FacetWin®

Windows® to UNIX® Connectivity

"The Windows Way"

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READ THIS FIRST!

You Must Register Your Software or it will stop running after 30 days.

All of the FacetWin software we ship is "evaluation" software in the sense that it will stop running after 30 days unless it is provided with an authorization key. This allows us to let all of our customers try the fully functional product before they buy it.

Here's how the process works:

- After you have evaluated FacetWin and decide to buy a license, you will be given a “FacetWin License” form.
- You should follow the instructions on the form for filling it out and faxing it to us.
- In response to your fax, we will fax back your registration key to you.
- The return fax will include instructions for entering the registration key on your system. You should then file your FacetWin license in a safe place.

We will track your license by the ***"LICENSE NUMBER"*** at the bottom of the license form. ***Write this license number in the space provided below*** so that you will always be able to easily refer to it. If you buy a license for additional users, you will receive an additional license form with it's own number. Record the numbers of any add-on licences in the space below also.

License Number	Users

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FacetWin Overview

FacetWin Features

FacetWin brings your UNIX system into your Windows network environment by providing server software that makes the resources of the UNIX server available to the Windows PCs on the network. The product is designed for the Windows 95/98 and Windows NT 4.0 environments, but some of the services can also be used by older versions of Windows.

FacetWin provides:

- File and Print Services.

  The file and printer shares that you define on the UNIX system appear in the PC's Network Neighborhood just like any other Windows network resource share.

  Each user's home directory on the UNIX system is automatically defined as his own file share.

  File shares support file and record locking, long file names, and Windows drag and drop interface.

  UNIX printer shares allow the UNIX printers to be used from Windows. A UNIX printer can be setup as the default printer for a Windows PC.

  A printer attached to a PC can be made available to UNIX applications as part of the UNIX printer spooler system.

  Access to file and printer shares can be limited to certain users or PCs.

  No additional software is installed on the PC for file and print services.

  File and printer sharing is supported for all versions of Windows.

- Terminal Emulation.

  Your character-based UNIX applications are turned into icons on the Windows desktop and menu. Double-click the icon and your application is run in a terminal emulation window. The setup required to configure a UNIX application to be invoked by this QuickLaunch™ method takes less than 1 minute.

  Emulation families include VT, Wyse, SCO ANSI, and IBM.

  The terminal emulator has a native Windows interface including property sheet configuration.

  Terminal emulator features include keyboard mapping, function key programming, and copy & paste. The Window Watch™ feature provides automatic monitoring of terminal activity to provide notification when user-defined events have occurred. The MouseKeys™ feature allows the user to input keystrokes using the mouse.

  The terminal emulator is only supported on Windows 95/98 and Windows NT 4.0.

- Modem Server.

  You can install the FacetWin virtual serial port driver on a PC to allow Windows applications to access the modems on the UNIX server. For example, you can configure Windows Dial-up Networking to use the UNIX modems in order to give PC users access to the Internet. You may also use the modem server with many other Windows applications that use a modem. Fax appications are not currently supported. This driver is currently only available for Windows 95/98.

- PC Backup/Restore.

  FacetWin allows one or more PCs to be backed up on the UNIX tape drive or to a disk archive on the UNIX server. This backup/restore facility requires the FacetWin Agent program to be running on the PC being backed up or restored (see below).The FacetWin Agent is supported on Windows 95/98 and Windows NT. It is not supported on Windows Terminal Server.

- E-Mail Server.

  FacetWin includes a POP3 mail server which can transfer e-mail from the UNIX/Internet mail system to a Windows mail program such as Microsoft Outlook. The FacetWin e-mail server may be used with any mail client program that uses the POP3 protocol.

- Remote Computing.

  FacetWin supports PCs that dial into the UNIX server using Windows dial-up networking. All FacetWin features are provided to dialed-up PCs. In fact, the entire network, including the other PCs, is made available to the remote PC.

- Windows Administration Tool.

  You may administer FacetWin either by directly editing the configuration files on the UNIX server, or by using the FacetWin Administrator program. The FacetWin Administrator is a Windows based program that organizes all of the administration details in an easy to use Windows property sheet. The FacetWin Administrator program is only supported on Windows 95/98 and Windows NT.

- FacetWin Agent.

  The FacetWin Agent is a program that runs on your PC and cooperates with the backup server on the UNIX host to allow the PC to be backed up. The Agent also provides a way for enhanced error messages to be reported to the user from the file and print server. Finally, the Agent's user interface, the "FacetWin Agent Control Panel", allows the user to configure his FacetWin virtual serial port(s) for use with the modem server, configure his own backups, and configure other minor features of FacetWin. The Agent is supported on Windows 95/98 and Windows NT.

What's New in Version 3

- Modem Server.

  The new modem server feature provides a virtual serial port driver for Windows 95/98 PCs that allows a modem on the UNIX host to appear as a directly connected modem. Most Windows applications that use a modem will be able to use a modem from a modem pool on the UNIX server. For example, you can configure a Windows Dial-up Networking connection that uses a modem on the UNIX server.

  The previous modem server feature that used the FacetWin terminal emulator to access the modem pool on the server has been obsoleted. However, if you have been using this older feature, it will continue to work with FacetWin Version 3.

- PC Backup.

  The new PC backup feature provides many enhancements over the older PC backup. Administrators may backup multiple PCs to disk or tape archives. Tape archives may span multiple tape volumes. Users may be enabled to backup their own PCs. Backups may be full or incremental, compressed or not, and may include large files over 2GB. A graphical interface to backup configurations is included in the FacetWin Administrator program and in the FacetWin Agent Control Panel (described below). Backups can be run from the command line or from the graphical interface.

  The previous PC backup feature that used the fct_client program has been obsoleted. The fct_client program should now only be used as a file transfer program for performing CIFS file copies from a UNIX command line.

- FacetWin Agent.

  The FacetWin agent is new in Version 3. The FacetWin Agent is a program that runs on the PC in the Windows System Tray. The Agent must be running on the PC in order for the PC to be backed up. The agent also provides a "Control Panel" user interface that allows users to manage their modem server and PC backup configurations. The Agent also allows the FacetWin file and print servers to send coherent error messages to the user.

FacetWin Documentation

The FacetWin help file is the primary documentation for the FacetWin product. The help file may be accessed before installing the product by putting the FacetWin CD in the drive on a Windows 95/98 or NT 4.0 PC, and clicking on the "FacetWin Help" button on the screen that is presented. After FacetWin is installed on a PC, the help file is available through the Start menu in the FacetWin program group. It is also available by selecting Help on the menu of the FacetWin terminal emulator.

The property sheets in the terminal emulator and the Administrator programs support the "What's this?" help feature of Windows. Information about any item on a property sheet may be obtained by clicking on the "?" icon on the title bar, and then moving the help cursor pointer over the item in question and clicking again. A pop-up help window will be presented with information about the item.

There are "man pages" installed with FacetWin on the UNIX server. These man pages describe each of the programs and configuration files installed on the server. To read the overview man page and see a list of the other pages, use the command:

```
man  facetwin
```

The printed manual contains the same information as the help file, and is available with the purchase of a FacetWin license. Additional printed manuals may be purchased separately. The on-line help may be more up-to-date than the printed manual since the on-line documentation can be updated with each version of software with which it is included.

The printed manual is also supplied in Adobe Portable Document Format (PDF) on the FacetWin CD. To access this file, double-click on the My Computer icon on your desktop, then right-click on the icon for your CD-ROM drive. Choose Explore from the menu that is presented. With the Windows Explorer, go into the FacetWin folder, and then into the Manual folder. The FacetWin manual is in the file Fwmanual.pdf. If you have the Acrobat Reader installed on your PC, you can double-click the Fwmanual.pdf file to open it in Acrobat Reader. If you want to print a copy of the manual, you can do it from Acrobat Reader. Note the number of pages in the manual - you may not want to print the entire manual at once. If you do not have Acrobat Reader installed, there are instructions for installing Acrobat Reader in the Readme.txt file in the Acrobat folder on the CD.

Installing FacetWin

FacetWin Requirements

In order to use the complete FacetWin product, your PCs must be running either Windows 95/98 or Windows NT4.0 (although the virtual serial port driver required for the modem server functionality is not currently available for NT). The file, print, and e-mail, features of FacetWin are available to PCs running older versions of Windows if they have the Microsoft TCP/IP software installed and configured. The TCP/IP software is included in Windows NT 3.51, but for Windows for Workgroups 3.11, you must download the TCP/IP from Microsoft's web site.

The "plist.txt" file in the top level directory of the CD-ROM will tell which UNIX versions are supported by the FacetWin software on the CD.

FacetWin is installed on each UNIX server that you want included in your Windows network. FacetWin will use 6-8 megabytes of disk space on the UNIX server depending on the platform.

Additionally, software is installed on each Windows 95/98 and Windows NT 4.0 PC on which you wish to have the terminal emulation, modem server (Windows 95/98 only), backup, or FacetWin Administrator functionality. There is no PC installation for older versions of Windows. The FacetWin PC installation uses about 5 megabytes of disk space on the PC.

You will complete the UNIX installation first. Then you will install the PC part across the network from a UNIX server which has the FacetWin software installed. You may also install the PC software from the FacetWin CD-ROM.

FacetWin requires the UNIX server(s) to have TCP/IP operational. In addition, in order to use the FacetWin remote (dial-up) functionality, you must have PPP operational. These services are part of your operating system and should be supported by your operating system vendor.

FacetWin is licensed by the number of concurrent PCs that are using FacetWin services. If you have 25 PCs on your network using FacetWin services, then it does not matter how many UNIX servers are providing the services, you only need a 25 user license. Therefore, you will probably eventually want to install FacetWin on all the UNIX servers on your network.

However, the general installation plan is to install on one UNIX server first, then on a PC, and ensure that the software is operating properly. Once this first server and PC are using the FacetWin services properly, you can proceed to install on the other servers and PCs. Before you buy a FacetWin license, the software will run up to 50 concurrent users for a period of 30 days. We encourage you to deploy it to as many servers and PCs as you like in order to evaluate its effectiveness in your computing environment.

Preparing the UNIX Server

Before installing FacetWin on a UNIX server, you should ensure that it is running TCP/IP properly. If you need help getting this accomplished, refer to the operating system documentation, or contact your operating system vendor's support department.

If you plan to use the FacetWin remote computing features, it will be necessary to have PPP services installed and working properly on the UNIX server. However, FacetWin can be installed and used on the network without having PPP operational. The PPP configuration can be done at a later time, before beginning use of the remote computing features.

Preparing UNIX Installation Notes

The following will guide you through decisions that you must make before installing FacetWin on the UNIX server. You will be instructed to create a set of notes that will be used while running the installation procedure.

Determining the Installation Directory for FacetWin.

The default installation directory on the UNIX server is /usr/facetwin. You may specify a different location during the installation procedure if you want to relocate it to a different partition with more disk space. The FacetWin installation only uses about 6-8 megabytes of disk space. As you add configuration information, additional space is used, although this is usually small. However, the default location for PC backup disk archives created from the Administrator program is in a subdirectory beneath the installation directory. You may give a disk archive a full path name and locate it anywhere you like, but if you think you might use the default location for large disk archives, then you may need to relocate the installation directory to a larger disk partition. *If you want to relocate the installation directory, write down the name of the alternate installation directory that you want to use.*

Determining the FacetWin File and Print Services Security Mode.

You must choose a security method before using FacetWin File and Print Services. Recent changes in Windows 95/98 and Windows NT have made this choice more complicated. In fact, choosing a security method is probably the most difficult part of configuring FacetWin. Still, it is not hard to do once you read and understand this section. We will walk you through the decision step-by-step and explain the implications of each of the four security methods.

The first security method is NT SERVER. This is available to you if you have a Windows NT machine on your network that knows the Windows user names and passwords of all of your users. This will usually be your Primary Domain Controller. If you have such a server, then NT SERVER is the recommended security method. Users who connect to shares on the UNIX machine through FacetWin File and Print Services will be authenticated by checking with the NT server that you specify. This method does not expose plain-text passwords on the network, and will work with all Windows clients without the need for any further configuration changes.

If you do not have an NT server that has the list of user names and passwords, or if you do not want to trust an NT server to authenticate users who connect to your UNIX machine, you will have to choose one of the other three methods. One of the remaining methods (UNIX) will require you to make a registry change on most Windows client workstations to allow plain-text passwords to be exchanged.

The LANMAN security method checks the password that the user entered against an encrypted password that is stored in a file called "fctpasswd" on the UNIX machine. If you choose this method, you will have to enter every user's PC password into this file using the "fct_encrypt" command, and you will have to update it every time the user's Windows password changes. This method does not expose plain-text passwords on the network, and will work with all Windows clients without the need for registry changes.

The RHOST security method is not used very often, because it requires fixed IP addresses and a clear understanding of the "$HOME/.rhosts" and "/etc/hosts.equiv" files. It checks the DNS name or IP address of the workstation against these files to decide whether or not to allow access. This method does not expose plain-text passwords on the network, and will work with all Windows clients without the need for registry changes. This method is not recommended unless you have a good understanding of how to use the rhosts and hosts.equiv files on your server.

Finally, the UNIX security method is the easiest in some respects, and the hardest in others. It allows your users to use their UNIX user names and passwords to log in. Passwords that are changed using the standard UNIX utilities will be changed for FacetWin access. However, the UNIX security method requires plain-text passwords to be exchanged over the network. This is because Microsoft's password encryption methods are incompatible with the UNIX password file. To compound this problem, some Windows 95 machines and most Windows NT and Windows 98 machines will not work with servers that require plain-text passwords. A registry entry on these workstations must be changed to allow them to connect to a UNIX machine that is using the UNIX security method. Changing the registry is quick and easy, but it must be done to every PC on the network. The real problem with the UNIX security method is the lack of a good error message on workstations that need the registry change. Instead of a message like: "Cannot connect to a server that requires plain-text passwords", Windows 9x gives a message like "Password required for <SERVER>/IPC$". Any password you enter will get the message "Password Incorrect, try again". Once you recognize this Windows behavior, you will know that this workstation needs its registry changed.

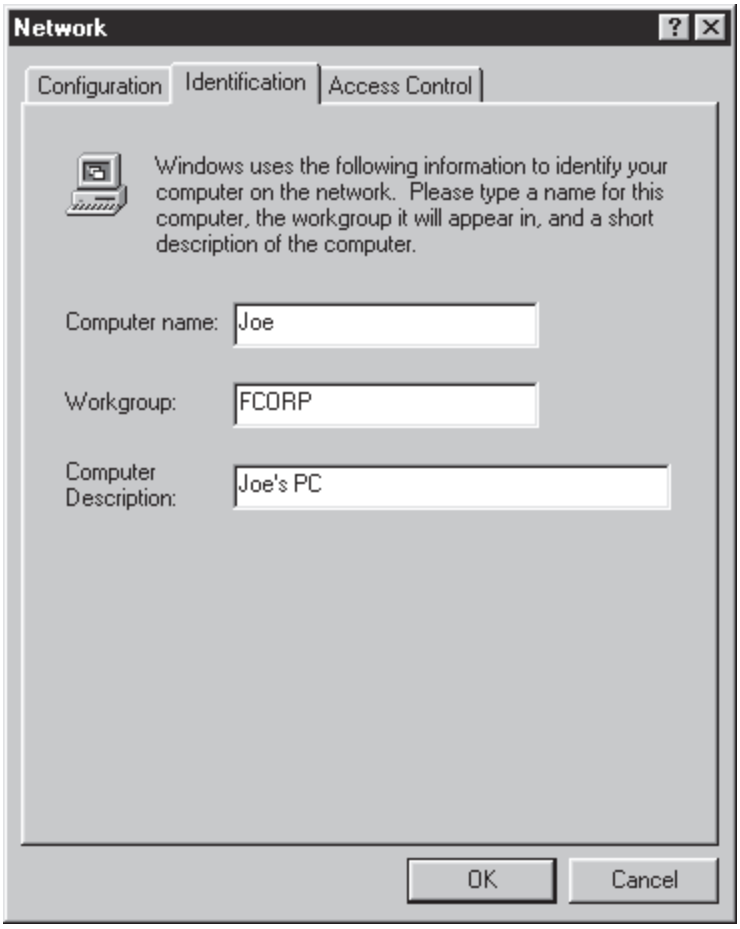
After evaluating these security options and the consequences of each, choose the security method that you want to use: NT SERVER, UNIX, LANMAN, or RHOST. *Write down the method that you choose. Also, if you have chosen the NT SERVER security method, write down the name of the NT server that will be used to authenticate users.*

Determining the Workgroup or Domain to Which the UNIX Server Will Belong.

During the installation procedure, you will also be asked to supply the name of the Workgroup or Domain to which the UNIX server will belong. The Workgroup is a Microsoft networking concept for grouping computers together in the Network Neighborhood. The Domain is a security concept for authenticating users. However, once you join an NT domain, you no longer belong to a Workgroup, and your PC will be grouped with other PCs in the same domain in the Network Neighborhood. If you already have PCs configured together on the network and you want the UNIX server to appear in the Network Neighborhood with these PCs, you must determine what name they are already using for the Workgroup or Domain. If you have multiple Workgroups/Domains on your network, at least 1 PC must be in the same Workgroup/ Domain as the UNIX server.

On a PC that is in the workgroup or domain that the UNIX server will join, right-click on the Network Neighborhood icon:

Choose the Properties item on the menu, and the network property sheet will be presented. Select the Identification tab (this example is from Windows95/98, but the NT Identification tab will have similar information):



Write down the name of the Workgroup or Domain to which the UNIX server will belong.

At the UNIX server, perform the following steps in order to install FacetWin on the server.

1. Login as root.

2. **If you are installing from CD-ROM:**

   The FacetWin CD is in "RockRidge" format. Mount the CD on your UNIX machine, and change to the appropriate directory on the CD using the examples below.

   Note: in the examples, the name of the directory on which the CD is mounted may or may not already exist on your system. If your normal directory for mounting a CD is different, you may substitute it in the commands below. If you do not already have a directory on which the CD may be mounted, you will need to create the directory first.

   On SCO Open Server 5:

   ```
   mount -r /dev/cd0 /cd
   cd /cd/facetwin/sco5
   ```

   On SCO UNIX:

   ```
   mount -r -f HS,lower /dev/cd0 /cd
   cd /cd/facetwin/sco
   ```

   On UnixWare:

   ```
   mount -F cdfs -r -o rrip /dev/cdrom/devname /cd
   (where devname is the name of the CD drive on your system)
   cd /cd/facetwin/intel
   ```

   On AIX:

   ```
   mount -rv cdrfs /dev/cd0 /cd
   cd /cd/facetwin/ibm              (for AIX 3.2.5), or
   cd /cd/facetwin/ibm4             (for AIX 4.x)
   ```

   On Sequent:

   ```
   mount -f cdfs -r /dev/dsk/cd0 /cdrom
   cd /cdrom/facetwin/sequent       (for PTX 4.4.x), or
   cd /cdrom/facetwin/ptx41         (for PTX 4.1.x and 4.2.x)
   ```

On SunOS 4.1 (Solaris 1.1):

```
mount -rt hsfs /dev/sr0 /cdrom
cd /cdrom/facetwin/sun4
```

On SunOS 5 (Solaris 2.x):

The CD will be automatically mounted when you put it in the drive. It will be mounted as "/cdrom/facetwin". If you have mounted another version of the FacetWin CD since the last reboot, it may be mounted on a directory with a name such as "/cdrom/facetwin#1". Change directory to the Sun 5 installation directory on the CD:

```
cd /cdrom/facetwin/facetwin/sun5
```

On Solaris x86:

Note: These instructions are for Solaris x86 version 2.5. User's of Solaris x86 version 2.4 should use the generic Intel version of FacetWin. See the instructions for UnixWare above.

The CD will be automatically mounted when you put it in the drive. It will be mounted as "/cdrom/facetwin". If you have mounted another version of the FacetWin CD since the last reboot, it may be mounted on a directory with a name such as "/cdrom/facetwin#1". Change directory to the Sun x86 installation directory on the CD:

```
cd /cdrom/facetwin/facetwin/sunx86
```

On HP/UX:

```
mount -F cdfs /dev/c0t2d0 /cdrom
cd /cdrom/FACETWIN/HP10          (for HP-UX 10.x), or
cd /cdrom/FACETWIN/HP9           (for HP-UX 9.x)
```

On DG/UX Intel-based:

```
mount /cdrom
cd /cdrom/facetwin/dg-intel
```

On DG/UX RISC-based:

```
mount /cdrom
cd /cdrom/facetwin/dg-risc
```

On Digital UNIX V4.0:

```
mount -r -t cdfs -o rrip /dev/rz4c /cdrom
cd /cdrom/facetwin/dec
```

On SGI Irix:

The CD will be automatically mounted when you put it in the drive. You can run the mount command with no parameters to see a list of the mounted disks and get the name of the mount point for the CD. This will probably be /CDROM. Change directory to the appropriate SGI installation directory on the CDROM:

```
cd /CDROM/facetwin/sgi5          (for IRIX 5.x), or
cd /CDROM/facetwin/sgi6          (for IRIX 6.x)
```

On any other supported platform:

In general, for platforms not listed above, you should mount the CDROM as a RockRidge format and then change directory to the facetwin/platform directory on the CDROM, where platform should be the recognizable name of your operating system. There is a README file in each platform directory which identifies the version(s) of the operating system on which the FacetWin software has been tested.

Go to step 3.

If you are installing from diskettes:

Change to a temporary directory, where the contents of the diskettes will be unloaded. For example:

```
cd /tmp
```

Read the contents of the diskettes into this directory:

```
cpio -icmuv < /dev/rfd0
```

"/dev/rfd0" may or may not be the name of the character device for the diskette drive on your system. If it is different, supply the proper name. *Be sure to run this command for each diskette in the installation set.*

Go to step 3.

If you are installing from tape:

Change to a temporary directory, where the contents of the tape will be unloaded. For example:

```
cd /tmp
```

Read the contents of the tape into this directory:

```
dd if=/dev/tape ibs=256k | cpio -icmuv
```

where /dev/tape may or may not be the name of the tape drive on your system. If it is different, supply the proper name.

Go to step 3.

