to-end including specialized mobile terminal equipment and in-vehicle integration. Great care is taken to deliver the best technology available and to train users so that new capabilities are accepted into the workflow seamlessly. Northrop Grumman will assist and support the customer in the selection of the best products, integrate diverse equipment and applications, and provide ongoing operational and maintenance support of the solution in the ensuing years of operation.

Benefits of a Northrop Grumman Solution

When public safety is the critical mission, it can't be limited by the security, reliability, interoperability, speed and mobility of the wireless network. The communications, applications and information sent and shared are only as good as the network over which they are transmitted. Northrop Grumman is highly experienced at designing, integrating and optimizing secure, complex wireless networks that meet the real-time, fail-safe needs of first responders, public safety agencies and jurisdictions. Northrop Grumman's solution provides:

- Improved operational effectiveness and response time
- Improved situational awareness, command and control
- Real-time information sharing through improved collaboration (across agencies, jurisdictions and the state)
- Reduced operational cost

Ultimately, the Northrop Grumman solution provides first responders and public safety agencies with the right tools to do their job, safely, more effectively, and at a reduced cost. Northrop Grumman – Mobilizing your Mission[SM].

When America Needs Trusted IT Solutions, We're There

Northrop Grumman's Information Technology sector is a leading IT provider and integrator, with annual revenues exceeding $5 billion. For more than five decades, our trusted IT solutions have enhanced the work of government and business – and improved the lives of the people they serve. Delivering full life-cycle solutions, we meet the mission, enterprise, and infrastructure needs of federal, civilian, defense, intelligence, state and local government, commercial, and international clients. State and local governments trust us to provide end-to-end solutions for information technology, integrated justice, homeland security, public safety, transportation, human services, and public health initiatives.

