

Optimized and Enhanced Data Collection via Private Network in the UK and Ireland

Every day people around the world want quick and easy access to current data. At the same time there is a requirement to keep sensitive information secure. The situation is the same for those responsible for road maintenance everywhere – they rely on receiving the latest information from road side weather stations to make critical decisions.

Weather in the UK and Ireland can change rapidly and it's often the timing of the changeable conditions that is crucial. When a snow event, for example, is forecast it can often be preceded by a period of rain. From a road maintenance point of view, having the right information at the right time is the key as treatments too early could get washed away but too late could allow snow to accumulate on the road network.

Therefore, receiving continuous meteorological data in the form of atmospheric and road surface measurements from a range of sensors is vitally important. However, being

able to see the situation on the road through a camera included in the weather station is of unquestionable value as well.

Private Broadband Network Ensures Fast and Secure Data Transfer

A recent Vaisala project in the UK has been to develop a service that connects weather stations to a private network and adds real-time streaming of road weather camera images where available. Data and images are transferred to a central database in Birmingham, where they are instantly

made available for customers to view via web-based display applications. This means that the end users are looking at data and images that have been recorded just a few seconds earlier.

Each station in the network has a broadband-enabled phone line, though the network supports wireless connections as well. Routers are specifically configured at each location to hide the connections from the public Internet, increasing the security of the data.

The use of broadband facilitates fast transfer of information from each weather station, but also increased transfer frequencies. As the broadband connection is permanent or "always-on", data can be transferred as frequently as needed. A typical rate is every 10 minutes.

For added resilience, two separate connections are available into the database. Should there be an issue with one connection, the information will automatically re-route through the other.

See It for Yourself – Instant View of Current Weather Conditions

The private network also enables direct access to cameras installed in the weather stations. Live images from the cameras update every second, generating an instant view of not only the current weather conditions across the road network, but also of the traffic flows and volumes, sometimes at remote locations hundreds of miles away.

Live thumbnail views provide a quick overview of all cameras, displaying the current conditions at a glance across the road network. Larger, higher resolution images can be accessed from any single camera, and depending on the access-level, additional camera functionality such as a digital pan and zoom is available. Access can also be password-protected if extra security is required.

Critical winter weather often happens overnight, so the cameras are equipped with a second lens that is more sensitive to low light conditions. Full-screen images will automatically adjust to using the best lens. In addition, infra-red lamps attached with the cameras allow visible images even in pitch black locations.

Established Method of Data Collection with Potential for Enhanced Services

Approximately 150 weather stations are now connected to this private network in the UK and Ireland, and the number of stations increases all the time. In some cases the weather station itself will have been in the same location, using the same hardware and utilities, for many years. Existing weather stations can be connected to the new service simply by adding one or two new processing units and ensuring the phone lines are broadband enabled. Cameras can also easily be added if they are not already present.

The use of the private network is now established as a core method of data collection and will only increase in importance as a larger



“The main benefit I can see is the live camera feed which will be very useful for decision makers.”

Fiona Stone, North Yorkshire County Council, England.



Thumbnail views provide a quick overview of all cameras across the road network, providing snapshot information on current weather conditions and traffic flows and volumes.

number of stations are connected. The functionality this private network allows is not static though. There is potential for enhanced services to be developed that add further value to customer operations in road weather and other applications.

An example of this could be the instant generation of real-time

alerts to traffic flows and volumes with the introduction of new traffic counting technology. The always-on connection the private network brings opens the door to opportunities.