



## CASE STUDY

### Memorial Sloan-Kettering Cancer Center Finds Cure for Network Congestion with High-Speed Outdoor Wireless Links from LightPointe

*World-Renowned Hospital and Cancer Institute Employs Leading-Edge Wireless Technologies, Including Optical Wireless, to Support Focus on Patient Care, Research and Education*

Memorial Sloan-Kettering Cancer Center (MSKCC), composed of Memorial Hospital for Cancer and Allied Disease and Sloan-Kettering Institute, is dedicated to excellence in the prevention, treatment and cure of cancer through prevention, patient care, research and education. MSKCC's tradition of care began more than a century ago. As the oldest and largest private cancer institution in the world, MSKCC has built a stellar reputation for its unique collaboration between scientists and physicians which fosters biomedical research and translating the latest research to advance the standard of cancer care worldwide.

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**John Guy** | Senior Network Engineer  
Network Infrastructure Group  
Memorial Sloan-Kettering Cancer Center

The center also has been universally recognized for its use of state-of-the-art technology to deliver improved services to patients, physicians, nurses, researchers and administrators. Memorial Sloan-Kettering's New York City-based facilities, which has several facilities in Manhattan but is centered on a city block on Manhattan's Upper East Side, feature the latest medical equipment and leading-edge information technology.

In particular, wireless technology is used throughout the paper-free environment, which includes a variety of 802.11b indoor wireless devices and mobile workstations used for admitting patients and administering treatment. The hospital's nurses and doctors are completely mobile—relying on wireless carts, PDA scanners as well as Voice over IP technology. In addition, WiFi coverage has been established throughout the hospital and its outlying clinics to support constant communications between members of the center's staff.

In its ongoing quest to provide physicians with up-to-the-minute patient information while minimizing paper-based files, Memorial Sloan-Kettering has implemented an all-digital Picture Archiving Communications System (PACS). With PACS, MSKCC captures, stores and distributes medical images, including routine X-rays, without needing to produce film-based patient studies. Physicians have immediate access to medical images, which improves productivity and patient care while lowering operational costs considerably.



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According to John Guy, senior network engineer for the network infrastructure group at Memorial Sloan-Kettering, technology plays a huge role at MSKCC. “We adopt the latest networking systems and tools to meet the needs of our dynamic environment,” he explains. “Whether it involves installing cutting-edge computer systems in new operating rooms or deploying wireless data and IP telephony systems throughout the campus, we focus on improving services and streamlining operations.”

### THE CHALLENGE:

MSKCC’s reliance on digital imaging, wireless technologies and bandwidth-intensive applications has raised the center’s networking requirements substantially. To that end, the network team upgraded the enterprise network from ATM-based to a Gigabit Ethernet backbone several years ago in order to provide additional network throughput and ensure fast delivery of large electronic files and images. When it came to connecting different buildings to the center’s Local Area Network (LAN), the team traditionally used a combination of leased lines, ranging from T1s to point-to-point 100 Mbps circuits, and Proxim Tsunami wireless Ethernet bridges to route traffic throughout the five-node, mesh-network topology. While the wireless bridges, which were based on microwave radio frequency (RF) technology, were suitable for long-haul network links, Guy became concerned that overlapping frequencies could cause network interference.

“In making the jump to a Gigabit LAN, we greatly improved overall bandwidth capacity and didn’t want to stifle the flow of traffic with RF products that operate at speeds of 10-to-700 Mbps,” says Guy. “We didn’t want to overburden the network and create traffic jams between buildings.” The IT team also wanted a solution that could deliver up to Gigabit Ethernet speeds without having to dig up the streets of Manhattan to lay fiber-optic cable. Faced with prohibitive licensing, costly fees, lengthy timetables and numerous metropolitan obstacles, the team decided that fiber wasn’t the route to take. Instead, they began looking at various outdoor wireless solutions, including optical wireless based on free-space optics (FSO) technology.

Optical wireless is a line-of-sight technology that use beams of light as the primary data path and is license-free worldwide. This high-capacity, point-to-point outdoor wireless solution offers the capabilities of fiber-optic cable, yet is priced more affordably and could yield a return on investment in two years. For MSKCC’s Guy, working with optical wireless was familiar terrain. Prior to joining Memorial Sloan-Kettering, he worked with a team on an optical wireless deployment that connected a building to the New York City headquarters of Tribal DDB Worldwide, one of the largest and most creative advertising agencies in the industry. “Optical wireless was by far the most ideal and cost-effective solution for providing high-bandwidth connectivity between the two buildings,” Guy recalls. “It was easy to install and worked flawlessly, which made me think it would work well for Memorial Sloan-Kettering, too.”

