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Best practices for connecting vehicle fleets

Reliable connectivity, no matter the vehicle

Image courtesy of Getty

Overview

Table of Contents

03 Vehicle fleets depend on constant connectivity

05 Cellular-enabled routers with SD-WAN ensure always-on, optimized connectivity

10 Checklist for deploying 5G routers

Is the train on time? Is the payment system on the metro bus connected? Is the milk in the dairy tanker spoiled?

Staying connected while on the road is a prerequisite for drivers, passengers, and vehicles in order to have a seamless travel experience. Planning and following route schedules, safely delivering cargo, and connecting to dispatch centers while in remote field locations require in-vehicle connectivity solutions. 5G, LTE, and other digital technologies provide vehicle fleets with the robust, real-time connectivity they need.

Vehicle fleets depend on constant connectivity

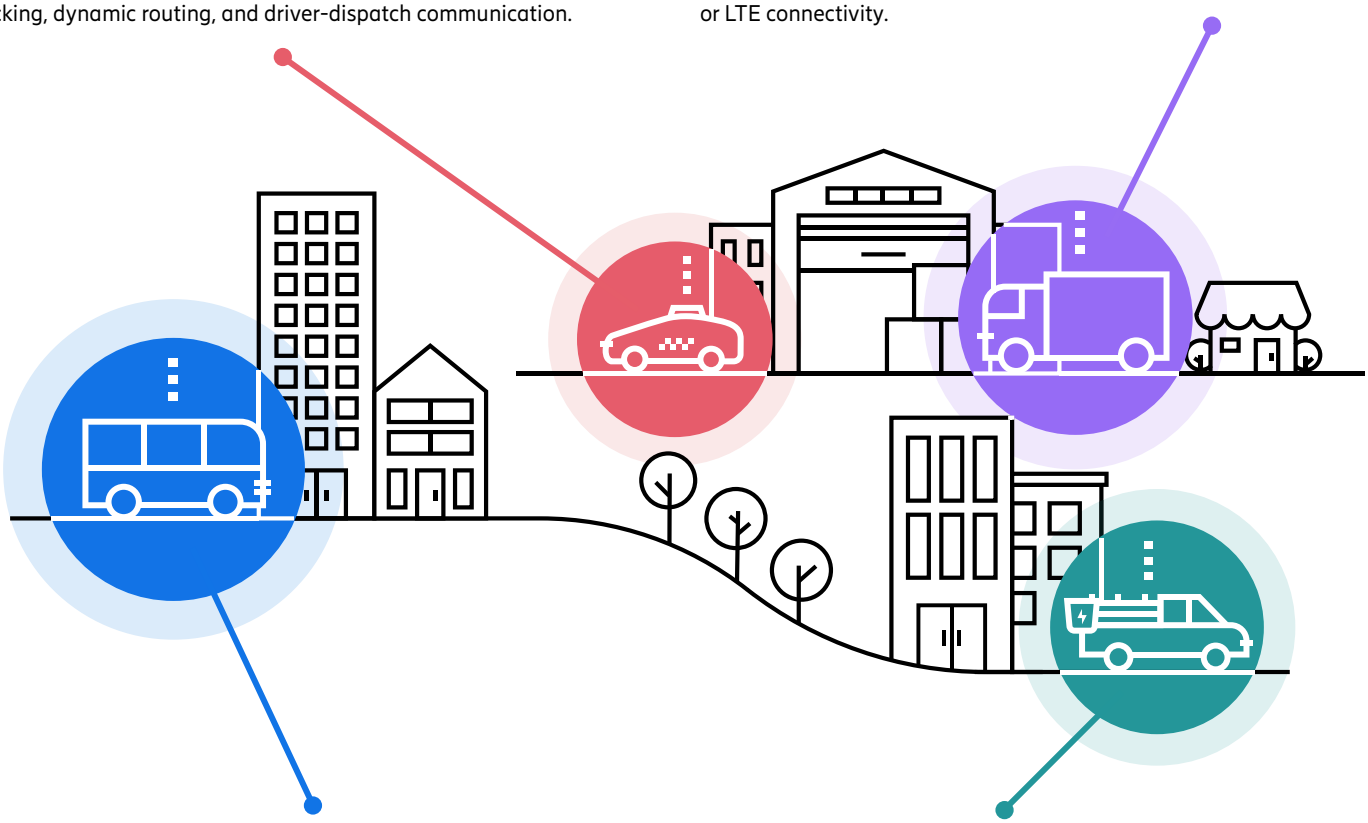
Various sectors, from public and private transportation to logistics and utility companies, can't function properly without onboard, cloud-connected technologies. IoT devices such as security cameras, digital signs, and sensors are standard.

