Protecting the public: How the cloud can modernize emergency operations

Throughout the country, 911 call centers do their best to keep the community safe, whether it's routing emergency responders to the scene of a serious multiple-car accident or getting an ambulance as quickly as possible to the home of an individual who needs urgent medical attention.

But legacy technology often hampers much of the work 911 dispatchers do today. Also known as public safety answering points (PSAPs), these centers could answer and route calls even more effectively if they had modern technology to better manage a growing influx of call data.

The Amazon Web Services (AWS) Cloud can help PSAPs innovate, evolve their data strategy, and deliver more responsive service that improves public safety.

A growing universe of data: Current challenges for 911 call centers

Though 911 is the universal number residents call in an emergency, there's not a unified, nationwide 911 network. Municipalities may have multiple PSAPs that operate independently and primarily provide emergency services at the county level.

Currently, there are 5,748 PSAPs across the country that handle an estimated 240 million calls a year,[1] which equates to nearly 42,000 calls per day per PSAP. Despite this growing call volume and accompanying data, 911 call centers largely have relied on on-premises systems to manage their backend operations.

Security concerns have been a driving factor for PSAPs relying on on-premises systems since these networks are closed and often don't connect with other systems. This helps protect the wide range of data PSAPs collect, including phone numbers, caller location data, and data from various multimedia sources such as wireline, cellular, voice over internet protocol (VoIP), multi-line telephone systems, and text-to-911 connections. However, on-premises infrastructure also limits interoperability, scalability, and modernization for PSAPs.

"Today, many municipalities are living under the assumption that if their data is localized and on premises, then it's secure. Unfortunately, that's not the truth. We should underscore them as 'candy-bar architectures.' They're very strong on the outside, but soft on the inside," says Alex Dizengof, chief technology officer and founder of Carbyne, powered by AWS, which offers a cloud-native emergency response platform and services for the public sector.

On-premises systems also make it difficult for PSAPs to share timely, relevant information with first responders and other public safety agencies and make proactive decisions that improve service delivery. Legacy systems hinder workforce automation and make it more difficult for PSAPs to expand their capacity and handle higher call volumes. These systems also make it challenging for 911 call centers to access and analyze real-time insights for complex calls that involve multiple jurisdictions.

Technology can modernize 911 call center operations, streamline data collection and analysis, and optimize dispatchers' workflows.

Modernizing 911 call centers with the cloud

The cloud improves data management and service delivery for 911 call centers in several ways.

First, it allows PSAPs to scale their compute resources up or down based on demand, and right-size their infrastructure based on the amount of call data coming into their environment. This also enables 911 call centers to deliver more responsive service and helps municipalities better manage their IT costs.

The cloud also supports secure integrations among multiple PSAPs and provides a flexible, scalable foundational infrastructure PSAPs can use to expand their analytics capabilities and seamlessly integrate new technologies like artificial intelligence (AI), security automation solutions, and threat detection tools to better protect their data.

For example, with the cloud, PSAPs can adopt emergency response platforms with assistive AI capabilities that allow dispatchers to analyze call data in real-time to improve coordination with responding public safety and law enforcement agencies. This can be beneficial during mass casualty events when there is a huge influx of calls and first responders need greater situational awareness. PSAPs can also use cloud-native platforms to integrate advanced mapping data and interactive communications tools into their environment, such as live video, instant messaging, and images, to help dispatchers gather more accurate information about a caller's location and make more informed decisions about the best ways to help them.

Delivered as a service, a cloud-native emergency response platform also reduces IT management burdens for PSAPs.

"One of the major challenges for smaller PSAPs is that with current on-premises legacy solutions, even if you have one or two seats in your 911 call center, you still need to buy hardware. You still need to deploy it. You still need to maintain it with cumbersome switches, routers, servers, and databases," Dizengof says. "Eventually, first responders and PSAP managers, they don't care about this. They just want to provide the best service they can for citizens. The cloud enables that."

Delivering better emergency services in the Rio Grande

The cloud is already helping several agencies, including the Rio Grande Council of Governments (RGCOG), modernize their PSAPs and better serve constituents.

RGCOG serves as the 911 authority for five rural jurisdictions outside of El Paso County, Texas, and is responsible for answering 911 calls in the area.

RGCOG's five PSAPs face unique challenges because the area has a relatively small population spread across a large area of land. The jurisdictions are also border communities, which contributes to a growing number of 911 calls from individuals at the U.S.-Mexico border who are lost and need assistance.

To replace its on-premises legacy infrastructure and expand the capacity of its 911 call centers, RGCOG adopted Carbyne's emergency response platform, which is built on AWS. The platform allows dispatchers to capture audio and multimedia data in a single, secure repository and share this information with first responders and law enforcement.

"The caller actually can go ahead and dial 911 and that video can be provided to the dispatcher. The dispatcher in turn can go ahead and send that information to the first responder," says Marisa Quintanilla, RGCOG's 911 director.

"It's not only a revolutionary change as it relates to the way the technology's working, but in the way we're able to deliver it to such small PSAPs. It really levels the playing field from large cities, like New York, to some border communities that may have one or two seats," Dizengof says about Carbyne's cloud-native solution, adding that the platform also enables small PSAPs to take on a higher volume of calls and respond more quickly to callers.

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> *Alex Dizengof, Chief Technology Officer and Founder, Carbyne*

RGCOG deployed Carbyne's platform in February 2022, and Quintanilla says it quickly began driving results. The solution has helped the region's PSAPs provide real-time video data to first responders to help them locate lost individuals at the border more quickly – all made possible by the caller hitting a simple, secure link the 911 center provides for them to upload and share their video. It has also improved first responders' situational awareness when arriving on the scene of major traffic accidents.

"This is where all public safety answering points are going to migrate toward because next-generation 911 is providing a multimedia platform to that public safety answering point, where the call takers can have a better visual and better understanding of the emergency from the caller," Quintanilla says.

Paving the way for NextGen 911

911 emergency communication specialists and first responders do lifesaving work every day, but their efforts could be even more impactful if PSAPs modernized their technology infrastructure.

The AWS Cloud can help PSAPs move in this direction, drive process automation, and allow 911 dispatchers to deliver even more responsive, timely service to the public when they need it most.

"A cloud base will allow our public safety answering points to be proactive instead of reactive," Quintanilla says. "This is legacy equipment that we're still working off. We're [PSAPs] so accustomed to that legacy equipment, but we can rip the band aid and say, "There's a better way. There's a technology we use in our personal lives and it can be used for public safety, as well.'"

For more best practices and advice around modernizing critical services, visit aws.amazon.com/stateandlocal/imagine-gov.

[1] www.nena.org/page/911Statistics

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