



## OSW / appiChar Technical Guide for IT Staff

### **Section 4: Connecting Clients**

Although many new computers have a built in network connection, occasionally you may need to get involved in attaching a computer to a network.

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## Physical Connection

### Internal network card installation

Many machines these days come with a network connection built in, either for connection to an office network in the case of business machines or to allow easy access to broadband for home machines. If you do need to add a network card to an existing machine it is usually a fairly straightforward process along the lines of the following:

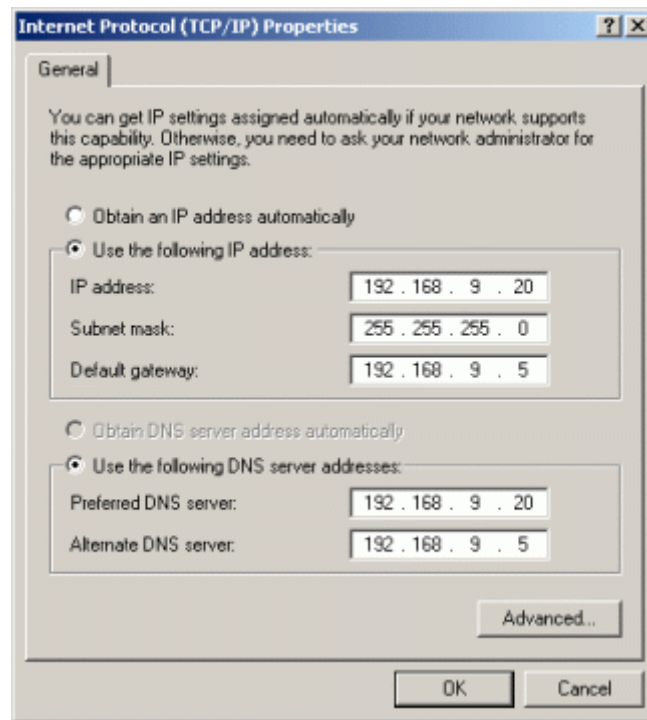
- switch off computer
- remove lid
- insert card in free slot
- replace lid
- attach network cable to card
- switch on
- if windows doesn't automatically load the correct driver, feed it the driver disk (some drivers may require you to have done this first – check with the supplied documentation)

### PC Card / PCMCIA or USB network interface installation

These should be even easier than an Internal card since you don't have to switch off or remove the lid! These do often seem to require that the driver software be installed before inserting the adapter. Hopefully you should just be able to follow the supplied instructions and it'll work. If not, see the troubleshooting section later!

## TCP/IP configuration

The first thing you'll need to know is whether or not you're using DHCP to assign addresses. If you are there should be very little you need to configure. Otherwise you'll need to know at least the numbers to use for the IP address, subnet mask, default gateway and DNS server. These are entered in to the TCP/IP properties for the appropriate network adapter.



The use of an alternate DNS server is not required, it will only be used if the Preferred server is unavailable.

The Advanced button takes you to another dialog where it is possible to configure additional IP addresses on to the same interface, alternate default gateways and other advanced options for DNS, WINS (another form a name lookup for Windows networks) and filtering.

## Troubleshooting

Referring back to section 3 you'll find or remember that TCP/IP networking can be thought of as being made up as a number of layers. Obviously each one needs to be working properly and it is worth being fairly methodical in your approach. The troubleshooting steps here only deal with the networking side. If your problem is with, say, browsing the Internet you'll also need to check the other relevant sections for more relevant steps there. Remember the layers though – start from one end and work to the other to begin with. Eventually you may find you develop a feel for where the problem is and be able to go straight there.

### **What are the symptoms?**

If you can't access anything, anywhere and other machines can, chances are it's a local machine issue. If nobody can access anything, chances are the problem is somewhere else but some of the techniques here will help you.

### **What does IPCONFIG say?**

Assuming you think the problem is with the local machine, check the **IPCONFIG** command. Does it give you the information in terms of IP address details that you'd expect? Make sure the computer has leased an IP address if you're using DHCP and that the correct IP address is bound to the correct adapter.

## Connecting Clients

```
C:\Documents and Settings\Administrator>ipconfig /all
```

```
Windows 2000 IP Configuration
```

```
Host Name . . . . . : lappyserv
Primary DNS Suffix . . . . . : pew.org.uk
Node Type . . . . . : Broadcast
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : pew.org.uk
                                   org.uk
```

```
Ethernet adapter Wired Network:
```

```
Connection-specific DNS Suffix . :
Description . . . . . : VIA Rhine II Fast Ethernet Adapter
Physical Address. . . . . : 00-A0-CC-CF-BE-F1
DHCP Enabled. . . . . : No
IP Address. . . . . : 192.168.9.20
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.9.5
DNS Servers . . . . . : 192.168.9.20
                          192.168.9.5
```

```
D:\Documents and Settings\Administrator>
```

A key clue to look for is `ipconfig` reporting that it is using an Autoconfiguration Address and showing an address starting 169.254 – unless you are using this range deliberately then it means that the computer has been unable to obtain an address from the DHCP server. Try `ipconfig /renew` which will have another go at obtaining an address. If that still doesn't work then you'll need to check the cabling from the computer to the rest of the network and then the DHCP server.

If `ipconfig` shows the correct information, can you **ping** another device (be it a computer or router) on the local network? If you have a router, can you ping an address the other side of it?

If you can ping hosts on the local network, including the local side of the default gateway then look back at the output from `ipconfig` and check that the subnet mask and default gateway are set correctly.

If the local network tests are passed, try using `tracert` to see where packets are actually being sent. This should confirm that the default gateway is being used and then show where your packets are disappearing in to a black hole. This will often be somewhere outside of your network and you may well be able to do little except wait for someone else to fix the problem!