

REQUEST FOR PROPOSALS
FOR
DIGITAL VOICE RECORDING SYSTEM
RFP# 13-0333



COUNTY COMMISSIONERS

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1. Project Overview

1.1 Introduction

New Hanover County invites proposals for the provision of a Digital Voice Recorder (DVR) to support mission critical communications within the County. The proposed DVR shall provide enhanced, recording capabilities for the County's 911 telephone and public safety radio systems.

The proposed DVR shall be capable of recording all radio and IP telephone communication in and out of the County's 911 Center.

The proposed systems shall comply with the latest applicable P25 suite of standards adopted as TIA and/or ANSI documents at the time of the proposal submission. The system will be delivered in accordance with the ISSI standards and P25 Phase 2 standards outlined in this RFP. Should these standards change or be updated for final release, the Successful Bidder will implement the final standards at no additional charge to the County.

1.1.1 County Overview

1. New Hanover operates a Motorola Astro 25 800 MHz Simulcast Trunking System.
2. The County's 911 dispatch center is located at 230 Government Center Drive, Suite 115, Wilmington, NC 28403, and operates twenty-one (21) Motorola MCC 7500 dispatch positions that were installed in 2006.
3. This RFP reflects user operational requirements, recorder requirements, and support requirements. This RFP addresses (but is not limited to):
 1. Significant system components
 2. Minimum performance specifications for the system based on defined user needs, national standards and industry best practices
 3. Hardware specifications
 4. Agency owned sites

4. Proposed systems shall leverage existing communications infrastructure to the greatest extent possible to provide interoperability and provide reserve capacity for use during major manmade or natural catastrophic events.

1.2 Overview of this Document

1. This Section provides a high level overview of the sections of this RFP.
 1. Section 1, *Project Overview* – This section provides background information and a general overview of the requirements contained in this RFP.
 2. Section 2, *Instructions to Proposers* – This section provides instructions to proposers, including, but not limited to; proposal due date; pre-proposal conference information; and evaluation criteria.
 3. Section 3, *Digital Voice Recorder Requirements* – This section provides requirements for the desired recorder, and site equipment.
 4. Section 4, *Training* – This section provides requirements for training programs to be developed by the Successful Bidder.
 5. Section 5, *Warranty, Maintenance, and Support* – This section provides requirements for the warranty, extended warranty, maintenance, and support of the proposed system and subsystems.
 6. Section 6, *System Implementation, Test, and Acceptance* – This section provides requirements for system cutover, installation, and final acceptance.
 7. Section 7, *County Terms and Conditions*
2. Several appendixes are also included with this RFP:
 1. Appendix A – Mandatory Submittals
 2. Appendix B – Proposal Pricing Forms
 3. Appendix C – Compliance Matrix

1.3 Project Summary

1. The Successful Bidder shall be responsible for providing the following project components:
 1. Furnishing and installing equipment

2. Engineering and design
 3. Project management
 4. Software installation and programming
 5. Training
 6. Acceptance testing
 7. Cutover plan and execution
 8. Warranty and Maintenance
2. The Successful Bidder shall be responsible for furnishing complete and fully functional systems connected to radio system, IP telephone equipment, 911 answering equipment and digital paging system
 3. Work shall be planned, coordinated and conducted with minimal interruption of service to existing critical systems.
 4. Proposals shall completely describe the equipment and methods that will be used to implement the system. The intent of this document is to allow Bidders to use the best equipment, technology, and methods available to provide state-of-the-art recording systems of highest quality and performance.
 5. All equipment shall be provided in new condition and be covered by a full factory and/or manufacturer's warranty of not less than three years from system acceptance.
 6. Proposals shall not be accepted that include systems or equipment at the end of their respective lifecycles (within three years).
 7. In the event that requirements are stated in more than one section and appear to conflict, the more stringent requirement shall apply.
 8. It should be noted that today's technology, for the most part, is IP controlled. Although it is a core goal of New Hanover County to leverage existing infrastructure, consideration must be given to the cost of interfacing to legacy systems. Therefore, the Bidder shall weigh these factors and provide a cost effective, long-term solution.

1.4 Authorization

1. New Hanover County has authorized this RFP as part of an ongoing effort to enhance mission critical radio communications and interoperability throughout the County. This project is intended to provide specifications and engineering assistance necessary to create a system-of-systems.
2. Upon authorization by the County, the Successful Bidder shall offer other agencies or municipalities in the County, user equipment and system components at the same or better pricing as that offered to the County.

1.5 Proposals Desired

1. The County desires, a complete turnkey solution for its recording needs.
3. Proposal Options: Requirements described as an “OPTION” or “OPTIONAL” refer to features or equipment which the County may or may not purchase, or items whose quantities are not determined yet. Bidders are asked to respond to all OPTIONAL requirements to the greatest extent possible.
4. Alternate Proposals
 1. In the event a Bidder has a technological solution that does not meet the exact requirements in this RFP, Bidder may offer more than one proposal as long as each proposal fully addresses the intent of the requirements set forth in this RFP.
 2. Alternate proposals shall be submitted separately under a different cover from the base proposal and clearly marked “ALTERNATIVE PROPOSAL”.
 3. The Bidder shall comply with the same submittal instructions in Section 2.3, *Proposal Format*.

1.6 Quality Assurance and Coordination

1.6.1 Standards and Guidelines

1. The Successful Bidder shall comply with the following standards, rules, regulations, and industry guidelines:
 4. American National Standards Institute (ANSI)

5. National Electrical Manufacturer's Association (NEMA)
 6. Electronics Industry Association (EIA)
 7. Telecommunications Industry Association (TIA)
 8. Telecommunications Distribution Methods Manual (TDMM)
 9. National Electrical Code (NEC)
 10. Institute of Electrical and Electronics Engineers (IEEE)
 11. Federal Communications Commission (FCC)
 12. Underwriters Laboratories, Inc. (UL)
 13. American Society of Testing Materials (ASTM)
 14. National Fire Protection Association (NFPA) 1221
5. The Bidder shall comply with industry best practices for system installation, grounding, bonding, and transient voltage surge suppression (TVSS), as outlined in the following standards:
1. Motorola R56 – Standards and Guidelines for Communication Sites (latest revision)
 2. Harris Site Grounding and Lightning Protection Guidelines (AE/LZT – 123 4618/1 – latest revision) Other contractor / industry standard – RESPONDENT shall provide to the County for review and approval prior to contract award.
6. Equipment mounting
1. Equipment placement in racks or cabinets shall be such that heavier items are placed lower in the racks while lighter items are placed higher in the racks.
 2. Bracing must also be applied to equipment during unattended periods of construction.
7. Governing codes and conflicts: If the requirements of this RFP conflict with those of the governing codes and regulations, then the more stringent of the two shall become applicable.

