



SEARCH

Advanced Search

CONTENTS

current issue
back issues
contracts
Product *Wire*
print subscriptions
contacts
media info

OTHER RESOURCES

Total Telecom
CWI Online

PROFITABLE STRATEGIES FOR NETWORK OPERATORS

COVER STORY SEE EYE POINTS OF VIEW FEATURES

Broadband: Are friends electric?

01 November 2001

Written off two years ago, powerline is back and it could be the technology to save broadband. Power companies throughout Europe and Asia are ramping up to provide stiff competition to incumbent telcos and cable operators that have so far dominated the broadband landscape. But, as Emma McClune discovers, the utilities know where their skills lie and they need partners to complete the jigsaw.

At last broadband service providers, reeling from the harsh realities of the dsl landscape, can take comfort in a new broadband access technology that utilises a resource even more common than copper. Powerline, the sending of data communications over electricity networks, could offer service providers the ubiquity, data rate, and in the long term enviably cheap prices that could drive mass uptake. As European utilities gear up on testing and rolling out plug socket-inspired high-speed internet access provision, a number of different models are emerging.

Powerline communications is hardly a new idea. Engineers and futurologists have flirted with the notion of transmitting data via the household electricity supply since the 1940s but until recently, utilities could not guarantee the steady flow of electricity necessary to carry data unharmed and high-speed encoder chips were either non-existent or not up to the task. But following trials in Germany and the UK in the late nineties, powerline has become a commercial reality with at least three services up and running in Germany - led by power rather than telecoms companies.

Until recently, utilities have lacked the incentive to venture into what was traditionally seen to be telecommunication territory. But with the imminent deregulation of power utilities in most European countries and a growing interest in finding a cheap solution to broadband access, powerline has fought back as a contender for broadband dominance. Faced for the first time in power supply history with the prospect of competing for customers, some of the larger utilities in a deregulated Europe are sensing the potential of powerline as a soothing influence on future profit margins and are more than happy to act as the access middleman, partnering with isps, alternative voice operators and a host of vendors keen to pry open the home networking market. Smaller electricity suppliers are also seeing powerline as a way to capitalise on their local customer base, as well as adding value to a service which until now has been largely limited to maintaining energy consumption levels at peak times in order to ward off power cuts.

Energy markets such as the UK, Germany and Scandinavia, and which have already seen a considerable degree of deregulation, offer the most favourable conditions for powerline partnerships with service providers. So says Nadine

Berezak-Lazarus, managing director of BMP Telecommunications Consultants in Germany. "It's quite clear that this is coming up now and that more co-operation will take place," she says, indicating that ISPs and service providers can offer utilities essential know-how in internet and telecoms provision.

In a market like Germany which has over 1,000 local electricity suppliers, many of the smaller energy providers are either too small, too inexperienced or simply unwilling to be aggressive enough to brand and service their own powerline product, Berezak-Lazarus says. She is aware of four to six unannounced partnerships in various stages of negotiation within Germany alone and many more are likely to follow. A recent poll she made of the biggest 150 German utilities indicated that a third were already investigating the potential of powerline.

Many, if not most, of these future powerline providers will be thinking in terms of partnering with service providers and ISPs in the coming years.

A market driven by partnerships between hungry power companies and innovative alternative telcos could be just the competition needed to awaken incumbent telcos from their local loop slumber. In Germany, alternative operators are complaining that Deutsche Telekom had the DSL market sewn up just weeks after its launch, and other European countries are facing similarly disappointing competitive scenarios. According to Berezak-Lazarus, the industry's recent focus on local loop unbundling together with a lack of regulation to guide pioneers of the grid technology pushed powerline out of the limelight in recent years. But that is a situation about to change.

With the European governments now desperate for a cheap broadband alternative to fibre to achieve their visions of an information economy, the theory is that powerline operators will soon rival DSL providers for customers and investment. "I have worked in almost every sector of telecoms, in hundreds of markets, and I can tell you that powerline is as much of a business model as DSL - absolutely," says Berezak-Lazarus.

POWERING UP

Utilities in Europe are already placing their orders. In Germany, both leading power company RWE and Mannheim's MVV have hooked up over 1,000 customers between them and have announced plans to venture into neighbouring districts. A third utility, EnBW, is due to launch commercial services in the next couple of months. So far, RWE has led the market, having launched commercial services in July. It has hooked up around 500 commercial customers with plans to roll out to Rhine-area neighbours Bonn, Cologne and Dusseldorf.

