In-Vehicle Networking for Fire Departments

ERICSSON

Problem

Modern firetrucks are equipped with technologies critical for ensuring safety, enabling seamless communication, and providing better efficiency in emergency situations. These technologies include Computer Aided Dispatch, digital radios, thermal imaging applications, GPS systems, connectivity for MDTs, vehicle sensors, wearables and even drones for aerial visibility and better situational awareness.

Solution

Ericsson Enterprise Wireless Solutions provides solutions targeted to first responders. This includes

- **Resilient and secure LAN/WAN connectivity** for fire trucks and other vehicles, computer vision applications (and other IoT deployments), and fire stations.
- **Centralized visibility and management** with coverage mapping, location tracking, advanced cellular insights and more.
- **Compliance** with end-to-end FIPS 140-3 encryption
- **Fast resolution to issues** with best-in-class support organization.

Top use cases

Ericsson's solutions can enhance connectivity for Computer Aided Dispatch (CAD) systems and attached Mobile Data Terminals and Land Mobile Radios (LMRs). They can also help agencies locate and track vehicles.

Real-Time Comms

- Reliable in-vehicle Wi-Fi with cellular WAN connectivity with optional public safety slicing/bonding
- Persistent communication with command centers and other fire personnel/first responders enhanced with optional multi-WAN and/or WAN bonding

Seamless Connectivity for MDTs, LMRs

- Fast carrier switching for seamless roaming
- Public Safety priority slicing support
- Optional high availability and enhanced uploads with bonding/SD-WAN
- Secure connectivity back to data centers with zero-trust

Track and locate vehicles

- Real-time and historical vehicle tracking
- Granular coverage mapping
- AVL partnerships with Forward Thinking and Fleet Complete.
- Extensibility with Docker container/SDK support

Qualifying questions to ask

Current Infrastructure and Needs

- What challenges do you have with your existing in-vehicle technology?
- Do you have video upload or streaming requirements?
- Is FIPS 140-3 support a priority?
- Is having resiliency/redundancy important?
- Is route tracking and the ability to document actual cellular coverage of value?

Connectivity and Communication

- How reliable is your current connectivity?
- Are there any specific connectivity issues you encounter, such as dead zones or slow application response times?
- Do you require high availability for CAD systems, radio communications traffic or other?
- Do you have apps that require resilient connectivity?

Future Plans and Integration

- Are you planning any fleet upgrades or expansions?
- Are you evaluating any public safety slicing based services?
- How are you going to secure communications from your vehicles? Private APN, VPN?
- Are you looking to include low orbit satellite for coverage in remote areas?

Ericsson product positioning for fire trucks

In-Vehicle Networking solutions

Fire Trucks

R1900 – 5G embedded R15 modem with CAT20 speeds, and a 2x2 Wi-Fi 6 AP with 4 GbE ports

R980 – 5G embedded R16 modem with CAT19 speeds, and a 2x2 Wi-Fi 6 AP with 2 GbE ports

R920 – LTE embedded modem, expandable to an additional 4/5G modem, with 2x2 Wi-Fi 6 AP and 2 GbE ports

R2100 (roof mounted) – 5G embedded R15 modem with CAT20 speeds, with 2x2 Wi-Fi 6 AP and 1 x 2.5 GbE RJ45, powered by PoE

Value added services

Mobile Advanced license for coverage mapping, advanced location services, cellular health events, live stats, application QoE dashboard and more...

Options for FIPS 140-3 and a CJIS architecture

Secure Connect* zero trust for VPN/Private APN replacement

WAN bonding/SD-WAN* for high WAN availability, better upload performance and better application QoE across multiple WAN connections.

ZTNA* for secure remote access to applications or other resources from MDTs or laptops.

*Customer and cloud hosted deployment options available

Product feature functionality mapping

	WAN/ LAN ports	Expansion ports	External modem support	SD-WAN features	Security features
R1900 – 5G R15 with Wi-Fi 6 AP	4 GbE (LAN/WAN)	4 GbE (optional PoE+) with RX30 dock	5G with LTE fall back with the MC400 and RX30 dock or R2100	Traffic steering, link bonding, FEC, fast link failover	Router and/or overlay security (Secure Connect & ZTNA)
R980 – 5G R16 with Wi-Fi 6 AP	2 GbE (LAN/WAN)	none	5G with LTE fall back with the R2100	Traffic steering	Router and/or overlay security (Secure Connect & ZTNA)
R2100 – 5G R15 with Wi-Fi 6 AP (roof mounted)	1 x 2.5 GbE RJ45	none	No. Deployed standalone or as a captive modem	None natively but when deployed as a captive modem it can support the features of the router it is connected to	Router and/or overlay security (Secure Connect & ZTNA) when deployed as a captive modem.
R920 – LTE modem with Wi-Fi 6 AP	2 GbE (LAN/WAN)	Serial and GPIO with the RX20 dock	5G with LTE fall back with MC400 and RX20 dock or the R2100	Traffic steering	Router and/or overlay security (Secure Connect & ZTNA)

