



A university has campus facilities spread all over a major metropolitan area. Digging up streets or purchasing rights-of-way and laying fiber-optic lines from one building to the next would be prohibitively expensive and could take years. Here is a product that quickly establishes an affordable, robust, high-speed, and high-bandwidth telecommunications network.

FlightSpectrum™

How It Helps: The FlightSpectrum free space optics system is fiber-optics without the fiber. Free space optical communication is both a substitute for and a supplement to fiber-optic cable links. In either case, deployment of free space optical equipment is a cost- and time-effective approach that has the additional advantage of redeployment flexibility (or no permanent fixed infrastructure). Because free space optical equipment operates at frequencies above 300 GHz, it requires no licensing in the United States. Some of its applications would be impossible to duplicate with fiber optics, such as ship-to-port, dirigible-to-station, or terrestrial point-to-point communications, where laying cable is prohibited for regulatory or political reasons.



How It Works: The FlightSpectrum free space optics system incorporates three high-powered lasers, separated from each other by approximately 200 mm and individually operating at 1,550 nm wavelength. These lasers safely transmit signals through air to multiple, spatially separated, large-aperture receiving lenses. Transmitting and receiving equipment is combined in a "transceiver," which can be stationed at any convenient space, such as on a rooftop or even in an office behind a window. The technique of separating the laser beams is called "spatial diversity" and it solves problems of atmospheric turbulence and dense fog. FlightSpectrum is protocol-independent equipment and provides carrier-grade reliability at a data transfer rate of OC-48 (2.5 Gb/s) through dry air at distances of up to one kilometer.

How Much It Will Cost: Costs per pair of FlightSpectrum transceiver units varies, depending on desired reliability, transfer data rate, and management software: \$15,000 to \$20,000 for 20 Mb/s; \$20,000 to \$25,000 for 155 Mb/s; and \$100,000 for 2.5 Gb/s.

When It Will Be Ready: The product is available now. The manufacturer meets customer demands for communications equipment directly and also indirectly through service providers. Company products accommodate any protocol, connect to existing network equipment, and require no licensing.

Who Is Working On It: LightPointe Communications, Inc., developed this product. In 2000, LightPointe moved its San Diego headquarters to a new location in the city, a 27,000-square-foot building that also will serve as a manufacturing facility for North American customers. Currently, however, a majority of the manufacturing is done at a subsidiary (LightPointe Europe, GmbH) in Dresden, Germany, at a 30,000-square-foot facility. The company also maintains a development laboratory called the Advanced Networking Lab in Boulder, Colorado. LightPointe employs 90 to 100 full-time-equivalent people. For more information, contact Jeff Bean of LightPointe at (858) 643-5200 or jbean@lightpointe.com. The company Web site is www.lightpointe.com.





MDA Origins
LightPointe traces FlightSpectrum's origins back directly to research funded by BMDO in 1998 to 2000. In 1999, BMDO awarded an SBIR Phase I contract to LightPointe for a digital radio backup system for multi-Gb/s terrestrial laser communications links. In 2000, BMDO awarded a follow-on Phase II contract to design a transceiver that combined both terrestrial laser and radio backup functions. Today, the radio frequency backup is used as an out-of-band management device.