If powerline does achieve international recognition as the answer to cheap broadband provision, service providers may be able to pick up where they left off with DSL, argues Jule Miker, an Oslo-based independent telecoms consultant. "Just before the technology market crash this year we were seeing a lot of activity from service providers willing to come into the DSL market and make it attractive for the consumer.

This obviously hasn't worked with DSL in Germany, but these service providers still have a lot to offer."

In Switzerland, for instance, competitive carrier Sunrise Communications has seen powerline as a way into the broadband market. After two years of powerline pilot tests, together with the electricity utility Freiburgerischen Elektrizitätswerken

(FEW) , the partnership launched commercial services in Freiburg in September.

Just two weeks after the launch, FEW had signed up around 1,500 customers out of a district population of 70,000 and was well on the way to reaching a target break-even point of 3,000 customers, and an end of year target of 5,000 customers. According to FEW chief executive Philippe Virvis: "The main reason why this is so achievable is that we don't have to do any work in the house." Dsl installation is still one of the biggest costs for providers who have to pay workers to physically connect up customers in every room they require access. "We only have to set an installation in the transformer, so our installation costs are very minimal," adds Virvis.

While engineers agree that upgrading the electricity grid to carry data is a substantially cheaper alternative to last mile technologies, reliable cost estimates are hard to come by since very often grids differ not only from country to country but also from region to region. Decoder boxes and chips are the main costs for utilities, whereas "conditioning" of the existing electricity infrastructure is a relatively cheap and easy operation.

Grids are "conditioned" to allow the transmission of two separate sets of frequency signals - one at the low frequency range of around 50 herz to carry power and another at a higher frequency of around 1 megahertz which will carry data. Most agree that for small power suppliers, increasing staff levels and taking on additional core expertise to manage the service provision itself would be an inefficient addition to the powerline cost balance sheet.

According to Virvis, FEW first approached Swiss fixed-line incumbent Swisscom with the idea of a partnership to promote the powerline product last year, but was turned down. "Swisscom has a competing product with its dsl range and I think this was the main reason." Partnering with a telco is not a natural choice for the electricity supplier, he says.

"It is not the job of a utility to be a service provider. This is something that was clear to us from the very beginning."

Smaller, more versatile service providers are the better-placed telecoms partners, says consultant Miker. "And I don't think utilities will get a very warm welcome from incumbent providers busy with their own dsl roll-out." But getting up to speed with powerline will be essential for electricity suppliers if they want to get an early foot in the door with this new technology. "This could be a very valuable business for utilities in the future, and they don't want to make any early mistakes," she adds.

For these utilities the best strategy is to go for a very compact and clear product launch with strong branding from the beginning, and they don't have the experience to do this alone." A notable exception to this rule is Germany's RWE which has so far offered a powerline service under its own steam and brand name.

In the German dsl market, T-online and Aol have pitched their basic services at roughly \$45 per month for 768 kbps. The RWE service is a little more expensive at the moment as it includes greater set-up costs for the consumer.

Its basic service, Power Net 2000, offers a shared 2 mbps up and down for \$45 a month, with a one-off registration fee of \$45 and a \$115 charge for the first modem. It also has a maximum bit allocation per month. Exceeding it incurs

further charges. RWE is marketing its powerline products as high-speed internet access with always-on capability through any power socket in the home, and is targeting home and small business users, as well as non-profit organisations, indicating that it's trying to corner the home internet market rather than go after the more sophisticated audio and video-streaming media business some people claim the technology is more suited for. "It will take a while for powerline to find its voice, and this has been true of any technology, including dsl," warns BMP's Berezak-Lazarus.

BIT SHARING

According to powerline advocates, upgrading an electricity grid to carry data entails a fraction of the cost of digging and laying fibre. Many utilities chasing powerline claim to be able to provide a household with 2 mbps in just two days - a rate which would allow a customer to make a phone call, download a music file and stream a video at the same time.

Although many are sceptical that the average consumer will ever demand heftier bit rates than that, powerline vendors such as Ascom in Switzerland claim that powerline bit rates could easily be upgraded to 10 mbps within a year. At a recent powerline industry conference in Brussels, Spanish chipset manufacturer BS2's Blasco Jorge claimed that his company is about to launch a product that will allow for rates of 45 mbps and, furthermore, the company is setting its sights on being able to achieve rates of 135 mbps.

