Mission Critical Voice Communication for Public Safety

What qualifies as mission critical?

With the buildout of the Nationwide Public Safety Broadband Network (NPSBN), the public safety community is learning more about new applications that could be used in emergency response. The NPSBN will provide a cellular type coverage to first responders, with priority and pre-emption features. The network will be built by AT&T. The federal agency formed to ensure the building of the network is FirstNet. FirstNet awarded the national contract to AT&T in 2017.

As public safety begins to use the NPSBN, the development of Mission-Critical Push-to-Talk (MCPTT) is a technology advancement that many first responders are interested in using. But what makes an application mission critical? In 2011, the Broadband Working Group of the National Public Safety Telecommunications Council (NPSTC) released a paper to provide a common understanding of the meaning of and the multiple requirements of mission critical voice. This informational sheet presents the seven requirements that working group outlined as essential. Any system that lacks even one of the requirements would not be considered mission critical voice by the NPSTC.

- **Direct or Talk Around:** This mode of communications provides public safety with the ability to communicate unit-to-unit when out of range of a wireless network or when working in a confined area where direct unit-to-unit communications is required.
- **Push-to-Talk (PTT):** This is the standard form of public safety voice communications today – the operator pushes a button on the radio and transmits the voice message to other units. When they are done speaking they release the Push-to-Talk switch and return to the listen mode of operation.
- **Full Duplex Voice Systems:** This form of voice communications mimics that in use today on cellular or commercial wireless networks where the networks are interconnected to the Public Switched Telephone Network (PSTN).
- **Group Call:** This method of voice communications provides communication from one-to-many members of a group and is of vital importance to the public safety community.
  - **Talker Identification:** This provides the ability for a user to identify who is speaking at any given time and could be equated to caller ID available on most commercial cellular systems today.
  - **Emergency Alerting:** This indicates that a user has encountered a life-threatening condition and requires access to the system immediately and is, therefore, given the highest level or priority.
  - **Audio Quality:** This is a vital ingredient for mission-critical voice. The listener MUST be able to understand without repetition, and can identify the speaker, can detect stress in a speaker's voice, and be able to hear background sounds as well without interfering with the prime voice communications.

To read the NPSTC Broadband Working Group report in its entirety, go to www.NPSTC.org. Click on the library heading at the top of the page. Select NPSTC reports. Scroll down to Technology and Broadband. Look for Mission Critical Voice Communications Requirements for Public Safety (August 2011).

> "The applications and cellular technologies now being offered to first responders represent some exciting new developments in communication," said Terry LaValley, Department of Public Safety FirstNet Single Officer. "However, first responders need to test the PTT application to make certain that in critical situations the technology performs as needed, especially when cell service is not available. The developing public safety network and its applications are not meant to replace LMR radios, but rather provide an additional means of communication."

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