

ADVANCED NETWORK SYSTEMS

A Case Study in High-Speed Wireless

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Orange County Improves Public Safety, Education, Civic Participation and Private-Sector Economic Development

Increasingly, county governments need systems that allow all branches of public service – from courthouses and police stations to public schools and emergency services – to share information quickly and efficiently. This is particularly important for rural counties, which have historically been extremely decentralized. With the help of Motorola's wireless solutions, Orange County, Virginia is on its way to providing services to all its businesses and residents.

Customer

Located 55 miles southwest of Washington, D.C. and 72 miles northwest of Richmond, Virginia, historical Orange County is a rural community with rolling landscapes and spectacular views of the Blue Ridge Mountains. Founded in 1734, the County's diversified economy and location make it ideal for business and industry, and its nearly 354 square miles are home to more than 32,000 residents.

Solution Provider

Advanced Network Systems, Inc., headquartered in Charlottesville, Virginia, was selected to provide design and implementation services for the county-wide project. The Company specializes in advanced wireless WAN communication technologies and was responsible for furnishing all systems consulting, engineering, procurement, deployment, systems support and maintenance services.



Situation and Challenge

Faced with performance limitations and infrastructure inefficiencies, multiple Orange County government agencies collaborated to create a high-speed wireless network that would provide a county-wide Local Area Network (LAN), a Wide Area Network (WAN) for each designated government entity and public school, a Metropolitan Area Network (MAN) for inter-governmental connectivity, and a shared infrastructure for Internet access.

Upon review, Orange County found that the wire-line solutions it used in the past were cost prohibitive and that certain locations were too distant to establish connectivity. In addition to spanning a large geographical area that contains many obstructions, Orange County faced a number of technological and logistical challenges associated with their existing network. These included limited intra- and inter-governmental connectivity, an inability to share resources and offer consolidated access to high-speed Internet services, inadequate broadband capacity for new applications, and disparate data and voice systems. The County also required reliable

support for a wide range of bandwidth-intensive applications, such as voice-over-Internet Protocol (VoIP), geographic information systems (GIS), video conferencing, video surveillance and distance learning.

"The wireless network installed by ANS has made a tremendous impact on us. Teachers have been able to utilize a wide range of online resources, which could not be accessed previously due to bandwidth issues. From an administrative view, the connection between the servers on our network has been improved tremendously, allowing us to transfer and edit data much more efficiently."

Gary Mittler,
Information Technology
Specialist, Orange
County Public Schools



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Technical Requirements

- Support for a wide range of applications, including real-time streaming video and IP telephony
- Ability to operate emergency services from alternative sites
- High data rates of at least 10 Mbps
- Ease of management and maintenance
- Ability to use existing tower structures within the County
- Stability in obstructed paths and high-interference environments
- High security to protect sensitive government information over a broadband network
- Design for future backbone redundancy



Deployment Detail and Interoperability

Utilizing systems that operate in the 5.8 GHz band, Orange County deployed Motorola's wi4 Fixed Point-to-Point (PTP) 400 and 600 Series Wireless Ethernet Bridges to connect 24 locations including administration offices, public schools, the courthouse, the airport, and police and emergency services.

The County used the Motorola PTP 600 Series radios to construct a subscriber-access backbone that extends over 30 miles. To overcome radio frequency interference challenges and path obstructions, Connectorized models with drum antennas were deployed. The radios were mounted on the County's existing tower structures, making it easier to expand the network.

User networks are segmented via high-performance Ethernet switches with virtual LAN and access control points. The same network solution also supplies all government entities with

Internet connectivity from a 45 Mbps DS-3 link. A security platform that includes firewall appliances, VLANs, global anti-virus, content filtering and bandwidth management applications is deployed at each network entry point to protect sensitive government data. Large users, such as the public schools, utilize Motorola PTP 400 Series radios with integrated antennas to provide data rates of at least 18 Mbps, exceeding the County's expectations. Smaller subscriber sites, such as the Orange County courthouse, use four-cell Motorola Canopy solutions.

After successful completion of the initial phase, the project was expanded to include many fire and rescue locations, allowing E-911 to print dispatch reports at the fire and rescue stations. E-911 sends the dispatch report to the printer located at the fire and rescue stations that have connectivity.



Results

To date, the wireless solution designed by Advanced Network Systems with the Motorola PTP 400 and PTP 600 Series radios has proven to be an extremely reliable, high-performance, converged voice and data network. Paired with the County's existing VoIP communication system, the solution effectively deploys telephony services at every government facility. Agencies immediately took advantage of computer management for e-mail, anti-virus control, file sharing and Internet services such as online Standards of Learning (SOL) testing capabilities for the County's public schools. Plus, specialized services have been added, including video surveillance at the airport and E-911 information applications for police, fire and rescue departments. Substantial cost savings and ROI

"Our high-speed wireless network has allowed the County to deploy advanced communications technologies where and how we need it. We've just begun to tap into the power of this infrastructure for improving areas such as public safety, education, civic participation and private-sector economic development."

William Rolfe, Orange County Administrator



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have resulted from the removal of analog voice lines that previously existed throughout the County's system. Later, the County added redundancy to its backbone for traffic re-routing. They have plans to connect three public libraries and two more emergency services locations. Other future plans may include the implementation of mobile data connectivity for emergency services enabled through the wireless network.

Why Motorola

- Secure, reliable wireless connectivity for rural communities across 24 diverse government entities
- Ability to implement new and innovative applications such as IP telephony, GIS, video conferencing, video surveillance and distance learning
- Substantial cost savings and immediate ROI benefits
- Network expansion that easily accommodates future growth



About Motorola

Motorola, a Fortune 100 company, is known around the world for innovation and leadership in wireless and broadband communications. Inspired by our vision of seamless mobility, the people of Motorola are committed to helping you connect simply and seamlessly to the people, information, and entertainment that you want and need. We do this by designing and delivering "must have" products, "must do" experiences and powerful networks -- along with a full complement of support services. For more information about our company, our people and our innovations, please visit www.motorola.com.

About Advanced Network Systems, Inc.

Advanced Network Systems specializes in the design, installation and support of information technology solutions. The company's expertise covers a wide variety of IT applications, including network security, virtualization, managed IT services, core infrastructure, networked storage, and wireless, as well as IP-based telephone and conferencing systems. With multiple locations, serving Virginia and West Virginia, Advanced Network Systems supports a diverse base of clients, including small and medium-sized businesses, government agencies, and educational institutions.

To learn more about Advanced Network Systems, visit us on the web at www.getadvanced.net.



"Wireless has long been billed as a way to bring connectivity to places where fixed-line access would be too expensive to implement. With a diverse set of facilities, topography and rural nature, Orange County and its applications, such as mobility, VoIP and video, testify to the sophistication of the network... and the broader opportunity for other communities."

Peter Jarich, Research Director, Current Analysis



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