If you are installing from a download from the FacetCorp web site:

Copy the "facetwin.z" file and the "install.sh" script to a temporary directory, and then change to that direcory:

```
cp facetwin.z /tmp
cp install.sh /tmp
cd /tmp
```

3. Run the installation procedure with the command:

```
sh install.sh
```

(on the HP, the name of the installation script if installing from CDROM will be in upper case).

4. The installation procedure will begin. You will be prompted:

> Have you prepared the UNIX installation notes as instructed in the installation instructions? (Y/N):

You should have the notes that you created in the previous section. If you do not, answer N and the installation procedure will exit.

Next the procedure will prompt:

> Specify the installation directory (Press <Enter> for /usr/facetwin):

Press <Enter> to accept the default, or choose an alternate FacetWin installation directory.

The next prompt will be:

> Which security method do you want to use for file and print services?
> Enter 1 for NT SERVER
> 2 for UNIX
> 3 for LANMAN
> 4 for RHOST

Select the method that you have chosen.

If you select NT SERVER mode, the next prompt will be:

> Enter the name of the NT server that will be used to authenticate PC users:

The next prompt will be:

> Enter the name of the workgroup or domain this machine belongs to:

Enter the workgroup or domain name that you wrote down on your installation notes.

If your system already has another SMB server installed, you will be given the choice of disabling the existing SMB server or canceling the FacetWin installation. Multiple SMB servers cannot be used on a system at the same time. If you choose to disable the current SMB server, the FacetWin un-installation procedure will restore its configuration if you remove FacetWin.

If your system already has another POP3 server installed, you will be asked if you want to replace it with the FacetWin POP3 server.

The installation procedure will continue with no further interaction.

5. If you installed from CD, be sure to change directory to the root and unmount the CD (except on the SGI machine - see below). For example:

```
cd /
umount /tmp/cd
```

Check the mount command that you used for your platform in step 2 for the directory on which the CD is mounted.

In the case of the SGI platform where the CD is mounted automatically, you should not use the umount command. Instead you should open the Disk manager window, choose the CDROM drive, and click on the Eject button.

After the installation procedure is finished, the FacetWin server software should be completely installed. The installation procedure will log all of its output to a file named log.txt which is in the FacetWin installation directory (/usr/facetwin by default). It is a good idea to inspect this file to be sure that there were no error messages that you missed on the screen output. Note that if you install FacetWin multiple times on the same server (as when updating your FacetWin software), that the output from each installation will be appended to this file. Therefore, this file will contain the output from every FacetWin installation that has occurred on this server.

If you have NIS or NIS+ running on your network, its configuration must be checked before proceeding. Otherwise, you can proceed with the configuration of the PCs that will be accessing the FacetWin servers.

If Your Network Uses NIS or NIS+ (Yellow Pages)

If you have NIS or NIS+ running on your network, you must perform the following steps to ensure that TCP/IP ports 110 and 139 are properly defined in the NIS services database.

1. Begin by printing the services file on the server where FacetWin was installed. On most systems, this file is /etc/services.

2. Next, if you do not already know, you must determine which machine is the master NIS or NIS+ server.

   For NIS, execute the command

   ```
   ypwhich -m services
   ```

   on the system where FacetWin was installed.

For NIS+, you must find the master NIS+ server by finding the server that has a directory called

/var/nis/*servername*

where *servername* is the name returned by the command

uname -n

on that system.

3. Go to the machine which is the master NIS or NIS+ server and list the port assignments.

   For NIS, execute the command

   ypcat services

   to list the ports defined in the NIS services database.

   For NIS+, run the command

   niscat services.org_dir

   to list the ports defined in the NIS+ services database.

4. Now that you have a list of the NIS or NIS+ ports that are defined, you should ensure that ports 110 and 139 are defined and that the name assigned to each matches the name on the printout of the /etc/services file from the server where FacetWin was installed. If these ports are defined and the names match, then the configuration is correct, and you may proceed with the configuration of the PCs that will access the FacetWin server.

5. If ports 110 and 139 do not exist in the NIS or NIS+ database, or if the names assigned to these ports don't match the services file on the FacetWin server, you must update the NIS or NIS+ database.

For NIS, update the /etc/services file on the NIS or NIS+ master server to have the definitions for ports 110 and 139 that were added to the services file on the FacetWin machine by the FacetWin installation procedure. Then, execute the command

```
ypmake services
```

to update the NIS services database.

For NIS+, execute the commands

```
nistbladm -a cname=pop3 name=pop3 proto=tcp port=110
        comment="Post Office Protocol - Version 3"
nistbladm -a cname=netbios-ssn name=netbios-ssn proto=tcp
port=139 comment="NETBIOS Session Service"
```

to update the NIS+ services database.

Preparing a Windows 95/98 PC for FacetWin

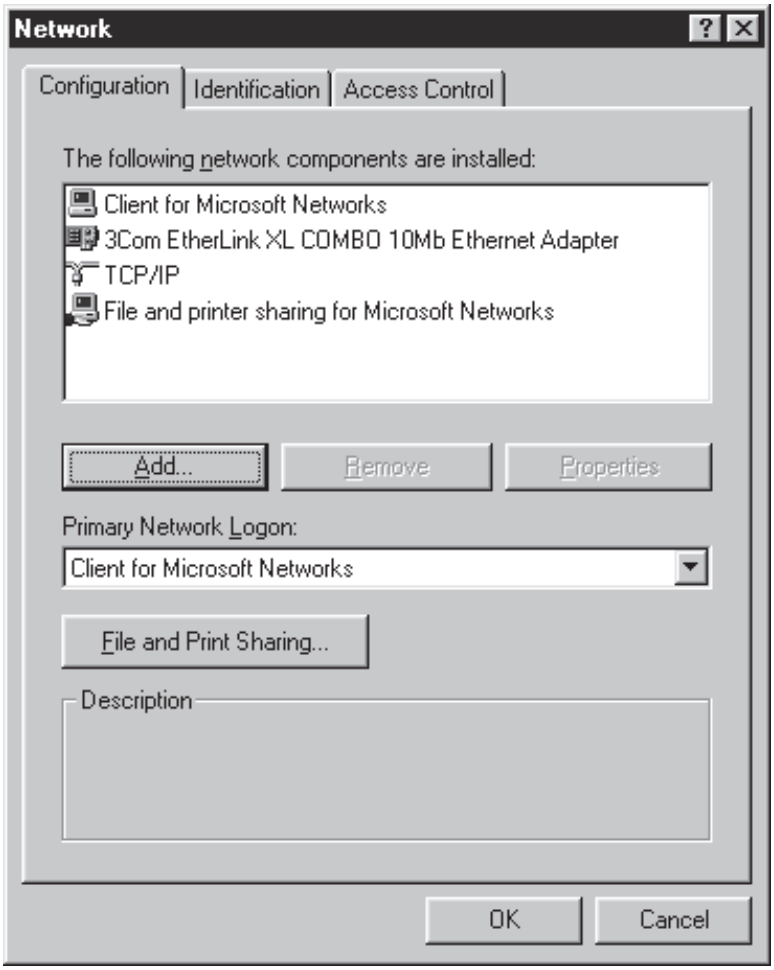
Before you can use FacetWin with a PC running Windows 95/98 you must have the Windows network system configured properly, especially in regard to the TCP/IP configuration.

The following screens are from Windows 95. There are slight differences in the corresponding Windows 98 screens, but these will be noted.

If you are setting up an NT, you should proceed to the next section .

NOTE: If a PC is running a version of Windows older than Windows 95 then you will not be able to install the FacetWin PC software on that PC. However, by configuring the PC's network properties as described below, it will be able to use the FacetWin file and print services.

To examine your PC's network configuration, right-click on the Network Neighborhood icon on your desktop. Choose the Properties option on the menu, and you will be presented with the Network property sheet



The components shown in the list above must be installed.

To add a component that is not already present, press the "Add" button, select the component type, then manufacturer, and finally the network service being added. Each of the required components can be found in:

Client / Microsoft / Client for Microsoft Networks

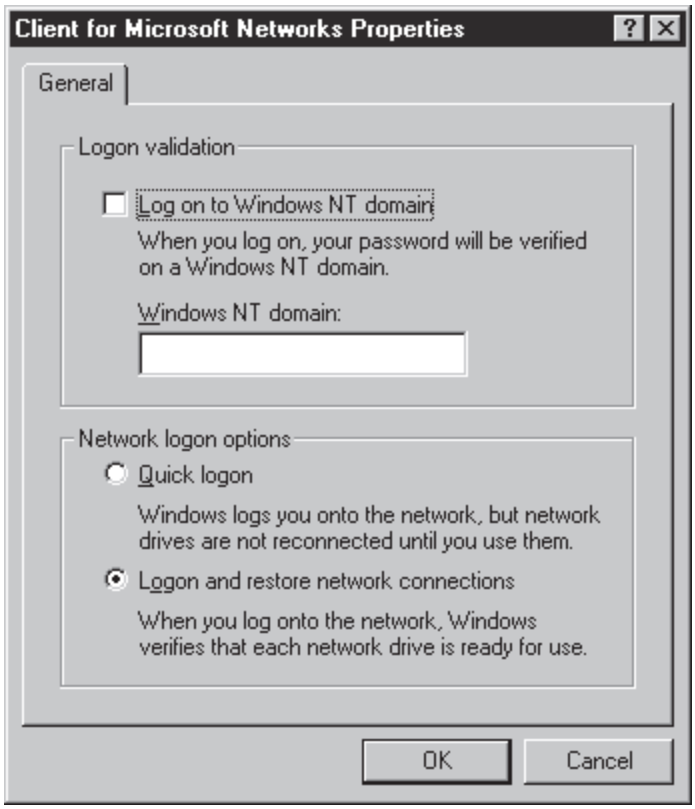
Protocol / Microsoft / TCP/IP

Service / Microsoft / File and printer sharing for Microsoft Networks

The Adapter must be configured properly for your hardware configuration. If this is not the case, you must get the hardware configured before proceeding with the PC installation of FacetWin.

When all of the necessary components are installed, select each one and click the Properties button to bring up its property sheet. The following illustrations show the proper settings for each of these. If you have a need to set an option different from what is shown below (except in the case of names specific to your network), then check with the FacetCorp support staff for possible effects this may have on the operation of FacetWin.

Client for Microsoft Networks:

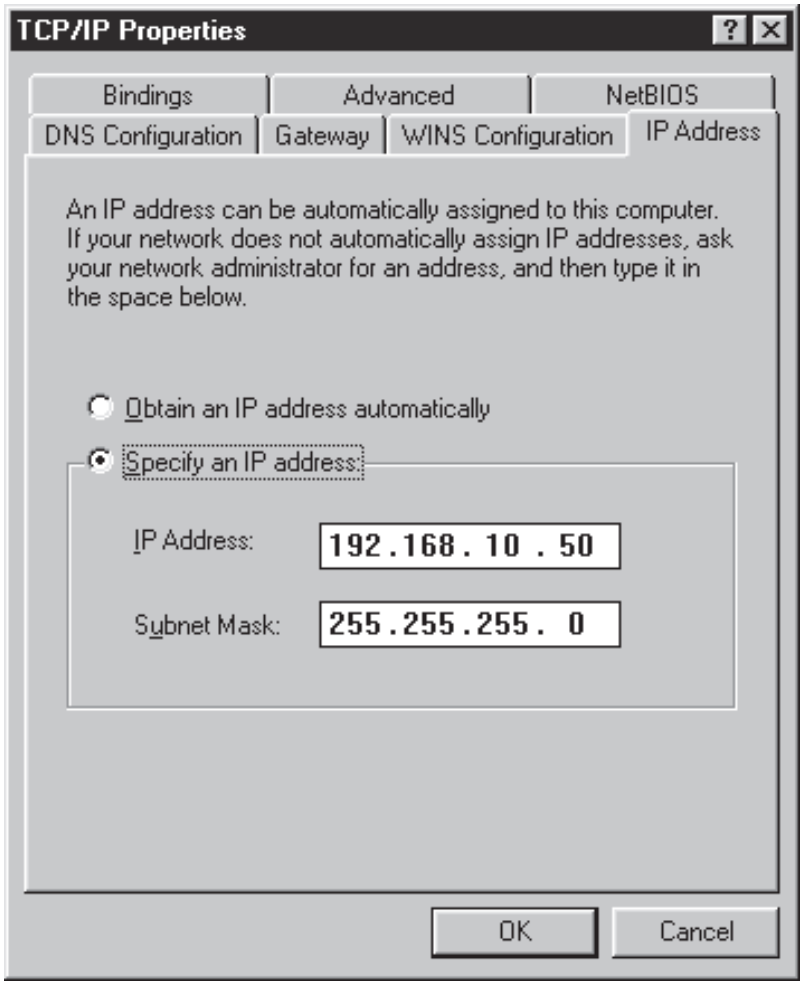


The "Log on to Windows NT domain" does not affect the operation of FacetWin. If you have an NT domain, you may set this appropriately, otherwise leave it blank.

Select the "Logon and restore network connections" option if you want mapped network drive connections to be restored when you logon the PC.

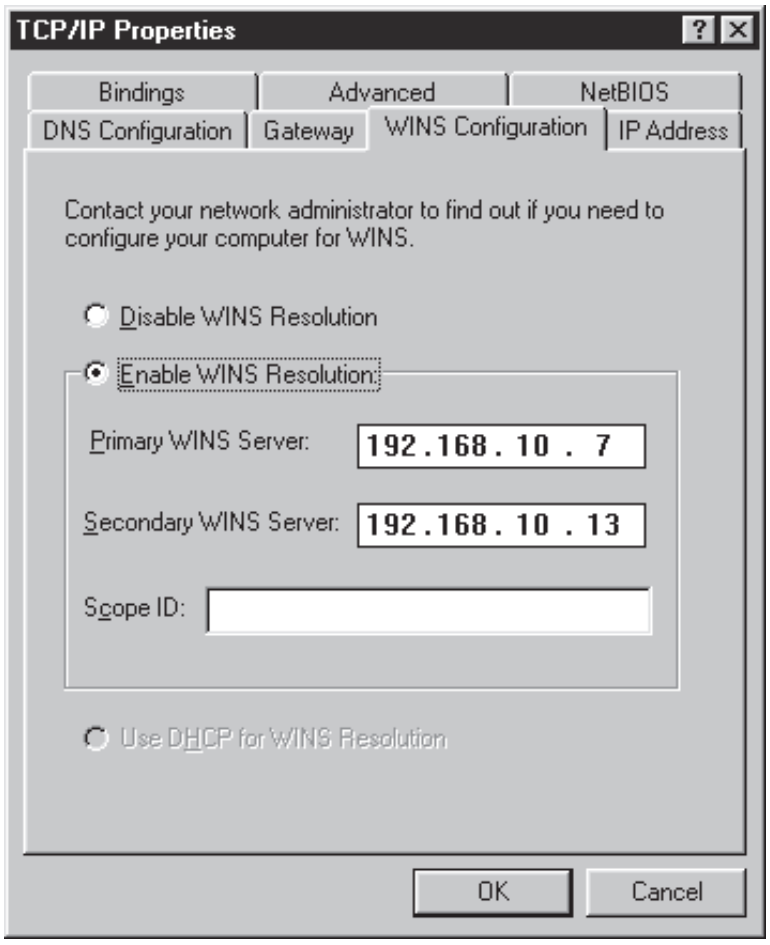
The following are tabs on the TCP/IP property sheet:

IP Address Tab:



Supply the IP address that has been assigned to your PC. Each computer on the network must have its own unique IP address. If you are using a DHCP server on your network, then you may select the option "Obtain an IP address automatically" instead of specifying a specific address.

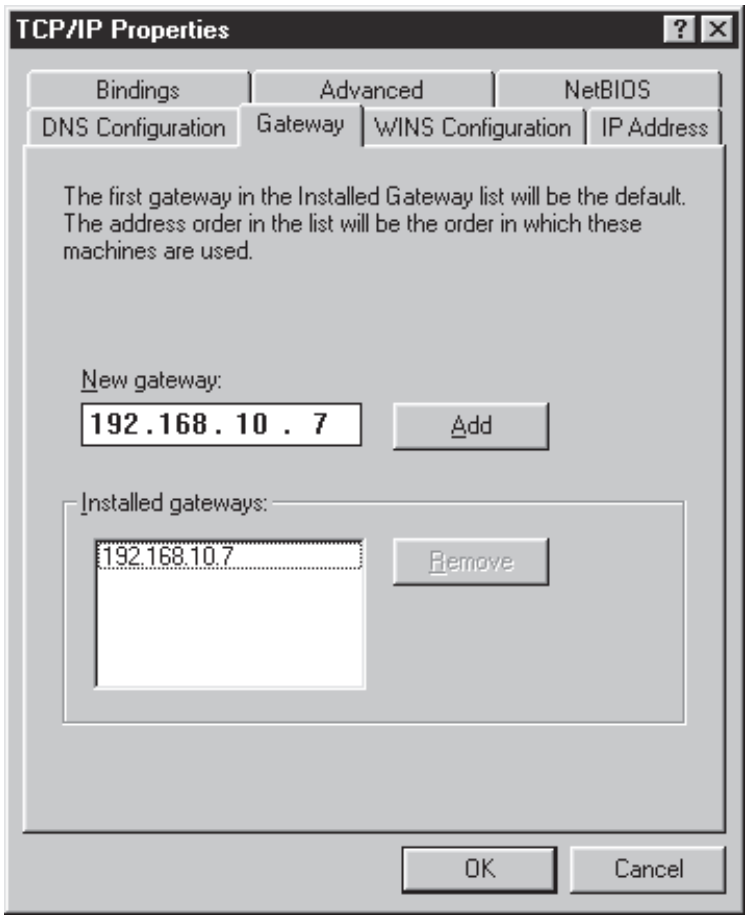
WINS Configuration:



Set the either the primary or secondary WINS server address to the IP address of a UNIX server that has FacetWin installed. If you are already using an NT server as your primary WINS server, then make the FacetWin enabled UNIX host your secondary WINS server. If not, then you can set the UNIX host as your primary WINS server. If you do not have another server to be your secondary WINS server, then enter the same address for both the primary and secondary WINS servers. The Scope ID is not supported by FacetWin and its field should be left blank.

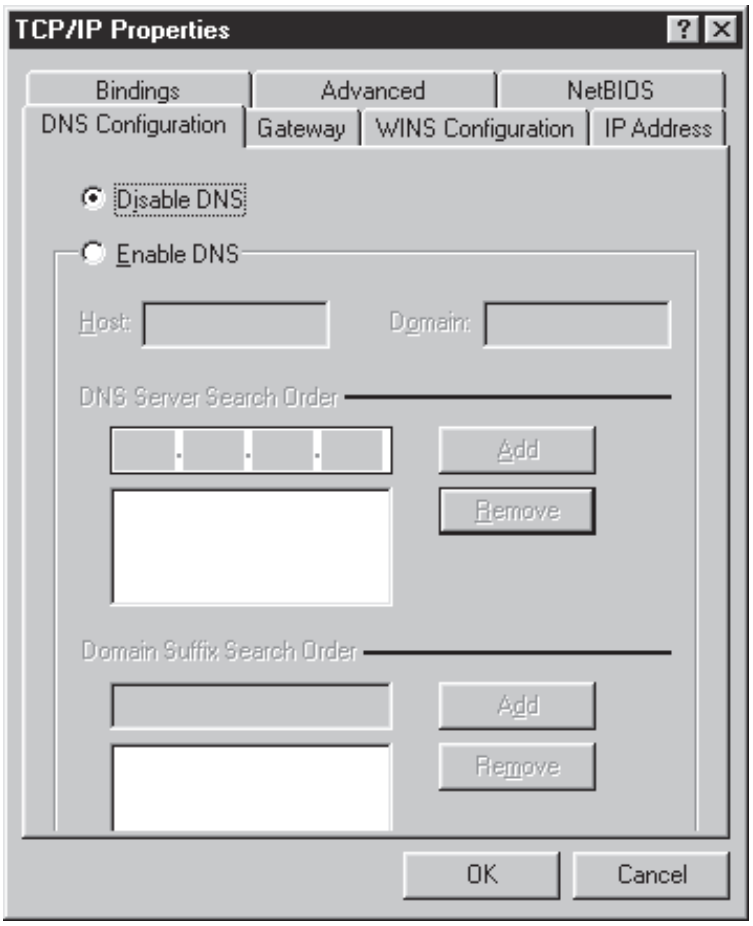
On Windows 98, rather than having a primary and secondary WINS selection, it has a WINS server search order. Enter the primary WINS server first, and any backup WINS servers afterwards.

Gateway:



If your local area network is connected to other networks, you will need to specify the address of a computer that is able to perform the routing to the other networks as a gateway. Otherwise, you can leave the list of Installed gateways empty.

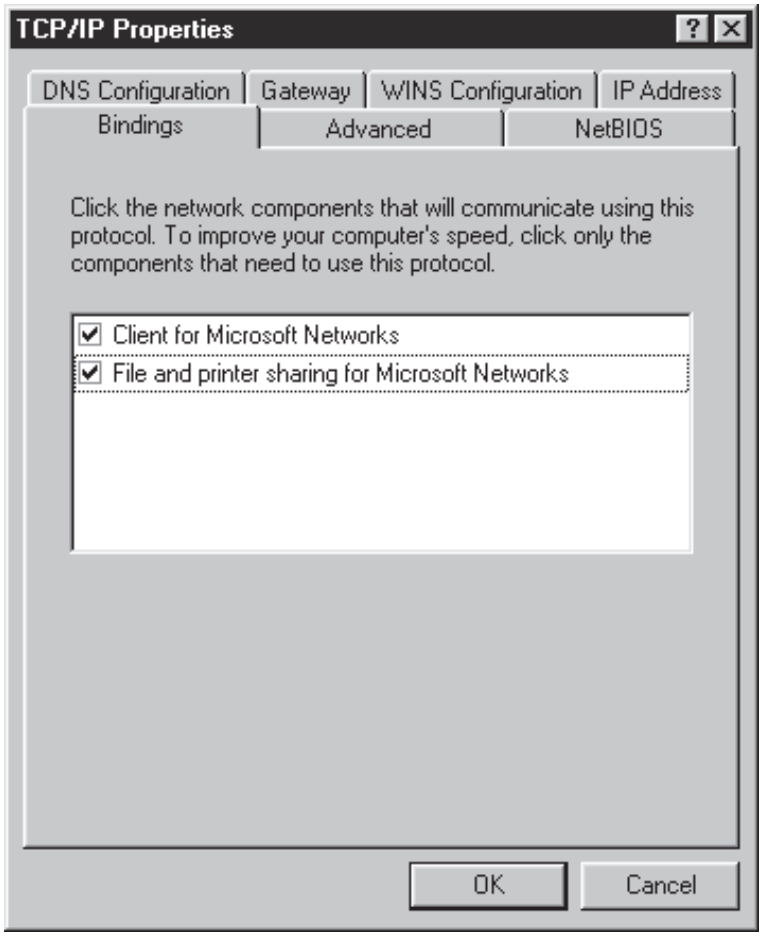
DNS Configuration:



If you have a server on your local area network configured as the Domain Name Server, you can enable DNS and supply that server's address here. However, this is not required for FacetWin operation.

