



## IBM Research Adds Integrated Cellular/WLAN Solution from Nextel and RadioFrame Networks for Enhanced In-Building Coverage and Staff Productivity

**Researchers, Building Staff and Visitors Benefit from Improved In-Building Coverage and Ubiquitous WLAN Access. The System Worked Flawlessly During Crippling Northeast Power Blackouts for Mission-Critical Communications.**

IBM Research, a business unit of IBM, and Nextel Communications recently announced the successful commercial deployment of an integrated cellular/WLAN service in two IBM Research facilities in New York State in mid-2003.

Scientists, building staff, business partners and visiting customers at the Hawthorne and Yorktown facilities have enjoyed better Nextel 4-in-1 service plus improved Wi-Fi connectivity over the entire 1.2 million square feet of office and laboratory space. Nextel users particularly appreciate the call quality, seamless handoffs and uninterrupted calls when entering and leaving the buildings.

*This world-famous building for the Thomas J. Watson Research Laboratory utilizes native stone to integrate the building into its hillside. The heavy granite challenges RF penetration from outdoor sources. The in-building solution from Nextel and RadioFrame Networks provides the answer, offering high-quality cellular and 802.11 broadband services. The implementation utilized IBM's pre-existing Cat-5 wiring, saving on installation and speeding up deployment.*

With the 802.11b Wi-Fi services, IBM Research employees and authorized visitors in Hawthorne and Yorktown can now use their PDAs and laptop computers to gain untethered access to email, the Internet, corporate intranets and wireless data applications anywhere in the two buildings.

### **Solves Buildings' Radio Frequency Challenges**

Like many stone buildings, cellular services at the IBM Research facilities in New York were somewhat unreliable. Cellular calls from the nearby interstate also drained capacity away from the facilities. For an answer to this problem, the Telecommunications & IT department at IBM Research turned to Nextel, which then installed a wireless access platform from RadioFrame Networks.

Nextel recommended the RadioFrame® System, because the technology would boost coverage and capacity for cellular and Direct



*A RadioFrame Unit (RFU) housing two RadioBlade™ transceivers for Nextel and 802.11 WLAN services. The 'super access bay' can power up to 7 radios for added capacity and coverage.*

Connect™ Walkie-Talkie® services, while embracing productivity-enhancing Wi-Fi. Further, the new gear from Nextel and RadioFrame is easily upgraded to support new wireless standards and scale as the needs of IBM Research change.

"We were looking for a way to manage a variety of wireless services to our users, everything from Direct Connect for our facilities crew to Wi-Fi access for our partners and customers," said Albert Schneider, director of information technology for IBM Research. "Nextel and RadioFrame are very effective at delivering these services, while greatly simplifying our plans for future upgrades."

### **Meeting the Demanding Needs of Many, Even During Power Blackouts**

While users among different segments had similar overall connectivity issues, each class had unique demands including:

- *Building and security staff* – Fail-safe mission-critical communications in the most challenging conditions. During the East Coast blackout of 2003 when other cellular networks were unavailable, Direct Connect services for all 150+ operational employees worked flawlessly.
- *Pervasive computing research staff* – Improved communications, enhanced staff interactions, research initiatives and overall productivity.
- *Technical managers* – Better voice call quality, incremental wireless access to corporate intranets and the Internet.
- *Visiting Partners and Guests* – Improved wireless for enhanced productivity reflects well on IBM Research.



"With this new system in place, we know calls to and from our handsets are going to get through," Schneider notes. "When you couple this peace of mind with the uptime our staff enjoyed during the power blackout of 2003, the RadioFrame gear has already paid for itself."

### The Only Converged Indoor Wireless Solution Available Today

The RadioFrame System is the only indoor wireless system configured to deploy and centrally manage wireless standards uniformly as a platform. This new approach enables remote control of the network elements, plus one-button control of hundreds of remote access points, and lowers administrative costs.

Key to the deployment of the RadioFrame System are RadioFrame Units (RFUs), high capacity 'super access bays' which are mounted at various locations within a building. Each RFU is about the size of an exit sign and

can contain up to seven, low-power Radio-Blade transceivers, which communicate with a full range of mobile devices.

Each RFU connects to various chassis units and collects, processes and redirects traffic to the Internet or to the Nextel cellular network. The RadioFrame solution supports Wi-Fi security standards plus incremental measures such as 802.1x with RADIUS, PEAP, EAP-TLS, VPN and MAC authentication.

The multiple protocols are managed and remotely controlled via SNMP or web browser via the built-in System Manager. The open network architecture allows the system to be configured to increase capacity and to add new, multiple wireless standards to the existing RadioFrame installation with "plug and play" ease, by simply adding more RadioBlade™ transceivers to the remote RadioFrame Units.

*In an innovative distributed architecture, low-power radios are located close to the user at the network edge to create high call quality personal coverage zones. Each RadioFrame Unit covers nearly 32,000 ft². Up to 64 RFUs can be networked via Cat-5 to provide single system coverage as large as 2 million ft². Up to three systems can be inter-networked.*



*The ultra-modern Hawthorne Research Facility requires incremental indoor coverage from Nextel and RadioFrame due to its building materials and proximity to the freeways.*

### System Highlights of the Nextel / RadioFrame Solution at IBM Research

- Coverage: Over 1.2 million ft² in multiple buildings including the prestigious Watson Laboratories.
- Deployed wireless protocols: Motorola iDEN for Nextel cellular services, 802.11b for broadband, mobile computing.
- Building-wide, indoor coverage for three large, separate buildings with seamless handoffs for Nextel 4-in-1 services upon entry or exits.
- Integrated platform provides multi-protocol services over a single Cat-5 system. Future protocols or capacity can be added with no additional RF planning required.
- Integrated System Manager provides remote management and central control of network elements plus 1-button control of WLAN.
- 802.11b Wireless LAN RadioFrame Access Points for high-speed broadband services in public meeting areas.

The Nextel / RadioFrame solution is ideal for universities, government agencies, and enterprises seeking a future-proof, wireless communication platform that can grow as their needs change.

More information is available from a Nextel representative or at the RadioFrame Networks website: [www.radioframenetworks.com](http://www.radioframenetworks.com).



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