Derbyshire Fire and Rescue Services (DFRS)

QUICKFACTS

Company
Derbyshire Fire and Rescue Services (DFRS)
www.derbys-fire.gov.uk

Customer Profile
Derbyshire Fire and Rescue Services (DFRS) is an emergency service that responds to a wide range of emergency events in the County of Derbyshire. DFRS also provides mutual assistance to other Fire and Rescue Services local to DFRS’ county boundary but also in support of National emergency events. With its fleet of 68 emergency response vehicles, DFRS affords an emergency response to over 1,000 square miles of rural and urban environments inhabited by communities populated with one million people.

Objectives
- Ensuring Emergency Services Network (ESN) compliancy by tethering mobile data terminals to ESN-compliant vehicle data routers (VDR)
- Leveraging VDRs to enable remote working

Sierra Wireless Products and Services
- Sierra Wireless’ AirLink® MG90 in partnership with Linkwave Technologies

How DFRS Became an Early Adopter of ESN Connect

Radio and to a lesser degree data communications across the UK Emergency Services are currently supported by a dedicated national terrestrial trunked radio (TETRA) network – Airwave.
For some considerable time, it has been recognised that the TETRA network with its limited bandwidth could not support the future data communications expectations of emergency services.

With that in mind, in 2011, the UK Home Office set up the Emergency Services Mobile Communications Programme (ESMCP) to investigate options to replace the Airwave Network. As a consequence of those investigations, the Emergency Services Network (ESN) was chosen as an emergency services communications replacement solution to the Airwave system.

The Emergency Services Network, based on EE’s telephonic 4GLTE telecommunications network, will not only provide all emergency services with state-of-the-art radio communications but will also bring with it an expansive bandwidth which has the potential to open up a whole new data vista to emergency services who for many years have been data-communications-poor due to TETRA’s limitations.

In recognition of the data capabilities and projected fiscal savings that ESN would bring to fire and emergency services (FRS), the National Fire Chiefs Council (NFCC) has promulgated guidance to FRS' expounding the use of data communications over voice communications.

There is an expectation of NFCC that FRS’ will take on board its guidance and review their ways of working and adopt a greater range of data communications.

To deliver the ESN project into the emergency service community, the Home Office, who are leading the national project, has adopted an incrementally staged delivery approach – one of the incremental stages is ESN Connect.

ESN Connect offers emergency services an early opportunity to embrace enhanced priority data communications over EE’s 4GLTE ESN Network.

As part of the Home Office strategic ESMCP delivery plan, UK Fire and Rescue Services were asked to declare an indicative interest in taking ESN Connect.

DFRS did look at a few other options as well. But, we were suitably impressed with Sierra and Linkwave’s professionalism and confidence. They were very positive and responsive to our questions and were very confident about what they could deliver.

Peter Aykroyd,
ESN Strategic Area Manager, DFRS
DFRS has, in principle, included the desire to utilise the ESN network to support its own future data communications and, as such, that desire has been captured within the services data communications strategy.

DFRS declared an interest to the Home Office in taking ESN Connect, and began an exploratory process into just what would be required of the Service to achieve a successful DFRS deployment of ESN Connect.

DFRS already has an established mobile data solution, primarily dealing with mission critical mobile resource mobilisation data communications, fully integrated into its Fire Control Mobilisation and Communications System (MOB’s).

All of DFRS’ first line emergency response vehicles are installed with Mobile Data Terminals (MDT’s) that facilitate connectivity via a commercial telecommunications network to the Services Fire Control MOB’s.

A prerequisite of Services wishing to connect to the Emergency Services Network using their existing hardware (MDT’s) is that the hardware must be ESN Compliant – clearly the MDT’s which DFRS are using are not compliant.

An indisputable imperative of any adoption of the ESN Connect solution by DFRS is that the deployed MDT vehicle hardware could not be upgraded and would need to be maintained.

A solution to the problem of maintaining use of the Services MDT hardware would be to tether the MDT to an ESN Compliant Vehicle Data Router (VDR).

At this point in time, DFRS engaged with suppliers whose VDR products could fulfil the ESN compliancy requirement.

“At the time, Sierra Wireless’ AirLink® MG90 was one of only two routers certified and approved for use on the ESN.

Ashley Burrows, ESN Project Manager, DFRS

ESN CONNECT

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In early 2019, DFRS began discussions with Sierra Wireless, and its UK-based distributor: Linkwave Technologies, a long-time Sierra Wireless Partner and specialist in cellular data communications since 1998.

According to Peter Aykroyd, DFRS’ ESN Strategic Area Manager, “DFRS did look at a few other options as well. But, we were suitably impressed with Sierra and Linkwave’s professionalism and confidence. They were very positive and responsive to our questions and were very confident about what they could deliver”.

From those early discussions, it became apparent that the MG90 VDR solution would not only remediate the issue of MDT compliancy but had the potential to propagate an extensive range of enhanced data capabilities that could be brought to life by the MG90.

