Goodmill Case Study

Pirkanmaa Hospital District Ambulance Data Connectivity

GOODM|LL
Always online

GOODMILL
Always online

PIRKANMAA HOSPITAL DISTRICT AMBULANCE DATA CONNECTIVITY

Modern ambulance services are introducing a variety of life-saving applications that require always online broadband. Pirkanmaa Hospital District is one of the forerunners of high-end applications in this field.

THE SERVICES USED

The hospital district needs to chart patients and share data in real-time in order to more easily manage Ambulance Trauma workflow and analyse patient data. The applications used help hospitals realise significant clinical and operational benefits, as well as improving performance and quality. It is even possible to capture data using a touch-screen interface, making charting quick, accurate, and comprehensive.

The applications enable hospitals and staff to see the status of all patients, including real-time information from charting in the field. It is also possible to use a workflow management system that allows agencies to manage EMS through review and approvals, ultimately replacing the paper trail. The hospital district can then use pre-built server reports and a powerful data analytics package to observe trends and effect change. Ambulances are outfitted with docking stations and tablet PCs. Data is entered via touch or voice recognition. Paramedics can send patient data in real-time to the hospital, but more than this the system allows users to quickly and accurately capture and relay far more information than manually via paper charts. The patient data is then available instantly to the emergency department and clinical audit staff.
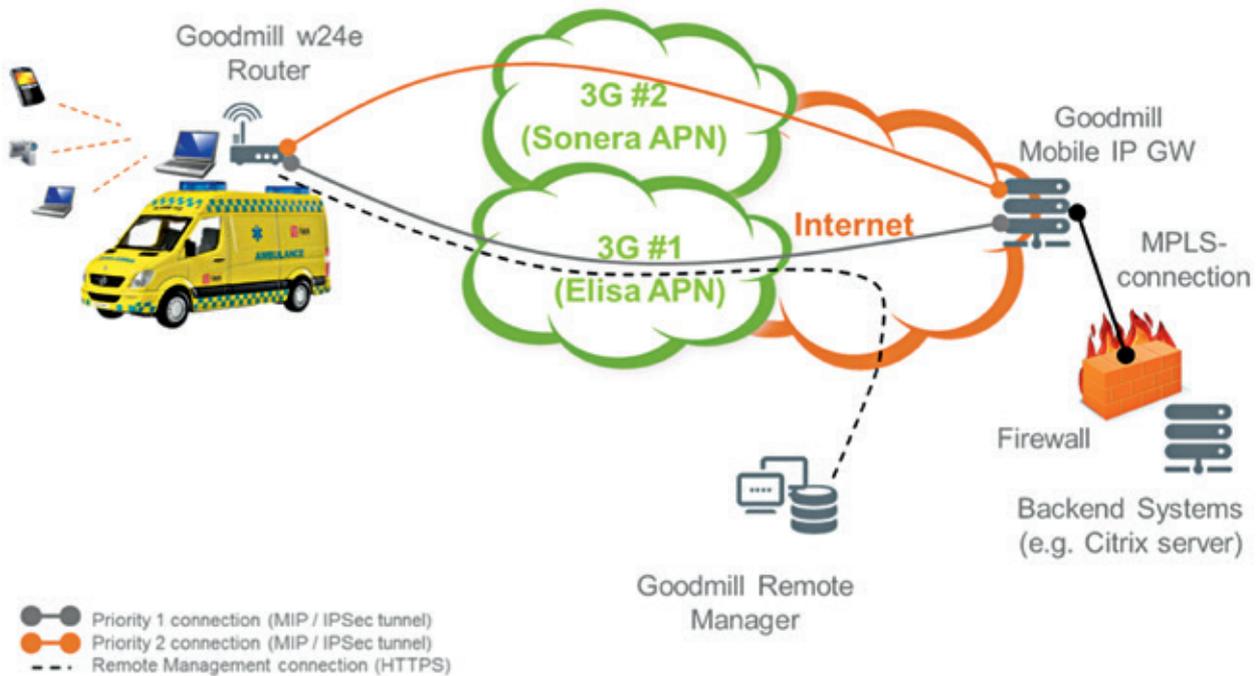
The system naturally requires data connectivity that is reliable, resilient and meets the coverage challenges typical of a large country like Finland.