That, claims Berezak-Lazarus, effectively solves the problem of bit sharing which just eighteen months ago was being cited as the main barrier to the technology's success. In Europe, as many as 200 homes are fed off the same transformer which means that at current rates, if everyone were to access the internet at the same moment, service would have to be shared equally. RWE admits that this situation is less than ideal.

In the Rhine district, where RWE has live powerline services, roughly 150 houses could potentially share the same transformer. In practice, this could mean that the average 2 mbps offered by RWE would be a fraction of the size if too many people are online at once. While this isn't too much of a problem for bursty activity like web surfing, streaming video would be severely inhibited, particularly if it were a live service with lots of simultaneous users. Fortunately, with just 500 customers on its books, the problem hasn't yet reared its head. To ward off future problems RWE insists it will upgrade its data transfer speed rate to 10 mbps by the end of the year using Ascom's upgraded equipment.

Although Europe and parts of Asia seem to be a ripe orchard for powerline, the US seems barren. In the US, as few as four homes would have to share a transformer, but while this would overcome the bit sharing problem, too few customers per transformer would make the powerline adaptor in each transformer prohibitively expensive

WORLD POWER

As well as the success of commercial powerline services in Germany and Switzerland, Austria is also getting in on the act. Incumbent utility EVN has just expanded field trials and placed orders for over 20,000 decoder boxes from Swiss powerline developer Ascom, which is also providing equipment for German utilities RWE and Enbw.

Ascom claims it is in the final stages of extensive field trials with electricity supply companies and utilities in 11 European countries and also in Singapore and Hong Kong to provide equipment which will allow electricity grid-driven always-on internet provision at data rates of 4.5 mbps.

In Iceland, Lina.Net, a subsidiary of national electricity supplier Reykjavik Energy, has put in orders for equipment to service 2,000 powerline homes while Scandinavian energy heavyweight Sydkraft ordered 3,000 powerline connections in August.

Electricity supplier Viken in Norway is also said to be happy with pilot test results and is about to order powerline equipment.

According to Jule Miker, an independent telecoms consultant in Oslo, utilities are now courting isps with strong consumer bases to build powerline partnerships. "Electricity suppliers know (internet provision) is not their core expertise so they'd be happy to allow service providers to take over the service side of the business. And this market represents a huge opportunity for service providers right now."

NOISE POLICE

One potential problem with powerline is noise. The problems associated with controlling this while staying within the regulatory emission level requirements was cited as one of the main reasons Nortel Networks backed out of the industry in 1999.

More recently Siemens said it would halt research into powerline this March for the same reason. But powerline developers like Israel's Main.net insist a smart chip installed in its modem has the ability to measure the flow of electricity and instantaneously calculate how the data transmission needs to be adjusted to create the optimum conditions for data traffic flow. Both Ascom and Main.net fight noise with additional frequencies which filter out the inhibitors. In such an event, repeaters which can be activated on demand ensure the data is not lost on the network.

Previously data over powerlines did work, but not when an appliance connected to the grid saps power from it, causing a noise spike. This has now been overcome.

Both developers' systems work on a shared medium, point-to-multipoint principle allowing the electrical socket to bridge the last mile for high-speed internet access and enable networking in the home or building. Powerline works through a simultaneous operation of an outdoor and indoor system.

A standard pipe connects a transformer to a telecoms network, while in the transformer, a modem combines voice and data traffic and ships it over the electricity grid to power sockets in the home. While the longest run from a transformer to the home is roughly 300 metres to 500 metres, and somewhat shorter than dsl's 3 kilometres, there are many more transformers far closer to homes than there are local telephone exchanges. Powerline's 300 metre run can also be extended with repeaters.

Inside the home, a controller plugged into the wall socket separates voice and data, directing to the correct terminal via fixed ip addresses.

It can use the indoor electrical circuit to ferry traffic to devices and their adaptors, throughout the house up to 100 metres from the home controller.

Information : info@total.emap.com

URL : <http://www.totaltele.com>

Site Information: [Privacy](#) • [Contacts](#) • [Ad Info](#) • [Site Map](#) • [Permissions](#)

©Emap Business International. All rights reserved. Reproduction of this website, in whole or in part, in any form or medium without express written permission from Emap Business International is prohibited. Your use of this website is subject to [legal terms](#). Please read these carefully.

info@totaltele.com