

## VoIP revolutionises Bury Metropolitan Borough Council communications

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Voice over IP (VoIP) has revolutionised communications at Bury Metropolitan Borough Council, and saved the local authority hundreds of thousands of pounds.

The council implemented technology from Cisco and Avaya for VoIP after years of incurring the cost of running and maintaining a legacy telephony network and suffering a lack of now standard system functionality.

Bury council estimates it has saved £200,000 per year over a four-year period through its new VoIP network, against its former BT Featurenet telecoms system. With £800,000 on immediate savings alone, the council also expects a return on investment just two years from September 2004 when the project went live.

Managing an increasingly expensive, ad hoc telephone network for Bury was becoming a problem, following a decade of using BT Featurenet. The BT Featurenet system was not manageable from a central point, was inflexible, did not cover the whole borough as BT had not enabled all the required exchanges, and was not serving the daily operational needs of the 2,500-strong council workforce.

On top of that, each of the 2,500 BT Featurenet handsets on the network were charged to Bury at around £230 per year in call commitment and additional call costs, totalling £600,000. Although internal calls were free on BT Featurenet, because not all extensions were not able to get onto the network the council was losing out. With external calls charged on top of this, unpredictable and large phone bills were created.

These issues and the fact that the BT Featurenet contract was coming up for renewal forced the council to start looking for another way to manage its communications infrastructure. Its objectives were to provide employees with the resources they needed to work more effectively and meet government e-policy stipulations, save money, increase functionality, flexibility and manageability on the network and invest in a future-proofed platform. The answer was VoIP.

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Kevin Amos, technical support manager at Bury, helped choose and oversee the implementation of the new system. He says, "We wanted a VoIP system that was going to be resilient, with tried and tested unified communications. We also wanted proper reports on usage plus a call

centre package so we could get stats on the number of calls received and how those calls were handled.”

In 2003 the council began looking into the relatively new area of VoIP. It called in consultancy firm Improcom to oversee the tendering process and implementation. Improcom introduced the council to Nortel, Cisco, Avaya, Alcatel and Mitel. Amos says, “We were just getting a feel for VoIP as it was still pretty new for most people back then.”

Improcom advised the council that the first step was the network itself, which needed a complete upgrade from its flat structure running on 3Com switches. After much deliberation, Cisco technology was chosen as the best option for a routed network with in-built resilience.

The new network was centred around four sites, also known as the main nodes. Each node runs a Cisco Catalyst switch, which means there is added resiliency in the network, so if one or more switches go down for whatever reason, there should be at least one still operational to maintain at least part of the network. All the other sites in the council were connected into the four nodes, one of which, the Town Hall, is the key site for the entire network.

The main node uses a Cisco Catalyst 6508 switch, the other three nodes use Cisco Catalyst 4507 switches, and the other 150 switches use the standard Cisco 2950T switch. With this technology the network can distinguish between different types of traffic, including public access, schools traffic and corporate traffic, using virtual local area networks (VLANs), providing quality of service for voice and mission critical applications.

Yet the choice of Cisco routers presented Bury with its first big issue. The council could either have Cisco switches that could provide power over Ethernet, or switches without that functionality. But it would depend on what type of VoIP phone the council decided upon to determine which switch to implement.

“It was a chicken and egg situation,” says Amos. “We had started to roll out switches to some buildings, but we had to stop because of this problem about power over Ethernet. We had to decide what phones we were going to get, then we could decide which switch we were going to use.”

Bury put its network implementation on hold and began the tendering process for a VoIP system. It looked at all the offerings on the market and got it down to three: Avaya, Cisco and Mitel. Avaya provided

working, relevant reference sites, while both Cisco and Mitel struggled to get that far.

Avaya's solution also seemed to be the best fit and best overall value, despite not being the cheapest offering. It won the tender and used partner, Sabio, to get the solution installed.

The Avaya implementation for VoIP included its standard 46101 SW phones with in-built switching, and the larger 4620 SW phones for call centre functionality for certain workers. Also, the Avaya Communications Manager switch was implemented. Part of that was Avaya Call Centre to provide Bury with the reporting element it required.

Avaya's unified messaging solution, Avaya Modular Messaging, was installed, and also Avaya IP Softphones. Additionally, the call logging element of the solution came from a company suggested by Avaya in its tender, Proteus.

