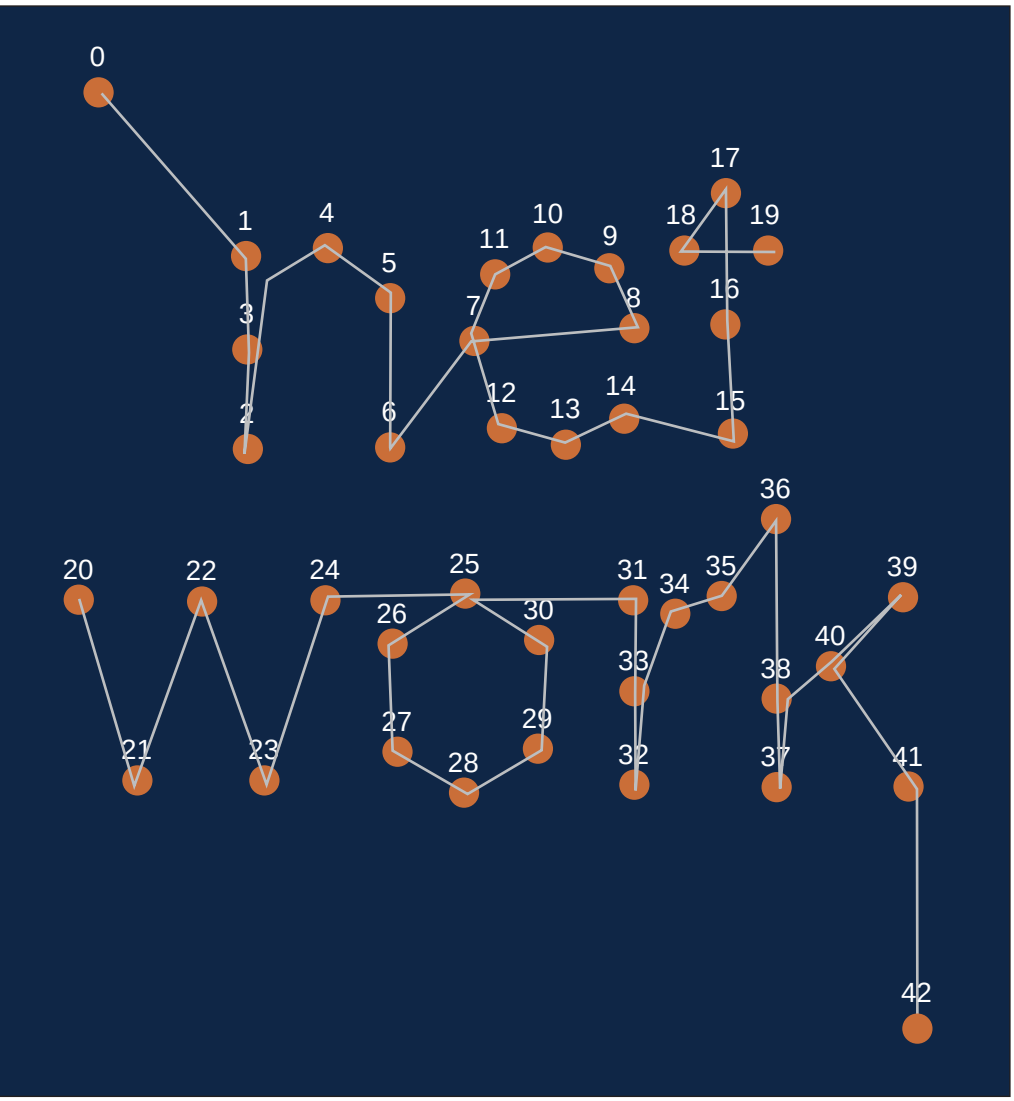
xp workshop



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Networking under XP

With the advent of Windows XP, now could be the ideal time to set up a home network. Kieran McNamee explains what resources you will need – network cards, cables, hubs – as well as the advantages of wireless networking

Many people will find themselves upgrading to Windows XP by purchasing an entirely new computer. But even for those who already have a decent system running Windows 9x, Windows XP's network setup facilities make it easy to configure a home network. No longer will there be fights as to who gets to use the computer. All your networked computers will have access to resources such as printers and scanners, and internet access can be provided through a single connection.