8. If the Bidder cannot meet any of the standards or guidelines listed above, the Bidder shall list any and all deviations for approval by the County in their proposal.

1.6.2 Project Management

1. The Bidder shall provide a Project Management Plan which includes, a detailed Work Breakdown Structure (WBS), project scope, deliverables, schedule, QA/QC processes, and risk management sections.
2. The plan shall describe how the Successful Bidder intends to monitor and control the installation and deployment of the proposed system and mitigate risks in order to ensure that the system meets the design specifications and is delivered on time.

1.6.4.1 Scheduling

1. The Successful Bidder shall develop and maintain a project schedule including tasks, milestones, start and end dates, task predecessors, and task owners based on an approved WBS.
2. The schedule shall represent tasks associated with completing work on all items identified in the WBS. The project schedule shall be updated with actual dates as tasks are completed.
3. The updated schedule shall be provided to the county.
4. The schedule shall address the following at a minimum:
 1. Equipment manufacturing
 2. Equipment delivery
 3. System installation
 4. System configuration
 5. System optimization
 6. Acceptance testing
 7. User training

8. System cutover
9. System documentation development and delivery
10. System and equipment warranty

1.6.4.2 Project Punch List

1. The Successful Bidder shall establish and maintain a punch list, as mutually agreed to with the County, equipment, and for acceptance tests.
2. The punch list shall be maintained in real time. The punch list shall include the following at a minimum:
 1. Sequential punch list item number
 2. Date identified
 3. Item description
 4. The party responsible for resolution
 5. Expected resolution date
 6. Resolution date
 7. Details about how each punch list item was resolved and tested
 8. Notes about the item.
3. If responsibility for resolving an item is transferred to another a person or group, a new entry shall be added to the punch list and the original entry shall be appropriately noted.
4. The Successful Bidder shall be responsible for reviewing each punch list item, and advising the County of any changes. The status of punch list items shall be updated during each status meeting.

1.6.4.3 Project Meetings

1. A project kickoff meeting shall be scheduled prior to the beginning of the project.
2. Project status meetings shall be scheduled following contract award and the initial kickoff meeting.

3. The Successful Bidder shall be responsible for scheduling the meetings as well as preparing meeting agendas and minutes. In addition to those identified in Section 1.7.4.1, Scheduling, above, meeting agenda items shall include, as a minimum, the following items:
 1. Schedule review
 2. Status of deliverables
 3. Risk items
 4. Changes
 5. Plans for the next period
 6. Action item assignments
 7. Punch list review

1.6.4.4 Project Staffing

1. Project staffing shall be managed by the Successful Bidder based on workload and the level of effort throughout the implementation / installation process; however, the positions identified below shall be staffed throughout the duration of the project and shall not be changed without prior approval of the County.
2. Successful Bidder Project Manager:
 1. The Successful Bidder's Project Manager shall be the primary point of contact between the County and the Successful Bidder.
 2. The Successful Bidder's Project Manager shall bear full responsibility for supervising and coordinating the installation and deployment of the communications system; be responsible for development and acceptance of the Project Management Plan; managing the execution of the project against that plan; and overseeing the day-to-day project activities, deliverables, and milestone completion.
 3. The Successful Bidder's Project Manager shall be responsible for coordination of the biweekly status meetings.

3. Successful Bidder Project Engineer:

1. The Successful Bidder's Project Engineer shall have the primary responsibility for managing the system design and ensuring that the system is installed in accordance with the approved system design.
2. Any deviation from the system design shall be subject to project change control procedures and will not be undertaken until approved by the County.
3. The Successful Bidder's Project Engineer shall ensure the development of block diagrams, system level diagrams, and rack diagrams to assist the installation team in completing the system installation.
4. The Project Engineer shall also supervise the development and execution of the Acceptance Test Plan, the Coverage Acceptance Test Plan, and guide the project team through the processes and procedures necessary to prove that the system performs as specified in the contract. No test plan will be executed until approved by the County.

1.6.5 QA/QC Program

1. The Bidder shall include a Quality Assurance / Quality Control (QA/QC) plan for the County's radio communications system project. The QA/QC plan shall be submitted for review during preliminary design as described in this section. The plan shall address all stages of the project, including, but not limited to:
 1. Procurement
 2. System design
 3. Installation
 4. Implementation
 5. Testing
 6. Cutover
2. The QA/QC plan shall specifically describe the plans and procedures that ensure the proposed system is designed in accordance with the standards and requirements described in this RFP.

3. The QA/QC plan shall be included as part of the Project Management Plan developed by the Project Manager.
4. The QA/QC plan shall be an integral part of the project and include County personnel as part of the review and approval process for all deliverables and submittals.
5. The proposed QA/QC plan shall address the following project tasks at a minimum:
 1. Design analysis and verification
 2. RF coverage analysis and verification
 3. Design changes and document control
 4. Material shipping, receiving, and storage
 5. Site preparation (if required)
 6. Field installation and inspection
 7. Equipment inventory and tracking
 8. System testing and validation
 9. Software regression testing
 10. Deficiency reporting and correction
 11. Implementation and cutover
 12. Training and certification

1.7 Project Submittals

Key project deliverables and submittals are outlined below and are described in further detail throughout this RFP.

1. All project submittals shall be subject to review and approval by the County and/or its Engineer / Consultant.

2. All submittals shall be provided in hard copy, properly bound, and in electronic format on CD-ROM. The quantity of hard copies required shall vary for each type of submittal and shall be determined by the County prior to submission.
3. All submittals shall include a cover letter or letter of transmittal, signed, dated, and fully describing the contents of the submittal.

