# CASE STUDY

## Sionex Expands Breakthrough Chemical and Biological Sensor Business With Support from LightPointe's Optical Wireless Networking Solutions

### *Free-Space Optics Delivers Increased Bandwidth, Rapid ROI and 100 Percent Uptime for Satellite Office*

The current geopolitical climate has created multi-billion dollar demand for products that can detect chemical and biological warfare agents, explosives, toxic chemicals and other lethal materials before any harmful effects can occur. Sionex Corp., of Waltham, Mass., is emerging as an innovative player in this market, with breakthrough chemical and biological sensor chips and systems based on its proprietary microDMx™ technology. Founded in 2000, the privately-held company has filed more than 20 patents as it pursues technology applications with the military, law enforcement, local and regional authorities, public buildings, major corporations, schools and transportation centers.

Business is booming at this start-up's Boston area headquarters, where a state-of-the-art laboratory adjoins bustling administrative offices. In early 2004, with staff increases imminent, it became apparent that Sionex would quickly outgrow its existing office space. Lacking the option to expand its headquarters facility, company officials decided to secure temporary office space across the street until a larger location could be found. Although the nearby site proved convenient, the IT staff was immediately challenged to find a way to extend networked computing services across a paved street and over a distance of approximately 200 yards—all within a matter of weeks.

According to Jane Andrews, IT consultant, "With top-level executives including the chief financial officer planning to occupy the new satellite building, we knew it was critical that the transition occur without a hitch." Andrews set out to find the best way to link the two offices, with the goal of ensuring transparent access to network servers, applications and data regardless of whether the employee was situated on the north or south side of the street.

### THE CHALLENGE:

Andrews evaluated installing T1s between the two buildings, but was concerned that the bandwidth (1.544 Mbps) wouldn't support the throughput and response time requirements for accessing the company's financial applications, email, schedules and file shares. Copper-based T1s also require an investment in routing hardware that Sionex would ultimately abandon once the company found space large enough to house the entire employee base. In addition, T1 service providers often work off of 45-day lead times, creating the risk that Sionex's IT services might not be up and running when the new office opened. Finally, because start-ups like Sionex keep a watchful eye on costs, the recurring monthly lease payments associated with T1s made Andrews think that there had to be a less expensive alternative.

With an 802.11g wireless local area network already in place, along with an employee population well-versed in the use of wireless hand-held devices, Sionex management is clearly open to leading-edge wireless solutions. When a Sionex board member suggested that Andrews consider optical wireless solutions based on free-space optics (FSO) technology, she was open to evaluating it as a non-traditional alternative for building-to-building connectivity. FSO-based optical wireless solutions are line-of-sight and use lasers to provide high-speed, optical bandwidth connections for sending and receiving voice, video and data at full-duplex speeds up to 2.5 gigabits per second. Originally developed by the military and NASA, optical wireless has been used for more than 30 years to provide fast, reliable and quickly deployed communication links for remote locations.

> *"They showed up for the installation at 10 a.m. and by the end of the business day we were fully operational,"* recalls IT consultant Andrews. *"In fact, the system has performed flawlessly since day one – even through Boston's foggiest season."*
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> **Jane Andrews** | IT Consultant
> Sionex Corp.

When introduced to LightPointe, a designer and manufacturer of optical wireless products based on FSO, Andrews found that the technology delivered the security and reliability the organization required, at a very affordable price. In terms of bandwidth, there were no concerns: LightPointe offers a broad portfolio of optical wireless equipment, with products providing bandwidth from 1.5 Mbps to 2.5 Gbps. After evaluating the LightPointe product line, Andrews determined that the entry-level product, the FlightLite 10/350, would best suit Sionex' needs. The FlightLite 10/350 offers bandwidth of 10Mbps—at least 10 times greater than T1. (Another FlightLite model, the 100, which was recently released, provides 100 megabits of full-duplex, point-to-point, and Fast Ethernet connectivity optimized at a distance of 500 meters.)

Although Sionex was sold on LightPointe, they still weren't certain the technology could be installed in time to meet their deadline. With the opening of the new facility just around the corner, Andrews was under pressure to get a solution in place fast. LightPointe put her in touch with Speed Wire Network Services, a Floral Park, N.Y.-based reseller offering telecommunications equipment and installation services along with specialized expertise in FSO-based optical wireless. When Speed Wire's director of business development, Michael T. Connolly, told her they could complete the LightPointe installation in less than 36 hours, the deal was sealed without a moment's hesitation.

