Why you should use only TCP/IP as your Network Protocol (and how to set it up correctly and dump all the other protocols)

One of a series of eclectic notes on how to do things on the UNM / EPS network, by Jim Connolly
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**Important Note:** The EPS Network administrator is responsible for setting up TCP/IP as the primary network protocol on systems in Northrop Hall which are connected to the Ethernet network. *Over the next two years (culminating on December 31, 2001), UNM will be phasing out support for other network protocols on campus.* The protocols to be phased out include Novell's IPX/SPX, Microsoft's NetBEUI, and Apple's Appletalk.

All systems connected to the EPS network should have been initially setup with an IP address and configured by the Network administrator to access the Internet. In the past 6 months, I have been setting up only TCP/IP and removing other protocols on new systems. Systems which are older than that may be running protocols which should be removed to avoid any problems (and be a good traffic-minimizing network citizen).

As network administrator, I will be happy to evaluate any connected systems for proper setup. It will take no more than 10 minutes to do this. Users of the Department of Earth and Planetary Sciences Network should contact me, Jim Connolly in person or by Email to connolly@unm.edu to have your system checked.

**Why TCP/IP:** TCP/IP is the network transport protocol of choice on the UNM Campus. There is basically one reason for this: It is fast, efficient (very low "chatter" coefficient) and may be routed (chatter is limited to a restricted area of the network). The default protocol in Windows for Workgroups, older versions of Windows 95 and Windows NT older than version 4 is NetBEUI; it may not be routed and is very inefficient on a large network such as we have at UNM. Because it broadcasts information without directing it (and relies on all possible target machines to listen and respond), it creates lots of network "chatter" which can significantly degrade network performance.

With TCP/IP configured properly, any Windows computer (Win95/98, NT or Windows for Workgroups) computer can communicate with with any other properly configured system (and the Internet) *from virtually anywhere and without any other protocols installed.* The only exception to this is that the TCP/IP protocol for Windows for Workgroups does not support full connectivity over modem connections, but this old operating system is now so rare on home machines that it can be effectively ignored.

This document explains how to set up your PC so that you can be a good bandwidth-conservative network citizen *and* be able to connect to EPS Department computers from
Step-by-Step for Windows for Workgroups Users

Microsoft's Winsock TCP/IP for Windows for Workgroups must be installed on your system. Trumpet Winsock (in UNM's Mirada Program suite) will not work because it does not support WINS services. In the unlikely event you are setting up a WFWG system for the first time to connect to the network, you will need to contact Jim Connolly to obtain a copy of the diskettes which contain the Microsoft TCP/IP protocol for WFWG, because this protocol is not shipped as part of the operating system and must be installed separately.

Before proceeding, start Control Panel, the Network Icon, and make your Workgroup "E&PS". This is required for browsing to work at all. If you're already using TCP/IP, the following steps will activate you as a WINS client:

2. Click on the "radio" button named Drivers
3. The NetBEUI, IPX/SPX and TCP/IP protocols should be installed. Select TCP/IP-32 3.11, and click on Setup. In the box labeled Primary WINS Server enter: 129.24.171.172 (this is the IP address of EPS, the primary E&PS domain controller). In the box labeled Secondary WINS Server enter: 129.24.170.67 (this is the IP address of EPS001, the secondary domain controller). Click on OK.
4. From the Drivers Window, make sure TCP/IP is selected, and click the button to make it the default driver. Select Close, then OK in the main Window. Windows will want to restart; feel free to accept this suggestion.
5. When Windows successfully restarts and you have network access, start Network setup again and examine the protocols installed. Then delete the non-TCP/IP protocols from the list and restart your system.

When done, you should notice that browsing on the network is faster, but everything else should work exactly the same. Log into the E&PS Domain, and your computer will inform the server about how you may be found on the system using TCP/IP. You are now a better network citizen.

