NGA

Next Generation Advanced

NG9-1-1
Pricing Proposal

Prepared for:

Hernando County Sheriff's Office, FL

October 4, 2022

NGA 911, LLC
8383 Wilshire Blvd,
Suite 800
Beverly Hills, CA 90211

Prepared by:
Chuck Freeman
chuck.freeman@nga911.com
727.542.3823

NGA 911 LLC (NGA) is pleased to provide this Agreement to Hernando County Sheriff's Office for NEXiSCore - Next Generation 9-1-1 Core Service “NGCS” / Emergency Services IP Network “ESInet”

Hernando County Sheriff's Office:

- Serves a population of 196,540

- One (1) primary PSAP
  - Hernando County Sheriff’s Office
  - 18900 Cortez Blvd. Brooksville, FL 34601
  - 10 positions
  - Intrado Power 911
  - 8 CAMA trunks and 4 transfer lines

- One (1) backup PSAP
  - Hernando County Detention Center
  - 16425 Spring Hill Dr. Brooksville, Florida 34604
  - 6 positions
  - Intrado Power 911
  - 6 CAMA trunks and 4 transfer lines

Hernando County has shared the following considerations:

- A solution dedicated to the County
- A solution that can be deployed quickly
- A solution that can add surrounding counties to the NGCS and ESInet
- A solution that can be easily adapted to create a regional network
- A solution that does not require requesting additional funding
- A solution that can utilize the county’s GIS department and/or third party GIS vendors
- A solution that Interoperates with the current CPE
- A solution that has effective maintenance support
- A solution that is scalable
- A solution that is future proof
  - Real-Time Text (RTT)
  - Video
  - Additional Data Repository (ADR)
  - The future needs of 9-1-1
- A solution that is dedicated to CyberSecurity
- A solution that is i3 compliant
- A complete i3 solution that is upgradable to future i3 versions without additional funding

The NGA NEXiSCore solution satisfies or exceeds all of the aforementioned considerations.

NGA Vision for NG9-1-1

NGA has envisioned, from its inception, a full NENA i3 compliant NG9-1-1 national deployment. A deployment where all OSP 9-1-1 traffic is delivered i3 to the PSAP with location, dispatchable addresses and additional data as required. To accomplish this vision, NGA has built a highly flexible IP based NG9-1-1 solution that meets all of the NENA i3 and other industry standards today but is also capable of ensuring its customers never have to worry about solution obsolescence. NGA is ready today to deliver real time text (RTT), video and additional data to the PSAP. We have partnered with several companies for the delivery of alarm data, automatic crash notification data and other key data to the PSAP. NGA has a Situational Awareness and Telecommunications Service Provider Outage Notification solution that can be integrated into our NG9-1-1 solution.

NGA recognizes the challenges PSAPs have faced with legacy systems where new features and functions often require “forklift” upgrades. That is not the NGA way. Through its partnership with Amazon Web Services (AWS), NGA is able to provide new features and functions to PSAPs with minimal impact on the PSAP.

