NGA911

Hernando County Sheriff's Office Statement of Work

Document History

Index	Date	Author	Description	Version
1	11/16/2021	M Bland	Draft Version	1.0
2	12/14/2021	M Bland	Updates to NG Trunks MRC	1.1
3	9/25/2022	J Sebastian	Review of timelines and project deliverable	1.2
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1. Objectives

Through the partnership with Hernando County Sheriff's Office (HCSO) listed below and its Public Safety Answering Points (PSAPs), NGA 911 (NGA) will provide the most efficient path to achieve end-to-end Internet Protocol (IP) call delivery and call processing.

Hernando County Sheriff's Office	18900 Cortez Blvd Brooksville, FL 34601
Hernando County Detention Center	16425 Spring Hill Dr Brooksville, FL 34604

NGA is a pioneer in in the development of a cloud-based NG9-1-1 Core Services (NGCS) platform and through participating in NENA Industry Collaboration Events (ICE); recognized disconnect between the perception of "i3" standard and the need for a testbed to validate, test, and optimize NG9-1-1 implementations well before they are made operational. Since 2016, NGA has partnered with Texas A&M to provide an i3 compliance testbed and it is that testbed which is the cutting edge foundation of the enclosed Statement of Work (SOW).

2. Relationship Expectations

NGA is committed to a long-term relationship with HCSO. Outlining future innovation, growth, and partnership for the sustainability of their operations.

3. Scope of Services Provided

This project requires NGA to provide an Emergency Services IP Network (ESInet) and Next Generation Core Service (NGCS) which includes Text to 911 as a service to HCSO. The work described in the following sections includes designing the components necessary for properly functioning systems and the furnishing of all labor, materials, equipment, drawings, engineering, testing, training services, and criteria necessary for the successful installation and operation of ESInet and NGCS network.

3.1. ESInet

3.1.1. NGCS Functional Elements

The NGA NGCS solution includes the following functional elements:

- Legacy Network Gateway (LNG)
- Legacy Selective Router Gateway (LSRG)
- Border Control Function (BCF)
- Emergency Services Routing Proxy (ESRP)

- Policy Routing Function (PRF)
- Emergency Call Routing Function (ECRF)
- Location Validation Function (LVF)
- Spatial Interface (SI)
- Location Database (LDB)/Location Information Server (LIS)
- Network Time Protocol and Time Source
- The above functional elements provide several services including:
 - o The Domain Name Servers (DNS) which is part of the ESInet
 - o The Management Information System (MIS) which is part of the Network Management System (NMS)/Operational Support System (OSS)
 - The LDB is built, in part, upon Master Street Address Guide (MSAG)
 Conversion
 - o The SI and contents of the ECRF are supported by Geocoding
 - o The LoST Servers are tied to the ECRF, the HELD Servers and the ADR information collected from the OSPs, the OSPs information service providers, and other sources are applied to the LIS for querying.

High-level NGCS Functional Elements Project Deliverables:

Task	Assigned To	Due
Provide Policy Routing Rules (PRR)	HCSO	Within 45 Days of Contract Award and Project Kick-off Meeting
Provision Functional Elements	NGA	Within 6 Months of Contract Award
As Built ESInet Drawings	NGA	30 Days of System Acceptance

3.1.2. Architecture

NGA will provide the following ESInet Architecture:

- Diverse routes and dual entrance into data centers and the cloud-based network core facilities
- No single points of failure
 - o 2 Fiber Connections (Diverse Carriers)
 - o Minimum of 2 LTE Connection
 - o 1 Starlink Satellite Antenna 18900 Cortez Blvd Brooksville, FL 34601
- Use of open standards-based protocols
- SBC for Viper; Supports IPv4 and IPv6 dual protocol stacks
- Supports Bidirectional Forwarding Detection
- Supports IP multicast routing and switching
- Supports Quality of Service (QoS) marking using Differentiated Service Code Point (DHCP)