Competitive: Semtech: Airlink XR60/XR90 with ALMS

Strengths versus Semtech

Strength of NetCloud – features, scale, performance, cellular analytics, live stats, most granular coverage map

Superior support - local support, high first call resolution, published EOS/EOL policies.

FIPS 140-3 support, not FIPS 140-2

Advanced networking – Layer 7 visibility, BGP, VXLAN, WAN bonding/SD-WAN

Zero trust network in under 6 mins – versus cumbersome VPN

Investment protection – SASE, AI

Bi-monthly feature releases versus irregular cadence of releases

Defending against Semtech

Lightweight AVL : support for JBUS and CAN bus connectors on XR series, provides detailed stats on driver behavior, engine faults, odometer readings that are accessible through ALMS with the appropriate subscription service.

Strong Wi-Fi on the XR90: XR90 has a 4x4 Wi-Fi 6 AP and strong client scale.

12-month data retention for advanced mobility reporting (coverage map, vehicle tracking, AVL) in ALMS

Overcoming objections

Semtech offers lightweight AVL functionality which means I don't have to buy a separate AVL system
Many customers need more robust AVL systems like the ones from Forward Thinking or Fleet Complete.

Semtech offers better Wi-Fi scaling.
Most in-vehicle deployments don't require massive scaling. Can we look at your requirements?

Don't you use Semtech modules in your hardware?
Some of our older product's leverage Semtech modules, however, we engineer our own module interfaces to add a deeper breadth of features and fully integrate to NetCloud and NCOS

Competitive : Peplink: Max BR 1 and 2 Pro with InControl and Speed Fusion

Strengths versus Peplink

Strength of NetCloud – much more intuitive, true ZTP, performance,

Less data usage – lower mgmt. overhead with Stream protocol

Superior support – industry leading support included in subscription; no extra charge.

Compact products – Peplink has very large form factor products

FIPS 140-3 support, not FIPS 140-2

Zero-trust security – Peplink offers outdated VPN and firewall for security

Investment protection –SASE, AI

Defending against Peplink

Mature WAN Bonding: With value added features like WAN smoothing, the ability to remove poor WAN connections from a bond & better bonding visibility

Rich route tracking: tracking of vehicles with estimated odometer readings.

Starlink Integration: Access to satellite dish throughput, latency and obstruction issues from InControl

Products with dual embedded modems such as the Max BR2 Pro

Overcoming objections

Peplink offers a more mature bonding solution with better visibility
We are investing heavily in bonding. Plus, Peplink lacks integrated zero-trust and can't simplify operations with AI like Ericsson can.

Peplink offers integration with Starlink to streamline mgmt.
Ericsson has low orbit satellite deployments worldwide and is working on a holistic satellite strategy that goes beyond just Starlink.

Competitive: Digi: TX 54 and 64 with Remote Manager and bonding

Strengths versus Digi

- **Strength of NetCloud** – user friendly, feature rich versus Remote Manager which requires administrators to rely on CLI. NetCloud offers coverage mapping and location tracking. Digi doesn't.
- **Superior support -** local support, high first call resolution, high NPS
- **FIPS 140-3 –** Digi has FIPS 140-2
- **Advanced networking & security –** Digi has WAN bonding but lacks SD-WAN, NGFW & zero-trust security.
- **Investment protection** – SASE, AI
- **Weak ruggedization** - no IP64

Defending against Digi

Advanced dead reckoning - supports both tethered and untethered (internal and vehicle-based sources)

Mobile VPN leveraging technology from Radio IP – offers session persistence when roaming between carriers and networks.

Overcoming objections

Digi offers better location services with GPS and tethered and untethered dead reckoning. In addition to GPS and tethered dead reckoning, we also support location services through the serving cell towers. This is unique in the industry.

Digi offers a session persistent VPN truly designed for mobile. Ericsson's Secure Connect also offers high resiliency when roaming. We also partner with Absolute and Radio IP when application persistence is required