

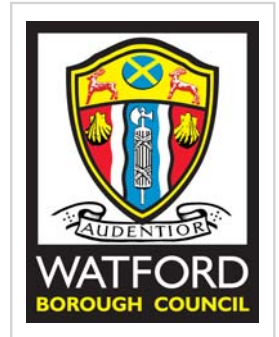


Building e-Government: Pervasive WLAN at Watford Borough Council

A profound change has been taking place in the way ordinary citizens interact with government: the “e-Government” movement. e-Government promotes the use of electronic commerce technology in government operations to deliver paperless services and information more rapidly and conveniently to citizens. Internal government operations are also expected to benefit from these technologies, in the form of increased efficiencies, lower service delivery errors, and greater accountability.

While e-Government started with a consumer and online services orientation, its scope has expanded to include the underlying physical infrastructures that government uses for its day-to-day operations. One technology that is changing the face of government administration is the wireless Local Area Network (WLAN), which promises to give local governments the same operational flexibility and efficiencies realized by private sector enterprises.

The Borough Council of Watford, a business center northwest of London, England, has taken a lead role in this movement by deploying WLAN at its local municipal facilities. The end-result of this initiative is a greatly improved technology framework that can make Watford Council’s technological infrastructure available for key governmental functions anytime and anywhere on premises.



e-Government Means Mobility

The push for technology in government has in part been driven by pressure from above. This is particularly true of the European Union, whose eEurope Action Plan has called for “the widespread availability and use of broadband networks throughout the EU... and the security of networks and information, e-Government, e-Learning, e-Health and e-Business.” This initiative to foster an information society was intended to touch every part of the social fabric, and the United Kingdom took it seriously, establishing a five-year nationwide plan to enable e-government services at all levels of government. This was no small task, however, requiring internal government operations themselves to become more efficient and responsive.

A major aspect of efficiency and responsiveness is the ability to quickly and cost-effectively relocate services to where they are needed. A primary strength of WLAN is its mobility, which inherently provides operational savings and flexibility by allowing municipal employees on the move to access and update information in real time. The Watford Borough Council decided, therefore, to make on-campus WLAN a key component of their program of Information and Communication Technology (ICT) replacement and rationalization, providing a physical infrastructure upon which to base the e-Government program.

While many enterprises may implement WLAN to meet a narrow set of requirements, the Watford Council’s deployment plan was designed to fully leverage the technology’s capabilities. Among the uses the Council envisaged was providing data connectivity to all elected officials on the Council campus, from home, or on the road. Other long-term goals included further integration of services into a customer service centre; creating e-Councilors to provide wireless access to constituents; and using the WLAN to enable “hot desking” (i.e. the creation of temporary work stations) on an as-needed basis.

To Watford Council, another intriguing aspect of WLAN was its purported ability to support voice applications in addition to data services. Watford Council’s IT strategy envisaged the introduction of wired VoIP; WLAN technology would effectively “future proof” their current investment by allowing wireless VoIP to be deployed using the same infrastructure and with no additional expenditure.

The Usual Challenges and an Unusual One

Ambitious IT programs often mean having to overcome wide-ranging challenges, and Watford Council’s wireless strategy was no exception. The WLAN would need to be reliable, secure, and ubiquitous in order to serve the range of users and applications on the system. This meant maintaining

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Business Information Systems

Project Scope

Provide mobile data to all elected officials on the Council campus. Ensure coverage in historic municipal buildings while still delivering seamless mobility, ubiquitous access, and high bandwidth. All communications to be encrypted using client-based VPN agents.

Solution

- Extricom WLAN System, consisting of EXSW-800 WLAN switches and UltraThin™ Access Points.
- Transparent support of client-based VPN encrypted mobile communications.
- Meet cost-efficiency requirements

Results

- APs deployed as needed to deliver the desired performance level, while adapting to the constraints of historic building codes.
- Clients can move throughout deployment area without dropping communications or VPN-based security sessions, helping comply with Privacy Directives.
- Watford government representatives and employees have significantly increased their productivity and ability to collaborate dynamically.

