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ALMR Operations Sustainment During COVID-19

To ensure crucial technical and operational support is available for managing ALMR during this pandemic, the Operations Management Office (OMO) and the System Management Office (SMO) have implemented continuity of operations (COOP) procedures. These procedures are intended to prevent possible exposure of staff to the virus and still enable them to operate and maintain the System, ensuring 24/7 availability to users.

On a daily basis, the SMO utilizes a Network Management Terminal (NMT) for the management of ALMR outage notices, site monitoring, subscribers maintenance, system security and other activities to ensure the System is functioning properly. An ALMR site in the Wasilla area now has a NMT and other bilateral equipment installed, allowing for the replication of the activities normally conducted at the Tudor Road office, if needed.

Additionally, the System Manager has staff working from home on an alternating basis, with only three personnel in the office at any one time. Anyone needing to contact the SMO staff, in person, during normal business hours must call first (907-334-2567) to determine what is required and how that can be accomplished safety for all involved. OMO staff, although working remotely, can be reached as usual at 907-269-8408 or 907-334-2636.

(Article by Mr. Del Smith, ALMR Operations Manager)

FirstNet Progress

With the First Responder Network Authority (FirstNet) wrapping up its second year of adding subscribers and coverage, it's a good time for a check into where things stand with the nationwide public-safety broadband network (NPSBN).

In December 2019, AT&T said more than one million FirstNet connections were in service with 10,000 public-safety agencies and organizations subscribing to the service. The carrier also pushed back its launch of mission-critical push-to-talk (MCPTT) service until 2020. The service was originally scheduled to launch in 2019, but executives said it was important to provide an excellent end-to-end experience, so AT&T is taking more time to roll out the important feature.

"We are still tracking ahead of our contractual commitments for the launch of this solution," said an AT&T spokesperson.

There is no denying AT&T has made much headway during the past few years to roll out the broadband network. In December, AT&T executives also said the carrier had built out 75% of Band 14 coverage, and continued site builds are expected throughout the year.

Many other issues are coming into play, including integrating 9-1-1 service into the FirstNet network, additional devices and applications for public safety, and most importantly, how Project 25 (P25) and other public-safety LMR networks will interwork with the Long Term Evolution (LTE) service.

2020 will bring many firsts for FirstNet, especially if MCPTT service begins. Public-safety officials will have the last say on MCPTT service, as well as whether the additional coverage is meeting their needs. The year will also likely see final standards for P25 to LTE interworking, and time will tell how the interworking technology rolls out in the commercial market.

We hope this article answers most of your immediate questions around FirstNet and the short-term future. We'll continue to cover the developments and evolution in the magazine and on our website.

(Ariticle by Sandra Wendelken, Mission Critical eMagazine Education Series)

DiagnostX Helps Make ALMR a Better System

Since four DiagnostX devices were installed on the ALMR System in early 2019, almost 500 subscribers have been identified as requiring re-tuning/calibration. The Operations Management Office (OMO) has contacted each of the owning agencies and provided them with a list of their subscriber IDs, so they could get them serviced.

DiagnostX is an over-the-air intelligent RF (radio frequency) receiver that scans the radio network outbound control channel frequencies and can be installed at any ALMR site at the receive antenna, where it identifies radios with problems. Subscribers have an internal reference oscillator to remain on the proper frequency, and over time these oscillators drift off frequency, eventually causing the radios to fail. There are also instances where brand new radios, fresh out of the box, have been found to be defective.

Every agency on the System is highly encouraged to conduct an annual inspection of their subscribers and perform any necessary calibrations to keep them in peak operating condition. However, for some agencies, this is an impossible task due to the sheer numbers of subscribers they deploy. DiagnostX provides a solution that saves staff time and resources by identifying subscribers in the field that need servicing, which allows agencies to focus maintenance efforts on those, as opposed to physically checking each radio in their inventory.

DiagnostX also provides a medium between ALMR agencies and the System Management Office (SMO), who is responsible for the maintenance health of the System. By identifying and servicing radios with operational problems, this helps reduce reports of System/site problems, which on a regular basis turn out to be subscriber problems. Agencies with properly operating equipment experience a higher level of performance and reduced maintenance costs and our public safety personnel can feel confident their radios will work properly when needed.

As identified radios are serviced and any issues corrected, owning agencies should contact Mr. Patrick Thornton (patrick.thornton@alaska.gov) to have the radio removed from the list.