1.7.1 Proposal

Bidders shall submit their proposal in accordance with the date and time specified in Section 2.1 and Proposal format and submittal details are provided in Section 2.3.

1.7.2 Preliminary Design (15 DAYS AFTER CONTRACT AWARD)

The Successful Bidder shall submit the Preliminary Design package **15 DAYS AFTER CONTRACT AWARD, WHICH SHALL INCLUDE THE FOLLOWING:**

1. QA/QC Plan
2. Detailed project schedule
3. System block diagrams
4. Radio and microwave channel plans
5. Microwave path engineering report(s)
6. Equipment room overview drawings
7. Equipment rack/cabinet elevation drawings
8. Tower profile drawings indicating antenna mounting locations
9. Detailed lists of materials for each site
10. 30-Day Operational Test Plan
11. Coverage Acceptance Test Plan (CATP)

1.7.3 Final Design (30 DAYS AFTER CONTRACT AWARD)

The Successful Bidder shall submit the Final Design package **30 DAYS AFTER CONTRACT AWARD, WHICH SHALL INCLUDE THE FOLLOWING:**

1. Any updates to previously submitted design information
2. Cutover plan
3. System operation and maintenance manuals for all equipment
4. Factory test data
5. Site installation drawings
6. The Successful Bidder shall submit a detailed Staging Acceptance Test Plan (SATP), outlining a comprehensive series of tests that will demonstrate proof of performance and readiness for shipment.
7. The SATP shall be submitted no later than 15 business days before the testing starts, and shall be approved no later than five business days before the testing starts.

1.7.4 System staging, delivery, and installation

1. System staging must be performed in the United States.
2. The Successful Bidder shall submit a bill of materials / packing list with two copies for each shipment of equipment. The packing list shall include the following information at a minimum for each component included in the packaging:
 1. Manufacturer
 2. Model
 3. Serial number
 4. Unique identification of the package containing the item
3. All items shipped by the SELECTED VENDOR or their suppliers will include the above information in a barcode format.

1.7.5 Final System Acceptance

1. The Successful Bidder shall submit a detailed Final Acceptance Test Plan (FATP), outlining a comprehensive series of tests that will demonstrate proof of performance and readiness for final acceptance by the COUNTY / OWNER.

2. The FATP shall be submitted no later than 15 business days before the testing starts, and shall be approved no later than five business days before the testing starts.
3. The Successful Bidder shall submit three final and complete sets of as-built documentation, including the following:
 1. Documentation index
 2. Field test reports
 3. Coverage test reports
 4. Warranty documentation
 5. Detailed list of materials for each site
 6. As-built system block diagrams
 7. As-built site drawings, including all cabling and terminations
 8. Site layout drawings, as appropriate
 9. Tower drawings showing any new installations

2 Instructions to Bidders

Release date for RFP	Friday, August 2, 2013
Pre-proposal Meeting	Thursday, August 8, 2013 at 10:00 AM in Finance Conference Room 500
Deadline for Questions	Monday, August 12, 2013 by 5:00 PM
Answers to Questions	Thursday, August 15, 2013 by 5:00 PM
Proposal due date	Friday, August 23, 2013 by 5:00 PM

2.1 Overview

1. Proposals must be received by **Friday, August 23, 2013 AT 5:00 PM EST**. Proposals received after this time will not be considered.
2. Bidders shall submit a bound original and three (3) bound copies of the proposal to the County. Each package shall also include a copy of the proposal in electronic format on CD-ROM. The front of the package should be marked "**RFP # 13-0333-Digital Voice Recording System**". Proposals shall be addressed to:

New Hanover County
Attn: Lena Butler, Purchasing Supervisor
230 Government Center Drive, Suite 165
Wilmington, NC 28403

2.2 Pre-Proposal Conference

4. A pre-proposal conference will be held on **THURSDAY, AUGUST 8, 2013 AT 10:00 AM, EST**. The conference will be held in New Hanover County Finance Conference Room 500 located at 230 Government Center Drive, Suite 165, Wilmington, NC 28403.
5. After issuance of the RFP, all communications between the County and prospective Bidders shall be in writing. Any inquires, requests for interpretation, technical questions, clarification, or additional information shall be directed to **Lena Butler, Purchasing Supervisor** by emailing lbutler@nhcgov.com or faxing (910) 798-7806.

Bidders may submit questions prior to the pre-proposal conference being held on **Thursday, August 8, 2013 at 10:00 AM, EST**. All questions concerning this RFP shall reference the section number and paragraph. During the conference, the County will provide answers to any questions received and hold an open discussion regarding the project.

Questions and responses affecting the scope of the services will be provided to Bidders by issuance of an Addendum which will be posted to the County's website at <http://www.nhcgov.com/Finance/Pages/CurrentBids.aspx>. The addendum will appear under the advertisement on the County's website.

All bidders who plan to submit a bid on this project should send an email to lbutler@nhcgov.com indicating at a minimum the bidder contact information including name and email address. This will ensure that you receive all addenda related to this RFP.

All questions shall be received no later than 5:00 P.M., EST, Monday, August 12, 2013.

2.3 Proposal Format

6. Bidders shall complete all mandatory submittals. Failure to provide any of the mandatory submittals with the proposal may be cause for rejection.
7. Bidders shall adhere to the proposal format provided below, organized by Section:
 1. Section 1: Cover letter
 2. Section 2: Table of contents
 3. Section 3: Executive summary
 4. Section 4: Qualifications

All Bidders shall provide information describing experience and qualifications with similar projects in their proposal, including, but not limited to the following:

- a. Descriptions of the Bidder's qualifications
- b. Resumes of key personnel

- c. Supplementary information
- d. A list of five systems of similar size and complexity, successfully completed by the Bidder, including:
 - 1) Name of the system
 - 2) Location
 - 3) Contact person
 - 4) Contact telephone number
- 5. Section 5: Description of the system, including equipment, software, design, and services to be provided
 - a. Logging Recorder
 - b. Additional subsystems (if required)
 - c. Detailed equipment specification sheets for all proposed equipment
 - d. System design information shall include a complete detailed description, block diagrams, equipment layouts, and equipment lists necessary to provide a complete and comprehensive description.
- 6. Section 6: Preliminary project schedule with detailed Gantt chart
- 7. Section 7: Training programs and additional information that is not covered in other sections
- 8. Section 8: System, subsystem warranty information
- 9. Section 9: All bidders are required to submit a fee proposal for all services outlined in the scope of services. The fee shall include all materials, supplies, software, hardware, training, and whatsoever is necessary to provide and implement the DVRS system as describe herein. The County is exempt from the payment of federal excise tax. If the bidder is required to charge NC sales tax on bidder's sales, bidder shall not include it as part of the bid price. The County will pay NC sales tax over and above bid prices when invoices.

