



NEXT GENERATION CORE SERVICES

Connecting a Network of Networks

As the public safety industry moves towards new technology, states, regions, and local jurisdictions need to adapt to the changing landscape, keep up with the demand for new ways to communicate, and replace legacy call routing tools with Next Generation 9-1-1 (NG9-1-1) equipment. The Comtech Next Generation Core Services (NGCS) solution offers an Emergency Services Internet Protocol (IP) network (ESInet) and seamlessly connects originating service providers (OSPs) with public safety answering points (PSAPs).

Our market-leading NGCS service is modular, scalable, and has been implemented at state and regional levels. Our NGCS offers a transitional or end-state replacement solution for legacy selective router (SR)-based 9-1-1 networks or incumbent IP solutions, depending on the specific needs of the jurisdiction. This NENA i3-compliant solution enables end-to-end IP call routing to the PSAP, providing call conversion when needed and performing true location-based routing. Supporting IP connectivity means Message Session Relay Protocol (MSRP) for text and other media types is also supported as well as other ancillary services, such as shared Computer Aided Dispatch (CAD). Our NGCS and ESInet solutions enable the full vision of NG9-1-1, deployed in a manner guided by and consistent with the needs of the jurisdiction.

Comtech's NGCS is highly reliable, resilient, and redundant. Our solution is composed of redundant central system components that provide load sharing and load balancing with failover capability. We deliver five-nines (99.999%) service for all deployments via a locally and geographically redundant architecture, so the system operates as a single entity even under the most catastrophic conditions. Our design provides seamless call-processing capacity from element to element and site to site, ensuring high availability and continued emergency call processing.



Multiple Deployment Options

- **Software as a Service (SaaS) / Cloud:** Engineered for use with widely available hardware and with extra capacity for expansion, the NGCS is operated on equipment owned and maintained by our public safety team at Comtech's fully redundant, geodiverse data centers and in our secure cloud locations. This model is ideal for public safety entities desiring a speedy deployment and a lower capital expenditure.
- **In-Network / Managed Service:** Entirely resident within your region, the NGCS hardware is installed in fully redundant, geodiverse locations. Comtech provides a managed service to operate the NGCS software. This model is ideal for public safety entities desiring a dedicated system.
- **Hybrid:** A combination of the hosted and in-network models, the NGCS is modular, flexible, and can be configured to meet the customer's needs.

Comtech NG9-1-1 Call Routing Suite

Our NG9-1-1 call routing service features the following set of NGCS functional elements (FEs) and interfaces:

- **Emergency Services Routing Proxy (ESRP):** Provides centralized routing control within the NGCS to determine the next hop for call delivery.
- **Policy Routing Function (PRF):** Performs rules-based analysis to validate the destination PSAP for 9-1-1 call delivery.
- **Emergency Call Routing Function (ECRF):** Uses Geographical Information System (GIS) data from the Spatial Interface (SI) to determine PSAP call routing in conjunction with the Emergency Services Routing Proxy (ESRP).
- **Location Validation Function (LVF):** Uses GIS data from the SI to confirm the validity of subscriber addresses with OSPs.
- **Legacy Network Gateway (LNG):** Performs protocol conversion of incoming calls from legacy Time-Division Multiplexing (TDM) to IP-based protocols.
- **Legacy Selective Router Gateway (LSRG):** Performs protocol conversion and signaling specifically for interaction with legacy selective routers.
- **Legacy PSAP Gateway (LPG):** Performs protocol conversion for communication with legacy call handling systems.
- **Border Control Function (BCF):** Provides security and call control for IP-based traffic.
- **Spatial Interface (SI):** Performs quality assurance (QA)/quality control (QC) on jurisdiction-provided GIS data.
- **Location Database (LDB):** Provides landline location to the PSAPs for 9-1-1 calls.
- **Additional Data Repository (ADR):** Provides data storage for additional information associated with a call, caller, or location.

- **Conference Bridge:** Enables call conferencing within the NGCS.
- **Open Architecture and Open Interfaces:** Enables modular design and industry-standard communication between vendor partners.
- **Cybersecurity Services:** End-to-end, proactive 24x7x365 monitoring of all network elements by the Comtech Network and Security Operations Center (NSOC) and secured by alignment with the NIST security framework.

Each deployment option—SaaS, managed service, and hybrid—uses these elements in a modular and flexible fashion to implement NG9-1-1 on your terms.

Enabling the Transition

Comtech is responsible for eight statewide and numerous regional NG9-1-1 deployments, the most statewide NENA i3 deployments by any vendor. Our experience and flexibility, along with our competitive local exchange carrier (CLEC) status in almost all states, provide significant value in enabling the transition between legacy systems and the NGCS solution.

Engineering

All of Comtech’s public safety technology is engineered to exceed the “five nines” standard of reliability, using carrier-grade components. Comtech designs its systems for continuous NG9-1-1 transaction processing, and we achieve this performance capability, along with the utmost reliability, through the intelligent use of a highly redundant and resilient system architecture.

Industry Compliance

- **National Emergency Number Association (NENA):** NENA i3
- **Alliance for Telecommunications Industry Solutions (ATIS):** JTD-110, IMSESINET, NGES, IMS911, ELOC, ESIF
- **Internet Engineering Task Force (IETF):** SIPCORE, ECRIT, GEOPRIV

Supported Interfaces

Interfaces as described in NENA-STA-010.3 (originally 08-003), including:

- SIP/RTP
- HELD
- MSRP
- LoST
- Secure portal interface for data management
- Legacy interfaces as required



Experience

Comtech's NGCS offers a highly available and geographically redundant NENA i3-compliant solution for NG9-1-1 deployments, designed around the philosophy that every call matters.

Comtech is a leading end-to-end NG9-1-1 solution provider with ~25% market share in primary statewide NG9-1-1 contracts across the United States. We have been deploying NG9-1-1 systems for over 10 years and are an industry leader in both NG9-1-1 and Text to 9-1-1 deployments.

Key Feature	Benefit
Active-Active Design	Offers the highest availability with a quad-redundant design. No manual interaction is required to "failover" as all transactional components are active at all times.
Quad-Redundant Processing	Increasing availability via both geographic and local redundancy in the software. Each NGCS instance is capable of processing the entire call volume independently.
CHE Interoperability	Successfully tested and/or interoperating with all major call handling equipment (CHE) manufacturers.
End-to-End Functionality	Taking 9-1-1 traffic all the way from the carrier circuits (aggregation services) to the PSAP demarcations.
Text to 9-1-1 Support	Enables native MSRP Text to 9-1-1 or browser-based solution.
Multiple Deployment Models	Can be deployed as a dedicated in-market solution, as a Comtech-hosted service, or in a hybrid configuration.
Proven NENA i3 Flexibility	Successfully deployed in legacy transition and true NENA i3 end-state architectures, using both our own and other NENA i3-compliant components within the solution.
Flexible Routing Changes	Allows for flexible updates to routing rules and make-busy options.
Cloud Functionality	Locates certain NGCS FEs in the cloud to speed transition and reduce the overall footprint of the solution.

About Comtech

When lives are on the line and seconds matter, Comtech locates, routes, and delivers the most important call anyone will ever make. Comtech has been one of the most trusted service providers for nearly four decades. Together with our partners, we offer innovative solutions to solve some of the world's most critical public safety challenges.

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