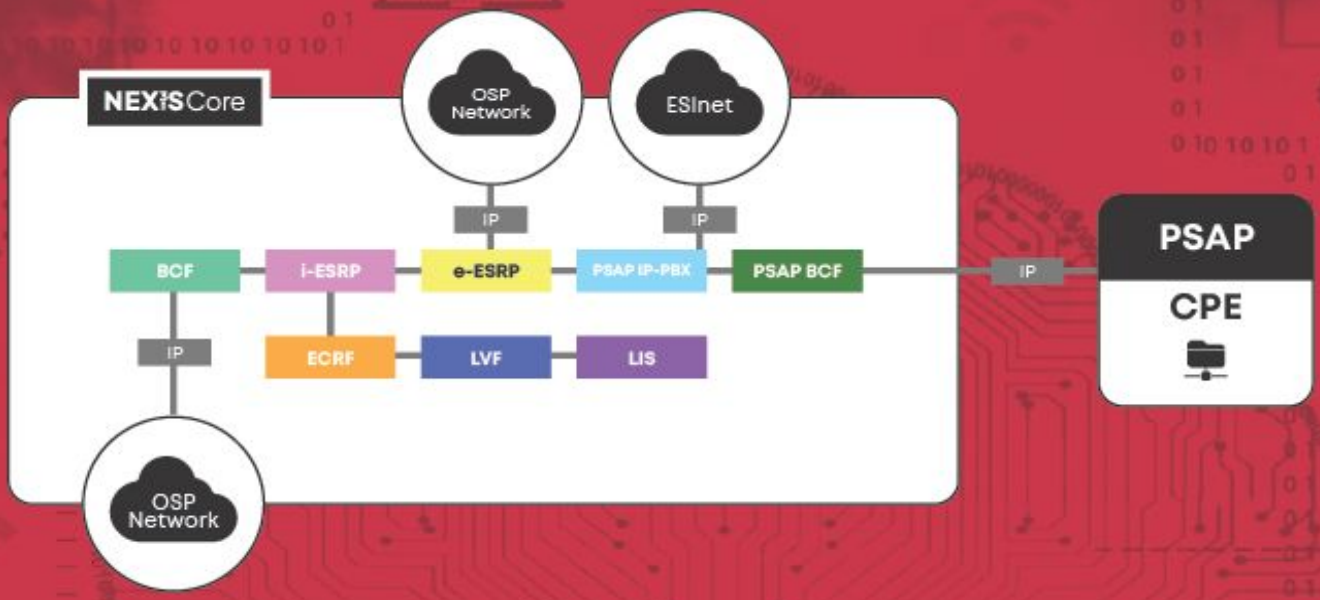
Introducing NEXiSCore. NGA’s Next Generation 9-1-1 Core Services and ESInet service. The following pages explain the elements of NEXiSCore and how it moves legacy 9-1-1 to Next Generation 9-1-1.

Diagram 1. High level NGCS and interconnect architecture

NGA
Next Generation Advanced

NEXT3S Core

Next Generation Core Services (NGCS)



The mission of **Next Generation Core Services (NGCS)** is to connect Communication Service Providers (CSP) that operate within the Originating Service Providers (OSP) networks with Public Safety Answering Points (PSAP) for the purpose of delivering emergency services to citizens.

A CSP is any organization that provides a means by which citizens communicate; there could be many CSP's that utilize the same Originating Service Provider's network, and each CSP could utilize the OSP's network differently. Communication Service Providers can provide voice, text, and video communication to citizens using a wide variety of technologies including landline, various cellular technologies, WiFi, IP, SMS, VOIP, and IP Video. It is further possible that a CSP could use more than a single OSP to deliver comprehensive service to citizens as is the case with mobile devices that seamlessly traverse WiFi and Cell Tower networks for voice and data service.

A **Public Safety Answering Point** is an organization that offers emergency services, including the authorized deployment of personal, communication, or other public safety resources.

When a subscriber of a Communication Service Provider requires emergency services they can route their subscriber's communication to the NGCS and the NGCS will connect them with the nearest and most appropriate emergency service offered by a Public Safety Answering Point.

To accomplish its purpose the NGCS must accommodate a plethora of Communication Service Providers and interface with the Communication Service Provider's wide variety of subscriber offered textual, voice, or video technologies. And, of course, deliver those subscriber initiated emergency requests to the appropriate Public Safety Answering Point.

