

Connected to the New Era of Next Generation 9-1-1 Communications

New technologies and rising public expectations are impacting today's 9-1-1 Public Service Answering Points (PSAPs) in ways that require optimized communications architectures.



Cell phone-driven call surges... new modes of citizen communications like SMS text and social media... citizen service calls occupying valuable skilled call takers... the need to become positioned to migrate to Next Generation 9-1-1 — these and other factors are bringing about the most extensive rethinking of the 9-1-1 system since its inception nearly 50 years ago.

Why do many of the most important organizations governmental agencies in the world rely on Avaya?

The reason: Avaya is the global leader in contact center solutions who provides advanced 9-1-1 solutions based on proven, industry-leading technologies to help speed operational performance, enhance response capabilities and save lives.

Consider the following scenarios:

- **A hit and run vehicle accident is witnessed by a bystander who uses his cell phone to snap an identifying picture of the car before it leaves the scene.** 9-1-1 call takers relay the photo immediately to local police who circulate it to patrol officers and the hit and run driver is apprehended in minutes.

- **A student in a college dormitory becomes concerned that a certain person down the hall is suddenly acting dangerously out of control.** She discreetly uses an Instant Message (IM) connection with a 9-1-1 operator who alerts campus security and with her permission is connected to the campus counseling service via the IM.
- **A serious storm requires evacuation of a PSAP (Public Service Answering Point) in a low-lying area that may become flooded.** By previous arrangement, 9-1-1 call takers are able to redeploy to a hotel ballroom located on higher ground and quickly re-establish operations.

RELIABLE, SECURE AVAYA INTELLIGENT COMMUNICATIONS 9-1-1 SYSTEMS:

- Support multiple E9-1-1 services on one infrastructure.
- Manage multiple PSAPS from a single location.
- Provide the continuity and security that 9-1-1 systems require.
- Handle any kind of communication — voice calls, text, photos, IMs, Chats, Video and more.
- Track and manage multimedia communications through established workflow techniques.

Intelligent Communications and 9-1-1

These scenario types were not possible even a decade ago, but are now well within the grasp of 9-1-1 systems that embrace Avaya Intelligent Communications.

Whether for police, fire, emergency medical, or other agencies, Avaya

provides secure call routing and handling that enables a streamlined and efficient delivery of emergency 9-1-1 calls with a pathway for next-generation 9-1-1.

Avaya aligns with the NENA i3 vision of an open standards based environment. We do this with Avaya Aura®, a SIP based open standards architecture that underpins the next generation 9-1-1 solutions from our ecosystem of **Public Safety - E9-1-1 DevConnect** partners.

This means that 9-1-1 systems can dramatically expand what's possible today by breaking down communications barriers and enabling more robust, flexible infrastructure. With these solutions, 9-1-1 systems can take advantage of modern protocols such as Session Initiation Protocol (SIP) — for the quick routing of many kinds of communication — as well as advanced and reliable contact center technologies that can be used to handle peaks of hundreds of thousands of callers per hour.

For Emergency Services IP Networks applications (see Figure 1), perhaps the Avaya Aura Emergency Services Routing Proxy proven NENA i3 compatible and interoperable at NENA sponsored Industry Collaboration Events (ICE), is an industry standard SIP routing proxy. Its policy-based routing ensures that incoming 9-1-1 calls are accurately directed to the most appropriate PSAP based on the caller's location specified in a civic or geodetic format and based on the PSAP's capacity to receive the call.

For Public Safety Answering Points, as a global leader in contact center systems and 9-1-1 solutions, Avaya is uniquely positioned to modernize and migrate PSAPs to next generation 9-1-1. This means enabling the center with multimedia call handling, social media integration and workforce optimization over a centralized network architecture delivering a consistent, richer set of capabilities tailored for the largest to smallest PSAPs within a regional cluster or 9-1-1 Compact, that is simpler to operate and to manage (see Figure 2).

AVAYA SOLUTIONS FOR 9-1-1

Galveston — Located in hurricane country, the Galveston County Emergency Communication District (GCECD) takes its job seriously. But over time, management of the eight PSAPs in the district became unwieldy and expensive. To simplify administration, achieve higher levels of reliability, while establishing an open standards platform to cost-effectively enable new services as needed, Galveston made the move to an Avaya IP infrastructure solution. If a PSAP has to be abandoned, dispatchers can now move to another location and log into their stations as if they were at their original position. Networking all eight PSAPs together means call overflow can be directed from a single, centralized administrative position. Upgrades are also now handled centrally from a single location and a centralized repository that tracks the total call volume.