2.4 Evaluation

The County shall evaluate proposals based on a number of criteria, including:

1. RFP compliance
2. Bidder experience
3. Cost of system
4. Lifecycle costs
5. Capability, features, and functionality of the system
6. Feasibility of design
7. Warranty, maintenance, and support

2.5 Addenda to the Contract

During the proposal period, the County may issue written addenda to these specifications, making changes or corrections to the specifications as issued. Such changes or corrections shall be included in the work and/or materials covered by the proposal, and such addenda shall become part of the specifications and contract.

2.6 Award of Contract

The County intends to award a contract for the complete recording system. However, the County specifically reserves the following rights, consistent with procuring a recorder system that best meets the needs of the County and system users:

1. The County reserves the right to accept or reject any or all proposals or any portion thereof.
2. The County reserves the right to accept all or part of any proposal depending solely upon the requirements and needs of the County.
3. The County reserves the right to seek clarifications of any proposal submitted or specific aspects of any proposal prior to the award of the contract. After seeking such clarification, the County will allow the PROPOSER an opportunity to provide the requested clarification.
4. The County reserves the right to adjust item quantities and/or reconfigure the communications system in the best interest of the County subsequent to award of the contract.

5. If multiple contracts are awarded, in lieu of a turnkey contract, the County may either:

- a. Negotiate additional scope with one or more of the successful Bidders to assume Prime Contractor status, or
- b. Provide system integration or prime contractor services provided the Successful has submitted a proposal for those services.

2.7 Proposals Binding

Unless otherwise specified, all formal proposals submitted should be binding for ninety (90) calendar days following proposal opening date.

3 Digital Voice Recorder System Requirements

3.1 Overview

1. Bidders shall propose one complete Digital Voice Recorder System. The system shall be installed in the County's 911 Dispatch Center.

3.2 System Configuration

3.2.1 Expansion

The DVR shall be expandable by adding additional hardware and/or software to increase coverage, capacity, or features. Where possible, RESPONDENT shall propose equipment such that the system can be easily expanded by a minimum factor of 30%.

3.2.2 DVR Layout

1. The DVR must be capable of recording up to 64 channels (trunk side) per chassis.
2. The search and replay application must be capable of searching and replaying all channels at the same time.
3. Each DVR recording module must support 2 archive drives and an internal hard disk configuration.
4. The DVR must be designed to allow future advances in archive technology to be incorporated without chassis modification. Please describe how this would be accomplished.
5. Each recording module must support up to 80,000 channel hours of recordings on-line for high speed access.
6. The DVR must be able to record a mix of digital extensions and analog ports (for analog extensions and radio ports) in the same chassis.
7. To ensure accountability for future support availability, the audio channel card(s) for the DVR must be designed and developed by the DVR Supplier and produced specifically for the proposed DVR.
8. To ease troubleshooting and minimize support and space requirements, the audio recording architecture shall be non-distributed, combining voice connectivity cards, internal hard drive, operating system and storage within the recorder chassis.
9. The recorder must use utilize Windows Server 2008 R2 or another approved option.
10. The Supplier must provide a system-wide multi-channel search and replay application which can be loaded on a client workstation.
11. For security reasons, all audio files stored on the recorder must be saved in a format that cannot be played via standard replay application, such as Windows Media Player, QuickTime, and others.
12. Upgrades must be allowed either directly using the DVR DVD, floppy drive or remotely via LAN or modem connection through remote control software.
13. The DVR must support an optional reporting tool package with pre-built reports and based on SQL Reporting Services or Crystal Reports to allow flexibility in creating new reports. At minimum the pre-built reports must include productivity and usage reports (per channel activity), Caller ID report (list of call records by caller ID), ANI/ALI report including (ANI, Zip Code,

Address, City and Name) and Security report including login, playback and file handling information. In addition, the reports package must support report printing, zoom in and out, emailing of completed reports and export to file.

3.2.3 Recording Inputs

3.2.3.1 General

1. Each DVR recording module (single chassis) must contain interfaces for all analog and digital telephony standards.
2. It must be possible to add recording channels to the DVR recording module without upgrading other elements of the DVR recording module (chassis, memory, processors etc.) up to the maximum limit of the chassis.
3. The DVR must support user-definable channel names and channel numbers to assist in searching, management, and monitoring.

3.2.3.2 Automatic Gain Control

1. Automatic Gain Control (AGC) must be available for replay. It must be possible for the System Administrator to enable or disable AGC on replay without requiring intervention by Supplier. In order to preserve evidence, the DVR must be capable of recording without modifying input levels.

3.2.3.3 Analog Inputs

1. The DVR recording module inputs must be balanced and isolated from any internal voltage source.
2. The DVR recording module must support DC impedance for telephony connections greater than 10 M Ω .
3. The DVR recording module must support a minimum crosstalk coupling of -60 db.
4. The DVR recording module must support a minimum signal to noise ratio of 35 db.
5. The DVR recording module must support analog recording modules with optional 600 Ω resistance for passive serial connection/termination to radio lines.
6. The DVR recording module must support a minimum dynamic input range of -50 dBm.
7. The DVR recording module must support a frequency response between 300 Hz (-6dB) and 3400 Hz (-7dB).

8. It must be possible to configure the analog recording inputs with optional warning tone without additional components or cost at any time in the life of the system. The System Administrator must be able to enable or disable the warn tone per channel.
9. The DVR recording module must have the ability to set alarms based on a specified period of non-activity and activity on a per channel basis.

3.2.3.4 Digital Inputs

1. The DVR recording module must be capable of supporting interfaces to digital telephone systems. The Supplier must provide a list of available interfaces.