### THE SOLUTION:

In reviewing different optical wireless solutions, Guy focused on offerings from LightPointe, a pioneer in the space with thousands of systems implemented in more than 60 countries and a growing list of blue-chip customers. LightPointe’s Flight™ family has earned high marks for linking two or more buildings in classic LAN-to-LAN connections with bandwidth up to 1.25 Gbps.



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After reviewing the product line-up, the team set their sights on LightPointe’s FlightSpectrum™ 155, a field-proven and time-tested outdoor wireless product that delivers Fast Ethernet bandwidth speeds. They felt that the FlightSpectrum offered the optimal balance of high capacity and affordability for linking a remote facilities building to the main campus, which was located about 500 meters away. As part of extending the reach of the enterprise network to the building, the team wanted to leverage its Cisco Systems CallManager VoIP system and Unity voicemail system, which are centrally located to provide

voice service to remote sites, including those connected via the LightPointe optical wireless links. The high-bandwidth FSO products permits voice and data communication over the same link, while using Quality of Service (QoS) ensures that voice traffic is prioritized over data.

Since MSKCC centrally manages its IP telephony system, it was relatively easy to use the FlightSpectrum to deliver voice and data services to the remote employees as though they were working from the main campus. “We were able to reap significant cost savings from our optical wireless implementation,” says Guy. “The FlightSpectrum provided ample bandwidth for carrying the additional traffic, allowing us to maximize our investment in existing equipment without incurring additional capital expenditures.” MSKCC also relies on LightPointe’s FlightManager in conjunction with HP OpenView used by the network operations group to monitor real-time performance of the optical wireless links.

Following the success of the IT team’s first optical wireless installation, they identified another opportunity to use optical wireless for connecting MSKCC research scientists with peers at Rockefeller University, one of the foremost research centers in the world. The university sits across the street from Sloan-Kettering Institute; yet digging up a busy Manhattan thoroughfare to link the two sites as well as purchasing a leased line were out of the question. The team briefly considered using microwave RF technology to provide the necessary connectivity, but optical wireless offered greater bandwidth and was easier to install and maintain.

MSKCC installed LightPointe’s FlightStrata™ Fast Ethernet product to provide 100 Mbps connectivity between the two locations. The installation went smoothly, reinforcing the viability of optical wireless as a high-speed transport solution. Initially, the IT team faced some skepticism over optical wireless reliability. “Over the past three years, the LightPointe links have withstood rain and snow fall,” notes Guy. “These products are very reliable.”



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### THE BENEFITS:

MSKCC has reaped such benefits from its initial LightPointe links that several other installations were completed in late 2005. Additional optical wireless projects included the deployment of LightPointe's FlightStrata Gigabit Ethernet product to connect a new site to an existing building. "We successfully installed a FlightStrata Gigabit Ethernet link to serve as a primary path for 200 Cisco VoIP and data users," says Guy. "The additional bandwidth will ensure that we can accommodate continuing expansion while providing high-speed access to vital data and services."

The team also identified two other applications for LightPointe's products, which encompass disaster recovery as well as another network link connecting a research facility currently under construction. "When we look out on the horizon and plan for future growth, LightPointe's optical wireless solutions are part of the solution mix," concludes Guy. "These high-speed outdoor wireless products enable us to deliver the bandwidth that drives the delivery of top-notch patient care, research and education."

### CUSTOMER:

Memorial Sloan-Kettering Cancer Center, the world's oldest and largest institution devoted to prevention, patient care, research and education in cancer. ([www.mskcc.org](http://www.mskcc.org))

### CHALLENGES:

- Aggressive growth and adoption of state-of-the-art information technology created network throughput challenges for rapidly expanding hospital and research institute
- Trenching of New York City public streets to lay fiber-optic cable was impossible
- Existing wireless Ethernet bridges delivered insufficient bandwidth for data-intensive applications and required additional effort to operate and maintain
- Desire to leverage investment in existing IP telephony equipment while reducing recurring leased-line costs

### SOLUTION:

- LightPointe's FlightSpectrum 155 Fast Ethernet and FlightStrata Fast Ethernet products were installed, a FlightStrata Gigabit Ethernet product and two additional links are planned.

### BENEFITS:

- High-speed optical wireless network provides ample bandwidth for a variety of network requirements
- Lowered recurring costs by reducing need for leased lines
- Simplified network expansion while protecting investment in existing equipment
- Ease of installation and trouble-free operation eliminated interference, security and management challenges associated with RF products
- Real-time network monitoring with LightPointe FlightManager in conjunction with HP OpenView