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Voice and Access

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The voice and access market, and specifically the technology behind the lines that physically connect customers to the networks and the calls that route across them, is in the midst of massive change. This new technology is beginning to break down the boundaries between the traditionally recognised areas of fixed-line voice, mobile and data, offering new opportunities for customers and Service Providers alike.

Alternative Networks believes that this change presents both major opportunities and risks to customers as they try to assess new technologies and choose when to adopt them. These risks include both early-adoption of unproved products, but more importantly, the withdrawal of existing access services. This paper intends to give some history and guidance on the changing voice and access market.

The Evolution of Fixed-Line Voice

Fixed-line voice originally began to evolve with regulatory involvement. Widespread regulation in the UK fixed-line voice market began primarily with the introduction of the Indirect Access (IDA) model. By giving consumers and businesses across the UK access to alternative fixed-line carriers, the Government sought to redress the virtual monopoly held by British Telecom since its separation from the Post Office in 1981. The 1984 Telecommunications Act also saw the opening up of competition for the UK Voice market and the creation of Oftel. IDA allowed calls to be routed via an alternative carrier through the use of prefix codes inserted at the beginning of telephone calls; the codes being recognised by the BT network and routed accordingly. Indirect Access was the first widely-available technology that gave consumers a choice of suppliers, which in turn began to increase competition, driving down price as was the Government's aim.

The next step, available across BT's network at the end of 2001, was the introduction of Carrier Pre-Selection (CPS). This took the responsibility of routing calls across an alternative supplier away from the end user's site, hosting the routing intelligence within BT's network. This helped to reduce call leakage back to BT that was experienced with Indirect Access because of user or equipment error. This offered a more secure solution and, although a technology based upon the incumbent BT network, is still the routing method of choice for traditionally-switched fixed-line voice minutes.

Increased competition and a levelling of the 'minutes' playing field led Oftel to address the other area in which BT displayed Significant Market Power, namely the access network, or 'local loop'. While end users were able to make a choice of outbound supplier, BT was the dominant supplier of lines, with customers subsequently receiving separate invoices for their calls and access. In 2002, Oftel modified BT's license to make a Wholesale Line Rental (WLR) product a regulatory requirement. BT launched the basic product later that year in 2002. After a review by Oftel (now Ofcom), BT launched an updated version of WLR offering enhanced WLR Analogue, ISDN2 and ISDN30 services, known as WLR2.

Ofcom's Strategic Review of Telecommunications in 2004 found that despite all its efforts, BT Group and its constituent parts, BT Retail, BT Wholesale and BT Global Services, still exercised Significant Market Power in the UK calls and access market. Ofcom questioned whether, in addition to a truly equivalent WLR product, the separation of BT Group would address this. In response, BT Group submitted a series of

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undertakings to Ofcom which included the creation of a new BT access services business, Openreach. Their remit was to manage the access infrastructure to include WLR3 and Local Loop Unbundling. The WLR3 program aimed to deliver an analogue service in January 2007, with ISDN2 and ISDN30 services following in 2008.

With the introduction of WLR3, all Communications Providers, including BT Retail, will in the future share a common interface into Openreach. This will ensure that end users will not only benefit financially from the enhanced competition, but that as pricing across the market stabilises, an increase in service quality will become one of the most important differentiating factors as it has in the Voice market. Communications Providers with direct experience of the WLR product and having existing relationships with Openreach will be able to offer the customer the most seamless experience with the new WLR3 product. This will become even more evident as new inexperienced Communications Providers, who have been awaiting the introduction of WLR3, enter the line access market.

21st Century Networks

At the same time as Openreach is introducing WLR3, BT Wholesale, who own and manage the core BT network, are implementing their 21CN programme. This 5-year project will see their traditional 'circuit-switched' network replaced with new IP-based technology. BT's stated aim is to transform existing disparate systems within their network supporting different access products, into one physically simpler and more reliable network. This may be the case, but the other main driver for BT is to drastically reduce operating costs to allow them to compete in the new IP market. By 2011, once the project has been completed, BT, and other carriers as they introduce their Next Generation Networks, will be looking to improve on services such as IPTV, Video on Demand and to vastly increase broadband speeds. At the moment however, the emphasis within the 21CN project is very much on replicating existing functionality and ensuring that the new IP environment mimics what is available today.

To a certain degree, the upgrade of its core network will allow BT to play catch-up and to offer IP-based services that are currently being introduced by Local Loop Unbundling (LLU) Operators. Mandated by Ofcom, LLU gives other operators, such as Opal, Pipex and Cable & Wireless, access to install their own equipment within BT Exchange Buildings. Lines are then physically moved and connected to the LLU Operator's equipment. At a basic level, this removes the BT transit charge on outbound voice traffic and reduces the pence per minute cost base for calls. More importantly for the end-user however, Local Loop Unbundling also means that customers now have access directly into other IP-based Next Generation Networks, and to the new products and services that they offer. One of the challenge to LLU providers however is that they are effectively re-creating the complex set-up of the existing telephone network and not making full use of new and emerging technologies.

