

Emergency Services and Government Solutions Overview

APIA – September 2016



Government Wireless Solutions

Applications

- Backhaul Trunked radio systems, including DMR
- 911 emergency systems and dispatch
- Remote Video surveillance for security
- Remote Video courtrooms
- City/Country Wide Networks
- Remote Building Connections
- City Wide WiFi Hotspot backhaul
- Disaster Recover – Comms Restoration.

Proven Performance

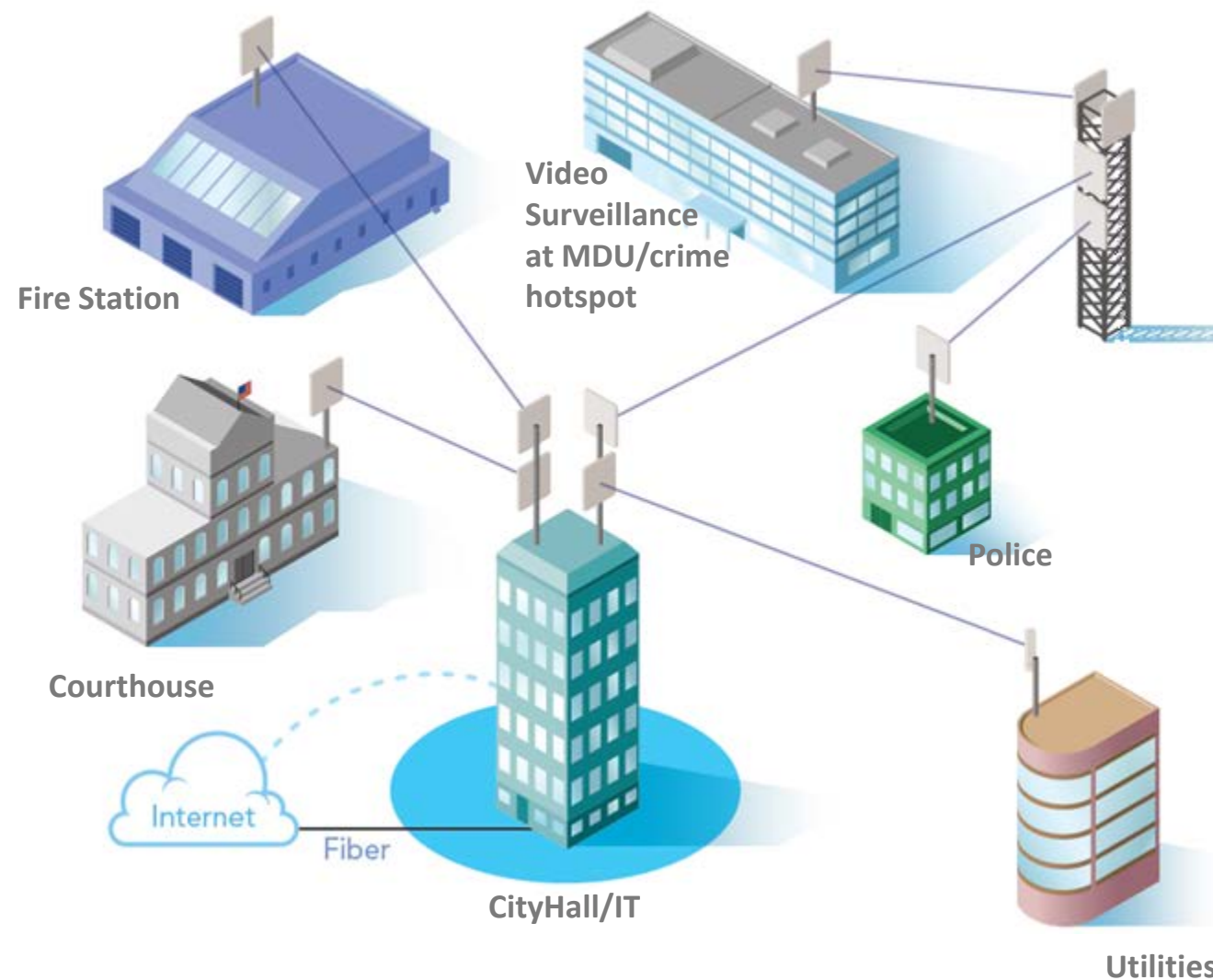
- Extremely high Security
- Highly Reliable Availability and robust Scalability
- Ease of Deployment
- Near/Non Line of Site Operation
- Interference Tolerance
- Global Homologations
- Low environmental impact/stealthy
- Proven for Voice, Video & Data



State/Local Government Networks

| | |
|--|---|
| Value Proposition to all Government Networks | Offer data, voice and video services across city/state Quick Easy installation Simple Configuration/GUI Proven Reliable performance Proven fast ROI Rapid deployment (no trenching) |
| Key Features | Highest level of data and management security High Throughput Low latency for sensitive voice and video applications Scalable to grow from a few subscribers to dense deployment and meet future bandwidth demands |
| Competitors | Technologies – wireless over wired <ul style="list-style-type: none">• Fiber• DSL |

City Wide Government Networks eg Solomon Island SIG.