In the following pages we will look at how to create your own home network. We will focus on the traditional networking that involves the use of cables, as well as take a look at the support that Windows XP provides for wireless networks.

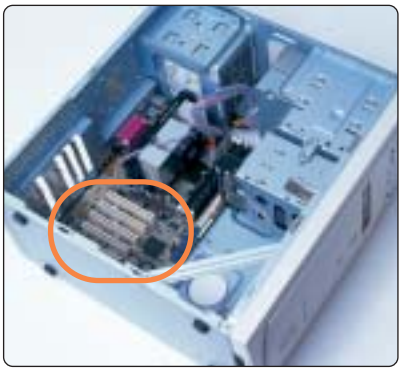
What do you need?

Setting up a small network is not a very difficult task but you will need to purchase some additional components.

• Network cards You'll need one of these for each computer although many new PCs will already have one installed. If you have a broadband connection to the internet then you will need one network card for

ILLUSTRATION: NATALIE WINTER

Installing the network card



1 Unplug the power, remove the casing (use a screwdriver if you need to) and identify the PCI slots: they are generally white and the only type into which your card will fit. Older computers will have a couple of ISA slots as well as a few PCI slots and some of these will already be occupied. Before putting the network card into the PCI slot, ground yourself by touching any of the metal surfaces on your computer casing. This will discharge any static built up in your body or clothing

2 Identify an empty PCI slot and remove the casing's metal strip, if there is one. Put the network card into the chosen slot on an angle and push firmly. When the card is seated in its slot, you can then screw it to the casing in the same place where you removed the metal strip. Replace the computer case cover and plug your network cable into your freshly installed network card

3 Installing a network card in a laptop is much simpler than a desktop installation. Simply push the credit card-sized card into a vacant PC Card slot. You will most likely have to connect a dongle as well so that the RJ-45 connecter can be plugged in. If you opted for a USB ethernet adapter, all you have to do is plug it into a free USB port

the net connection and one to connect to the home network.

Generic network cards can be purchased from any computer store. A basic 10/100 PCI network card with a single RJ-45 socket shouldn't set you back more than £30. The 10/100 means that the card will work at either 10Mbps (megabits per second) or 100Mbps.

Alternatively, you may want to opt for a USB ethernet adapter. It will cost you quite a bit more (around £60) but you won't have to worry about opening up your computer to install it, as it simply plugs into a vacant USB port as the back.

• Cable The most common cable used in Ethernet networking is Cat5 UTP (unshielded twisted pair). In the past, coaxial cable could be used in ethernet networks but this is no longer very common. Twisted-pair provides greater flexibility, and if any node should go down, the network will still function. The twisted-pair cable is connected to each system and a central hub with RJ-45 connecters. These connecters look very similar to RJ-11 connecters which plug into your phone or modem, except the RJ-45s have eight pins and the RJ-11s just six.

You can purchase this cable with the connecters when you buy your network card(s). It's a good idea to decide on the design of the network (in terms of where the computers will be and how far they will be from the hub) so that you know the length of cable you'll need. Alternatively, if you are handy with wiring and crimping, you can purchase a Cat5 UTP and some RJ-45 connecters and assemble them yourself.

• Hub The hub is the central component in your network as it controls all network communications between the computers. Each piece of cable connects a single computer to the hub.

If you are connecting just two computers then you can use a crossover cable, but for future expansion it is probably wise to buy a hub. The two decisions to make when purchasing a hub are how fast you want the network to be and how many ports will be required. A four-port USB 10Mbps hub from a manufacturer such as Belkin (www.belkin.co.uk) will cost between around £50, and double that for 100Mbps performance.

