

Case Study:

Northumberland Improves Productivity and Reduces Costs with SkyPilot® Network



“Despite the unique challenges that Northumberland has presented, we’ve achieved full resilience and the ten-fold increase in bandwidth we set out for.”

– Frank Freeman, Northumberland
Council Project Manager

Northumberland County in the United Kingdom was able to improve staff productivity while reducing operating expenses with a wireless broadband network from SkyPilot by Trilliant.

Northumberland is the United Kingdom’s northern-most county, covering an area of about 5,000 square kilometers (1,940 square miles). Bordering Scotland and the North Sea, the 100-mile long Northumberland Coast is a designated Area of Outstanding Natural Beauty (AONB). Much of the area is unpopulated, with mile-after-mile of award-winning golden sandy beaches, quiet country lanes and tranquil towns, making Northumberland a popular tourist destination. Like most rural settings, Northumberland found wired connectivity to be too expensive, and the pressure to increase bandwidth cost-effectively motivated the governing Council to investigate wireless solutions.

The Need: Better Connectivity for County Staff

The old leased line infrastructure was a mixture of lines serving three closed user groups. Frank Freeman, assigned by the Council as the project manager, believed a wireless mesh network would be the best solution. “We wanted to consolidate to one network, not only because it would be more cost-effective, but to provide mobile connectivity to make staff more productive by increasing home working and cutting down on travel,” Freeman explains. “The idea was that we would avoid long-term, expensive contracts for leased lines, reduce our carbon footprint and aim for a tenfold increase in bandwidth for all staff.”

To help find the best available wireless mesh solution, the County retained the services of KBR, an established network solutions provider based in County Durham, UK. KBR provides wired and wireless networks solutions for government, education and industry, and has 26 years of experience designing, installing and maintaining end-to-end networks.

“As part of the tendering process led by our procurement and IT teams, we conducted a comprehensive review of products and technologies on the market. Following a visit to a SkyPilot deployment in Munich and Rural Bavaria, where we saw that they could provide extensive, secure and resilient public broadband, we awarded KBR the contract to implement the SkyPilot solution across Northumberland.”

The Solution: SkyPilot Mesh Network from Trilliant

Gareth Tomlin, Technical Director for KBR, recommended the SkyPilot wireless mesh network from Trilliant. The SkyPilot solution fully met the County’s requirements for high bandwidth, cost-effective coverage and reliable operation. “There are other wireless and mesh products available, but they don’t have the bandwidth or the range of functionality that the SkyPilot solution does,” states Tomlin.

The wireless mesh network consists of more than 200 SkyPilot Gateway and SkyPilot Extender nodes deployed on County office buildings, libraries and schools in 18 towns throughout Northumberland. The SkyPilot Gateway nodes connect to the network backbone, including the Internet, while the SkyPilot Extender nodes expand coverage, which is currently over 2,000 square kilometers (770 square miles) with some of the rural areas being pretty remote.

Customer premises equipment (CPE) at the individual sites consists of SkyPilot Connector nodes for the larger offices and SkyPilot Connector Mini nodes for smaller offices and homes. SkyPilot Connector DualBand nodes are used where Wi-Fi Hot Spots are needed.

The configuration met the requirements Freeman had established: “To provide the

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service that we wanted and have more mobile access for staff doing their jobs, we needed connectivity for buildings at street level and community access from the network. It's also helped us in terms of reducing the carbon footprint by removing any unnecessary travel and has improved working efficiency in the process."

"Despite the unique challenges that Northumberland has presented, we've achieved full resilience and the ten-fold increase in bandwidth we set out for," Freeman adds. The network now provides a minimum of 10Mbps to Council buildings, fire stations, libraries and schools, with a maximum of 100Mbps where needed. The network is also available for other public sector buildings, with the hospital and some doctors' offices now using the network.

The Results: More Bandwidth with Substantial Savings

Freeman believes there have been significant gains in staff productivity, although these are difficult to quantify. The Council has estimated that the increase in home working facilitated by the network will enable it to reduce office space, potentially saving the County about £750,000 over five years. Additional savings are being realized by a 50% reduction in ongoing operational expenditures compared to the previous ADSL service.



Locations of SkyPilot components in the town of Blyth

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The network will also be opened for use by ISPs and businesses, subject to state aid regulations. Freeman notes that a number of businesses have already begun to use the network and the Council anticipates more will do so as awareness increases.

Freeman knows there is still a significant amount of unused capacity to support these new users, and the Council is considering the addition of CCTV and voice over IP communications. KBR's Tomlin is anticipating even more uses, including an Advanced Metering Infrastructure (AMI): "Smart meter readers are projected to be in every home by 2020, and utility companies could go to the Council and buy a portion of the network to enable them to deploy these smart meter readers."

The Northumberland network even received official recognition with the receipt of a UK CEED National eWell-Being Award in 2010 for "Better Ways of Working" that honored the County as a frontrunner in wireless mesh networking technology and mobile connectivity, and for the improvements in productivity and cost-efficiency.

With its higher bandwidth and lower total cost of ownership, Freeman and the Council are totally satisfied with the SkyPilot solution. According to Freeman, "We even did a review of WiMAX and found that while the coverage was okay, the throughput was nowhere near as good as the SkyPilot network. From my point of view, the best network solution for the public sector is a wireless mesh with connectivity to the street level and no single point of failure."



Solution

- SkyPilot Gateway and SkyPilot Extender nodes form the backbone of the network
- SkyPilot Connector and SkyPilot Connector Mini nodes serve as customer premises equipment for offices and homes, as well as for video surveillance
- SkyPilot Connector DualBand nodes are used to create Wi-Fi Hot Spots

Benefits

- Realized a significant reduction in operating costs – approximately half of the costs associated with the ADSL lines
- Estimated additional savings by reducing office space through a home working program for some staff – potentially £750,000 over five years
- Achieved a tenfold increase in bandwidth resulting in sufficient capacity for additional applications such as CCTV, and ISP and business access
- Received a UK CEED National eWell-Being Award for "Better Ways of Working" that recognized the County as a frontrunner in wireless mesh networking technology and mobile connectivity



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