



Roanoke County Digital Radio System

Roanoke County Communication System

- The Roanoke Valley Radio System is a Digital Trunked, 4 Site Simulcast 800 mhz Failsoft system with Conventional back up sites

Trunked System

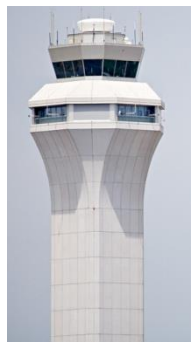
Trunking

- Simply put, trunking permits a large number of users to share a relatively small number of communication paths - or trunks.
- Our Digital system is 22 trunks
- Fire and Rescue, Police, Parks and Rec, and General Services all share available trunks (all radios)
- This sharing of communication paths is managed automatically by a computer

Trunking Cont.

- Of the 22 channels only 21 can be used for voice conversations. Every day one channel is used as a “control channel” which assigns radios in the field a channel each time they transmit
- Control channel is constant communication through all sites to keep all synced together and to assign which radio gets which channel

Trunked System- How It Works



Control
Channel



Channel 2

Channel 3

Channel 4

Channel 5



4



3



2



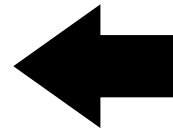
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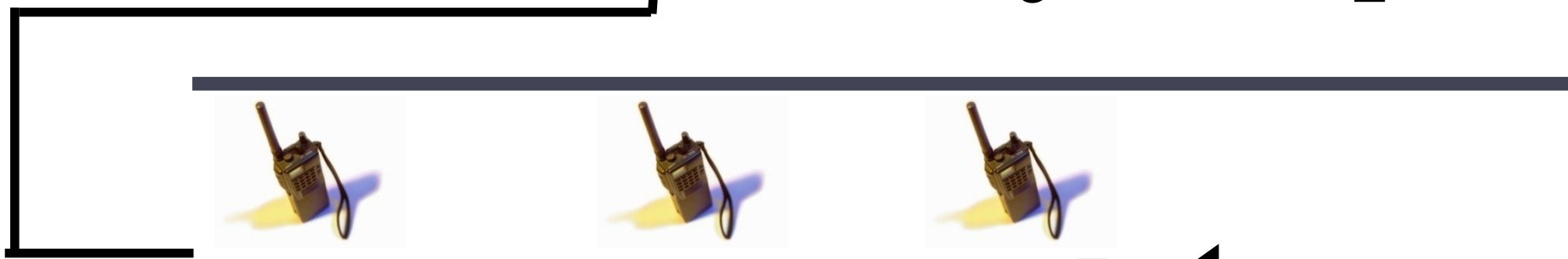
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IN



Trunking Cont.

- The “Channel” or “TAC” names on your radio actually refer to what is called a “Talkgroup”
- Each individual radio has a unique I.D. the controller can identify
- A Talkgroup is a method (programming) the system uses to group together radios so they will only communicate with radios in the same talkgroup



