

Home truths

After making his name with Motorola & IPWireless, the relentlessly energetic Chris Gilbert is now evangelising femtocells as CEO of UK start-up Ubiquisys. *3G Strategies for Operators* gets to grips with a very comprehensive conversion.



3G Strategies for Operators: *You now head up a start-up called Ubiquisys that has developed a femtocell offering called ZoneGate. What is ZoneGate?*

Chris Gilbert: The ZoneGate system has been designed to allow mobile operators to extend 2G and 3G coverage in an extremely targeted way. Our femto access point is a small plug-and-play device that becomes part of a user's broadband gateway to provide first-rate mobile coverage in the home. It

integrates seamlessly with the operator's core network and can be remotely managed and updated. The aim is to help operators reduce deployment costs, generate new revenues and speed up fixed-mobile substitution. We think it will also speed up 3G take-up. As far as consumers are concerned, the aim is to provide brilliant mobile coverage in the home.

3GS: *What attracted you to Ubiquisys?*

CG: I have always been drawn to innovative technology that addresses specific industry challenges.

The communications industry all too often creates products in search of a market. ZoneGate is a direct response to consumer and operator demand. At the moment, operators are trying to transition more users to 3G networks that offer better voice capacity and premium value-added data services. Initial 3G consumer uptake was stunted by issues like large handset size, limited device availability and poor battery life. Having solved these problems,

operators still face issues of poor coverage, particularly within the home where something like 40 per cent of mobile phone calls are actually made.

Building additional cell sites to tackle the coverage challenge would be extremely costly and would also stir up serious problems in relation to planning restrictions. It's an open secret that few operators plan to extend 3G access much beyond regulatory requirements short to medium term. This clearly implies a challenge in the context of driving fixed-mobile substitution and even in maintaining current levels of user experience.

The ZoneGate device provides an extremely low-cost solution to this problem by delivering quality residential 3G coverage that can be user-installed and self-provisioned. One of the analysts described it as a simple, elegant solution to the one number, one device scenario that convergence is meant to be about. I'd agree with that.

I guess the short answer to your question is that I see a very significant market for ZoneGate. Also as soon as I heard the pitch, I wanted the product.

3GS: *Isn't ZoneGate the solution to a problem that's already been resolved – what's wrong with WiFi?*

CG: While WiFi is a great technology that's perfectly suited to connecting

computers and other devices which have power cords, it simply wasn't designed for voice. It really isn't suitable for use in phones. It is extremely power-hungry as it has no ability to modulate power output, meaning that WiFi devices are either on full power or switched off. When you have a continuous power supply this obviously isn't a problem. But in a mobile phone, which has a number of other drains on the battery, and is charged at best daily, efficient power management is key.

Then there's the question of service quality. Because WiFi operates in unlicensed spectrum it is very susceptible to interference from any of the broad range of devices that use the same or similar spectrum. This means interference from microwave ovens, wireless phones, Bluetooth enabled devices, and other wireless LANs.

WLAN is far more susceptible to interference than cellular systems where the licensed operators are the only ones allowed to use that spectrum. Then there's the device issue. It is unlikely that there will ever be the range of WiFi enabled devices to match that already

available for 3G. Inevitably WiFi/3G compatible devices will be high-end handsets and if we've learned anything in this industry it's that if it's not mass market it's unlikely to work long term.

WiFi has its uses, but no one seriously considers it a long-term, sustainable solution for the seamless extension of mobile coverage.

3GS: *In-building coverage never made headlines or profits in the past. What's different in the context of 3G?*

CG: 3G networks typically operate at higher frequencies than the 2G networks which have been prevalent up until now. The laws of physics dictate that operating at a higher frequency results in the signal having a shorter wavelength and so travels less far. With 3G the higher frequencies of the radio signals are also less able to propagate through obstacles like walls and into buildings.

In addition, in-building usage of high bandwidth data services degrades the macro network, because the power allocated at the base station to provide

in-building coverage can compromise service delivery elsewhere in the cell. In other words, the overall quality of the network can become compromised.

The more operators and vendors confront the realities of W-CDMA deployment, the more the challenges inherent in spread spectrum technology are brought to the fore. Cell breathing is a big issue. Load balancing technology means that when a cell becomes heavily loaded, it shrinks and subscriber traffic is redirected to a neighbouring cell that is more lightly loaded. The point here is that in-building usage of high bandwidth applications will lead to heavily loaded cells and cell shrinkage. The answer is either to build more base stations or find a way to reduce pressure on the macro network. This is what ZoneGate is all about.

3GS: *What makes you think mobile consumers want high speed wireless access in the home?*

CG: It's not so much consumers demanding high speed data in itself, but rather the services which it enables. ▷

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The current market demand which operators are seeing for technologies such as streaming audio and mobile TV is evidence of this. A good example is the iPod: to date Apple has sold some 42 million of these music players all of which require the user to download music to a PC and then sync with the device. Increasingly the ability to play

MP3 is becoming standard in mobile phone handsets, however the wireless connection is still the one bottleneck for downloads.

With high speed access it is possible to quickly and simply download music or multimedia direct to the phone handset. This really makes the concept of the converged device a reality.

Of course, the case for mobile broadband is also significantly improved by the arrival of powerful high speed access technologies like HSDPA. This will significantly improve the user experience for services ranging from video download to web-style applications. These are the kind of offerings for which analysts predict 70 per cent or more home usage.

But there are also much broader issues at stake. Service providers are well aware now that users are coming to demand anytime, anywhere access to every type of service and they're becoming increasingly impatient with the fragmentation of delivery mechanisms. In other words, the one number, one device, all services message on which 3G is predicated is a proposition a large number of consumers have bought into. Now they're looking to providers to deliver on the promise. And at the very least this means the ability to provide seamless mobile access in the home.

