TALKING X

NETWORKS **How do you share files between two computers running different operating systems? It's easy with Mac OS X. Lindsay Bruce shows you how.**

➤ **APPLE IS TALKING** Mac OS X up as a server platform, and well it might, for OS X's potential abilities in this area are remarkable. And yet, for the most part, people still don't know how to perform the most basic of network functions in Mac OS X; how to share files with Classic Mac OS users. Actually, it's not that difficult, but it's certainly not as intuitive as the good old Chooser, limited though it was.

File-sharing troubles in OS X stem from the fact that the shipping version does not support AFP (Apple File Protocol) over AppleTalk, only via TCP/IP. This means that if your Mac is booted in OS X, you won't be able to see Classic shared folders on the network unless they are shared using TCP/IP. Essentially then, that means that the Classic Macs on your network have to be running Mac OS 9.0 or later, *AppleShare IP*, or other TCP/IP file sharing software (such as *ShareWay IP*, on which OS 9's TCP/IP networking is based).

Apple caught a lot of flak over this obvious networking flaw when OS X was released. Perhaps AppleTalk support wasn't regarded as high priority, as Apple has been moving away from it for the last three years. Regardless though, the oversight is to be corrected in Mac OS 10.1, due for release by the time you read this. In the meantime, we'll show you how to get OS 9 and OS X Macs talking.

CLASSIC FILE SHARING

File sharing on the Mac has been easy since the introduction of System 7 eight years ago (when PC users still didn't even have a Desktop to speak of). In Mac OS 9, Apple introduced file sharing over TCP/IP, a feature that was only offered in its server software *AppleShare IP*.

If you can, use TCP/IP networking in preference to AppleTalk as it's more than twice as fast. Note that under Classic Mac OS you can't run two TCP/IP interfaces simultaneously. If you are using a modem on one of your Macs to connect to the Internet, you will have to switch the TCP/IP settings from your internal network to the PPP settings used for the modem before you can connect. This gets tedious, so you might want to invest in a network router with a built-in modem, ISDN or ADSL connection.

Alternatively, you can use the excellent shareware *IPNetRouter* ($89 from Sustainable Softworks, **www.sustworks.com**) which lets you run two or more TCP/IP interfaces at once. It also serves as a DHCP and NAT server, so that all your networked computers can use a single Internet connection via one "gateway" Mac.

MAC OS X FILE SHARING

If Classic file sharing is so good, why has Apple changed it in Mac OS X? The answer, as always, lies deep within the folds of the new operating system. Apple inherited certain crucial features from the BSD UNIX sub-system on which OSX is based, including its security concepts for multiple users.

In principle, Mac OS X file sharing works just like it did in Classic, but for one thing; you cannot define user groups – at least, not within the user interface. You can do it manually logged in as the root user (System Administrator) and using the NetInfo Manager utility, but this is not recommended. None of us at MacFormat are yet so familiar with Mac OS X's UNIX core that we'd dare attempt this; you can do a lot of damage in UNIX as the root user unless you know exactly what you are doing. Unless you're a network guru familiar with NetInfo domains, we strongly advise you to leave well enough alone.

Interestingly, all the technology hooks for defining user groups are already in Mac OS X. But you won't be unlocking them unless you buy Apple's Mac OS X Server application, which incidentally, is the easiest server admin suite you'll ever use. It includes software for running email, web and ftp servers, network management tools and lots of other goodies. Mac OS X Server costs £350, for more details contact Apple on 0800 783 4846 or visit the website at **www.apple.com/macosx/**

Mac OS X also supports multiple TCP/IP interfaces so you can connect to lots of

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➤ **STEP ONE:** Connecting from OS 9
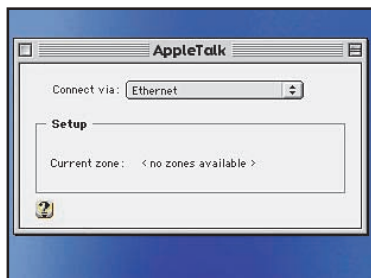
1 First, open the AppleTalk Control Panel and make sure it is set to Connect via Ethernet. If you don't have Ethernet on your Mac then we suggest you buy an Ethernet card. Sharing on older Macs with serial ports is possible, but diabolically slow.
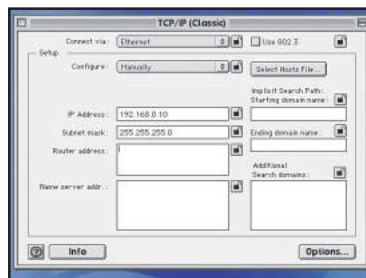
2 If you want top-speed networking, then give each of your Macs a TCP/IP address in the TCP/IP Control Panel. Make sure it is also set to Connect via Ethernet. If you connect to the Internet via modem, make sure you save these settings so you can switch back to them later.
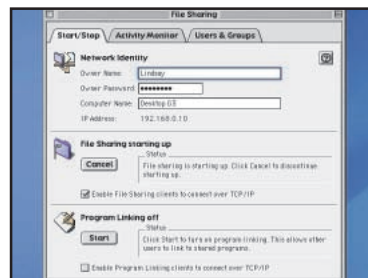
3 Open the File Sharing Control Panel and click the Start button to turn file sharing on. If you are running Mac OS 9 or later and have given your Macs network TCP/IP addresses, make sure to check the "Enable File Sharing clients to connect over TCP/IP" checkbox.