Typically PTP:
PTP650
PTP800

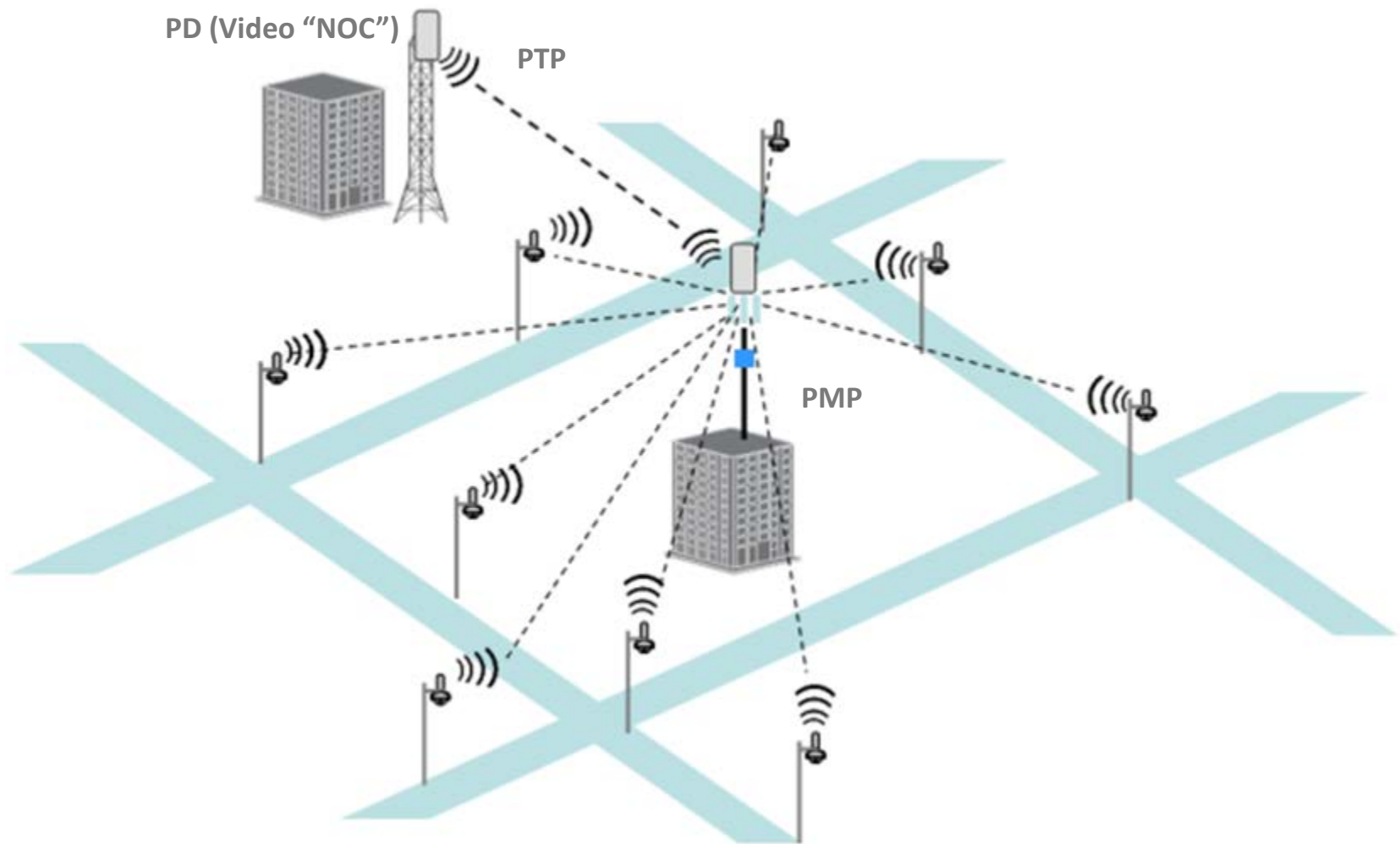
Rapid Deployment

Quick ROI vs
separate leased
circuits

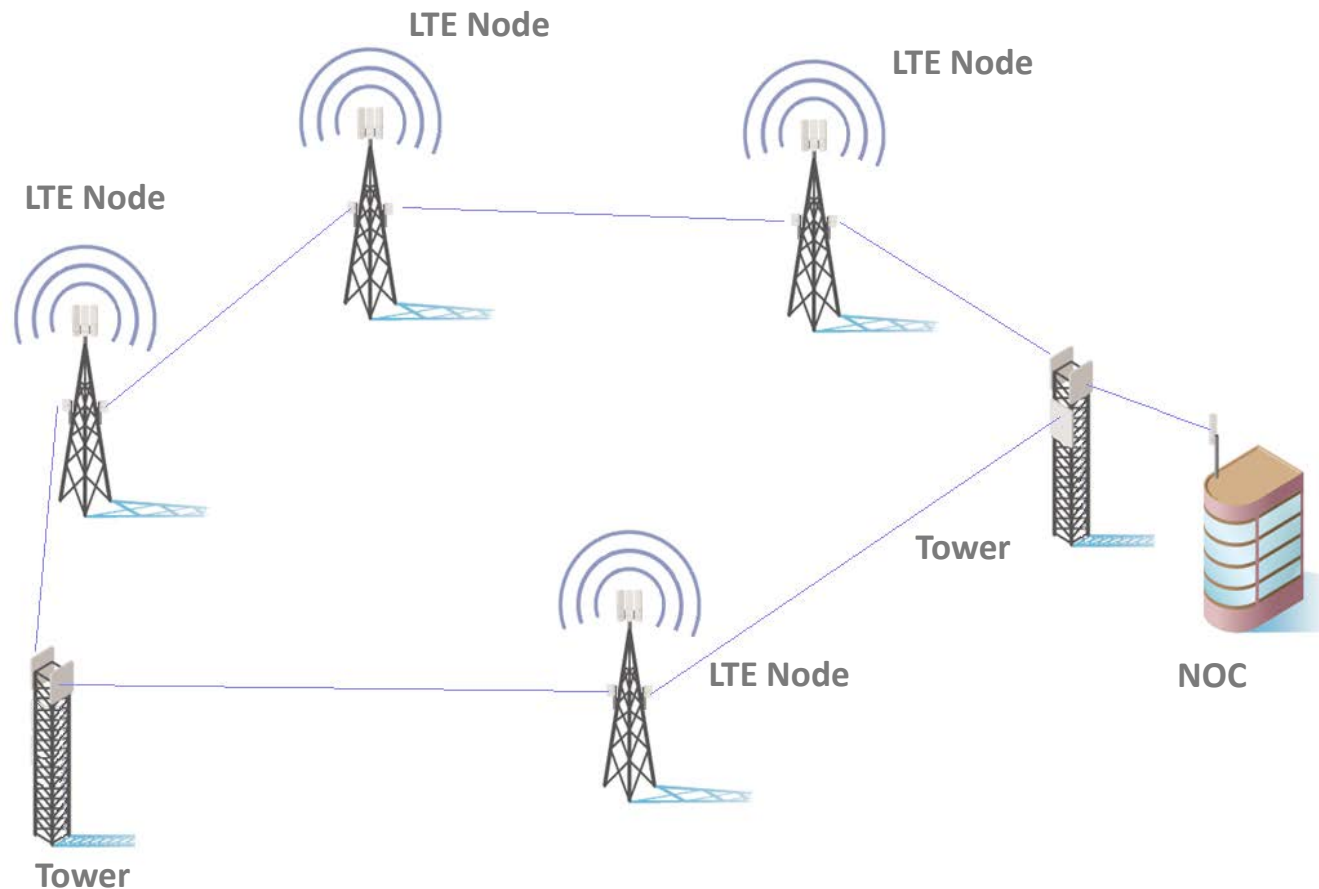
High speed:
100Mbps to
~700Mbps FD

Supports: Voice,
Video, Data

Typical Architecture for Video Surveillance for Public Safety and SMART Cities.



FirstNet (US) Backhaul (Public Safety LTE)