Step-by-Step Setup for Windows 95/98

If you were connected to the network using Windows for Workgroups and upgraded your installation to Win95/98, you should already be setup for basic networking; the setup program is very good at keeping your old WFWG setups. How to setup TCP/IP, Dialup Networking and PPP (Point-to-Point Protocol) is discussed in detail in another document (wintcp.htm), and should be followed by anyone without a direct Ethernet connection to the UNM network and EPS Local Area Network. Here is how you setup the WINS client services when you have an Ethernet connection, and are connecting from within
Northrop hall. For connections from other locations on campus, the gateway and subnet mask entries will be different.

1. From "My Computer" or the Start Menu-Settings, start Control Panel, and open the "Network" aplet.
2. Under the Configuration Tab, select TCP/IP protocol. (It should already be installed and configured if you upgraded from Windows for Workgroups or set it up when installed. If it is not installed, follow the instructions in WINTCP to install it from disk or CD ROM.) Click on the Properties button.
3. Click on the WINS Configuration tab and in the "Primary WINS Server" box enter: 129.24.170.67 (this is EPS001, the Primary domain controller for E&PS). In "Secondary WINS Server" enter: 129.24.171.172 (EPS, the Secondary domain controller). Scope ID should be left blank.
4. Click on the Advanced tab and check the box labeled "Set this Protocol to be the Default Protocol".
5. If TCP/IP is otherwise setup (i.e., Telnet, Eudora, etc. are working fine), then you will need to OK your way out and let the computer restart. If you want to check your settings, continue through the tabs and (if you are connecting from an Ethernet port in Northrop Hall) check for the following:
   - In the IP address tab, make sure your assigned IP address is set, your subnet mask is 255.255.248.0
   - In the Gateway tab, the installed gateway is 129.24.168.1.
   - In the DNS Configuration tab, your host name is your assigned node name (i.e., "epsdodo"), the Domain is: unm.edu, and the DNS Server IP addresses, in order, are 129.24.8.1, and 129.24.8.4.
6. If you have upgraded from WFWG and previously automatically logged on to the E&PS domain, this will be automatically setup. If you have not done this previously, you will need to select "Client for Microsoft Networks" in the control panel, select "Log on to NT Domain", enter E&PS as the domain name, and check the "Quick Logon" box. This assures that you will be prompted to logon every time you start Windows. To not logon just click on the Cancel box. Also note that you are not required to logon to access everything on the computer you are using, only to access resources on the network.
7. After restarting, you will be prompted for your Username and Password to log on to the E&PS domain. This lets the server know how to contact your computer using TCP/IP and puts it on the "browse" list. Once done, browsing should be faster because you're not actually browsing -- you're letting the server browse at intervals and just retrieving the browse tables from it.
8. When you are done and all works fine, go back into network setup (Network icon in Control Panel) and click on the "Protocols" Tab. Note what protocols are installed and delete all of them except TCP/IP. If you have the Microsoft DLC protocol installed to control a Hewlett-Packard network printer, it may be left in place but NetBEUI, IPX/SPX, and all others should be removed.

You may log off the network from a Windows 95 system in two ways. The simplest is to just shut down the system. If you wish to keep the system running, this is done from the
Start Menu, select Shut Down, then "Close all Programs and Log on as Different User". This will log you off from the E&PS domain, and pop up the logon dialog box for the next user. **On machines used by more than one user, it is important that you log off when leaving the system unattended since the next person who sits down at the computer will have full access to your files and data if you do not.**

**Note:** For setting up dial-up connections, you should not assign an IP, subnet mask and gateway in your protocol configuration settings. These are automatically assigned by your Internet dialup connection when you establish a connection. You will get best results by entering your DNS and WINS addresses in the dialup configuration as discussed in the companion document, wintcp.htm.

**A Modem Caveat:** Although dial up networking *theoretically* gives you full network functionality, it is not very smart to attempt to run a large program over the network. If you attempt to load, say, Excel on the network over a 14.4KB modem, you will wait about 45 minutes for it to transfer and run the file, and saving large files will be painfully slow. In general, it is best to transfer the files you want to work on, run the programs to work on them on your local machine, and transfer them back when you are done.