



## Whitepaper: NPSBN and NG911

### WHAT'S INSIDE

The NPSBN and NG911 will generate new forms of data communications that will enable telecommunicators to make better-informed decisions when dispatching first responders.

This whitepaper discusses the profound operational changes that 911 centers will need to make in order to take advantage of the new capabilities.

## 911 Operations: How Next Generation 911 and FirstNet Will Impact PSAPs

### Background

These are great times for public safety answering points (PSAPs), aka 911 centers, and their personnel. A Nationwide Public Safety Broadband Network (NPSBN) is being implemented by the First Responder Network Authority (FirstNet)—which was created by the Middle Class Tax Relief and Jobs Creation Act of 2012—and Next Generation 911 (NG911) is finally gaining traction. Together they will enhance the role of PSAPs—which already are the hub of the first-response wheel—exponentially.

Because the NPSBN and NG911 are Internet Protocol-based, broadband-enabled platforms, they will generate new forms of data communications that will flow into PSAPs and improve the situational awareness of telecommunicators dramatically. This new data, if properly managed, will enable telecommunicators to make better-informed decisions regarding processing calls and dispatching emergency-response personnel and resources. The increased data flow also will enable them to share vital information with first responders in the field, a capability that currently is rudimentary at best due to the limitations of today's legacy public safety communications systems.

As an example, let's consider a bank robbery that is in progress. Today, the PSAP might receive an alert from the bank's alarm system or a 911 voice call from a patron or teller—provided, of course, that it is safe to trip the alarm or place such a call. Even if the call is placed, the amount of information that can be obtained is limited to what the caller can provide—and given the stress of the situation and the caller's limited perspective, that likely won't be much.

In contrast, when such an event occurs in the future—after the NPSBN and NG911 are implemented and well-integrated—the situational awareness of the telecommunicator will be very different. Multiple patrons might place text-to-911 calls, collectively providing a considerably more-complete description of the event. Some of them might send images and video, further setting the scene for the telecommunicator. Meanwhile, the telecommunicator might access real-time feeds from the bank's and city's video surveillance system. This information taken together will provide the telecommunicator with unprecedented knowledge and insight concerning what is happening in the bank that will make them more effective.

At the same time, these also are uncertain times for PSAPs and their personnel, precisely because the NPSBN and NG911 collectively will unleash a torrent of information that somehow must be processed. To do so, PSAPs will need to undergo profound operational and policy changes. The good news is that plenty of time still exists to do so.

## The Challenges

The essence of every legitimate 911 call is that people's lives and/or property are at great risk, and that every second matters. This makes the telecommunicator's job inherently stressful. Those stresses will rise quickly and profoundly if PSAPs are not well-positioned to handle the enormous amount of data that will be generated in an NPSBN/NG911 world.

This is not a matter of increasing staff, even if that were possible—which it is not given the fiscal restraints under which many if not most PSAPs operate today. Even if adequate funding was available, there is no reasonable number of staff that would be capable of processing the enormous amount and new types of data that will be available in the future. Instead, PSAPs will need to make a number of major operational and policy changes.

### Operational change #1: Data-analytics systems

PSAPs will need to deploy new data analytics solutions. At the heart of such solutions is software that is programmed to flag predefined events and anomalies so that telecommunicators can take appropriate action when it is needed, for instance when a backpack has been left unattended for too long in a transportation center. There is no possible way that a human could sit in front of a screen for hours at a time, day after day, sifting through footage captured by video systems without quickly losing effectiveness. Data-analytics solutions operate in the background, parsing data and prioritizing what the telecommunicator needs to see, and providing alerts when appropriate. All of this enables telecommunicators to focus on the day-to-day aspects of the job, primarily handling 911 voice calls.

The flood gates are going to open in an NPSBN/NG911 environment, which will release an informational tsunami—and data analytics will help prevent telecommunicators from drowning.

### Operational change #2: Data storage

In addition to implementing data analytics, thought must be given to data storage, which generally is an expensive proposition. Ergo, a decision will be needed concerning whether to store the data in-house or in the cloud. Other corollary decisions will need to be made, and policies crafted, concerning the level and type of compression that will be used to store the data, how long the data will be stored, how it will be secured, how it will be accessed, and by whom.

### Operational change #3: Modern, state-of-the-art communications systems

Finally, from a technology perspective, an assessment of the PSAP's various systems, most notably its 911 call-handling and computer-aided dispatch (CAD) systems is needed. The goal of that assessment should be to determine what needs to be upgraded or replaced to ensure integration with both the NPSBN and the NG911 system, so that information can flow seamlessly into the PSAP and then back out to first responders in the field, and vice versa.

The data floodgates are going to open in an Nationwide Public Safety Broadband Network and Next Generation 911 environment, which will release an information tsunami—and data analytics will be critical to prevent telecommunicators from drowning.

#### Operational change #4: Bolstered telecommunicator support programs

Perhaps the greatest challenge tied to the greatly increased volume and types of data that will flow into the PSAP in the future is that an already stressful job—that of the telecommunicator—will become far more demanding, simply because there will be many more data inputs. Consequently, PSAPs will need to have policies and programs in place to ideally prevent telecommunicators from becoming overwhelmed, or at least help them cope.