There are however, more immediate consequences of the introduction of BT's 21st Century Network. As part of preparatory work leading up the full roll-out, BT have already identified several line types, services and Customer Premise Equipment connected to the current BT network that will cease to function with 21CN. To date, this information is not widely available in the public domain and customers will need to be reliant on informed Communications Providers such as Alternative Networks to guide them through the required migration paths.

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The New VoIP World

As more fixed-line operators bring their Next Generation Networks into operation, attention is turning towards access into those networks. Traditionally, access for business users has been through ISDN2 or ISDN30 dependent upon the customer's requirement and size. However, with Voice traffic now being routed at the networks' core via IP, the ability to deliver those calls into a carrier via a data connection such as broadband, are becoming a reality. Solutions now exist whereby calls to the outside world are passed as IP across a data connection to a carrier. This not only removes the need for separate voice and data networks, but more importantly replaces the need for ISDN connectivity, except perhaps for back-up purposes. For smaller businesses, an ADSL connection can now offer one voice line as before, but also uses the data connection to offer additional voice channels. This will effectively give an ISDN equivalent over a single analogue line.

Tied in with the developments in access technology is the rise of hosted services. Call management functionality can now be hosted away from a customer's site, removing the need for a telephone system. IP handsets connect to a customer's existing data network, and voice traffic shares the existing data connection to the outside world. In this new IP environment, where PBX functionality is hosted away from the customer, these handsets and their users become 'nomadic'. The users' profiles and settings are applied to wherever they decide to plug in their IP handsets.

The Future

As BT's 21CN project gathers pace and other suppliers such as Opal and Cable & Wireless bring their Next Generation Networks into service, the UK will have probably the first regulated IP-based inter-connected networks anywhere in the world. This brings with it huge benefits and possibilities for cost-effective transit of voice traffic, access into those networks, and additional functionality that the new IP environment will offer.

A wide variety of IP-based solutions are already available and a lot of UK businesses are already taking financial advantages of VoIP. The majority of the widespread solutions that have been implemented to date have concentrated on converging customer's voice and data networks, and on routing calls between sites over an IPVPN. The market is now seeing more acceptance of hosted PBX and IP Centrex services as end-of-life PBX equipment is replaced by technology that is now more 'bedded in'. However, customers might take some time to feel confident in networks that will expose their voice traffic to the same disruption as their data network. In the same vein, while offering financial benefits, hosted PBX services rely on the customer trusting the supplier and their product enough to relinquish control of the routing intelligence of their incoming and outgoing calls to equipment hosted externally.

The next stage in the expansion of common-place use of VoIP technology, and perhaps the most significant, will be the rise of data connectivity such as ADSL, SDSL, even Wi-MAX, becoming the access method for voice traffic, replacing existing ISDN connectivity. As well as the cost benefits, this will close the divide between the traditional desk phone and the office mobile. Solutions are now becoming available that allow software clients loaded onto compatible mobile handsets such as the Nokia E Series to connect to their own wireless office network. From there they are

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connected to their office PBX. Not only does this bypass the traditional routing of a mobile call, giving the customer a pence per minute rate more closely aligned with a fixed-line call, but more importantly will allow them to make calls in the same way from selected Wi-Fi hotspots.

In short, the next few years will see a dramatic change in the Voice and Access landscape. The implementation of Next Generation Networks, most importantly BT's 21CN programme, will change entirely the underlying technology that allows customers to make and receive calls and connects them to the outside world. Some suppliers are already using this technology to offer cost and functionality benefits, however there are still issues that will need to be resolved. Ofcom have recently published their ruling on the extent to which existing regulation of the voice & access market should be applied to the new VoIP providers. Many still feel that this will need much more clarification before there is widespread consumer uptake and that requirements are still unclear. There are also still quality concerns; the traditional voice market is now at such a mature stage, end-users have become used to a very high quality of service that as yet cannot always be maintained on the new technologies.

The Alternative Networks Approach

Far from seeing the new IP world as a threat to our traditional revenues, Alternative Networks sees this as a major step to offer truly converged and tailored solutions. IP will allow us offer solutions which offer shared functionality, across mobile and desk handset and, across internal voice and data networks, while at the same addressing substantial operational costs. As an existing provider of voice & access solutions, as well as mobile and PBX hardware, we will be ideally suited to implementing quality solutions that offer real benefits across a mix of products that we know well.

As more and more products and services emerge, customers will more than ever need a supplier with proved experience and relationships in the voice and access market that can offer expertise and guidance to help customers make informed decisions. It is in this role, as Convergence Partner of Choice that Alternative Networks sees its future.