WESTERN POWER DISTRIBUTION
*Serving the Midlands, South West and Wales*

SIMOCO

# WESTERN POWER DISTRIBUTION (WPD) ENSURES MISSION CRITICAL SCADA TELEMETRY ACROSS OPERATIONAL AREAS IN THE UK

## Background and challenges

**UK utility company Western Power Distribution (WPD) is the UK's largest electricity distribution network. It serves nearly 8 million customers across a 550,000 square kilometre service area which covers the Midlands, South West England and South Wales. The WPD network, which spans the width of the country from Penzance on the tip of Cornwall all the way to Skegness on the North Sea, consists of 220,000 km of overhead lines and underground cables, and 185,000 transformers.**

Since 2007, Simoco has worked closely with WPD to install one of the largest analogue MPT1327 PMR voice networks in Europe, based on the Simoco Xfin system. The network was expanded in 2012 and WPD strategy has been to enhance this core network and introduce further value added services such as Supervisory Control And Data Acquisition (SCADA) technology.

WPD asked Simoco to consider using its Xd network in the Midlands to carry secondary SCADA telemetry data owing to poor coverage, interference and reliability issues. WPD was looking to move away from its current GPRS solution, used in this area to connect some 8,000 devices.

Following a number of lab and field based trials, Simoco developed a solution that uses its Xd Digital Mobile Radio (DMR) network to transmit mission critical low-band data.

Surf Telecoms, a wholly owned subsidiary of WPD, is responsible for monitoring and maintaining the utility network. The company operates two network management centres 24 hours a day, 365 days a year. Maintenance teams have an immediate response time and four hour fix targets for all bandwidth service affecting faults.

"WPD operates a 'Target 60' initiative, which aims to restore power within 60 minutes in the vast majority of cases.

If lengthy power outages occur, utility companies can be fined heavily by the industry's regulator if it is not possible to fix them in a quick and cost- effective manner.

WPD is committed to serving its customers effectively by seeking out ways to minimise disruption when outages occur, while the insight provided by telemetry systems to monitor and control field operations across a widely dispersed infrastructure, enables us to deliver robust, reliable solutions."

**Kevan Scott**
Surf Telecoms Manager

Secure. Reliable. Adaptive.

## Solution

WPD was provided with Pulse, a telemetry system based on the Xd network, which uses a world leading fully integrated IP network to connect information sent from data modems or RTUs to Scada masters. This functionality makes it easy to scale the solution to include more modems, RTUs or even voice transmission to the same network. This private network becomes a practical and secure way of managing a large and complex amount of information, with operators and maintenance teams having constant insight into grid performance and any locations where issues have occurred.

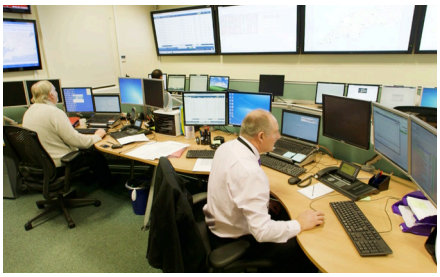
As WPD already had existing RTUs in place, it was supplied with the Pulse Air data modem. The licensed channels used on the network are more effective in mission critical environments as they do not suffer from interference, data call collisions or variable usage. The Pulse system is designed to connect tens of thousands of devices and, with low operating costs thanks to its inherent reliability, it can be quickly scaled to provide a solution across wide geographical areas.

A further feature of using the Pulse solution to transmit telemetry data is its ability to carry voice communications over the same Xd infrastructure. This means the network can be cost effectively scaled to co-exist with voice on a full mission critical solution capable of meeting the voice and data needs of utility companies in the smart grid age.

The three-year programme to upgrade the current WPD network and introduce 100 new sites will include an initial roll out of 8,000 data modems across the Midlands region. Delivery of the infrastructure and first 2,000 Pulse Air Data Modem units was completed in November 2015, with the first sites expected to go live in early 2016. On completion of the roll out in the Midland region, the solution will be expanded into the WPD South West and Wales regions.


"The Pulse solution uses technology that has a proven track record for mission critical communications. While voice transmissions remain an essential part of this mix, low-band telemetry data is just as critical if you are a utility company in 2016. We now have a secure and reliable picture of our network and the ability to react quickly when issues occur. In the areas where the Pulse solution has already been installed, WPD's target of restoring power within 60 minutes of an outage is well on the way to being achieved, meaning we are well placed to meet the demands of today and the future."

**Kevan Scott**
Surf Telecoms Manager



## Benefits

**The Pulse solution has enabled WPD to add smart grid management and control functionality to its operations. This includes real-time monitoring, network optimisation, delivery of proactive maintenance programmes and the remote implementation of commands and updates. If a problem on the network occurs, WPD saves time and costs by knowing exactly where the problem is located rather than having to dispatch teams to manually search areas of the grid. Before the introduction of telemetry data this involved physical visits to the site in order to locate the source of an outage.**

Setting up a communications infrastructure to support reliable low-band data transmission can be challenging for utility companies like WPD, where cellular coverage can be patchy and intermittent and installing wired networks has significant cost implications. However, the Pulse solution provides a stable path for the limited but critical amounts of data associated with SCADA communications as a result of the robust nature of the network.

While larger amounts of data can be carried across overlaid broadband networks, providing connections to wide bandwidth devices such as smart phones and tablets, it remains an unreliable and sometimes insecure way of transmitting mission critical data.

In contrast, the private network nature of the Pulse solution means it is less open to security threats and less congested than unlicensed radio alternatives or broadband networks. Such systems also provide a predictable cost of ownership. WPD's system has been designed to its exact requirements and once installed at the budgeted cost, there are no further call charges or unexpected upgrades as new technologies are rolled out.