3GS: *What's to stop my neighbour using services via my ZoneGate? And doesn't preventing this kind of abuse mean complicated provisioning?*

CG: Creating a mass market product isn't just a case of being able to manu-

facture to an appropriate price point. Mass market is also about designing a product that works without hassle for the largest possible number of consumers. This means that from the very start ZoneGate was developed to be self-provisioning. Again, it's about being mindful of current consumer expectations. Today, people expect plug-and-play functionality and they expect issues like establishing who does and who doesn't have service access to be simple and transparent.

When the ZoneGate is first switched on by the consumer, it sniffs out the topography of its location and sets up its femtocell network accordingly. The device also contains a SIM card and on set-up consumers will authenticate their handsets for use with the access point. They can set up for simply personal usage or they can enable access for all or specific members of their family or friends. In other words, there are no complicated PC-based applications or passwords – all the authentication and set-up is held on a SIM, just like a mobile phone.

This approach prevents abuse, and also allows clever functions such as a single number for the ZoneGate which rings all mobiles connected to it. The SIM card also opens up opportunities for mobile operators to offer and bill for domestic services to the home account. This makes good sense when mobile phones are company-owned.

3GS: *Isn't in-building coverage more an enterprise play? And aren't big players like Motorola already on the case?*

CG: There's certainly a market for enterprise femtocell products and companies such as Motorola are building products which address these markets. However, these devices do not easily scale down to a lower price point and require professional installation and management. At Ubiquisys we specifically developed the ZoneGate product from the ground up to target the residential market. This has allowed us to hit a mass market price point and our access point is wholly user configurable and installable.

But on the broader subject of competition, we're extremely confident about the quality and feature set of our product and there seems to be general

consensus that right now we are ahead of the crowd. This is certainly what we're hearing from operators and analysts.

The bottom line is that when we're hearing from analysts like ABI that there will be 102 million femtocell users by 2011, I'd take that to mean that competition will be on the horizon at some point down the road. It's a great opportunity and we're already in pole position as market leaders.

3GS: *From an operator's perspective, what's the business case for a femtocell solution?*

CG: Operators want to get more users on to 3G and its evolutions. To do so will require solving coverage and capacity issues, particularly in the home where some 40 per cent of mobile voice calls are currently made. If you compare the ZoneGate with the alternatives for increasing coverage and capacity it's a 'no-brainer' for the operators. It means very significantly lower service provision over conventional deployments. Operators can deploy additional base stations which involve a significant CAPEX outlay on hardware and real estate combined with the OPEX of power and back-haul, or they can roll out low cost residential femtocells which are user sited, powered and provisioned. Due to the low cost of call provision, the ZoneGate also enables aggressive, targeted home-zone packages allowing operators to effectively drive fixed-mobile substitution.

The business model speaks for itself – more customer satisfaction, less churn; more premium service take-up, lower deployment costs. And every aspect of this proposition helps bind the consumer ever closer to the service provider.

3GS: *Does the success of this product depend on significant IMS rollout?*

CG: I'm clear that the majority of operators are currently looking to migrate to an IMS infrastructure – however, their adoption and deployment strategies all vary hugely. We took the view that we'd be entirely agnostic with regard to core network integration – agnostic, but wholly committed to a standards-based approach. Without standards, there's no scalability and we're committed to a mass market proposition.

The ZoneGate access point integrates seamlessly into an operator's network using a range of standards including Iub over IP, UMA and IMS. This means that in addition to providing a solution which can be deployed today, it can also aid in the migration path to IMS through remote software upgrades.

3GS: *Doesn't network planning become a nightmare with networks comprising thousands of ZoneGate devices?*

CG: A typical 3G network in the UK comprises some 6000 cell sites. The introduction of residential femtocells could see that number rise exponentially with obvious potential headaches for network management. However, in the DSL world the management of this many end devices is not unusual for a typical service provider. At Ubiquisys we have adopted the TR69 protocol for DSL modem management and this is how we allow operators to remotely manage and integrate thousands of ZoneGates into their networks. We have also care-

fully thought through the provisioning and support processes to make it easily manageable for the operator.

ful solution to coverage extension, but also as a marketing tool that can help reduce churn and drive premium service take-up. In this sense, from an operator's perspective ZoneGate clearly has a very similar investment value to a handset. Our aim has been to ensure that ZoneGate was delivered at such a low price point it would remain an attractive proposition to consumers even if it was unsubsidised.

3GS: *What kind of response have you had from the industry?*

CG: The response that we've had from the industry thus far has been overwhelmingly positive. As I was saying, we believe that the ZoneGate really does provide a solution that addresses the issues of 3G coverage, cost and service take-up. It enables high quality in-building service delivery and enhanced network capacity for an incredibly low cost.

It's a case of delivering the right technology at the right time and at a compelling price point. As a result, we are

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3GS: *Who pays for the access point?*

CG: We would expect that the access point would be subsidised by the network operator in the same manner in which they would subsidise a phone handset. The consumer would typically receive the box either free of charge or for a small fee and the operator would then make back the cost via increased voice and premium data services. All the operators we've spoken with have considered ZoneGate as both a tech-

gaining increased traction with mobile operators, who recognise the potential for gaining a competitive edge and driving forward fixed-mobile substitution.

3GS: *What are your timelines?*

CG: We are looking to have product in commercial trials with operators during the first half of 2007 and would hope to announce actual rollouts later that year. The speed of these timelines is in part testament to how easy a solution the ZoneGate is for operators to deploy. In fact, in terms of sales cycle it is much closer to a mobile handset sell than a piece of infrastructure. ●