Simulcast

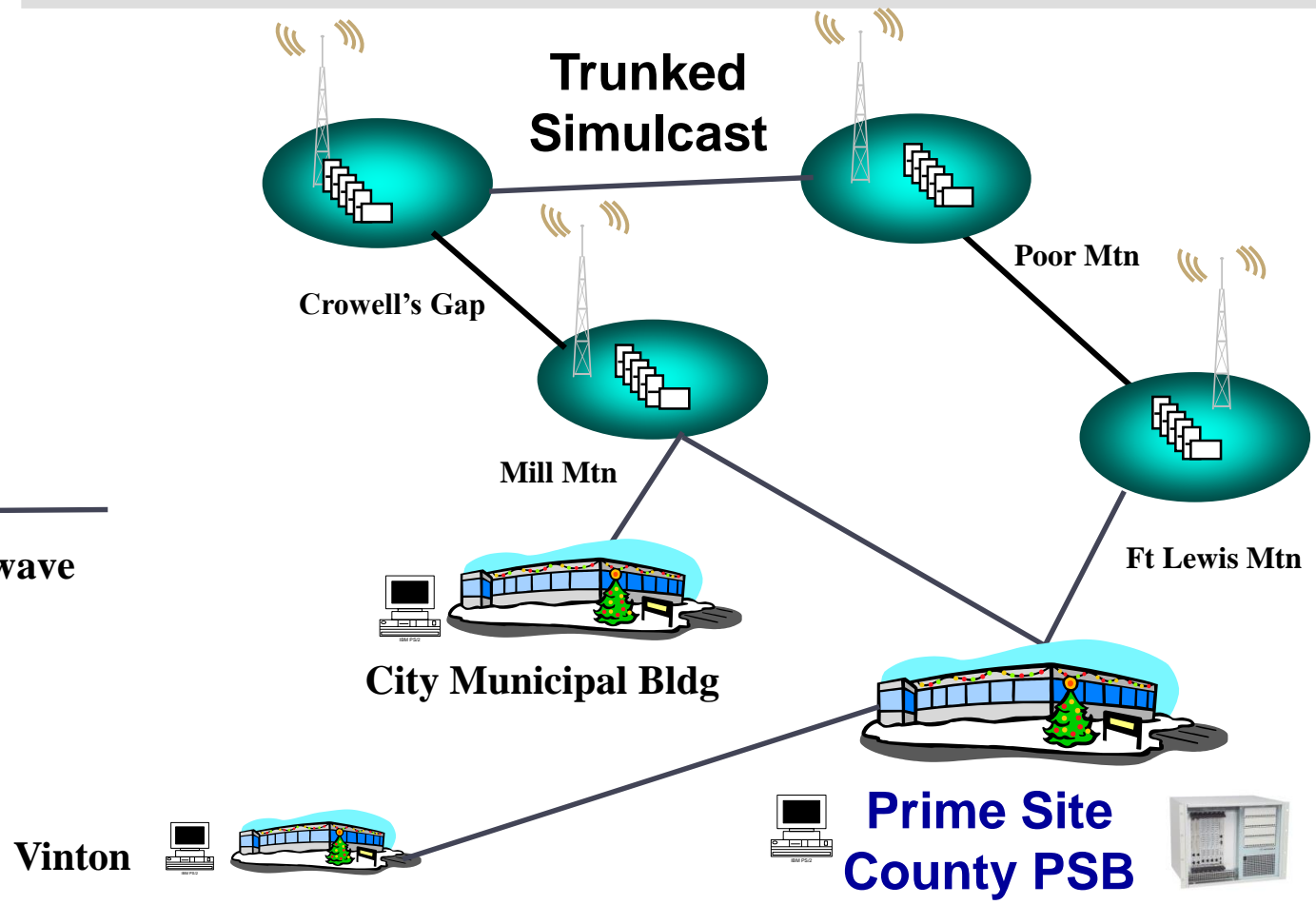
Simulcast Overview

- Simulcast systems consist of more than one radio site that simultaneously transmit on the same radio frequency
- This allows the user to stay on the same channel/talkgroup when roaming from one site's coverage area to another
- This simplifies the user experience, as it requires no extra effort on the part of the user

