viprinet ®

CASE STUDY

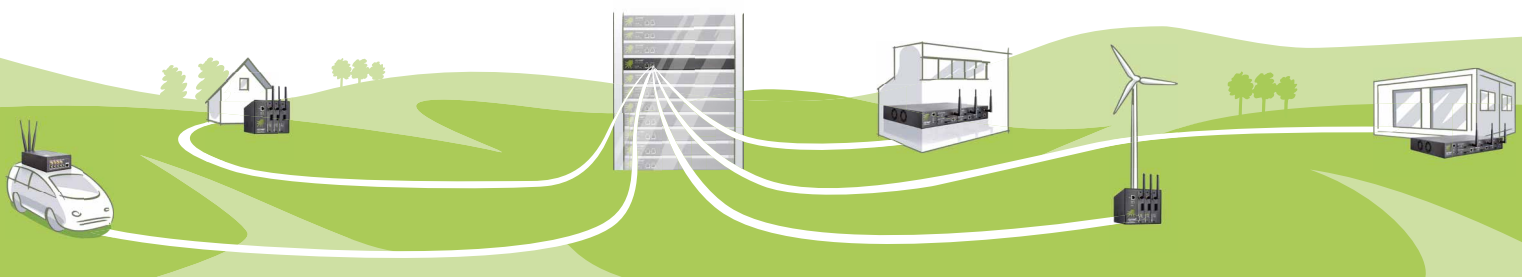# RAPID AID FOR STROKE PATIENTS

Time is vital for stroke patients, in order to minimize long-term medical consequential damages. It is therefore of greatest importance for stroke patients that all therapeutic medical procedures start as early as possible. Preferably in the ambulance while it is already on its way to the hospital. The German Federal Ministry of Education and Research sponsored a development project of the so-called ASTER – Acute Stroke Telematics Platform for Ambulances for which Otto von Guericke University Magdeburg in cooperation with Johanniter Unfallhilfe jointly developed an ambulance. All important devices may now be controlled via a single web-based user interface. This enables the transmission of diagnostic information including live video images directly to the medical experts. Emergency patients may be pre-registered at the desired hospital and in addition, an exchange between the location of the hospital and the situation on the streets is enabled via a fleet control system.

OVERVIEW OF BENEFITS

- Introduction of all therapeutical procedures as early as possible
- All user interfaces will only be displayed in a web-based fashion
- Summary of output of all important devices such as ECG, live-video or fleet control system on one single device
- Specialized navigation system with current situation on the road (traffic jams, building sites, etc.) and traffic light prioritization (e.g. "green wave")

THE TASK

ASTER aims at improving the stroke care. This new web-based user interface provides the relevant data to all parties concerned and enables them to take action. The medical specialist in the hospital can make a diagnosis and give further instructions for action while, at the same time, everything is being prepared for the arrival of the patient. In addition, the fleet control system instructs the driver with respect to the currently quickest route to take. This requires a reliable broadband mobile connection to the Internet. The Viprinet Multichannel VPN Router 500 exactly meets these requirements with its quadruple bonding of different UMTS connections.

IMPLEMENTATION

It was a known fact right at the beginning of the project that a reliable IP-based data transmission was the decisive factor for its success. As a result of the relatively high requirement of bandwidth, communication via TETRA data radio transmission by the authorities, or using a single mobile phone connection was excluded right from the start. Instead, the communication should be set-up via several redundant UMTS connections because the main area of use of the ambulance would located in rural areas that are not competently and optimally cared for. The solution was to use a Viprinet Multichannel VPN Router 500 that met all requirements from the scenario.

RESULT

The mobile Multichannel Router VPN 500 is extremely rugged and small which enables its installation directly in the roof-top of the ambulance close to the antennas, thus reducing the cabling effort considerably. The solution exceeded all expectations: It was not necessary to use the fallback solution of an entire offline-operation that has been implemented in the developed software. Any changes that had to be done on the network concept during the development could be made via the web interfaces of the routers by the developers quite easily and even be carried out during operation. It showed that the Viprinet Router was particularly useful as it determines the existing bandwidth continuously. The information can by analyzed easily, and enables the software to indicate if the operations of extremely bandwidth-intensive features would currently make sense – for instance if a video consultation could be carried out or how long it would take to do an ECG transmission.

"As far as the hardware and software are concerned, the Viprinet solution could be integrated into the ambulance and its web based telematics solution with minimal effort. It is ideal for the software prototyping as it can be very flexibly programmed and used by the developers with minimal training only. Since its activation, the system has worked decidedly stable and reliable."

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