APCO International
Emerging Technology Forum

Achieving Next Generation 9-1-1 Nationwide

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Topics

- NG9-1-1 – What IS it?
- Technical Basics – What does it NEED to do?
- Issues that need to be on the radar
  - Interoperability
  - Multimedia from Public to ECC to Responder
  - The Cloud
- Sensible decisions for your ECC

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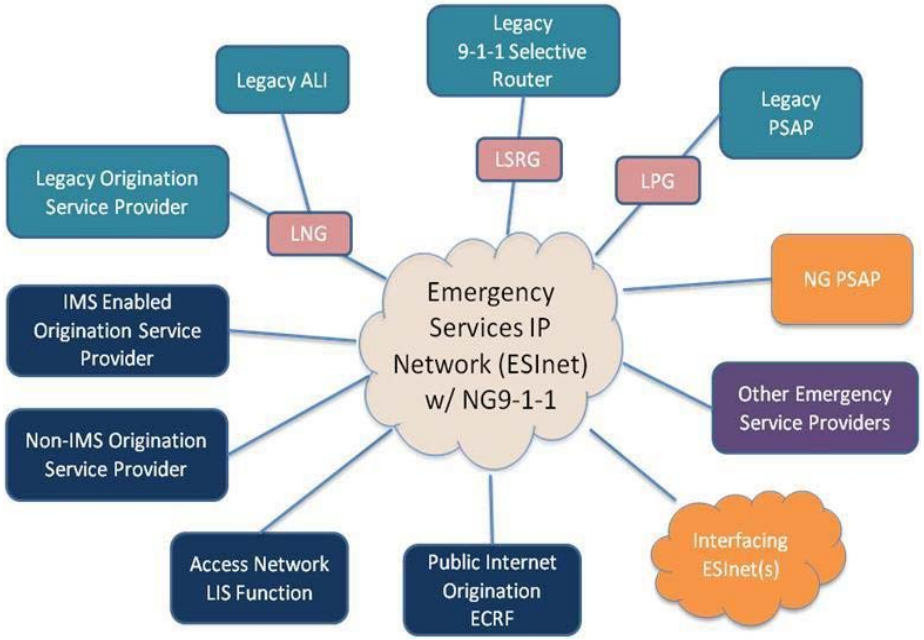
So…just what is "NG9-1-1?"

- Public Safety Communications is undergoing tremendous change.
- The transition from circuit switched technology to IP networks and Next Generation 9-1-1 has begun, leaving ECCs and Telecommunicators to wonder: "What is NG9-1-1 and what does it mean to me?"
- Broadband technologies already exist, and the public has more capability than the average ECC. This must change.
- Next Generation systems are envisioned as being a "network of networks" providing connectivity between ECCs via secure, interoperable networks within a specified geographic area to other networks both regionally and nationally.
- Interconnected vs. Interoperable – Why it matters.

How will NG9-1-1 Systems Be Different?

- IP-Based: components/personnel can be located anywhere.
- Many new communications inputs.
- Multimedia is a key factor.
- Interoperability is a must.
- It must be possible for disparate systems, ECCs, and authorized agencies to interoperate.

Simplified View of NG9-1-1 Environment



ESInets

- In addition, the ability to reroute calls to and share data with any ECC served by the ESInet is a benefit of the transition. But only if they are built, implemented, and operated correctly.
- In spite of the measurable benefit to making the transition, many ECCs are finding that they are limited by equipment and networks incapable of providing a realistic evolution to NG9-1-1.
- Lack of Interoperability is hampering progress.
- We cannot build another version of legacy, proprietary, non-interoperable systems and call it NG9-1-1.

The Cloud

- So…..is this cloud computing?
- I'm glad you asked!
- Cloud computing as a concept has been around since the **Advanced Research Projects Agency Network** (ARPANET) in the 1960s.
- The vision was to connect data and people, anywhere, anytime.
- But the ***NAME*** didn't come about until much later, as technology and the way we use it changed….

The Cloud

- Original concept for NG9-1-1 conceived 13 years ago, and since that time…..
  - Amazon Web Services March 14, 2006
  - Twitter July 15, 2006
  - **iPhone June 29, 2007**
  - In early 2008, NASA's OpenNebula became the first open-source software for deploying private and hybrid clouds, and for the federation of clouds.
  - In 2009, Google and others started to offer ***browser-based enterprise applications*** though services such as Google Apps.
  - In February 2010, Microsoft released Microsoft Azure.
  - On March 1, 2011, IBM announced the IBM SmartCloud framework, and in ***2014 IBM launched BlueMix now known as "IBM Cloud"*** which includes components of IBM Watson® AI and machine learning.

The Cloud

- **SaaS (software as a service)**
- **IaaS (infrastructure as a service)**
- **PaaS (platform as a service)**
- **Private cloud**
- **Hybrid cloud**
- **Advantages of cloud computing**
  - Reduce the time to market of applications that need to scale dynamically.
  - Developers are drawn to the cloud by the abundance of advanced new services that can be incorporated into applications, from machine learning to Internet-of-Things connectivity.
  - Interoperability.
- **Cloud computing security**
  - Yes, it is a concern, as it is with anything networked or connected.
  - Major public clouds have proven themselves much less susceptible to attack than the average enterprise data center.
  - MUST included integration of security policy and ICAM between customers and cloud providers.
  - Secure connectivity (VPN tunneling, etc.) is required.