3.2.3.5 Record Triggers

2. When recording analog telephony/radio channels, the DVR must provide the following record triggers:
 - a. Level or energy detection with manually adjustable threshold,
 - b. External (contact closure, squelch output),
 - c. On/off hook detection (for telephony), and No trigger for continuous recording.
3. When recording digital telephony/radio channels, the DVR must support the following record triggers:
 - a. Level or energy detection with manually adjustable threshold
 - b. On/off hook detection (for telephony), and
 - c. No trigger for continuous recording.
4. The DVR must support configurable record trigger for each channel separately to accommodate various channel requirements.
5. The DVR recording module must support integration with equipment that supplies a dry contact closure to signify the beginning and end of a call.

3.2.3.5 Filters

1. The DVR recording module must support built-in configurable frequency filters. Note: This can be used to filter out the 2175Hz tone produced by the radio system.

3.2.3.6 Voice Activation

1. The DVR must continuously record voice activity to ensure each voice transmission is completely captured and not clipped.

3.2.3.7 Analog Signaling

1. Dialed Digits – The DVR recording module must be capable of decoding all dialed digits (DTMF) during a message, to enhance search capabilities. The

digits will be stored with the audio record. The DVR recording module must be capable of saving up to 48 dialed digits for each recorded message.

2. Calling Number – the recorder must be capable of decoding CLI information that meets the following specification: Bellcore GR-30, ISDN BRI, and ISDN PRI.
3. The DVR recording module must support internal (without the use of external decoding equipment) MDC-1200 decoding.

3.2.4 Voice Processing

1. The DVR recording module must be capable of converting analog input signals to digital data, compressing the digital data and storing the digital data to disk.
2. Digital input signals, such as ISDN Basic Rate, must be converted to discrete 64kbit/sec audio signals and then compressed.
3. The types of speech compression supported by the DVR must be selectable from 5.3 kb/s to 64kb/s.
4. It must be possible for the System Administrator to select compression algorithm on a per recording channel basis.

3.2.5 Operation

3.2.5.1 Time Synchronization

The DVR recording module must be capable of synchronizing to designated SNTP or NTP server(s).

3.2.5.2 Diagnostics & Alarms

1. The DVR must support 4 different means of reporting alarms from each recorder.
 - a. LED
 - b. Audible Alarm
 - c. Monitoring application loaded on individual clients
 - d. SNMP with standard MIB file.
2. Alarms and management feedback must be provided via a built-in client application AND via SNMP commands monitored from an SNMP management application such as HP OpenView, CastleRock, etc. Supplier must provide standard MIB files for the proposed DVR.

3. The DVR recording module must include built-in tests that automatically monitor the status of the DVR, initiating audible, visual, and network alarms in the event of a failure. The system administrator must have the option of silencing the alarm indicators.
4. The DVR must keep a full audit trail of all user access and DVR maintenance functions with details of who accessed the DVR and when, with details of what was changed or accessed.
5. The DVR must support the ability to create a list of events that will trigger an alarm. In addition, the alarm type (SNMP, beep tone, etc.) must also be selectable on the basis of specific events.
6. The DVR must keep a full audit trail of all alarms and faults and provide a method of viewing the alarm history.

3.2.6 Hard Drive

1. Each DVR recording module (single chassis) must be capable of being configured with internally mounted hard drive(s). Each recording module must be capable of storing up to 80,000 channel hours per recorder.
2. The DVR recording module database must be proprietary, and must be capable of maintaining an extremely high insert rate, be resistant to hacker and virus attacks, and be very secure and stable (not prone to corruption).
3. To maximize hard drive efficiency and provide a very high level of security the DVR recording module must write voice to an unformatted partition on the local HDD, RAID 1 or RAID 5 disk array.
4. Messages stored on the DVR recording module hard disk(s) must automatically be copied to the archive media unless the archiving is disabled.
5. In the event that the DVR recording module hard disk is approaching 100% full of un-archived data and there is no archive available, the recorder must initiate an alarm warning that data will be lost if a new archive is not enabled.
6. For security reasons, it must not be possible to manually delete specific individual messages from the DVR hard drive(s).
7. The operating system, primary recorder software, recordings and associated call records must be striped across multiple hard disks when the DVR recording module is configured with a RAID 5 subsystem.

3.2.7 Archive

1. The DVR recording module must be capable of supporting single or dual archive decks. In dual deck mode it must be possible to operate the decks in sequential or parallel mode.
2. The DVR must support manual archiving by channel and date range.
3. The DVR must have an optional feature to select the expiration date after which the media can be overwritten.
4. The DVR must support an archive methodology where one deck is actively archiving while the other deck is in standby mode. The second deck starts archiving only if the removable archive media becomes full on the first deck or if the first deck fails.
5. The DVR must support an archive methodology where both decks archive simultaneously to create duplicate set of archive media.
6. The DVR must support a dual deck configuration where one deck is archiving while the second deck is being used for replay.
7. To minimize space requirements, the DVR must support internally mounted DVD-RAM, AIT-1, AIT-2 or DDS drives. DVRs that only support archive drives or sub-system external to the recorder mainframe will not be considered.
8. Each 9.4 GB DVD-RAM archive disk shall be capable of recording up to 3600 channel-hours.
9. Each AIT-1 archive tape must be capable of recording 13000 channel-hours.
10. The supplier must provide a removable media management methodology that includes:
 - a. Label printer used to print label with unique ID, date of creation and logger ID.
 - b. An integrated search and replay application that indicates by ID, logger ID and creation date which piece of media contains the desired recordings.
11. When the removable media is full, the DVR must alarm to notify the administrator that a change of media is required.
12. Access to the archive drives (in the DVR recording module) must be simple but prevent unauthorized ejection of media to prevent loss of data security and to protect the chain of evidence.
13. The DVR must support archiving and retrieval from a remote dedicated server. This is to enable media management from a remote location.