TIPS

PC FILE NAMES
If you share files with PC users (via disk or over a network) remember that Windows uses a three-character file name extension to identify documents. For example, Microsoft Word files end in ".doc", Excel files in ".xls", text-only files in ".txt", JPEG images in ".jpg", TIFF files in ".tif" and Acrobat files in ".pdf". If you do not add these extensions to your Mac files, PC users will not be able to open them.

TIN CANS AND STRING
Sharing files is only as fast as your network. To get any decent speed, your Ethernet network should be 100BaseT or better. Macs preceding the blue-and-white G3 use 10BaseT, one-tenth the speed and about as useful as old tin cans and pieces of string. Invest in 100BaseT Ethernet cards for older Macs, and buy a 100BaseT Ethernet Switch, not a hub. Ethernet switches are more intelligent and faster than hubs.

CONSIDER A FILE SERVER
If you move big files around your network, invest in a dedicated file server. This will store and back up files, and makes your workflow more efficient. Apple's Mac OS X Servers start at £2,467, but you can buy Mac OS X Server separately (£399 for 10-client, £799 unlimited clients) and install it on any Mac. Processor speed is less critical than lots of RAM, fast hard drives (Ultra 2 SCSI or better) and a fast network card (Gigabit Ethernet for preference).

PC USERS CAN CONNECT TO YOUR MAC JUST AS EASILY AS THEY WOULD TO ANOTHER PC OR SERVER

different networks (including the Internet) at the same time. This means you can set up your Mac as a server operating on several network subnets. For example, you may have separate networks for different departments in your office (Sales, Accounts, Manufacturing, Goods in, and so on). Using multiple Ethernet cards and TCP/IP interfaces, you can make your Mac appear on all of them.

FILE TRANSFER
Note that this doesn't mean you can join networks through your Mac so that users can "see" one another (you need a router or bridge for that) but you can use the Mac's shared folders to transfer files from one group to another. This "blind" file sharing is more useful than you may think as it ensures a level of security between departments. You wouldn't, after all, want your delivery people to be able to read through this year's budget forecast.

Although you can't define groups in the regular Mac OS X, that's not to say it doesn't use them. When you create a new user in the Users panel of the System Preferences application, OS X automatically creates an array of folders in the Users directory to store that person's files and settings – including a Public folder that can be accessed over the network when file sharing is switched on. The Public folder only contains a "drop box" (a folder with write privileges only) so don't worry about people browsing your personal files because they won't be able to see them.

SHARE AND SHARE ALIKE
If you choose Get Info from the File menu on this drop box and select Sharing from the pop-up menu, you'll notice that Mac OS X has a predefined group called "staff". Now try looking at the sharing privileges for folders on different levels of the hard disk, including the Desktop. You'll find two other predefined groups; "admin" and "wheel". The admin and wheel groups include any user to whom you've given administration rights on this Mac OS X machine. Members of this group who log on over the network are automatically given access to the entire hard disk (including system files) and any other mounted volumes.

The staff group is reserved for the root user (System Administrator), which, if you're running your own Mac, will also be you. Users defined on the Mac who do not have administrator privileges will be allowed access to their own folders, and to the Public drop

Mac OS X filenames

Files are eminently portable between Classic and Mac OS X. Two things to note though; Mac OS X uses long files names (256 characters), so when viewed in Classic they will be truncated to 31 characters. And secondly, Mac OS X allows different characters to be used in file names. The most obvious example of this is the colon (":") which you'll recall can't be used in Classic.

A note of caution for users with older utility programs such as Norton Utilities: Mac OS X uses a period (".") at the beginning of many of its system files. In Classic Mac OS, this is frowned upon as usually only disk drivers use this (although there's nothing to stop you from using it). There was a time when naming a file ".sony" could trash your hard drive as this was the name of the driver used for the Mac's floppy disk drive! Anyway, older disk repair utilities may note the presence of Mac OS X's files beginning with a period and ask you if you want to "fix" them. Don't! "Fixing" these files will result in you not being able to boot into Mac OS X.

boxes of other users only. Guests, if you enable them, will have access to users' drop boxes and any folders you enable guest access on.