Time to Change our Thinking

- The bottom line is, NG9-1-1 has not kept up with the times, but it's not too late. In fact, there's never been a better time to adapt to changing times and embrace available technologies.
- Carriers, service providers, and the business community are doing so, as are many government agencies, and ECCs can too.
- ***Secure, connected, interoperable….that's why APCO chose it too….***
- "That's the way we've always done it" is NEVER the right answer… don't let it be your answer to NG9-1-1 options.

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NG9-1-1 Transition

Evolution not Revolution

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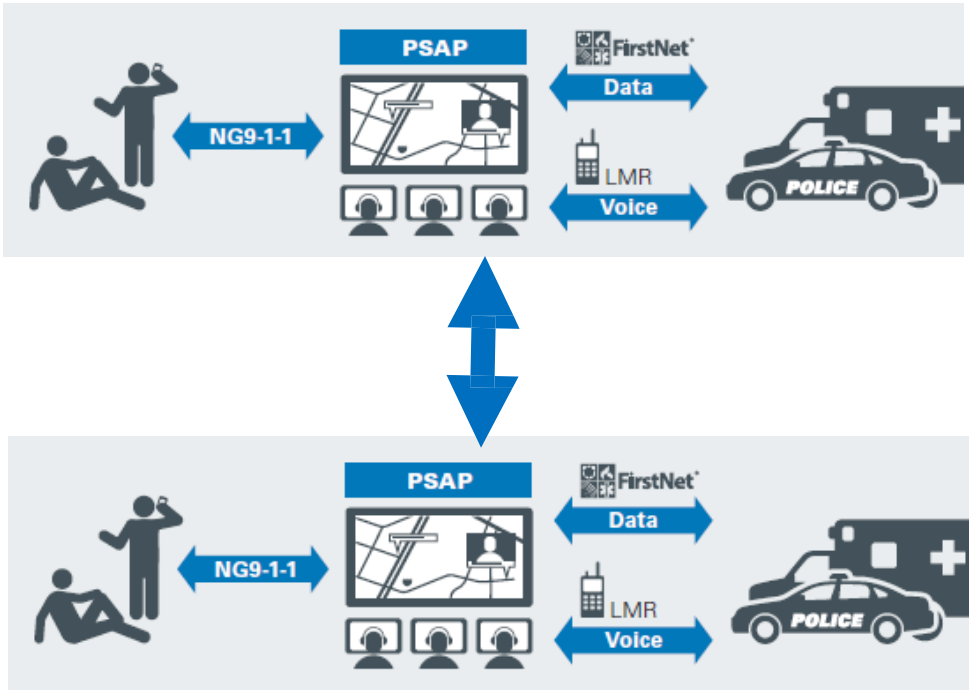
Achieving Seamless Interoperability



Build Upon Existing Solutions

- Telecom networks and other industry sectors have already converted to digital, IP, broadband technology
- What do existing solutions have in common?
  - Substantial range of companies innovating at a rapid pace
  - Seamless interoperability and data sharing without the need for specialized interfaces or after-the-fact integrations
  - Multiple features and options available
  - World-wide economies of scale

NG9-1-1 needs the same

What's Needed: A Comprehensive Definition

NG9-1-1 is an interoperable, secure, IP-based system that:

A. Employs Commonly Accepted Standards
B. Enables the appropriate Emergency Communications Center to receive, process, and analyze all types of 9-1-1 Requests for Emergency Assistance
C. Acquires and integrates additional information useful to handling 9-1-1 Requests for Emergency Assistance; and
D. Supports sharing information related to 9-1-1 Requests for Emergency Assistance among Emergency Communications Centers and Emergency Reponses Providers

Interoperability as a Requirement

"The term 'interoperable' or 'interoperability' means the capability of emergency communications centers to receive 9–1–1 requests for emergency assistance and related data such as location information and callback numbers from the public, then process and share the 9–1–1 requests for emergency assistance and related data with other emergency communications centers and emergency response providers, regardless of jurisdiction, equipment, device, software, service provider, or other relevant factors, and without the need for proprietary interfaces."

A Shared Vision

- Recognition and Respect for PSTs
  - PSTs perform protective, life-saving work every day
  - This role will only expand with the deployment of NG9-1-1
- Having a comprehensive view of the resources needed
  - Cybersecurity
  - Training
  - Workforce

A Shared Vision

- Interoperability as a requirement
  - Use objectives-based RFPs.
    - Many RFPs we've seen for ESInets and other pre-NG9-1-1 deployments either lack a clear requirement for interoperability or leave the matter of interoperability to be worked out at a later date
    - Accordingly, APCO has recommended that RFPs lay out objectives including interoperability, and allow for flexible, innovative approaches

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A Shared Vision

Questions to ask vendors:

- Can you guarantee that our NG9-1-1 solution and other IP-based equipment will be seamlessly interoperable with other solutions and equipment, including across state boundaries? For example, will our ECC will be able to transfer voice and multimedia data (text, pictures, video) to any other ECC that has a different provider's equipment or service or is on a different network, including across jurisdictional boundaries? If so, please explain your methodology for doing so and how your solution/equipment will communicate with that of other providers.
- Can you guarantee that our NG9-1-1 solution will be seamlessly interoperable with the networks that deliver 9-1-1 calls from the public (wireless and wireline networks)?
- Will you guarantee your solution to be interoperable without additional upgrades and new costs to the 9-1-1 Authority/ECC?
- Will your CPE, CAD, RMS, GIS, or mobile app products be able to seamlessly share and exchange data with other companies' products, without the need for special interfaces or additional costs?

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Questions?

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