(Article by Ms. Sherry Shafer, Operations Management Office)

Motorola Solutions Disinfecting Guidelines

In response to the coronavirus (COVID-19) pandemic, Motorola Solutions is providing recommended cleaning and disinfecting guidelines for their base station, repeater, gateway, dispatch and other fixed infrastructure products based on current and best understanding of infrastructure equipment hygiene. Per global health authorities, removing germs, dirt and impurities from surfaces further lowers the risk of spreading infection.

Warning – Base stations, repeaters, gateways, dispatch and other infrastructure may be connected to hazardous voltage and/or energy sources. Disconnect all products from energy sources prior to cleaning**.** Only trained service personnel should clean and disinfect infrastructure products. Do not use bleach, solvents or cleaning sprays to cleanse or disinfect your equipment.

General Cleaning:

- Some equipment components can become hot during operation; wait until sufficiently cool before touching.
- Caution must be used when cleaning equipment. Not all equipment is hermetically sealed. Take care that liquids and dirt are not pushed into the equipment fan grills, vents, speakers, connectors and other openings. Equipment can be damaged if liquid enters the enclosure, and dust, dirt and debris may contain conductive materials that could create a failure. If possible, use only deionized or distilled water to clean equipment.
- Apply 0.5% detergent-water solution with a lightly damp cloth to outside equipment surfaces, handles, knobs, buttons and controls to remove surface dirt, dust and debris. Wring out excess solution before cleaning to prevent pooling or entry of liquid into the electronics enclosure. Remove any remaining detergent solution or residue with a second lightly damp cloth wetted with clean deionized or distilled water.
- Use a soft, absorbent, lint free cloth or tissue to dry the device. Make sure that no solution or water remains or is entrapped in any vents, connectors, cracks or crevices. Equipment must be fully dry and free of all liquids before returning to service.

Disinfecting:

- Equipment may be disinfected by wiping it down with over-the-counter isopropyl alcohol (rubbing alcohol) with at least 70% alcohol concentration.
- When cleaning with isopropyl alcohol, the alcohol should never be applied directly to the device. It should be applied to a cloth, which is used to wipe down the device.
- The effects of certain chemicals and their vapors can have detrimental effects on plastics and metal platings.

Caution – Motorola Solutions systems may contain third-party hardware and other equipment. Refer to the OEM websites and guidelines provided by these third-parties for specific instructions and restrictions for cleaning and disinfecting for their hardware and equipment.

Because ALMR is a Motorola™ ASTRO 25™ Digital Trunking WAN SmartZone solution that consists of the system infrastructure and multiple subsystems, we chose to use Motorola cleaning instructions for this article. Please see the ALMR website for cleaning instructions for other manufacturers. (http://www.alaskalandmobileradio.org/radios.htm)

(Information taken from Motorola Solutions Technical Notification (MTN) MTN-0048-20-GL issued March 2020)

The PTT Interoperability Challenge

During the past decade, broadband push-to-talk (PTT) solutions have experienced widespread adoption within government and commercial markets. Availability of broadband data rates and the open application distribution platforms for smartphone and tablet devices has fueled this growth. Some believe broadband PTT solutions are now positioned to replace traditional LMR entirely. However, there are vast architectural differences between LMR and commercial wireless network infrastructures that host most broadband PTT solutions.

LMR and broadband technologies each include features that the other does not. Perhaps the question of using broadband PTT as an LMR replacement is the wrong question. Why not leverage both technologies, integrating the two into a hybrid network, while taking advantage of the features that allow public-safety users to best meet their mission? This hybrid model is rapidly gaining traction in the public-safety market.

Hybrid Project 25 (P25) and broadband PTT solutions are being deployed using the P25 Inter Subsystem Interface (ISSI) for integration. ISSI was designed to connect multiple P25 systems; however, it can also be used to connect P25 and non-P25 systems. In this model, broadband PTT users are assigned P25 unit IDs, and while the users talk on P25 channels, the P25 system manages floor control, priority and pre-emption. ISSI-integrated hybrid networks also support passing unit IDs, private calls, group calls and emergency calls, as well as transparent integration with Console Subsystem Interface (CSSI) connected dispatch consoles and call-logging systems. End-to-end encryption between smartphones, radios and consoles is also supported, including key management, via the P25 key management facility (KMF).

