



Public Safety Related Applications Task Force (PSRA-TF) Final Report

June 2015

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Public Safety Related Applications Task Force

- The IP Transition of Public Safety Related Applications Task Force (PSRA-TF) was launched in 2Q14 as part of ATIS' all-IP transition program.
 - Task Force was led by Mike Clancy (Comcast) and Mike Nawrocki (Verizon)
- Effort was launched to address the implications of all-IP migration on infrastructure associated with public safety.
- Task Force explored multiple, critical applications that will be impacted due to dependencies on legacy PSTN technologies and services.

PSRA-TF Participating Companies

ALU

AT&T

Aviat

CenturyLink

Comcast

Cox

Ericsson

GENBAND

Harris

Intrado

JDSU

Motorola

Sprint

Telephone and Data Systems

Time Warner Cable

Verizon

PSRA-TF Process

Identify critical public safety applications and current provisioning methods

Outreach to key public safety associations to validate and prioritize

Develop industry RFI to identify solutions

Communicate findings as part of report and promote customer education

All-IP Transition

The Current Situation

- Network operators are transitioning copper-based networks to new IP-based media.
- Many public safety related applications are provisioned on legacy copper circuits, including:
 - Voice grade circuits
 - Digital data services (DDS)
 - Metallic (contact closure) circuits
 - Circuit-based paging systems
 - Private line automatic ringdown circuits
 - Other legacy circuit types

Key Public Safety Applications

Based on current IP transition activities, the Task Force identified the following public safety applications:

- Alarm circuits to fire and police (including buildings, campuses, elevators)
- Circuits that monitor railroad crossings and other transit systems
- Circuits that monitor sensors at gas and power company locations
- Meter and alarming circuits related to power grid
- Circuits supporting underground communications related to transportation systems
- FAA circuits to towers and alarms
- Paging circuits and automatic ringdown circuits to EMS, fire, police

Outreach to Public Safety Associations

The PSRA-TF solicited input from the following associations:

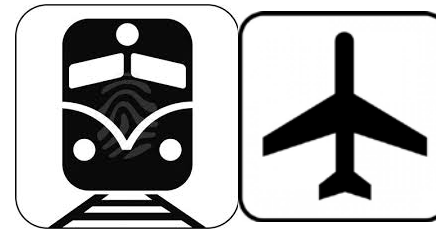
- American Gas Association (AGA)
- Alarm Industry Communications Committee (AICC)
- Association of Public-Safety Communications Officials (APCO) International
- Electronic Security Association (formerly the National Burglar and Fire Alarm Association (NBFAA))
- National Association of State Fire Marshals (NASFM)
- National Public Safety Telecommunications Council (NPSTC)
- National Emergency Number Association (NENA)
- National Fire Protection Assoc. (NFPA)
- National Rural Electric Cooperative Association (NRECA)
- Security Industry Association (SIA)
- Utilities Telecom Council (UTC)

Key Requirements of Public Safety Sectors



Utility & Energy Sector

Broad range of data and communications; low latency; resiliency; diversity; reliability



Transportation

Isolated locations; limited commercial power; security; reliability; supports ruggedized equipment



Building Alarms to Fire & Police

Relies on communication of tones & alarms; interoperability with fire and alarm panels; security