According to Ashley, “We knew the technology was there, but after seeing the VDR’s capabilities, we realized that there was a plethora of opportunities that could be embraced now (and in the future) by using a VDR data communications solution”.

Based on DFRS’ engagement with Sierra Wireless and Linkwave, a decision was made by DFRS to embark upon a proof of concept exercise, in conjunction with Sierra Wireless and Linkwave, whereby a VDR would be procured and tested and then operationally trialed.

**VEHICLE DATA ROUTER: PROOF OF CONCEPT (POC)**

Before embarking on a project to deliver mobile working to its units, DFRS needed to know if the MG90 was viable. Through the Spring and Summer of 2019, it ran a program of tests followed by an operational trial with the MG90 installed onto five of its vehicles.

For the purpose of the PoC exercise, EE’s commercial network was used to simulate the ESN. Earlier, DFRS had tested all 6,000 miles of Derbyshire’s ESN-contracted roads for EE 4GLTE coverage, availability and connectivity, and had deemed it viable to support the service data communications. The Sierra Wireless Airlink® Mobile Management (AMM) cloud tracking and monitoring solution was used extensively in conjunction with this testing.

The PoC exercise with support from Sierra Wireless and Linkwave was a resounding success both from an ESN perspective (tethering of an MDT without detriment to its operational functionality) and also from a remote working perspective - the MG90 being a key enabler in supporting remote working.

By using the MG90 to create a 4GLTE connection and WiFi hotspot in and around the vehicle, DFRS could provide a remote working platform that could transform its current ways of working into a whole new working experience.

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Linkwave has provided an end-end technical solution with specialist support and advice, working with a FITAS certified partner that can de-commission legacy comms equipment as-well as install and commission new ESN equipment. The ‘replacement handling’ of communications equipment is an essential part of the ESN delivery program.

Chris Ryan, Sales Manager, Linkwave UK & Ireland
Remote working could now transform the cab of an emergency vehicle into an office, allow Fire and Rescue staff to work from inside an individual’s property during a community safety visit with live connection to the Services back-office systems and provide access to those same systems from remote locations in and around Derbyshire. But, more critically, it offered the capability to have accurate and timely mission critical data communications remotely available at operational events to mitigate risk to DFRS staff and the communities that DFRS serves.

Secure in the knowledge that the MG90 is an ESN-compliant device and that it can be used in conjunction with DFRS’ MDT solution along with its capability to support remote working, the MG90 now forms a key provision in supporting the Service’s data communications strategy.

Having now independently proven the overall concept, the next logical phase of the solution’s evolution would be to migrate DFRS’ data communications onto the live ESN network – ESN Connect.

**ADOPTION OF ESN CONNECT**

Even though DFRS was not a part of the Home Office’s own ESN Connect proof of concept exercise, the work that DFRS, Sierra Wireless and Linkwave Technologies did together, formed a firm foundation for DFRS to approach the Home Office for the Service to be considered as an early adopter of ESN Connect.

DFRS produced a successful business case for ESN Connect’s early adoption to the Home Office which also purported DFRS’ confidence in the MG90 along with Sierra Wireless’ supporting peripheral technologies - the Airlink® Connection Manager (ACM).
Security is the watchword for ESN. This is where the MG90 and ACM solution comes into its own. The MG90 comes with the Airlink® Connection Manager (ACM), a mobile-optimised VPN solution. Supported by Linkwave Technologies, this phase of the project was a crucial step in moving forward. The ACM, which has already been pre-tested with MG90 and all other Airlink® devices, ensures that all data passing through the MG90 is secured with FIPS 140-2 Compliant encryption.

The ACM really gave DFRS an opportunity to segregate its data traffic away from the rest of the Service’s data traffic as part of the enabling process. The segregation of ESN data traffic will ultimately lead to the achievement of the necessary standard of security required for DFRS to acquire its ESN Code of Connection.

The Home Office appeared to be suitably impressed with the simplicity of having a VPN through ACM to access back-office systems; it could be said that other solutions employed by some fire and rescue services that do not employ ACM technology tend to be quite intricate and complicated.

There is an expectation that DFRS will, with the assistance of Sierra Wireless and Linkwave Technologies, migrate to ESN Connect in late Autumn 2020 by which time DFRS’ fleet of vehicles will be installed with the MG90 in preparation for the migration.

About Sierra Wireless
Sierra Wireless (NASDAQ: SWIR) (TSX: SW) is the leading IoT solutions provider that combines devices, network and software to unlock value in the connected economy. Companies globally are adopting IoT to improve operational efficiency, create better customer experiences, improve their business models and create new revenue streams. Whether it’s a solution to help a business securely connect edge devices to the cloud, or a software/API solution to help manage processes associated with billions of connected assets, or a platform to extract real-time data to make the best business decisions, Sierra Wireless will work with you to create the right industry-specific solution for your next IoT endeavor. Sierra Wireless has more than 1,300 employees globally and operates R&D centers in North America, Europe and Asia.

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