Other modern fleet staples include Wi-Fi for drivers and passengers, GPS tracking, and telematics to check on vehicle maintenance needs. Staying connected also improves operational efficiencies and passenger experience, saves money, and improves safety.

Commuting is work time or downtime

Private transportation, including chartered buses, shuttles, taxis, and ride-sharing, requires seamless cellular connectivity. Charter buses and intercity services need high-bandwidth solutions for entertainment systems and reliable communication, especially in remote areas. Ride-sharing and shuttle services depend on real-time app-based tracking, dynamic routing, and driver-dispatch communication.

For **logistics**, connectivity improves safety, efficiency, and communication between drivers, customers, and headquarters. GPS tracking enables real-time location updates and geofencing to notify stakeholders of arrivals and departures. Onboard surveillance cameras, sensors, and communication and reporting systems require reliable 5G or LTE connectivity.



Public transportation, such as city buses, light rails, and ferries, depend on connectivity to deliver essential services and operate vehicles. Keeping passengers up to date about service availability and schedules, ensuring safety when entering and exiting and while onboard, and the ability to pay for digital tickets are all part of a seamless journey. Wi-Fi and digital signage with the latest information are also expected. Whether in stations or en route, transportation authorities must provide uninterrupted services.

Utility companies, including those in electricity, water, gas, and telecommunications, rely on cellular connectivity for field operations, fleet tracking, and remote asset monitoring. Service vehicles require always-on connectivity to receive real-time dispatch updates, report service completion, and communicate.

Common fleet needs across various sectors

An unreliable connection leads to downed services, poor passenger and customer experiences, frustrated drivers, and increased costs to manage hardware, equipment, and operations. Vehicle fleets across various industries have some common connectivity needs.

GPS fleet tracking and geofencing

Real-time GPS tracking, Automatic Vehicle Location (AVL), and restricted zones help route monitoring and optimization, dispatch coordination, and safety.

Digital payments and contactless ticketing

Many transportation systems use mobile payments, credit card point-of-sale (POS), or QR code scanning for seamless transactions.

Passenger information and mobile apps

Commuters can check real-time schedules, delays, and service alerts via apps or digital signage. Riders can plan routes, receive notifications, and even pay fares through mobile platforms.

Security and surveillance

Connected cameras enable live monitoring, remote access, and cloud storage for safety and compliance.

Digital signage

Real-time updates, advertisements, entertainment, and service information on screens inside vehicles or at stations keep passengers and drivers informed.

On-board sensors

Connected sensors for cargo collect data on location, temperature, humidity, shock, and vibration to ensure food, livestock, hazardous chemicals, packages, and more arrive safely at their destinations.

Passenger or worker connectivity

Passenger Wi-Fi (for buses) or secure network access (for field workers) ensures productivity and customer satisfaction.

Predictive maintenance and telematics

Remotely monitor engine diagnostics, fuel efficiency, and vehicle health to reduce operational costs. Use heat mapping to collect coverage data.

Depending on the sector, some needs are more relevant than others. For instance, public transportation focuses on mass connectivity, requiring high-bandwidth networks for passenger services, fleet tracking, and citywide transportation systems.