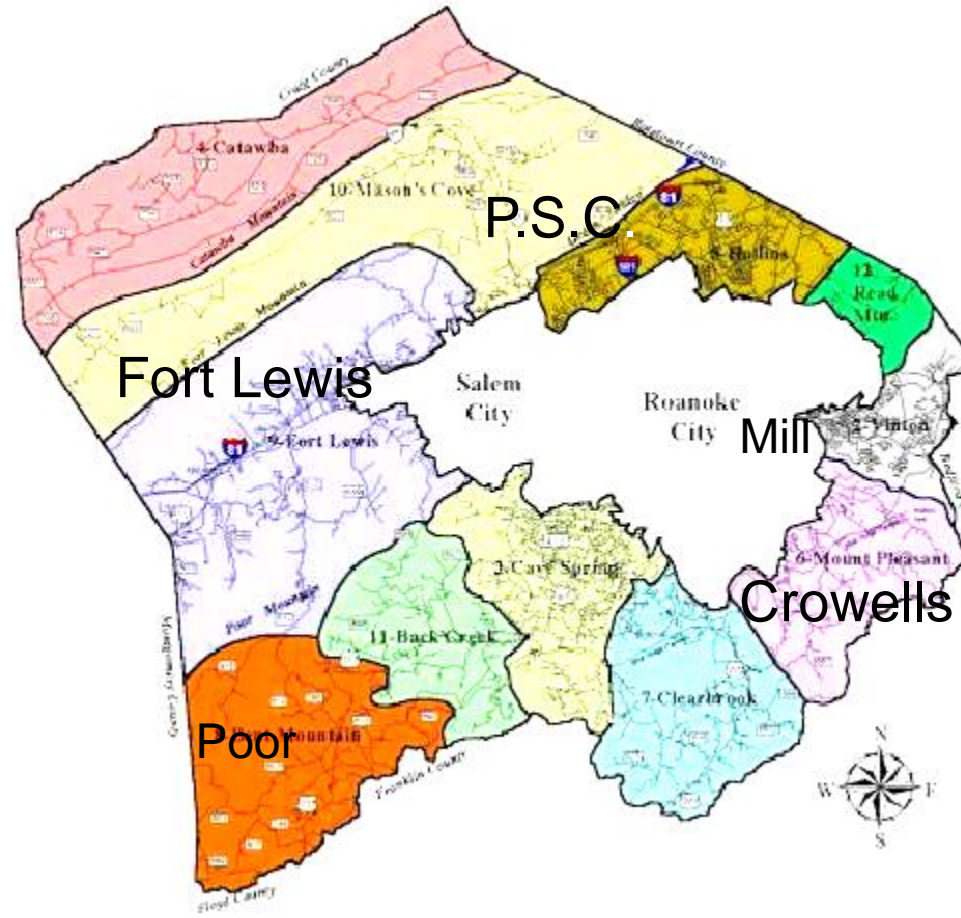
Simulcast Cont.

- Transparent to user, controlled by the system
- Allows best signal to be transmitted over wider area
- Simulcast = Simultaneously being repeated

Roanoke Voice Radio System



Trunking Sites





Failsoft

Failsoft

- Built in back up for a system problem
- All radios will sound like an open mike with a short “beep” every 9 seconds
- This indicates the radio controller is not operating correctly to allocate channels - trunking system is down
- Each individual radio is assigned to one of the available channels

Failsoft Cont.

- System is still simulcasting and using all 4 sites therefore the systems range or coverage are not compromised
- Remain on your assigned TAC channel
- Control will receive radio traffic
- Radio discipline is very important – higher number of radios on each channel



Conventional

Conventional Backup System

- When trunked radio system not accessible
- Indication: Out of Range Tone & no failsoft
- Out of range due to system failure - not location
- Conventional sites are single repeated sites (not trunked or simulcast)
- Poor, Fort Lewis, Crowells Gap and Tinker Mountains

Conventional Backup System Cont.

- You must switch unit to the site closest to where you are geographically located (i.e. Hollins area to TINKER)
- Radio discipline important, all users share same conventional sites – ex. Accident on 221, Fire and PD both on Poor
- Control will hear traffic and be able to communicate

Conventional Cont.

- Some areas may have somewhat different coverage than from trunked site due to location
 - Poor Mtn conventional site is physically in a different location than Poor Mtn Repeater
 - Tinker is conventional only
- Radio functionality will not be the same (no scan, emergency, ID, simulcast or trunking)
- Coverage different – **only on the single tower**

Emergency Button

- To be used in an Emergency Situation only
- Protocol for use established by department
- Automatically sends a visual and audible alert to Control
 - Other users on talk group will still hear any verbalized traffic
 - Control attempts to contact unit one time to determine status of unit