NOTE: If you have the DNS configuration set up to point to your Internet provider, and you access that provider via Dial-up Networking, you should take the DNS address out of the Network properties, and put it in the TCP/IP properties of the Dial-up Networking configuration that is used to dial-up your Internet provider.

Bindings:

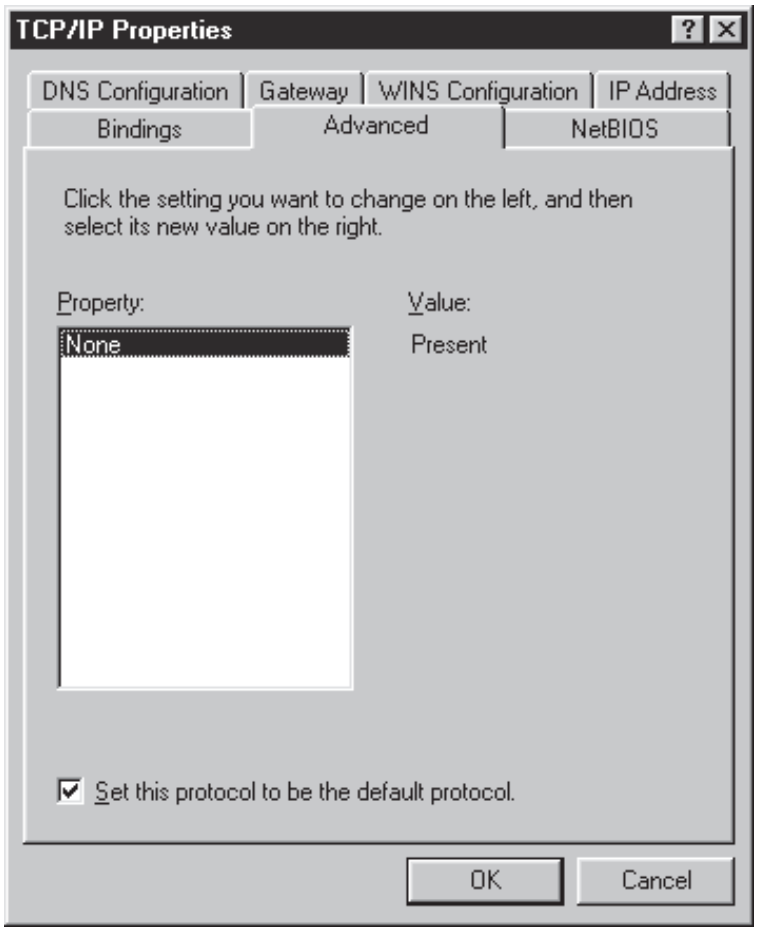


The "Client for Microsoft Networks" item must be checked.

The "File and printer sharing for Microsoft Networks" item must be checked if you want the UNIX system to be able to access the PC's network resources. This is necessary if you want to use the FacetWin remote printing feature to allow a printer attached to your PC to function as a UNIX printer. It is also necessary if you want to use the FacetWin fct_client program to copy files to or from your PC from a UNIX command prompt.

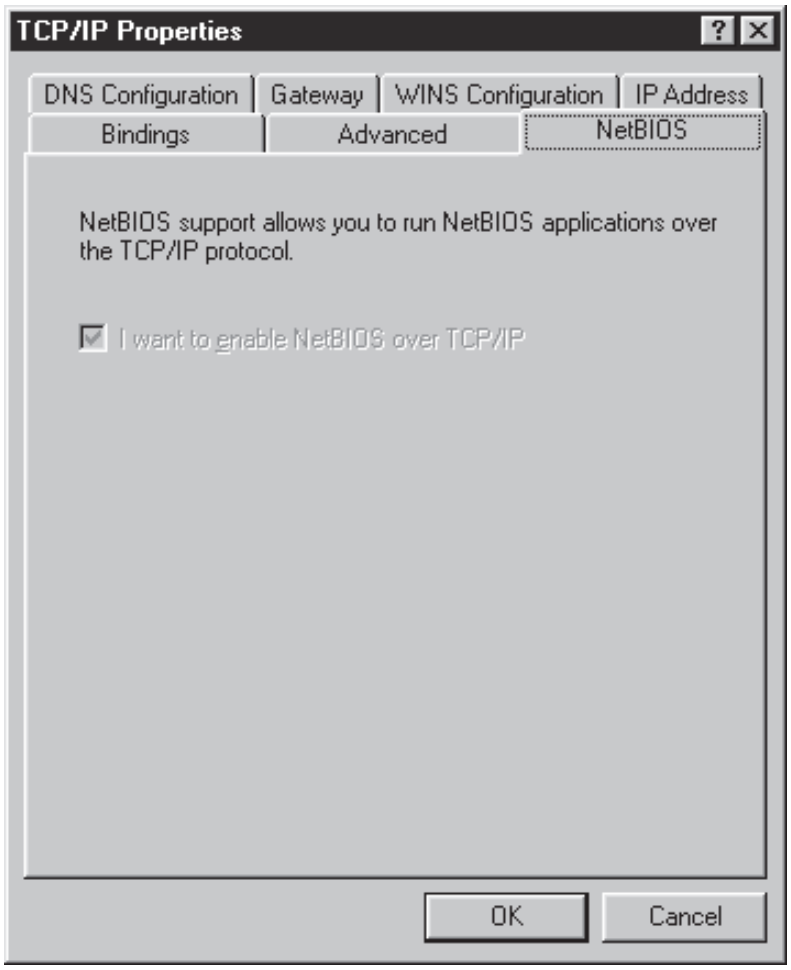
NOTE: If you use Dial-up Networking to access an Internet provider, you may be warned and asked if you want to turn off the File and Printer sharing before connecting to the Internet. Do not turn this off if you want FacetWin browsing, remote printing and remote access features to work properly.

Advanced:



The check box "Set this protocol to be the default protocol" at the bottom of the tab should be checked (it may be disabled and checked). The remainder of the Advanced tab may be left unaltered.

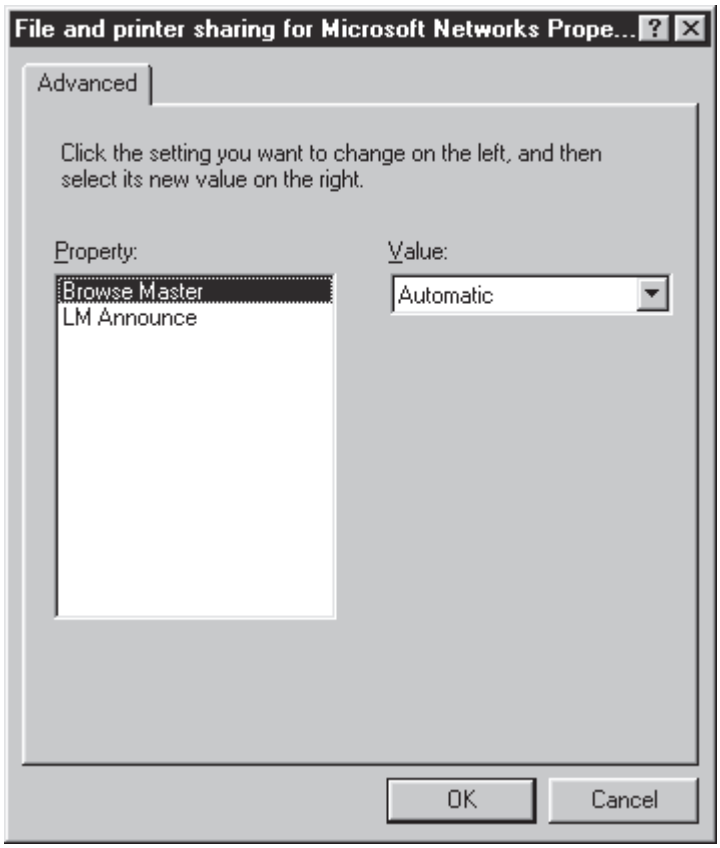
NetBIOS:



On later versions of Windows 95 and on Windows 98, there is a NetBIOS tab on the TCP/IP Properties. If your PC has this tab, be sure that the box labeled "I want to enable NetBIOS over TCP/IP" is checked (it may be disabled and checked).

That is all of the TCP/IP configuration. Click OK on the TCP/IP property sheet and return to the main Network Properties sheet.

On the main Network Properties sheet, select File and printer sharing for Microsoft Networks and click on Properties:



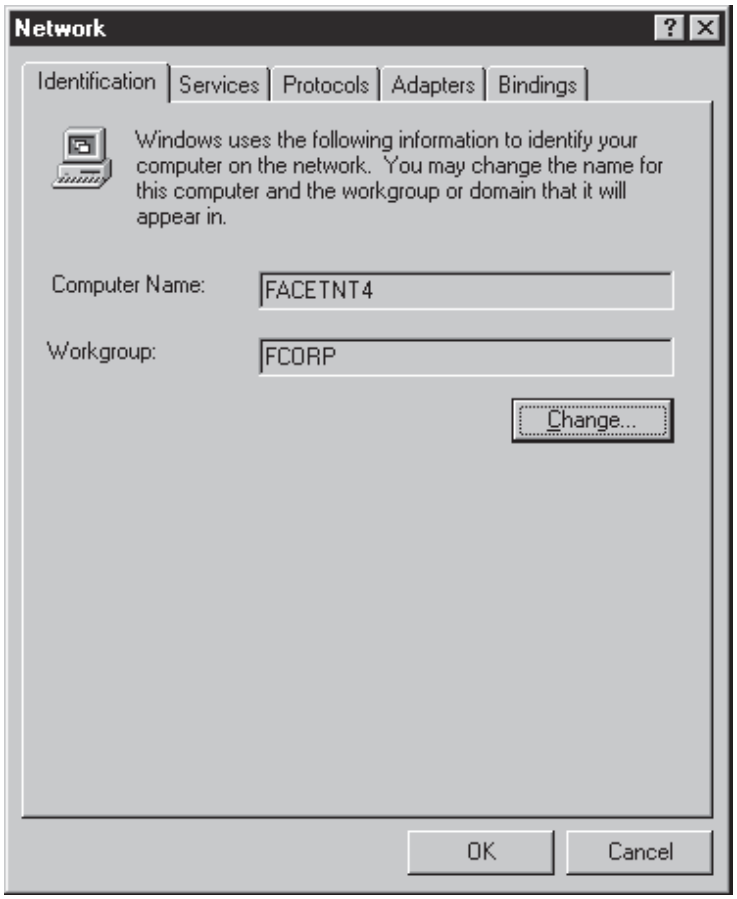
The "Browse Master" item must be set to "Automatic" or "Enabled" on at least one PC on each subnet for browsing to work. The "LM Announce" item should be set to "NO" unless you have a legacy Lan Manager 2.x domain on the network. In that case set the LM Announce item to "YES".

Click OK on the Network Properties to save any changes you made. If you are given a message about rebooting, you must reboot before the changes will take effect.

Preparing a Windows NT PC for FacetWin

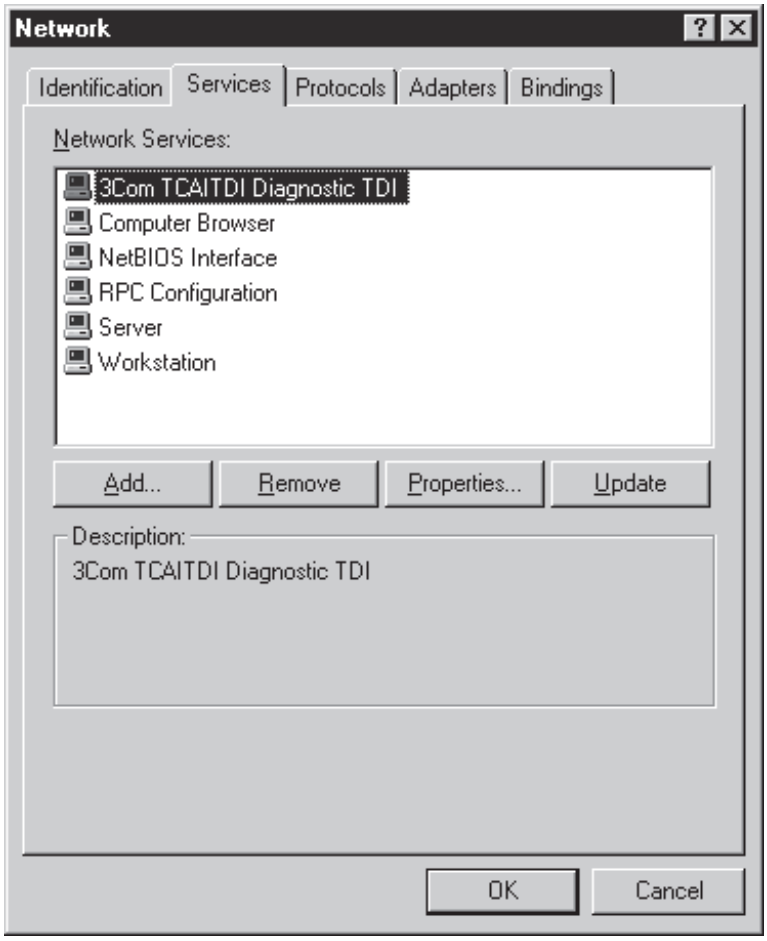
Before you can use FacetWin with a PC running Windows NT 4.0, you must have the Windows network system configured properly, especially in regard to the Microsoft TCP/IP software.

To examine your NT PC's network configuration, right-click on the Network Neighborhood icon on your desktop. Choose the Properties option on the menu, and the Network property sheet will be presented:



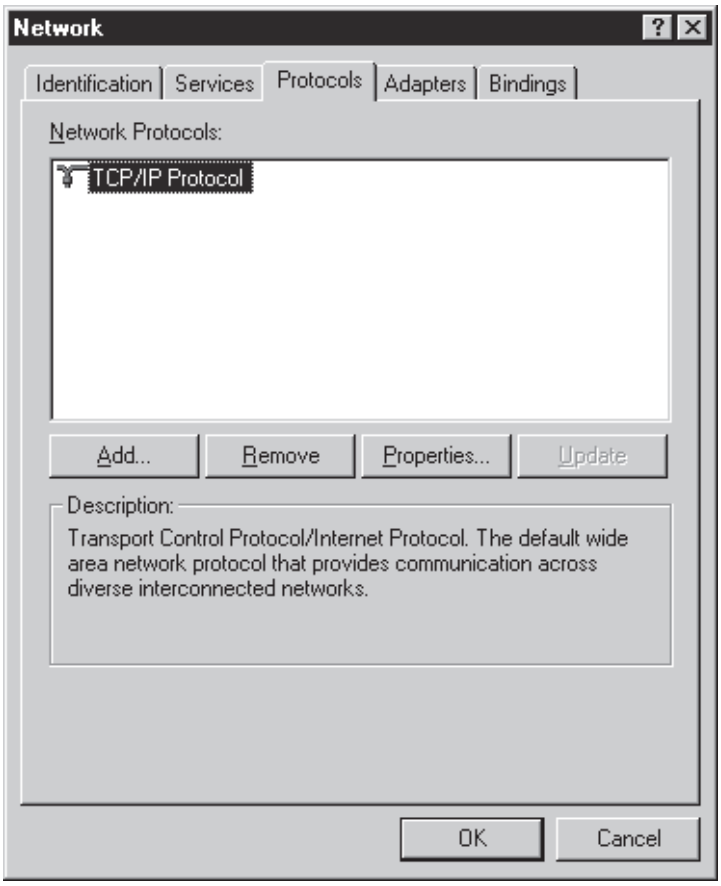
Select each of the tabs and configure as instructed. The following illustrations show the proper settings for each of these. If you have a need to set an option different from what is shown below (except in the case of names specific to your network), then check with the FacetCorp support staff for possible effects this may have on the operation of FacetWin.

Services:



The Computer Browser, NetBIOS Interface, Server, and Workstation services shown in the list above must be installed. To add one of these services that is not already present, click on the Add button and select the service that you need to add from the list presented.

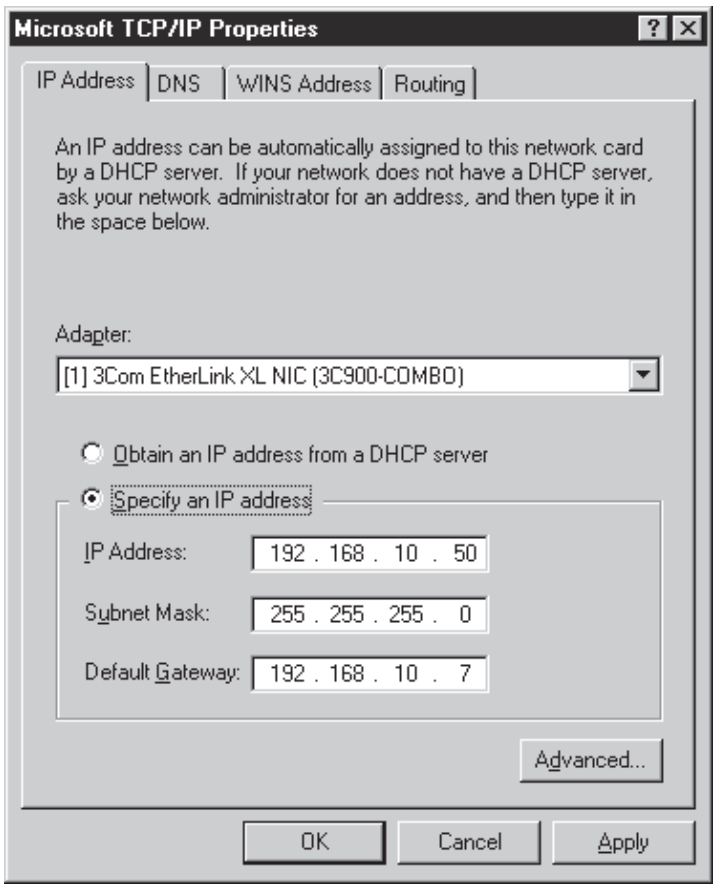
Protocols:



You must have the TCP/IP Protocol in the list. If you do not, click on the Add button and select TCP/IP form the list presented.

Select the TCP/IP Protocol in the Network Protocols list, then click on the Properties button. The TCP/IP properties will be presented. The following are tabs on the TCP/IP property sheet:

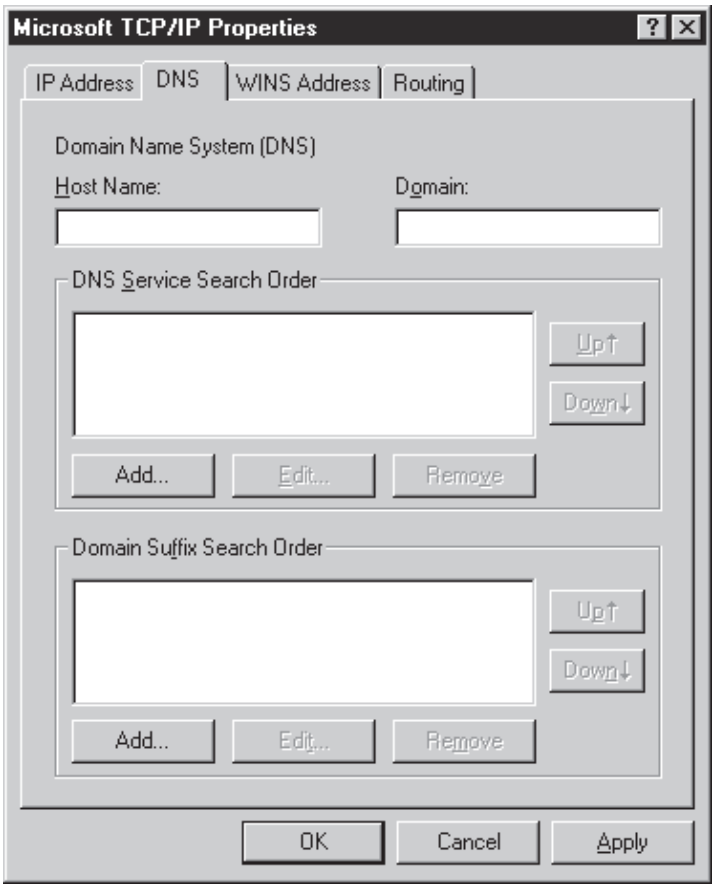
IP Address:



Supply the IP address that has been assigned to your PC. Each computer on the network must have its own unique IP address. If you are using a DHCP server on your network, then you may select the option "Obtain an IP address from a DHCP server" instead of specifying a specific address.

If your local area network is connected to other networks, you will need to specify the address of a computer that is able to perform the routing to the other networks as a gateway. Otherwise, you can leave the Default Gateway address empty.