Washington D.C. — Emergency responders in Washington, D.C typically answer calls within five seconds, with most calls answered in less than one second (compared to a national average of about 10 seconds), thanks to a 9-1-1 system implemented by Avaya and IBM. This system integrates emergency call centers for police, fire, rescue and emergency responders and also can handle a non-emergency “Action Line” and 3-1-1 informational calls. The solution automatically identifies callers and their location and can track incoming call trends and patterns.

IP Telephony boosts 9-1-1 performance

Avaya IP Telephony solutions enable 9-1-1 systems to shave response times and help save lives by:

- **Allowing 9-1-1 call takers to seamlessly integrate the phone, SMS text, IM, e-mail and live chat** into an efficient workflow tailored to the needs of callers or other responders.
- **Tracking all communications** — calls, pictures, emails and IMs — and linking them to a specific event, making it possible to better inform decision makers and communicate publicly with actionable information.
- **Transferring calls along with a call record** (even between geographically distant centers), making it unnecessary for routine information to be repeated.

- **Identifying patterns of incoming calls** to make decisions about staffing and resource allocation.

Simplifying coverage and management across multiple infrastructures

An intelligent, IP-based infrastructure brings an end to the old era when every 9-1-1 service area required separate systems, were separately managed and were unable to easily communicate with one another. Today with Avaya solutions, one infrastructure can handle multiple citizen services, as well as routine agency administrative communications, thereby lowering the cost of managing multiple PSAPs and multiple 9-1-1 services. This simplified coverage also preserves each area's individual autonomy and community identity.

Activities across multiple PSAPs can be collapsed into a single database application, enabling management of multiple sites from a single point while providing consolidated views a wide variety of real-time, historical and integrated reports of PSAP performance.

- **9-1-1 call takers can now work from dispersed locations**, simplifying the process of drafting more personnel from other government agencies when situations require it.
- **PSAPs in neighboring jurisdictions can work together**, sharing calls and information. This provides mid-sized to small cities and towns the opportunity to collaborate as a regional emergency response organization - structured as geographically distributed 9-1-1 centers, functioning as a single logical unit while maintaining their local identity.
- **For large metropolitan 9-1-1 applications**, Avaya increases the level of service to citizens while decreasing human and process latency, including the ability to distribute call takers in geographically distributed locations and to quickly relocate and add personnel in the event of deteriorating circumstances.
- **Intelligent call routing capabilities and patented applications like Expert Call Taker selection** make sure that the right call gets to the call taker best suited to that situation.

Enhancing performance through NENA i3 open standards

Avaya enhances the flexibility of PSAP operations through its embrace of NENA i3 open standards and multi-vendor interoperability allowing you to choose the tools (e.g., Intelligent Work Station and Computer Aided Dispatch) that make the most sense for your operations.

Avaya's advanced SIP (Session Initiation Protocol) solutions allow easy integration with the newest generation of Automatic Location Information (ALI) controllers and delivers features like presence which enables users to inform others of their status, availability, and how they can be contacted — before a communication session even begins. Call takers can take advantage of SIP to determine the status of critical emergency

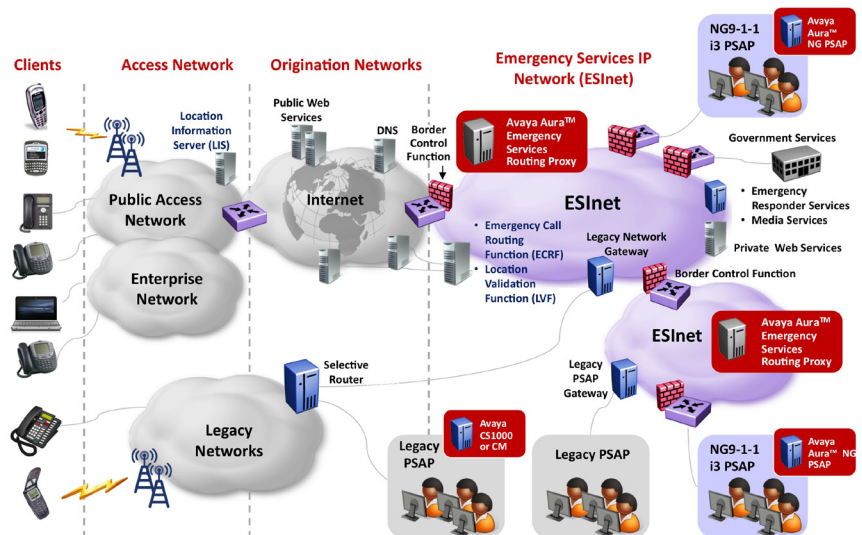


Figure 1 - Avaya Next Generation 9-1-1 Reference Architecture

Real-time performance reporting

Operating 9-1-1 services requires detailed reporting. A key reason Avaya is a global leader in contact center technology is the set of tools it provides for managing staff levels, balancing workloads, and staying in touch with individual call takers (e.g., to manage call taker stress levels). These tools are all available in real time making it possible to provide decision makers and political leaders with accurate, up-to-the-minute status reports.

