

LEADING NEUROLOGICAL HOSPITAL GOES WIRELESS WITH D-LINK

The David Lewis centre >>>



The David Lewis Centre, spread over a 170-acre campus in rural Cheshire, is the largest UK provider of a range of medical, educational, residential and assessment services for people with complex epilepsy and other neurological conditions.

The centre – which celebrated its centenary in 2004 – consists of 26 buildings housing over 700 regular staff and 300 residents of all ages. A registered charity, the centre helps to enrich the lives of thousands of people every year.

Due to the size and layout of the centre, information flow and management was a continuous challenge making the running of day-to-day processes comparatively complex.

To overcome the obstacle of communicating and managing activities across the site, the need for a well-designed and well-administered IT infrastructure had grown in response to evolving user and resident demands.

The centre's full-time IT Manager Alex Taylor, who is responsible for all aspects of its IT systems and services explains: "Our communications were restricted by a limited network provision in only a few buildings on the site. We wanted to extend it so that wherever staff were, they could gain fast access to centrally held resources. A number of the main buildings already had fibre and copper connections, but the cost of expanding this to cover all required buildings made it immediately prohibitive. This was further exacerbated by the public road running through our site separating nine outlying buildings from the main campus and preventing us from laying any kind of hard-wired LAN (Local Area Network) connections."

Another key driver for the network expansion project was the need to introduce a time and attendance monitoring system. This would require all staff to log on to a central server with unique swipe cards whenever going on and off shift. The system would safeguard the interests of all patients at the centre helping to further ensure that the appropriate level of medical care was maintained by the correct personnel at all times. With staff also needing to have the ability to log administered medicines in real time, and exchange large files such as neurological scans and medical photographs, it became apparent that every building on the campus needed its own network connection onto the LAN.

In seeking an alternative solution to extending costly hard-wired connectivity, Alex came to the conclusion that wireless could be an attractive option. He then called upon the expertise of locally based wireless network integration specialists Ingenitech. Ingenitech's Consultant Engineer Chris Halicki explains: "It was immediately clear that wireless would be the best solution as it allowed us to leverage the existing fibre network investment and supplement any outstanding black spots with new wireless links. The challenge was to locate and implement a sufficiently powerful, flexible and cost-effective solution that could cope with such a large site and ensure high LAN speeds."



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case study

overcoming obstacles

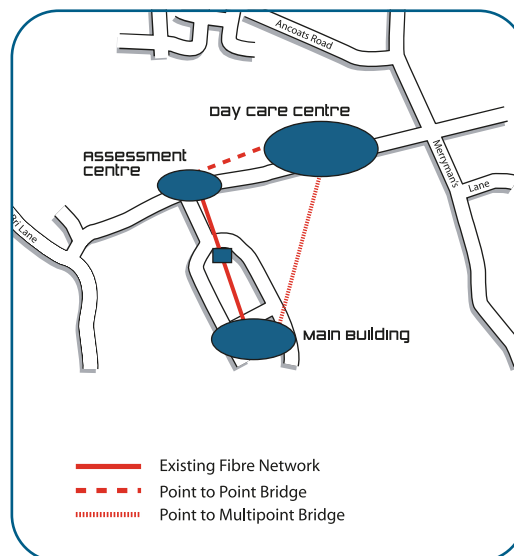
Alex was not easily persuaded of the potential benefits of wireless and proceeded with caution: "I hadn't been involved in a wireless deployment before. It made a lot of sense, but I wasn't convinced until the project went live and we saw the positive response from our users."

Wireless networking technology is typically deployed in indoor spaces to provide roaming coverage. At the centre however, it would be used principally to directly bridge outdoor distance spans of several hundred metres. Chris Halicki of Ingenitech explains: "An immediate obstacle to the smooth operation of a wireless network across the site was the presence of several buildings and trees interfering with and blocking radio frequencies. We conducted a full site survey, and agreed a network infrastructure featuring two strategically placed wireless point-to-point links bridging the facilities on either side of the road to bring LAN connectivity into two previously untouched areas. A total of four point-to-multipoint wireless LANs (see diagram) would provide blanket access to the remaining buildings, so that all would be covered."

