Adaptable Turbo Chain Technology Creates Highly Available Wide-Ranging Wayside Network

2010-03-30

Location / Country : Australia

Product Solutions:

IKS-6726 Series

24+2G-port Gigabit modular managed Ethernet switches

EDS-505A/508A Series

5 and 8-port managed Ethernet switches

Introduction

Project Introduction

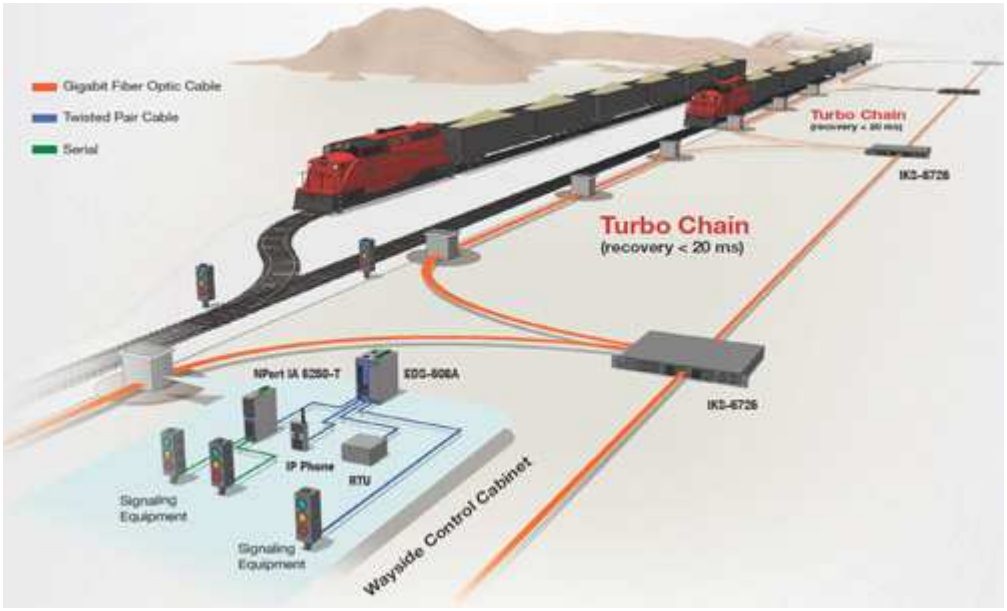
One of the world's largest natural resource companies sought to upgrade one of their key assets: an iron mining, processing, and rail transportation network in Western Australia. A new wayside communication network with network redundancy would maximize the safety, reliability, and efficiency of this almost 40-year old network.

Ethernet ring redundancy was an obvious first choice to create a scalable, self-healing system. However, to build this system the operator would need to install and cable network equipment along wayside cabinets covering over 270 km of track. A conventional ring coupling architecture using backbone core switches would be exorbitant in an application of this sheer scale. It was time to look at new technologies that would enable high-value, efficient operations.

System Requirements

• High network availability to ensure safe daily transportation
• A cost-effective network architecture to simplify network connection over a farranging wayside communication network
• Multi-Service IP network support
• Reliable performance under the extreme temperatures likely to be experienced in wayside equipment cabinets
• Scalable to allow multiple redundant networks between the control center and field sites.

System Diagram



Moxa Solution

Moxa's breakthrough Turbo Chain™ flexible redundancy technology frees system builders from the costly limitations of conventional ring architecture. With Turbo Chain, Ethernet switches can be daisy-chained together from cabinet to cabinet, and each "chain" is connected to the control center and broader network by a head and tail switch. No ring coupling switches are needed, which means the chain architecture can adapt to many topologies.

Recognizing the advantages of Turbo Chain technology, the mine operator selected multiple products from Moxa's wide selection of Ethernet switches, including the EDS-505A, the EDS-508A, and the IKS-6726 switches. These products work reliably in a wide operating temperature range of -40 to 75°C, which empowers them to overcome the conditions in wayside cabinets, which lack climate control. In the event of any chain segment failures, Turbo Chain will activate the blocked path and self-heal the network within 20 milliseconds, creating a highly available network.

Compared with conventional ring topology, Turbo Chain eliminates the need for kilometers of extra cable and additional Ethernet ports to form ring coupling paths. As this iron mine discovered, these savings scale dramatically in large networks, such as a wayside communications network.

Why Moxa

• Moxa Turbo Chain™ saved a significant amount of development costs in time, effort, cabling, and Ethernet ports over an extensive wayside network.
• Turbo Chain maintains highly available networks with fast recovery times while transcending the limitations of conventional redundant ring technology. The flexible Turbo Chain topology adapts to circumstances that would frustrate the stricter requirements of a ring redundancy topology.