Core Elements of the NGA's NEXiSCore Solution:

BCF | i-ESRP | e-ESRP | ECRF | LVF | LIS | PSAP IP-PBX | PSAP BCF

BCF

State-of-the-art Session Border Controller provides a uniform network interface with comprehensive security features in fixed and mobile operators NGN and VoLTE / IMS networks.
The BCF provides a mature, proven carrier grade technology packed with feature rich capabilities allowing rapid deployment of services. Our flexible licensing model allows clients to meet budget requirements and scale as and when future growth dictates. Reduce your network complexity and operating costs with a network edge signaling and media solution deployed through a comprehensive, secure web based interface.

i-ESRP

After a call has been allowed into NGCS by the BCF at the edge of NGCS it is handed over to the Originating or Ingress Emergency Service Routing Proxy "i-ESRP". The i-ESRP is the first routing element inside the NGCS and has a lot of heavy lifting to get the call directed to the Call Taker at the PSAP.

e-ESRP

After a call has been processed by the i-ESRP it is handed over to the Terminating or Egress Emergency Service Routing Proxy "e-ESRP". The e-ESRP is the final routing element inside the NGCS prior to the call being delivered to the PSAPs BCF. Whereas the i-ESRP normalizes communication between NGCS and OSPs, the e-ESRP normalizes communication between NGCS and the PSAPs.

ECRF

The ECRF queries a geospatial data model resident in the authoritative production database. The ECRF interfaces with the Emergency Service Routing Protocol (ESRP) using Presence Information Data Format Location Object (PIDF-LO) and provides real-time routing information to the PSAP when a route can be derived from the underlying geospatial street centerline database.

LVF

In the case of civic addresses the location information is verified by the Location Validation Function (LVF) element of NGCS. Civic addresses must prove sufficient for both routing and dispatch before a 9-1-1 call is placed from that specific civic address. It is important to note that the LVF is only used for civic location validation.

LIS

Location is essential to emergency response. The Location Information Server (LIS) interacts with BCF, i-ESRP, e-ESRP, LNG, ECRF, PSAP, and most elements in NGCS by providing location storage, retrieval, privacy, and dereferencing services. RFC 3693 and RFC 3694 have set the basis for standardizing location data structures and privacy. RFC 6280 and RFC 7459 updated RFC 3693 and RFC 3694 to clarify location privacy and uncertainty. The LIS is built atop the diligent work performed by Internet Engineering Task Force (IETF) which has standardized, clarified use cases, and embraced privacy considerations as location information is utilized by first responders for the safety and well being of our citizens.

The central component of the Geopriv architecture is the location object, which is used to convey both location information about an individual or device and user-specified privacy rules governing that location information. The LIS provides location information in the form of a PIDF-LO. The PIDF-LO data is always embedded in the call - either directly or by reference. The actual location object can be directly embedded in the call or a URI reference can be embedded in the call. In the case of location data provided as a URI reference the LIS provides a dereference service for the location URI.

PSAP IP-PBX

Many PSAPs are constrained by their current PBX system, and they need a solution for seamless integration with NG9-1-1. They need a solution that is affordable and modern. Our cloud-based, IP-PBX service is loaded with calling features that reduce capital expenditures for a PSAPs telephony needs.

PSAP BCF

The PSAP BCF protects the borders of the PSAP. The BCF provides a mature, proven carrier grade technology packed with feature rich capabilities allowing rapid deployment of services. Our flexible licensing model allows clients to meet budget requirements and scale as and when future growth dictates. Reduce your network complexity and operating costs with a network edge signaling and media solution deployed through a comprehensive, secure web based interface.

Because NEXTSCore is cloud based and highly scalable, adding additional counties to create a regional NG9-1-1 network is relatively simple. The deployment in Hernando County will have completed the critical timeline items for Originating Service Provider (OSP) ingress. There may be additional small CLECs in a county that need to be included but that will not be a major hurdle.