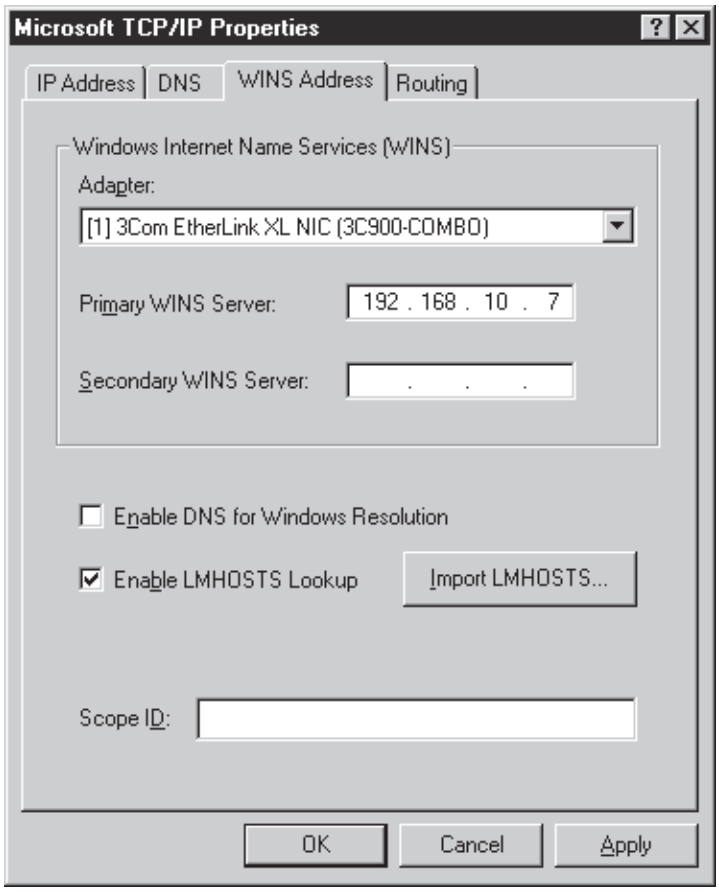
DNS:



If you have a server on your local area network configured as the Domain Name Server, you can enable DNS and supply that server's address here. However, this is not required for FacetWin operation.

NOTE: If you have the DNS configuration set up to point to your Internet provider, and you access that provider via Dial-up Networking, you should take the DNS address out of the Network properties, and put it in the TCP/IP properties of the Dial-up Networking configuration that is used to dial-up your Internet provider.

WINS Address:



Set the either the primary or secondary WINS server address to the IP address of a UNIX server that has FacetWin installed. If you are already using an NT server as your primary WINS server, then make the FacetWin enabled UNIX host your secondary WINS server. If not, then you can set the UNIX host as your primary WINS server.

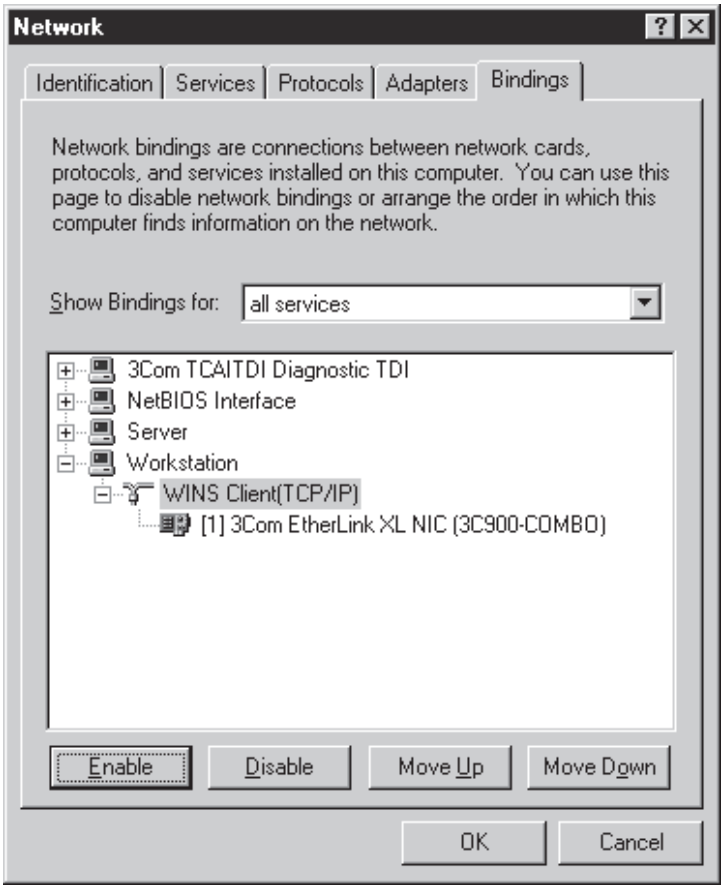
The Routing tab of the TCP/IP properties has no settings that are relevant to FacetWin. You may have a DHCP Relay tab on your TCP/IP property sheet. If so, there are also no settings on this tab that are relevant to FacetWin.

That is all of the TCP/IP configuration. Click OK on the TCP/IP property sheet and return to the main Network Properties sheet.

After returning to the Network screen, Choose the Adapters tab of the Network property sheet.

The Adapter must be configured properly for your hardware configuration. If this is not the case, you must get the hardware configured before using the PC with FacetWin.

Bindings:



In the "Show bindings for" drop down box, choose "all services". Expand the Workstation node in the tree. The "WINS Client (TCP/IP)" item must be enabled. To enable, click once on WINS Client(TCP/IP) under the Workstation node, then click the Enable button at the bottom.

Click OK on the Network Properties to save any changes you made. If you are given a message about rebooting, you must reboot before the changes will take effect.

Gaining Access to Shares on the UNIX Server

Your choice of security method and your network configuration may require that you do some additional configuration before your PC can access file and printer shares on the UNIX server.

- If your Windows user names are different from your UNIX user names.

  If your users have Windows user names that are different from their user names on the UNIX server, then you must specify which Windows user names should be mapped to which UNIX user names. This is done in the fct_alias file. This file is in the FacetWin installation directory on the UNIX server (/usr/facetwin by default). Each line in this file associates a UNIX user name with one or more PC user names. Lines beginning with "#" are comments. Instructions for setting up the file are included in the file as comments.

- If you chose the UNIX security method and you have Windows 95 Build 950 C, Windows 98, or Windows NT PCs on your network.

  If you chose the UNIX security method and you have Windows 95 Build 950 C, Windows 98 or Windows NT PCs on the network, then these PCs must be enabled to send plain text passwords before they can access the UNIX file shares. The older versions of Windows 95 do not require this fix unless you have installed a security patch from Microsoft. In general, any PC that gets the message "Password required for <SERVER>/IPC$" when trying to connect to a FacetWin share requires this patch.

  FacetWin includes two registry scripts, one for Windows 95/98 and one for Windows NT. When you apply the appropriate registry script to a PC it will enable that PC to send plain text passwords across the network. The registry script for Windows 95/98 is named w98.reg and the one for NT is named nt4sp3.reg. These scripts are located in the fwt/registry subdirectory of the FacetWin installation directory. If you have a way of copying files from the UNIX system to your PC (floppy disk, ftp, etc.) then copy the appropriate script to your PC. You may also download the scripts from our web site at www.facetcorp.com/registry. You apply the registry change by double clicking on the ".reg" file from within Windows.

- If you chose the LANMAN security method.

  The LANMAN security method requires that users' DES encrypted passwords be kept up to date in the fctpasswd file. This file is in the FacetWin installation directory on the UNIX server (/usr/facetwin by default). The installation procedure will have built an initial fctpasswd file with user names but no passwords. The passwords must be added using the fct_encrypt program. For information about this program run the command:

  ```
  man fct_encrypt
  ```

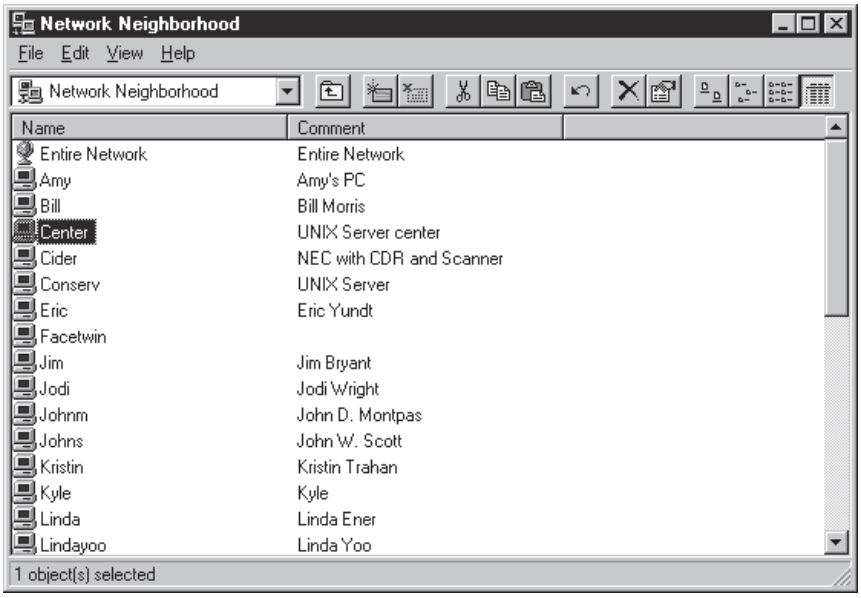
  on the UNIX server.

- If you chose the RHOST security method.

  If you have chosen the RHOST security method, then you must add the DNS host name of each PC that will access file and print shares to the /etc/hosts.equiv and .rhosts files. For information on these files see the UNIX man pages for hosts.equiv and rhosts. The PC host names must be resolvable by the UNIX system.

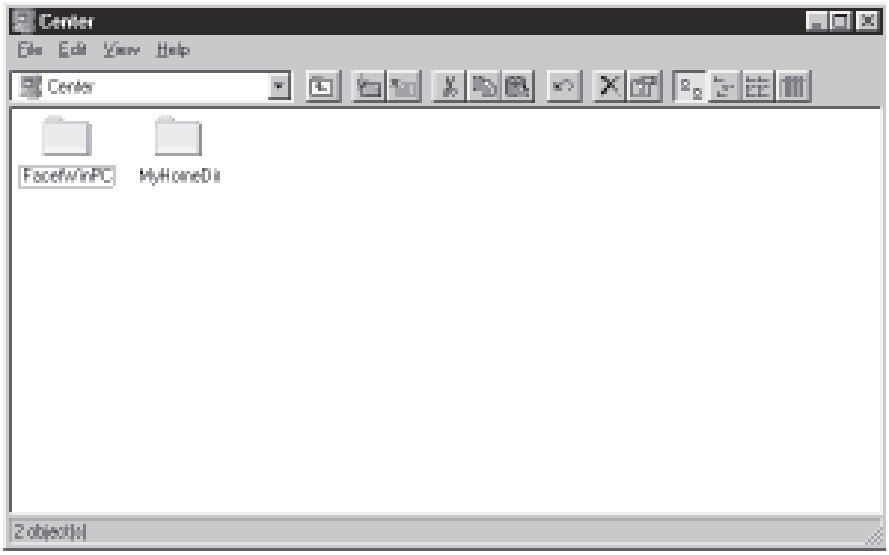
Once you have completed any of these configuration steps that apply to your situation, then you are ready to test access to shares on the UNIX server.

After the PC has been correctly configured for a few minutes, you should be able to see the UNIX server running FacetWin in your PC's Network Neighborhood. Double-click on the Network Neighborhood icon. You should see the UNIX server that is running FacetWin along with the PCs that are in the same workgroup or domain with the server. If the "Details" option is turned on in the View menu of the Explorer window, you should see the server comment "UNIX Server". In the following example, several UNIX hosts have FacetWin running, and the comment field has been configured to be unique for each UNIX server on the network.



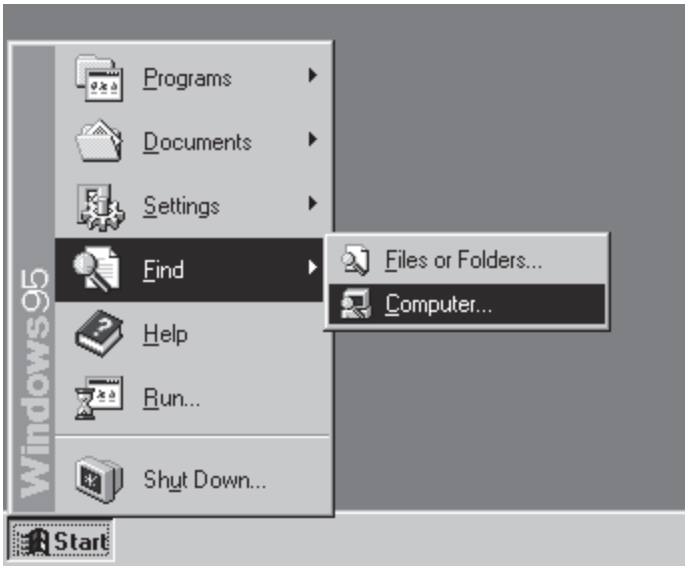
If the UNIX server does not appear in the Network Neighborhood, proceed to the next section.

Double click on the UNIX server's icon in the Network Neighborhood. If you are on a Windows NT 4.0 PC, it may prompt you for a user name and password to use on the UNIX server. Enter a user name and password combination that is valid on the UNIX server. Otherwise, it should present the two shares that are initially defined for the server:

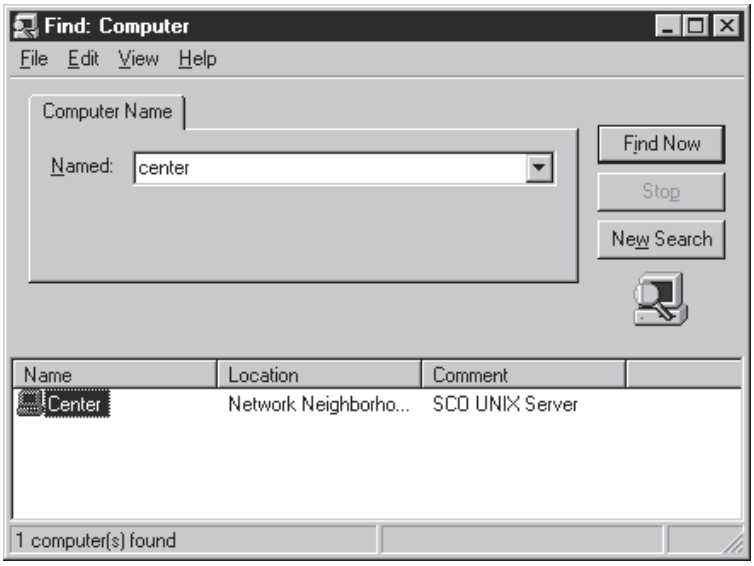


If the UNIX Server Does Not Appear in the Network Neighborhood

If the UNIX server where FacetWin is installed does not automatically show up in the Network Neighborhood on your PC, try to find it with the "Find" command on the Start menu. Click on the Start button on the task bar, and then point to the Find command on the main menu. A submenu will be presented, and you should click on the "Computer" item on that menu:

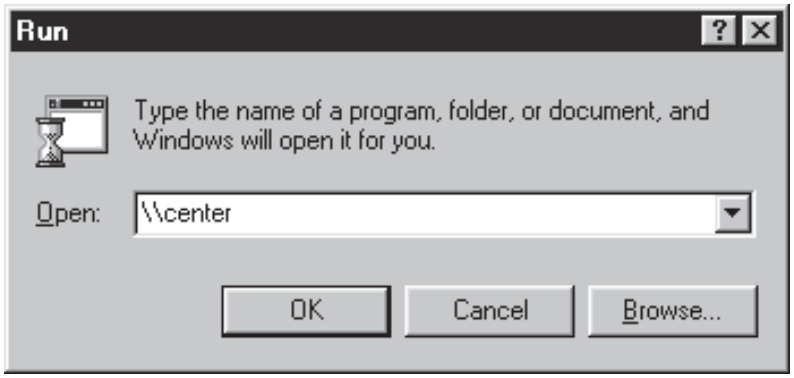


A window will be presented prompting for the name of the computer you want to find. Enter the name of the UNIX server where FacetWin is installed, and click on the "Find Now" button. The computer name is case insensitive, so you may enter it in either lower or upper case. If this does not find the server, you can also use the IP address of the server in the find command. Once the UNIX server is found, it will appear in the list at the bottom of the Find Computer window:



Open the Network Neighborhood window, and drag the icon for the computer from the Find Computer window into the Network Neighborhood window. That way you can access this computer in the future by double-clicking on its icon in the Network Neighborhood.

Another way to try to access the server is to use the "Run" command on the Start menu. Enter two backslashes and the name of the server as the program to run:



This should cause an explorer window to be opened showing the shares available on the requested server.

If you cannot access the FacetWin server with the Network Neighborhood, the Find command, or the Run command, or if you get an error when trying to display the shares on the UNIX server, see the troubleshooting section "FacetWin Browsing and Connection Problems".

Installing FacetWin on a PC

If you do not have Windows 95/98 or Windows NT 4.0 on your PC, then you cannot install the PC portion of FacetWin, and you should skip this section.

The PC software can be installed from the FacetWin CD. It may also be installed from a UNIX server that has FacetWin installed and is sharing files properly with the PC.

If you are installing on an NT, you must login to the NT as an administrative user in order to install FacetWin.

If installing from the CD.

Put the FacetWin CD into the drive on the PC. A program will automatically run and it will present a screen that has a button for installing the software on a PC. Click on this button and the setup program will run. Follow the instructions on the screen.

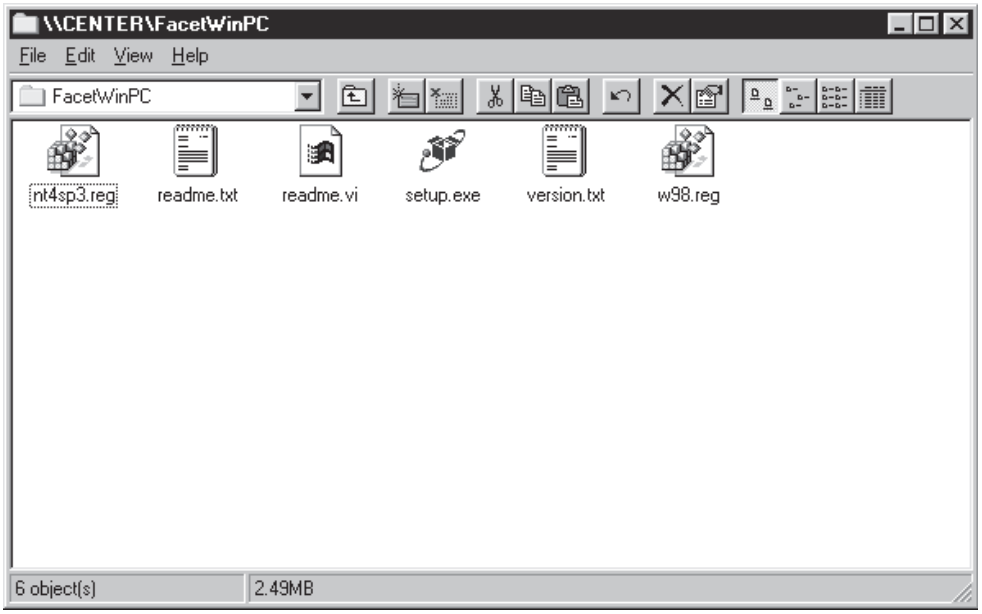
If installing from the UNIX server.

In order to install from the UNIX server, you must have successfully gained access to the file and printer shares on the UNIX server as outlined in the previous section.

On your PC, double-click on the Network Neighborhood icon, find the UNIX server on which FacetWin has been installed, and double-click on its icon.

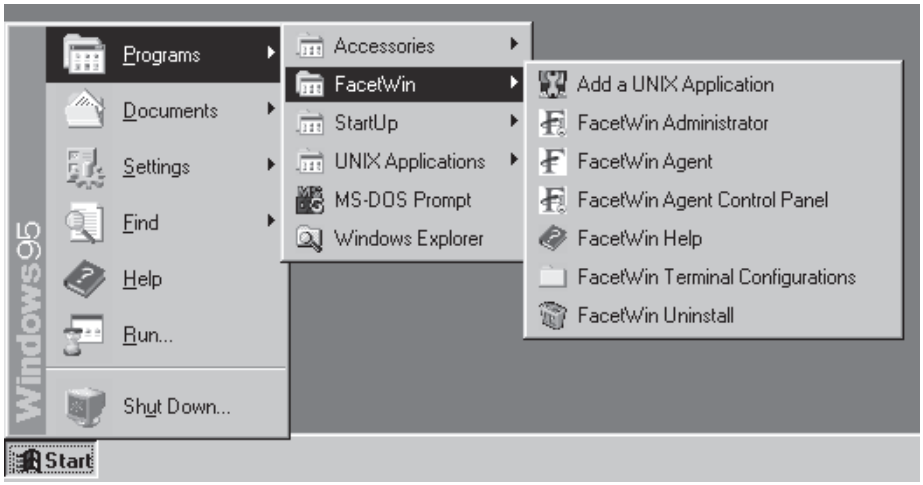
If you are installing on a Windows NT 4.0 PC, it may prompt you for a user name and password to use on the UNIX server. Enter a user name and password combination that is valid on the UNIX server.

The shares that are currently defined on the server will be displayed. One of the shares will be named "FacetWinPC". Double-click on this icon and the contents of that share will be displayed:



Double-click on the "setup.exe" item. The installation will begin on the PC. Follow the instructions on the screen to complete the installation.

After the PC software has been installed, a "FacetWin" group will have been added to the Windows Start menu:



The items contained in the FacetWin menu group depend on which components you chose to install. If you installed everything, then the following items will have been added:

- The "Add a UNIX Application" item is used to create and configure a new FacetWin terminal emulator configuration to run an application on a UNIX server.
- The "FacetWin Administrator" item will run the Windows based administration program.
- The "FacetWin Agent" item will run the agent program that must be running to backup the PC or display enhanced messages from the FacetWin servers.
- The "FacetWin Agent Control Panel" item will run the configuration program that allows users to configure user definable FacetWin features on their PC.
- The "FacetWin Help" item will open a help window that displays the contents of the FacetWin help file. The entire FacetWin product is documented in this help file.
- The "FacetWin Terminal Configurations" item will open an Explorer window in the folder where all the configurations are kept. You can right-click on the configurations displayed there in order to change their properties. You can double-click a configuration to start the UNIX application it describes.
- The "FacetWin Uninstall" item is used to remove the FacetWin PC software. There is no need to run this when upgrading FacetWin software. Run this only when removing FacetWin from the PC permanently.

Installing FacetWin on Additional Servers

When installing FacetWin on additional UNIX servers on the network, you will follow the same procedure outlined in the Installing FacetWin on a UNIX server section. Since FacetWin is licensed by PC users, there is no additional cost to install it on as many UNIX servers as you want.

You should check the Systems file on each of the FacetWin servers to ensure that it has entries for each of the other servers with the desired cooperation between systems setup properly. See the section "System Coop Tab of the FacetWin Administrator". You must have license sharing set up between the servers in order for all the servers to use the same license.

