



Public Safety Radio Assessment

IT Strategic Plan and Roadmap

Public Safety Radio Assessment

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Prepared for



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Public Safety Radio Assessment Background

- As part of the overall IT Strategic Plan and Roadmap, the City of Virginia Beach asked Gartner to conduct a high-level assessment of the public safety radio current state and City's future plans
- This assessment included review of City-provided radio system summary data and stakeholder interview workshops
- Representatives interviewed included:
 - Bob Christman, VBPD
 - Dan Constantineau, ComIT
 - Robert Delauney, ComIT
 - Thomas Green, EMS
 - T.C. Hall, VBPD
 - Dan Mugan, VBFD
 - Josh Nelson, ECCS
 - Ken Pravek, VBFD

Public Safety Radio Assessment

Current Radio Systems

- The City of Virginia Beach has a number of systems that support public safety and public services:
 - 700/800 MHz Digital Trunked Radio
 - Motorola Astro 25
 - 700 MHz Regional Interoperability (5 Channels)
 - 800 MHz City Use (14 Channels)
 - 3000 subscribers
 - 7 sites
 - 800 MHz Analog Trunked Radio
 - Motorola SmartNet
 - 10 Channels
 - 2500 subscribers
 - 6 sites
 - VHF Analog Conventional Radio
 - Backup voice system
 - Mobile Data
 - 9600 baud on Analog system
 - Verizon service (via private IP network)
 - Investment part of separate Integrated Public Safety project, which includes projects like CAD and RMS
 - Paging
 - On VHF system

Public Safety Radio Assessment City Radio Sustainment Plan

- The City is considering a \$99M radio investment over 16 years; the plan includes the following elements:
 - Transition of 10 SmartNet Analog Channels to the Astro25 System
 - Addition of 6 Tower Sites to Increase Coverage
 - Addition of GPS-tracking and Text Messaging Capabilities
 - Public Safety Subscriber Units (Initial Upgrades and Ongoing Refresh)
 - Non-Public Safety Subscriber Units (Initial Radios and Ongoing Refresh)
 - System Maintenance Support

Public Safety Radio Assessment Assessment Framework

- The following slides summarize current state observations and the potential implications for achieving ComIT's strategic vision. The areas of focus include:
 - Process and Services
 - Governance and Policy
 - Technology and Tools
- Evaluative ratings are noted (R/Y/G) to indicate the degree of perceived impact that each finding has on the City's current state and may have on future state radio communications.
- Recommendations are based on information provided and collected during stakeholder interviews. Additional analysis may be warranted to validate conditions.

Public Safety Radio Assessment Processes and Services

Current State Observation	Impact Rating	Potential Implications for Achieving ComIT's Strategic Vision
<p>1. User device support is viewed as positive by stakeholders. The addition of the on-site service garage has improved satisfaction and repair time for users.</p>		<p>Customers are able to spend more time conducting business and less time traveling to service or repair devices.</p>
<p>2. Maintenance is provided on a best-effort basis. Three City staff support the system and are capacity challenged to meet system service needs. No formal maintenance contract with Motorola exists (only depot repairs purchased in \$5K increments) and ad hoc support is provided on a time and materials basis by Gately Communications.</p>		<p>Stakeholders recognize the constraints of service due to limited staff resources and value the support the staff is able to provide. However, improvements would be needed to meet stakeholder expectations and ensure continuity of service through additional staff and preventative maintenance agreement(s).</p>
<p>3. Metrics for tracking service performance are not reliable. Stakeholders contact support staff directly and service tickets are filled out typically after service is rendered.</p>		<p>Without reliable metrics and regular reporting, ComIT cannot effectively gauge the overall health of its service to stakeholders and measure improvement.</p>

Public Safety Radio Assessment Governance and Policy

Current State Observation	Impact Rating	Potential Implications for Achieving ComIT's Strategic Vision
<p>1. Aside from the monthly regional ORION interoperability meetings, radio system planning meetings are not held with stakeholders. Stakeholders have noted they do not feel to be a part of the planning process.</p>		<p>If stakeholder needs are not adequately represented in planning, investments may not align with enterprise needs; potentially requiring additional future investments to achieve goals.</p>
<p>2. The budget process is described as a caucus model. Stakeholders have previously submitted decentralized capital investment requests for radios needs.</p>		<p>If radio investments are not coordinated between stakeholder groups, then investments may not be efficient; the City may not realize contract leverage or maximize enterprise-wide capabilities.</p>
<p>3. A detailed alternatives analysis and business case have not been developed for the proposed system upgrade plan.</p>		<p>Stakeholder, executive and oversight buy-in may be greatly enhanced with due diligence performed on options available to the City and validation of proposed approach.</p>