→ Wireless PC Card: you will need to install one of these for each notebook on a wireless network

↑ Wireless hub: when purchasing a hub you need to consider how fast you want your network to be

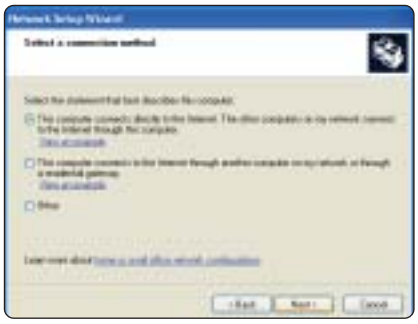
Laying the cable

Once the network card is installed (see *Installing the network card*, above), you must wire up all your computers to the hub. If the computers that you want to network are all in one room then this is relatively easy. Try to cut down on the length of wire by finding a place for the hub near a power outlet more or less equidistant from each computer.

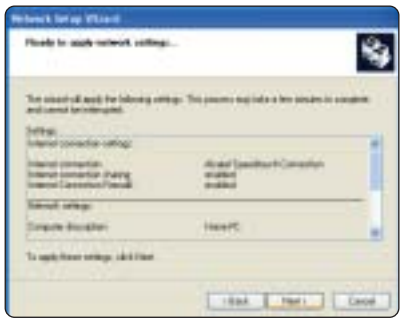
Configuring the network

After performing the physical installation of your network, you simply need to configure each PC to recognise the network. The Network Setup Wizard will walk you through the process of configuring your network and making your internet connection available to all of the computers on the network. By clicking ok to each choice in the wizard, 90 percent of users will be able to configure their network completely without really having to do anything.

1 Before configuring the network with the Network Setup Wizard make sure all your PCs are turned on and connected to the hub. If you turn on peripheral devices, such as printers and scanners, the Network Setup Wizard will also make them available to all computers on the network. Your internet connection will also be shared over the network, so dial into your ISP before running the Network Setup Wizard. Open the Network Setup Wizard from Start, All Programs, Accessories, Communications



2 The first few steps deal with your internet connection and setting up Internet Connection Sharing. Internet Connection Sharing was introduced with Windows 98SE and provides a simple way for networked computers to use a single network connection. You will be asked whether the Windows XP machine connects to the internet directly or if the connection comes through another computer



3 The computer name identifies your computer on the network and the same workgroup name should be used by all the computers. Once the wizard has collected enough information it will display a summary before applying the settings

4 If you ever need to change the configuration of your network you can run the Network Setup Wizard again or you can change it manually via the Local Area Connection Properties. From the Control Panel select Network Connections and click on Local Area Connection. Under the General tab you can see how much data has been sent and received, while under Support you can find important details, such as the physical address of your network card and the IP address assigned to your computer. This is the IP address for the network; the computer connected to the internet will have another IP address assigned by your ISP

Networking computers that are in different rooms and possibly on different floors can make laying the cable a lot more difficult, and you may need to seek advice from someone with experience.

Setting up the other computers

Configuring networks in older versions of Windows was a lot more difficult than it is with Windows XP. Now you can use the Windows XP CD to set up networking on your other computer(s) as long as they are using Windows 98 or Me. Once you have configured the network on the computer running XP (see *Configuring the network*, above), insert the Windows XP CD in the other computers and on the menu that appears, click Perform Additional Tasks. On the next menu click Setup home or small office networking. This will bring up the same Network Setup Wizard that you used on your Windows XP machine.

Wireless networks

Wide area wireless networks are still in their infancy but one day we will all be able to connect to networks at the office, at home and in public without the need for cables of any sort. The availability of wireless networks can extend the freedom of a mobile user, solve various problems associated with hard-wired networks and even reduce network deployment costs.