Public Safety Communications

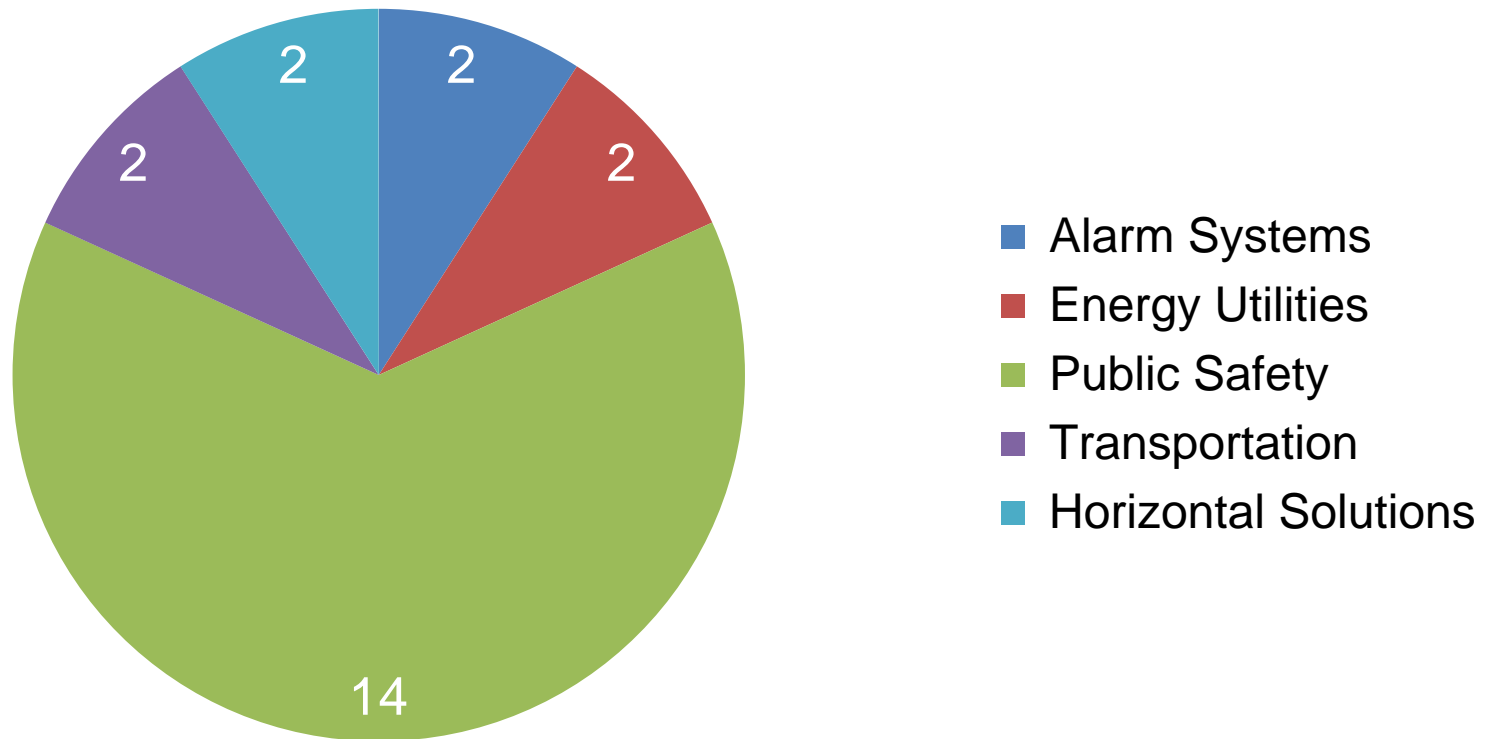
Broad range of radio communications and dispatch needs; integration with PSAP communications; high reliability

ATIS Industry RFI

- Based on input from the PSRA Task Force and outreach to the public safety industry, an RFI was developed and issued in 1Q15:
 - Explored solution roadmaps (no pricing)
 - Focused on each public safety sector
 - Included horizontal solutions (e.g., SmartCity)
- RFI's primary target was manufacturers and service providers who offer IP-based solutions.
- Web-based collection of responses with the goal to make input publicly available to public safety stakeholders.

