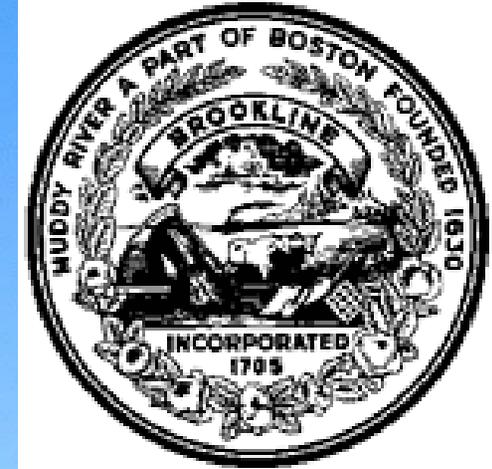


MUNICIPAL WIRELESS NETWORKS



Brookline, Massachusetts

Presented By
Scott Wilder, Brookline PD

4.9 GHz Licensed Public Safety Frequency

- Dedicated Frequency Spectrum for Public Safety and First Responders
 - Licensed, So It Is More Secure With Less Noise (Interference)
- Mesh Network Providers Now Integrate 2.4 GHz (Wi-Fi) and 4.9 and other radios in the same unit –**Build The Network Once!**
- Get Your License!-Apply On-Line:
- [Http://wireless.fcc.gov/uls](http://wireless.fcc.gov/uls) (No Cost for Public Safety)

Public Safety Applications

- **Public Safety's 4.9 System**
 - Wireless LAN access for: Uploading reports accessing criminal databases, downloading video and images of missing and wanted persons...
 - Special Event communications and monitoring, setting up on-the-fly Incident Command Center. (Boston Marathon)
 - Video Surveillance and On-scene cameras
 - Mobile Data : Laptops, Handhelds, and PDA's
- Access to GIS data in the field : Building schematics (public buildings, schools, colleges)
 - NetMotion Software keeps the session persistent.

Public Safety Applications cont..

- RMV/NCIC information – license checks, stolen vehicles ,warrants etc...
- Training documents and videos.
- Emergency Management Databases.
- COM Stat Reports, Policies, General Orders
- The units on the WIFI network are part of the LAN – making it easier to manage: Anti-Virus Updates, Active Directory rules for users, Web filtering.