14. The DVR must support configurable archiving schemes: archiving continuously and at specific time.

3.2.8 Centralized Archive

1. The DVR solution must be capable of archiving voice recordings to centralized storage to facilitate long-term high-speed access to recordings.
2. The DVR centralized archive solution must support RAID, SAN and NAS. The supplier must provide a reference site (name and installation date) which employs centralized storage.
3. The DVR centralized archive solution must be fully integrated with the EMC Centera storage system. In addition, the supplier must be certified by EMC and provide proof of certification.
4. The DVR centralized archive solution must accommodate jukeboxes and tape libraries.
5. The DVR centralized archive solution must operate on servers running the Windows Server 2008 R2 operating system.
6. The DVR centralized storage solution must support a redundant architecture to maximize uptime.
7. The DVR centralized storage solution must support an optional architecture that provides geographic redundancy.
8. The DVR centralized storage solution must support rules-based archiving.
9. The transfer of voice recordings from the recorders to the centralized storage can be bandwidth intensive. The centralized storage solution must include transfer options.
10. The centralized storage solution must allow an administrator to program variable retention periods on a per channel basis.

3.2.9 Redundancy

1. The DVR recording module (single chassis) must support an internal RAID 1 or RAID 5 disk array.
2. The DVR recording module (single chassis) must support dual DVD or dual AIT-1 archive drives.
3. The DVR recording module (single chassis) must contain dual hot-swap power supplies with load-balancing and dual independent power feeds.
4. The DVR must be capable of providing 100% redundant voice recording by means of a parallel recording architecture.
5. The DVR must have the capability of providing offsite centralized storage to guard against geographic disaster. The supplier must provide a reference site (name and installation date) which employs a parallel recording architecture with offsite centralized storage.

3.2.10 Call Data

1. The DVR must provide the capability to decode and store call data (CTI, CDR, SMDR, VOIP, and ATIA) in a Microsoft SQL Server 2008 database. All intrinsic features and functionality of the database must be available.
2. The DVR must provide an external call data storage component that must utilize Microsoft Windows 2008 R2 Server.
3. The DVR must support a dual call data storage environment to protect against geographic disaster and provide a maximized level of redundancy.
4. The DVR must be capable of providing up to 7 years of data storage on hard drive (Online) without requiring the use of removable media on any type.
5. The DVR solution must provide the capability to natively decode and store CDR and CTI data from a wide variety of switches, including the following:

Alcatel	OmniPCX 4400 - CTI link (Genesys)
	OmniPCX 4400 - CTI link (TSAPI/CSTA)
	OmniPCX 4400 - CTI link (TSAPI/CSTA) Centralized

	networked solution
Aspect	Call Center - CTI link (Aspect Contact Center)
	Call Center - CTI link (Event Bridge)
	Call Center - CTI link (Genesys)
Avaya	Definity or Media Server - CTI link (AVAYA CT)
	Definity or Media Server - CTI link (Avaya Interaction Center)
	Definity or Media Server - CTI link (Cisco ICM)
	Definity or Media Server - CTI link (CVLAN – Direct ASAI)
	Definity or Media Server - CTI link (Genesys)
	Definity or Media Server - CDR link over a serial Link
	Definity or Media Server - CDR link over TCP/IP
Cisco	Call Manager – CTI link (Cisco CTI Manager – TAPI)
	Call Manager – Skinny Client Control Protocol Decoder
	Call Manager – CTI link (Cisco ICM)
	Call Manager - CTI link (Genesys)
	Call Manager - CTI link (Genesys + Cisco CTI Manager)
	Call Manager - CTI link (Cisco ICM & Cisco CTI Manager)
Concerto (formerly Rockwell)	Spectrum – CTI link (Genesys)
	Spectrum – CTI link (Transaction Link)
Ericsson	MD110 - CTI link (Application Link)
	MD110 - CTI link (Genesys)
	MD110 - CTI link (OAS)

NEC	NEAX/APEX – CTI Link (Genesys)
	NEAX/APEX – CTI Link (TCP/IP)
Nortel	Meridian1 - CTI link (Cisco ICM)
	Meridian1 - CTI link (Genesys)
	Meridian1/Succession - CTI link (Meridian Link) + MAX/MEI
	Meridian1/Succession - CTI link (Symposium Call Center Server)
	Meridian1 - CDR Link (non real time) + MAX/MEI
Siemens	Hicom 300/300 E (US) - CTI link (Genesys)
	Hicom 300/300 E (US) - CTI link (Envox CT-Connect)
	Hipath 4000 - CTI link (Genesys)
	Hipath 4000 - CTI link (Envox CT-Connect)

3.2.11 Search and Replay

1. The DVR must provide up to 10 analog output channels per DVR recording module to accommodate direct connection to speakers.
2. The DVR must support the ability for a remote caller to replay recordings from a remote telephone connection.
3. Audio must be transferred over the LAN in compressed format and optionally formatted (via the search and replay application) to .wav format at the client workstation.
4. The DVR must be capable of recording on all channels during replay. The replay operation must not affect the recording performance in any way.
5. The DVR must support searches using ANI/ALI data (when available) as the search criteria.
6. DVR must provide a Windows-based Client replay application that supports online help. Please provide an actual screen shot of the basic search screen in jpg format.
7. The DVR search and replay client application must be capable of displaying calls graphically, by channel, by talk group and/or radio ID. Please provide detailed list of all data elements that can be used as search criteria. Please provide an actual screen shot in .jpg format depicting calls being graphically displayed.
8. The DVR search and replay client application must be configurable using xml.
9. The DVR search and replay application must be able to save the audio from a custom multi- channel/ multi-talk group/ multi-radio ID search into a single stereo .wav file.
10. The DVR search and replay application must support spoken time and date during replay.
 - a. Spoken time/date must be synchronized to recorder time.
 - b. Spoken time/date can be saved to one of the stereo channels in a .wav file.
 - c. On playback from a standard PC, the spoken time and date and the audio from the call must be played on separate speakers e.g., the spoken time is played on the left speaker and the audio on the right speaker.
 - d. Spoken time/date intervals must be configurable separately, e.g. spoken time every 30 seconds, and spoken date every 2 minutes.