NGA NEXTSCore is i3 compliant and has been verified in the only i3 compliance lab in the United States at the California Office of Emergency Service (Cal OES) in Sacramento California. During this i3 lab testing, i3 NGCS to NGCS 9-1-1 call transfer was verified ensuring Hernando County will have the ability to transfer i3 calls to any neighboring county, region or state that is on a different NG9-1-1 solution. Additionally, NGA is including a Legacy Selective Router Gateway (LSRG) that provides for 9-1-1 bi-directional call transfer to agencies still supported by the legacy Selective Router (SR)

NGA NEXTSCore ESInet

The NGA ESInet is engineered for Hernando County based on the available circuit providers in the area. The ESInet is engineered to provide carrier diversity and geographic diversity (where possible). The NGA ESInet also provides two (2) tertiary LTE backup connections, AT&T FirstNet and Verizon Quality of Service, Priority and Preemption. Up to four (4) paths (where available or future availability) make up the NG Trunk deployment that allows NGA to commit to 99.999% availability. NGA also has the ability to add a satellite network creating a 5th connection for a nominal fee.

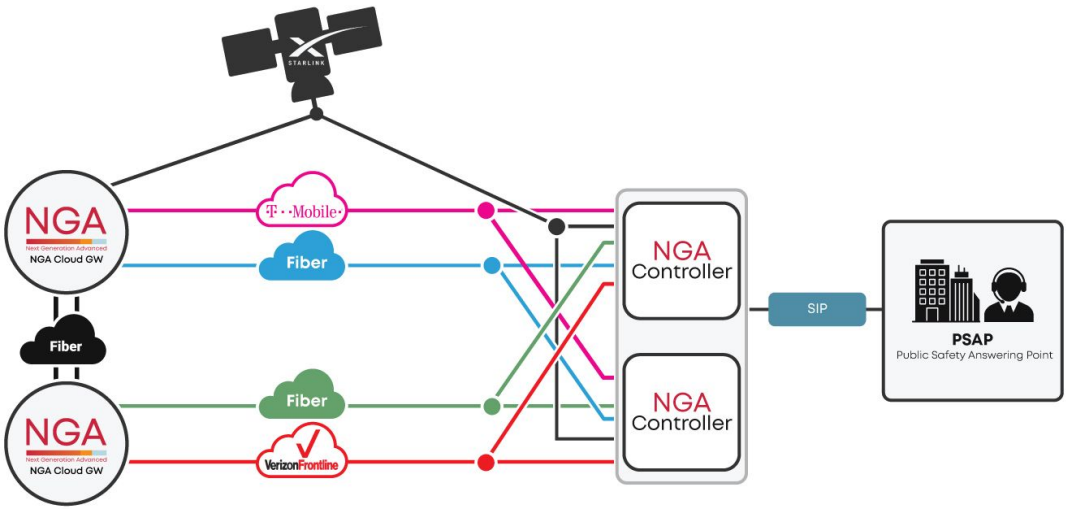


Diagram 2 ESInet

- 2 Complete Sets of redundant equipment and redundant
  10 to 100 (depending on the traffic) Mbps circuits - primary and backup
- 2 LTE tertiary backup connections - TMobile and VZW QPP
- Starlink Static Antenna
- Resilient multipath connectivity
- No loss of Call or Voice Quality with any single path failure or up to 4 path failures
  - All 5 paths have the ability to carry the same call simultaneously
- Packet duplication for superior resiliency and voice quality

NGA Deployment and OSP Ingress

The ingress of OSP traffic is the biggest challenge to the deployment timeline. NGA has worked with the major wireless OSPs and our partner, Inteliquent, to deploy a national interconnection model that allows NGA to deploy wireless OSP traffic in nine (9) to twelve (12) months. This means that 80% of Hernando County's 9-1-1 calls can be delivered over NGA NEXTS Core in less than a year. NGA cannot commit to the length of time it will take to ingress the wireline and VoIP traffic but the timeframe for complete transition should be twelve (12) to eighteen (18) months.

