KODIAK
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Low-Risk Steps to Get to MCPTT

Transitioning your Jurisdiction to MCPTT using Broadband PTT Interop

 Version 1.0

Introduction

Broadband Push-to-Talk (PTT) is available to government and public safety jurisdictions by commercial carrier now and from FirstNet in the near future. Broadband PTT enhances Land Mobile Radio (LMR), with expanded overall capacity, reduced costs, larger (often nationwide) footprint, and integrated broadband data applications that can reduce the number of devices that must be carried. Now is an excellent time for agencies to learn how broadband PTT can help meet public services and public safety communications needs.

This paper identifies low-risk steps to consider when evaluating and transition from a pure LMR mobile communications environment to one containing broadband PTT, and ultimately Mission Critical broadband PTT.

The Steps to Broadband PTT

Any migration for a public safety entity must occur safely and efficiently, and the steps below will help identify the specific areas to consider.

1. **Work with your wireless carrier to arrange for broadband PTT service**
2. **Move Mission Support users to broadband PTT and LMR Interop** (If your LMR system is not shared with mission support elements, skip this step.)
3. **Provide broadband PTT with QoS and LMR Interop to Public Safety leadership**
4. **Provide broadband PTT with QoS and LMR Interop to First Responders as a backup to LMR**
5. **Migration to Mission Critical broadband PTT when available and comfortable**

Step 1 – Make Broadband PTT Arrangements with Your Carrier

Talk with your carrier to arrange for broadband PTT service and supported broadband PTT devices. Carrier-provided broadband PTT can provide quality of service and priority (QoS elements) that are unavailable with over-the-top or premise-based broadband PTT services. Your carrier can also work with you to set up interoperability between broadband PTT service and your LMR system and talk groups.

Explore any programs your carrier has to provide public safety with free or heavily subsidized devices. Since different carriers offer different broadband PTT devices, confirm appropriate devices, accessories and training can be provided. Broadband PTT devices can include smartphones, purpose-built feature phones with PTT buttons, rugged versions of both, and even tablets. Supported accessories include wired as well as wireless headsets, earpieces, remote speaker microphones (RSMs), car kits and more, making it possible to match the right accessory with each user's need.

If your agency has a BYOD (Bring Your Own Device) policy, then it should be reviewed to include broadband PTT-compatible devices.

Step 2 – Move Mission Support Users to Broadband PTT and LMR Interop

Broadband PTT can be deployed while maintaining interoperability with an existing LMR system. LMR interoperability allows a system manager or owner to enhance, augment or gracefully transition an LMR system that is not meeting current needs, thereby avoiding an expensive upgrade or replacement.

Many mission support users, including Water, Streets, Public Works, etc., require push-to-talk communications and access to LMR talk groups, but do not need an LMR radio. Moving mission support users off the LMR system to broadband PTT makes 'their' LMR bandwidth, talk groups and radios available to mission critical users, but allows them to retain PTT communications with each other as well as those on the LMR network. Added benefits of moving mission support users to broadband PTT include 1-to-1 calling and the ability to use a single device to access broadband productivity applications such as workforce management and asset tracking.

To accomplish this step in a low risk manner, the initial effort should identify a small department or group that currently carries LMR radios as well as smartphones for access to data applications in the field.

Once identified, work with the group to determine the talk groups / channels that need to be supported. From a simplicity perspective, keeping a similar talk group structure to what currently exists minimizes operational issues in the transition. In addition, realize that 1-to-1 conversations are included in broadband PTT, which can greatly improve the effectiveness of users on a talk group by reducing the radio traffic that users have to listen to. Work with the carrier to set up the talk groups or use the provided talk group management app to set them up directly.

Next, provide training to the group on how to use the broadband PTT application on their broadband PTT devices. Once the new broadband PTT users are on the air, solicit feedback on what works, and what doesn't and then make appropriate changes.

During the transition, consider a trial period where users carry both an LMR radio and a smartphone. That decision is up to the system manager, as both systems can be made interoperable with each other for the trial, or longer.

