



Guidance for Achieving an Innovative and Interoperable Transition to Next Generation 9-1-1

Achieving an end-state, Next Generation 9-1-1 system throughout the country requires that public safety professionals actively engage in defining the needs and requirements of any solution. These requirements should include ensuring solution providers are aware of public safety's need for:

- Achieving interoperability among NG9-1-1 systems regardless of technology or jurisdiction
- Promoting competitive and innovative solutions
- Enabling the most cost-effective and operationally efficient solutions
- Ensuring these solutions include more than just an “upgrade” from analog based voice only systems to true IP-based, multimedia capable systems, and architectures

Whether your agency, local jurisdiction, region, or state is developing an NG9-1-1 plan or crafting a request for proposals or similar document, below are a number of steps and considerations that should be taken.

Objectives-Based RFPs – Tell Your Potential Vendors What You Really Need

Do not restrict potential solutions to a specific architecture or approach (including particular functional elements or core services). Instead, redraft these as objectives for prospective vendors to achieve. This will ensure that you avoid precluding new and innovative ways to implement NG9-1-1 that are already emerging and being implemented. Below, we offer a more comprehensive approach you can take, followed by some background to explain our position and help provide you with justification to modify the approach currently being considered with regard to your RFP.

First, Define NG9-1-1 in a Comprehensive Way

Recent [bipartisan NG9-1-1 legislation](#) incorporated a definition of Next Generation 9-1-1 that APCO supports and believes best ensures Emergency Communications Centers (ECCs) receive what they need while remaining future-proof to accommodate ongoing innovative approaches:

Next Generation 9-1-1

The term “Next Generation 9–1–1” means an *interoperable*, secure, Internet Protocol-based system that—

- (A) employs *commonly accepted standards*;
- (B) enables the appropriate *emergency communications centers* 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 response providers*.

This definition represents a comprehensive, end-to-end NG9-1-1 solution, that includes what will be needed by ECCs to not only receive new forms of data, but have the means to process and analyze this information (i.e. call handling, record management, GIS, and CAD functionality). Some RFPs do not go this far – soliciting instead just the connectivity to deliver new forms of communication to the doorstep of the ECC (and in the process mis-label such acquisitions as “NG9-1-1”). Even if your agency/jurisdiction is not yet seeking a full end-state NG9-1-1 solution (such as, for example, by seeking an ESInet only), it is advised to keep this comprehensive definition in your RFP to signal that this is your ultimate objective.

This legislation also includes a number of further sub-definitions that APCO similarly supports and takes a more forward-looking and modern approach:

9–1–1 request for emergency assistance

The term “9–1–1 request for emergency assistance” means a communication, such as voice, text, picture, multimedia, or any other type of data that is sent to an emergency communications center for the purpose of requesting emergency assistance.

Commonly accepted standards

The term “commonly accepted standards” means—

- (A) the technical standards followed by the communications industry for network, device, and Internet Protocol connectivity, including but not limited to, standards developed by the Third Generation Partnership Project (3GPP), the Institute of Electrical and Electronics Engineers (IEEE), the Alliance for Telecommunications Industry Solutions (ATIS), the Internet Engineering Taskforce (IETF), and the International Telecommunications Union (ITU); and
- (B) standards that are accredited by a recognized authority such as the American National Standards Institute (ANSI).

Emergency communications center

The term “emergency communications center” means a facility that is designated to receive a 9–1–1 request for emergency assistance and perform one or more of the following functions:

- (A) Process and analyze 9–1–1 requests for emergency assistance and other gathered information.
- (B) Dispatch appropriate emergency response providers.

- (C) Transfer or exchange 9–1–1 requests for emergency assistance and other gathered information with other emergency communications centers and emergency response providers.
- (D) Analyze any communications received from emergency response providers.
- (E) Support incident command functions.

Emergency response provider

The term “emergency response provider” has the meaning given that term under section 2 of the Homeland Security Act (47 U.S.C. 101(6)), emergency response providers includes Federal, State, and local governmental and nongovernmental emergency public safety, fire, law enforcement, emergency response, emergency medical (including hospital emergency facilities), and related personnel, agencies, and authorities).

Interoperable

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.