THE ROUTER SYSTEM

Pirkanmaa Hospital District has chosen a top of the range routing solution that is capable of switching from one network to another seamlessly in a matter of seconds. For guaranteed availability, the routers system is remotely managed and the solution includes state of the art mobile IP capabilities.

The systems consist of routers, mobile terminals, router software, management software and tunneling software. An example setup is presented in the diagram below.

Pirkanmaa
Hospital District

Priority 1 connection (MIP / IPSec tunnel)
Priority 2 connection (MIP / IPSec tunnel)
Remote Management connection (HTTPS)

The figure shows that the hospital or command center can be connected to any vehicle through secured IPSec based VPNs through a VPN gateway. This VPN gateway can be any of the currently commercially available standard gateways. In case of high-end video surveillance, a special mobile IP server is needed on-site. This enables near seamless switching between networks with very little influence on picture quality or disruption to the video feed.

The WAN networks can be selected freely based on the availability of mobile terminals that are integrated in the router. In this case the most used Finnish Operators were selected to provide for the best possible combined coverage. The selection of alternative WAN links used is based on connectivity and cost needs. It is important to note that the solution provides a smooth transition to future dedicated broadband networks: when LTE is one of the selected modems, it will be used where available. As the LTE network coverage grows, the usability increases flexibly. These services can be implemented immediately and upgraded as more broadband capacity becomes available.

SPECIFIC GOODMILL BENEFITS

It is clear that the solution for these life-saving applications cannot be provided with standard routing systems. There are requirements that demand special attention which the Goodmill router system is in a key position to provide. These include:

- Extremely quick switch over times through multiple active radio modems

- Data Session Persistency while using different networks, enabling real time applications such as Video and VoiP, as well as keeping critical data sessions open all the time
- Secure data communication through built-in VPN capabilities
- Auto rollback
- Double memories
  - Fall back to previous working configuration is new one is corrupted
  - Fall back to latest functioning version of SW if problems occur or the router loses its connection
- Hardware based modem control
  - In case of modem dysfunction the router has hardware power-up reset functionality
- Power back-up
  - In case of power loss, e.g. when starting the vehicle, the router retains power for approx. 20-30 seconds.

The advanced management system is essential in minimising implementation and operating costs as well as maximising availability at all times during operation. The Goodmill Systems' management features and benefits include:

- Device management remotely
  - Remote management via the active router/link
  - All configurations administrated by the management system
- Mobile terminals managed and controlled by the system

- Monitoring
  - Wan link status
  - VPN status
  - Configuration revision
  - Router Log management
- Router firmware download and initialisation
  - Remotely controlled by the management system
  - Recovery to earlier version if needed
- Secure and scalable installation
  - Secure procedure to add devices under management
  - Automated self-setup and configuration with remote management and predefined parameters
- Management system can handle thousands of units

SUMMARY

Goodmill Systems Ltd. has created an indispensable solution that meets the current and future needs of data connectivity in field use for the Public Safety Sector. In our experience, the session persistency, high network availability and wide coverage we achieve can be provided only through our approach. The mobility of the vehicles influences the network functionality in such a way that it excludes currently available bundling solutions for this type of usage.

The high end implementation of the Pirkanmaa Hospital District system has proved the concept, and the results can be seen clearly: improved service means saving lives.

Pirkanmaa Hospital District comprises 34 municipalities with approximately 450 000 inhabitants, and Tampere University hospital provides specialist healthcare to more than a million Finns. There are about 75 000 patients admitted in nursing units and 370 000 outpatient visits per year. The annual operating revenue is around 400 million euros.

Goodmill Systems Ltd. is a Global market leader in critical broadband connectivity for vehicles. Goodmill brings you revolutionary multi-channel router solutions that enable outstanding Broadband connectivity ensuring constant data flow in demanding conditions where connectivity is critical.