After further consultation, Chris recommended the D-Link DWL-900AP+ to be the 'workhorse' of the solution – selecting the device for its flexible use, power control and ability to utilise external antenna systems for ranges above several hundred metres. Operating on the IEEE 802.11b standard, the DWL-900AP+ is a Wireless 22Mbps Access Point with added transparent bridging functionality to link two separate networks over a wireless connection. The first of such units was installed in 2001, with 15 ultimately deployed. Through a built-in 10/100Mbps port on each device, all were easily connected to the centre's Ethernet network, enabling interoperability between wireless users and wired workstations/servers.

D-Link DWL-2100AP Wireless 108Mbps Access Points are also deployed at the centre. Designed for indoor use, the DWL-2100AP is compliant with the enhanced IEEE 802.11g standard, allowing it to deliver data transfer speeds of up to 54Mbps bursting up to 108Mbps in 'turbo mode'. Over time, four were deployed to provide wireless network bridging for those links with the greatest bandwidth demands, while a further 25 were set up to act as access points to provide wireless roaming coverage.

The DWL-900AP+ and the DWL-2100AP share outstanding security capabilities, with enhanced industry-standard Wired Equivalent Privacy (WEP) data encryption protocol as standard. The DWL-2100AP also features 802.1x authentication for protection against network intrusion and, in Pre-Shared Key mode, allows users to automatically receive a new security key each time he/she wirelessly connects.



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Building Bridges

For the bridging part of the solution, Ingenitech combined its own expertise in antennae engineering with the technological flexibility of the D-Link platforms. Ingenitech enabled each device in the bridging infrastructure to act as a wireless hub and was able to reduce signalling overheads and other data-draining functions. "The bridges are highly focused and have been engineered to operate on a very narrow line of sight, rather like an invisible cable laid between two points. This makes them extremely secure," commented Chris. "We chose to disable functions that weren't required, enabling us to achieve the best possible data throughput."

As if to prove the point, the wireless bridges have been engineered to behave in such a contained manner that all operate on the same radio frequency with no risk of interference.

Wireless LAN Roaming

At the centre's main administration building, D-Link wireless technology has been deployed to provide wireless roaming coverage. Four access points cover the entire three-storey building, providing network access for several hundred users.

"The D-Link devices are totally interoperable so adding, replacing and changing configurations is a simple case of plug-in and play," explained Alex. "From an access point perspective, users are so keen to access the LAN and interact with data that we needed the reliability and performance of an IEEE 802.11g compliant platform like the D-Link DWL-2100AP in order to cope with the increased demands on the network."

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To extend their network, the David Lewis Centre purchased D-Link wireless products to deploy across their 170-acre campus.

DWL-900AP+
Wireless 22Mbps
Access Point

DWL-2100AP
Wireless 108Mbps
Access Point

AirPlus



AirPlus Xtreme G



The installation of an effective network at the centre was somewhat restricted by the size and layout of the grounds.



Looking Forward to the Future

The centre has evolved from an organisation struggling to cope with a lack of network provision across its campus to one that has adopted revolutionary wireless technologies to realise the benefits of fast communications access. Along the way, attitudes to wireless have changed from 'cautiously hesitant' to enthusiastic and ambitious.

"Using wireless technology from D-Link has enabled us to branch out our network cost effectively and provided plenty of flexible ways of growing and expanding," concluded Alex. "Without it, we would not have the faith in our network's ability to help us deliver improved medical, educational, residential and assessment services for people in need."

"The David Lewis Centre is a great example of how large public sector organisations so often have such unique sets of physical circumstances and network demands, that only an intelligently engineered wireless solution using flexible, high-performing devices can provide the remedy they need," commented Tahira Perveen, Country Sales Manager, D-Link UK & Ireland. "This solution has brought them quickly and cost effectively to where they wanted to be, and ultimately provided firm foundations for their extremely important healthcare and social services."

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