Northrop Grumman Information Systems

15010 Conference Center Drive
Chantilly, VA 20151

Susan Connell
(571) 313-2478
susan.connell@ngc.com

www.is.northropgrumman.com/publicsafety

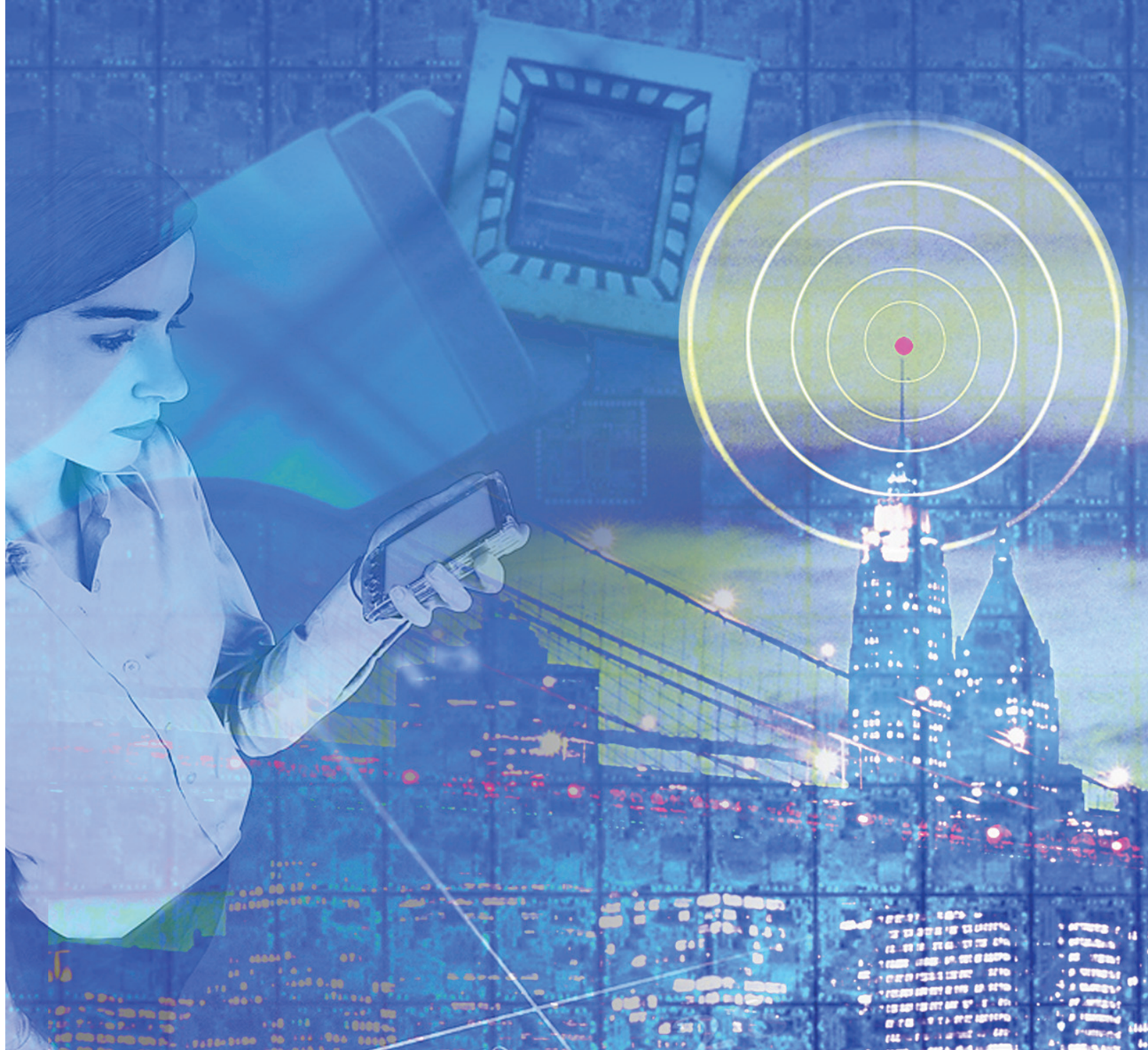
IS_015 08/01/11

NORTHROP GRUMMAN

NORTHROP GRUMMAN

Public Safety Broadband Wireless Networks

Mobilizing your Mission[SM]



Recent emergencies have demonstrated the criticality of getting the right information into the hands of those who needed it most, in real time, and across jurisdictional boundaries. As a result, there is heightened interest in using wireless communications more effectively for public safety applications. Local governments and public safety agencies across the nation are evaluating the benefits of broadband wireless networks for remote access to information, both mission critical and routine, to improve real-time situational awareness for better decision making and enhance collaboration and information sharing.

While wireless networks have been used to support police, fire, EMS, emergency management, transportation and traffic management, inspectors, and other government users for decades, they have been limited to basic voice and very limited data transmission. Advancements in commercial cellular radio technology and changes to radio spectrum allocation and policy are creating opportunities for public safety and government users to now deploy and access the most advanced systems for mobile data communications. Next generation broadband wireless networks enable remote access to a wealth of high-speed mobile applications, including real-time video, rapid database lookup, and the exchange of rich graphical information. And because of increased network speed, these networks provide a near immediate availability of critical information where and when it's needed, enabling faster decision making.

The availability of new broadband networks is a major breakthrough for large cities and counties, in particular those that are potential terrorism targets or vulnerable to natural disasters such as hurricanes, earthquakes, floods, mud slides, and wild fires. First responders in these locations must control network resources to ensure that services will be available when needed. To ensure around-the-clock availability, they must control where coverage is provided and how system capacity and throughput are allocated, and which users have access to the network and priority access.

Wireless from Northrop Grumman

Police, Fire, EMS, and other first responders must trust the reliability and availability of the public safety network at all times and in particular during an emergency. For mission critical public safety, the solution is a private network, owned and operated by the public safety community, using licensed spectrum that is protected from interference and contention by design and delivers highly reliable and available services when and where they are needed most. Public access networks, on the other hand, are designed to deliver acceptable performance to as many commercial end users as possible, and, by design, cannot meet the rigorous, mission-critical needs of the public safety community.