Wireless connections can extend or replace a wired infrastructure in situations where it is costly or prohibitive to lay cables. Temporary installations represent one example of when a wireless network might make sense or even be required. However, some types of buildings or building codes may prohibit the use of wiring, making wireless networking an important alternative.

For wireless networks to become more mainstream, the price of the technology must come down. A wireless

home network is a great idea, but it can cost around 10 times as much as a wired network.

Ad hoc versus infrastructure

When connecting to wireless networks with Windows XP, you must be aware of two configurations: access points and infrastructure.

In access point wireless networks, wireless stations connect to wireless access points, or hubs. These access points function as bridges between wireless stations and the existing network backbone. As you move from one location to another, and the signal for one wireless hub weakens, you can connect to a new access point.

In computer-to-computer wireless networks, wireless stations connect to each other directly, rather than through wireless hubs. For example, all the participants in a meeting can connect to each other's computers and form a temporary network.

Wireless support in XP

There are several wireless networking solutions available today. Windows XP supports the IEEE 802.11b standard as well as HomeRF. Of these two, 802.11 garners most support and is likely to become the solution for business, home and even public wireless networking.

The current IEEE 802.11b standard provides wireless transmission rates of 11Mbps. The next generation of wireless networking, referred to as 802.11a, will provide a speedy throughput of 54Mbps. This may not be the same as the 100Mbps provided by most corporate networks, but it is pretty fast considering no physical wires are involved.

Windows XP makes connecting to wireless networks easy thanks to its Wireless Zero Configuration service. The wireless network card will scan for available networks and pass those to Windows XP, which will then take care of configuring the wireless network card with an available network.

Wireless network configuration is enabled by default but if you want to disable it you can open Network Connections from the Control Panel. Right-click the Wireless Network Connection icon and select Properties. Under the Wireless Networks tab disable the Use Windows to configure my wireless network settings checkbox. ■

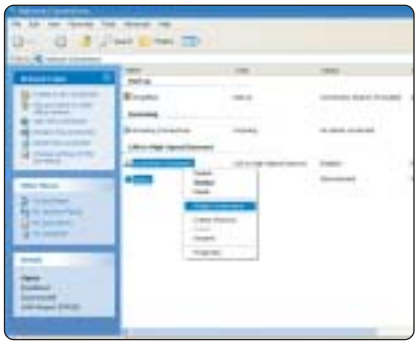
Network bridging

We have looked at how to set up a home network using the most common type of networking technology, twisted-pair ethernet. We have also looked at the support Windows XP provides for wireless networking. There are a variety of other technologies that can be used to set up a network. However, networks that are configured in different ways will not be able to communicate with each other properly. This is where the topic of network bridging comes into play.

There will be occasions when different types of networks will need to be configured into one recognisable network. This will be more common in business situations than home networking, where the entire network is ethernet or wireless and not a combination of different technologies.

Windows XP features network bridging, which allows the computers on different networks to communicate with each other. Without network bridging, the computers can only talk to others connected using the same standard.

1 By default, the Network Setup Wizard automatically creates a bridge when multiple network cards are found on a Windows XP computer. The Network Setup Wizard does not bridge a network connection that is connected to an external broadband internet connection. If you want to create a network bridge manually or want to configure the settings for your network bridge, you can do so by opening Network Connections from the Control Panel. If you want to open the Network Connections option but it is set up as a submenu, then right-click Network Connections and select Open



2 You will find all network bridges under the Network Bridge section. If you want to create or add a network bridge, select each of the private network connections that you want to be part of the bridge from the LAN (local area network) or High-Speed Internet section. Right-click one of the highlighted private network connections, and then click Bridge Connections

3 Do not create a bridge between an internet connection and your private network connection. To do so will create an unprotected link between your network and the internet, and your network will be vulnerable to intrusions. For this reason, network connections that have Internet Connection Sharing or Internet Connection Firewall enabled are not eligible to be part of a network bridge