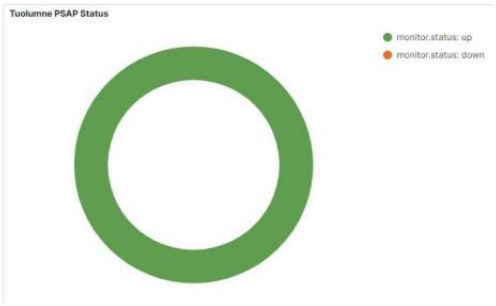
NGA is working with the wireless carriers to ensure delivery of native SIP at a minimum but i3 SIP as the ultimate deployment model. An NG9-1-1 solution cannot be declared fully i3 compliant until the 9-1-1 call begins as i3 at the wireless OSP and is delivered i3 to an i3 compliant Call Handling Solution "CHS". NGA has completed i3 testing with one (1) major wireless OSP and is in i3 testing with another.

NGA Monitoring and Reporting

NGA provides complete visibility for the network and the hardware components for monitoring at the PSAP through the real time dashboard. Trouble tickets can be created and/or viewed from creation to completion whether created by the PSAP or the NGA Network Operation Center (NOC). A Root Cause Analysis on any failure is delivered within forty eight (48) to seventy two (72) hours to the PSAP. A failure does not necessarily indicate an outage. NGA, as stated above, deploys a highly available, redundant solution. All network and hardware is deployed so there are no single points of failure.

Diagram 3 Network Live View

The image below depicts a PSAP with no alarms.



The image below depicts a notification of equipment down.

Diagram 4 PSAP Equipment Status

NGA provides a comprehensive suite of MIS reports to the PSAP through the real time dashboard. There are canned reports and the PSAP can create reports through the dashboard or by calling the 24x7 help desk. The network reports combined with the CDR of the CHS provide an end to end view of every 9-1-1 call from its ingress into the NGCS to call termination at the call taker position.

