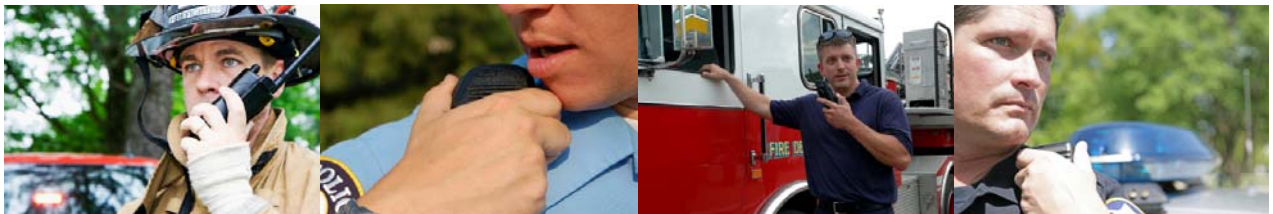


Futurecom Systems Group Inc.
Digital Vehicular Repeater Systems
(DVRS)

Case Studies

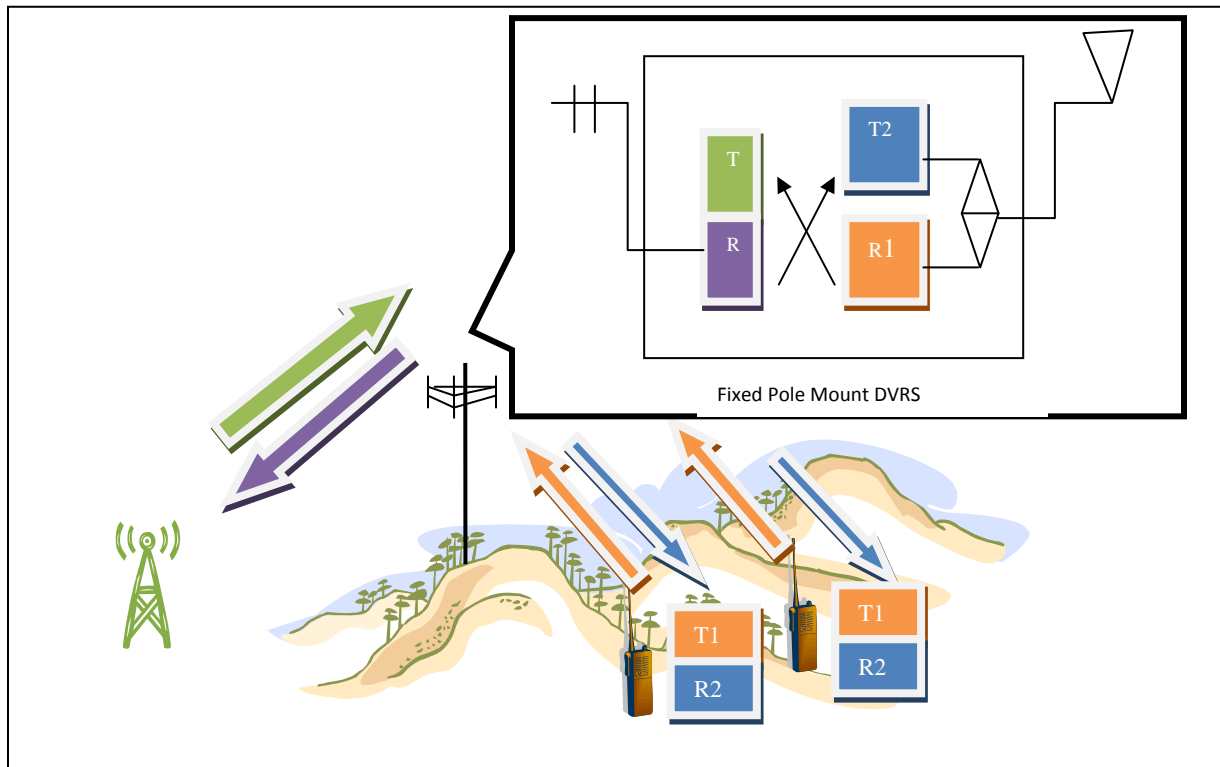
August 2009



Case Study #1 – Fixed Mount DVRS for Outdoor Coverage Enhancement

Problem: A Police Department uses a wide area 800 MHz trunking system that does not cover a town due to terrain issues. This police department is a large agency which shares its trunking system with other departments. In one particular town portable radio coverage is not available as it is situated at the base of a ridge. The closest tower site is at the airport, at the top of the ridge. There are two or three officers on duty at any one time and they need to talk to each other, their local office as well as dispatch which is located several hundred miles away.

Solution: The Police Department installed a fixed mount, cross-band VHF DVRS at a remote police station. A 50 foot tower is located beside the station. The tower has a yagi antenna on it allowing the DVRS mobile to link into the trunking system plus an omni antenna for the DVRS repeater providing portable coverage throughout the town. By mounting the mobile control head on a desk in the local office, combined with a speaker and desk microphone, the office staff have a control station. The result is improved portable radio coverage around town that keeps the officers in constant communications with each other, the local office and dispatch. The officers can also utilize their dual band portable radios.