- e. Spoken time/date volume must be controlled separately from the master audio volume control.
11. The DVR search and replay application must be capable of displaying and replaying an unlimited number of channels in synchronized mode, allowing effective scenario reconstruction.
 12. The DVR must provide the ability to display and save all (no limit) recordings associated with a particular incident to a single directory (a “Scenario”), recognizable by the search and replay application as a single entity. The solution must be able to search for and re-display the saved scenario + associated call data and provide the ability to continue searching or filtering for calls within the saved scenario without access to a recorder.
 13. The DVR search and replay application must allow users to search on the following criteria, individually, in any combination (Boolean) and supporting wild cards:
 - a. Time & Date
 - b. Duration
 - c. Channel ID
 - d. Position or Alias
 - e. Extension Number
 - f. Condition Code (incoming or outgoing)
 - g. Dialed Number
 - h. Calling Number
 - i. Annotation - user specific notes
 - j. ANI/ALI data
 14. It must be possible to combine any number of search criteria elements into one search function to provide complex but efficient system-wide searching capability.
 15. The DVR must support the ability to toggle Automatic Gain Control (AGC) on & off during replay.
 16. The DVR search and replay application must support block replay. This replay feature involves the selection of multiple recordings displayed graphically, which can be played sequentially by one press of the play button.
 17. The DVR search and replay application must be capable of viewing all recording channels. The search and replay application must not require the user to have knowledge of the channel map to specify from where the message needs to be replayed.
 18. The DVR search and replay application must be capable of seamlessly performing search and replay on both 911 telephony calls and trunked radio

recordings. The search criteria must support both 911 (ANI/ALI) information and radio information (radio ID, radio alias, talk group and talk group alias).

19. The DVR search and replay application must provide the ability to limit individual users to retrieve and replay calls related to designated talk groups or groups of designated talk groups (when in a trunked radio environment).
20. The DVR search and replay application must be able to replay the silence between recordings to fully recreate the original incident. The application must allow the user the option to play back the recordings with silence between recordings played (silence reconstruction) or not (skip silence).
21. The DVR must support the playback of recordings in mixed mode, where the recordings are replayed as they occurred; or in sequential mode, where each recording is played back sequentially one at a time. This may aid the user in understanding individual recordings where multiple radio transmissions or telephone calls occur on different recorder channels simultaneously.
22. There must be no limit to the number of recorder channels that can be displayed synchronously, up to the recorder system capacity.
23. The DVR search and replay application must allow selection of an unlimited number of audio segments for replay.
24. The DVR search and replay application must provide the capability to text annotate selected recordings. The annotation field will be at least 4000 characters in length and allow 10 such entries per call. The search and replay application must allow the user to search on text within the annotation field. The text annotation field will be stamped with a specific point of time so it can be related to a specific part of the call.
25. The DVR search and replay application must provide the capability to voice annotate selected recordings. The search and replay application must allow a minimum of 10 voice annotations per recording and be capable of graphically displaying the voice annotations within the recording. The voice annotation field will be stamped with a specific point of time so it can be related to a specific part of the call.
26. The DVR search and replay application must allow the user to set flags (markers) within a recording. In addition, the search and replay tool must be capable of graphically displaying the flags within the recording. The flag will be stamped with a specific point of time so it can be related to a specific part of the call.
27. The DVR search and replay application must support parallel recording environments by allowing the user the ability to switch between multiple recording complexes.

28. It must be possible to vary the speed of playback without pitch distortion, from 0.5x to 2x.
29. It must be possible to define the skip forward/backward interval between 1 and 60 seconds.

3.2.11 Instant Recall

1. The DVR Instant Recall application must provide users the ability to replay a message from a remote PC workstation via the network. The Instant Recall application must be software-based only and must not require any additional hardware to be installed in the recorder or console of the 911 Center. Solutions that require individual hardware-based Instant Recall devices will not be considered.
2. The DVR Instant Recall application must provide users the ability to replay a message from a remote PC workstation via the network with a single step action in all the following three ways: single mouse click, hot-key (predefined by the user), and double click on tray icon.
3. Audio must be streamed over the LAN via the Instant Replay application to the client workstation to allow fast replay.
4. The Instant Recall application must provide a replay interface with the following play controls (skip forward, skip backward, pause, stop, play, etc).
5. The Instant Recall application must be capable of loop replay. During replay of the last message, it must be possible to select a passage within the message using markers and to have that passage automatically loop back and repeat the passage.
6. The Instant Recall application must be capable of controlling the speed of replay. It must be possible to change the rate of replay to multiple settings between half speed and double speed to assist in clarification of the message. Replay rate must be changeable within sections marked by the looping feature. In addition, to maintain intelligibility, the pitch shall be corrected as the rate is changed.
7. The Instant Recall application shall be configurable to enable access to a group of channels (consisting of 1 or more channels) or all channels for the replay of last message for each position. These channels must be fixed on a per client basis to prevent unauthorized access to other channels.
8. The Instant Recall application must allow access calls up to 24 hours in the past (configurable timeframe). This time back must be configurable by the administrator for per user.

9. The Instant Recall application must display a list of messages (if present) upon start up. This list must be refreshed continuously to reflect the last messages. It must be possible to pick any message within the list and have the application automatically start playing that message. In this way it will be possible for the operator to quickly select a message that may be older than the most recent (last) message on the particular channel.
10. Where applicable, the Instant Recall application must display ANI/ALI information.
11. The Instant Recall application must provide the capability to annotate selected recordings in three formats: bookmark, text annotation, and speech annotation. All annotations must be associated with the exact time indication to which they relate in the call.
12. The Instant Recall application must be a standard part of each recorder provided by the Supplier. Suppliers that do not provide Instant Recall software as a standard configuration will not be considered.