Northrop Grumman is positioned to deliver robust, public-safety owned solutions that deliver high-value, reliable wireless communications capabilities for public safety and other government agencies that may be tailored to their unique needs. As a systems integrator, Northrop Grumman has many years experience delivering information technology (IT) services and solutions across federal, state and local governments, and is a leading provider of highly secure wired and wireless networks — networks that address our customers' critical missions and are in alignment with today's most current, rigorous industry standards. Northrop Grumman brings this expertise to bear in delivering the critical elements of a comprehensive public safety wireless solution that addresses the three historical challenges to implementing a reliable public safety wireless network

- Highly available, reliable, and secure broadband access;
- Multi-jurisdictional interoperability;
- Applications uniquely enabled by broadband wireless, offering value-added features and functionality while at the same time helping to drive down the cost of operations.

Northrop Grumman is a systems integrator rather than an equipment manufacturer, and therefore we provide a vendor-neutral, best of breed approach to system design, engineering and integration. Northrop Grumman is adept at finding creative solutions to spectrum availability in support of secure, private network solutions, and our solutions leverage the most effective technologies to best meet the unique requirements of our customers. Northrop Grumman's solutions also accommodate existing legacy systems whenever possible and are interoperable with existing applications and adjoining jurisdictions, simplifying implementation, enhancing collaboration and reducing costs. Further, we team with the industry's leading solution providers and design for the long-term with a road map towards technology advancements. As a single point of accountability, Northrop Grumman selects and implements the best solutions to achieve our customer's objectives.

Key Features

From homeland security to law enforcement and first response, Northrop Grumman's solutions deliver comprehensive wireless network features and functionality that can dramatically enhance communications and collaboration.

Reliability, Performance and Survivability: Northrop Grumman deploys wireless networks that meet the rigorous reliability, performance and survivability requirements of public safety Customers. A public safety wireless system must be highly available and reliable. If it isn't available when needed, then it won't be used. Northrop Grumman designs and builds networks with those mission critical requirements in mind. Northrop Grumman builds networks with dense network designs, high capacity, immunity to interference, and quality of service to deliver priority access. It also includes a level of redundancy and robustness such that the network automatically and rapidly recovers when equipment or communication paths fail. The systems are designed to be highly survivable, especially in the event of a hurricane or other natural disaster, and they have sufficient performance and capacity to support public safety applications and users at times of peak usage.

Security: As the provider of security solutions to some of the intelligence and defense communities' most secure communications systems, Northrop Grumman employs the most advanced solutions to protect highly sensitive data on both wired and wireless networks. Northrop Grumman delivers a wireless infrastructure with a full array of cyber and physical security features to address and combat known and evolving security threats, including multi-level encryption, user authentication, firewall management as well as cyber and physical intrusion detection, prevention and tracking.

Mobility: Effective law enforcement demands "any time, any where" access to information—and they need it while on the move. To perform their jobs safely and effectively, law enforcement personnel also need complete and immediate situational awareness. They require broadband-intensive information, such as license and vehicle information, fingerprints, biometric data, felony warrant information, and mobile video. Northrop Grumman delivers law enforcement the ability to access and share critical information on the go, in real time, via a variety of devices.

Scalability: Northrop Grumman's flexible, customizable solutions are easily scalable to meet the growing needs of our customers. Our solutions promote a simple migration path from legacy systems and ease expansion due to an open architecture design.

Interoperability: First responders require interoperability between disparate land mobile radio (LMR) systems to communicate critical incident information and to ensure collaboration between agencies and jurisdictions. Northrop Grumman's solutions promote complete interoperability between wired and wireless voice and data systems, enabling real-time information sharing and collaboration. We integrate technologies that interconnect traditional systems and enable voice interoperability between LMR and cellular, and broadband systems.

Applications: Northrop Grumman offers a host of applications that are uniquely enabled or enhanced by broadband wireless network access. These include:

- Computer-Aided Dispatch (CAD)
- Field access to database information
- Location based services and Automated Vehicle Location (AVL)
- Video and imagery
- Geographic Information System (GIS) information
- Integrated Traffic Management
- Mass transit solutions
- Call boxes
- Remote sensors
- Voice interoperability

Northrop Grumman's work with applications starts with identifying and evaluating best in class solutions that meet the unique needs of our customers. This includes lab and field tests and phased, pilot deployments to mitigate technical risk and minimize implementation headaches. A rigorous process is employed to ensure that the solution meets your needs while also being fully interoperable with legacy systems. Northrop Grumman implements applications from end-