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CTO Update



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Agenda



- CTO Focus Areas
- Support Technical Portion of Requests For Proposals (RFP)
- Organization and Hiring
- Public Safety Grade Updates
- Public Safety Communications Research (PSCR) Progress
- Public Safety LTE Deployments

CTO Focus Areas



Focus Area	Key Milestones	Level of Effort
<p>Comprehensive Network Solution RFP</p> <p><i>Support the technical part of the RFI/SOO and RFP, conduct market research, establish network security framework, evaluate RFP responses, and select partners for a comprehensive network solution including security</i></p>	<p>RFI/SOO in September 2014 Draft RFP early 2015</p>	<p>FY14 </p> <hr/> <p>FY15 </p>
<p>Public Safety LTE Deployment Support</p> <p><i>Support the launch and operations of public safety LTE deployments and use key learnings as guidance for RFP activities and network planning. Ensure public safety LTE deployments implement networks in compliance with the FirstNet design principles for future integration</i></p>	<p>BTOP Support and Key Learnings in FY14 and FY15</p>	<p>FY14 </p> <hr/> <p>FY15 </p>

CTO Focus Areas (continued)



Focus Area	Key Milestones	Level of Effort
<p>PSCR Key Initiatives</p> <ul style="list-style-type: none"> <i>Proof of concept testing</i> <i>Network simulation tools</i> <i>Standards support at 3GPP, OMA, and ATIS</i> 	<p>FY14 and FY15</p>	<p>FY14 </p> <hr/> <p>FY15 </p>
<p>Support State Consultation and Planning</p> <p><i>Network planning and RF coverage designs and evaluations for 56 states and territories, including the core network, devices, and applications</i></p>	<p>Process definition in FY14</p> <p>Network Planning in FY15</p>	<p>FY14 </p> <hr/> <p>FY15 </p>
<p>Pilot Network (if approved)</p> <p><i>Evaluate the need for a pilot network with several cell sites in a state or territory using Band 14 LTE. The pilot network will be used to demonstrate public safety services to stakeholders, industry, and the public safety community</i></p>	<p>Planning in FY14, RFP, Secure Sites and Partial Implementation in FY15</p>	<p>FY14 </p> <hr/> <p>FY15 </p>

CTO Focus Areas (continued)



Focus Area	Key Milestones	Level of Effort
<p>Small Deployables (if approved)</p> <p><i>Testing and operation of several Small Deployable units with devices. Will support the Boulder Experience and Training center as well as showcase the capability at Public Safety Technology Expo and Conferences and other venues</i></p>	<p>Planning in FY14, Conduct RFP and Award in FY15</p>	<p>FY14 </p> <hr/> <p>FY15 </p>
<p>Experience and Training Center, Local Network, and Supporting Lab (if approved)</p> <p><i>Design and implement an Experience and Training Center to support state consultation, as well as training and marketing for public safety. Lab will be in support of the Center as well as limited testing such as public safety features and devices. The local network (comprised of a few sites) will support field testing and mobility demonstrations</i></p>	<p>Planning in FY14, RFPs and Implementation in FY15 (Lab Phase I) and FY16 (Lab Phase II)</p>	<p>FY14 </p> <hr/> <p>FY15 </p>

CTO Contribution to Comprehensive Network RFP



Major Accomplishments

- **RFP Market Research**
Meetings with suppliers in order to understand their capabilities to support the FirstNet mission and, research the feasibility of implementing public safety requirements within an LTE network
- **Analysis Of Alternatives for RFP**
Document and analyze all possible alternative network implementation models and rate the different models against a common set of service and financial criteria
- **RFI/SOO for RFP**
Support the development of the RFI and SOO
- **Resourcing**
All required resources for the development of the comprehensive solution RFP have been planned in FY15 proposed budget

Focus for the Future

- **Market Research Report**
- **Evaluation of RFI/SOO Responses**
- **Operational and System Architecture**
- **Use Case Development**
- **RAN/Core Interface Specification**
- **Support the Development of the Draft and Final RFPs**
- **Source Selection Evaluation**

Public Safety Grade Systems and Facilities



- **A comprehensive set of 459 network implementation (hardening) recommendations** endorsed by the PSAC for public safety grade services. The report allows FirstNet the flexibility to define the actual specifications and the measurement process
- While many of the recommendations are relatively easy to implement, **some will be challenging or expensive** for network partners to accept. For example:
 - Implementation of all recommendations for FirstNet to provide Service Level Agreements (SLA) to states on performance, coverage, reliability, and resiliency
 - Recommendation for new towers to be designated TIA-222 Rev G Class III, and existing towers to Class II for FirstNet colocation
 - Recommendation for Tier 4 data centers will be expensive and limit design flexibility
- **Work with PSAC** on a process for implementing the public safety grade recommendations that are economically and practically feasible
 - Develop a phased implementation schedule for the public safety grade recommendations that are not cost prohibitive
- In the mean time, FirstNet and PSAC teams will address the most challenging and expensive recommendations by **making appropriate network design choices that would mitigate risks**

PSCR QoS/Priority/Pre-Emption Testing Update



QoS/Priority/Pre-Emption Features

What is working?

- Priority pre-emption of bearers
- ARP and QCI basic configuration
- Basic admission control
- Basic packet scheduling

What is under investigation?

- Preemption triggers
- Impacts to cell capacity and performance

What needs development by the vendors?

- Establishment cause support
 - Multi-media priority service
 - SIP priority
- *Basic QoS/P/P features are working. PSCR will share test plan and encourage parallel testing with vendors*
 - *Advance features need development (Multimedia Priority Services, Establishment Cause support)*

Major PSCR Lab Activities

Vendor Integration

- 5 EPC vendors engaged
 - 2 integrated and under test
 - 1 integrated, on hold for test
 - 1 upgraded, on hold for integration
 - 1 engaged, on hold for upgrade

PSCR adding staff to support multi-vendor evaluation (target onboarding in September)

Functional Evaluation

- System baseline established
 - Integration briefing delivered (July)
 - Focusing on ARP prioritization
- *Defects and feature support in RAN load testing equipment posing a challenge*
 - *Starting to see some wins in the area of preemption. Successful triggering of preemption observed after system default parameter optimization*

Public Safety LTE Deployments



FirstNet Guiding Principle

FirstNet will provide technical support to these projects and will share any lessons learned with the broader public safety community to inform FirstNet's nationwide deployment

Project	SMLA	KLCP	Sites	Primary Focus Area(s)/Key Learnings	On-Air
1. LA-RICS	Yes	Yes	231	Secondary responders, Quality of Service, priority/pre-emption	2Q15
2. NM	Yes	Yes	9	Hosted core, int'l border spectrum management, Federal partnerships	2Q15
3. NJ	Yes	Yes	31	Deployable assets, DR/COOP, training exercises, NOC notification	2Q15
4. ADCOM	Yes	In-Progress	17	PSCR/FirstNet test support, BC 14 device testing, demonstration access	Now
5. TX	Yes	In-Progress	13	Core migration, user data analytics, use cases	Now

SMLA: Spectrum Manager Lease Agreement
 KLCP: Key Learning Conditions Plan

Thank You



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