Private transportation needs flexible, high-quality connectivity for premium services like Wi-Fi, entertainment, and seamless payment processing.

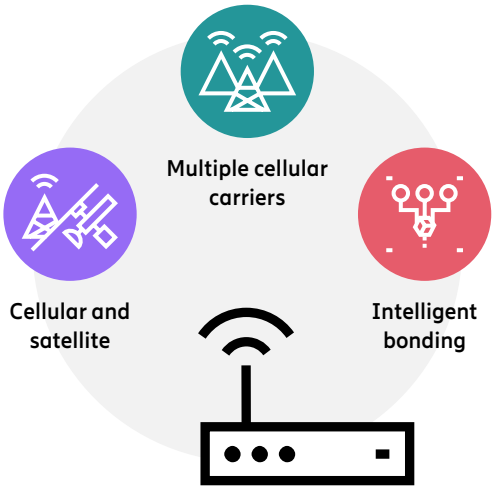
Logistics fleets prioritize driver and cargo safety with real-time tracking, geofencing, and onboard monitoring but have less need for ticketing, digital signage, and POS.

Remote connectivity is essential for utility and energy companies because their service trucks are also their offices. They need low-latency, long-range cellular or satellite networks for asset monitoring and worker communication.

Cellular-enabled routers with SD-WAN ensure always-on, optimized connectivity

Enterprise-grade 5G and LTE routers in vehicles provide reliable connectivity over cellular networks. Routers with software-defined WAN (SD-WAN) capabilities provide seamless multi-network connectivity in three key ways:

- Managing multiple cellular carriers
- Intelligent bonding for bandwidth optimization
- Integrating cellular and satellite networks



1. How modern fleet routers manage multi-carrier connectivity

Dual-modem 5G routers enable simultaneous connections to two different carriers, ensuring network redundancy, failover protection, and cost optimization. eSIMs provide the added benefit of activating and managing the carrier profiles electronically, without the need to physically change SIM cards.

Active-active dual-carrier operation

Ericsson Cradlepoint 5G routers can have two active carrier connections (carrier 1 + carrier 2) using two modems.

Both carriers operate simultaneously, allowing SD-WAN to dynamically select the best-performing connection based on:

- Signal strength and network congestion
- Throughput and latency
- Carrier-specific data consumption

Automated failover between carriers

If carrier 1 experiences congestion, SD-WAN shifts high-priority traffic (e.g., AVL tracking, PoS, GPS) to carrier 2.

If carrier 1 completely fails, all traffic is seamlessly switched to carrier 2 for uninterrupted service.

Data plan optimization and cost control

Through Ericsson NetCloud Manager, data usage monitoring ensures cost-effective connectivity by switching between carriers based on data plan thresholds. If carrier 1 reaches its data limit, the router automatically moves lower-priority traffic to carrier 2 to prevent overages.

Example: Public transit buses

A city bus uses carrier 1 primarily for passenger Wi-Fi, POS payments, and fleet tracking. When entering a zone with weak carrier 1 coverage, the router automatically switches to carrier 2 for uninterrupted connectivity.

"When we first rolled this out, we had 147 buses. The buses are interchangeable, and we didn't want kids to have Wi-Fi one day and not the next because routes had changed. So, we went all in."

Scott Major, CIO, Berks County Intermediate Unit

"I can schedule updates to push out across the fleet simultaneously at 3 a.m. — without requiring our team to visit any of the buses. If there's a connection outage or router issue, I can go into the cloud, get into the console, and figure out what's going on."

Russ Mattichak, network engineer, King County Metro

Image courtesy of King County Metro

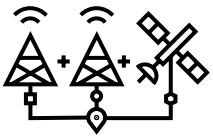
2. How intelligent bonding (flow duplication and bandwidth aggregation) works

Ericsson's intelligent bonding technologies enhance application resilience and bandwidth efficiency by combining multiple network links (5G, LTE, satellite) into a single logical connection.