BET YOU DIDN'T KNOW…
Not being able to define user groups might seem an obvious flaw, but you might not actually need them. Because Mac OS X enables each user to log on from multiple machines simultaneously, you can simply create a user to act as a group. For example, create a user called "Sales Dept" and then give each person in that department the user name and
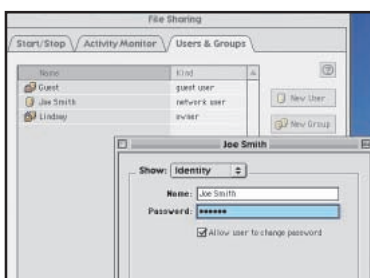
4 Click the Users and Groups tab in the File Sharing Control Panel. Here you can create a list of registered users allowed to connect to your Mac, sort them into groups and define access privileges for each. There's a shortcut though – simply double-click on the Guest icon, select Sharing from the popup menu, and check the "Allow guests to connect to this computer" option.
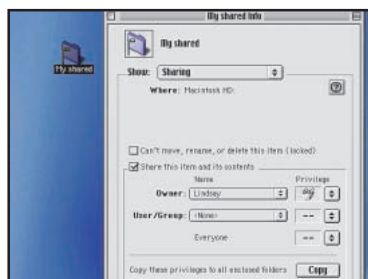
5 Create or select a folder you want to share. Select Get Info from the File menu in the Finder, and select Sharing from the popup menu. Here you define access privileges for this folder; who owns it (you by default), for a specific user or group you've already created, and for guest access. Each has four options for access; none, read only, write only, and read and write.
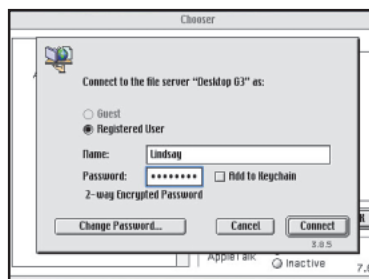
6 On another Mac connected to your network, open the Chooser and click on the AppleShare icon in the left-hand window pane. Macs on the network with File Sharing activated will appear in the right-hand window. Double-click one to log onto it and select the shared folder you wish to access.

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TALKING X MASTERCLASS

TIPS

SHARE FILES OVER THE INTERNET
In the Chooser under Mac OS 8.5 or later, you can specify a server's TCP/IP address you want to connect to. If your Internet connection is open, you can connect to any server on the Internet that supports AFP (Apple File Protocol) over TCP/IP. Likewise, with Mac OS 9, you can set your Mac up as a server on the Internet – all you need is a static (not dynamically allocated) TCP/IP address from your ISP.

SHARING BETWEEN OFFICES
If you want secure file sharing between two sites (even two continents), you want to invest in a VPN Firewall. VPN (Virtual Private Networking) creates an encrypted data tunnel between two firewalls across the Internet, ensuring that your data cannot be read by outsiders. You will be able to connect to the remote network as if it were in the same building – you can even print over it.

REMOTE ACCESS
You can set up your Mac so that you (or others) can dial-in via modem and copy files from your hard disk. To enable this, open the Remote Access Control Panel and select Answering from the Remote Access menu. You can enable access just to your Mac, or to the entire network. Remember to set up the Users and Groups Control Panel with registered users, otherwise anybody can connect to your Mac! More on this in a future issue of MacFormat.

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associated password to log onto the server, and bingo, you've defined group access!

Windows users need not be left out, either. By turning on FTP Access in the Sharing panel of System Preferences, PC users can access shared folders using an FTP client. As *Internet Explorer* supports FTP and is welded into the Desktop of Windows 98 and 2000, PC users can connect to your Mac just as easily as they would another PC or server. Of course, you aren't limited to PCs; any computer capable of supporting FTP can connect; including Linux, BeOS, UNIX, and possibly even some PDAs.

