



## CASE STUDY

### Using AireBeam™ Millimeter-Wave Radios to Maintain Mission-Critical Network Operations

*Sturm Foods Deploys LightPointe Millimeter-Wave Radios to Avoid Potentially Catastrophic Network Infrastructure Failure during Road Construction*

Since 1905 Manawa, Wisconsin based Sturm Foods, is the leading global dry grocery manufacturer for both the retail and foodservice industries. The company specializes in providing dry products Hot Cereals, Organic and Natural Products, Sugar Free Drink Mix Sticks, Sugar Free 12 Quart Drink Mixes, Hot Cocoa and Cappuccino categories. The Sturm Foods campus includes several buildings housing administrative and production facilities. The buildings are all interconnect to a Campus Area Network (CAN) and the IT department maintains 24/7 operation to support mission-critical applications. When the IT Department was informed on a relatively short notice that road construction would start close to one of the main facilities, the IT Manager was concerned that the construction could potentially lead to a catastrophic network failure due to a fiber cut. Sturm Foods turned to LightPointe to provide a wireless GbE radio solution to maintain mission-critical network operation.

#### THE CHALLENGE:

In late spring, Sturm Foods got a call from the Manawa city administration informing the company that a major road maintenance and road construction project was about to start in the business park area that houses the main Sturm Foods production facilities. This message became a major concern for the company's IT

Department, because the construction was in an area and along roads where the main optical fiber connection to the production building was buried. A fiber cut, and in particular the cut of the fiber that connected the main Warehouse/Shipping Building and the Corporate Headquarter would cause a catastrophic network failure that would cost the company a lot of money. A downtime of the network running mission-critical was unacceptable and the IT Department was in charge of maintaining 24/7 operation of the network. Digging an alternative fiber route to ensure network path redundancy between the two Gigabit Ethernet Cisco routers located at each building was not an option due to the extremely high digging costs and the time it would take to get the fiber in place. Since the applications running in the network required to transfer larger amount of network traffic with very low latency requirements, a temporary lease of a slower speed copper based network connection from a local service provider was no option. Moreover, there was also no guarantee that a leased copper line would not be cut during the road construction. A high capacity wireless network bridging solution that would not be impacted by the ongoing construction work seemed to be the best solution to avoid the potentially catastrophic network outage.

*"A fiber outage caused by backhoes and bull-dozers would have a huge financial impact on our business. Our network runs mission critical applications and we needed an alternative communication solution that could be implemented quickly, inexpensively, and provide GigE speeds supported by our Cisco routers"*

**Larry Katerzyske, CIO Sturm Foods**



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### THE SOLUTION:

At this point Larry Katerzynske, the CIO of Sturm Foods, turned to LightPointe and discussed using the LightPointe Gigabit Ethernet capable AireBeam™ millimeter-wave radio solution to establish a high capacity network connection between the Warehouse/Shipping Building and the Sturm Headquarter facility. By looking at the building GPS coordinates it turned out that the distance between the buildings was about 1 mile (1.6 kilometers) and well within the distance capability of the high capacity LightPointe Airebeam™ radios. In the Wisconsin climate environment (rain zone K), the AireBeam™ 1250-24 Gigabit Ethernet transport capable radio solution was a perfect fit to established a point to point network connection at extremely high availability required by the Sturm Foods IT Department.

However, when Fiber in Air, a Chicago based certified LightPointe Reseller, performed a site review to determine suitable mounting locations on the roof tops of the Warehouse/Shipping Building and the Sturm Headquarter building, it turned out that there was no Line-of-Sight between the two buildings. Luckily Fiber in Air determined that there was a clear Line-of-Sight to both buildings from the Manawa water tower located on a hill top between the two buildings to be interconnected. After exchanging a few phone calls with the Manawa city administration, Sturm Foods got the permission to use the Manawa water tower as a hopping/repeater location and to install a radio system on top of the water tower. This resolved the Line-of-Sight problem and in the final network design a back-to-back connected Airebeam™ system served as a repeater system for the radio antennas installed on the roof tops of the remote Sturm building locations. Due to the water tower repeater location, the actual Line-of-Sight distance to each building was virtually cut into half and was now roughly 600 meters and 1000 meters, respectively, Fiber in Air used two smaller LightPointe AireBeam™ 1250-12 12" antenna systems in the network design. These smaller all-in-one radio and 12" antenna systems provided the same availability figure over the shorter distance spans when compared to a 24" antenna system installed over the full distance of 1 mile between the Sturm buildings.