Public Safety Radio Assessment Tools and Technologies

Current State Observation	Rating	Potential Implications for Achieving ComIT's Strategic Vision
<p>1. The City's Astro 25 radio system has coverage gaps. City building development has outgrown the existing radio system (new buildings have blocked where there was once coverage). Additionally, in-building radio coverage is lacking in 40% of city buildings (e.g., School Safety Officers in city schools). Stakeholders claim that in-building coverage decreased with the transition to the digital system (e.g., fringe coverage areas are less forgiving)</p>		<p>Coverage and availability are the core requirements of public safety users. Coverage gaps are noted in critical service areas. Not meeting coverage needs of the users means providing a service that cannot be relied upon and therefore first responders cannot uphold their primary mission.</p>
<p>2. During significant incidents (e.g., previous plane crash), users have experienced overloading of the Astro 25 system.</p>		<p>Coverage and availability are the core requirements of public safety users. Not meeting availability needs of the users means providing a service that cannot be relied upon (especially during extreme incidents).</p>
<p>3. Many radio subscriber units have reached end of life and have significant costs when submitted to Motorola for repair. City staff have been deferring repairing many radios due to cost.</p>		<p>Older subscriber repair is becoming costly and resulting in a smaller pool of devices being available.</p>

Public Safety Radio Assessment Tools and Technologies

Current State Observation	Rating	Potential Implications for Achieving ComIT's Strategic Vision
4. The future direction for VHF paging is unknown. Grant funds were obtained for paging upgrades, but have gone unused.		Stakeholders are looking to ComIT for strategic direction on paging purchases; future direction unclear.
5. System redundancy is lacking. It is dependent on a single monopole antenna at the PSAC location which is insufficient for system and public safety reliability standards.		We understand that ComIT is currently working on an additional site. Redundancy is especially important for users that depend on the radio systems during extreme conditions.
6. The City's fire station alerting system is outdated and does not meet user needs.		Ability to maintain this system is becoming difficult as it continues to age.
7. Mobile data system is analog and end of life. Parts are difficult to find; parts have been sourced on eBay for needed repairs.		Without reliable access to parts and support, future support for this system is uncertain; system performance is at risk.
8. Mobile data on Verizon is not a prioritized service and stakeholders have experienced availability impacted when network is busy.		The City's growing business needs for mobility will need to be addressed.

Public Safety Radio Assessment Recommendations

The City's Radio Sustainment Plan addresses many gaps highlighted in the previous slides. With this in mind, Gartner recommends the follow activities to ensure stakeholder and oversight buy-in for this and future public safety communications investments.

- Establish formal governance structures to solicit stakeholder input and guide project investment decisions; establish charter, roles and responsibilities and communication plan.
 - Evaluate maintenance and support options; establish preventative maintenance and support strategy.
 - Develop detailed analysis on radio system upgrade alternatives; establish operational value, technical value, risk and cost criteria, include stakeholders in the process and develop strategic recommendation to gain funding approval as appropriate.
 - If not done so already, perform coverage predictions to determine improved exterior and in-building coverage of adding planned 6 sites; If needed, perform alternatives analysis of gap-filling solutions for in-building coverage (e.g., BDA's, building repeaters).
 - If not done so already, perform an analysis to determine whether the planned addition of public service channels would be sufficient in supporting increased traffic during significant incidents.
 - Conduct alternatives analysis of public service users to determine whether all existing analog users require LMR-type communications; If some user groups could use commercial services, this could reduce the numbers of handhelds (and potentially RF site equipment) required as part of the Radio Sustainment Plan.
 - Conduct assessment of system survivability and redundancy to identify potential system improvements for investment
 - Formalize service management process, track/report on service levels, measure and develop service improvement strategy.
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