Updating Your FacetWin Software

You can update your FacetWin installation with a new version of the software by installing over your current installation. Do not remove the FacetWin software first, as this will cause you to lose your license registration. There is no difference in the software between the FacetWin evaluation and a fully licensed installation. Therefore, you can update your FacetWin software by obtaining a new FacetWin evaluation package, or by downloading a new evaluation from the FacetCorp web site at www.facetcorp.com.

Begin by installing the new software on the UNIX server, following the same instructions as for a new installation. As with a new installation, you must be logged in as root. Be sure to accept the default installation directory, which will be your current installation directory. You will not be asked for the security method or the workgroup/domain name when updating the software. All of your configuration files will be left intact. The new default configuration files will have been installed with a file extension of ".default". If you configure FacetWin by editing the configuration files, you can inspect these default files for new settings that you may want to use. If you configure FacetWin with the FacetWin Administrator program, it will update your configuration files with the default values for any new settings the first time you run the new version of the Administrator program.

The FacetWin PC software can be updated automatically the next time you start the terminal emulator, agent control panel, or Administrator program. When you start one of these programs, they will determine that there is newer software available for installation and you will be asked you if you want to update your PC software. If you answer yes, then your PC will be updated with the newer FacetWin software automatically. This way, you will always be sure that your PC has FacetWin software which matches the version of the server software.

If you get the error: "Could not access the setup program. New software will not be installed.", then you do not have file services access to the FacetWinPC share on this server for some reason. Review the section "Gaining access to shares on the UNIX Server" to determine what might have caused you to have lost access to this file share on the server.

The Administrator program will not run until it is upgraded because it must match the version of the UNIX server software in order to work properly.

Uninstalling FacetWin

FacetWin provides removal procedures for both the UNIX and PC software.

On the PC, exit all terminal emulation and administration sessions. Right click on the FacetWin Agent icon in the Windows system tray on the task bar. Choose item "Close FacetWin Agent".

Choose the FacetWin Uninstall item in the FacetWin group of the Start menu. This procedure will remove anything that was installed by the PC installation procedure. It will not remove anything that you have created since installation, such as terminal description files. Therefore, you may need to finish the uninstallation by removing the FacetWin installation directory, and the UNIX Applications group in the Start menu.

On the UNIX server, removal is accomplished by logging in as root and running the script:

```
/usr/facetwin/bin/unstall.sh
```

If your FacetWin installation directory is something other than /usr/facetwin, you should use that path when executing the "unstall.sh" script. At the end of this procedure, it will notify you of any other commands that are needed to finish the removal. After you remove FacetWin from the UNIX server, it will lose any license registrations that it previously had.

Getting Started With FacetWin

The "Using FacetWin" section provides information from a user's perspective about how to use and configure the various FacetWin components. This section is for anyone who will be using the FacetWin services.

After you have installed FacetWin, you will probably want to proceed with further configuration in order to define additional file and printer shares, setup terminal emulator sessions, etc. See the section "Configuring FacetWin" for detailed instructions on all aspects of configuring the FacetWin servers. The configuration section is primarily for the system administrator.

Using FacetWin

Using the FacetWin File and Print Services

Overview

The FacetWin file and print services allow the disks and printers on the UNIX server to appear as part of the Windows network. In the Microsoft networking system, you define "shares" which are used to access the resources on the server where the share is defined. A file share provides access to the directory that is being shared, its contents and all of its sub-directories. A printer share provides PC access to a printer attached to the server where the share is defined.

The file and print services are implemented with a CIFS server program that runs on the UNIX system. Each PC that connects to a share on the UNIX system will communicate with its own server process. CIFS (Common Internet File System) was formerly known as SMB and is the native protocol used for file and printer sharing in the Microsoft networking system. Therefore, no additional software is required on your PC in order to access the files or printers on the UNIX server (assuming that you are running a network enabled version of Windows).

FacetWin also allows a printer connected to a Windows PC to become part of the UNIX print spooling system. This is referred to as "remote printing" since one popular application of this feature is to be able to print reports from a UNIX application on the printer of a PC dialed in from a remote location.

Accessing Files on the UNIX Server

The file shares on the UNIX server made available by FacetWin can be used as any other file share on the Microsoft network. On Windows 95/98 or NT 4.0 PCs you can access the files on the UNIX server via the Network Neighborhood. Applications written for the Windows 95 interface can also access these files and directories via their "File/Open" and "File/Save as" commands. With any networked version of Windows, you can map a network drive that points to the UNIX file share.

The installation procedure will have defined two default file shares; a share called "FacetWinPC" that points to the UNIX directory that holds the FacetWin PC installation files, and a share called "MyHomeDir" that points to the user's home directory on

the UNIX system. The "MyHomeDir" share is unique in that, rather than pointing to a fixed place on the disk, as all other file shares do, it points to the home directory of each user who attaches to the share.

For information on defining additional shares, see the section "File Sharing Tab of the FacetWin Administrator".

Accessing Printers on the UNIX Server

Printers that are shared on the UNIX server can be setup as a printer on your PC by using the "Add Printer" icon in the Printers folder on the PC. The Add Printer "wizard" will ask if you are adding a local or network printer. Choose network printer. You will then be able to browse the Network Neighborhood to identify the UNIX printer that you are adding to your Windows configuration. This printer may be defined as the default printer for your PC if you wish.

Before a Windows PC can access a UNIX printer, a FacetWin share must be defined for the printer. For information about defining a printer share see the section "Printer Sharing Tab of the FacetWin Administrator".

Printing to PC Printers from UNIX

You can use the FacetWin remote printing feature to define the printer on your PC as a printer in the UNIX print spooling system. This allows UNIX print jobs to be directed to the printer on your PC. This is especially useful at remote locations. Once the remote printer is setup, you use it from UNIX just as you would any other UNIX printer. For information about setting up a remote printer, see the section "Printer Sharing Tab of the FacetWin Administrator".

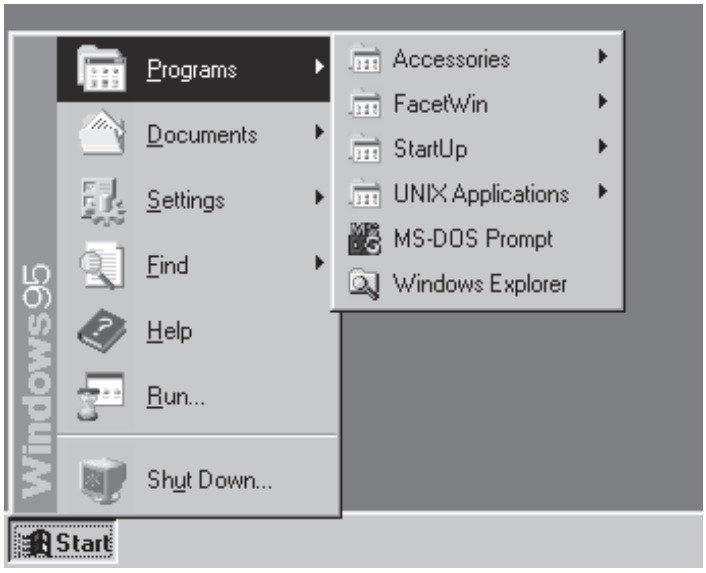
FacetWin Terminal Emulator

Overview

The FacetWin terminal emulator allows you to run your character based UNIX applications in windows on your PC. You can run multiple UNIX applications at once, accessing multiple servers, with each application presented in its own window. The emulator program on the PC cooperates with the FacetWin application server on the UNIX host to make the setup of applications extremely easy. After initial setup of an application, starting it is as easy as choosing it in the Windows Start Menu, or double-clicking its icon.

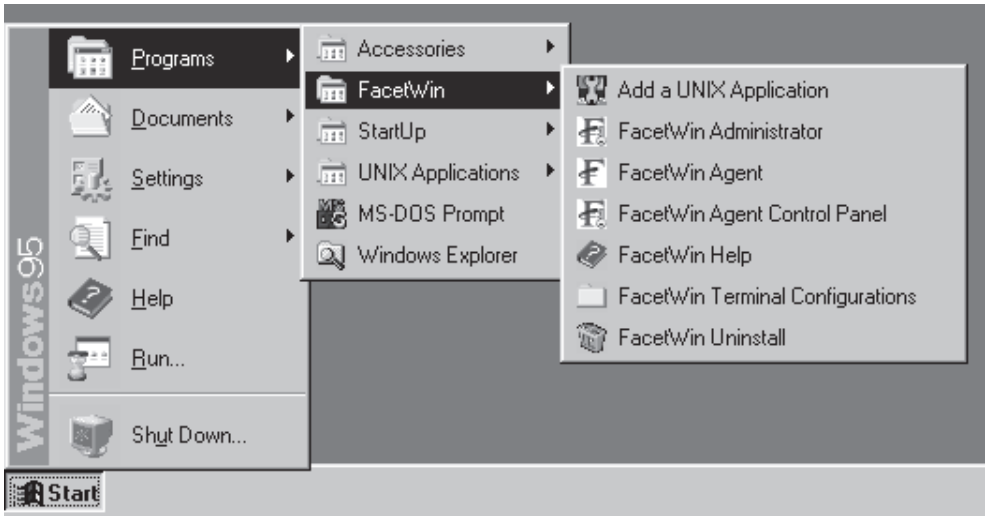
Each UNIX application that you setup is described by a FacetWin terminal emulator configuration file. These files have a ".fwt" file name extension. Double-clicking on one of these files, or a shortcut to one, will cause the UNIX application described by the configuration to be started in an emulator window. Right-clicking on one of these files (but not a shortcut to it) will bring up a menu which allows you to change the properties of the configuration.

The PC installation of FacetWin will put the "FacetWin" group in your Start menu:



The "UNIX Applications" group is created when you define your first UNIX application. This is the default location in the Start menu for the UNIX applications you will setup.

The "FacetWin" group includes the following:



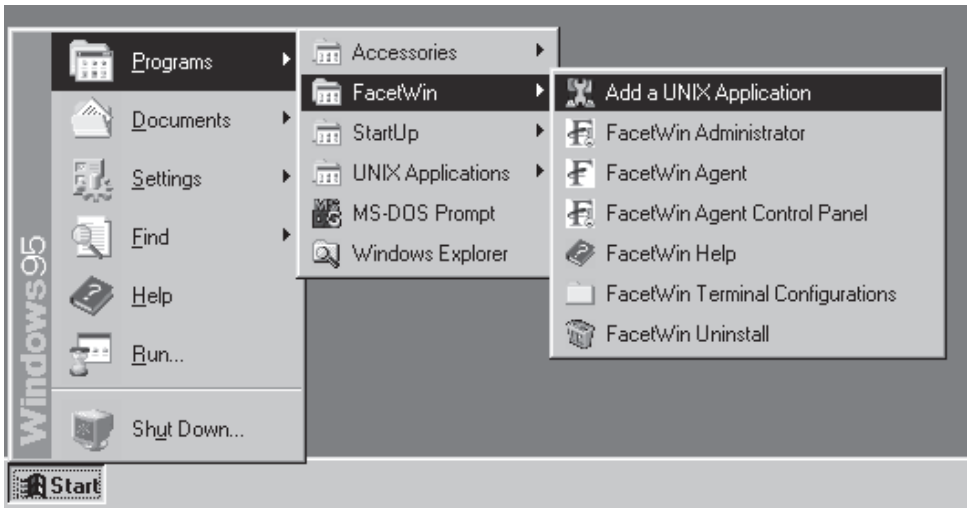
The items related to the FacetWin terminal emulator are:

- The "Add a UNIX Application" item is used to create and configure a new FacetWin terminal emulator configuration to run an application on a UNIX host.

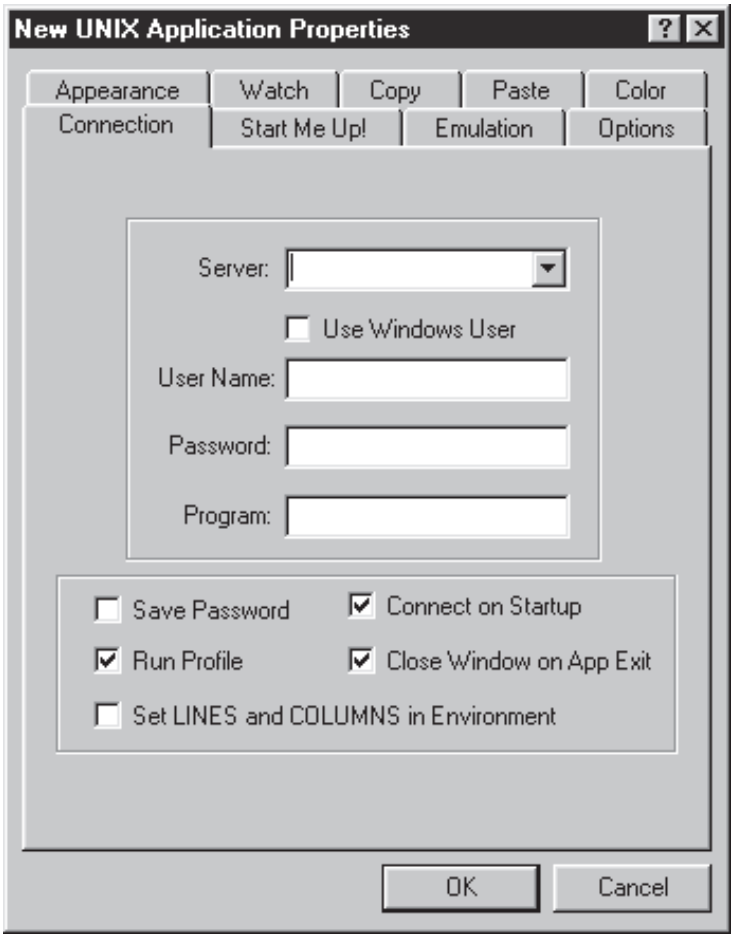
- The "FacetWin Terminal Configurations" item will open an Explorer window in the folder where all the configurations are kept. You can right click on the configurations displayed there in order to change their properties. You can double click a configuration to start the UNIX application it describes.

Setting Up Your First UNIX Application

With the FacetWin "QuickLaunch" feature, setting up a UNIX application icon is quick and easy. To begin setting up a UNIX application, bring up the Windows Start Menu, select the FacetWin group, and select "Add a UNIX Application":



This will cause the FacetWin terminal emulator property sheet to be presented:



Fill out the "Connection" tab by entering the following:

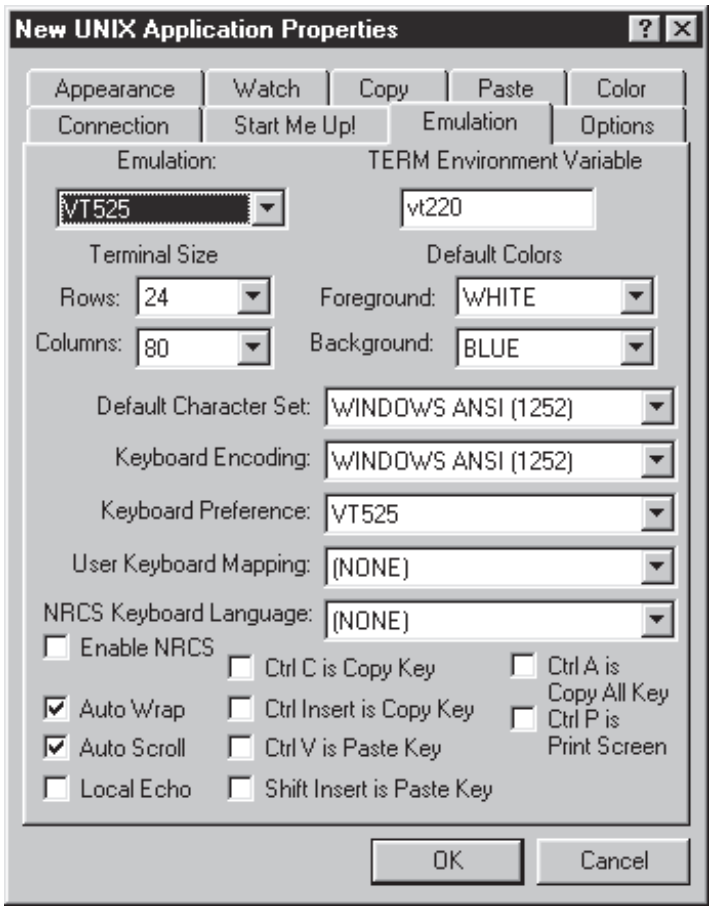
- Enter the name of the server you want to login to. The drop-down list will include the servers which have FacetWin installed for you to choose from. If you do not know the network name of the server you want to use, ask your system administrator.

- Enter your user name and password on that machine. If you want FacetWin to save this password and never prompt you for it when invoking this UNIX session, then check the "Save Password" box. Note that this gives anyone with access to your PC the ability to login as you. If this is a security problem for you, then do not check this box. If your network connection is such that your

IP address changes (often the case with a PPP connection), then you cannot save your password. Do not check the "Use Windows User" box at this time.

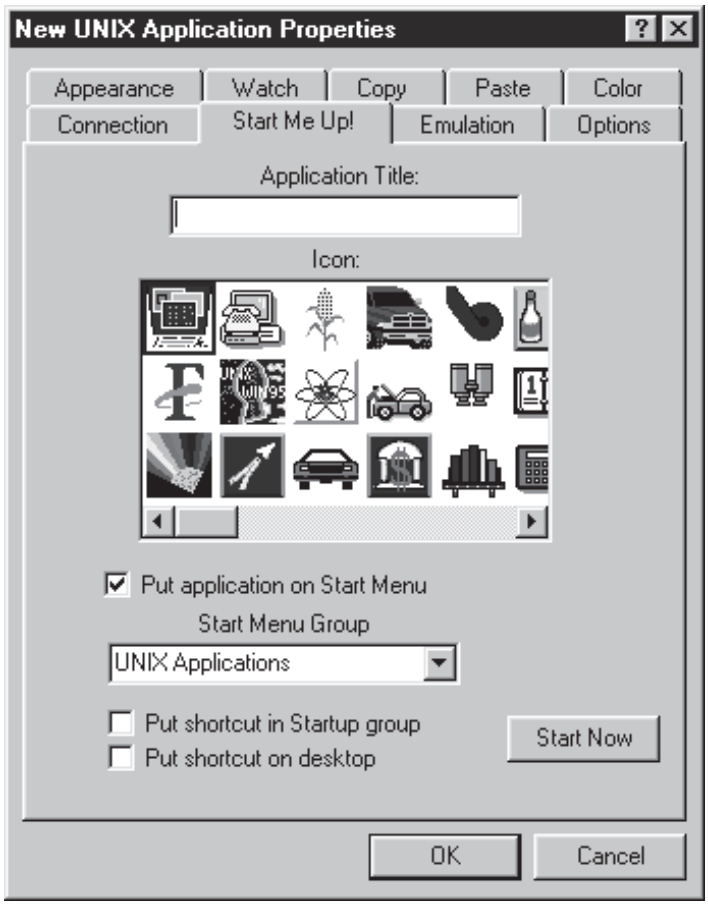
- Leave the program name blank for now. This will cause FacetWin to run your normal login shell. If your normal login account runs some program other than a UNIX shell, then that will be the application that is run.
- Leave "Run profile" and "Connect on Startup" checked, and "Set LINES and COLUMNS in Environment" unchecked.

Select the "Emulation" tab:



Fill out the Emulation tab by choosing the terminal emulation that you normally use. If the default TERM environment variable provided for that emulation is not what you normally use, then enter the value that you normally use with that emulation.

Select the "Start Me Up!" tab:



Fill this tab out by entering the following:

- Enter a title for this UNIX application. This name may be upper and lower case, and may contain spaces, but periods are not allowed in the name. For example, the title could be "My UNIX login".
- Choose an icon to associate with this application.
- Leave the "Put application on Start menu" box checked, and leave "UNIX Applications" as the menu group to put the item in.
- Also check the "Put shortcut on desktop" box.

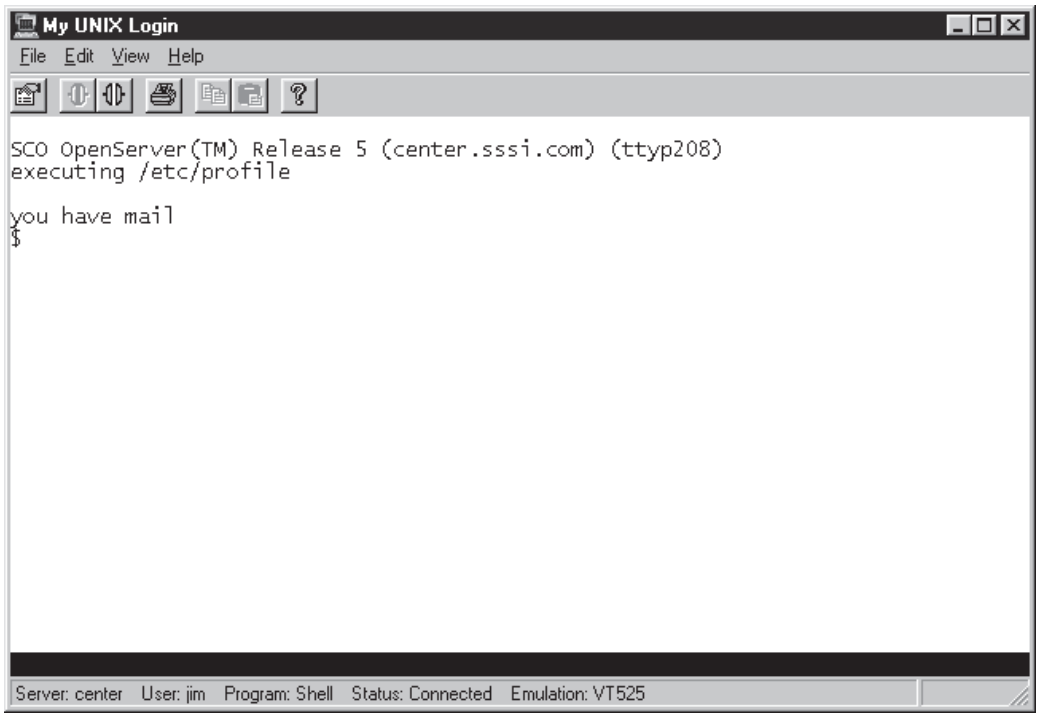
For this example, we will keep the default settings for all the other options on the property sheet. Therefore, you are ready to press the "Start Now" button, and see if the application comes up properly.