- Support downtime of no more than five (5) minutes per year (99.999% uptime)
- Provide a Mean Opinion Score (MOS) of 4.0 or better
- Capable of interfacing with other i3-compliant ESInet
- Failure of any single instance of a hardware or software element, or physical connection, will not negatively impact overall solution performance
- All network-connected elements will support at least two (2) redundant network interfaces
 - o Each PSAP facility will have two (2) geo diverse fiber connections from two (2) diverse carriers with north/south entrances (where possible)
 - o Each PSAP will have three (3) tertiary back-up (2) LTE connections, AT&T FirstNet, Verizon Frontline and (1) Starlink Satellite Antenna

High-level Architecture Deliverables:

Task	Assigned To	Due
Draft Design ESInet Drawings	NGA	Within 45 days of Contract Award and Project Kick-off Meeting
Draft Call Flow	NGA	Within 45 days of Contract Award and Project Kick-off Meeting
Network Interface Specifications	NGA	Within 45 days of Contract Award and Project Kick-off Meeting

3.1.3. Facilities

NGA will provide:

- Power sources that will be redundant and diverse (e.g., at least two (2) separate circuits) with connectivity to the UPS system and generator backup for a minimum of twenty-four (24) hours
- Redundant entrance facilities for data centers
 - o NGA facilities are Tier III and Tier IV which have North and South redundant entrances on separate conduits
- Diverse provider facilities
- Secured and dedicated rack space
- Minimum Tier 3 Rated
- Hardened facilities that can withstand F5-category winds up to 318 miles per hour

High-level Project Facilities Deliverables:

Task	Assigned To	Due
Site survey of Primary PSAP	NGA	30 Days of Contract Award and Project Kick-off Meeting
Site survey of Backup PSAP	NGA	30 Days of Contract Award and Project Kick-off Meeting
Primary PSAP Remediation	NGA	60 Days of Contract Award and Project Kick-off Meeting
Backup PSAP Remediation	NGA	60 Days of Contract Award and Project Kick-off Meeting
Analyze current configuration and identify other Data Centers needs	NGA	30 Days of Contract Award and Project Kick-off Meeting
Order new equipment, install, and configure Data Center and PSAP	NGA	90 Days of Contract Award and Project Kick-off Meeting
Order, Install, Configure PSAP Circuits	NGA	90 Days of Contract Award and Project Kick-off Meeting
Confirm Data Center Readiness	NGA	100 Days of Contract Award and Project Kick-off Meeting
Confirm PSAP Readiness	NGA	100 Days of Contract Award and Project Kick-off Meeting

3.1.4. Originating Service Provider and Selective Router Migration

The NGA solution will:

- Integrate all OSP connectivity for wireline, wireless, and VoIP traffic, as well as multiline telephone systems (MLTS)
- Coordinate with HCSO to obtain Letter of Authority (LOA)
- Establish interconnection and commercial agreements and trunking
- Coordinate with telecommunications providers and manage circuit order processes to including testing and integration
- Manage all adds, moves, changes, and deletions of connections to OSPs, both TDM and/or IP-based, monitor these connections, and proactively work with respective OSPs to resolve problems as they occur
 - o Build out LNG for TDM connectivity
- Coordinate and execute connectivity to legacy selective routers to support transfers to neighboring agencies not served by HCSO's NG9-1-1 solution
 - o Build out LSRG
- Define and manage all processes associated with split and/or consolidated rate centers, local number portability, national number portability
- Support transition of both TDM and SIP ingress to the ESInet

High-level OSP and SR Migration Deliverables:

Task	Assigned To	Due
Obtain Letter of Authority (LOA)	HCSO	Within 30-45 days of Contract Award
Establish Interconnect Agreements	NGA	Within 45 days of Contract Award and after receipt of LOA
Coordinate OSP Connectivity (Establish Weekly Planning Calls from contract execution through Final Traffic Migration)	NGA	Within 30 Days of Contract Award and Project Kick-off Meeting
Circuit testing and integration	NGA	Within 45 Days of Contract Award and Project Kick-off Meeting
Identify POIs and Aggregation Points	NGA	Within 30 Days of Contract Award and Project Kick-off Meeting
Develop Transition Schedule	NGA	Within 60 Days of Contract Award and Project Kick-off Meeting
Coordinate OSP Testing	NGA	TBD – Based OSP Schedule
Define and manage processes associated with split rate centers	NGA	Within 45 Days of Contract Award
Define, design transfers between PSAPs on/off net	NGA	Within 60 Days of Contract Award and Project Kick-off Meeting
PSAP Profile including Selective Router	NGA/HCSO	Within 45 days of Contract Award and Project Kick-off Meeting