What Does It Look Like



Cruiser 4.9 Antenna

Brand – Huber+Suhner



Strix Mobile Unit

Strix Radio

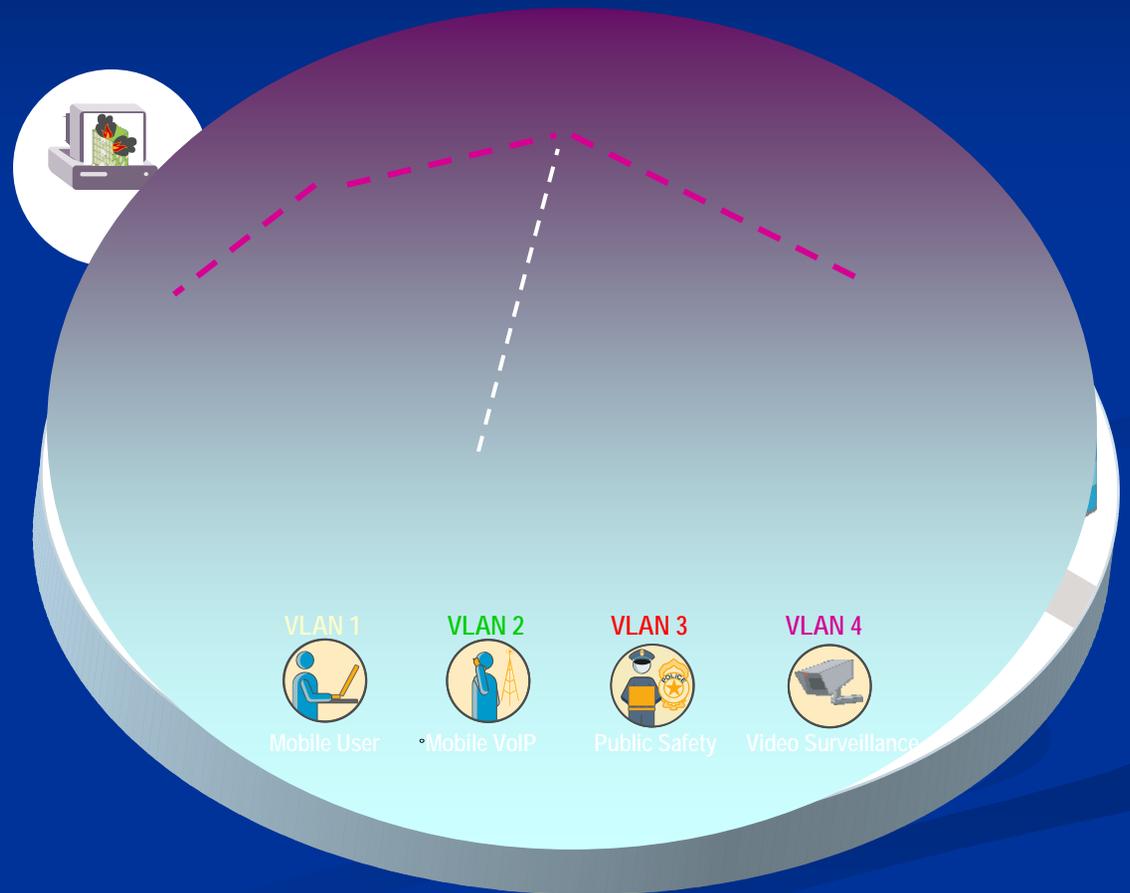


Laptop LAN Connection



Infrastructure Topology

- Flexible Service Delivery
 - 5 GHz mesh backhaul
 - 2.4 and 4.9 GHz Wi-Fi access
 - Transparent network infrastructure
- Supports Multiple Applications
 - Data access
 - Video surveillance
 - Voice over IP (VoIP)
 - Mobility
- Network Segmentation for Multiple User Groups
 - Virtual LANs
 - Traffic prioritization
 - Traffic filtering



Items to Consider

- Support for 2.4 GHz and 4.9 GHz (Licensed Public Safety) Access
- Number of Radios at Each Node (Brookline will have 6).
- Mesh Capacity to Backhaul Traffic
- Upgrade Path to New Technologies (700Mhz).
- High Speed Mobility
- Cost Users
 - Laptops
 - Handhelds
 - Police Cruisers
 - Fire Apparatus
- Start Thinking About Applications
 - It's not just the network

Thank You

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The Brookline “Deal”

- Procurement from Statewide Contract ITT13
 - Simple Procurement
 - Open Process
 - Awarded to Galaxy Internet Services (Newton, MA)
- Mixed Use Public Safety, Municipal, and Commercial System
- Free Service in Commercial Hot Spots / Zones
- Free Services in Public Parks
- Free Services for Municipal Workers
- Free Services for Public Safety (Police and Fire)
- Limited Free Services to Public Housing Residents
- No Capital Costs to Brookline Residents
- Licensee (Galaxy Internet) Makes Money on Paid Commercial Customers

Wireless Business Models (1)

- Municipality Invests In Infrastructure
 - Operated and Maintained by Municipality ?
 - Operated and Maintained by Private Company ?
 - City Offers Services and Tech Support ?
 - Private Company (ISP) Offers Service and Support ?
 - Cost Recovery for Municipality (Percentage of Revenue)
- Private Entity Invests In Infrastructures
 - Operated and Maintained by Private Company
 - Private Company Handles Support
 - Private Company Looks to Recover Investment
 - Selling Commercial Services
 - Selling Services to the Municipality (Anchor Tenant)
- Non-Profit Invests in Infrastructure (Boston Model)
 - Need to Raise Money
 - Non-Profit Pays to Install, Operate, and Maintain Network
 - Non-Profit to Cover Costs by Selling Wholesale to Private Entities
- Hybrids
 - Anything goes – this is a new world!

Wireless Business Models (2)

- Typically Some Kind of Public-Private Partnership
- Often an Exchange of Rights to Use Municipal Assets (Poles, Fiber, etc.) for Something
- Factors for Private Investment
 - Population Density
 - Lower node count (cost) per potential subscriber
 - Projected Take Rate
 - Economic Demographics
 - Availability of Other Services
 - DSL, Cable, FiOS
 - Deployment Issues
 - Terrain & Foliage
 - Municipal Facilities
 - Poles (Power)
 - Fiber

Why Wireless

(Why Wi-Fi)

- ▣ Improve Public Safety
- ▣ Improve Municipal operations
- ▣ Economic Development
 - ▣ Free Hot Spots
 - ▣ Commercial Districts
 - ▣ Public parks
 - ▣ Digital Lifestyle
- ▣ Community Development
 - ▣ Closing “The Digital Divide”
 - ▣ Access to municipal resources
- ▣ Increases Broadband Competition