And so far we've only used basic TCP/IP and file-sharing preferences, we haven't even touched NetInfo domains yet – but we'll leave that for another time. Now that you've seen a small sample of Mac OS X's network power and can move your files around willy-nilly, isn't it about time you started using it? **MF**
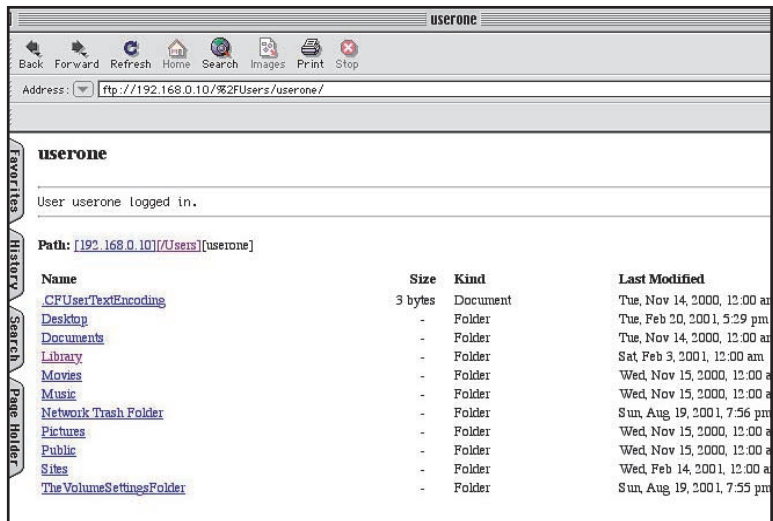
FTP may not be a pretty interface, but it does enable file sharing with almost any platform.
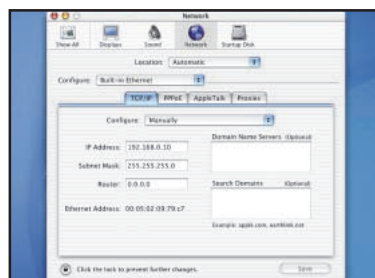

→ STEP TWO: Connecting from OS X

1 To enable File Sharing under Mac OS X, the first thing to do is open the Network panel in System Preferences and give yourself an IP address on the Ethernet port either manually or automatically via DHCP. This will speed up file copying considerably. If you don't have a router, leave this field blank.
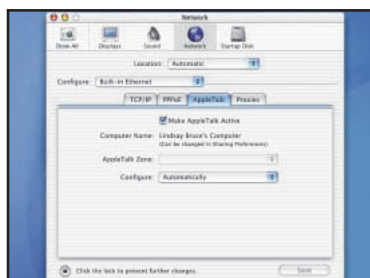

2 Now click on the AppleTalk tab and switch AppleTalk on. If you are connected to a large network, you may have to choose a zone for your Mac to appear in. AppleTalk is the protocol used by Classic Mac OS to connect to other Macs and network devices, and it makes it easier for your Classic machines to connect to OS X if it is switched on.
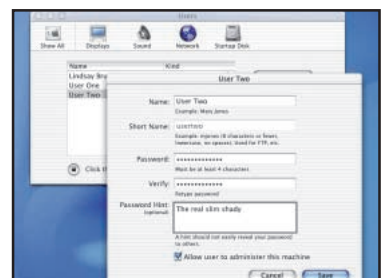

3 Now open the Sharing panel and switch File Sharing on. Note your Mac's IP address is displayed in the bottom of the panel. This is the address that will be used for TCP/IP file sharing, and FTP or remote access if you enable these.
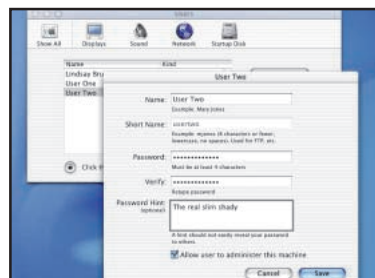
4 With the tricky part over, all you have to do now is define some users. For registered users, you'll need to add their names to the list in the User panel in System Preferences. This will create a full set of user folders and settings for them, giving them access to your Mac.
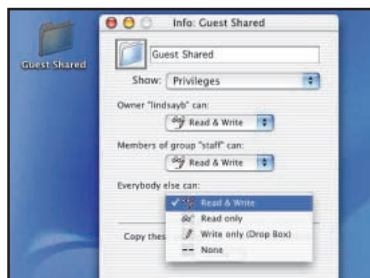
5 If you don't want to create users on your Mac, simply create a folder anywhere on your hard disk and enable Guest access to it, using the Sharing tab in the Get Info box.
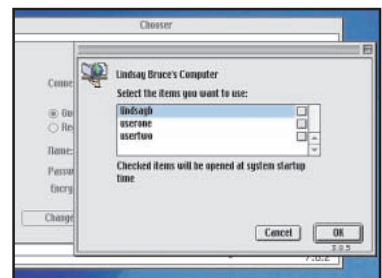
6 Now from another Mac running Classic Mac OS, you can log onto your OS X Mac and access individual users' drop boxes, or if registered on the Mac, you can access your own folders. Registered administrators can view the entire contents of any mounted volume, including the startup disk.