3.1.5. ALI Transition

NGA will provide the following services to support the transition from legacy ALI to i3 functional elements:

- Master Street Address Guide (MSAG) conversion service
- Service Order Input (SOI) process for subscriber records
- Integration and provisioning for MLTS databases
- pANI provisioning and shell records management
 - o Including trunk-based routing for corrupted/unresolved ESRK
 - o Define Default routing for No Record Found, Shell Records
- Manage the transition to include coordination of all provider records from the legacy ALI database to the replacement LDB and facilitate any dual provisioning necessary during the transitional phases of the project
 - o Provide reporting for all data within the LDB via a web-based tool

3.1.6. Logging and Recording

NGA will provide the following Logging and Recording capabilities:

- Support for EIO and IDX (once ratified by NENA)
- Discrepancy reporting
- Logging and recording
- The run-on-demand dynamic reports from the reporting UI
- Multi-tenant partitioning of logs and call data, allowing for partitioned reporting, based on role
- Support for entering call notes
- Support Data, Voice, and/or Video
- Standard reports
 - o Call Reports
 - o SIP Error Reports within the ESInet
 - o ECRF and LIS/LDB location queries and results
 - o ESRP/PRF routing reports (errors and successes)
 - o Location discrepancy reports
 - o Reports are available from ESInet and NGCS
- Support for ad hoc reports and creation of customized report templates
- Support for automated report generation and distribution

Task	Assigned To	Due
Identify User Profile	HCSO	within 30 days of Contract Award and Project Kick-off Meeting
Build User Profiles	NGA	within 45 days of receipt from HCSO
End User Training of Reports in Network Management System	NGA/HCSO	TBD

3.1.7. Training

NGA will provide a minimum of:

- One (1) Admin training session
- One (1) Train the Trainer Session to accommodate twenty (20) people
- Four (4) End User in person training sessions
- Access 24x7x365 to training manuals
- Annual on-line refresher training for the life of the contract upon request.

Training Sessions will include, at a minimum:

- SI user's interface tools
- Reporting and logging tools
- Incident reporting and ticketing tools

- Dashboards
- Change-management requests, processes, and tools
- PRF policy management
- GIS tools and procedures
- Subscriber Order Input (SOI) update procedures
- LVF procedures

Additional training sessions can be added to the HCSO(s) if determined necessary after contract award.

Task	Assigned To	Due
Develop a Training Plan including scheduling, class size, location, recording, personalization	NGA/HCSO	Within 90 Days of Contract Award and Agreement of the Call Handling Project Plan
Provide Admin Training to the Admins	NGA	30 days prior to the PSAP "Go Live" date
Provide personnel information for building of role permissions in the Web-Portal	HCSO	30 days prior to the PSAP "Go Live" date
Train the Trainer	NGA	Within 14 days prior to the each PSAP deployment
Provide Training to the PSAP	NGA	Within 14 days prior to the each PSAP deployment

3.1.8. Security

NGA will provide the following Security policies/functions:

- Maintain a completed NENA NG-SEC compliance matrix
- Maintain a Security Plan (physical and network)
- Maintain a credentialing plan/process for external entities
- Adhere to any local/state standards for data security and encryption
- Perform proactive analysis of the network for vulnerabilities
- Provide a defined Continuity of Operations Plan (COOP) as well as a Disaster Recovery Plan (DR). Final draft to be approved by HCSO.
- Provide access reports from facilities down to the individual device level
- Require multi factor authentication for any access to externally accessible portals, user interfaces (UIs), etc. (Policy Routing Function portal, reporting portal, system dashboards, etc.)

^{*}All training will be held during mutually agreed upon dates/times.

