Federal Partnership for Interoperable Communications

National Public Safety Telecommunications Committee Meeting
September 29, 2016
FPIC UPDATE

Federal Partnership for Interoperable Communications FPIC

- The FPIC serves as a coordination and advisory body to address technical and operational wireless issues relative to interoperability within the public safety emergency communications community, interfacing with voluntary representatives from F/S/L/T/T

- The FPIC has an established working relationship with the ECPC, the NCSWIC EC, and the SAFECOM-NCSWIC Technology Policy Committee as a technical advisory resource

- The FPIC includes more than 200 federal, state, local, tribal and territorial public safety representatives from over 45 federal agencies, as well as representatives from state, tribal, territorial and local entities, focusing on improving interoperability among the public safety community at all levels of government and addressing common public safety related communications issues

- Address topics and questions concerning Interoperable Communications, Security Services, Spectrum (related to interoperability), and Standards

Topics for Today - FPIC Current Activities

- LMR Sustainment, Interoperability, and Cooperative Partnerships

- Spectrum Activities

- Encryption Activities

Importance of LMR Sustainment

- The sustainment of resources and operational capability supporting LMR is vital to public safety mission-critical communications

- It is important that government leaders and public safety managers recognize sustained funding is critical to keep LMR systems functional

- The FPIC, in coordination with OEC, is working closely with the NCSWIC to address LMR issues at all levels of public safety that include technology, funding, governance and others

Cooperative Partnerships

- Reduced Federal and State/Local budgets force agencies to seek opportunities to achieve cost effective solutions and operational efficiencies by securing partnerships with statewide and regional public safety systems

  - Enhanced coverage

  - Better interoperability with state and local agencies

  - Typically provides a multi-vendor environment for standards compliant equipment

  - Resource sharing

- The partnership in Wyoming is a prime example of how the FPIC has supported cooperative opportunities resulting in enhanced communications for all concerned. Other partnerships include Alaska, Connecticut, Missouri, South Carolina, and Washington

- The FPIC has promoted these initiatives for many years and is embarking on a new initiative with the NCSWIC to identify assets for potential future partnerships

FPIC Spectrum Activity

- The Federal I/O channels in 162-174 MHz and 406.1-420 MHz bands can be used by S/L/T Public Safety agencies to enable joint Federal/Non-Fed interoperability. NTIA Manual 4.3.16 governs new rules that allow a simplified process to coordinate that use through the SWICs.

- An MOU between Federal Department and each State/Territory SWIC allows all S/L/T PS agency to use those channels for operating with a federal agency (no need to coordinate with every single public safety agency in the State)

- In coordination with NTIA, OEC/FPIC is drafting an MOU template reflecting NTIA Manual changes allowing S/L/T agencies to use LE/IR channels

- Draft MOU has been provided to NTIA/OSM for comment and has gone through legal review

- Draft MOU will be coordinated with Federal Spectrum Managers and NCSWIC through the FPIC Spectrum Subcommittee

- Further coordination with federal agencies and SWICs is required to identify signatories for each MOU

FPIC Spectrum Activity –cont'd

- FPIC is currently working with the FCC and NTIA to identify I/O Channels that can be used nationwide for immediate and unencumbered use. This is different from the use of the LE/IR channels mentioned in the previous slide.

- A preliminary search of existing LE/IR and AGA4 assignments identified some candidate channels

- FCC has agreed to consider pairing these channels with FCC part 90 IO channels

- Further coordination will be conducted through the FPIC Spectrum Subcommittee

- FPIC is developing strategies for identifying cross-border interoperability channels with Canada

  - Based on recent suggestions to NTIA from Region 9, the FPIC Spectrum Subcommittee also agreed to address cross-border IO channels with Mexico

Encryption Guidance Documents

- The FPIC Security Working Group has teamed with SAFECOM and NCSWIC to develop a series of documents addressing Encrypted Communications in a P25 environment

- ***Guidelines for Encryption in Land Mobile Radio Systems*** – Feb 2016 www.dhs.gov/technology

- ***Best Practices for Encryption in P25 Public Safety Land Mobile Radio*** – Sept 2016 www.dhs.gov/technology

- ***Considerations for Encryption in Public Safety Radio Systems*** – Sept 2016 – www.dhs.gov/tecnology

FPIC Encryption Document Status

- *"Best Practices for Encryption in P25 Public Safety Land Mobile Radio Systems" and "Considerations Encryption in Public Safety Radio Systems"*

  - Final Draft documents have been approved by the SAFECOM – NCSWIC Technology Policy Committee and the FPIC and have been published. www.safecom.gov/technology.