Once users are comfortable with broadband PTT, the final part of this step is to retire or reallocate their LMR radios and talk groups, providing them to LMR mission critical users if needed.

Step 3 – Move Public Safety Executive Management to Broadband PTT and LMR Interop

This step provides broadband PTT with LMR Interoperability to public safety leaders and managers. Providing public safety leaders and jurisdiction managers with broadband PTT service and LMR interoperability allows those decision makers to remain in touch when out of the LMR footprint or unable to carry an LMR radio. Arrange for QoS for your broadband PTT service if this has previously not been included, as it will ensure high-availability communications in high-traffic events.

Start with identifying these specific users and what devices they will use. If BYOD is allowed, then personal devices must be compatible with the broadband PTT application and solution, or new devices must be acquired.

Next, each user device should be programmed for their current talk group(s). If desired, additional leadership talk groups can be created on the broadband PTT side to provide command level communications. Further, each leader will have the ability to have 1-to-1 communications with any other user, providing a private broadband PTT communications channel option.

Training on the broadband PTT app and user devices follows, focusing on the user device and operational procedures. Once in use, feedback should be collected, and policies and procedures should be adjusted if needed. Leadership may wish to carry both LMR and broadband PTT devices during a trial period, or quickly migrate to broadband PTT.

Step 4 – Add / Move Public Safety Users to Broadband PTT and LMR Interop

Similar to the above transition steps, this step moves to operationalize broadband PTT for first responders as a backup communications option, once an agency has experience providing broadband PTT to mission support and leadership elements. If an after action review was held during any of the previous transition steps, this is a good time to update policies and procedures.

While not intended to replace mission critical LMR for first responders at this time, adding broadband PTT for these users provides additional communications coverage and capacity. For instance, EMS gains coverage when they respond or transport outside the LMR footprint. Fire gets reliable communications in enclosed areas such as large buildings or basements, where LTE, cellular or Wi-Fi is present but LMR has poor penetration. Police enjoy the same benefits noted above, but also gain a simple method of providing LMR interoperability with mutual aid agencies.

While BYOD and other popular smartphones may work for some responders, ruggedized devices should be seriously considered for all first responders, as their cost is not significantly more than many smartphones, but are better able to stand up to a first responder environment. Once that decision is made, a device policy is established or updated, devices are chosen, followed by system and device training prior to fielding responders with these devices. Upon completion of training and distribution of devices, responders should carry both LMR and broadband PTT devices during the trial phase.

Another consideration for larger departments where hundreds or thousands of users may be involved is the establishment of a rollout timetable. This can help minimize any problems that may arise.

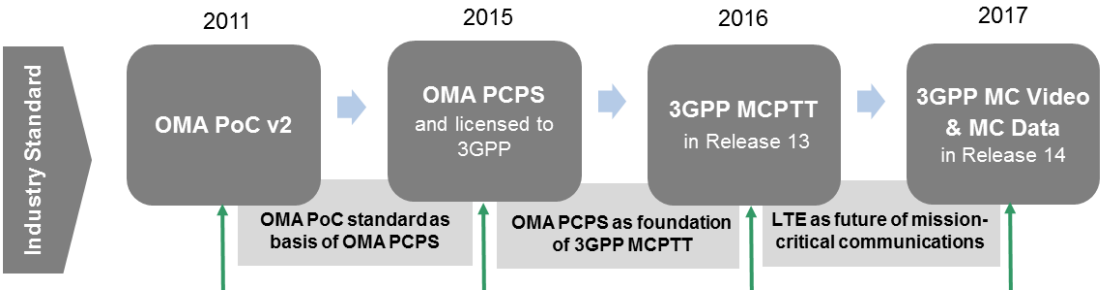
Finally, an evaluation of the results is needed, to adjust policies and procedures, and to determine the long-term roadmap for agency communications.

