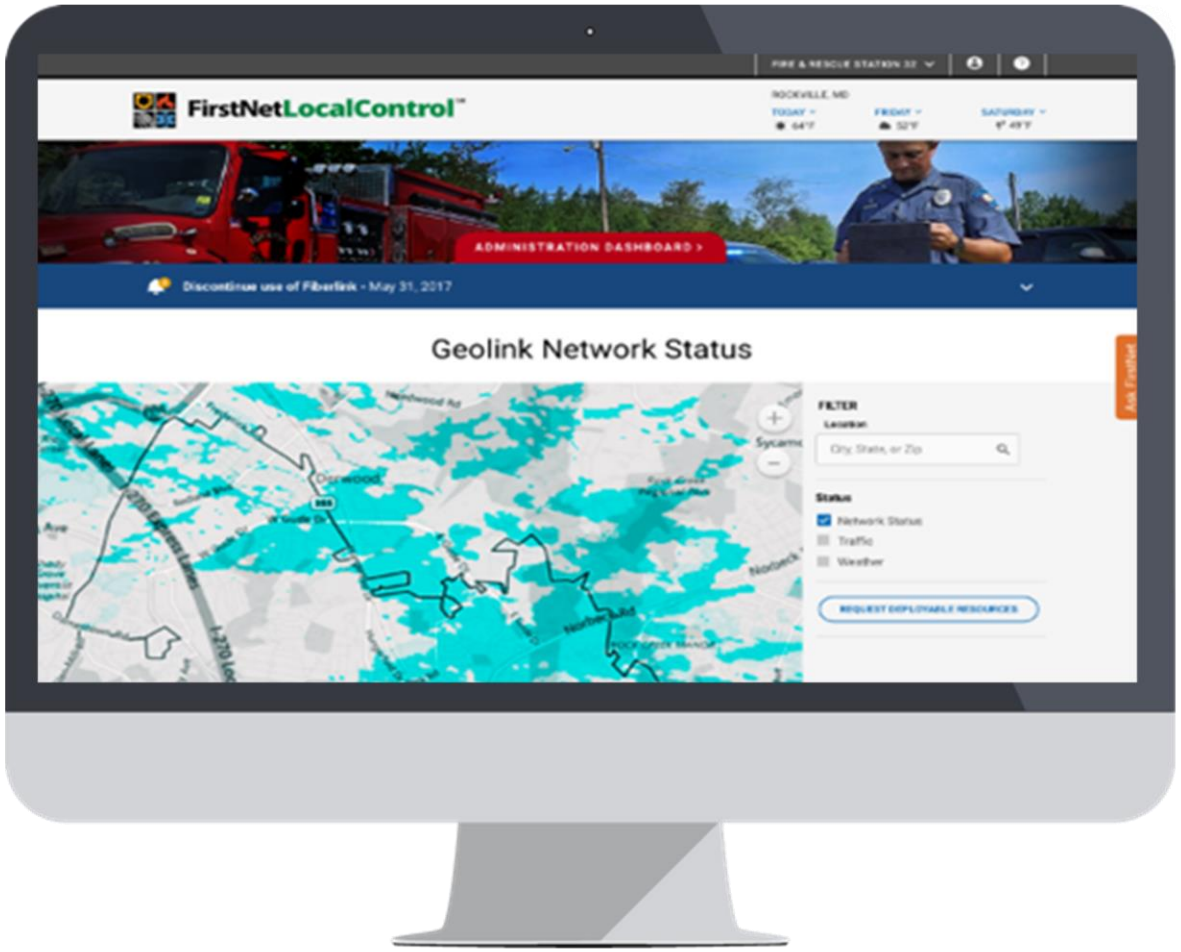
WHAT IS QPP, AND WHY DOES PUBLIC SAFETY NEED IT?

QPP : QoS – Priority - Preemption

- **Q**uality of Service (QoS): establishes min/max service quality parameters
- **P**riority: Gives users preferred access to network resources
- **P**reemption: Terminates or relocates lower priority users to provide primary users with access

LOCAL CONTROL / DEVICE MANAGEMENT

- Ability to monitor the Network in real time, including site locations and service level conditions
- Provides real time Situational Awareness
- Ability to create trouble tickets directly from the “Local Control” portal
- Ability to enable and disable agency owned devices locally
- Secure site with required login credentials

