

## Application Profile:

# Mass General Hospital Utilizes Microwave for 10Mbps LAN Extension between Facilities

In the Spring of 1987, Massachusetts General Hospital decided to relocate its computing facilities to a spacious new building that had recently been constructed. The new building is located in Charlestown, in a former Navy yard, approximately 1.3 miles away from their main Boston location.

Although relatively close, the new MGH Research and Computing facility is separated from the main MGH campus by several highways and a large river. Dave Murphy, Computer Network Manager at MGH, was responsible for finding a means of connecting Ethernet computer networks between the main location and Charlestown.

Among his options were leased T1 service from Bell, Fiber Optics and microwave. A leased T1 circuit was the least desirable method since it carries a high monthly charge and limits bandwidth to 1.544Mbps, too slow to transfer large files and applications between locations.

Fiber optics was also considered, but the cost and availability exceeded their budget and time requirements. After many months of waiting for fiber to be installed between buildings, MGH is still unsure as to when it finally will be available.

MGH decided to use microwave to link Ethernets between facilities because it was immediately available, low in cost and could provide 10Mbps transmission between buildings. What is unique about MGH's LAN Extension system is that they are using two complete microwave LAN Extension links, side by side, in a redundant configuration. The switchover between links, in the event of an

outage, is provided by a data link layer bridge. There was some concern at MGH about the reliability of microwave with regard to New England's turbulent weather. According to Dave Murphy, since the installation was completed in July, both links have been operating without a single outage.

MGH uses its microwave LAN Extension link to transmit vital data between virtually every hospital department including clinical, administrative, research and the Cardiac Computer Center. Currently over 360 nodes are being connected with 90% of all traffic being DECNET and the remaining mostly TCP/IP.

MGH decided to purchase its LAN Extension link from Microwave Bypass Systems, Inc. for several reasons. First, Dave Murphy was impressed that MBS had been the first company in the industry to pioneer this technology. More importantly, Microwave Bypass provides and supports all system components, has engineers in both microwave and Ethernet technologies and provides a turn-key system including installation, FCC licensing, final test and customer training.

Components used for each of MGH's LAN Extension links include: (1) 23GHz Wideband Microwave Radio with 2' parabolic antennas, (2) Etherwave Transceivers and (2) Data Link Layer bridges. Total cost for a complete 10Mbps LAN Extension link is under \$45,000 including licensing and installation. The microwave is manufactured by International Microwave Corp., Stamford, CT. Microwave Bypass Systems manufactures the Etherwave Transceiver and the LAN-LINK 1000 Data Link Layer Ethernet Bridge.

For more information call (617)494-8700 or write: Microwave Bypass Systems,  
One Kendall Square, Suite 333, Cambridge, MA 02139

*(See back side for diagram of system configuration)*

# MASS GENERAL HOSPITAL Cardiac Computing Center

System Diagram for 10Mbps LAN Extension over Microwave

