



Open-access fibre lights the way to next-generation broadband applications

Open-access fibre networks in Scandinavia and the Netherlands provide a valuable insight into how service providers and customers across Europe are likely to use ultra-high-speed broadband.

Most European operators are convinced that customers will find uses for the unprecedented amount of bandwidth their planned fibre access networks will deliver. But beyond high-definition TV (HDTV), they are not sure what these will be.

Open-access networks are proving fertile ground for such applications. Operated by utilities and municipalities that act only as wholesalers, these neutral networks have given free rein to the imaginations of service providers, who have devised a raft of services that go well beyond telecoms' traditional triple-play of Internet access, telephony and TV (see fig.).

A network that has come a long way in commercialising these new services is Malarnetcity, in the Swedish city Vasteras. There, a number of operators offer more traditional telecoms services such as broadband, telephony and TV, but there are also service providers offering dedicated gaming servers, security and surveillance, remote storage and video-on-demand.

But even these comparatively novel services are now being supplanted by innovations elsewhere in Sweden. One of the most radical revelations is that service providers can offer customers new applications and services regardless of whether they are subscribed to an Internet service.

One idea, suggested by Jonas Birgersson, CEO of open-access-network operator ViaEuropa, at this month's FTTH Council Europe conference in Paris, is to package existing Internet services into discrete units and sell them for a low fee.

For example, a user could sign up for access to social-networking website Facebook, video-sharing website YouTube or peer-to-peer-based video service Joost, for a small payment. A service model of this type would entice users who might not necessarily want to pay about €20 for full access to the Internet, but would be willing to spend, say, €2 for access to a particular Internet-based service, says Birgersson.

He says that such segmentation would enable network operators to generate maximum revenue from the network by addressing a new customer segment, but also allow for a more sophisticated service portfolio, as factors such as quality of service can be more easily controlled.

Some service providers are also using open-access broadband as a marketing tool, providing specific online services for free.

On the Affarsverken Karlskrona municipal-fibre network in Sweden, users can access local information services cover-

Fibre applications: Key points

- Open-access fibre enables service providers to offer IP-based applications to consumers without Internet-access contracts
- Government services such as healthcare and education are increasing the social value of fibre networks
- Next-generation video and 3D environments will require fibre, as bandwidth demands surge over the 100Mbps mark
- Remote computing will stretch fibre access to its limits, though only in short bursts
- The low barrier to entry of open-access networks is driving service innovation

ing the town's cinemas, news and estate agents via their TVs or PCs, even if they are not subscribed to an Internet service. In this respect, the initiative mirrors legacy services such as text TV and online portals that perform a similar function.

A healthy option

Elsewhere in Sweden, governments are exploring the potential of fibre for public services. Nurse Gudrun is a trial project based in the city of Karlskrona that, since June 2007, has been offering residents in one housing development remote consultations with a nurse using a video link.

The service gives residents a two-way video feed to their local health service via their TV, so that user groups such as the elderly, who might not have a computer in the home, can access the service using a familiar interface.

The health services can "call" a user on a video link to his TV to check on his status, while the user can call the health services using the TV's remote control. Other on-demand features include prescription renewal and booking face-to-face appointments at a health centre.

Nurse Gudrun targets the 20-30% of home visits by nurses that are superfluous, by giving users a TV-based link with a nurse. They can use it to resolve minor aches and pains and renew prescriptions, at a cost to the health service of €10 a session. This compares with €80 for a visit to a local health-care centre. The project has been well-received, and plans are under way to roll out the scheme to other municipalities.

Representatives from the project said at the FTTH Council Europe conference that if the scheme were rolled out nationally and cut home visits by as little as 10%, the healthcare sector would save SEK2.6 billion (€250 million) a year.

Sweden is not the only hotbed of innovation. In the Netherlands, educational services are being developed that employ the 3D environments typically used for gaming.