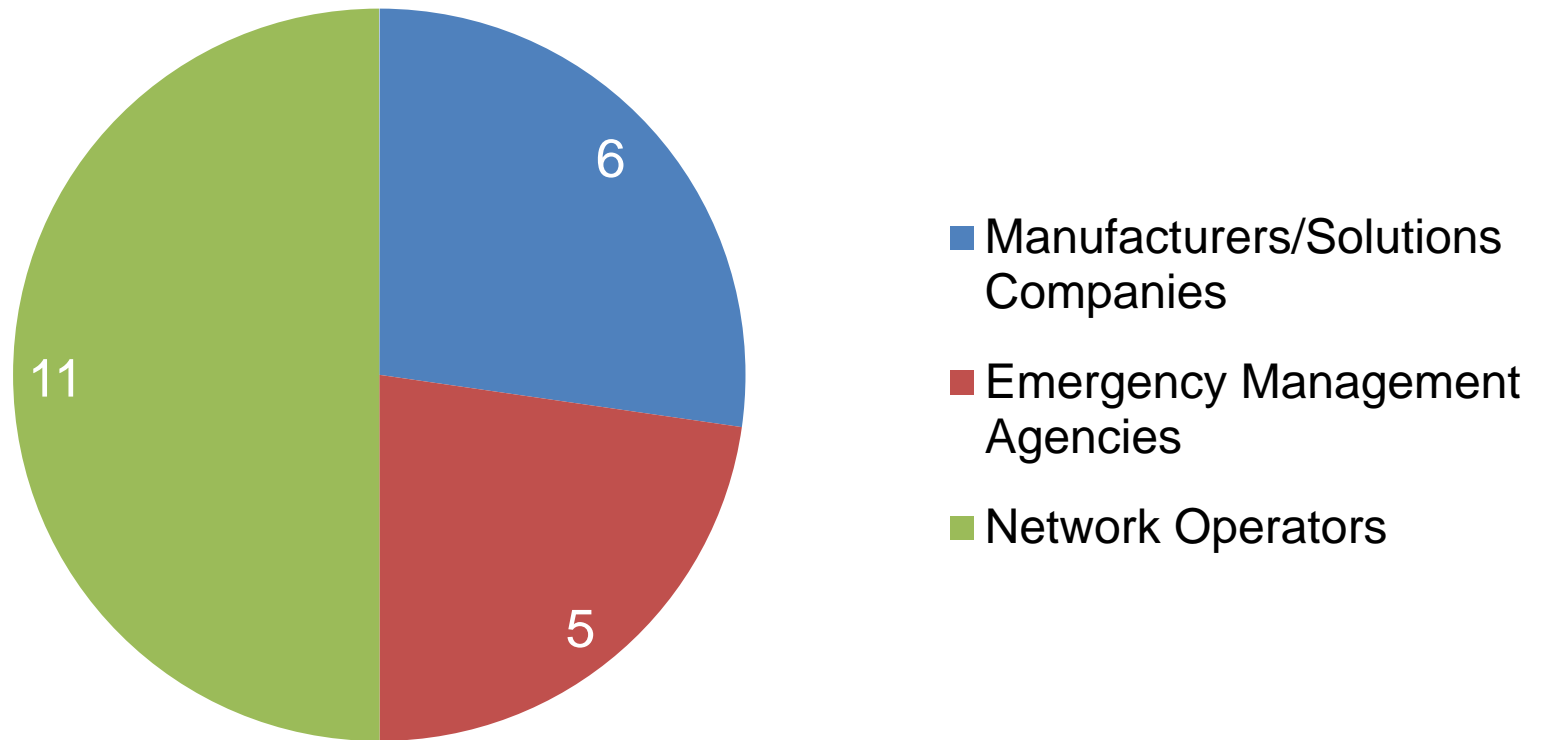
Preliminary RFI Responses

Number of RFI Responses

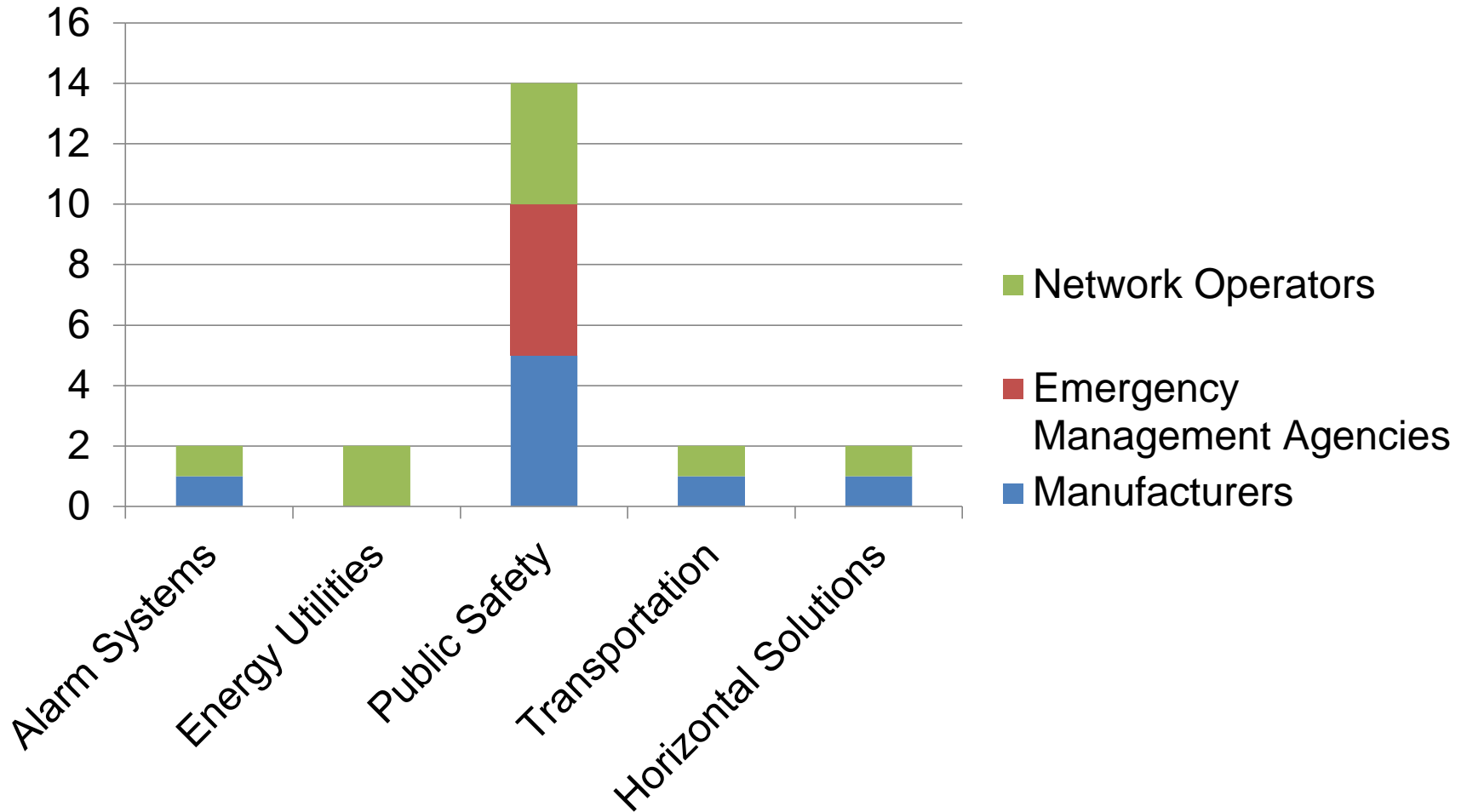


Preliminary RFI Responses

RFI Responses by Industry Sector



Preliminary RFI Responses



RFI Respondents

- AT&T
- Aviat
- CenturyLink
- Cisco
- Clark County IT Department
- Harris
- Honolulu Fire Department
- Hughes
- Red Sky Technologies
- Verizon
- Washoe County
- Winnipeg Fire Paramedic Service
- Zetron Inc.

Public Safety Communications

- Responses include service providers, manufacturers and city/county emergency management agencies.
- Multi-access solutions—microwave, coax, fiber, copper, wireless, satellite.
- Radio dispatch solutions; integration with 911/E911 PSAP communications; fire department alarm, dispatch and ring down circuits.
- Most solutions are located at the PSAP or dispatch center.
- Identified standards include FCC frequency spectrum utilization, NENA, IPsec, IPoS, FIPS, ISO.
- Most solutions offer improved diversity and resiliency capabilities.
- Solutions are already in operation (and include some case studies).

Conclusion – This application received the broadest range of response and the most response from emergency management agencies; significant deployment of next generation solutions are already underway.

Energy & Utilities

- Two service provider responses:
 - IP private line solution between transmission end points over fiber, copper, microwave
 - Wireless end-to-end solution
- Proposed solutions meet majority of all applications defined.
- Performance:
 - IP private line solution meets carrier grade specifications
 - Wireless solution designed to meet list of network service level targets and reporting (cell site availability, average data rates, latency, etc.)
- Both solutions designed as replacement for copper-based analog/data services.
- Solutions have already been deployed and in use by utilities.