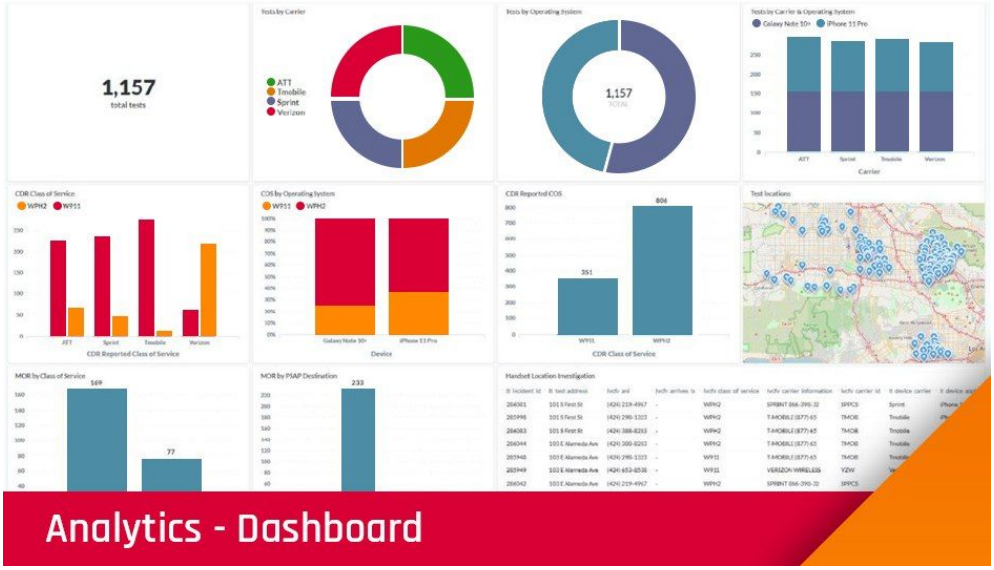


Diagram 5 Analytics Dashboard

NGA
Next Generation Advanced

Benefits of Using NGA

- **Redundancy and Diversity**
  - ESInet
    - 2 Fiber (where possible)
    - 2 LTE
    - 1 Starlink antenna
  - Optional
    - Microwave
  - NGCS
    - 8 Cores Dedicated solely to Florida
- **Faster Deployment**
  - 9 - 12 months for Wireless
- **Smaller Footprint**
  - ½ of a 19” rack
- **Dashboards**
  - Customized to your needs
  - Full Transparency
- **Disaster Recovery Platform**
  - PSAP remote access from any credentialed device
- **Proven Integration with:**
  - Vesta/Viper & Other CPE
  - Multiple CAD Providers
  - GIS (Local & Other)
  - RapidSOS
  - ESInet to ESInet and Legacy Selective Router (LSR) Transfers with ALI/ANI Data
- **i3 NGCS and i3 Call Handling**
  - Real-Time Text
  - Picture/Video
  - Geospatial Routing
  - Analytics
  - Additional Data Repository (ADR)
  - New Features Automatically Upgraded
- **No End of Life**
  - Hardware & Software Maintenance Included
  - Training Included
- **A Single Point of Contact**
  - NGA Maintains all Vendor Contracts
  - Dedicated NGA Team
- **Project Management**
  - With Impacted Vendors
- **Cyber Security**
  - 365 24X7 Cyber Monitoring
- **24x7 NOC and SOC Monitoring**
  - Network & Software Operations Center
- **Cost Effective**
  - Bundled Pricing
  - No Hidden Costs
- **Hassle Free Procurement**
  - MiCTA Contract
  - DMS Approved
  - Simple Pricing

Attachment A, NEXiSCore
Proposal Pricing:

NRC = Non Recurring Charge
MRC = Monthly Recurring Charge

Hernando County	Population	NRC	MRC per Population	MRC total	Number of Months	Year 1 Total NRC + MRC
NGCS/ESINet	**196,540**					
Year 1		**$137,000.00**				**$137,000.00**
			$0.099	**$19,457.46**	**X12 =**	**$233,489.52**
Year 1 Totals						**$370,489.52**
		NRC	**MRC per Population**	**MRC total**		**Annual MRC**
Year 2		**$0.00**	**$0.099**	**$19,457.46**	**X12 =**	**$233,489.52**
Year 3		**$0.00**	**$0.099**	**$19,457.46**	**X12 =**	**$233,489.52**
Year 4		**$0.00**	**$0.099**	**$19,457.46**	**X12 =**	**$233,489.52**
Year 5		**$0.00**	**$0.099**	**$19,457.46**	**X12 =**	**$233,489.52**
5 Year Maintenance		**Included**	**Included**	**Included**		**$0.00**
5 Year Toal						**$1,304,447.60**

Extension option: Years 6 through 10 will be subject to a Population True Up in year 5, plus a 3% COL increase not to exceed 5% of total MRC years 1 through 5.

Pricing Valid from 90 days of issuance

NGCS/ESInet Pricing

NGCS/ESInet Hernando County	Network Annual Price	Comments/Notes
Network Total Non-Recurring Fee	**$137,000.00**	One Time Implementation Fee
Network Monthly Recurring Charge X 12 Months	**$233,489.52**	12 Months @ **$19,457.46**
Tabular Routing	N/A	
Geo-spatial Routing		Included with NGA
MIS/Customer Portal and Dashboards		Included with NGA
MSAG Management		Included with NGA
ALI Database Management		Included with NGA
Backup System Application & Disaster Recovery (2)		Included with NGA
ESInet and Connectivity to PSAPs		Included with NGA
1 (One) Starlink Static Antenna and Connectivity		Included with NGA
24X7 NOC (Network Operations Center) Support		Included with NGA
24X7 SOC (Security Operations Center) Support		Included with NGA
Real Time Text (RTT)		Included with NGA
Text-to-911		Included with NGA
Software Version Upgrades		Included with NGA
Maintenance on all Software & Hardware		Included with NGA
Year 1 Totals NGCS/ESInet	**$370,489.52**	Includes NRC and MRC
Years 2-5 NGCS/ESInet	**$933,958.08**	**MRC only**
Total 5 year Cost NGCS//ESInet	**$1,304,447.60**	**Total Cost for NRC and MRC**

Pricing Valid from 90 days of issuance