If the application started properly, proceed to the section "Using the FacetWin Terminal Emulator to Run Your Application".

If the application did not start or did not run properly, go to the "Troubleshooting Terminal Emulator Connection Problems" section of the "Troubleshooting" chapter.

Using the FacetWin Terminal Emulator to Run Your Application

If all went well in the setup of you first UNIX application, then you should have a FacetWin terminal emulator window on the screen, running your login shell:



In addition, the FacetWin "splash screen" will have been displayed briefly. This screen shows you the version of the FacetWin software you are running on your PC, and the state of the FacetWin license on the UNIX machine that you have connected to. The splash screen will be displayed for about 3 seconds. You can dismiss the splash screen sooner by clicking on it or pressing any key. You can re-display the splash screen at any time by choosing the Help/About FacetWin Terminal item on the menu.

Most of the time you spend running your UNIX application, you will simply keep your hands on the keyboard, and operate your application as though it was running on a character terminal. However, since the FacetWin terminal emulator is a Windows program running on a PC, there are some features available to you that are not available on a character terminal.

Window Sizing.

You can change the size of the window as with most Windows applications. In its default mode, the FacetWin terminal emulator will continue to show the full terminal screen, and adjust the font to fit the size of the window you configure. You can change to a mode where the font size is left as is, and scroll bars are put on the window when it is sized smaller than the full terminal screen. This mode can be changed either in the View menu, or on the Appearance tab of the property sheet. However, the font adjustment mode is the recommended setting. When the window is maximized, it will be set to the largest size for which the entire terminal screen will fit on the screen. The FacetWin terminal emulator window is always sized such that there is no extra space around the terminal area in the window.

Status Lines.

There are two kinds of status lines on the FacetWin terminal emulator. If the emulation is setup to have a terminal status line, then it will appear as an extra line on the terminal screen area of the window. In addition, the FacetWin terminal emulator has its own Windows status line at the bottom of the window. This area tells which machine it is connected to, which user login is being used, the program that is being run, the connection state (connected or disconnected), and the terminal emulation being used.

Menu.

The FacetWin terminal emulator menu is a standard Windows menu that provides a way to display the property sheet, print the screen, set various appearance settings, perform copy and paste operations, and view the help files.

Property sheet.

The FacetWin terminal emulator property sheet is a standard Windows 95 property sheet that provides easy access to all of the configuration options. Some of the connection options cannot be changed while a connection is in effect. To change these options refer to the section "How to Modify the Settings of an Existing UNIX Application".

Tool bar.

The FacetWin terminal emulator tool bar provides quick, single click access to the most common operations including displaying the property sheet, connecting and disconnecting, screen print, copy and paste, and displaying the help file.

Quitting Your UNIX Application

It is important that you quit your application just as you would if you were running it on a character terminal. The FacetWin terminal emulator has a disconnect function, but this should only be used to disconnect from a server session that cannot be exited in a normal manner.

If you disconnect from an active session, your UNIX application will be given a series of signals until it terminates. Depending on the application, it may or may not shutdown properly. Therefore, the safest way to terminate a session is to exit from the UNIX application normally, and this will cause the connection to the server to close.

How to Prepare Your UNIX Login Account for Optimal FacetWin Terminal Emulator Usage

You can make minor changes to your UNIX login profile that will greatly increase the flexibility of using the FacetWin terminal emulator with your UNIX applications.

If your profile sets the TERM environment variable, you should take this setting out. The FacetWin terminal emulator will establish the TERM setting that is correct for each application configuration. Any additional setting of this environment variable in the profile will be unnecessary at best, and incorrect at worst.

If your profile starts an application program at the end of the profile, this will limit the flexibility in using FacetWin. This is because you will usually want to specify that the profile be run in order to get the path and other environment variables set correctly. But then, if the profile runs an application, this will prevent you from being able to configure

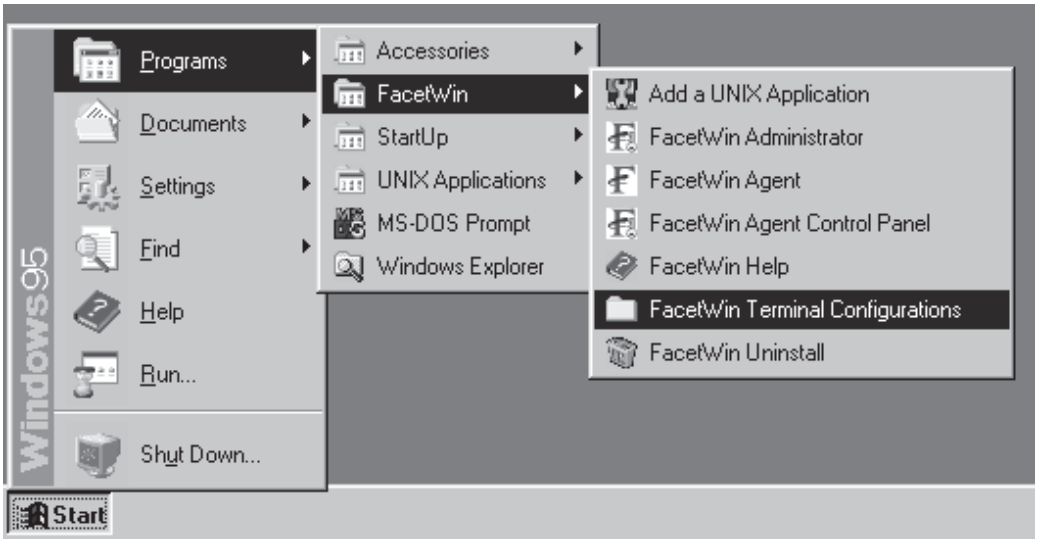
a FacetWin terminal emulation session that runs anything other than that application. Therefore, if you want to be able to run a different application you should take the command to start the application out of the profile, and specify this application in the FacetWin terminal emulator configuration instead. Then, any other application can also be specified this way, while still being able to process the profile.

How to Modify the Settings of an Existing UNIX Application

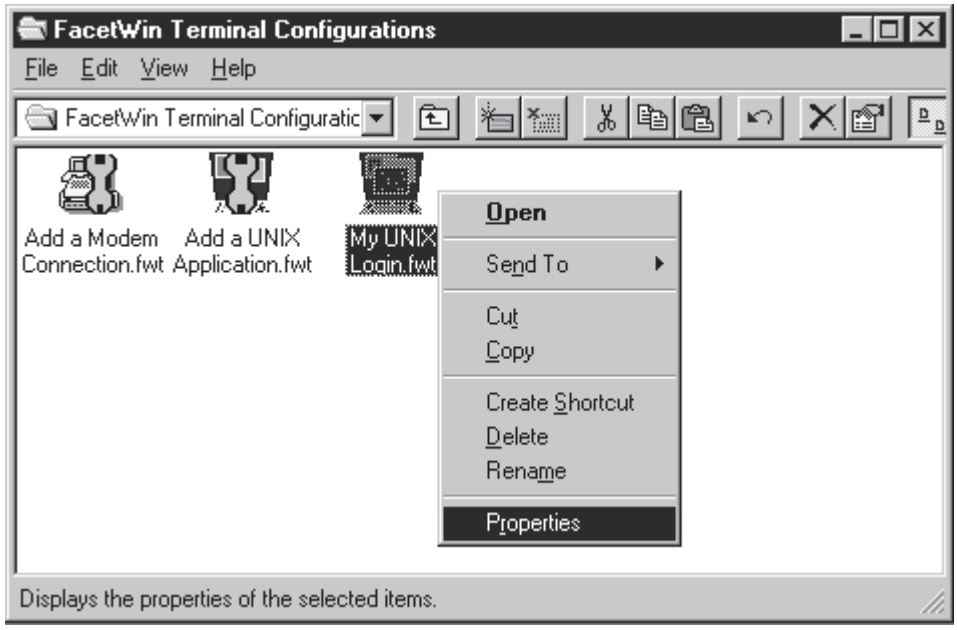
There are two ways to modify the settings of an existing UNIX application configuration. They can be changed while the application is running by modifying its properties, or they can be changed when the application is not running by simply accessing the application's property sheet.

You can change the properties while the application is running, and the changes will be saved in the FacetWin terminal emulator configuration file for that application. Note that some of the connection settings cannot be changed while the connection is in effect. Other settings, such as the window position and size can only be changed while the application is running. Any time you move or re-size the application window, the new position and size is saved in the configuration for the application.

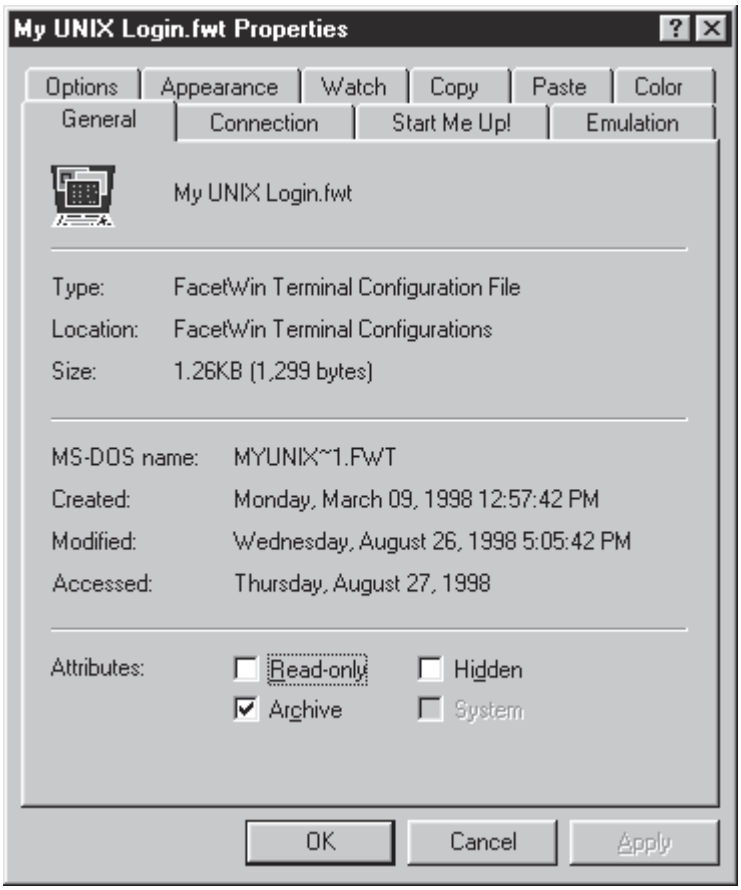
You can also modify the settings of an existing application without actually running the application. Go to the FacetWin Terminal Configurations folder by choosing it in the FacetWin group on the Start Menu:



An Explorer window will display all of the FacetWin terminal emulator configurations that you have created. You can right click on the configuration you want to change and the following menu will be displayed:



Choose the "Properties" item on this menu, and the property sheet for that file will be displayed:

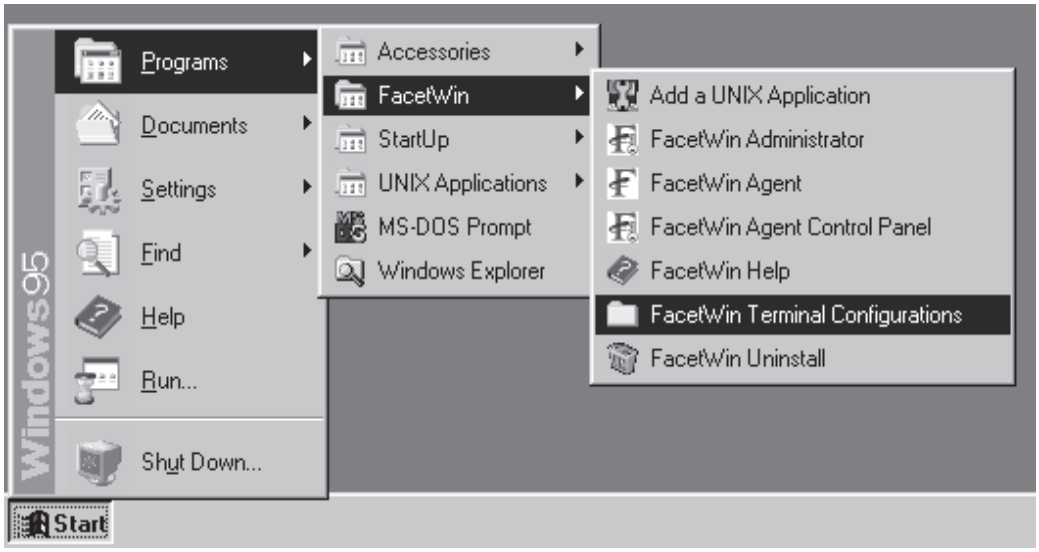


The first tab is the general file tab that the Windows Explorer provides. All the other tabs are the property sheet tabs that you get when you access the property sheet while the emulator is running. You can modify all of the items on the connection tab in this manner, since the connection to the server is not running when you access the property sheet this way. Note that if the application is currently running, you cannot change its properties this way. You must quit the application before bringing up its property sheet by right-clicking on its icon.

How to Modify the Default Values Used When Creating New UNIX Applications

You will probably want to make some changes to the default values that are provided each time you set up a new UNIX application. For example, you will probably want it to default to your normal user name rather than a blank name. Setting up as many of these default values as possible will make the task of adding each new UNIX application quicker. Usually you can use your customized defaults for everything except some of the items on the "Connection" and "Start Me Up!" tabs.

Begin by going to the FacetWin Terminal Configurations folder. This can be done by choosing this option on the Start menu:



This will open an Explorer window in the directory where all of the FacetWin terminal emulator configuration files are kept. Right click on the "Add a UNIX Application.fwt" file in this folder. This will cause the presentation of the property sheet that contains the default values for new applications. Fill in the values of any options that you want to be defaulted differently when you add applications. An explanation of each property sheet option can be found in the property sheet reference sections later in this chapter. When you are finished making your changes, click the OK button at the bottom of the property sheet to save the changes. Clicking the Cancel button will cause your changes to be ignored.

How to Use Copy and Paste

The FacetWin Copy and Paste feature allows you to transfer text between UNIX applications and Windows applications or between two UNIX applications. Because the terminal emulator runs character based applications, only text can be copied from or pasted to an application running in the terminal emulator window. Any time you copy from a terminal emulator window, it replaces the text on the Windows system clipboard. Any time there is text on the Windows clipboard, it can be pasted to a terminal emulator window.

To copy from a FacetWin terminal emulator window, you begin by using the mouse to mark the area you want to copy. The mouse cursor will be an I-beam cursor when it is capable of marking an area of the screen. You must have the "MouseKeys" mode on the emulation tab of the property sheet turned off in order to mark text (see Emulation Tab in the property sheet reference sections later in this chapter). To mark an area, position the mouse cursor at the beginning of the area you want to mark, press and hold down the left mouse button, while moving the mouse cursor to the end of the area you want to mark. Either a rectangular area or whole lines will be marked depending on the copy type specified on the copy options tab of the property sheet (see Copy Tab later in this chapter). Once you have marked an area, you can copy the text that is marked by choosing the Edit/Copy menu item or by pressing the Copy button on the tool bar. These will be disabled unless some text is marked. In addition, there are special keys that can be setup to perform a cut or paste. These must be enabled on the Emulation Tab of the property sheet. Once you have performed the cut operation with one of these methods, the text will be on the Windows clipboard and will remain there until something else is copied to the clipboard from the same or a different window.

When you paste text into a terminal emulator window, it appears to the application running in that window as though the text was typed in. Therefore, you must have the application ready to accept whatever is about to be pasted. For example, if the application has a command mode, and a data entry mode, you must have the application in its data entry mode before you paste data into it. Once the application is ready to receive the data, paste it by choosing the Edit/Paste menu item, or by pressing the Paste button on the tool bar. These will be disabled, unless there is text available on the Windows clipboard. If you are pasting a large amount of data, your application might need to have the data typed into it in smaller portions. This can be accomplished by turning on "Paste pacing" on the paste options tab of the property sheet (see Paste Tab later in this chapter).

How to Use Window Watch

The FacetWin Window Watch feature allows you to specify output from the server application to watch for. If the watched for activity occurs while the emulator is not the foreground window, then an alarm box will be popped up to notify you that the watch condition has occurred.

For example, suppose you are running a UNIX e-mail program, such as "elm". You probably only want to select this window when you are going to send mail or when you receive new mail. You can use Window Watch to notify you when new mail has arrived, allowing you to keep the e-mail window minimized when its not in use. Whenever new mail arrives, FacetWin will pop-up an alarm box to let you know that new mail has arrived.

Or perhaps you are running a report process that takes a long time to finish. You can have FacetWin watch for some identifiable output that indicates that the report has finished. After starting the report process, you can select a different window and go on with other work. You will then be notified when the report has finished.

To set up Window Watch, simply fill out the Watch tab of the property sheet (see Watch Tab later in this chapter).

How to Print the Screen

You can print the emulator screen by choosing File/Print on the menu, or by clicking on the Print icon on the toolbar. When you select Print from the menu, the print dialog box will be presented allowing you to choose the number of copies to print, or make changes to the printer setup. If you just press the OK button, it will print one page using the current printer settings. When you click on the Print icon on the toolbar, the print dialog box is not presented, and it prints one copy to the last printer used.

Using the Terminal Emulator Property Sheet

The FacetWin terminal emulator property sheet is a standard Windows property sheet which provides a convenient and organized way to display and modify all of the program settings in one place.

- There are several ways to access the property sheet:
- Choose the File/Properties menu item while running the emulator.
- Press the Property sheet button on the emulator tool bar.
- In a Windows Explorer window, right click on a FacetWin terminal emulator configuration file which has the ".fwt" file name extension. A menu will be presented, and you should choose the "Properties" item in this menu.

When accessing the property sheet from the menu or with the tool bar button, the program will, of course, be running, and the changes take place immediately. The changes will be automatically saved in the configuration file.

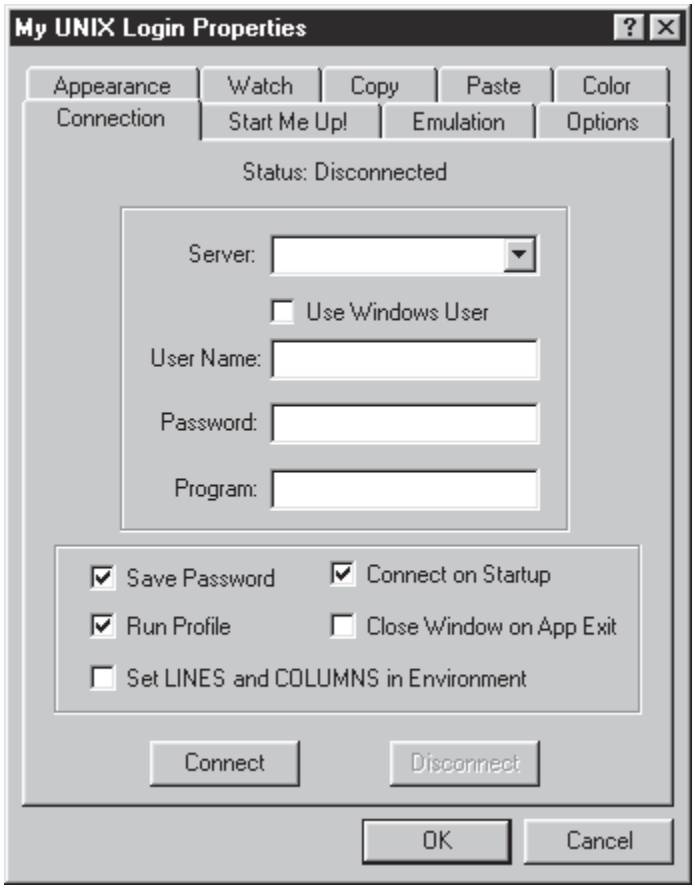
Right clicking on a configuration file while in an Explorer window, provides a way to make changes to a configuration without actually running the terminal emulator. This is an easy way to change connection parameters which cannot be modified while the connection is made.

If you exit from the property sheet with the OK button, then the changes you have made will be saved. If you exit with the Cancel button, no changes will be made to the configuration.

In the following descriptions of each option, the default value is indicated. However, you can personalize the defaults to your own preferences by right clicking on the "Add a UNIX Application" configuration. See the section "How to Modify the Default Values Used When Creating New UNIX Applications".

Connection Tab of the Property Sheet

The following is the Connection tab for a FacetWin terminal emulation configuration:



- Server

  This selection box will contain a list of the FacetWin enabled servers. Choose the server that will run the application you are setting up. If the list is empty, you probably do not have the WINS configuration set up properly on your PC. For help in setting this up, look in the "Installing FacetWin" help section. You may also type the name or the IP address of the server you want to connect to in this box.

- Use Windows User

  If the server selected above is using CIFS terminal emulator security, then the Single Sign-on feature is available. This allows you to use your Windows logon user name and password for terminal emulator sessions. You may check this box and leave the user name and password blank. The terminal emulator session will be authenticated using the same method being used for file and print services. If the server is using the standard UNIX terminal emulator security, then you should leave this box unchecked, and specify a user name and password. Even if CIFS terminal emulator security is in effect, you may leave this box unchecked and supply any user name and password that you like.

- User Name

  Enter the login name to use on the server where the application will be run.

- Password

  Enter the password for the specified user on the server where the application will be run.

- Program

  Enter the command that would be used to run this application from a UNIX shell. If you leave this entry blank, the normal login shell for your user account will be run.

- Save Password

  Check this box if you want the password to be saved (in an encrypted form) in the configuration. The default setting for this option is off. If you check this box, you will not be asked to provide the password each time you run this application. While this is convenient, it may also be a security problem for you. If others have access to your PC, and you have a need to provide security to this application, then do not check this box. The password will then be required whenever anybody attempts to run the application. The saving password feature may also be disabled centrally on the UNIX server. See the section Term Emul/E-mail Tab of the FacetWin Administrator for information about central disabling of saved passwords.