3.2.12 ANI/ALI

1. The DVR solution must integrate with the current ANI/ALI output provided by the 911 service provider.
2. The DVR solution shall decode the inbound ANI/ALI information, normalize the information into a static call record, insert the call record into a call record database, and associate the call record with the corresponding recording.
3. The DVR solution must provide an ANI/ALI annotation application which is adaptable to changes in the ANI/ALI format.
4. The DVR solution must be able to extract the ANI/ALI information from the ANI/ALI controller or the appropriate output on the CAD system.
5. The DVR solution must support a configuration with parallel ANI/ALI annotation applications. The dual server configuration ensures that all 911 calls are annotated, even in situations where one of the servers experiences a problem.
6. The DVR must provide the capability to accept and store ALL ANI/ALI call data identified in the NENA ANI/ALI Phase II specifications (data element, type and length). The data elements MUST include:

Item	Field	Field Length	Description
1	NPA	3	The three digit area code of the Calling/Working Number.
2	Calling Number	7	The seven digit telephone number of the Calling/Working Number.
3	House Number	10	The house number. This field should be spaced filled if no house number is available.
4	House Suffix Number	4	The house number extension. (e.g. 1/2) This field should be space filled if no suffix applies.
5	Prefix Directional	2	The leading street direction prefix. Valid entries are: N, S, E, W, NE, NW, SE, SW. This field should be space filled if no prefix applies.
6	Street Name	60	The service address of the Calling Number.
7	Street Suffix	4	The street abbreviation, as defined by the U. S. Postal Service Publication 28. (e.g. AVE) This field should be space filled if no suffix applies.
8	Post Directional	2	The trailing street direction suffix. Valid entries are: N, S, E, W, NE, NW, SE, SW. This field should be space filled if no suffix applies.
9	Community Name	32	The service community name of the street / house number as assigned by the Municipal Street Address Guide.
10	State	2	The alphabetic state abbreviation as defined by the U. S. Postal Service. (e.g. PA)
11	Location	60	The additional address information describing the exact location of the Calling Number. (e.g. SUITE 2002, APT 706A) This field should be space filled if no location applies. See Notes for additional information on the use this field.

12	Customer Name	32	The subscriber name associated with the Calling Number.
13	Class of Service	1	Valid entries are:
			1 = Residence
			2 = Business
			3 = Residence Private Branch Exchange (PBX)
			4 = Business PBX
			5 = CENTREX
			6 = Coin 1 way out
			7 = Coin 2 way
			8 = Mobile
			9 = Residence Off Premise Extension (OPX)
0 = Business OPX			
14	Type of Service	1	Valid entries are:
			0 = Not Foreign Exchange (FX) or Non Published (Non Pub)
			1 = FX in 9-1-1 serving area
			2 = FX outside 9-1-1 serving area
			3 = Non Pub
			4 = Non Pub FX in 9-1-1 serving area
			5 = Non Pub FX outside 9-1-1 serving area

15	Exchange	4	Exchange used to place cellular phone call.
16	ESN	5	ESN for cellular phone
17	Main NPA	3	The three digit area code of the Main Number associated with the Calling Number.
18	Main Number	7	The seven digit telephone number of the Main Number associated with the Calling Number
19	County ID	4	County Identifier
20	Company ID	5	The Telephone Company Identification code. This field is to be populated using the NENA Company Code.
21	Zip Code	5	The five digit Postal Zip Code.
22	Zip + 4	4	Four digit zip code addendum
23	General Use	11	Field not used, space fill.
24	Customer Code	3	Customer code of cellular customer
25	Comments	30	Miscellaneous customer comments
26	X Coordinate	9	Longitude position of caller
27	Y Coordinate	9	Latitude position of caller
28	Z Coordinate	5	Altitude of caller
29	Cell ID	6	Identification Number of cellular phone used to place 911 call
30	Sector ID	1	Sector Identifier for sector in which call is placed
31	TAR code	6	Taxing Area Rate code.
32	Alternate Number	10	Alternate Number. Directory Number if different than Calling Number.

All fields must be discretely searchable via the standard replay client provided with the DVR.

3.2.13 Infrastructure

1. To ensure scalability, all external data must be captured and stored in a Microsoft SQL 2008 database residing on a dedicated server (separate from audio recorder). Multiple server configurations will be acceptable. Suppliers offering “single box” proposals where audio and external data sources are captured and stored in a single chassis will not be considered.
2. Each replay client must have the capability to search ALL recorders within the DVR simultaneously and return one data set to the user interface. Suppliers that do not provide single search across multiple database capability will not be considered.
3. Each DVR recording module must support dual network connectivity with teaming capability.

3.2.14 Security

1. The DVR must support configurable security to include unique security accounts allowing operators to access only specified channels with specified functionality.
2. The DVR must support the capability to prevent unauthorized users from ejecting media from the DVR recording module. Media that has been designated for removal from a remote PC Workstation must not be ejected from the recorder.
3. The DVR must support a configurable security methodology which prevents unauthorized users from replaying media.
4. The recorder must not require access to the operating system level for any function of use or maintenance of the DVR. All operations should be provided through a user-friendly application from a remote client PC. No recorder will be accepted that requires the need to access the recorder desktop or operating system for any configuration, installation or upgrades to the DVR.
5. All audio files stored on the DVR must be saved in a secure format. Formats that can be played by the standard media player (like Windows Media Player) are not acceptable.
6. The DVR supplier must provide a written anti virus strategy. The DVR must support at least 2 major anti virus software packages and be certified with

each major “antivirus software” version release no later than 1 month after general availability. Any supplier that is not able to prove past conformity to this level of anti-virus protection and process will not be considered.

3.2.15 Remote Management

1. The DVR must be capable of being maintained remotely via PC Anywhere.
2. Access to the DVR via the remote control software must be account name and password protected.
3. The DVR must support centralized configuration (manage multiple DVR recording modules from the same PC workstation).
4. It must be possible to monitor the status and alarms of each individual recorder from a single PC Workstation. A status change on any recorder mainframe must result in a status change indication being displayed on the PC Workstation.

3.2.16 Electrical Requirements

1. Each DVR recording module must be fitted with dual hot-swap power supplies with load-balancing and dual independent power feeds AC power supply (100 to 240 +/- 10% VAC).

3.2.17 Environment

1. The operating temperature of the DVR recording module will be in the range +5C to +35C (+41F to +95F).
2. The storage temperature of the DVR recording module will be in the range 0C to +50C (32F to +122F).
3. The operating humidity of the DVR recording module must be in the range 20% to 80% relative humidity, non-condensing.
4. The storage humidity of the DVR recording module must be in the range 10% to 90% relative humidity, non-condensing.

3.2.17 Physical

1. Each recorder module shall be rack mountable for installation into an equipment cabinet.
2. Provide a rack diagram will include all equipment (DVR recording modules, servers, IT equipment, etc).
3. Each individual recording chassis must support up to 192 channels (extension side) or 480 channels (trunk side) of conventional telephony in a 4U form factor.