Conclusion – This sector has some of the most stringent performance requirements; IP private line and wireless solutions must continue to evolve to assure that the data and control needs of energy and gas utilities are met.

Alarm Systems

- Responses included:
 - HFC point-to-point and multipoint systems (service provider)
 - 3G/4G M2M solutions (manufacturer)
- Solutions included both:
 - Circuits between protected premises and central stations
 - Circuits between protected premises and First Response Dispatch centers
- Architecture:
 - Client alarm control panel connected over Internet to Alarm Receiver Center, providing alarm monitoring and communications (includes back-up)
 - M2M solutions utilizes alarm module(s) connected to Control Center that provides real-time event driven diagnostics and alarms
- Solutions have already been deployed.

Conclusion – Fixed point-to-point and M2M solutions exist in this area; security and reliability need to be assured, and integrated with building code needs.

Transportation

- Responses included:
 - Enhanced push-to-talk (wireless) solution (service provider)
 - Intended to replace voice grade circuit, automatic ringdown
 - Ethernet solution supporting ELAN, EVPL and VPLS services (manufacturer)
 - Could replace broad range of services (VG, DDS, Metallic, Frame Relay, etc.)
- Architectures:
 - 4G/3G and WiFi access alternatives
 - Metro Ethernet and GigE
- Standards-based solutions:
 - Wireless solution – 4G/3G and WiFi standards
 - Ethernet solution – MEF and IEEE 802.1q
- Solutions have been commercially deployed.

Conclusion – These requirements are extremely customized (railroad crossings, POS operations, underground communications); while solutions exist, they must be deployed to meet a specific set of performance criteria.

Horizontal Solutions

- Responses included:
 - Connected solution/integration with Smart City approach (service provider)
 - Smart City integrated platform (manufacturer)
- Architecture:
 - SP: Smart lighting approach that integrates with broader smart city portfolio and operates over fiber, coax, copper, wireless
 - Vendor: Routers, Switches, Unified Communications, Video Conferencing, Video Surveillance, Wearable networks over broad range of media
- Both solutions offer some level of integration and application development:
 - SP: Traffic management and parking, smart street lighting, security or video surveillance, mass notification
 - Vendor: Traffic management and parking, smart street lighting, intelligent buildings, security or video surveillance, mass notification, medical (lifeline) services
- Solutions are currently available/commercially deployed (US/global).

Conclusion – Public safety is not typically the lead driver for SmartCity deployments, but significant opportunity exists to horizontally integrate.

Current Landscape and Migration Path

- The public safety industry is already highly aware of the all-IP transition underway.
- Public safety applications present additional challenges, due to:
 - Existing investments in emergency management infrastructure
 - Need to maintain continuity of operations
 - Broad range of customized needs in public safety sectors
- IP-based solutions do offer additional benefits and options (e.g. diversity, mobility, integration across applications), yet require:
 - *Better knowledge of available solutions and roadmaps*
 - *Cooperation among key stakeholders: public safety industry, manufacturers and network operators*

General Conclusions and Findings

- Available solutions can be provisioned over broad range of IP-based media – wireless, microwave, copper, coax, fiber, satellite.
- IP-based designs generally offer a higher degree of inherent diversity.
- Most solutions proposed by the industry have already been deployed.
- Opportunity exists for more horizontal integration of public safety applications.
- Some roadmap solutions are not designed to directly replicate copper characteristics or emulate TDM services.
- Public Safety sector is requiring the same (or better) level of reliability and availability of services/applications.

Benefits of Copper Migration and All-IP Transition

- Migration of existing private lines over copper to broad range of point-to-point and multi-point topologies.
- Diversity and resiliency improvements through multiple media options and distributed data designs.
- More flexibility in evolving to higher data rates.
- Better aligned with future cloud-based networks and IoT devices.
- Opportunity to evolve from single-purpose circuits to solutions that can share, store and correlate data across applications.
- Better alignment with the next generation of dispatch and emergency communications networks.

For More Information

- Detailed results and RFI questions are publicly available via the link below:
 - <http://www.atis.org/topsc/psra.asp>
- Questions may be directed to:
 - Yvonne Reigle (yreigle@atis.org)
 - Nicole Butler (nbutler@atis.org)