



Interoperable Communications for First Responders

Universal Gateway to Telecommunications Equipment – uGATE

Overview: In the event of natural or man-made civil disaster, many organizations are called to the area to assist the citizens, help restore order, and rebuild as necessary. These “first-responders” include the National Guard, various police and public safety organizations, federal and state agencies, as well as humanitarian organizations. Each has its means of communications, and there are many excellent high quality, reliable means of communications available to the first-responders. The Military and National Guard have their SINCGARS, and Personal Role Radios. Police and public safety organizations often work with hand-held walkie-talkies, others use cell phones, internet and the local telephone system if the infrastructure survived the disaster.

What their various communications systems can’t do, however, is talk to each other.

This lack of communications interoperability creates huge command and control as well as operational difficulties for the relief organizations. The most publicly visible example of this situation is the recent efforts during Hurricane Katrina in 2005, which was well covered in the news media to the embarrassment of the hard-working agencies trying to manage the relief efforts. Providing the means for these various communications systems to interoperate would significantly improve the control and integration of the overall relief operations as well as the personal safety of the first-responders.

Working for years with the Office of Naval Research, Advatech Pacific, Inc. has developed a universal gateway that provides the necessary link that enables all these communications means to interact with one another in a compact, low-cost package. Though developed as the Highly Mobile Tactical Communications (HMTc) system for the military, the gateway is also a solution to the intercommunication needs of civil disaster relief organizations. Through this gateway, the National Guard can communicate with the police and public safety agencies, the state and federal agencies can efficiently send directions and instructions to all supporting elements and receive timely reports from the “troops on the ground” regardless of where they are located in the nation or the world. The system was developed as the Highly Mobile Tactical Communication (HMTc) system and carries the Advatech Pacific name of Universal Global Access to Telecommunications Equipment (uGATE).

Operations Concept: The uGATE equipment handles the interoperability issues between radio systems through the connection of a radio from each net type. When the internal software detects incoming voice signals from one of the connected radios, it transmits

(broadcasts) that signal to all other connected radios. These uGATEs do not require line-of-sight among each other since they each have an L-band connection to the Iridium Constellation of satellites, permitting world-wide interconnectivity.

The uGATE has four configurations, two of which have First Responder applications. The one discussed above, the uGATE-B, is a 19 inch rack unit that occupies only two rack spaces that is easily mountable in almost any vehicle or on a table top and is designed primarily for the military. It operates on either vehicle or house power.



The uGATE-J3 is a man-pack, small, lightweight unit that interconnects any two military radio networks into a single network.



The third, the uGATE-C, is the battery powered man-portable unit, carried in a “Pelican” case. The smaller version is particularly valuable for those instances when a single person or small team or car mounted peace officer is isolated from the local networks. It contains a module to permit direct connectivity to the Iridium Constellation so that the team can communicate with anyone, anywhere in the world. The team is never out of communication with his support or management. It also provides interoperability between two radio networks. That unit has both military and civilian applications.



The fourth, the uGATE-C Plus, was designed with the first responder requirements in mind. We removed the satellite transceiver and increased the number of networks it can accommodate to eight, which can be allocated to up to four sub-networks for communications management. If satellite communications is required, a satellite phone or a standard uGATE-C unit can be connected. It is also packaged in a “Pelican” case for ease of transport. The user can establish necessary communications well before the command unit arrives on site.



Typical Operations: The relief efforts during Hurricane Katrina in the year 2005 along the Gulf Coast and in New Orleans, in particular, is one of the most recent examples demonstrating the urgent need for interoperable communications for first responders. Everything from flood victim rescue via boat or helicopter to the dispatch of transport trucks demonstrated the lack of an ability to communicate among the agencies conducting the relief effort.

A capability for the National Guard to communicate with Fire and Police rescue and security teams would have significantly enhanced those efforts. Rather than exchanging personnel and equipment, having a device that would translate between the systems would have improved the efficiency, the communications, and the management of the relief efforts. Compound that with the number of relief agencies from all over the United States and from all levels of Government, the communications difficulties were enormous and the true value of the uGATE system in these environments can be realized. Simply plugging a radio from each net into one of the uGATE units would have solved the problem – automatically.

In all but the most serious cases of civil disaster, the local authorities have knowledge of which agencies will respond and have normally conducted practice sessions that amount to a rehearsal of the event. Each of the various agencies responding to the disaster would provide one of its radios, tuned to the agency's frequency band, and the dispatcher would connect that radio with its appropriate and pre-positioned cable to the uGATE C Plus (for example) and that agency would have interoperable communications with all others that had arrived and connected to the uGATE. A single uGATE C Plus can accommodate eight agencies in this manner, and can leave them all on one network or break them into as many as four sub-networks, as required for communications management.

If there are widely separated events under one command, the standard uGATE C has the capability of extending the communications via satellite to anywhere in the world, assisting the command and control of the various events as well as the reporting of the situation to the command centers.

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