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secure and robust connections throughout the entire service area, even as users moved. In addition, compliance with UK IT Privacy Directives required use of client-based Virtual Private Network (VPN) technology, which would further challenge the selected wireless solution to maintain such secure sessions in a mobile environment.

To complicate matters, Watford had an additional and unusual challenge: the Council's offices are in Listed Buildings, meaning they are classified as historical landmarks and rigorously protected by law. This resulted in stringent restrictions on where access points (APs) could be placed. Any prospective WLAN solution would have to permit maximum flexibility of AP placement, while still delivering the high level of coverage, capacity, and mobility required by the IT department.

"The physical constraints presented a difficult challenge," recalls Lieven Hermans, Watford Council's Head of BIS Services. "It is well understood that one of the greatest complexities, and, frankly, drawbacks, of traditional cell-based WLAN is the fact that APs must be placed where the channelization and RF interference says they should be, not necessarily where you would rather want them to be. In our situation, the placement of APs was non-negotiable – they physically could not be installed in certain spots, but that nonetheless could not be allowed as an excuse for degrading system performance."

A Versatile WLAN Solution

Given these hurdles, Watford Council would need a versatile and innovative WLAN technology to accomplish their goals. They found it in the Extricom Interference-Free™ WLAN system, which offered simplicity of deployment and the lowest cost of ownership relative to the various solutions in the marketplace.

Perhaps what made the Extricom solution most attractive to Watford Council was the system's operational flexibility, which stems from its innovative channel blanket topology. Conventional WLAN solutions based on cell-planning topologies require APs to be placed where radio physics dictate in an attempt to mitigate the co-channel interference that arises when reusing the same channels at multiple APs. But this was obviously an impossibility at the Council's facilities.

On the other hand, the Extricom channel blanket, formed from the combined coverage of all the APs operating on the same channel, enabled the Watford Council IT team to place APs wherever they wanted, even if unevenly spaced, to take into account building physical limitations and requirements. This is because, in the Extricom solution, AP placement is based only on where RF signal is needed, independent of channelization, antenna type, and the myriad

other variables that affect the cell-based alternative. The Extricom central WLAN switch governs the communications from all APs, ensuring that no co-channel interference ever arises within the channel blanket. The bottom line is ubiquitous coverage, giving Watford Council the ability to get communications where required, with maximum bandwidth and mobility.

For Watford Council, the other key strength of the Extricom approach is the seamless mobility experienced by the users, which is particularly important from a security perspective. Cell-planned topologies traditionally have problems supporting VPN for mobile users because as the client moves, it hands off from AP to AP, and the resulting "handoff latency" will often result in a dropped VPN connection. With the Extricom system, clients associate directly to the switch and see zero handoff latency as they move throughout the channel blanket.

A Technological Bridge to the Future

The Watford Borough Council deployment now provides robust and pervasive Wi-Fi to key facilities on the main campus, and gives them the technological flexibility to quickly extend capacity anywhere in their facilities as dictated by operational or governmental needs. Equipped with mobile computing, Watford government representatives and employees have significantly increased their productivity and ability to collaborate dynamically, achieving many key goals of the UK's e-Government plan.

In the future, Watford Council may also choose to re-configure the existing system, with no additional investment, to create segregated User Zones, in which overlapping channel blankets can be used to allocate a system-wide channel for internal, private users, while reserving a second system-wide channel for a public wireless service. In addition, Watford Council is assessing WLAN as an enabling technology to address accommodation issues and for a possible document management system.

Whatever use the Extricom WLAN is put to, however, perhaps its most important function is simply as an application-neutral infrastructure which Watford Council can adapt to meet the evolving requirements of the public and the UK political system. The simplicity of deployment and management of this solution, as well as its ability to support a wide range of mobile applications, ensure that it will be relevant for years to come. Hermans acknowledged as much in his to-the-point assessment of the WLAN: "Past disappointments had made me a vocal opponent of anything wireless. But what Extricom offers is truly what wireless should be. The ease of deployment, performance, and value for money is breathtaking. It makes economical sense."