

wireless networks





How to choose a wireless local area network

A wireless local area network (WLAN) connects computers together and enables them to communicate with each other. It consists of two key components: an access point (also called a base station) and a wireless card. Information can be transmitted between these two components as long as they are fairly close together (up to 100 metres indoors or 350 metres outdoors).

If you are considering a WLAN for your school, a good place to start is the Becta Accredited ICT Service Suppliers website [www.ictchoice.org.uk].

Ask suppliers to visit the school to conduct a site survey. This will determine the number of base stations you need and the best place(s) to locate them. A site survey will also enable each supplier to provide you with a detailed quote. It is important to contact a number of different suppliers as prices, equipment and opinions may vary.

"We asked a number of different suppliers to do site surveys of our school. The results varied dramatically, both in the cost and the number of base stations we needed. Fortunately, two of the suppliers said pretty much the same thing. We went with one of those as they also promised the best after-sales care."

Secondary school, Worcester

In identifying the right supplier, it is important to consider a number of issues:

Cost

While some schools found wireless networks to be a cheaper solution than digging up playgrounds to lay cables, others found it cheaper to increase their wired network.

Coverage

Some schools reported difficulties in transmitting their wireless networks through walls and other obstructions. Access to the network should, in theory, be possible for up to 100 metres indoors. However, a metal reinforced wall, or similar obstruction, can make the network ineffective in certain areas, so it is important to ask suppliers to conduct a site survey.

Technical standards

It is important to ensure that the equipment you purchase is inter-operable. In other words, the wireless cards must be the same

standard as the base station and the laptops. The current standard for wireless technologies is 802.11b.

Multimedia

Many schools have experienced difficulties in sharing multimedia over wireless networks. It is generally accepted that wireless networks are slower than their traditional counterpart and that this affects performance when using multimedia. However, it should be pointed out that schools with a broadband connection and a multimedia proxy server do not see this as a problem.

Security

Network security is another issue associated with wireless networks, as in theory it is possible for someone outside the school to hack into the network. The use of passwords can reduce the likelihood of this occurring, but where wireless networks are used to transmit confidential information, security issues should be discussed with prospective suppliers.

Health and safety

There has been a lot of discussion about the health and safety implications of using wireless networks. Given the current focus on the use of mobile phones, this worry is understandable. However, the latest information seems to indicate that levels of radiation used in wireless networking technologies are significantly lower than levels found in mobile telephones. They also fall within the agreed safety limits suggested by the National Radiological Protection Board (NRPB).

How to make the most of a WLAN

Schools that have implemented WLANs are using the technology in a number of different ways. How you choose to develop the network in your school will depend on what you want to achieve. However, schools which are successfully using wireless technologies have provided the following advice:

- Consider a team approach. Simply asking the ICT co-ordinator to be responsible may not be the best option.
- Consider piloting wireless technologies in a small area of your school such as a department or year group. This way, any initial problems will be small scale and, hopefully, easier to solve.
- Before you purchase a set of laptops, consider how they will be moved around the school, how they will be stored, and how they will be timetabled. You will also need to decide who will take responsibility for looking after them.
- Plan how you will recharge the laptops' batteries. A number of schools surveyed found problems with this. While it is not something specific to wireless networks, it will still need to be overcome. Some schools purchased a device such as LapSafe®, which recharges laptops as they are stored. Other schools purchased two sets of batteries and recharged one set while using the other.
- Consider the type of batteries you will use. Laptops with Li-ion batteries are less problematic, as you do not have to wait for them to run down before recharging them.



- Try to visit other schools that are already using wireless networks. Asking questions and sharing experiences is the best way to learn.
- Investigate the possibility of using wireless networks to develop a school intranet – this acts as an internal website that anyone with the correct password can view. Some schools upload lesson plans, curriculum activities and homework assignments onto their intranets, and the flexibility of wireless laptops means that these can be accessed from the classroom.

Measures of success

The Becta/Technology Colleges (TC) Trust Wireless Local Area Networks Project surveyed approximately 50 schools known to be using wireless technologies. All the schools surveyed claimed that installing the wireless technologies led to an increase in the provision of ICT in their schools. Many schools also stated that WLANs enabled them to:

- Increase access to ICT – laptop computers can be moved around schools on a timetabled or need-to-use basis, and they can be used outside school buildings, for instance during science or PE lessons.
- Increase the amount of ICT taught in curriculum subjects – as teachers can be flexible in deciding how and when ICT should be taught, pupils no longer have to visit ICT rooms but can use laptop computers on their desks, enabling them to complete work in the usual manner.
- Improve staff training and development – staff have the freedom to complete

planning and administrative tasks at home by taking the laptops with them. A number of schools surveyed said that this had led to better internal communication, with staff having more time to keep abreast of recent developments.