Make “Interoperability” a Primary Objective

Employing the legislative definition of “interoperable” or “interoperability” pivots the RFP to lay out objectives rather than specifying particular standards. It places the responding technology providers into the position of formulating a solution that achieves interoperability for your agency’s operations. Those solutions then would facilitate the use of application programming interfaces (APIs) that are designed to facilitate linking dissimilar vendors and solutions through a common point, and would not have to be limited by a single standard that may not be comprehensive. There are numerous options available to facilitate true interoperability, and the onus should be on the vendor, not the ECC, to provide such.

Avoid use of the term “interconnection” or “interconnectivity” when you mean to achieve interoperability. Interconnection is not the same as interoperability. Interconnection may mean that the equipment and services within the contract area can exchange information, but very likely does not mean that this is the case with ECCs outside of the contract area. And, “interconnected” historically applies only to the ability to transfer the voice portion of the call, not any of the affiliated data. It is very important that you specify to your vendors that you expect interoperable systems, not just interconnected ones.

Do not leave the matter of interoperability to be worked out at a later date. This will result in costly, after-the-fact integrations or additional proprietary solutions. For example, require any ESInet to be fully interoperable with adjacent ESInets:

“ESInet communications must be fully interoperable, not only within the ESInet serving our jurisdiction(s), but also with ESInets serving other agencies, and jurisdictions, regardless of vendor or service provider.”

Also, it is the role of the solution providers, not public safety, to ensure that their products and services will be “interoperable.” Thus, craft resulting contract language to enforce an interoperability requirement, rather than agree to affording the vendor the flexibility to demonstrate interoperability via a future compliance testing process.

As a side note, you may not even need to specify an ESInet (and thus incur the resulting costs and obligations that fall upon the state/jurisdiction) if you properly define NG9-1-1, because that definition already encompasses a requirement for end-to-end connectivity, and because of alternate solutions like cloud-based technologies and secure broadband connections that may provide increased benefits. An alternative requirement for connectivity could read as follows:

“This solution must be capable of supporting interoperable communications that include voice, text, and multimedia communications from the public, between ECCs, and to responders. These capabilities must be inherent in the proposed solution, not as future “add on” capabilities with “to be determined” specifications and additional costs.”

Invite Innovative Approaches

Technology is increasingly creating opportunities for new approaches to NG9-1-1 networks, functions, applications, and services. Accordingly, RFPs should invite forward-thinking solutions for NG9-1-1, even if the proposals deviate from traditional approaches to NG9-1-1 network architectures.

Do not preclude cloud-based solutions or hybrid solutions. For example:

“Preference will be given to any solution, or partnership, that provides seamless interoperability, multimedia capabilities, and fully enabled, IP-based voice and multimedia services. Acceptable solutions are not limited to premise based approaches, and may include cloud-based and/or secure broadband solutions, hybrid solutions, or any specific technology or vendor provided they meet all other requirements for security, reliability, interoperability, and multimedia capabilities.”

Additional Background Information

To increase the likelihood that NG9-1-1 equipment and services are interoperable, consider asking the following questions when interacting with NG9-1-1 equipment and service providers, or perhaps consider inserting some form of these questions into the RFP itself:

- 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 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 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 interoperate with other companies' products, without the need for special interfaces or additional costs?

Standards

Above, we mentioned how our approach stresses objectives over specifying standards. There are a number of standards including those from the Alliance for Telecommunications Industry Solutions (ATIS), the International Engineering Task Force (IETF), and the Third Generation Partnership Program (3GPP) that are already implemented and operational that not only form the basis for why the consumer marketplace and many other commercial sectors have achieved interoperability, but also impact NG9-1-1. 3GPP is the "home" of the Internet Multimedia Subsystem (IMS) standard that has been operationally deployed worldwide for a number of years. This standard drives the LTE technology on virtually every smart phone and tablet in the world and is being employed by FirstNet to meet its statutory interoperability requirement. There are specific components to IMS that are already being incorporated into NG9-1-1 systems and are integral to successful implementation of interoperable, multimedia capable systems. This standard was specifically designed to facilitate both and should certainly be considered as one of the suite of standards that will help us realize the NG9-1-1 system our industry truly needs.

Likewise, IETF is the home of the SIP standard and the PIDF-LO standards. Where both SIP and PIDF-LO are already operational, they may be applied to accomplish the desired results for VoIP capabilities with voice, and location presence. These are a few examples of why it is so important to make your RFP objectives-based, and not just compliant with a particular standard.

All of this information is provided in order to assist agencies in making the best choices for your jurisdiction(s) and your citizens. APCO wants you to be fully informed and obtain the best possible services and solutions that you can.