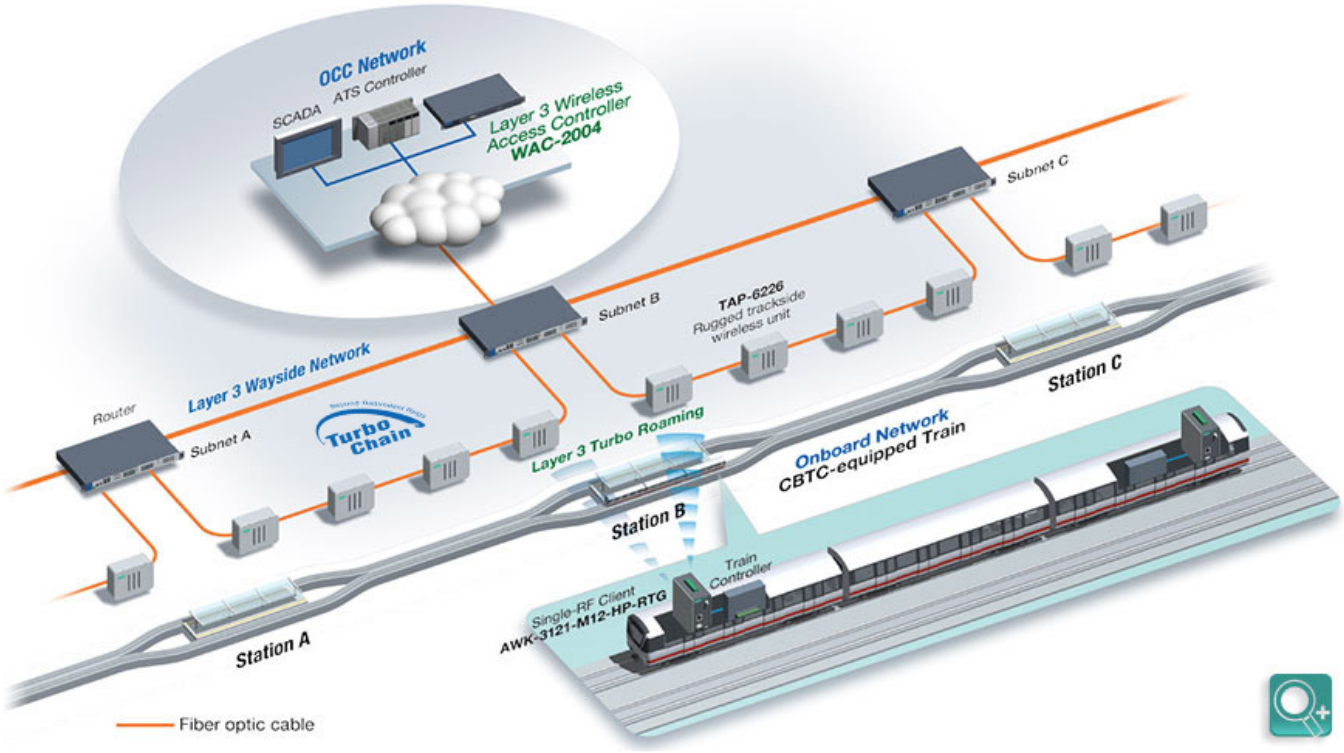
Layer 3 CBTC - Fast Secure Handover on Layer 3 CBTC Networks

Fast Secure Handover on Layer 3 CBTC Networks

Fast Secure Handover on Layer 3 CBTC Networks

For long-range rail lines, the wayside network consists of several subnets distributed across multiple base stations. The risks of CBTC service can be minimized by using redundant links to each train. A radio CBTC network consists of onboard radio and wayside radio APs. Wayside APs are connected to different subnets by linking physically to station routers. Onboard the train, two clients are placed at each end of the train for redundancy. Each client associates with different wayside APs, and only one radio link is active at a time. To secure communications across subnets, Moxa?s L3 wireless access controller (WAC-2004) enables a Layer-3 handover delay of less than 50 ms, seamlessly exchanging the data needed for safe operations between train and ground.



Network Requirements

- Layer 3 roaming (handoff <50 ms) for cross-subnet mobility
- Adaptable to various wayside antenna scenarios:
    - Waveguide scenario: waveguides or leaky cables are installed along the track
    - Free propagation scenario: antennas are positioned at distinct points along the track

Moxa Solutions

- Rugged trackside wireless unit
    - Complete integration solution of dual radios, managed fiber Ethernet switch with AC power supply.
- Sub-50 ms Layer 3 Turbo Roaming:
    - WAC-2004 Layer 3 wireless access controller enablescrosssubnet roaming
    - Inter-controller roaming

    - IEEE 802.11i-compliant wireless security
    - Redundancy via hot standby controller
- Universal roaming scheme up to support a variety of wayside propagation modes