It was then just a case of working out how to make the Avaya phones work on the Cisco network. As the Avaya phones were not compatible with Cisco's power over Ethernet switches, the plain flavour switches were chosen and that implementation continued. Reseller, Absolute Network Solutions, suggested that the council get power to the Avaya phones using PowerDsine solutions, power over Ethernet technology that pushes electricity and data over Ethernet cables.

#### Problems

The implementation itself raised problems. Amos says, "An implementation of this size is never straightforward. There were quite a few council buildings that weren't on the original BT Featurenet network, so these had to be connected to the new circuits, which takes time. Those buildings that weren't going to be connected to the new network due to geography had to have new analogue lines installed, as otherwise when they finally switched BT Featurenet off they would have no phone lines at all."

To add to complications, at the time the implementation was going on the council also tendered for its external telecoms provider. BT, the existing provider, and Your Communications put forward bids and Your Communications won based on cost. However, when the council ordered new analogue lines for its sites that were not joining the new network and for the die-hard members of staff that were refusing to give up their fax machines, Your Communications had to order them from BT.

Amos says, "We had a lot of occasions where BT said it had been to certain sites, but when we looked for the new lines they weren't there or they weren't in the right place. So that took time and added more cost to the project."

Many more problems arose during the rest of the implementation and after in the form of quality of service issues. These were caused by poor initial configuration of parts of the Avaya phone system, a bad batch of Avaya phones that caused echo on calls and the difficulties of trying to tweak BT copper lines so that quality of service would be supported on VoIP by the partners in the implementation. Yet through various upgrades, reconfigurations and the use of a solution from Telindus to create quality of service over copper wire, these teething problems have finally quietened down.

Jonathan Buckle, account director for Avaya on this implementation, says that these issues were nothing untoward: "This was quite a large implementation using the big bang approach. It involved a lot of change over a short period of time. Typically when you do implementations of this kind, changes are made throughout the roll-out. There are some fault finding requirements that need to be done; it's just a case of managing the risk really."

#### Lessons learnt

Amos says the council learnt a lot during the course of the implementation, which began in December 2003. It was supposed to finish in May 2004, but actually went live in September 2004 due to an overrun. He says, "If we were doing this again, we would try not to do it in such a rush. We upgraded our network and changed our phone system at the same time, so we didn't have enough staff to cope with the change and had to get contractors in."

Another aspect of moving so fast was not knowing as much as would have been preferable, says Amos. "We relied a lot on Avaya and Sabio. If we'd had a bit more experience on VoIP, we would have picked up on a lot more of the problems we ran into beforehand. It could have been useful to have employed someone with VoIP experience for our own quality control, or it could have been more in Avaya's interests to oversee the implementation."

The difficulty of changing the internal culture at the council was also an area that Amos states could have been handled more thoroughly. "As our original go-live date was May, we trained people before then on the system," he says.

"When the date changed to September, we tried to get people to use the new phones for internal calls in the interim period but no one did,

which was a cultural issue. Then there was no pre-September training for the system and people had forgotten how to use everything. Also, when we did the original training the voicemail system and the soft phones weren't working, so when everything went live no one knew how to use them. We could have planned that a lot better than we did."

#### Looking ahead

Through the new network, the council is saving money and is reinvesting some of that back into making its systems even more efficient, including lowering mobile phone bills. Six months after the VoIP implementation was completed, the council rolled out a mobile gateway solution through its partner, Penine Telecom. The mobile gateways from manufacturer Verling are estimated by the council to provide a saving of £60,000 over two years in call costs.

Amos adds that the call centre reporting functionality has aided the council in more enhancements to its infrastructure. He explains, "We are in the process of implementing a customer relationship management solution, so the fact we have a call centre solution in place really makes that easier."

Next on the list is fixed mobile convergence (FMC). Amos is excited about the possibilities this can open up for Bury. He says an implementation of FMC is going to be the next big thing on the 'to do' list, but not until 2007 or 2008.

Amos sums up: "This network is much easier for us to manage and scale. There's still the odd thing we're trying to resolve, but nothing major. Now the network is settled, it's a really good system," Amos enthuses.