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Nashville, tn | February 15, 2018

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Next Generation 9-1-1

Interoperable, Multi-Media Capable, Open Architectures for Public Safety

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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
  - Interoperablity
  - Multi-Media from Public to PSAP to Responder
  - The Cloud
- Sensible decisions for your PSAP

How will NG9-1-1 Systems Be Different?

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

So…just what is “NG9-1-1?”

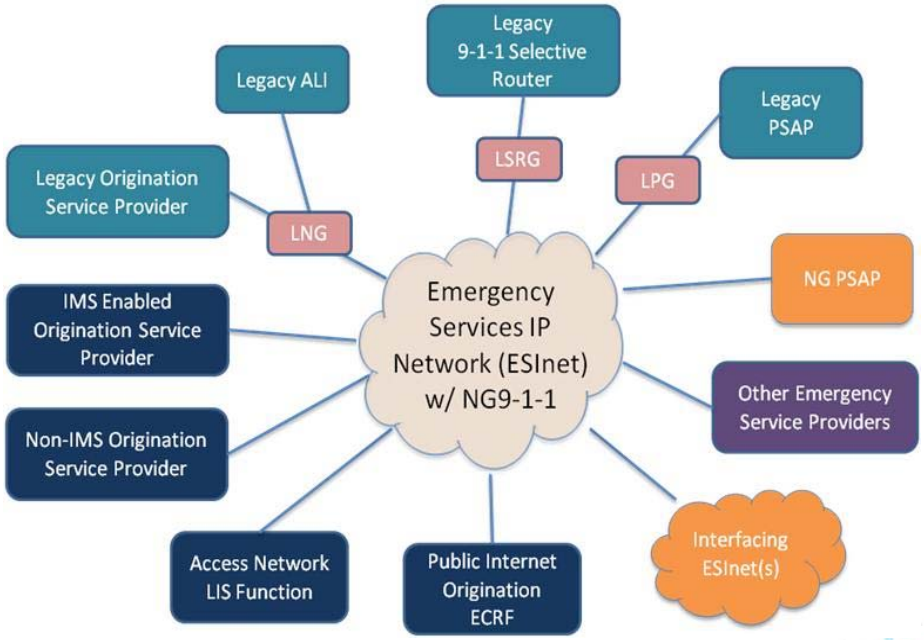
- Public Safety Communications is undergoing tremendous change.
- The transition from circuit switched technology to IP networks and Next Generation 9-1-1 has begun, leaving PSAP’s and Telecommunicators to wonder, “What is NG9-1-1 and what does it mean to me?”
- Broadband technologies already exist,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

Broadband capabilities are key

STANDING UP A SECURE BROADBAND IP NETWORK AND CONNECTING PSAPS AND OTHER AGENCIES IN ORDER FACILITATE TRUE INTEROPERABILITY

Agencies can potentially share resources such as CAD, RMS, email & Network applications

Simplified view of NG9-1-1 environment



ESInets

- Fundamental to the formation of NG systems is the creation and deployment of Emergency Services IP Networks, or ESInets.

- The ESInet is indeed a network of networks designed to achieve specific Quality of Service (QoS), Security and reliability levels while facilitating enhanced call routing and delivery.

ESInets

- In addition the ability to reroute calls to, and share data with, any PSAP 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 PSAPs 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 1960's.
- 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

- A few fun facts courtesy of *Technology Review*
  - "Cloud computing is one of the hottest buzzwords in technology. It appears 48 million times on the Internet. (***this was back in 2011!)***
  - Some accounts trace the birth of the term to 2006, when large companies such as Google and Amazon began using "cloud computing" to describe the new paradigm in which people are increasingly accessing software, computer power, and files over the Web instead of on their desktops.
  - But *Technology Review* tracked the coinage of the term back a decade earlier, to late 1996, and to an office park outside Houston. At the time, Netscape's Web browser was the technology to be excited about…
  - Inside the offices of Compaq Computer, a small group of technology executives was plotting the future of the Internet business and calling it "cloud computing."
  - Their vision was detailed and prescient. Not only would all business software move to the Web, but what they termed "cloud computing-enabled applications" like consumer file storage would become common." [1]

1 -https://www.technologyreview.com/s/425970/who-coined-cloud-computing/

The Cloud

- Original concept for NG9-1-1 conceived 13 years ago, and since that time…..
  - Amazon Web Services March 14, 2006

    (Amazon launched its Elastic Compute Cloud (EC2) as a commercial web service that allowed small companies and individuals to rent computers on which to run their own computer applications. Amazon EC2/S3 is considered by many to be the first widely accessible cloud computing infrastructure service)
  - 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.