Note: The password saving feature will not work in situations where your IP address changes. This is sometimes the case with dial-in PPP connections. Because the IP address is used as a key in encrypting the password, the saved password is not correct after the IP address is changed.

- Run Profile

  Check this box if you want your UNIX .profile to be processed before running the application. This is usually desirable in order to have the environment variables setup properly for the application. However, there may be commands in your profile which will prevent the application from operating properly. Be sure that you have followed the recommendations in the section How to Prepare Your UNIX Login Account for Optimal FacetWin Terminal Emulator Usage. The default setting for this option is on.

- Connect on Startup

  Check this box if you want to automatically connect to the server and run the UNIX application when you startup the emulator with this configuration. This is almost always the way you will want to set it up, but you may have some special consideration that requires that you not connect immediately when the emulator is started. The default setting for this option is on.

- Close Window on App Exit

  Check this box if you want the emulator window to be closed whenever the connection with the server ends. This is what you will want in most circumstances since it will most likely mean that you have exited the application. Note that if the application terminates abnormally and writes an error message before exiting, this message will be lost since the window will have closed too quickly to read it. Even if you have this option turned on, the window will not close if the connection is broken in an abnormal manner or if the UNIX application terminates within a few seconds of starting up. In these cases, there are probably error messages that you will want to see before closing the window. The default setting for this option is on.

- Set LINES and COLUMNS in Environment

  Check this box if you want the LINES environment variable on UNIX to be set to the number of lines that the terminal emulator is set to display and COLUMNS set to the number of columns it is configured to display. Some applications will use these environment variables to affect their screen displays. The default setting is for this option is off.

- Connect

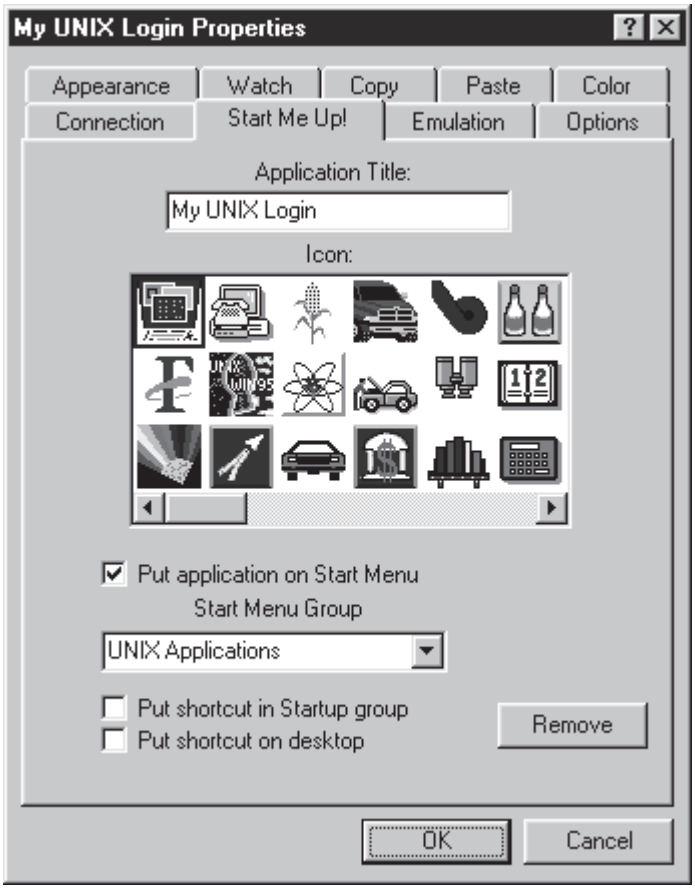
  If the emulator is currently disconnected from the server, this button will be enabled, and you can click on it to connect according to the specifications on the Connection page. When you click this button the property sheet will be removed and the connection will be attempted.

- Disconnect

  If the emulator is currently connected to the server, this button will be enabled, and you can click on it to break the connection to the server. Note that you should not disconnect this way unless you are unable to quit the UNIX application normally for some reason. See Quitting Your UNIX Application .

Start Me Up! Tab of the Property Sheet

The "Start Me Up!" tab contains those items that define how the configuration will be saved, and where icons to the application will be installed:



- Application Title

  Enter the name you want to give to the application. This will be the name in the title bar of the application when you run it, and it will be the name of the FacetWin terminal emulator configuration file with the .fwt extension added. Do not add the .fwt extension yourself. The title can contain upper and lower case. Spaces are allowed in the name, but periods "." are not allowed.

- Icon

  Choose the icon that you want to represent this application. You choose one of the icons by clicking on it.

  The icons that are presented for your use are in the "Icons" sub-directory of the FacetWin installation directory on your PC. There are more icons in the "Iconlib" sub-directory. If you want to add them to the list presented for your use in the terminal emulator, then copy them from the Iconlib directory into the Icons directory. The display of the "Start Me Up!" tab of the property sheet will be slowed by adding too many icons to the Icons directory.

- Put application on Start Menu

  Check this box if you want to put this application on the Windows Start Menu. The default setting for this option is on.

- Start Menu Group

  If you are putting the application on the Start Menu, you may select the group that it goes in here. The default group is "UNIX Applications".

- Put shortcut in Startup group

  Regardless of the menu group you selected in the previous option, you may additionally specify that the application should go in the Startup group so that it is automatically started when Windows is started on the PC. The default setting for this option is off.

- Put shortcut on desktop

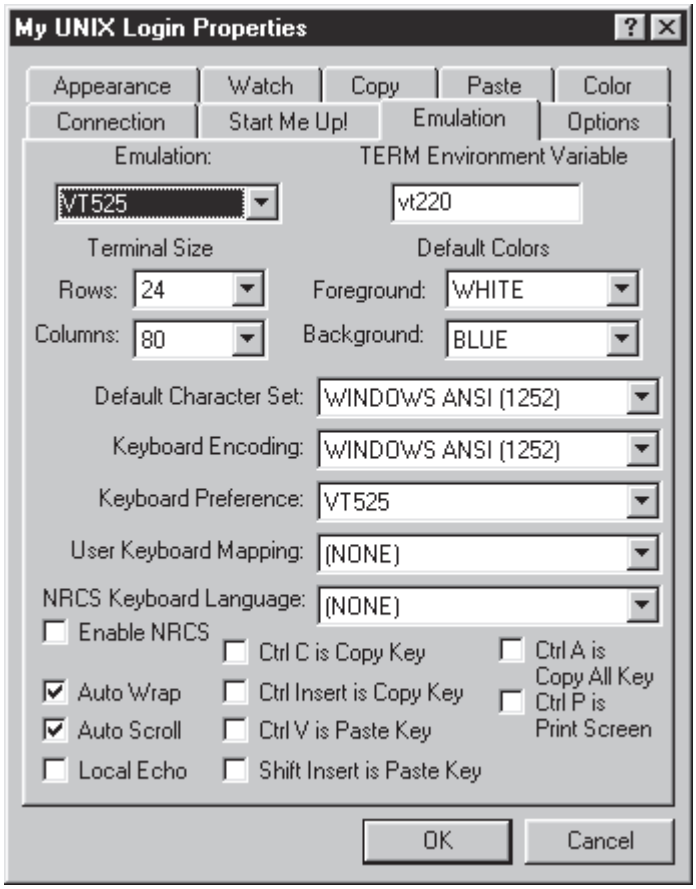
  If you check this box, the icon for the application will be put on the Windows desktop, so that it can easily be started by double clicking the icon on the desktop. The default setting for this option is off.

- Remove

  Click on this button if you want to remove the application and all of its short-cuts in the menu or on the desktop. If the emulator is currently connected to the server, this button will be disabled.

Emulation Tab of the Property Sheet

The Emulation tab selects the terminal emulation and all of the options associated with that emulation:



- Emulation

  This selection box contains a list of the terminal types that the emulator supports. Choose the emulation that you know works best with the application being setup. Some of these emulations are really emulation families. For example, the VT525 is a color superset of the VT series of terminals. If your application works well with one of the VT terminals, such as the VT220, VT320, etc., then VT525 is the emulation you should use.

- TERM Environment Variable

  Enter the value of the TERM environment variable that you normally use for the terminal type that you selected from the Emulation list. When you change the emulation, a reasonable default will be supplied here. However, you may change it to whatever works best on your UNIX system.

- Terminal Size

  The Rows and Columns selection boxes contain a list of the valid screen sizes available for the terminal type you have chosen. These values are defaulted to the "normal" screen size, such as, 24 rows by 80 columns.

- Default Colors

  The Foreground and Background selection boxes contain a list of the colors available for the default foreground and background colors of the terminal screen.

- Default Character Set

  This selection box contains a list of character sets that the current emulation supports. The default character set defines which character set will be used to display international (8 bit) characters, unless changed by the application under program control.

- Keyboard Encoding

  This selection box controls the code page that will be used to turn 8 bit characters entered on the keyboard into the appropriate value to be sent to the server. The default setting will be dependent on the emulation and your PC's default code pages set up when you installed Windows 95. The USER SPECIFIED setting should only be used under the direction of FacetCorp support staff.

- Keyboard Preference

  This selection box will contain choices for popular alternatives to the default keyboard for a particular terminal emulation. For example, if your emulation is set to VT525, you may select between the default VT525 PC keyboard, and a keyboard more compatible with VT220 applications that are expecting a VT keyboard with PF1, PF2, PF3, and PF4 keys. This setting causes F1 through F4 on the PC keyboard to send the sequences normally sent by PF1 through PF4 on the VT keyboard.

- User Keyboard Mapping

  This selection box will contain a list of any user defined keyboard mapping files with the extension .fwk found in the "userkey" directory under the FacetWin installation directory on the PC. The keys in the shift states specified in this file will send the user defined sequence instead of the default for the terminal. The application cannot override the user defined sequence.

- Enable NRCS

  Check this box if you want the emulator to use a National Replacement Character Set.

- NRCS Keyboard Language

  If you have enabled the use of National Replacement Character Sets, this selection box will allow you to select the language of the replacement character set. The USER SPECIFIED setting should only be used under the direction of FacetCorp support staff.

- Autowrap

  On some terminals, it is an option to have the terminal automatically wrap to the beginning of the next line when reaching the end of a line. Check this box to have autowrap turned on. The default setting is to have autowrap on.

- Autoscroll

  On some terminals, it is an option to have the terminal automatically scroll the screen when going to the next line after the last line. Check this box to have autoscroll turned on. The default setting is to have autoscroll on.

- Local Echo

  Check this box if the server you are communicating with uses a "half duplex" communication path which requires the terminal to echo the characters that a user types rather than having the server echo them. This is usually not the case with UNIX systems. The default setting for this option is off.

- Ctrl C is Copy Key

  Check this box if you would like for the Ctrl C key to perform a copy to the Windows clipboard. Note that you must have an area of the screen marked in order to perform a copy. You should be sure that the UNIX application does not use this key before dedicating it to this use. The default setting for this option is off.

- Ctrl Insert is Copy Key

  Same function as the "Ctrl C is Copy Key" option except that it determines the effect of the Ctrl Insert key. The default setting for this option is off.

- Ctrl V is Paste Key

  Check this box if you would like for the Ctrl V key to perform a paste from the Windows clipboard. Note that there must be text on the clipboard in order to perform a paste. You should be sure that the UNIX application does not use this key before dedicating it to this use. The default setting for this option is off.

- Shift Insert is Paste Key

  Same function as the "Ctrl V is Paste Key" option except that it determines the effect of the Shift Insert key. The default setting for this option is off.

- Ctrl A is Copy All Key

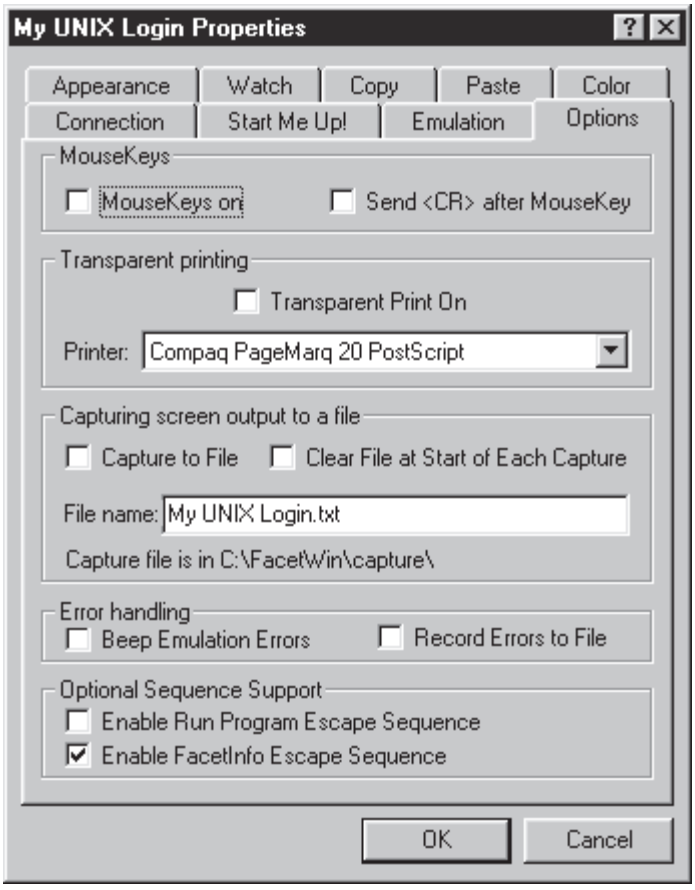
  Check this box if you would like for the Ctrl A key to copy the entire screen to the Windows clipboard. There is no need to mark the selection area when doing a "Copy All". You should be sure that the UNIX application does not use this key before dedicating it to this use. The default setting for this option is off.

- Ctrl P is Print Screen

  Check this box if you would like for the Ctrl P key to perform a screen print. You should be sure that the UNIX application does not use this key before dedicating it to this use. The default setting for this option is off.

Options Tab of the Property Sheet

The Options tab contains a variety of miscellaneous configuration options:



- MouseKeys on

  Check this box if you want to turn on the "MouseKeys" feature of the FacetWin terminal emulator. This mode allows you to use the mouse to point at a character on the screen, and cause that character to be "typed" when you click on it (the character is sent when the mouse button comes up). This mode is useful for operating a menu driven application which prompts for single character menu commands. Note that when this mode is in effect, you cannot mark a selection for copying. This mode can also be toggled under the View menu item. The default setting for this option is off.

- Send <CR> after MouseKey

  Check this box if you want a carriage return to be transmitted after the "MouseKey" character is sent. The default setting for this option is off.

- Transparent Print On

  This check box can be used to turn transparent printing on and off. When transparent printing is on, output is sent to the specified printer rather than coming to the screen. This will usually be done by escape sequences from the program running on the server. However, this check box is available for manually turning transparent printing on and off.

- Printer (for transparent printing)

  This selection box lists all the printers available to the PC. By selecting a printer here, you are only selecting the printer to be used in transparent printing. The printer used in screen printing is unaffected by this setting.

- Capture to File

  Check this box if you want all of the output to the screen to be written to a file. The file will be put in the "Capture" subdirectory of the FacetWin installation directory on your PC. The default setting for this option is off. Because this file contains each character sent to the emulator from the server, it will have some unprintable characters in it. You should also note that leaving this option on during a long emulation session, can use a large amount of disk space on the PC.

- Clear File at Start of Each Capture

  Check this box if you want the capture file to be cleared each time you toggle capture mode from off to on.

- File name (of capture file)

  This is the name of the file that the captured screen output will be written to. This file will always be put in the "Capture" subdirectory of the FacetWin installation directory on the PC. The default file name is the name of the current configuration with a ".txt" filename extension. You may used this edit box to save the captured output to a file of a different name.

- Beep Emulation Errors

  Check this box if you want the emulator to "beep" whenever it receives a terminal control escape sequence that it does not understand. This feature is mainly used with the instruction of FacetCorp support engineers. The default setting for this option is off.

- Record Errors to File

  Check this box if you want the emulator to record terminal control escape sequences that it does not understand to a file. The file will be put in the "Errors" subdirectory of the FacetWin installation directory on your PC. The file will have the same name as the configuration, except with a ".txt" file name extension. This feature is mainly used with the instruction of FacetCorp support engineers. The default setting for this option is off.

- Enable Run Program Escape Sequence

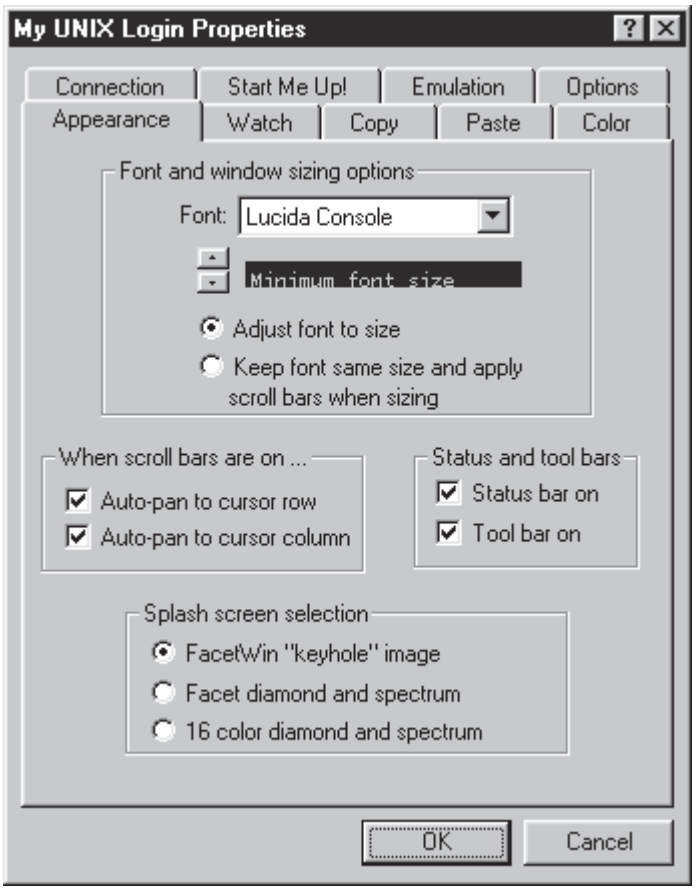
  The terminal emulator supports an extended escape sequence that may be used by a server program to cause a PC program to be run on the Windows PC. This sequence will not be recognized by the terminal emulator unless the feature is turned on by checking this box. The default setting for this option is off. A description of the use of this feature is found in the section PC Command Feature.

- Enable FacetInfo Escape Sequence

  The terminal emulator supports an extended escape sequence that may be used by an application to determine information about the PC where the terminal emulator is running. The default setting for this option is on, and you should leave it on unless instructed by FacetCorp support to turn it off.

Appearance Tab of the Property Sheet

The Appearance tab of the property sheet includes items that determine what font will be used, how it will be sized when the window size is changed, how the emulation window will behave when scroll bars are applied, whether the status and tool bars are displayed, and which splash screen is used:



- Font.

  This selection box will contain a list of fonts suitable for use with the FacetWin terminal emulator. Only fixed pitch True Type fonts are included. The Lucida Console font which comes with FacetWin is the default font. This font scales well, and has a very large set of characters.

- Minimum font size.

  This up/down control allows you to select the smallest font size that will be used when adjusting the font to the window size. If the window is sized such that the entire terminal screen will not fit at the minimum font size, then scroll bars will be used even if the "Adjust font to size" setting is selected.

- Adjust font to size / Keep font same size and apply scroll bars when sizing.

  These radio buttons select between two modes that determine how the emulator window behaves when you size it. In the "Adjust font to size" mode, the font size will be made smaller or larger as you shrink or enlarge the window. In the "Keep font same size ..." mode, scroll bars are applied to the window when it is made smaller and the font is kept at the same size. In the scroll bar mode, the window cannot be enlarged beyond a full terminal screen size for the current font size. The default setting for this option is the "Adjust font to size" mode.

- Autopan to cursor row and column

  These settings only apply when the window has scroll bars. If the "Autopan to cursor row" box is checked, then when the cursor is positioned on a row that is not visible, the window will be automatically scrolled to make the row that the cursor is on visible. Similarly, if the "Autopan to cursor column" box is checked, then the window will be automatically scrolled to make the column that the cursor is on visible. The default setting for both options is on.

- Status bar on

  Check this box if you want the FacetWin terminal emulator status bar to be displayed. The status bar is located at the very bottom of the terminal emulator window. It displays information about the connection, and also displays instructions during the marking of a selection for copying. The default setting for this option is on.

- Tool bar on

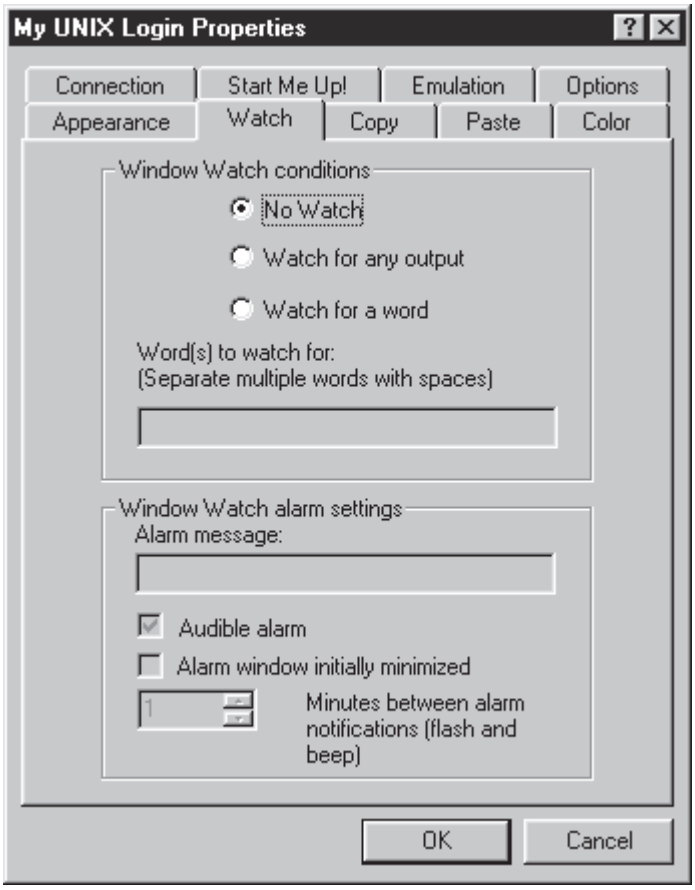
  Check this box if you want the FacetWin terminal emulator tool bar to be displayed. The tool bar provides a quick way to perform the most common functions of the emulator. The default setting for this option is on.

