

AMR Corp Taps GarrettCom for Next-Generation Industrial Ethernet LAN in Aircraft Maintenance

An Industrial Ethernet Application

TECHNOLOGY TODAY

When AMR Corp, parent company of American Airlines, decided to convert its airplane maintenance facility at Alliance Airport, Fort Worth, Texas, from a cost center to a profit center that provides maintenance for a number of commercial and freight airline fleets, the facility had to develop a system that could measure time and materials, as well as energy consumption for the contracted services to enable accurate and timely billing – and that required a new look at its networking strategy. The facility, which encompasses 15 buildings spread over hundreds of acres, had been utilizing a SCADA system from Johnson Controls with ARCNET bus-oriented networking technology that was installed in the early 90's. As the installation aged and ARCNET-compatible products became more difficult to find, the facility has slowly replaced measurement devices and PLCs with Ethernet™-enabled units, creating a hodgepodge of ARCNET, serial, and Ethernet connections.

ABOUT AMR CORP

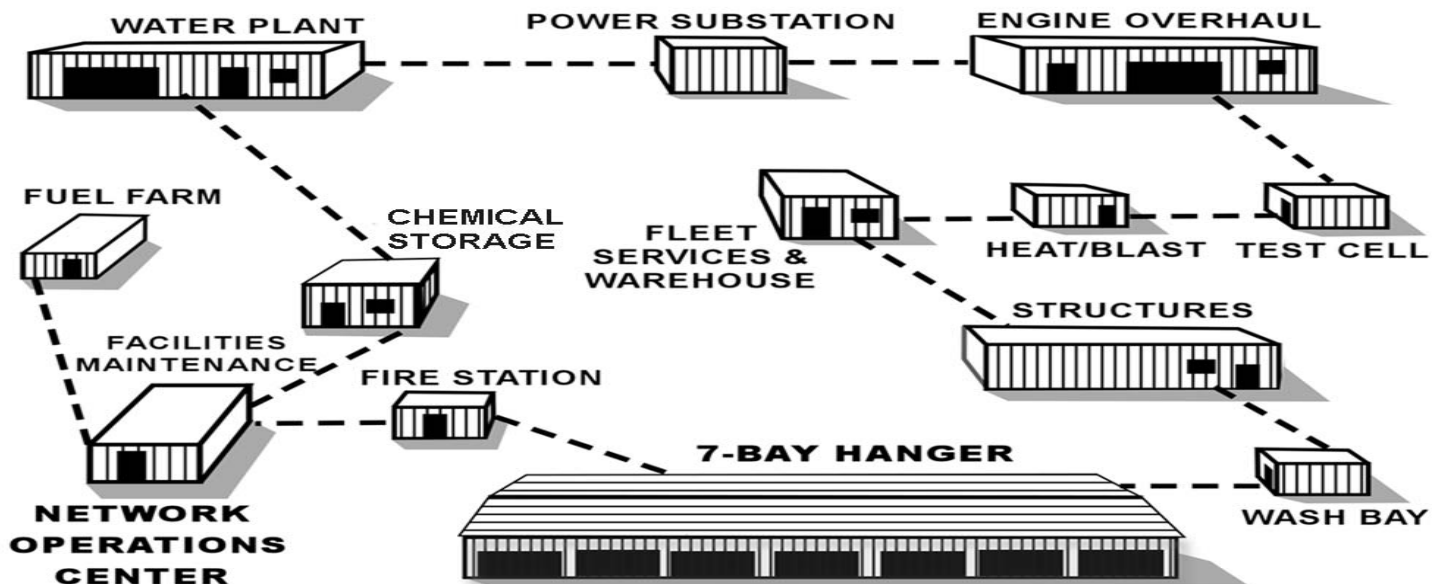
The AMR Maintenance and Engineering facility at Alliance Airport services planes from a number of commercial and freight carriers, as well as the American Airlines and American Eagle fleets. The facility was converted from an in-house aircraft maintenance facility to a profit center in 1998, and service work (including engine overhaul and testing) has continued to expand.

THE CHALLENGE

AMR Corp has been making use of Z-Technologies' process control expertise for many years. When plans called for creating a profit center, Z-Tech helped the facility develop a system to collect and communicate information on each job for the IT department. The initial plan was to maintain the legacy Ethernet system using GarrettCom's 3000X Series Hubs. This bus-oriented implementation ran at 10 Mb using BNC connectors and cabling (an older Ethernet cable type) and fiber. Media converters were used to integrate serial lines. The final solution takes advantage of the in-place fiber loop to leapfrog to current-generation 1 Gb backbone bandwidth capability including port modularity, network management software, and resilient ring structure support – all for less than a 10% increase in investment over the 10 Mb legacy concept

THE SOLUTION

A combination of Magnum 6K25 and 6K16V managed switches, which support Ethernet bandwidth from 10 Mb to 1 Gb, provides the backbone for the facility. The network is currently utilizing a 100 Mb backbone; it can upgrade at any time using plug-in modules. The modular ports capability and the fiber built-in features of the Magnum 6Ks made them an ideal fit for the job.



Aircraft Maintenance Facility

Magnum mP62 switches interconnect PLCs in the hanger, as well as in harsh environments such as the remote airplane cleaning facility and the engine test area where jet engine testing can release significant smoke and fumes.

The layout of the facility's fiber cabling, originally a loop, made it easy to convert the fiber bus into a ring. GarrettCom's standards-based S-Ring™ technology is a redundancy management software product for ring topologies that provides automatic fault recovery so that communications is uninterrupted if a cable is cut or if a component of the system fails or is taken out of operation for service.

THE RESULT

- Economical upgrade to 100 Mb / 1Gb backbone technology allows the facility to take advantage of higher bandwidth technologies as desired
- Industrial-grade products provide hardened units in compact housings, impervious to dust and dirt, and with wide temperature tolerance
- In-place fiber media, which is resistant to electrical noise, handles the long distances between facilities locations without the need for expensive new cabling
- Modular Ethernet switches provide a mix of fiber and copper ports, and an easy upgrade path when needs change in the future
- Convenient resiliency software maintains communications among the different stations linked by the fiber ring, simplifying network servicing
- Single source for Ethernet products from a broad-line Industrial Ethernet supplier to simplify purchasing and support

MAGNUM SWITCHES

The Magnum 6K-Series Switches are built to withstand the harsh, noisy conditions found in industrial environments, and feature a wide choice of port types and power options. The Magnum 6K16V Managed Fiber Switch is the first edge switch with modular, per-port fiber access from 10 Mb to 1 Gb and "big switch" management features in one small-footprint package. The Magnum 6K25 Managed Fiber Switch offers up to 24 fiber ports with optional 1 Gb fiber uplink capability. All Magnum 6K Switches come with Managed Networks Software (MNS-6K), including the company's S-Ring™ redundancy management software.

ABOUT GARRETTCOM

GarrettCom, Inc., is the leading manufacturer of industrial and carrier-class Ethernet LAN products. GarrettCom offers a comprehensive line of ETSI and NEBS-certified switches and hubs for use in telecommunications, industrial, and automated factory environments. GarrettCom markets its products through a network of resellers, OEMs, system integrators, and distributors worldwide. For more information on GarrettCom and its products, visit www.GarrettCom.com.

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GarrettCom, Inc.

47823 Westinghouse Drive • Fremont, CA 94539 • PH: (510) 438-9071 • FAX: (510) 438-9072
Email: mktg@garrettcom.com • Web: www.GarrettCom.com