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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 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)

The Cloud

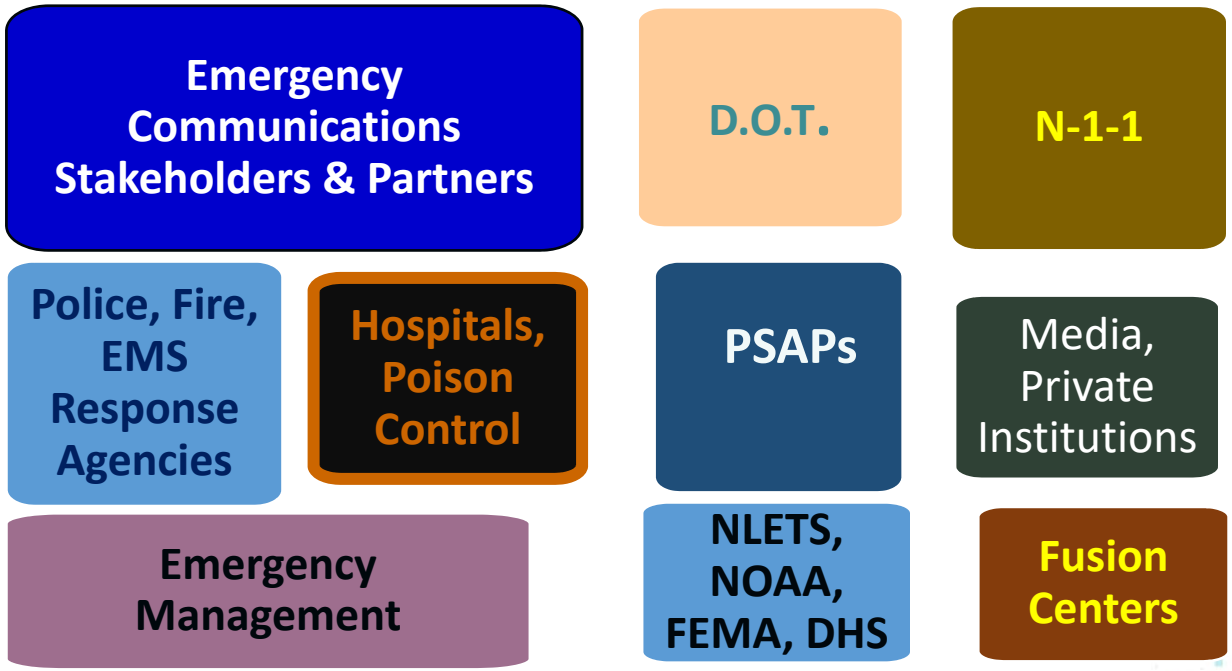
- The bottom line is, NG9-1-1 has not kept up with the times, but it's not too late. In fact, there's never been a better time to adapt to changing times, and embrace available technologies.
- Carriers, service providers, and the business community are doing so, as are many government agencies, and PSAPs 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.

Cybersecurity

- As we've already discussed, Cybersecurity must be "baked in" from the start.
- Building a network or system, then deciding to try and secure it puts PSAPs behind the power curve and on the defensive.

Collaboration is Required

Managing data, coordinating services at all levels, and paying for them all require vision, leadership and a willingness to work collaboratively.


Emergency Communications Stakeholders & Partners
D.O.T.
N-1-1
Police, Fire, EMS Response Agencies
Hospitals, Poison Control
PSAPs
Media, Private Institutions
Emergency Management
NLETS, NOAA, FEMA, DHS
Fusion Centers

What is the Common Denominator During an Emergency?

ALL Emergencies are LOCAL.

Interoperability of both voice and data services is critical as incidents unfold and expand.

Next Generation services can provide that interoperability

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NG9-1-1 Transition

Evolution not Revolution

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QUESTIONS?

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