As agencies look to migrate more users to broadband-enabled PTT solutions, the largest factor is capacity, which goes back to the wireless network architecture itself. Commercial wireless networks use unicast transmissions between cell sites and phones, whereas LMR networks use multicast transmissions. Therefore, if you have 100 broadband PTT users on the same channel (group) all within the range of a single cell site, you are bridging 100 individual data calls using 100 broadband channel resources. In the multicast LMR architecture, the same scenario will only use a single LMR channel resource. The Third Generation Partnership Project (3GPP) Mission Critical Push-to-Talk (MCPTT) architecture specifies support for multicast, but this feature is years away from availability on commercial wireless networks and smartphone devices. Setting aside all other differences between broadband and LMR systems, a full rollout of broadband PTT as a complete replacement for LMR would not be practical until multicast and a direct mode option are available throughout the coverage region.

Another major factor that makes MCPTT over broadband a challenge is the device landscape. LMR handsets are deployed as a tested set of hardware, operating system (OS), application software and accessories. Broadband PTT operates on a wide range of commercial handsets, with multiple OSs, near unlimited range of apps and a broad range of accessories. This makes broadband PTT solutions prone to failure if the device ecosystem is not carefully managed using a mobile device management (MDM) platform. This became an issue in mid-2019, when Apple's 12.4 OS update broke background operations for iOS users across all commercial broadband PTT solutions.

In California, during the third and fourth quarters of 2019, a new issue threatened broadband PTT service. As a preemptive measure to avoid starting wildfires during windstorms, power utility PG&E cut electricity to large areas of the state. All cell sites in those areas, many with no or limited access to backup power, went off the air. If public safety is to rely on commercial broadband infrastructure, wireless networks must be capable of sustainable power for the duration of any outages. Most LMR networks have redundant backup power solutions built in. During critical moments when public safety needs it most, broadband service may be impaired

Leveraging available technologies, public safety has a broad set of tools available to facilitate cross-system, cross-carrier communications to support mission-critical users. The hybrid broadband PTT and LMR networks can solve issues that have plagued public safety for decades. Interoperability on this level is no small task, but most of the pieces exist and must be coordinated at the mutual-aid level,. The community that provides communications solutions to public safety must be willing to work together for the benefit of those who risk their lives for us.

(Article by Josh Lober, from the March 1, 2020 Mission Critical Communications eEdition)

System Status Notifications During Emergencies

The status of the ALMR System following a major event, such as an earthquake, volcano eruption, etc., is critical information that is needed by the ALMR user agencies responding to the incident. The ALMR Helpdesk will, in most circumstances, be able to advise agency points of contact (POCs) via e-mail of any on-going concerns. However, in the interests of providing an additional method of emergency notifications to ALMR user agency POCs, the Operations Management and System Management Offices urge you to follow ALMR on Twitter at @ALMR_SOA. In addition to system status reports, additional routine information important for users to know, can be made available to member agencies.

(Article by Mr. Del Smith, ALMR Operations Manager)

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How Project 25 Standards Evolve

The Project 25 (P25) standards for land mobile radio (LMR) interoperability have continued to evolve over time. You may wonder how this occurs.

The Telecommunications Industry Association (TIA), represents manufacturers and suppliers of high-tech communications networks. Within TIA, the Engineering Committee, known as TR-8, formulates and maintains standards for radio communications systems and equipment for both voice and data applications. TR-8 addresses all technical matters for systems and services, including definitions, interoperability, compatibility and compliance requirements. Some of the types of systems addressed by these standards include public safety, such as police, EMS and fire applications.

Much of the work of the committee relates to the formulation of the TIA-102 series standards for P25, developed to provide digital voice and data communications systems suited for public-safety and first-responder applications, such as ALMR.

Although there are a number of ongoing activities within the TR-8, one example of the work they are engaged in is the area of security. Currently, a definition of a link layer encryption security service is in progress. This is the first big new technology upgrade for improved security for all P25 air interfaces. It protects control channel messages and group and individual IDs.

An addendum to the Key Fill Interface Standard is also in progress. This will enable key fill devices, such as key variable loaders, to interface to a Key Management Facility, an authentication facility and another key fill device.

Additional information on P25 can be found at the Project 25 Technology Interest Group (PTIG) website (www.project25.org).

(Article by Mr. Del Smith, ALMR Operations Manager)

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Ted Stevens Site Update

The Ted Stevens Anchorage International Airport RF site was initially turned off on February 3 for a period of 60 days. During the test period, there were no reported issues and no noted impact to surrounding sites. Mr. Del Smith, ALMR Operations Manager, in consultation with the ALMR System Manager and the State of Alaska SATS/ALMR Manager, determined the site will be left off for the time being, but could be brought back on line, if necessary.