

New York City Wireless Network (NYCWiN) New York, New York USA

New York City Selects NextWave Wireless TD-CDMA Infrastructure to Power Advanced Municipal Wireless Network

Introducing the New York City Wireless Network (NYCWiN) — the nation's first high-performance mobile broadband infrastructure for e-Government and public safety

New York City is taking a major step into the 21st century as it unveils a new, state-of-the-art mobile broadband municipal network. This powerful infrastructure represents an industry breakthrough in mission-critical municipal deployments, and is purpose-built to support the nation's first wireless e-Government architecture. Capable of supporting the widest possible range of applications, the network delivers new levels of responsiveness, efficiency, and cost-containment for both emergency and non-emergency municipal services.

NYCWiN provides mission-critical support for a wide array of data, multimedia, and high-speed mobility applications. The first viable wireless e-Government infrastructure, NYCWiN can support virtually any use-model, from continuous monitoring of critical utilities and traffic control services, to broadband multimedia links with emergency response teams, and more.

In fact, the network is already proving its versatility by extending support for over 52 critical applications across 19 municipal departments, many of which deliver significant cost savings. This flexible, future-proof solution is capable of offsetting a wide range of ongoing operational expenses, making it ideal for cities and counties interested in creating a wireless e-Government network.

“NYCWiN will provide our emergency responders with quick access to critical information in the field, enabling them to be better prepared to protect our city and its residents.”

Paul Cosgrave, Commissioner of the NYC Dept. of Information Technology and Telecommunications (DoITT)



Over 400 cells are scheduled for deployment over NYC's five boroughs, making NYCWiN the largest municipal broadband network in the USA.

The Challenge

The demands on any municipal network are great—and supporting a diverse range of applications, including multimedia, across the nation's largest city is a formidable task. Underscoring this challenge is the need for uncompromising network performance capable of delivering mobile, multi-megabit service across 320 square miles of glass and concrete, and throughout 6,200 miles of roadway. To meet these demands, it is essential for the new infrastructure to deliver predictable, reliable service of at least 2 Mbps from anywhere in the coverage area. Additionally, under heavy loading and incident testing, it is critical that per-sector performance be maintained without degradation—a critical requirement for the public safety applications.

The infrastructure also needs to be capable of provisioning rich, real-time multimedia applications such as aerial video coverage and streaming video, and providing support for high-speed mobility and first-wall in-building penetration. Client access in the municipal environment is principally via laptops and handheld devices, driving strict requirements for security and dynamic preemption and prioritization for NYPD, FDNY, and other emergency responders. Lastly, the solution needs to be based on a single integrated, infrastructure—facilitating communication between municipal entities, and containing costs by decommissioning costly leased-line services.

New York City needed a proven solution today, capable of meeting their stringent performance and security requirements. At the same time, the City also wanted to ensure maximum investment protection, and an open migration path to emerging technologies such as WiMAX and LTE in the future.

The Solution

NextWave met the tough challenges presented by NYCWiN with its V5™ Multi-Standard 3GPP Mobile Broadband platform, powered by TD-CDMA technology and purpose-built to deliver high-performance, predictable mobile broadband connectivity. The network, consisting of over 400 cell sites spanning all five of the New York City boroughs, utilizes licensed 2500 MHz spectrum to provide complete coverage, including first-wall in-building penetration. TD-CDMA is equipped with unique low-latency Quality of Service and Tier of Service mechanisms to deliver prioritized and preemptive network access to specified users and groups, such as government officials or emergency response personnel. The network is also used to provision a wide range of City departments, such as building and health inspectors, and for monitoring key municipal installations and utilities.

TD-CDMA technology plays a critical role in enabling NYCWiN's extensive capabilities, and offers a number of significant and unique technical advantages, including:

- N=1 Frequency Reuse: Enables the entire network to be deployed using a single 10 MHz TDD channel, lowering spectrum acquisition costs and making large-scale networks extremely cost-effective
- Intercell Interference Mitigation (IIM): Facilitates interference cancellation between adjacent cells, supporting larger cell sizes and higher data rates at the cell edge
- Tier of Service and Quality of Service: Real-time scheduling capabilities providing dynamic prioritization of specific user groups or cells, and ensuring optimal resource allocation during both normal usage and pre-emptive emergency situations
- Per-Sector Performance: Delivers up to 32 times the maximum sector load capabilities of competing technologies, supporting up to 256 users per sector at full capacity during heavy network loading and/or incident testing



NextWave V5™ Multi-Standard Mobile Broadband Platform, powered by 3GPP-enhanced, Release 7 TD-CDMA technology.

