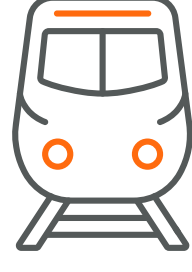


# Satellite IoT in Rail Operations

Extending Visibility Beyond the Trackside Network



## The Rail Connectivity Challenge

Rail networks span thousands of miles and frequently operate in environments where traditional communications infrastructure cannot reliably support continuous monitoring. Across freight, passenger, and industrial rail systems, maintaining visibility over moving assets requires connectivity that extends well beyond fixed trackside networks.

### Rail networks often travel through:

- Remote corridors with no cellular coverage
- Tunnels, mountain passes, and rural terrain
- Areas without trackside infrastructure
- Regions where public networks are unreliable or congested

### Meanwhile, customer expectations are rising:

- Real-time shipment visibility
- Cargo condition monitoring
- Safety and compliance reporting
- Asset utilization optimization

Connectivity gaps directly impact revenue, safety, and operational efficiency.

## Why Satellite IoT Matters in Rail

Rail operations move continuously across geographies where connectivity conditions change rapidly. Satellite IoT provides a resilient layer of communication that complements terrestrial networks and maintains visibility across entire rail routes.

Satellite IoT ensures continuous monitoring where terrestrial networks end.

### It enables:

- ✓ Real-time railcar tracking across entire routes
- ✓ Brake system and equipment status visibility
- ✓ Temperature and environmental monitoring
- ✓ Hazardous material compliance reporting
- ✓ Remote asset diagnostics and alerts

Rail operations no longer need to depend solely on fixed infrastructure.



## Why Globalstar for Rail?

Rail operators require connectivity that works across vast territories, harsh environments, and long deployment cycles. Globalstar's satellite IoT solutions are designed to support these realities.



### Global Reach

Rail freight often crosses long distances and multiple jurisdictions. Satellite coverage helps ensure monitoring continuity regardless of regional infrastructure differences.

- Coverage across North America and beyond
- Seamless tracking across borders
- No dependence on roaming agreements
- Reliable service in rural and infrastructure-poor regions

Rail doesn't operate only where towers exist. Satellite ensures end-to-end visibility.

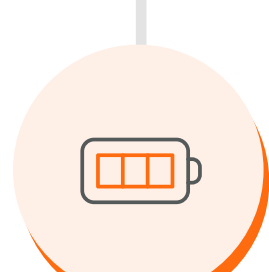


### Intrinsically Safe Devices

Rail transport frequently includes hazardous cargo such as fuels, chemicals, and industrial materials. Monitoring these shipments requires certified equipment designed for safety-critical environments.

- Certified solutions for hazardous environments
- Ideal for fuel, chemical, and hazardous cargo monitoring
- Designed for compliance-driven applications

Safety and compliance are not optional in rail. Globalstar devices are built accordingly.



### Battery-Optimized Performance

Most railcars do not provide continuous power for monitoring systems. Devices must operate for years on battery power while maintaining reliable data transmission.

- Low-power architecture for railcars without line power
- Multi-year battery life
- Configurable reporting intervals

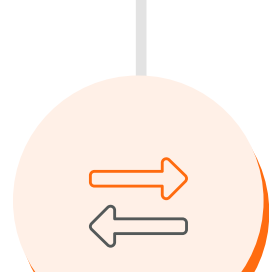
Designed for large fleets where maintenance cycles matter.



### Affordable, Scalable Deployments

- Cost-effective hardware and service plans
- Simple installation
- Minimal infrastructure investment

Enables fleet-wide rollout without prohibitive capital expense.



### One-Way & Two-Way Capabilities

#### One-Way

Efficient location and condition monitoring

#### Two-Way

- Remote configuration
- Command and control
- Status confirmation

Two-way communications elevate monitoring into actionable operations.



### Supporting Safety Across the Network

- Remote brake status visibility
- Real-time system alerts
- Lone worker GPS safety devices
- Emergency messaging capability

When incidents occur, real-time data reduces response time.

## The Result

By extending monitoring beyond the fixed network infrastructure, satellite IoT helps rail operators improve operational awareness across their entire network.

### Rail operators gain:

- ✓ Continuous asset visibility
- ✓ Improved fleet utilization
- ✓ Reduced compliance risk
- ✓ Lower maintenance overhead
- ✓ Enhanced safety monitoring



**Rail is Expanding. Connectivity Must Expand With It.**

Satellite IoT ensures rail operations stay connected from major hubs to the middle of nowhere.

Learn more at [globalstar.com](http://globalstar.com)