Step 5 – Migrate to Mission Critical Broadband PTT (MCPTT)

The last step is to Migrate to Mission Critical broadband PTT (MCPTT) when standards based MCPTT becomes available and comfortable for your agency. While MCPTT is still a few years away, the time to plan is now. This will affect budgeting, deployments, capital expenditures for current and future systems, and the testing needed to ensure results meet expectations.

The first factor to consider in a move to MCPTT over broadband is the availability of a standards based implementation of MCPTT. The good news is 3GPP, the standards organization driving MCPTT over broadband has recently published “Release 13”, and expect to publish “Release 14” next year. The implementations of these releases are expected to be available in systems and products in late 2018 and 2019 respectively.

Proximity Services, Location-based services and MCPTT enhancements plus updates will be coming out in late 2019. Early adopters may want to trial MCPTT starting in early 2019, building up understanding and lessons learned. Others may wish to wait to see the results of trials and testing started in late 2018. Irrespective, mission critical performance on-par with LMR systems will be generally available by 2020.



In understanding the MCPTT timeline, it makes sense to consider your agency’s path forward as broadband PTT gains acceptance, and as system owners near a decision on an expensive LMR system upgrade or replacement. MCPTT over broadband provides very cost-effective

alternatives. This is also an opportunity to review procedures and policies for responders using either LMR or broadband-based MCPTT.

Following those reviews and decisions, system managers should consider protection standards (such as IP 66) applicable to their particular use profiles when selecting devices for mission critical users. Other decisions will center around safety enhancing accessories, such as speaker-mikes, earpieces and docks.

Not to be forgotten will be the productivity enhancing applications that will make first responder more effective in their efforts. Planned applications will give responders better information regarding situational awareness, building layouts, crime reports, real-time imagery, first aid tools, language translation, and many more, all on a single device. Further, links to existing databases and information sources should be anticipated and how that information can be efficiently and effectively shared. Leadership will need to develop a plan for training and integration of these tools and apps. And as with any mission critical system, a 24/7 help line will be required.

Unlike mission support users, the transition for mission critical users will need to be slow and deliberate, as adding applications all at once to a new device may be confusing. Planning should include having existing LMR, mobile data and other systems available until users are confident with their new devices.

Finally, training will be required for the broadband PTT user devices, system and applications.

Noticeable Differences

While operational procedures for broadband PTT are similar to those for LMR PTT, there will be some noticeable differences in a user's operational experience. These include:

- **PTT Button**

  The PTT function will be activated by a dedicated button on the side of many ruggedized, feature and specialty phones. Conversely, many consumer smartphones use a 'soft button' on the touchscreen. Appropriate accessories can provide a dedicated button, even for smartphone users in most cases.

- **Mobile Device Management (MDM)**

  MDM has become a productivity enhancing tool for most every manager of mobile devices. MDM can update a user device, update, add or delete an application; manage individual or groups of users and their talk group access; restrict or grant rights of a user to access all, part or none of the Web or other resources; help a system manager easily maintain the configuration of "BYOD", or remotely program or configure a user device. With an Open Mobile Alliance standard to work with, system managers will enjoy the standards-based, non-proprietary tools often provided by LMR vendors, giving managers access to third party solutions.

- **Cryptographic Key Management**

  Keys are loaded and handled differently in LMR radios and broadband PTT devices. Specific differences depend upon the two systems and the cryptographic protocols used. In general, this is transparent to users.

Summary

Broadband PTT is here and ready to help LMR users, managers, and system owners provide better, low-risk, more cost-effective services. The technology is mature and ready. The ability and steps are delineated above, and the risks to move forward are low. Standards-based MCPTT will be here within a few years, giving system owners and managers several paths for future first responder communications, all with significant savings.

Finally, there's an excellent article by Donny Jackson in *Urgent Communications* magazine. Donny interviews a wireless manager who has already made the switch for their mission support users, saving $15 million the first year and about $2 million annually after moving these mission support users to PTT while maintaining LMR interoperability. That article can be found here:

http://urgentcomm.com/land-mobile-radio/ptt-over-cellular-solutions-make-compelling-case-lmr-replacement-webinar-speakers-