KBC ThruLink™

Enables Secure, Reliable Communications for Countrywide Rail Crossing Safety

Rugged, scalable connectivity that delivers

Case Study

Background

Indian Railways, one of the world's largest rail networks, identified a pressing need to improve safety and communication at Level Crossing (LC) gates, particularly in remote areas like the Alipurduar Division of the Northern Frontier Railway.

Traditionally reliant on manual operations, these gate crossings were vulnerable to human error and communication gaps, posing safety risks to personnel and the public. Each year, approximately 50 fatalities occur at level gate crossings – often due to individuals ignoring posted signals and alerts.

Challenge

The main challenge was to modernize LC gate operations without relying on open networks or limited unicast-only communication, which was particularly difficult given the inconsistent telecom infrastructure.

The solution had to be fully secure while enabling two-way communication between remote crossings, control centers and headquarters, providing live video streaming and audit-friendly data logging, all on demand.

Key requirements:

- **Seamless scalability** across 5,000+ future remote locations
- **Rapid device deployment** and replacement without difficult configuration
- Complete **end-to-end encryption** for network security
- Support for multicast traffic and **MESH connectivity**

Solution

KBC's local partner, **AavVik Business Pvt. LTD**, led the design, development and implementation of the **Audio-Video LC Gate Communication System** using the **KBC ThruLink** as the secure VPN solution to link all cutting-edge technologies and remote locations.

The solution included the Aiphone IX-MV7 intercom system with ruggedized outdoor panels featuring integrated video and audio, UniView cameras and a public address (PA) system.

Since the Aiphone system relies on multicast streams for audio and video, the KBC ThruLink was selected to connect and secure all locations seamlessly. ThruLink's unique capability of supporting multicast traffic over encrypted VPN tunnels and automatically routing traffic via the most efficient path using MESH technology made it the clear choice.

Why ThruLink?

- **Hassle-Free Remote Access:** No fixed IPs, port forwarding or VPN setup—connect from anywhere
- **End-to-End Encryption:** Military-grade security for video, audio, and control data
- **MESH Connectivity:** Always-on, resilient links across the entire network
- **No Licensing:** No recurring costs or license management headaches
- **Multicast Traffic Support:** Enables efficient and reliable live video streaming to multiple endpoints
- **Rapid Scalable Deployment:** Add or relocate remote sites quickly with minimal configuration

Outcome

Following a six-month test phase, the system proved to be exceptionally stable and secure, delivering uninterrupted performance and zero reported faults across the 30+ phase-one sites. Today, Indian Railways benefits from real-time video and audio communication across all locations, enabling immediate and clear coordination where it's needed most. The scalable, future-proof network architecture ensures the system can grow alongside operational needs, while simplified operations and maintenance reduce the burden on technical teams and enhance long-term reliability. Through collaboration with AavVik and the deployment of KBC's ThruLink, Indian Railways now has a groundbreaking safety and communications solution. A solution that offers enhanced protection and saves lives at vulnerable crossings, and is now a model for secure and scalable infrastructure in critical public transportation systems.

"ThruLink was key to our solution—securely handling multicast traffic and ensuring reliable MESH connectivity in India's tough telecom conditions. It enabled a scalable, plug-and-play system that's improving rail crossing safety."

Vibhor Khandelwal,
AavVik Business Pvt. LTD

data delivered