Case Study # 2 – Vehicle Mount DVRS for Fire Applications

Problem: A Fire department currently uses a VHF conventional system. They would like to go on an 800 MHz state-wide network for interoperability situations. The Fire department wants to go on the 800 MHz state-wide network for interoperability with state and local police. The state wide system does not provide in building radio coverage. Surrounding departments are primarily volunteer departments who will continue using VHF. Additionally, the state fire mutual aid channels are VHF.



Solution: The Fire Department installed VHF DVRS connected to an 800 MHz mobile in all vehicles. The 800 MHz system is used to communicate with dispatch. Users continue to carry VHF portables, so all fire ground communications are VHF with the DVRS linking to the 800 MHz state wide network and dispatch. The conventional VHF portables allow the users to communicate with the volunteer agencies on their VHF channels, the state mutual aid VHF channels users as well as the 800MHz State and local Police users (via the DVRS). Fire Fighters now receive reliable in building radio coverage and interoperability throughout their jurisdiction that results in a greater sense of security and safety for everyone.

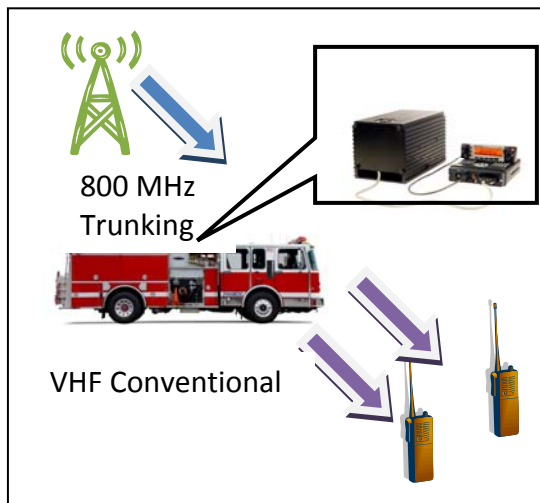


Figure A: VHF Simplex DVRS Cross Band to 800 MHz Trunked Mobile – Outbound Call Handling

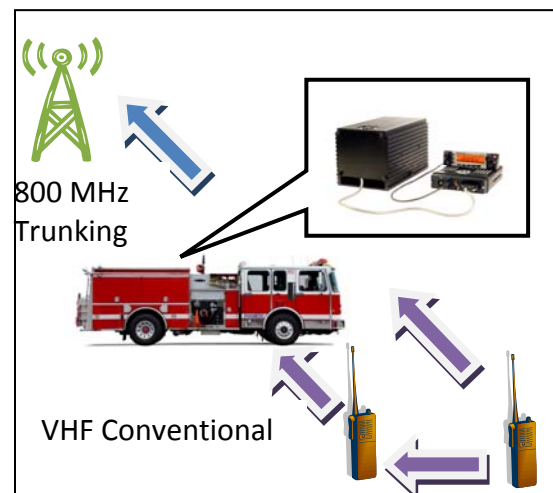


Figure B: VHF Simplex DVRS Cross Band to 800 MHz Trunked Mobile – In-bound Call Handling