3.1.8. Security - Continued

Task	Assigned To	Due
Security Plan aka Security Policy Note	NGA	Ongoing
Establish PSAP Credentialing Method	NGA/HCSO	45 Days of Contract Award and Project Kick-off Meeting
Continuity of Operations Plan	NGA	45 Days of Contract Award and Project Kick-off Meeting
Disaster Recovery Plan	NGA	45 Days of Contract Award and Project Kick-off Meeting
Establish multi-factor authentication	NGA	45 Days of Contract Award and Project Kick-off Meeting

3.1.9. Monitoring and Alarming

NGA will provide the following:

- Physical access monitoring and reporting of NGCS host sites
- Automated network node monitoring and alarming
- Integrated alarming and ticketing system
- Ability to display network node status in a client-faced dashboard
- Event logging and reporting
- User-definable notification levels and recipients, text, or email delivery options

Task	Assigned To	Due
Physical Access Reports	NGA	Within 5 calendar days upon request
Establish credentialed personnel list	NGA/HCSO	60 Days of Contract Award and Project Kick-off Meeting
Monthly reports on physical access to NGA ESInet and NGCS facilities (Include successful and failed attempts)	NGA	10 th of every month: If the 10 th is not a business day, then the due date is required to be done on the next business day
Define and establish alarm settings	NGA/HCSO	TBD
Define and establish alarm event notification	NGA/HCSO	TBD
Develop Dashboards	NGA	TBD
Access to Administrative Portal	NGA	TBD

^{*}TBD dates will be mutually agreed upon during the Project Kick-off Meeting and NGA will deliver the Call Handling Solution Project Plan for HCSO Review and Acceptance

3.1.10. Service Validation

NGA will support:

- Independent third-party validation of feature functionality
- SIP Messaging, call detail records, and/or call logs to verify compliance with contractual obligations
- Documentation of completed results from Acceptance Test Plans
- Draft and Final Acceptance Test Plans to be reviewed with the HCSO, PSAP, and any other identified Stakeholders

Task	Assigned To	Due
Draft Acceptance Test Plan	NGA	14 days prior to cutover
Final Acceptance Test Plan Results	NGA	7 days upon completion of Acceptance Test Plan

3.1.11. Pre-Cutover Acceptance Criteria

- Confirmation and documentation of equipment configuration
- Confirmation and documentation of control, monitoring, and alarm solutions
- Acceptance Test Plans and documentation
 - o Certificate of Acceptance PSAP to sign after thirty (30) consecutive calendar day soak
- During testing, if the HCSO identifies a solution test that fails, the HCSO will
 provide NGA with a written description of what test failed and why. The HCSO
 also will provide NGA with an expected amount of time that will be allowed to
 resolve the identified failed test case scenario.

Task	Assigned To	Due		
Provide equipment configuration designs	NGA	TBD		
Provide documentation of control, monitoring, and alarm solutions	NGA	TBD		
Provide Acceptance Test Plans	NGA	Within 45 days of Contract Award and Project Kick-off Meeting		
Provide punch list	NGA/HCSO	TBD		
Provide Certificate of Acceptance (COA) Form	NGA	TBD		

^{*}TBD dates will be mutually agreed upon during the Project Kick-off Meeting and NGA will deliver the Call Handling Solution Project Plan for HCSO Review and Acceptance

3.1.12. Cutover Coordination

NGA will support/provide:

- The coordination of cutover activities with all service providers, HCSO staff, and PSAP personnel
- A detailed mutually agreed upon cutover plan
- Coordinate conference calls with all Stakeholders
- Supporting documentation

Task	Assigned To	To Due	
Provide a Cutover Plan	NGA	60 days after Contract Award and Project Kick-off Meeting	
Cutover Plan approval	HCSO	90 days after Contract Award and Project Kick-off Meeting	
Provide Cutover Team information (name, title, email, mobile number)	NGA	Included in PSAP Specific Cutover Plan	

3.1.13. Preliminary Test Plan

NGA will support the following:

- Provide a preliminary test plan that contains testing processes for all components in the proposal
- Provide Action Item Register and IML (Issues Management Log) that can be tracked and measured for the duration of the project