Flow duplication for high-availability traffic

Ericsson NetCloud SD-WAN can duplicate critical data streams across multiple network paths (e.g., carrier 1 + carrier 2). This ensures that even if one network loses a packet, the duplicate from the second network arrives intact, preventing disruptions. This is ideal for:

- Mission-critical VoIP calls (dispatch, emergency communications)
- Real-time GPS and AVL tracking
- Live security and camera streaming in transit and remote workstations



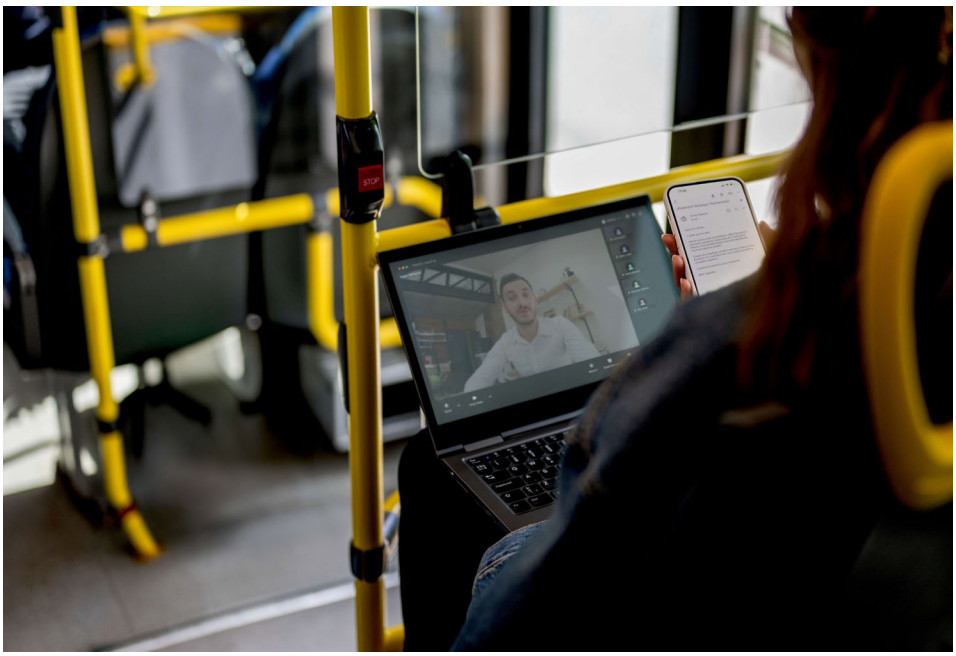
Bandwidth aggregation for high-throughput applications

Ericsson NetCloud SD-WAN can combine the bandwidth from multiple networks (e.g., carrier 1 + carrier 2 + satellite) to increase total throughput. All available links are used simultaneously, preventing congestion and improving overall network performance. This is ideal for:

- Passenger Wi-Fi on buses and corporate shuttles
- Live-streaming from surveillance cameras in remote sites

Example: Private transportation (chartered buses)

A chartered bus offers high-speed passenger Wi-Fi, in-transit entertainment, and business tools. Bandwidth aggregation combines carrier 1 and carrier 2 for higher-speed, uninterrupted connectivity.



"It wasn't until Ericsson Cradlepoint routers that we truly found a solution we thought was high-quality and reputable that we could really be proud of."

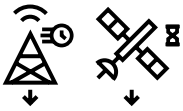
Ryan Cassidy, director of people and processes, Coach Atlantic Maritime Bus

3. Satellite and cellular: Equipping 5G routers with connectivity anywhere

For fleets that need always-on connectivity across various routes, Ericsson Cradlepoint routers support hybrid WAN by intelligently managing multiple network connections, including 5G, LTE, and satellite.