Unlike many of the services mentioned previously, which could theoretically be accommodated with a copper-based DSL connection, next-generation 3D games and services could consume quantities of bandwidth that only a fibre connection could provide.

According to Juriaan van Rijkswijk, director of Dutch software developer Gamesfactory, there is a growing trend of gamers wanting to do more than just play games in these worlds. He refers to "online oxygen", which is the desire to do things like watch TV and have conversations with people in these environments without having to switch between the real and virtual worlds.

Though such concepts might seem alien to the mainstream potential user base, they nevertheless require a huge amount of bandwidth. Graphical information, video and voice streams could quickly consume more bandwidth than that provided by copper-based broadband.

And although not every gamer is going to live out his entire life in a virtual environment, the subscriber base is large and very profitable. Rijkswijk says that whereas a game costs about US\$200 million (€131 million) to produce, users spend on average US\$28 a month on subscriptions and in-game sales and services. For games such as *World of Warcraft*, which has 10 million active subscribers, the investment is quickly recouped.

Innovations in 3D, or stereoscopic, television could also begin to make fibre a must-have for certain types of entertainment. Consumer-electronics manufacturer Samsung is currently working on ultra-definition 3D video, which, uncompressed, would consume a 300Mbps stream. Though compression could reduce the required bandwidth to about 100Mbps, ultra-definition video would still require bandwidth a magnitude above that of copper-based broadband technologies.

In research labs elsewhere, the concept of server-based computing is also gaining traction (*TM*, 29 Jan, 2008). Such

services would move the processing power and memory that reside in residential computers today onto the network without the need for hardware at home.

Remote computing could consume huge amounts of bandwidth when users access media and documents that need to be available in an instant, though only in relatively short bursts. But although it enables users to compute virtually anywhere, it has sparked concerns about the security of networks at a time when entire countries have been brought offline by cut submarine cables or malicious hackers.

Open for innovation

So far, open-access networks have been catalysts for this new generation of services. In Sweden in particular, municipalities and local utilities have created a myriad of local fibre networks, many of which are based on the open-access principle.

From a service-provider point of view, it is the low barrier to entry that provides the key to the level of service innovation on open-access networks, says Adam Brannstrom, CEO of Swedish open-access network Malarenergi Stadsnat.

ViaEuropa's Birgersson echoes Brannstrom's point. "Opex is what kills the initiative," he says, adding that high monthly costs of running the network passed on to customers via services will discourage them from using the services on the network.

The open-access networks are also indirectly answering the question of what users could possibly do with the 100Mbps-plus connection available through fibre. According to Birgersson, about 46% of subscribers on the ViaEuropa network in the city of Lund have migrated to 100Mbps services, which cost about €30 a month.

Though he did not provide details on how those connections were used, the fact that such a high number of users choose 100Mbps connections over cheaper 10Mbps connections indicates that there is public demand for such services.

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Services available on open-access FTTH networks, Mar-08

Service type	Service provider	Network*	Cost
Home surveillance	Dialect	Malarnetcity (Sweden)	€10.46/month + €213 installation
Online gaming	Game Connect	Malarnetcity (Sweden)	Free with registration
Remote storage	Storegate	Malarnetcity (Sweden)	From €2/month
Nurse Gudrun	Karlskrona health services	Affarsverken Karlskrona (Sweden)	Free
Online video	Joost**	ViaEuropa (Sweden)	€2/month
Online video	YouTube**	ViaEuropa (Sweden)	€2/month
Home surveillance	HusetMitt	Tromskraft (Norway)	€8.80/month
Home surveillance	HyttaMi	Tromskraft (Norway)	€7.53/month
100/100Mbps broadband	B2	ViaEuropa (Sweden)	€20/month
VoIP	B2	ViaEuropa (Sweden)	€3.63/month
Video-on-demand	CDON	ViaEuropa (Sweden)	From €0.96 per film
Local information	Various	Affarsverken Karlskrona (Sweden)	Free

*Some services are available on several open-access networks. **Proposed

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