County/Statewide
backhaul for “small cell”
type LTE Network

Typically PTP:
PTP650s and PTP820

Low Latency and
Synchronous Ethernet

Rapid Deployment

More reliable than
carrier leased circuits

Highly secure network

High speed: ~100Mbps
to 700Mbps

Solomon Islands

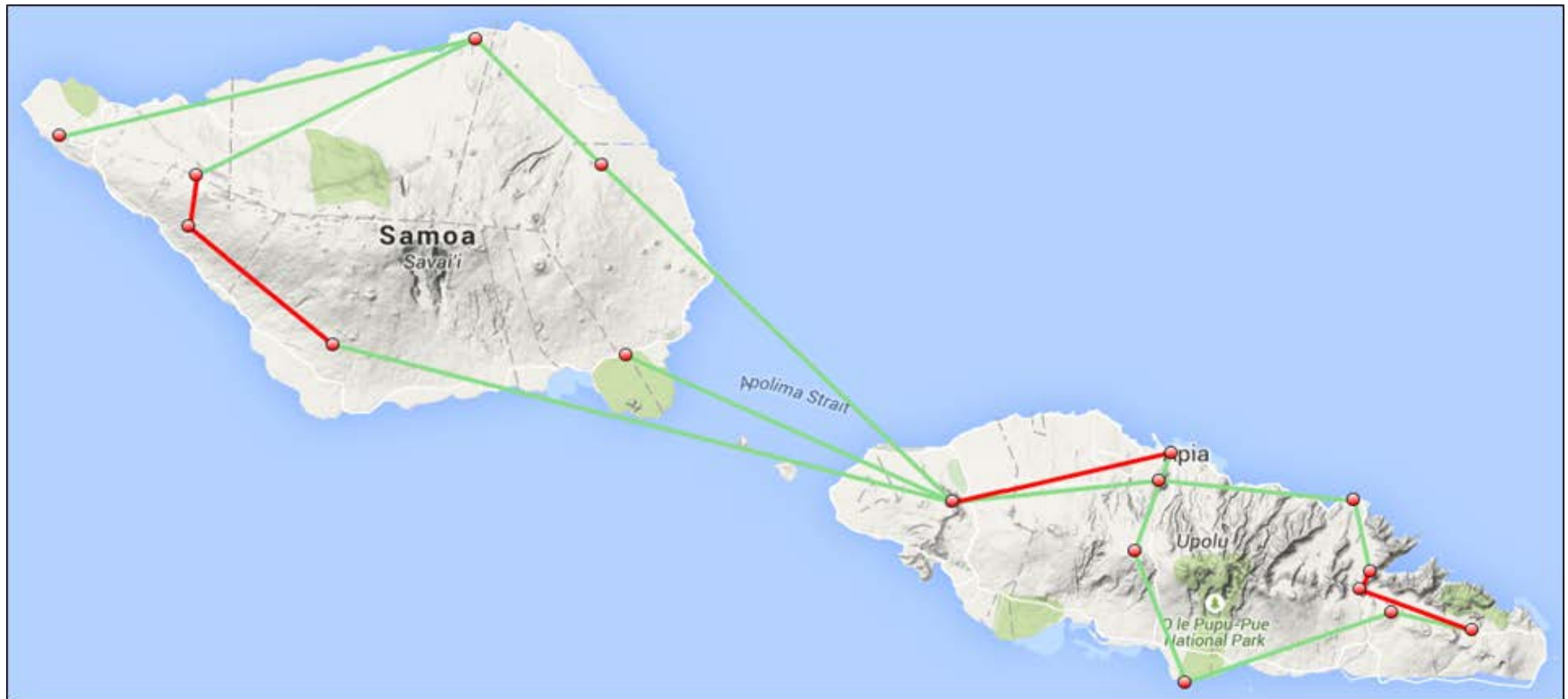
| | |
|-------------|---|
| Application | <ul style="list-style-type: none">• Provide broadband connectivity for public services in the city of Honiara• Establish one common network infrastructure for multiple agencies |
| Challenge | <ul style="list-style-type: none">• Currently has 2,500 users in 93 offices• Scalability to support growth up to 5,000 users• Ability to be relocated if offices move• Need high reliability |
| Solution | <ul style="list-style-type: none">• Network of 19 PTP wireless backhaul links supporting 18 PMP wireless access network sectors• High throughput, low latency services• Reliable performance in hot weather, high humidity, and over water• Leveraged the network to add video surveillance capabilities |



Samoa - Digital Mobile Radio Backhaul and Multi Service

- 2010 – Review by NZ Partner MCS Digital of Samoa Fire & Emergency Services Authority (SFESA) to replace their aging, analogue two-way radio communications system.
- Process identified additional “emergency” users with similar requirements.
- Significant cost of site linking to achieve nationwide radio coverage.
- The ERN was designed and dimensioned such that operation would be consistent pre, during and post a significant emergency or disaster.

PTP800 Licensed Microwave Backbone



Green – Current Links installed in 2013

Red – New planned links 2016 for redundancy.

Planning with LinkPlanner – workshop on Friday.

Solution

- Motorola MotoTrbo DMR Voice, Data & GPS (low capacity IP via USB & telemetry)
- Cambium Networks Microwave Point to Point IP Linking (Low latency Fast Ethernet)
- Benefits:
 - Mototrbo (DMR) features
 - Mobile GPS via the DMR radio network (vehicle tracking, user location services)
 - Low capacity IP data across the DMR radio network (in-field form updates, small data queries)
 - High capacity IP data across the IP network (WAN/LAN extension, IP Cameras, continuous sensor data)
 - Telemetry across the DMR radio network (mobile or remote measurement values, sensor status, remote activations)
 - Telemetry across the IP network (consolidated values from uplink stations)

Thank you

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