

Connect

Information Technology at NYU



Search This Site

F a l l 2 0 0 3 E d i t i o n

Browse the table of contents, or select an option from this menu:



Current Issue



Archives



About Connect

Wireless Computing

[Print this article \(236K PDF\)](#)

The NYURoam Wireless Network It's Where You're Going!

By **Carlo Cernivani**

You've probably seen them, those people sitting in Starbucks, sipping a double latté and browsing the Internet on their laptop computers. What makes this kind of mobility possible is wireless data networking, an exciting new service that is now available to the University community through the NYURoam network.

New Technology—Unique Opportunities

Wireless networks are becoming increasingly mainstream, as more "wireless aware" people look for ways to remain connected—in an unconnected way. Wireless "hot spots", public locations that offer high-speed Internet access for people with wireless-enabled laptops or devices, are in demand and growing in number. And a wide range of devices and applications are being developed to take advantage of this expanding technology.

Whether from your living room couch or at an airport, in a conference center or in a



Figure 1. NYURoam allows you the freedom to work where you choose.

classroom, your "online world" can be accessed in more and more of the places you frequent. Wireless networking offers unique opportunities in education, research and communication. Such a technology is sure to thrive in a university environment, especially one as diverse as New York University's.

The NYURoam wireless network has been designed to offer ubiquitous, secure access to resources on NYU-NET (NYU's network) and the Internet at a growing number of locations around campus. This new network provides NYU community members with mobility and flexibility by enabling them to access network resources without being tied to a physical (wired) location.

Although the technology behind wireless networking has been in existence for several years, it has taken time for it to mature to the point at which a secure, flexible, enterprise-scale service such as ours could be deployed. ITS has been moving towards the rollout of NYURoam for some time, and contending with a myriad of technical issues along the way.

New Technology—Special Challenges

Wireless technology is continually evolving, and standards, which are the foundation of reliable equipment interoperability, are still a point of contention among major manufacturers. As a result, ITS has had to strike a balance between pre-standard and standard wireless functions in order to offer support to the NYU community for the widest possible range of hardware and operating systems. Eventually, the emergence of a standard that ensures uniformity on how wireless clients authenticate and securely handle data will broaden the supported base of devices and streamline the access process.

There are numerous complexities associated with designing and supporting an enterprise-scale wireless network. NYU's urban location places us in a rather "polluted" wireless environment. The radio frequency at which 802.11b* wireless equipment operates is filled with radio traffic generated in the vicinity of NYU's Washington Square campus.



Figure 2. NYURoam is currently available at a variety of locations around campus, including Levels A and B of Bobst Library.

Numerous radio networks can be detected as one walks around campus—on Mercer Street, Broadway, West 3rd Street, etc.—emanating from surrounding residences and businesses. Inspect the Verizon phone "booths" along West 4th Street, for example, and you will see small, dome-like devices atop the phones' enclosures; these are wireless access points delivering wireless network access to Verizon customers. This co-habitation of diverse independent networks causes high levels of radio traffic, which can take a toll on transmission speed and signal quality.

Ensuring full radio coverage within NYU buildings presents another set of challenges. Deployments in classrooms, lounges, and similar

areas are relatively straightforward. Areas in which signals must penetrate walls and other obstructions, however, pose a tougher wireless design problem, requiring careful placement of the wireless access points that deliver the network's radio signal.

The 802.11b standard also creates limitations. For instance, there are only three distinct radio channels to work with, and each wireless access point in a given location should be kept "out of sight" of the other access points on the same channel.

A Reliable, Scalable Wireless Network

To ensure the best level of coverage possible in each supported location, ITS installs enough access points to create an adequate degree of redundancy. This tactic not only provides the area with greater bandwidth, but also acts as backup in the event of a malfunctioning access point. In addition, this configuration will allow for a smooth transition in the future, when ITS upgrades NYURoam to the next-generation wireless standard, 802.11g, since this newer standard will result in a smaller coverage area for a given access point. Wireless design is a strategic game played in three dimensions, with rules dictated by such factors as variable radio transmission levels, antenna types, building construction, and a variety of hidden surprises.

One important thing to keep in mind about NYURoam, however, is that it is, after all, a radio-based service and should not be considered a replacement for NYU-NET's hardwired infrastructure. There are many external factors that can affect your connection to NYURoam—factors which cannot be readily controlled.

An appropriate analogy would be that NYURoam is to the hardwired network what cellular phones are to hardwired telephones. People who have become reliant on their cell phones don't necessarily expect sound quality to be so good they "could hear a pin drop" and accept the fact that potential problems go with the radio territory. The same expectation level should apply to NYURoam.



Figure 3. The NYURoam wireless network expands classroom horizons.

ITS has and will continue to make every effort to provide as reliable a service as possible, but please remember that wireless networks are a shared medium: another person using a misconfigured wireless client in your vicinity, or a malfunctioning wireless card, can cause you to experience problems with performance or connectivity.

Getting Started

Despite these and other challenges, ITS has been successful in crafting a convenient, reliable, and scalable wireless network for the NYU community. For more information about NYURoam, including detailed set-up instructions, an

interactive map of access locations, and in-depth details about the network architecture, please visit <http://www.nyu.edu/its/wireless/>.

* 802.11b is the wireless standard currently supported by NYURoam; see <http://www.nyu.edu/its/wireless/security.html> for more information.

Author Biography

Carlo Cernivani is Senior Data Communications Manager for ITS Network Services. He can be reached at carlo.cernivani@nyu.edu.

Page last reviewed: November 4, 2003. All content © New York University.
Questions or comments about this site? Send e-mail to: its.connect@nyu.edu.