Broadband Fixed Wireless Access (BFWA)

What it is and what it can do

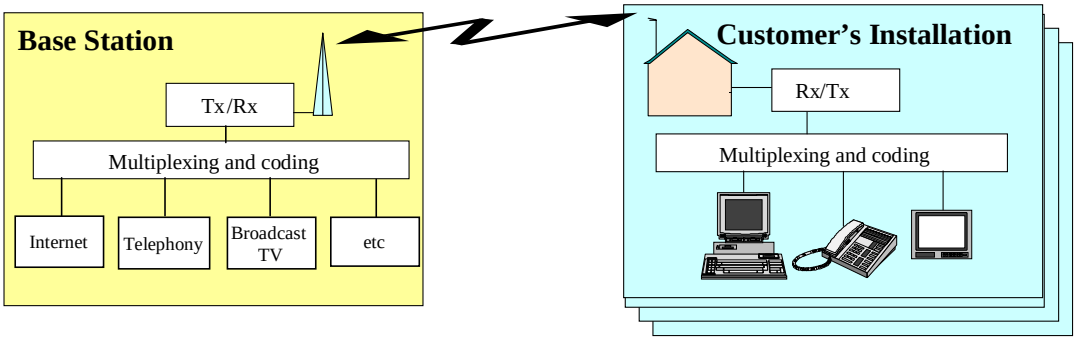
Broadband Fixed Wireless Access (BFWA) has its origins in the micro and millimetre wave TV distribution systems introduced in the 1980s to deliver cable TV-like services to areas where cable was uneconomic. These were essentially local broadcast services covering an area of 2-20 km diameter and carrying about 30 analogue TV channels. The systems offered a highly flexible approach to meeting demand for services and could be installed much more quickly than new cables.

During the 1990s digital systems were introduced with over 100 TV channels, encryption and access control. Operators then began to experiment with return channels to support interactive TV services. It soon became evident that these return channels could allow the systems to provide broadband digital interactive services or indeed a mix of broadcast and telecoms services (see the briefing on Cable TV Modems).

In Europe, several EU funded research projects have also explored how to use micro and millimetre wave radio links for two-way broadband services. Trials in a number of European countries between 1996 and 1999 confirmed that the technology worked well in a wide range of operational environments. They also showed that the equipment needed on the customers' premises could be similar in size and cost to that needed for digital broadcast services.

Key messages for SMEs

- If you are based in or close to a medium sized town, a wireless network operator may offer you broadband services in the next year or so. However, availability will vary from country to country.
- The service offerings will be similar to those from telcos and cable TV companies and will probably be priced quite competitively.
- If you are based in a small town or a remote rural area, you will probably have to wait three or four years for service and, even then, it is likely to be more expensive than in towns where a telco or cable company is offering broadband.



Broadband Fixed Wireless Access System providing a mix of broadcast and telecoms services

The European Radio Communications Committee (ERC) has recommended a number of frequency bands for BFWA systems[1]. Over the last few years all EU, and most accession countries, have awarded licences for broadband radio access systems for one or more of these bands. Further offers of licences in an additional frequency band (42 GHz) are planned.

However, the responses so far have been mixed. Competition was intense for the Swiss licences but there were no bids at all for around two thirds of the UK and Austrian licences. Furthermore some of the winners of licences have shown remarkably little interest in building networks.

Service availability therefore varies significantly from country to country and indeed within countries. However, in many medium sized towns, SMEs may be offered broadband wireless services now or in the next year or so. If you are based in a small town or a remote rural area, you will probably have to wait three or four years for service and, even then, it is likely to be more expensive than in an area where a telco or cable company is competing to offer broadband.

The services currently on offer are be similar to those from telcos and cable TV companies and are priced quite attractively. Typical offerings are:

[1] The bands are at 3.5 GHz, 10 GHz and 26/28 GHz

- Symmetric connections at standard bit rates between 384 kbit/s and 8 Mbit/s.[2]
- Asymmetric connections similar to those offered by Digital Subscriber Loops or cable modems.
- Service packages aimed at business users.

Advantages and Disadvantages

Broadband Fixed Wireless Access networks offer a solution to the 'last mile' problem – namely how to deliver broadband services cheaply from local exchanges to the customer. They can deliver similar broadband services to those offered by telcos or Cable TV operators but do not depend on the quality or capacity of existing cables.

The principal advantage of BFWA services is that they can be offered almost immediately to any customer within the coverage areas (2-20km) of the network operator's transmitters. The customer premises equipment is similar in size to a satellite TV receiver and is almost as quick and easy to set up. Like mobile phone networks, the radio frequencies can be re-used and new transmitters can be quickly installed to meet growing demand.

internal unit (4.4x21.4x28 cm) external unit (30x16x20 cm)

Customers' equipment from Broadnet (www.broadnet.de)

A disadvantage is that you usually need a line of sight between your antenna and the network operator's transmitter.[3] A further problem is that BFWA is a relatively new technology. Licences have only recently been awarded and the standards for transmission and coding are still evolving. Equipment is still being manufactured in relatively small quantities and costs more than it would in mass production.

In the immediate future BFWA services are therefore only likely to be offered to customers in areas of high demand (e.g. city centres and industrial estates), where the relatively high cost of the equipment can be offset against the cost of digging up the streets to lay new cables. It will be several years before the cost per customer falls sufficiently for BFWA to be equally attractive in thinly populated rural areas.

What to buy

Although BFWA is not yet the long awaited solution to delivering broadband to residential and rural customers, over the next few years it will play a growing role in providing broadband access for small businesses.

One example of the service on offer is 'Wireless-DSL Unlimited' from the UK operator Liberty Broadband (www.libertybroadband.co.uk). For an installation charge of £149.99 (~€240) and a monthly fee of £39.99 (~€64), the customer gets unlimited always-on Internet access at download speeds of up to 512 kbit/s and upload speeds of up to 256 kbit/s, together with 10 e-mail addresses and 20 MBytes of web space. A range of upgrade packages offer speeds of up to 1 Mbit/s and guaranteed minimum data transfer rates. A range of wireless 'leased line' products is also available. The service is currently on offer in over a dozen UK towns and cities and there are plans to cover the country's 40 largest urban areas.

Similar products are being offered in other parts of Europe. However, it is not possible to present the current situation in every part of Europe in a briefing such as this. If a service is available in your area,

[2] i.e. at about 7 – 150 times the speed of a connection over a modem on a phone line.

[3] A recently developed variant of broadband wireless, mesh radio, overcomes this problem and is discussed in a separate briefing. However it is an experimental technology and is unlikely to be generally used for commercial services in the next year or so.

it is likely that the network operator will be promoting it fairly visibly. However, to find out if a service is likely to be available in the near future, check the telecommunications suppliers section of your Yellow Pages or ask your national telecoms regulator.

One useful source of information is the Broadband Wireless Association site at www.broadband-wireless.org. Although primarily a UK-based site, it also contains links to information for some other countries in Europe.

Questions to ask suppliers

You obviously will want to know about equipment costs (buy or rent) and charges for using the service. Beyond this you should ask:

- Is the service available in my area and, if not, when will it be available?
- What speeds can be delivered and what downstream and upstream bit rates do you guarantee?
- How big is the equipment and what power supply does it need?
- Will you install and maintain the equipment for me?
- What changes will need to be made to my computer(s) in order to connect to the service?
- Will the service be as reliable as my existing telephone service?
- Can I easily upgrade to a higher speed service?
- How quickly will you respond to reports of faults?