NEXT GENERATION 9-1-1

WHAT IS NEXT GENERATION 9-1-1:

- NG9-1-1 is a turning point in how we interact with emergency services. It describes both the technology associated with modernizing the Nation's three-digit emergency number *and* the concept of 9-1-1 evolving beyond just a phone number.
- The introduction of smart-phones, sensors, text, video, and other services and products have revolutionized how people communicate.
- Transitioning to an NG9-1-1 based Emergency Communications system will allow public safety to leverage the technological innovations that have already transformed much of American society. Even more importantly, NG9-1-1 will allow 9-1-1 to be more effective, more resilient, and better integrated with field responders. In many places, NG9-1-1 is already a reality.
- With NENA's i3 standard as a foundation, both incumbent 9-1-1 providers and innovative market entrants have an IP based platform (ESINet and NG9-1-1 Core Services) to interconnect and interoperate seamlessly. This allows for increased data transfer between callers and 9-1-1, enhanced situational awareness and communication between 9-1-1 and field responders, and increased resiliency and reliability of 9-1-1 services.
- NG9-1-1 is becoming a reality across the nation. This means you, as a 9-1-1 professional, vendor, or stakeholder, need to know about the basics of NG9-1-1. The purpose of this brief document is to increase awareness, answer basic questions, and serve as a starting point for the development of your knowledge on this important evolution in public safety technology.

WHY DO WE NEED NG9-1-1?

9-1-1 must keep pace with the evolving communications methods and habits of the public in order to remain reliable and relevant. The world of telephony has changed fundamentally in the past 50 years, leaving our nation's 9-1-1 infrastructure badly outdated. The 9-1-1 systems in use today was designed originally for static, landline telephones with permanent street addresses and physical connections to carrier switches and networks. But we have almost completely transitioned to smartphones in the past decade, meaning that *fewer than one in five* 9-1-1 calls come from landline phones. Enhanced 9-1-1 constitutes a partial evolution to a mobile-centric world, but 9-1-1 still lacks native support for smartphones and IP-based devices.

Expanding 9-1-1 beyond voice does more than just add convenience: for the 50+ million Americans with speech or language disabilities or anxiety disorders, text- and data-to-9-1-1 can mean the difference between life and death. Non-voice connections to 9-1-1 can also save the lives of domestic abuse victims, active shooter or hostage victims, and other situations where non-voice communication is needed. Seamless, direct communication to 9-1-1 from wearable health monitoring technology can save the lives of children, the elderly, and countless others, as well.

UNIQUE NG9-1-1 BENEFITS TO CALLERS AND PSAPS:

- Reduced call set up time (due to IP basis) 10-12 secs > 2 secs
- Faster emergency response times (entire system is faster, received calls delivered in 2-3 seconds)
- More accurate and advanced routing control (supports caller location-based routing of calls)
- PSAPs future-proofing (standard interfaces to support any type of service and data)
- Increased reliability and disaster recovery of the delivery network (software based)
- Clearer demarcations of responsibility and accountability
- Seamless 9-1-1 call transfer (throughout NG9-1-1 systems and among them, within states and across states)
- PSAPs data exchange
- Improved accessibility for those with disabilities (native support of Real Time Text and video)
- Increased interoperability (if standards are followed by vendors)
- Opportunities for cost savings without consolidation (networked equipment and software)
- Access to additional data sources via the central NG9-1-1 Core Services (rather than at each PSAP)
- Policy Routing controls, centrally and under direct control of the PSAP or 9-1-1 Authority

The above are all designed into NG9-1-1, but some are dependent on IP interfaces from the originator or to the PSAP, and support by originators to send multimedia.

WHAT WILL CHANGE ONCE WE IMPLEMENT NG9-1-1?

As it becomes fully deployed, NG9-1-1 will revolutionize emergency communications capabilities in the United States and beyond. Early adopters and innovators have already realized benefits associated with NG9-1-1 — benefits that will only become more significant as legacy systems become unsupportable, agencies realize the benefits of additional data and improved resiliency, and the public experiences 9-1-1 services that meet the communications capabilities they already possess in the palm of their hand, like text and video. Equally as important, NG9-1-1 provides a framework of interoperability that will help ensure 9-1-1 remains available even during disasters and is able to share text, video, and other data with field responders through the public safety broadband systems. NG9-1-1 supports a vastly improved emergency response system which is able to not only receive data but analyze and share it with other responders, creating a more holistic public safety communications system and a safer community.

WHAT WILL CHANGE ONCE WE IMPLEMENT NG9-1-1?