  - Final Drafts of the associated "Fact Sheets" for decision makers are approved and have been published. www.safecom.gov/technology.

- *"Guidelines for Encryption in Land Mobile Radio Systems"*

  - Document was published in February 2016 and available on SAFEOM Web site. An associated Fact Sheet is in final review.

- *"Operational Best Practices for P25 Public Safety Land Mobile Radio"*

  - First draft (outline) will be developed by FPIC Security Working Group

Encryption Guidance

- The FPIC Security Working, in coordination with the NLECC and other public safety agencies, developed a standardized SLN assignment list for National Encrypted Interoperability (June 2015)

- This guidance is not mandatory but is important to maintaining encrypted discipline and avoiding conflicts

- The FPIC encourages PS agencies who are going to implement encryption to coordinate with NLECC SLN, Key, and KeyID assignments. A National database can be developed to avoid conflicts and improve encrypted interoperability

- It is Important to coordinate with your adjacent jurisdiction

- After the LMR sustainment survey is complete, the FPIC will attempt to populate a SLN database to avoid conflicts with neighboring jurisdiction. This information will be protected and distributed on a need-to-know basis.

Encrypted Interoperability Requires

- A desire to interoperate between agencies
- Knowledge and understanding of encryption and key management
- Coordination between agencies
- Coordination with the National Law Enforcement Communications Center (NLECC) and/or Statewide Interoperability Coordinators (SWIC) for I/OP keys
- Coordination planned through SWICs for easier access to information

Encryption Interoperability Planning

- Theoretically, different entities could have different SLNs refer to the same Traffic Encryption Keys

- Storage Location Number (SLN)

  - A common method to refer to an encryption key. In an OTAR system, each SLN contains two TEK keysets (one active/one inactive). This is a decimal value between 0 and 4095.

- Example:

  - Agency A: SLN 0001 KID: 12AF　　　　TEK:1234567890ABCDEF

  - Agency B: SLN 1234 KID: 12AF　　　　TEK:1234567890ABCDEF

  - Agency C: SLN 4095 KID: 12AF　　　　TEK:1234567890ABCDEF

  - These all refer to the same traffic key!

  - Even though the SLNs do not match, the radio *will* decode the audio since the KIDs and TEKs are the same

  Note: Single key radios will increase the operational complexity and require additional coordination

Encryption Interoperability Planning (continued)

- Different agencies with uncoordinated SLN/KID/TEK assignments can create an interoperability nightmare

- Example:

  - Agency A: SLN 0001 KID: 0001   TEK:ABCDEF1234567890

  - Agency B: SLN 0001 KID: 0001   TEK:1234567890ABCDEF

    - Same SLN and KIDs all refer to different traffic keys!

    - The radio will attempt to decode audio with unsuccessful results and *will not* interoperate

  - Agency C: SLN 0001 KID: 0002   TEK:ABCDEF1234567890

    - Same TEK but the Key ID does not match. Still *will not* interoperate

  Note: Multi-band environments will increase the operational complexity and require additional coordination

Contact Information

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Backup Slides

Appendix A: National Reserved SLN Table (6/19/15)