Task	Assigned To	Due
Provide a Preliminary Test Plan	NGA	60 days after Contract Award and Project Kick-off Meeting
Preliminary Test Plan approval	HCSO	90 days after Contract Award and Project Kick-off Meeting

3.1.14. PSAP Final Acceptance Testing

- PSAP final acceptance testing, providing confirmation that NGA's solution operates during day-to-day use in each live PSAP environment. The acceptance period will be thirty (30) consecutive calendar days
- NGA confirms that the solution will perform in compliance with the incorporated RFP
- Should a failure occur, NGA and the HCSO will follow the below process:
 - o The HCSO will provide a written notification to NGA

- NGA will remedy the non-compliance per the SLAs and Service
 Management Performance sections of the contract and will provide written notification of the remedy to the HCSO
- The final acceptance testing period will restart upon the HCSO's written notification of acceptance of the remedy, or ten (10) business days, whichever occurs first
- The procedure will continue until compliance over the testing period, thirty (30) consecutive calendar soak in, is achieved and the acceptance notice mutually executed

Task	Assigned To	Due	
Provide Certificate of System Readiness form	NGA	TBD	
Execute Certificate of System Readiness form	HCSO	TBD	
Provide Certificate of Final Acceptance (CFA)	NGA	30 consecutive calendar days post cutover	

^{*}TBD dates will be mutually agreed upon during the Project Kick-off Meeting

3.1.15. System Final Acceptance Testing

- Final System Acceptance testing will not start until the HCSO has successfully completed the PSAP final acceptance testing. The testing period will be sixty (60) consecutive calendar days
- NGA will confirm that the solution performs in compliance with the incorporated RFP. If a failure occurs, NGA and the HCSO will follow the below process:
 - The HCSO will provide a written notification to NGA
 - NGA will remedy the non-compliance per the SLAs and Service
 Management Performance sections of the contract and will provide
 written notification of the remedy to the HCSO
 - The final system acceptance testing period will restart upon the HCSO's written notification of acceptance of the remedy, or three (3) business days, whichever occurs first
 - The process will continue until the final system acceptance testing period is achieved (60 consecutive calendar days) and the acceptance notice is mutually executed
- The following fault categories are defined for use during the final acceptance testing process:
 - Priority One (1) Fault A critical system fault that renders the solution even partially inoperable.
 - Priority Two (2) Fault A major system fault that significantly reduces the solution's performance and functionality. These minor faults are

- operational in nature and only are acceptable while in the final acceptance phase.
- Priority Three (3) Fault A minor system fault that marginally affects system performance and functionality. These minor faults are operational in nature and only are acceptable while in the final acceptance phase.
- Priority Four (4) Fault A combination of minor system faults and items
 that are on the punch list. These are items that have minimal or no
 effect on system performance and functionality, and only are acceptable
 while in the final acceptance phase.
- All HCSO detected Faults will be documented, and the documentation will include a limited, but reasonable time-period, in which the Fault is to be resolved by NGA.

Task	Assigned To	Due
Provide Certificate of System Readiness form	NGA	TBD
Execute Certificate of System Readiness form	HCSO	TBD
Notice of System Final Acceptance	HCSO	TBD

3.1.16. Migration Plan

- Provide a detailed migration plan that includes a full description of the methods and procedures that will be employed to ensure a non-service-affecting migration from the current environment to the new system
- Provide recommended transition tasks
- The plan will include a fallback procedure to restore the HCSO to a pre-migration operational state in the event of a catastrophic failure

Task	Assigned To	Due
Provide PSAP Draft Migration Plan	NGA	30 days after Contract Award and Project Kick-off Meeting

3.1.17. NOC/SOC

NGA NOC/SOC will:

- Be staffed 24/7/365
- Able to accept tickets, submitted by phone, email, and direct IT Service Management user access for incidents, problems, and changes
 - o By Phone
 - o By Email
 - o By logging into the NGA Web-Portal
- Perform outward notifications and updates of customer tickets through phone, email, and text
- Provide an executive dashboard with (near) real-time updates of tickets and network status, availability, and performance
- Comply with Service Level Agreements (SLAs) for notifications and ticket resolution
- Provide access to technical staff for escalations with established escalation procedures
- Provide Tier I support, network and security monitoring, and troubleshooting