Automatic failover between satellite and cellular

When 5G/LTE connectivity is strong, dual modem routers prioritize cellular as the primary connection for low latency and high speeds. If cellular becomes weak or unavailable, the router can automatically switch to satellite for continuous connectivity in rural, offshore, or remote locations. Failover is seamless, avoiding interruptions in mission-critical applications such as AVL tracking and IoT telemetry.



Best-path selection for latency-sensitive applications

Satellite has higher latency than 5G/LTE, and SD-WAN uses policy-based routing to send time-sensitive data over the lowest-latency connection.

Traffic such as real-time video streaming, emergency alerts, and navigation data is prioritized over cellular when available. Non-time-sensitive traffic (e.g., file uploads and system updates) can be offloaded to satellite to ensure priority applications have bandwidth available.

Example: Utility companies with remote operations

A field service truck in a remote area uses 5G/LTE for monitoring and dispatch communication. If the cellular signal degrades, SD-WAN settings prompt the dual-modem router to instantly switch to satellite, ensuring continuous monitoring of critical infrastructure.

Image courtesy of SA Power Networks

"We knew that replacing our failing equipment meant finding a ruggedized solution with a very good signal that we could remote into at any given time. Ericsson Cradlepoint routers checked all the boxes."

Patrick Farrell, manager of IT infrastructure, Hydro Ottawa

"The connectivity solutions we now have with 5G routers and Starlink LEO satellites are saving our field workers significant time on travel and administration effort."

Paul Salter, head of power and electrical services, SA Power Networks

How these technologies impact sectors

Public transportation

Benefits

Reliable passenger Wi-Fi, real-time AVL tracking, digital fare processing, and live CCTV streaming using intelligent WAN selection.

Logistics

Benefits

Seamless GPS tracking, always-on monitoring of IoT data, and intelligent network switching to keep communication, monitoring, and reporting systems online.

Private transportation

Benefits

Premium travel experiences with uninterrupted connectivity, bandwidth aggregation for high-speed Wi-Fi, and real-time fleet management.

Utilities and energy

Benefits

Wi-Fi inside and surrounding the vehicles for field crews, IoT monitoring, and telemetry with satellite failover for remote operations.

Images courtesy of Getty

Checklist for deploying 5G routers

If you are considering Ericsson Cradlepoint 5G routers for your vehicle fleet, use this practical checklist to ensure a smooth deployment and optimal performance.

1. Choose the right router model based on deployment

- [ ] Public and private transportation (buses, shuttles, fleets) should consider passenger Wi-Fi, GPS tracking, and POS.
- [ ] Delivery fleets: GPS tracking, driver safety, geofencing, and monitoring of on-board data
- [ ] Utilities and energy (field vehicles, remote sites): IoT connectivity and on-board Wi-Fi for remote sites

2. Optimize network performance and redundancy

- [ ] Use dual-modem failover to switch between carriers automatically.
- [ ] Prioritize 5G/LTE for mission-critical applications and use satellite as backup.

3. Implement strong security and data encryption

- [ ] Use VPN encryption for POS transactions, surveillance, and remote management access.
- [ ] Enable ZTNA for secure remote access for internal and third parties.
- [ ] Deploy firewall rules and intrusion detection to block unauthorized traffic.

4. Use Ericsson NetCloud for remote management and automation

- [ ] Configure automated alerts for network failures, security breaches, and data overages.
- [ ] Remotely schedule firmware updates and patching to keep devices secure.
- [ ] Use AI-driven analytics for predictive maintenance, fleet tracking, and network optimization.

5. Ensure proper physical installation and mounting

- [ ] Use ruggedized mounting kits for secure installation in vehicles, transit depots, and industrial sites.
- [ ] Deploy high-gain external antennas for improved signal strength in rural areas.
- [ ] Ensure adequate power supply.

6. Monitor data usage and carrier costs

- [ ] Choose a data plan that aligns with actual usage (unlimited vs. metered 5G/LTE plans).
- [ ] Implement data caps and alerts to prevent unexpected overages.
- [ ] Use SIM failover policies to switch between carriers efficiently.