	Benefit #1	Benefit #2	Benefit #3
The Public	Communication w/9-1-1 in additional ways beyond a voice-call.	Integration with IoT; sensors and other important data and information	Improved resiliency of 9-1-1—in all circumstances
9-1-1 Call-takers & Dispatchers	More user-friendly interfaces and improved dispatching systems.	More information will be available to call-takers and dispatchers.	Supports improvements in routing and locating callers.
Field Responders	Seamless interconnection with FirstNet	Better information before arrival—such as video	Potential improvements in incident management through improved data
Stakeholders & Government	NG9-1-1 saves taxpayer dollars compared to legacy systems	Improves the ability of the public to interact with 9-1-1	Supports improved robustness of 9-1-1—ensuring availability
9-1-1 System Providers	Moves 9-1-1 away from legacy systems which utilize outdated tech.	Improves ability to manage 9-1-1 call flows—dynamically!	Supports additional data such as video, sensors, and AI

WHAT IS NG9-1-1 IN MORE DETAIL?

NG9-1-1 is the term to describe multiple systems and databases that support the modernization of 9-1-1. It involves moving away from legacy technology like selective routers and switches to modern, IP-based network technology which supports a variety of new technologies. Equally as important, it supports improved resiliency, better security, and many operational enhancements such as improvements in location technology, additional information and data with 9-1-1 calls, the ability to better manage periods of extreme activity, and the ability to route calls to any other 9-1-1 capable centers more efficiently.

WHAT IS IT NOT:

- NG9-1-1 is not a single product.
- NG9-1-1 is not another term for `ESINet', or vice-versa.
- NG9-1-1 is not running 9-1-1 over the "Internet"
- NG9-1-1 is not FirstNet, nor does it compete with FirstNet.

THE CONSENSUS DEFINITION OF NG9-1-1:

Next Generation 9-1-1 (NG911) supports voice, video, and data communications between the public and 9-1-1, and between 9-1-1 and field responders. When fully implemented, NG9-1-1 will support improved routing and locating of 9-1-1 callers as well as the use of new technology in the public safety environment. NG9-1-1 can do this because it is a secure, IP-based, open standards system comprised of hardware, software, data, and operational policies and procedures which:

(A) provide standardized interfaces from emergency call and message services to support emergency communications;
(B) processes all types of emergency calls, including voice, text, data, and multimedia information;
(C) acquires and integrates additional emergency call data useful to call routing and handling;
(D) delivers the emergency calls, messages, and data to the appropriate public safety answering point and other appropriate emergency entities based on the location of the caller;
(E) supports data, video, and other communications needs for coordinated incident response and management; and
(F) interoperates with services and networks used by field responders to facilitate emergency response.

INTEROPERABILITY AND THE i3 ARCHITECTURE:

The NENA NG9-1-1 Core Services (i3) architecture is designed to be interoperable, if the standard is followed as defined. In addition, standard IP interfaces provide interoperability between the ESINet and with other i3 compliant NG9-1-1 systems, such as between State implementations. However, only conformance tests for and between vendor designs for NG9-1-1 can identify full interoperability.

HOW MUCH DOES IT COST IN OHIO?

The National 911 Office is currently awaiting final publication of its NG9-1-1 Cost Study. Although this cost study is of a general nature, it is important to understand that costs are still being determined in Ohio. Once a contract is implemented with the state for NG9-1-1 Core Services, the information of specific costs will be shared with policy makers to help them determine Ohio's 9-1-1 funding approach. There are many factors to consider however, PSAPs and 9-1-1 authorities should know that areas which have already moved to NG9-1-1 systems have realized cost savings—especially when sharing NG9-1-1 systems and development with other agencies.

WHAT ARE THE CHALLENGES OF IMPLEMENTING NG9-1-1?

With NG9-1-1 comes the need for agencies and 9-1-1 Authorities to improve their cooperation with others; inform their public and field responders; develop their understanding of NG9-1-1; and transition away from a "siloed" approach. NG9-1-1 necessitates a view of

9-1-1 as something bigger than just a phone line serving a single community. All 9-1-1 providers are members of a larger Public Safety Community. Understanding and embracing this reality is fundamental if the improvements and enhancements associated with the modernization of 9-1-1 are to be fully realized.

CONCLUSIONS & NEXT STEPS

NG9-1-1 services will bring improved functionality, enhanced network resiliency, seamless interoperability, improved system integration and compatibility, equal accessibility, and greater capacity for innovation. 9-1-1 authorities will be able to service the public and field responders in an improved and more resilient and efficient manner.

WHERE TO GO FOR MORE INFORMATION

NG911 NOW Coalition | www.NG911NOW.org

The NENA `NG9-1-1 For DecisionMakers' - nena.org

The National 9-1-1 Office website – 911.gov

Ohio 9-1-1 Program Office – 911.ohio.gov

NENA – nena.org

APCO – apcointl.org

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ACRONYM LIST:

APCO: Association of Public-Safety Communications Officials
FirstNet: FirstNet is an independent authority within the U.S. Department of Commerce. Authorized by Congress in 2012, its mission is to develop, build and operate the nationwide, broadband network that equips first responders to save lives and protect U.S. communities
NENA: National Emergency Number Association
NG9-1-1: Next Generation 9-1-1
PSAP: Public Safety Answering Point