Yet another factor concerns what telecommunicators will encounter when citizens and first responders begin to transmit videos and still images from the scene of an emergency incident. Quite frankly, many of these videos and images will be horrifying even for seasoned field personnel to view or watch live—e.g., wounds suffered by victims of a car accident, shooting incident or house fire—and none of them are viewed by telecommunicators today. That will change when the NPSBN and NG911 systems are operational and integrated, and it will be a watershed moment for PSAPs and their personnel when it occurs. As a result, PSAPs will need to have additional critical incident stress management mechanisms in place to help telecommunicators emotionally process what they encounter, and policies that enable administrators to manage the situation effectively.

#### Operational change #5: Enhanced workplace training

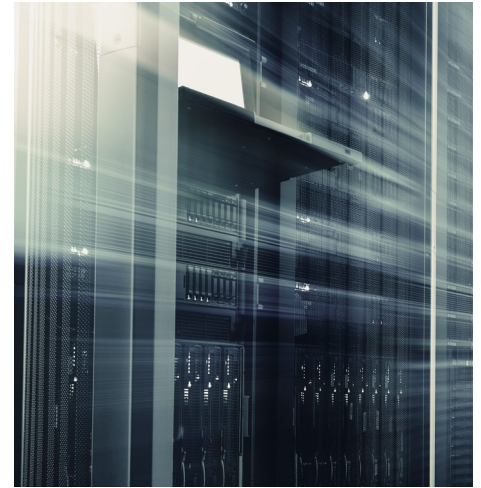
Training will take on even more importance in this environment. The future will be very different for telecommunicators, so they will need to be trained very differently. In addition to learning the ins and outs of data analytics, telecommunicators also will need to be taught how to triage the data streams that enter the PSAP lest they are exposed to decision making issues associated with over choice and analysis paralysis, or wrongly focus on data that perhaps is less important than other data for a given incident. Perhaps more important, the PSAP's recruitment and hiring practices will need to adapt, simply because the telecommunicator of the future will need additional skillsets. Similarly, administrators will need to be trained differently so that they are able to effectively support telecommunicators who are operating in a strange new world.

Arguably, telecommunicator certification will be even more vital in the NPSBN/NG911 environment, not only because additional skillsets will be needed, but also because the tasks that telecommunicators will perform in the future—e.g., juggling multiple data inputs simultaneously and interacting with a data-analytics system—will be more complex.

Of course, the training described above will need to be developed. Who will do that? The PSAP itself, a trade organization such as the National Emergency Number Association (NENA) or Association of Public-Safety Communications Officials (APCO), or a for-profit company? Regardless of how the training is developed, there will be a cost associated with implementing it in the PSAP. This will require the 911 authority to secure funding specific to this purpose or adjust the PSAP's operations budget accordingly.

#### Conclusion

Undeniably, preparing for the inevitable arrival of the NPSBN and NG911 in the PSAP will be an enormous undertaking from an operational perspective. Both platforms together will change completely the manner in which 911 centers and telecommunicators operate. New skillsets will be required, as will new technology, policies, and training. This is necessary not only to safeguard telecommunicators from the risks that are created by the new data streams flowing into PSAPs, but more importantly, to prepare them to effectively leverage the data to improve their situational awareness and decision-making capabilities. This will, in turn, enable them to better support first responders in the field. It will also require new sources of funding or new approaches to budgeting.



Data storage, either in-house or in the cloud will be important to house the large volumes of data in an NPSBN/NG911 world.

The good news is that at least a decade, perhaps two, will pass before the NPSBN and NG911 are both ubiquitous and integrated. This notion is supported by the following data from the 2016 National 911 Progress Report, published by the National 911 Program:

- Eight states indicated that 100 percent of their geographical area is served by NG911-capable services, i.e., those that are compliant with the NENA i3 standards
- Nine states indicated that 100 percent of their population is served by NG911-capable services
- Six states indicated that 100 percent of the primary PSAPs within their boundaries have 911 call-handling equipment capable of processing IP calls from an ESInet
- Twenty states have adopted a statewide NG911 implementation plan
- Eighteen states have issued a contract for procuring NG911 system components

Meanwhile, FirstNet only recently named its commercial partner, AT&T, and still is in the process of finalizing its NPSBN implementation plans for each state. So, while progress has been made on both fronts, there is still much work to do that will require a copious amount of time to perform. That means PSAPs still have ample time to prepare for the arrival of the NPSBN and NG911—but the gears need to start turning soon.

Another bit of good news is that the 911 sector has been through this before. Recall that basic 911 service eventually migrated to enhanced 911, which later evolved to accommodate the wireless devices that were entering the market, primarily cellular and voice over IP (VoIP). Similarly, dispatching once was a cumbersome, manual process that eventually gave way to the highly efficient and more accurate computer-aided dispatch with some agencies being capable of CAD-to-CAD.

Each time one of these migrations occurred, the initial reaction was along the lines of, “the sky is falling.” But history shows that while each migration had its challenges, they all were successfully executed and 911 operations adapted to the new normal. Ergo, a better way to think about the operational preparation that needs to occur in advance of NG911 and the NPSBN can be summarized in the following adage: “the best way to eat an elephant is one bite at a time.” This is an enormous task, but if 911 officials focus on the enormity, the task quickly will become overwhelming. Instead, start planning now, commit to making steady progress, and the necessary preparations will be completed well before the future of emergency communications arrives.

## NG911 BY THE NUMBERS

(AS OF JUNE 2017)

**8** states are compliant with NENA i3 standards

**9** states stated that 100% of their population is served by NG911-capable services

**20** states have a statewide NG911 implementation plan