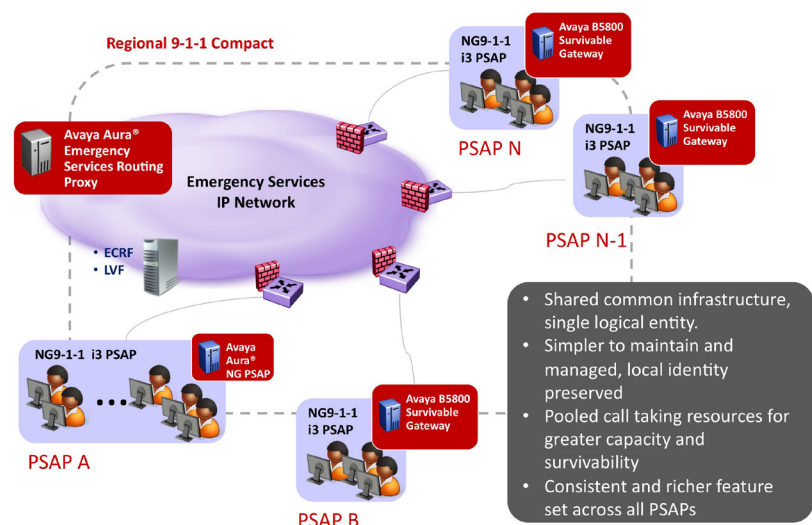


Figure 2 - Avaya NG PSAP Regional 9-1-1 Compact

personnel and then can easily conference them into a call whether they are using a traditional land-line phone, a cell phone, a VoIP device, a Land-based Mobile Radio or other modes of communication.

Continuity

Avaya delivers a comprehensive, multi-layered solution approach to PSAP continuity that's designed to reduce problems while providing cost-effective alternatives to expensive and redundant back-up facilities.

Advanced capabilities:

- Since Avaya media servers duplicate all data and provide active call-state awareness and memory mirroring so that in the event of a processor failure, virtually every call capability is preserved.
- Tools like Avaya Converged Network Analyzer optimize call routing so that when a problem is detected, the call is re-routed transparently in milliseconds.
- Avaya Enterprise Survivable Servers (ESS) and Local Survivable Processors (LSP) minimize the effect of network outages on critical communications.
- EXPERT SystemsSM Diagnostic Tools remotely monitors your systems, finding and resolving about half of all problems without human intervention. EXPERT Systems reduce the risk of encountering a major outage by 74%. Between EXPERT Systems and our remote engineering team, Avaya is able to resolve 99% of all problems remotely, with 89% of all major issues cleared within 4 hours.

- Responsive fail over to the Public Switched Telephone Network provides another level of protection.

Avaya solutions are able to support more IP-enabled endpoints with fewer restrictions on loads and a smaller number of clustered call servers than other solution providers — resulting in significantly lower expenditures in system management, upgrade management, complexity, and staff time.

Security

The Avaya solution architecture is designed to provide secure communications between all endpoints without sacrificing performance. For example, instead of simply providing encryption of all transported media, Avaya applies an intelligent scheme that provides encryption when needed, minimizing impact on performance. Strong authentication capabilities can be added at remote sites without requiring special software to be loaded into individual devices.

Learn more

The robustness, reliability and security of its IP telephony solutions have made Avaya a global leader in communications. Many government organizations count on Avaya for secure network infrastructure and reliable voice and data applications that help enable operations continuity and recovery. For more information about how Avaya can help you enhance your 9-1-1 system, visit www.avaya.com/PublicSafety or contact your Avaya Account Manager or a member of the Avaya Connect channel partner program.

TEN REASONS TO CHOOSE AVAYA FOR 9-1-1

- 1 9-1-1 leadership and expertise
- 2 Increase capacity — maintain local identity
- 3 Reliability and redundancy
- 4 Support for legacy investments/ systems
- 5 Multimedia capability
- 6 Security throughout the system
- 7 Fewer standalone systems, lower costs
- 8 Continuity through emergencies
- 9 Real-time reporting
- 10 Wireless support

About Avaya

Avaya is a global leader in business communications and collaboration systems, providing unified communications, contact centers, data solutions and related services to organizations of all sizes around the world. For more information please visit www.avaya.com.

The Avaya logo consists of the word "AVAYA" in a bold, red, sans-serif font. The letters are closely spaced and have a slight shadow effect.

The Power of We™

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