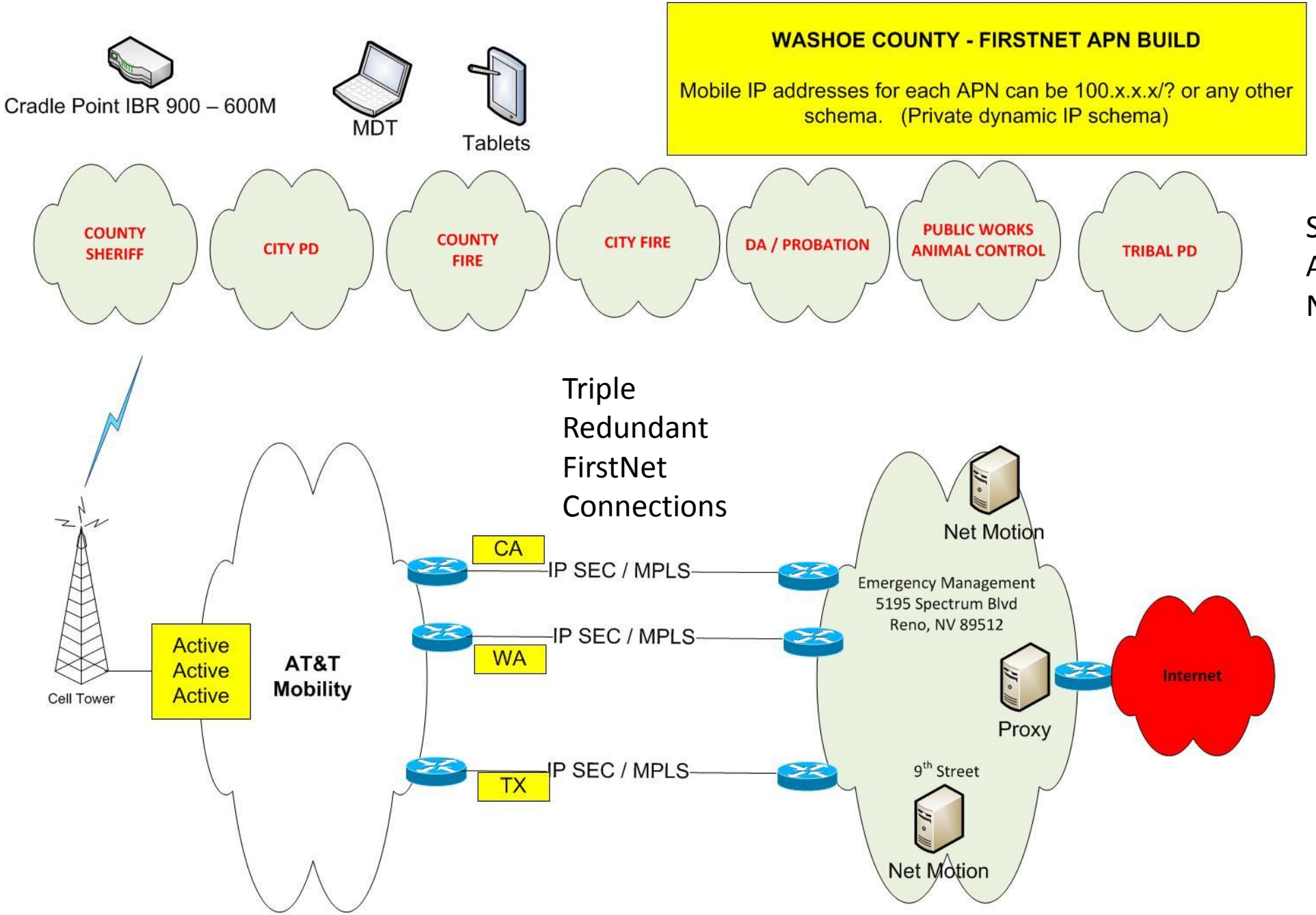


Local Control

FirstNet provides regional agencies with control over and visibility into the FirstNet operational status and configuration. It provides us the ability to manage our own accounts, devices, and user priority levels; and to monitor the network status.

AT&T has designated Washoe County to be the Regional Agency through which it prefers to centralize the control of our local system design and configuration.
Washoe County Technology Services wishes to use this 911 Meeting as a tool for kick starting regional communications and coordination on this initiative.

AT&T FirstNet Design Overview



Sivam Namasivayam / Senior Mobility Technical Engineer / AT&T Mobility Solutions Services

Design Concerns

- **Washoe County will need to designate APNs and the mobile IP address pool for each Public Safety agency which seeks to use FirstNet; as well as the default routing for that APN.**
- **It is assumed that most APNs will need to be routed to 5195 Spectrum, which houses the Tiburon Dispatch system that most regional agencies are now using; and also is the campus that houses the main NOC for the Regional Communications System.**

Note: APN = Access Point Name – an identifier used by mobile cellular devices to control the mobile network and services it connects to. A bit similar to a SSID name in WiFi technology.

- **AT&T recommends three diverse internet connections at the primary designated regional host site for FirstNet connectivity. 5195 Spectrum currently only houses a small internet connection for public WiFi use. All agencies using the facility currently house primary internet connections at offsite locations. New connectivity will be needed to fully implement FirstNet.**

Costs for FirstNet implementation

(Excluding costs for new mobile hardware and data plans for individual devices)

- Three new diverse internet connections for 5195 Spectrum. Setup and ongoing fees.
  - Quotes gathered from AT&T; Charter; and Zayo
- New router to control these new connections – One time charges for life of equipment (approximately 7 years).
- FirstNet fees for APN setup and Data Transport configuration.

Funding source must be found for these implementation costs and ongoing fees. Grants may be available for some. Others may need to be shared across Regional agencies that wind up making use of the system.

FirstNet Implementation costs

	Vendor	Monthly Fees	Total First Year Cost	Three Year Cost
New Internet Connections	AT&T - Note: Price is still under review for discounting	$1,927.80	$23,133.60	$69,400.80
	Charter	$1,039.00	$12,468.00	$37,404.00
	Zayo	$1,296.00	$15,552.00	$46,656.00
	Total	$4,262.80	$51,153.60	$153,460.80

One Time Costs Hardware	Internet Router	$1,930.00
	APN Setup - $500 Per APN - Based on Estimate of 9 initial APNs	$4,500.00
	Data Transport configuration	$1,995.00
	Install Charges for Internet links	$1,000.00
	Total	$9,425.00