Critical Application Support

NYCWiN is currently testing more than 50 applications for 19 municipal agencies, including:

- Multimedia image retrieval delivers instant access to photos, maps, blueprints, and fingerprints — anytime, anywhere
- Streaming video from emergency responders, including police cars and firefighter helmet cams
- Computer-aided dispatch
- Automatic vehicle location
- Mobile emergency command centers
- Solar-powered wireless VoIP emergency call boxes
- Continuous monitoring of key municipal utilities, including water, gas, power, and nuclear facilities
- Telemedicine



NextWave Wireless currently offers a full line of secure, robust TD-CDMA end-user equipment.

- Integrated Security: Restricts network access through the use of licensed spectrum and embedded smart chip security identification modules on all end-user equipment

Only TD-CDMA was capable of delivering predictable, reliable performance—at any location within a cell and under heavy congestion. Full network roll-out is currently underway, with 95% coverage expected by Q3 2008.

New Infrastructure Enhances Productivity and Contains Costs

The NYCWiN network delivers an overarching infrastructure capable of providing extensive application support. The potential for synergistic e-Government solutions are endless, from support for streaming video from emergency personnel to command centers, to embedded sensors used for vehicle location, distributed command and control, and constant monitoring of essential utilities throughout the five boroughs of New York City—The Bronx, Brooklyn, Manhattan, Queens, and Staten Island.

This approach yields significant benefits, both in terms of productivity and cost containment. Workforce effectiveness is dramatically increased through the use of broadband wireless-enabled mobile laptops and handhelds, and substantial cost savings are realized through reduced wear-and-tear on municipal vehicles. In addition, leased-line overhead incurred through provisioning traffic lights and other resources can be dramatically reduced with this infrastructure.

In fact, traffic control is one of the key areas where the NYCWiN network delivers both cost containment and enhanced performance. Significant cost savings will be achieved by replacing existing leased lines with wireless connectivity. In addition, continuous monitoring of traffic via wireless sensors and supplemental controllers enables traffic to be more efficiently managed according to time-of-day, congestion patterns, and seasonal variations. This also provides municipal entities with the data required to re-route traffic during an emergency, clearing vital traffic routes to maximize response times. Over 2400 wireless traffic light modems will be deployed throughout the city in the next year.

Broad-based application support provides tremendous future viability and investment protection, which was a key factor in the NYC Department of Information Technology and Telecommunications' (DoITT) decision to adopt the TD-CDMA technology as the cornerstone of the NYCWiN infrastructure. The NextWave Wireless TD-CDMA infrastructure is purpose-built to maximize service capability and system longevity. To ensure its ongoing viability, the system is field-upgradeable to either WiMAX or LTE, enabling the infrastructure to evolve gracefully as wireless technology continues to develop.

Partnering with NextWave to Achieve 21st Century e-Government Solutions

The unified infrastructure of the NYCWiN solution represents a fundamental shift in the way that services are provided in municipal environments. By consolidating municipal services into an integrated whole, a new level of responsiveness is achieved that delivers key advances in both efficiency and cost containment. The ability of the network to provide services is unparalleled, creating an umbrella of support for virtually any type of application or service required by a municipal entity. The result is an integrated approach to servicing governmental needs that can only be achieved through 21st century technology.

For information on how your city or county can benefit from these innovative approaches to municipal broadband wireless networking, please contact us via email at npinfo@nextwave.com, or visit us on the web at www.nextwave.com.

About NextWave Wireless

NextWave Wireless provides software, systems, and silicon solutions that enable cutting-edge wireless broadband and mobile multimedia services. Our products and technologies include high-performance digital baseband WiMAX SOCs, multi-band RFICs, UMTS and Wi-Fi based network systems, device-embedded mobile multimedia software, and end-to-end UMTS and WiMAX mobile multicast and broadcast solutions. Our customers include many of the largest mobile handset manufacturers and wireless service providers in the world.

NextWave Wireless is headquartered in San Diego, CA, and operates sales and technology development centers around the world, including Las Vegas, NV; Charlotte, NC; Chicago, IL; Boston, MA; Calgary, Canada; Basel, Switzerland; Berlin, Germany; Nice, France; Tampere, Finland; Punjab, India; Seoul, South Korea; Sao Paulo, Brazil; Tel Aviv, Israel; and Tokyo, Japan.