

Out of Area, Always Connected with ROAM from Simoco

Mission critical communications have, over many decades, been built on the bedrock of mobile radio; be that DMR or P25 or TETRA. It’s a familiar user experience with few frills but with solid voice communication, where getting the message through is paramount. And for that reason, it continues to play a vital role to this day in sectors like emergency services, transportation and utilities.

But what happens when you need to operate across vast rural areas where there’s patchy or zero radio coverage? You could decide to just extend the radio network by building more radio antennas, but this is an expensive exercise. When you account for securing the land, getting a building permit, ground works including access roads and providing power and data backhaul services, you are talking hundreds of thousands dollars per site plus ongoing rental and maintenance costs.

Broadband Matters

The issue is even more acute for providing LTE cellular coverage which is cost prohibitive in rural areas. And yet high bandwidth communications like LTE are vital for the kind of data intensive applications that blue light and other services rely upon to deliver an efficient service and secure the safety of citizens and employees on the ground. LEO (low earth orbit) satellite technology like Starlink has a vital role to play in delivering broadband data but even this cannot offer 100% availability.

Satellite only works in those places where you can see the sky. So, a vehicle going through a tunnel or entering dense woodland will not always be able to count on satellite links in an emergency.

Instant, Always-on Voice: a non-negotiable

So, the challenge is how do we leverage these broadband technologies like LTE and satellite to deliver mission critical communications without additional expensive fixed infrastructure? Remember; whatever we choose, you still need to have that instant always-on voice. You need to be able to communicate as groups and you need to have the safety solutions built into it such as: tracking, man down and lone worker welfare monitoring. You need all the benefits of radio from a user perspective over a wider area at an affordable cost.

Keep the Connection without the Fixed Infrastructure

Simoco’s ROAM technology responds to this challenge without the need for expensive fixed infrastructure like mobile masts and radio towers.

Using an in-vehicle smart connectivity hub and some sophisticated wide area networking software, ROAM not only extends the reach of your radio outside the DMR network but can also deliver mission critical level broadband data anywhere in the country.

Velocity VR950 — Mobile Connectivity Hub with Added Edge

The beating heart of ROAM is the Velocity VR950 in-vehicle mobile intelligent router which delivers mission critical connectivity on the move and a platform for mobile office applications, while offering a small physical footprint in vehicles where space is at a premium. As well as being able to integrate with in-vehicle DMR radio to extend radio communications up to 2km from the vehicle, it has four SIM card slots to give you a choice of LTE carrier and a satellite connection for areas without LTE or radio coverage. It can act as a Wi-Fi hotspot within and outside the vehicle, allowing a range of smart devices to be connected and used within the vehicle and at up to a radius of 50m outside. As well as orchestrating all the connections to in-vehicle devices and mission critical communications networks, VR950 incorporates an edge computing device that can host any number of smart applications such as: out of area vehicle tracking, man down and lone worker safety features. No amount of smart technology will compensate for a loss of power and VR950 has been designed with this in mind. It has built-in power management such as instant wake up and dual onboard power supplies and critically, its own internal back up UPS.



And VR950 is designed to keep you connected over many years as it can be easily upgraded to meet new standards as and when they emerge rather than having to replace the whole unit.

InStream Multiple Parallel Bearers: Don’t Gamble on Safety

An essential requirement of mission critical communications is that the message must get through at all costs. To this end ROAM does not gamble on one bearer such satellite, radio, Wi-Fi or LTE but effectively bets on “all four horses” in the communications race. Simoco’s SD-WAN technology InStream is a Parallel Bearer System that uses multiple methods of getting the message through at the same time, switching in milliseconds between LTE cells or between LTE and satellite as required. All automatically. All virtually instantly and with no loss of data. This gives excellent reliability regardless of location or conditions. InStream is a two ended “pipe” with intelligence, both in the VR950 mobile router and at the control room. The message-voice or critical geographical location data is broken down into data packets at one end, replicated across the four bearers and reassembled at the other end, which also discards any duplicate packets. This means that when there is a momentary loss of signal, such as when an ambulance goes under a bridge or through tree cover, or there is a mobile cell handover at the brow of a hill, the message gets through intact.

Life-Saving Integrations

Simoco has a track record for developing integrations for customers that leverage the power of always-on connectivity and on-board intelligence in the vehicle. Examples of these include: off-network vehicle tracking, and worker welfare applications which automate the process of checking in with workers in the field to ascertain their safety status. Cross platform alerting is particularly powerful in mission critical applications. Imagine a scenario; a worker presses the duress button and the person who is supposed to respond has gone off duty. With the intelligence in the VR950 and the power of InStream you can set up an escalation tree so that the system can send an SMS message to the next available contact and keep trying until it gets a response. With ROAM and Simoco’s engineering expertise, mission critical customers have a limitless scope to innovate to drive ever higher levels of efficiency and safety even in the most challenging parts of the country.

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