LightPointe, who owns a nationwide license to install 70 GHz millimeter-wave radios, applied for the operating license for the links on behalf of Sturm Foods. With the GPS coordinates of the installation locations in place this Internet based process typically takes less than 1 hour and cost only a few hundred dollars per link for a 10 year license. The license granted for each individual point-to-point connection protects the end-user from potential future interference and in case that another radio system operating in similar frequency band is installed in the same area.

Fiber in Air installed the required optical fiber connections and power cabling at each individual location. Because the AireBeam™ radios operate at 48 Volts, no certified electrician is required to install the electrical wiring to power the radios. Within a few week time frame the system was up and running to the satisfaction of the Sturm Foods IT Department. Extensive testing of network throughput and system latency actually revealed that the radio links operating over a combined distance of roughly 1 mile had a better latency performance when compared to the roughly 2 miles optical fiber run that interconnects the same routers in each of the buildings.





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The Sturm Foods IT Department configured the Cisco Gigabit Ethernet routers at each end of the link to run the Open Shortest Path First (OSPF) automatic failover and redundancy routing protocol. Tests of the failover mechanism showed that the switching between the primary and secondary transmission is performed instantaneously with not more than one network packet being lost during the switching process itself. The OSPF protocol actually chooses the AireBeam™ wireless link as the primary path over the optical fiber path due to the better latency performance of the radio system.

### THE BENEFITS:

- By using the LightPointe Gigabit Ethernet millimeter-wave radio system, the Sturm Foods IT Department was able to circumvent the potential risk of network downtime due to a fiber cut.
- The LightPointe AireBeam™ radio solution could be installed on a short time frame and at a fraction of the cost of digging an alternative fiber route.
- Unlike other wireless radio solutions, the LightPointe Airebeam™ system operates at real full-duplex and full throughput Gigabit Ethernet speeds and very similar to a fiber optic transmission path.
- Unlike using a slower speed failover radio solution that does not operate at full duplex and “real physical layer” transmission speed, the AireBeam™ system simulates a “virtual” physical layer optical fiber connection. In this case the IT Manager can also treat the radio link as a secondary “virtual” fiber connection and does not need to enable special QoS mechanisms when a failover from the high capacity primary fiber transmission path to the secondary radio path occurs.
- The extreme low and fiber like latency of the radio system ensures that latency sensitive applications run smoothly and to the satisfaction of the program user.

*“We are extremely pleased with the performance of the LightPointe AireBeam system. When switching from an optical fiber connection to the radio system, there is no difference in performance at all. In our particular case the latency over the radio system is actually lower when compared to the optical fiber connection. I highly recommend the company and the product to anybody who needs a reliable and high capacity network connection”*

**Larry Katerzynske, CIO Sturm Foods**



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**CUSTOMER:**

Sturm Foods, WI. (<http://www.sturmfoods.com/>)

**INDUSTRY:**

Food/Beverage Industry

**RESELLER:**

Fiber in Air, Inc., ([www.fiberinair.com/](http://www.fiberinair.com/))

a Chicago, IL.-based network consulting, design and installation company and a certified LightPointe reseller.

**CHALLENGES:**

- Road construction threatened to cut fiber connection for mission-critical operation.
- Major road maintenance and construction project and fiber backup solution required on a very short notice. Low latency and 1.25 Gbps speed required to ensure smooth network operation in case of fiber cut.
- Time and cost constraints reduced list of viable options.

**SOLUTION:**

LightPointe AireBeam™ Millimeter-wave radio solution operating at full duplex 1.25 Gbps (GbE) speed. Back-to-back installation with water tower as relay/hopping point.

**BENEFITS:**

- High-speed networking at a fraction of the price of other alternatives.
- Sufficient, expandable bandwidth to support disaster recovery initiatives and eliminate the risk of downtime.
- Convenient wireless link requires no trenching for trouble-free installation.
- Secure, reliable LAN extension withstands severe weather and protects critical data.