Transportation Automation

Gigabit Ethernet Switches for Kaohsiung MRT Communication Backbone Redundancy

Project Intro

The Kaohsiung Mass Rapid Transit System (KMRT) is a rapid transit railway system operating in the metropolitan area of Kaohsiung, Taiwan. The construction of the KMRT began in 2001 with a Red Line and an Orange Line, which started operations in 2008. The combined length of the two lines is 42.7 km, with 42 stations.

The initial integrated communication network of the KMRT carried voice, video, and building automation data with an SDH network and connected to the PA system, intercom, security and access control, and BA SCADA systems. However, as the network grew in size and complexity, the bandwidth of the SDH system bottlenecked. For this reason, a backbone with Gigabit and redundant capabilities was added. The new backbone must be able to co-work with the existing network and must be independent from the SDH network.

Location: **Taiwan**

System Requirements

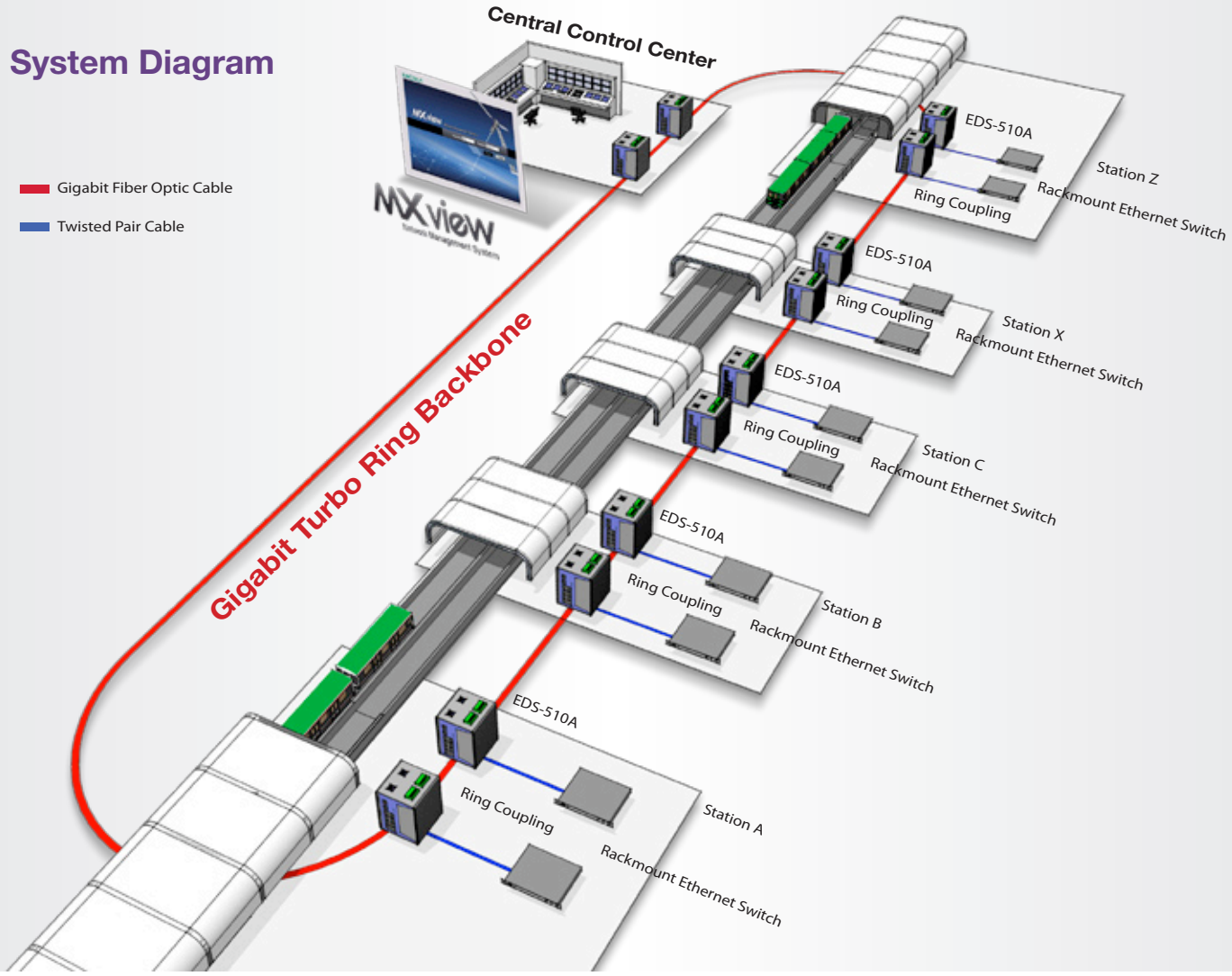
- A redundant Gigabit Ethernet backbone with dual switches to ensure around the clock uptime
- The new MRT BA system backbone must be compatible with the existing network.
- Must support single-mode fiber (for station to station) and cooper cables (for within the station).

Moxa Solution

Each station's network is equipped with redundancy features to minimize the impact of equipment failure. Moxa's MXview network management software is used to monitor system status and performance. There is a single Central Control Room (CCR) for the 42 stations as well as multiple IT rooms. Each station employs two of Moxa's EDS-510A Gigabit managed Ethernet switches that connect to the existing network using ring coupling topology to build a redundant link between the backbone and the network. Moxa's EDS-510A with 3 Gigabit Ethernet ports is ideal for use with the Turbo Ring™ redundant topology, which leaves a spare Gigabit port for uplinks to the network switches in the IT room and the CCR.

Moxa's ABC-01, a simple and powerful configuration backup and restoration tool, is used for saving and loading the configurations of the managed Ethernet switches. With the ABC-01, users can easily replace or install switches without needing to bring their laptops to the site; this significantly reduces maintenance time and system downtime.

System Diagram



Why Moxa?

- High network availability is achieved with Moxa's fault tolerant Ethernet switches and self-healing Turbo Ring technology, which enables flexible network planning by ring coupling topology, and supports a recovery time under 20 ms.
- The EDS-510A's Gigabit port is capable of transmitting a vast amount of data, including voice and video
- The comprehensive and intelligent functions of Moxa's managed Ethernet switches simplify network management and troubleshooting for the customer
- Moxa provides in-depth consulting service and fast delivery

Products

EDS-510A Gigabit Managed Ethernet Switch

- Gigabit Ethernet ports for redundant ring and 1 Gigabit Ethernet port for uplink solution
- Turbo Ring (recovery time < 20 ms), RSTP/STP (IEEE802.1W/D) for Ethernet redundancy
- Supports QoS, IGMP snooping/GMRP, VLAN, LACP, RMON

ABC-01 Configuration Backup and Restoration Tool

- Capacity to store all of a switches configurations
- Quick and easy switch replacement reduces system downtime

MXview Network Management System

- Automatic device detection
- User defined topology map for logic connections and to display device status
- Access your network remotely over the Internet