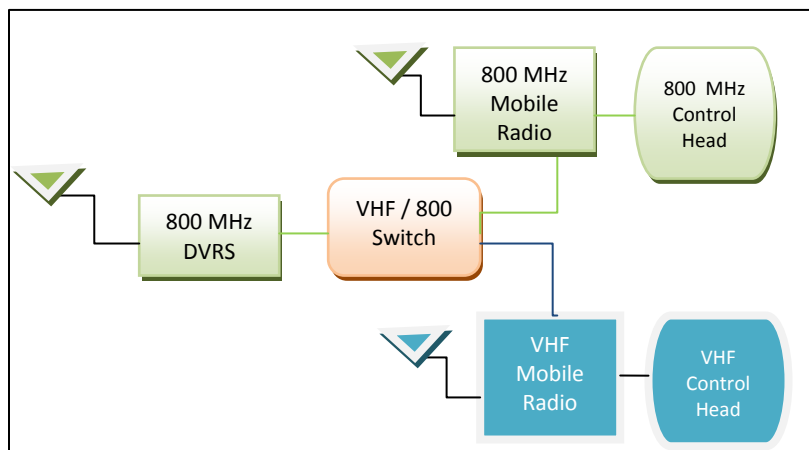
Case Study # 3 - Vehicle Mount DVRS for In-Building Radio Communications Applications

Problem: The Fire department operates on an 800MHz trunking system that does not provide sufficient in building coverage. The Fire department is located in a city that operates the only 800MHz system in region. Another problem is that all other fire departments in the surrounding areas operate on VHF system. As the largest fire & EMS department in the region, they have daily mutual aid runs. The Fire Department is on a multi site trunking system designed to provide on street portable coverage. This level is insufficient for fire operations as they require reliable in building coverage. A radio communications consultant was hired to examine the alternatives which included:

- Additional tower sites
- Bi-Directional Amplifiers (BDAs)
- Mobile repeaters

Additional Sites were determined to be costly and take months or years to implement. BDA systems were expensive, difficult to retrofit into private structures, and not guaranteed to be available during fires, structural collapse or power outages.

Solution: Digital Vehicular repeaters (DVRS) were chosen as being the most cost effective and the easiest to implement. In-band 800 MHz DVRS were installed in all fire apparatus and EMS units. The DVRS solved the in-building coverage problems, but the VHF interoperability issue remained. It was solved by adding a VHF mobile to each vehicle and an A/B switch was installed allowing an in-town (800 to 800 trunking) and out of town (800 to VHF) position. Now 800 portables are able to talk to VHF systems or directly to VHF portables at a fire scene. An added bonus is that they now have excellent in-building coverage when on mutual aid runs. Firefighters have dependable in-building radio communications and the ability to have interoperability during emergency situations.



Case Study # 4 – Transportable DVRS for On-Scene Emergency Applications

Problem: A Fire Department is on a county 800 MHz trunking system. The county has a very large swamp area that does not have any tower sites near it. This results in poor portable coverage. The swamp area is considered an environmental protected area, which does not allow for tower sites to be developed in or near the swamp. The Fire Department is involved in several rescues annually in this area and requires reliable portable coverage.



Solution: The Fire Department currently owns a number of suitcase DVRS that are used primarily for disasters and special events. By putting one of the transportable DVRS units in the basket of an aerial truck and taking the basket up to 80'-100' they are able to get portable radio coverage many miles into swamp area. The Fire Department can rely on a secure and reliable communications during on-scene rescue situations.