Task	Assigned To	Due	
Obtain letters from PSAPs requesting Text to 9-1-1 and RTT	NGA	30 days of contract award and Project Kick-off Meeting	
Register PSAPs with FCC	NGA/HCSO	7 days of obtaining letters of request from PSAP	
Coordinate with OSPs for delivery of Text to 9-1-1 and RTT	NGA	Immediately upon registration	
Training	NGA/HCSO	TBD - Schedule developed with PSAP	
Implementation	NGA	TBD	
Test and Acceptance	NGA/HCSO	TBD	

4. Payment Milestones

4.1 Non-Recurring (NRC) Payment Triggers

Milestone	Description	Percent of NRC	
Project Execution	At agreement signing	10%	
Phase 0	Pre-Planning Plans completed and accepted	10%	
Phase I	Final Plans completed and accepted	15%	
Site Survey and Network Requirements Compete	Design Plan and Site Survey Complete, NG Trunks ordered and installed	20%	
Interface and Implementation Complete	ESInet/NGCS implemented; Network testing begins	20%	
Training and Cutover	All training complete and system cutover complete. Entered system soak	25%	

4.2 Monthly Recurring (MRC) Payment Milestone Triggers:

Milestone	Description	MRC
Install of NG Trunks	Upon Completion of installation and Test/Acceptance	\$3,000
First Live OSP	Cutover to Live	25%
Second Live OSP	Cutover to Live	50%
Third Live OSP	Cutover to Live	75%
Fourth and all additional Live OSP	Cutover to Live	100%

- 5. Draft Master Schedule and Project Plan
 - 5.1. Project Kick-off Meeting will be scheduled within 14 days of Full Contract Execution. During the Project Kick-off Meeting NGA, in collaboration with HCSO, will:
 - Establish Communication Process and Project Planning Meeting Cadence
 - o NGCS / ESInet
 - o Call Handling Solution
 - o PSAP Activities
 - Identify Key Resources/Stakeholders for input into Project Planning Meetings
 - Review Provided Draft Master Schedule
 - Develop a mutually agreed upon RACI Chart
 - Review Executed Contract, including but not limited to:
 - o Roles and Responsibilities (RACI)
 - o Technical Solution Review
 - o Timeline Expectations
 - o Implementation, Training and Support Expectations

^{*}Dates to be finalized upon mutual agreement during the Project Kick-off Meeting, additional subtasks will be incorporated into the Master Schedule and Project Plan. The Start Date is to show an example only, actual dates will be assigned during Project Kick-off Meeting.

Task No.	Task Name	Duration (days)	Start	Finish	Predecessors	Resource Names
1	PSAP Deployment Project	196	12/31/2022			
2	Contract Execution	0	12/31/2022	12/31/2022		ALL
3	Kick off Meeting	0	1/30/2023	1/30/2023	2	ALL
4	Phase 1: Project Planning & Documentation	74	1/1/2023	3/16/2023	3	NGA 911, PSAP
10	Phase 2: Infrastructure	99	1/30/2023	5/9/2023	3	NGA 911
11	Site Surveys & Remediation	48	2/13/2023	4/2/2023		NGA 911, PSAP
15	ESInet/NGCS	45	1/30/2023	3/16/2023		NGA 911
24	Data Centers & PSAP	67	3/3/2023	5/9/2023		NGA 911, PSAP
29	OSPs	82	2/13/2023	5/6/2023		NGA 911, OSP, PSAP
36	Phase 3: Implementation	140	1/28/2023	6/17/2023	3	ALL
54	Phase 4: Testing & Training	31	6/10/2023	7/11/2023	36	ALL
60	Phase 5: Cutover	70	7/11/2023	9/19/2023	54	ALL
68	Phase 6: Day 2 Support	33	9/20/2023	10/23/2023	60	NGA 911, PSAP