- Increase enthusiasm for ICT – the flexibility of wireless networks enables teachers to use ICT in a way that suits them, and so they begin to see ICT as a tool that will help them to meet their objectives.
- Utilise space normally used for specialist ICT rooms for other purposes – this is especially important to schools facing increases in pupil numbers.

case study

Wireless networks take science into the wild

Children at Dorrington Primary School in Birmingham use wireless technology to increase their knowledge of invertebrates.

The school has its own wild area near to the school buildings. The wireless network enables children to take laptop computers out of the classroom to study and research different types of 'minibeasts' in their natural habitats and then share their findings with the rest of the school.

When they visit the wild area, Year 5 pupils photograph the minibeasts they



find using a digital camera and save the pictures to disk. They then access the internet using the wireless laptops and research facts about each creature.

The children produce electronic documents to show what they have discovered. To finish, they upload their work onto the school intranet before carefully returning the creatures to the wild.

Back in the classroom, the children discuss the wide range of minibeasts they have found and what they have learned about them. Their confidence in using the digital camera, wireless laptops and school intranet is also greatly enhanced.

All the staff feel that the technology has enabled them to increase the amount of ICT that they can incorporate into curriculum subjects and to improve standards of teaching and learning in science.

Further information

Becta and the TC Trust have produced a publication, 'Wireless Networking in Schools: A Decision-making Guide for School Leaders.' It details the experiences of 12 schools which implemented wireless technologies, and examines their future goals and strategies for making the most of their equipment. A PDF version can be viewed on the Becta Website [www.becta.org.uk/page_documents/leas/wire.pdf].

You will find all this information and more on the ICT Advice site <http://www.ictadvice.org.uk>



Becta's ICT Advice services for teachers

Becta's ICT Advice service is an integrated provision of support and advice to schools. It offers timely, free and impartial advice on the implementation of ICT through a range of different services.

To keep up to date with Becta's ICT Advice service, register for the ICT Alert, a monthly email newsletter [www.ictadvice.org.uk/newsletters].

The ICT Advice website [www.ictadvice.org.uk]

The ICT Advice website is the 'core' of Becta's advice and support to schools. It is the place to access online content and services and to find out more about the events and opportunities offered by Becta's ICT Advice service for schools.

Aimed at classroom teachers, subject co-ordinators, ICT co-ordinators and special needs co-ordinators, the website is where you will be able to access all of the advice and support relevant to your professional needs.

The ICT Advice service consists of the following key features:

Direct access to national experts through the 'Ask an Expert' service
[www.ictadvice.org.uk/experts]

The Ask an Expert service offers support and advice to enable practitioners to make appropriate decisions about ICT-related issues or problems. You are able to pose questions directly to national experts through the ICT Advice site. Each month the site hosts two topical themes which focus on curriculum and pedagogy. The themes are advertised in advance through the site and our newsletters.

Developing ICT skills and confidence through the 'New2Computers' service
[www.ictadvice.org.uk/new2computers]

New2Computers is for those teachers who are just starting out with computers. The service offers direct online advice from friendly mentors via tutorials, a chat room and an email forum. If you are totally new2computers, you can join the 'newts' area, which offers sample missions to support the development of ICT skills.

Sharing good practice in the use of ICT in your subject through a programme of face-to-face national conferences

[www.ictadvice.org.uk/ictadviceevents]

Events at venues all over the country will be happening over the next year to support the use of ICT in subject teaching. Becta's ICT Advice services will be offering advice and support events, with additional subject specialisms being provided by the relevant subject associations.

Supporting continuing professional development in the use and implementation of ICT through online events and insets

[www.ictadvice.org.uk/ictadviceevents]

The online events and insets provide lesson resources, ideas and advice. Users are able to log on in advance, view and try out materials, and then ask for support from the content authors at a pre-arranged time.

Keeping up to date with the latest news and sharing good practice through online and offline newsletters [www.ictadvice.org.uk/newsletters]

Find out the latest ideas and learn more about integrating ICT into your subject through our online and offline, termly and monthly newsletters.

Exchange information and talk to other practitioners through online discussion forums
[www.ictadvice.org.uk/talk]

The 'Talk' area of the ICT Advice website is where you will find a wide range of discussion forums on different aspects of ICT. By joining a forum, you can exchange views, ask questions, provide answers and just generally share classroom experiences with other teachers.

Supporting the use of ICT in schools through offline publications
[www.ictadvice.org.uk/orders]

In addition to providing online advice, a range of print publications is available free of charge. You can order any of our publications, leaflets and CD-ROMs from the above web address.

About Becta

Becta is the Government's lead agency for ICT in education. It supports the UK Government, national organisations, schools and colleges in the use and development of ICT in education to raise standards, widen access, improve skills and encourage effective management.

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