EMERGENCY RADIO COMMUNICATIONS SYSTEM INCORPORATING INTEGRAL PUBLIC SAFETY RADIO BRIDGING CAPABILITY

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of application Ser. No. 12/901,993 filed on Oct. 11, 2010, which is a continuation-in-part of application Ser. No. 12/141,849 filed on Jun. 18, 2008, now U.S. Pat. No. 7,813,750, which is a continuation-in-part of application Ser. No. 11/682,231 filed on Mar. 5, 2007, the entire disclosures of which are hereby incorporated by reference.

FIELD OF THE INVENTION

The present invention relates to communication systems incorporating multiple communication modes, and more particularly, to an emergency communication system for bridging incompatible radio communication elements.

BACKGROUND OF THE INVENTION

Many organizations have internal radio systems to manage day-to-day operations to include organization security. Various staff or security personnel may be equipped with radios enabling basic two-way communications between personnel. For many years, emergency or first responders such as law enforcement and fire departments have used radios for communications.

Because of the required range and necessity for reliability, government officials communicating by radio are typically equipped with highly advanced radio systems that are unable to directly communicate with the less complex radio systems used by organizations. When there is an emergency incident occurring at an organization, the standard method to contact emergency responders is by a telephone call to 911. A 911-call center is able to obtain the location of the caller in order to dispatch emergency responders. However, emergency responders have no direct means of radio communication with personnel located at the emergency location. Regardless of the nature of the incident and the identity of the emergency responders, it is very difficult for organizational personnel to directly speak with the responders prior to the responders arriving at the location.

Many emergency situations are time critical and the ability for organizational personnel to provide instantaneous information as to the status of the emergency can make the difference between emergency responders properly handling the situation as opposed to such responders not having adequate information, and the emergency situation then turning into a tragedy. No matter the type of emergency situation, the ability to provide accurate and timely information by those directly affected by the emergency situation often results in a more complete and rapid response by emergency responders.

Emergency responders typically have two-way radios installed in their vehicles to allow rapid and reliable communication between these emergency responders and their dispatch center or PSAP to control and coordinate their emergency actions. Many police officers and firemen also carry hand held radios that operate on the same radio system. Because of the necessity to ensure that emergency responders have the ability to communicate with one another, Federal regulations limit the types of organizations that may operate on the same frequency bands as emergency personnel. As

mentioned above with respect to organizations who use two-way radio systems for daily operations, these radio systems are not able to communicate with emergency radio systems since each operate on very distinct frequencies, and the nature of the RF signals produced during the communications are very different. Therefore, other than the 911 telecommunications, affected personnel at the organization cannot communicate with emergency responders until they arrive at the scene.

Therefore, there is a need for a system and method whereby direct communications can be facilitated between emergency responders and affected organizational personnel during emergency situations. Additionally, there is need to provide a communication system where organizations can avoid the expense of purchasing more sophisticated and expensive radio communication systems, and the ability to directly communicate with emergency personnel can be on a selective and controlled basis. Additionally, there is a need to provide a communication system that may timely inform a network or group of organizations regarding an emergency situation coupled with the ability of a 911 call center to select which organizations within the group can directly communicate with selected emergency response personnel.

SUMMARY OF THE INVENTION

In accordance with the present invention, a communication system and method is provided for handling emergency situations wherein complex public safety radio systems can be used to directly communicate with normally incompatible radio systems used by organizations such as schools, hospitals, and other large independent facilities. The system of the present invention includes a radio communication patch or bridge that is selectively activated by emergency personnel to contact one or more selected organizations. In a preferred embodiment of the present invention, the communication system further includes a communication network, such as a local area network (LAN) or a group of LANs and a high speed interconnecting network such as the Internet. Activation and deactivation of the bridge is achieved over the LAN (s). A computer server may be located at one of several locations such as at a 911 call center, school district headquarters, or school district security center. This server is used to monitor and control the emergency communication system with one or more communication endpoints that are linked to the server. Each of the communication endpoints, such as separate schools, each have an IP address that allows them to be connected over the network(s) by the server. Each of the communication endpoints also has their own local two-way radio system and a communication patch or bridge device that is activated or enabled by IP commands over the network(s). Activation of the bridge is typically prompted by a 911 call by the affected organization at the communication end point. The 911-call center then evaluates the particular emergency, and can selectively activate over the network(s) the radio bridge. Once the bridge is activated, personnel located at the communication end point can then directly communicate with the emergency responders who have been dispatched and who are operating their radios on the public safety radio system. The local radios at the communication endpoints operate on their normal frequency/channel and once the bridge is activated then the local radios are automatically merged with the public safety radio channel or talk group. When the bridge is deactivated, the radios cease to operate on the public safety radio frequency/channel and are automatically returned to their normal channel operation.