SLN	Algorithm	Use	SLN Name	Crypto Period (Annual key changes are completed on the first working Monday of October)
1	DES	Public Safety Interoperable	ALL IO D	Annual
2	DES	Federal Interoperable	FED IO D	Annual
3	AES	Public Safety Interoperable	ALL IO A	Annual
4	AES	Federal Interoperable	FED IO A	Annual
5	DES	National Law Enforcement State and Local Interoperable DES	NLE IO D	Static
6	AES	National Law Enforcement State and Local Interoperable AES	NLE IO A	Static
7	AES	US – Canadian Fed Law Enforcement Interoperability	FED CAN	Static
8	AES	US – Canadian PS Interoperability	USCAN PS	Static
9	DES	National Tactical Event	NTAC D	Single Event Use – Not to exceed 30 Days
10	AES	National Tactical Event	NTAC A	Single Event Use – Not to exceed 30 Days
11	DES	Multiple Public Safety Disciplines	PS IO D	Static
12	AES	Multiple Public Safety Disciplines	PS IO A	Static
13	DES	National Fire/EMS/Rescue	NFER D	Static
14	AES	National Fire/EMS/Rescue	NFER A	Static
15	DES	National Task Force Operations	FED TF D	One time use as needed for Special OPS
16	AES	National Task Force Operations	FED TF A	One time use as needed for Special OPS
17	DES	National Law Enforcement Task Force (one time only operation)	NLE TF D	One time use as needed for Special OPS
18	AES	National Law Enforcement Task Force (one time only operation)	NLE TF A	One time use as needed for Special OPS
19	AES	Federal – International Law Enforcement Interoperability	FED INTL	When needed by operational requirement
20	AES	Public Safety – International Law Enforcement Interoperability	PS INTL	When needed by operational requirement

FPIC P25 ISSI/CSSI Activity

- There has been increased interest in implementing the P25 Inter RF Subsystem Interface (ISSI) and the Console Subsystem Interface (CSSI) to interconnect P25 Systems

- There has been significant misunderstandings and negative reports concerning the capabilities and purpose of the ISSI and CSSI, particularly when implementing *multi-vendor* P25 ISSI and CSSI interconnections.

- While there is still significant standards activity still in progress, there have been a number of implementations by a number of users

- Reports varied on the success of these implementations and numerous questions came up among users

FPIC Sponsored P25 ISSI/CSSI User and Vendor Working Session

- FPIC, with support from OEC, sponsored a two-day User Working Session, hosted by Interior Department at the Denver Federal Center

- The working session provided public safety entities a forum to voice experiences and address concerns identified when implementing the P25 ISSI/CSSI between radio systems provided by different manufacturers.

- To share information relevant to implementation successes and challenges, including how these challenges were addressed, the FPIC assembled a panel of knowledgeable users experienced with the planning, implementation, and/or testing of the ISSI or CSSI interconnected between multiple vendor products.

FPIC Sponsored P25 ISSI/CSSI User and Vendor Working Session (cont'd)

- The first day was limited to government (all levels) users focused on experiences in planning and implementation, including successes and areas for additional consideration

- There were 16 invited users that made up the "core panel" and a total of 42 users participated (36 in person, 6 on conference bridge)

- There was significant sharing of information and a number of "success stories" were presented

- Successful implementations included interconnections among Motorola, Harris, EF Johnson, and Cassidian/AirBus in multiple configurations, as well as CSSI implementation with Zetron and Pantel with multiple RF Systems

- The challenges that were encountered were also provided

FPIC Sponsored P25 ISSI/CSSI User and Vendor Working Session (con't)

- The second day the users returned and representatives from Project 25 equipment manufacturers and system providers, specifically those that have ISSI/CSSI product offerings and implementation experiences.

- This was a collaborative session, attended by 14 representatives from 8 companies, that provided an opportunity for users and manufacturers to openly discuss the topics that were identified during the user session.

- There was extensive discussion concerning the sharing of information during implementations that required programming changes or standards related revisions.

- Users expressed an interest in "roaming" capabilities across an ISSI and a briefing was provided by the TIA TR8 Chair

- Compliance Testing and availability of test procedures/results was a concern that initiated extensive discussion

FPIC Sponsored P25 ISSI/CSSI User and Vendor Working Session (con't)

- The users raised concern with the field implementation and testing among different manufacturers and how potential standards revisions were documented and implemented in TR8

- There was also extensive discussion concerning how different features and services from different vendors were addressed in the ISSI

- Users and manufacturers felt a document addressing "basic interoperability features/services" should be developed by the FPIC and submitted thru the P25 UNS

- The users also expressed a need to address the number of options that are provided and identify possible solutions to minimize options that impact interoperability.

- The group agreed to form a FPIC Focus Group to address next steps

- A second meeting is tentatively planned in the Sep/Oct time frame in Dallas.

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