### THE SOLUTION:

Sionex was able to purchase a FlightLite system (two links) for approximately $5,000, which turned out to be equivalent to the cost of an initial T1 investment, but without the additional monthly fees of $500 or more. Through Speed Wire, Andrews scheduled the installation almost immediately. The reseller went to work right away, customizing mounts to secure the FlightLite devices to the rooftops of each of the Sionex buildings.

LIGHTPOINTE™

On a blistery day in March 2004, Speed Wire arrived at the Sionex facility to set up the optical network. Although a heavy snowstorm was passing through the Boston area, they insisted upon proceeding with the installation, even though the process involved several hours of outdoor time atop the Sionex buildings. Although Andrews was eager to get the network up and running, she convinced them to wait until the next day, when the storm finally subsided.

After setting up the equipment mounts and LightPointe system, the consultants then calibrated the FlightLite pair. As promised, the initial installation took less than two days, instead of the weeks—or months—projected for the T1 line. "They showed up for the installation at 10 a.m. and by the end of the business day, we were fully operational," recalls Andrews. "Most importantly, the system has performed flawlessly since day one—even through Boston's foggiest season." This point is particularly important, as critics frequently refer to fog as a key factor for creating interference in optical wireless networks. Sionex' experiences with the LightPointe system clearly dispelled that myth.

> "We make every effort to utilize leading edge technology, as long as it fits withour strategy. Sionex must make sure that IT investments are leveraged to provide flexibility and options as the company grows…LightPointe supported this goal, while also meeting all of our requirements for connectivity in a very short timeframe and providing a very fast return on investment."
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> **Jane Andrews** | IT Consultant
> Sionex Corp.

### THE BENEFITS:

On the first day that employees occupied the new building, they had instant access to the corporate network. "It was completely transparent to our end users. They were sharing large files and accessing applications over the network that included the LightPointe link between buildings." says Andrews. For example, the CFO, who is now in the new building, uses a financial application that sits on a server at headquarters. Print jobs are also served across the street from the new office. In addition, employees working out of both buildings continue to use their Pocket PCs and other hand-held devices to access data across the company's virtual private network. All this, and there hasn't been a single performance issue or a moment of detectable downtime, even with fog, snow, wind and rain hitting the region on a regular basis. If there were any issues, Speed Wire promised to be on call 24/7 to make any adjustments necessary.

The FlightLite has also proven to be a completely "hands-off" system for Sionex, which means Andrews can spend her time taking care of other IT matters instead of focusing on the operation and management of the new optical wireless network.

"We make every effort to utilize leading edge technology, as long as it fits with our strategy. Sionex must make sure that IT investments are leveraged to provide flexibility and options as the company grows. In this case, the ability to provide a reliable, robust network connection allowed us to expand our space on a temporary basis," concludes Andrews. "LightPointe supported this goal, while also meeting all of our requirements for connectivity in a very short timeframe and providing a very fast return on investment. If I'm ever faced with the need to connect multiple buildings in a campus setting again, LightPointe will definitely be my top choice."

**CUSTOMER:**

Sionex Corp., a privately held provider of breakthrough chemical and biological sensor chips and systems, with headquarters in Waltham, Mass. (www.sionex.com).

**INDUSTRY:**

High technology

**RESELLER:**

Speed Wire Network Services, a Floral Park, N.Y.-based reseller offering telecommunications equipment and installation services along with specialized expertise in FSO-based optical wireless (www.speedwireinc.com)

**CHALLENGES:**

- Rapid growth required adding another facility to house additional staff; new building needed to be completely operational within weeks.
- Sharing of large document management, PLM and database files required significant bandwidth.
- 100 percent network uptime and transparent access to data were critical.
- Time and cost constraints reduced list of viable options.

**SOLUTION:**

- LightPointe FlightLite, an optical wireless solution for enterprise IT professionals, weighs just 9.9 pounds (4.5 kilograms); offers up to 1.25 Gbps speed; and is the most compact and economical member of the LightPointe Flight™ Optical Wireless family.