- Splash screen selection

  Use these radio buttons to select which "splash screen" you want to be displayed when the first copy of the terminal emulator starts up. This is also the screen presented when you choose Help/About FacetWin on the menu. The FacetWin "keyhole" image is the image on the CD packaging and manual cover. The "diamond and spectrum" image is the image printed on the CD itself. The "16 color diamond and spectrum" is the image printed on the CD, but in only 16 colors. Use this 16 color image if your display adapter only displays 16 colors, or if you wish to avoid the palette change when the splash screen is presented on a 256 color display.

Window Watch Tab of the Property Sheet

The Window Watch tab of the property sheet contains the parameters for setting up the watch condition for this terminal emulator configuration:



- No Watch / Watch for any output / Watch for a word

  These radio buttons select whether a watch is in effect, and if so, whether it is watching for any output or only selected output.

- Word(s) to watch for

  If you have chosen to watch for a word (or words), enter the specific text to watch for here. You can specify multiple words to look for by separating them with spaces. If any of the words are matched in the output from the application, then the alarm window will be displayed. For example, suppose you have a long running report process running, and you want to minimize the window, but have it notify you when the report is finished. Suppose the report process outputs the word "Finished" when the report completes successfully, and "Error" if it terminates with an error. You would want to be notified in either case, and so you would enter:

  Finished Error

  as the words to watch for. This item will be disabled unless the "Watch for a word" watch type is set.

- Alarm message

  Enter the message that you want in the alarm box that will be displayed when the watch criteria are met. Since you may have several emulator windows with their own watch conditions setup, you will want to supply a message which indicates which window has had its watch condition occur.

- Audible alarm

  Check this box if you want the watch alarm box to sound an audible alarm periodically.

- Alarm window initially minimized

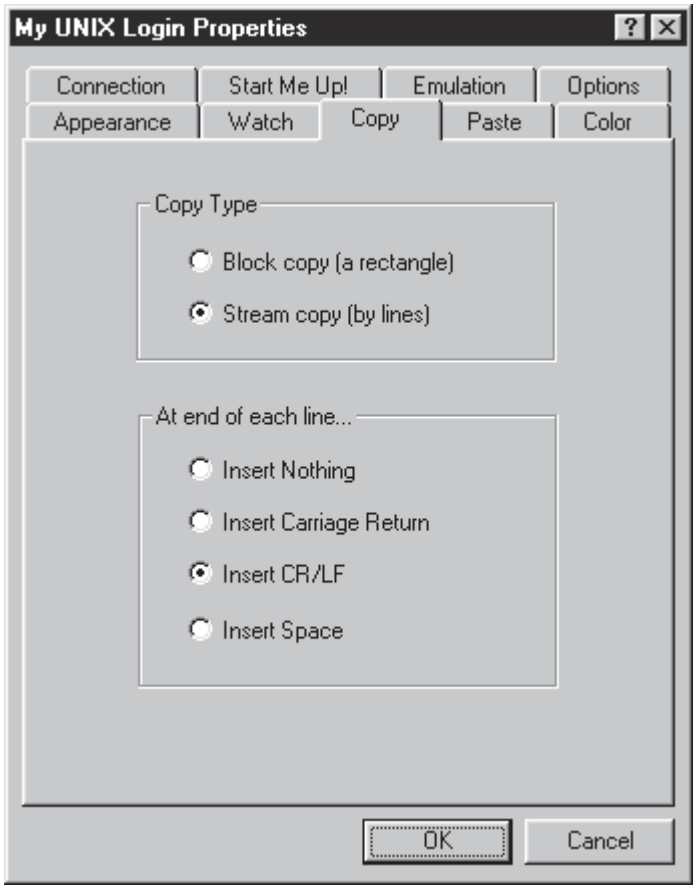
  Check this box if you want the watch alarm box to be minimized when the alarm first goes off. Instead of popping up over the other windows on the screen, it will only have a button on the task bar.

- Minutes between alarm notifications

  When the watch alarm box is present, it will flash its title bar and beep (if the audible alarm is turned on) periodically to remind you that the watch condition has occurred. You can set the interval between these "flashes" and "beeps" by specifying the number of minutes here. The default setting for this option is 1 minute.

Copy Options Tab of the Property Sheet

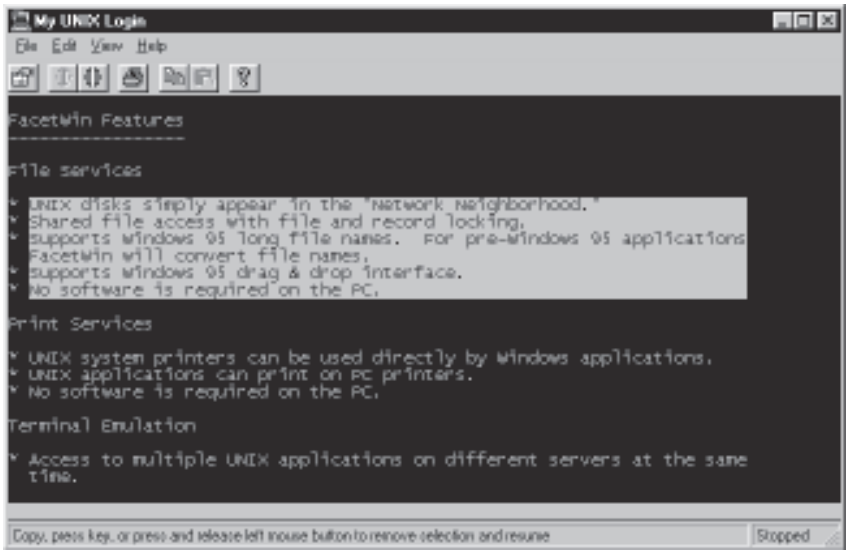
The Copy Options tab contains the options that determine how an area of the screen will be marked for copying and what terminating character will be put at the end of each line when the marked area is copied onto the Windows clipboard:



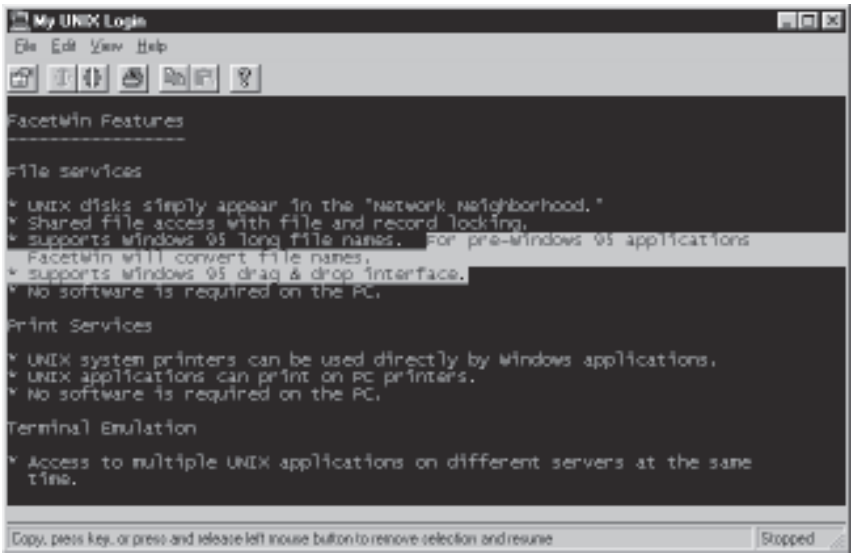
- Copy type: Block copy / Stream copy

  These radio buttons select between a block copy and a stream copy.

In block copy mode, the rectangle of characters defined by opposing corners are marked:



In stream copy mode, whole lines between the beginning and end of the selected area are marked:

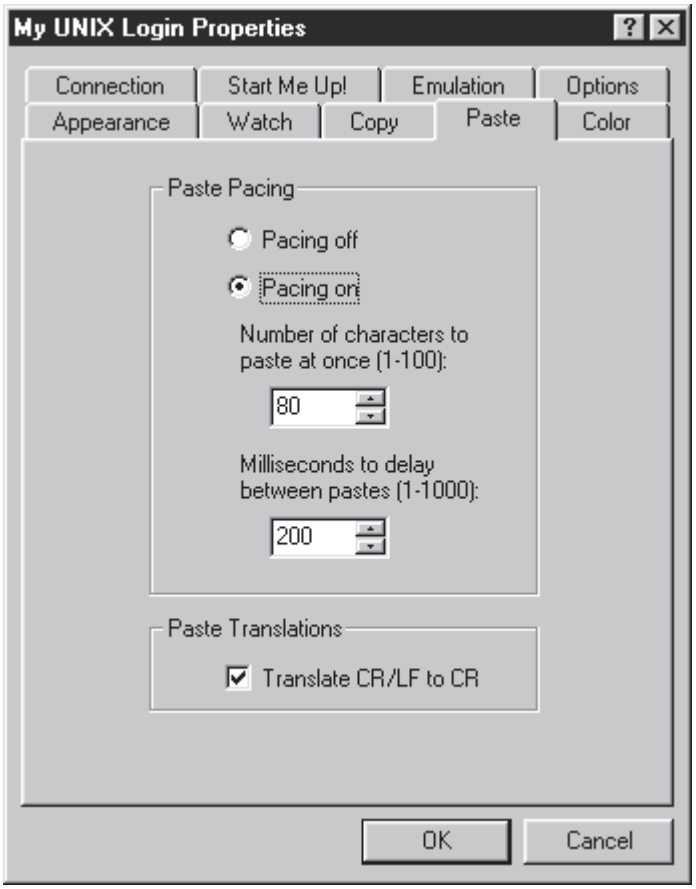


- End of line terminators: Insert Nothing / Insert Carriage Return / Insert CR/LF / Insert Space

  These radio buttons determine what will be put in the copied text at the end of each line. The norm for DOS and Windows software is to put a carriage return and line feed (CR/LF) at the end of each line. This is the default setting. Special circumstances might require you to have it put nothing, or a space, or just a carriage return at the end of each line. For example, if you copied a long shell command that wrapped to the next line, you would want to insert a space at the end of the line. The end of line terminator is not inserted at the end of the last line copied.

Paste Options Tab of the Property Sheet

The Paste Options tab contains options which determine the rate at which pasted characters will be fed to the destination application, and a setting that determines whether CR/LF pairs in the clipboard data should be converted to CR only:



- Pacing off / Pacing on

  Paste pacing causes the text on the clipboard to be sent to the server application in multiple transmissions with a limited number of characters in each transmission and with a delay between each transmission. Because a paste appears to be keyboard input to the server application, there are sometimes timing constraints on how quickly the server can handle the characters without losing any of them.

If paste pacing is off, all of the characters on the clipboard will be sent at once. If it is on, then the number of characters specified on the property sheet will be sent with the delay specified between each transmission. The default setting for this option is on.

- Number of characters to paste at once

  This setting specifies the number of characters to send in a single paste transmission if paste pacing is on. The default value is 80 characters.

- Milliseconds to delay between pastes

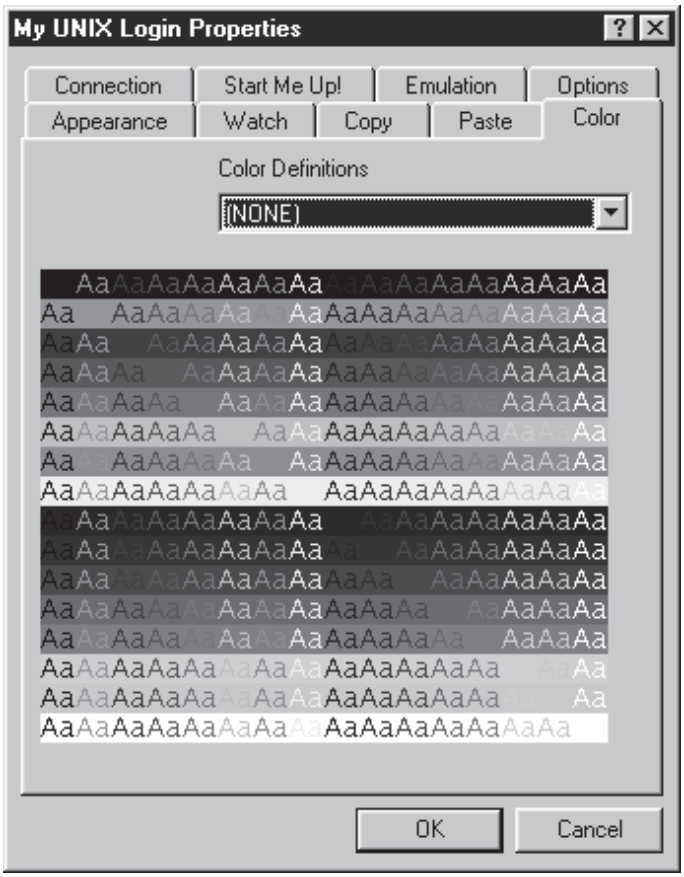
  This setting specifies the number of milliseconds to wait between paste transmissions if paste pacing is on. The default value is 200 milliseconds.

- Translate CR/LF to CR

  Check this box if you want carriage return / line feed pairs (CR/LF) to be converted to carriage return only before pasting to the server application. While the normal text clipboard format on Windows has CR/LF pairs terminating each line, most UNIX applications expect you to type a carriage return only at the end of each line. Therefore, you probably want to have this option turned on. The default setting is on.

Color Tab of the Property Sheet

The Color tab provides a method for you to choose an alternate set of colors to be used in the terminal emulation window. For example, if you use a combination of foreground and background colors that are difficult to read with the standard set of colors used by the terminal emulator, then you may select an alternate set of colors that makes this foreground/background combination readable.



- Color definition file

  This drop down box contains a list of color definition files that were found in the color subdirectory of the FacetWin installation directory on the PC. These files specify alternate sets of colors that may be used with the terminal emulator. If you find that the normal colors used by the terminal emulator are not

optimum for some of the color combinations you are using, you may select an alternate color set here. The name of each color definition file provided with FacetWin describes the basic effect of the color set (such as brighter foreground colors).

- Color display area

  This display area shows the effect of the colors that are used by the color definition file selected above. This display shows every foreground color on every background color. This allows you to preview the effect of a color definition file before closing the property sheet and having the color change applied to the terminal emulator window.

User Keyboard Maps

The FacetWin terminal emulator has the capability for the user to map selected keys to output up to 256 characters when the selected key is pressed. The keyboard mappings are defined in a user keyboard mapping file which has the extension ".fwk" (for FacetWin Key file). These keyboard mapping files must be in a sub-directory called "UserKey" under the main FacetWin directory on the Windows PC. For example, if FacetWin was installed in:

C:\Facetwin

then the FacetWin keyboard mapping files must be located in:

C:\Facetwin\UserKey

A keyboard mapping file can be selected for each FacetWin Terminal configuration. The keyboard mapping is selected on the Property sheet Emulation Page . The pull-down list box titled "User Keyboard Mapping" will contain a list of all keyboard mapping files found in the UserKey directory.

A keyboard mapping file consists of one or more lines (one line per key to map) with the syntax:

[CTRL/][ALT/][SHIFT/]*keyname* SEQ=*sequence_to_send*

For example:

CTRL/SHIFT/F4 SEQ=hello\r

means that when the Ctrl and Shift keys are depressed, the F4 key will send the string "hello" with a carriage return afterwards.

Each line of a keyboard mapping file has the following characteristics:

- Each line is limited to 256 characters.
- Blank lines and lines that begin with "#" are comments.
- White space consists of multiple space and/or tab characters.
- White space at the beginning of the line is optional.

- There can be no white space between the "CTRL/", "ALT/", and "SHIFT/" modifiers and the keyname.
- There must be white space between keyname and "SEQ=".
- Any white space after "SEQ=" is part of the seqence_to_send.
- There is no line continuation character.

When the emulator reads in a keyboard mapping file to use, any errors in the keyboard mapping specifications will be recorded in the error file if that error handling option is enabled. Also, if the "beep" error handling option is enabled, keyboard mapping errors will cause the emulator to beep. These error handling options are on the Options Page of the Property sheet.

keyname is one of the following:

For the standard typewriter keys, use the printable character that the key would normally send. For example, ‘A’, or ‘a’ both refer to the "A" key, and you could specify a sequence to be sent when Alt-a is pressed with either:

ALT/a SEQ=xxx

or

ALT/A SEQ=xxx

Special keys are denoted by the following identifiers:

ESC	is	Escape key
TAB	is	Tab key
BACKSPACE	is	Backspace key
ENTER	is	Enter key (not on keypad)
SPACE	is	Space bar
F1, F2, ... F24	are	Function keys (most keyboards only have 12)
PRINTSCREEN	is	Print Screen key
PAUSE	is	Pause key

INSERT	is	Insert key (not on keypad)
HOME	is	Home key (not on keypad)
PAGEUP	is	Page Up key (not on keypad)
DELETE	is	Delete key (not on keypad)
END	is	End key (not on keypad)
PAGEDOWN	is	Page Down key (not on keypad)
UPARROW	is	Up arrow key (not on keypad)
LEFTARROW	is	Left arrow key (not on keypad)
DOWNARROW	is	Down arrow key (not on keypad)
RIGHTARROW	is	Right arrow key (not on keypad)
KP_/	is	/ key on keypad
KP_*	is	* key on keypad
KP_-	is	- key on keypad
KP_+	is	+ key on keypad
KP_ENTER	is	Enter key on keypad
KP_.	is	. on keypad with Num Lock on
KP_0, KP_1, ... KP_9	are	0 through 9 on keypad with Num Lock on
KP_HOME	is	Home on keypad with Num Lock off
KP_UPARROW	is	Up arrow on keypad with Num Lock off
KP_PAGEUP	is	Pg Up on keypad with Num Lock off
KP_LEFTARROW	is	Left arrow on keypad with Num Lock off
KP_CLEAR	is	5 key on keypad with Num Lock off
KP_RIGHTARROW	is	Right arrow on keypad with Num Lock off
KP_END	is	End on keypad with Num Lock off
KP_DOWNARROW	is	Down arrow on keypad with Num Lock off
KP_PAGEDOWN	is	Pg Dn on keypad with Num Lock off
KP_INSERT	is	Ins on keypad with Num Lock off
KP_DELETE	is	Del on keypad with Num Lock off

You may also map the shift keys themselves, but this is highly discouraged since the key will lose its shift state meaning. The following identifiers refer to the shift keys:

CAPSLOCK	is	Caps Lock key
SHIFT	is	Either Shift key
CTRL	is	Left Ctrl key
RIGHT_CTRL	is	Right Ctrl key
ALT	is	Left Alt key
RIGHT_ALT	is	Right Alt key

Windows takes over some keys in certain shift states for its own use, such that these cannot be mapped at all. The following keys cannot be mapped for this reason:

ALT/TAB
ALT/ESC
CTRL/ESC
ALT/F6
SHIFT/ALT/F6

FacetWin also does not allow the mapping of:

Num Lock
Scroll Lock

The *sequence_to_send* is composed of normal printable characters, plus the following combinations which indicate special or unprintable characters:

\\	is	BACKSLASH
\b	is	BACKSPACE
\n	is	NEWLINE
\r	is	RETURN
\s	is	SPACE
\t	is	TAB
\e	is	ESCAPE
\E	is	ESCAPE
\x[0-9 a-f A-F]	is	HEX equivalent of character
\[0-7][0-7][0-7]	is	OCTAL equivalent of character
\OTHER	is	OTHER
^?	Is	0x7F
^@ to ^_	is	0x00 to 0x1F
^` to ^~	is	0x00 to 0x1E

PC Command Feature

The PC Command feature allows a UNIX application to run PC applications by sending an escape sequence to the terminal emulator. For example, a UNIX database application could easily be enhanced to display images by invoking an image viewer program on the PC. Or, your UNIX application could be enhanced to play sound or video clips via a Windows media player program.

The escape sequence for running a PC program is:

```
\E[2]command\r
```

where command is a command to be run on the Windows PC. For example,

```
\E[2]notepad myfile.txt\r
```

would run the Windows Notepad program, and it would attempt to edit the file called "myfile.txt".

Note that you can run PC programs that refer to data files back on the UNIX server. For example, suppose you had a PC program for viewing JPEG images called "jpegview.exe", and you had JPEG image files on the UNIX server where you are running a UNIX application. The UNIX application could cause the display of the JPEG images on the PC by sending this escape sequence:

```
\E[2]c:\bin\jpegview \\unixhost\usr\images\image1.jpg\r
```

The "c:\bin\jpegview" is the path to the PC program to run, and the "\\unixhost\usr\images\image1.jpg" is the server name and path to the image file to be viewed.

The program running sequence is disabled by default, and must be turned on by checking the "Enable Run Program Escape Sequence" box on the Options Page of the Property sheet. When enabled, the escape sequence works the same regardless of which terminal type is being emulated.

System Administrator Features

The FacetWin terminal emulator has a few options that are considered "system administrator features". These features are designed to allow the system administrator to limit users' ability to disconnect abnormally or make unwanted changes to their terminal emulation configurations. These features are all implemented by editing the .fwt files of the affected configurations with a text editor like Notepad and adding the lines described below. By adding these lines to a user's "Add a UNIX Application.fwt" configuration file, you can insure that they are propagated to all new configurations that the user may create.

- noclosetilldisc=YES

  This prevents the user from closing a terminal emulator window with the "close window" button on the title bar (the "x") before exiting his application. This is to prevent abnormal termination of a UNIX application.

- nouserdisconnect=YES

  This prevents the user from disconnecting a terminal emulation session with the File/Disconnect menu command, the Disconnect button on the property sheet connection page or the Disconnect button on the toolbar. Therefore, this feature also prevents abnormal termination of a UNIX application. When both the noclosetilldisc and nouserdisconnect features are enabled, the user must normally exit his application before the connection with the server will be terminated.

- nullmenu=YES

  This causes a menu to be displayed that only has the help option. If a session is configured to have the toolbar turned off, and then this feature is enabled, the user will not be able to change anything about the configuration of the session other than to move or resize the window.

UNIX Environment Variables Used by the Terminal Emulator

Each FacetWin terminal emulation session has the following UNIX environment variables associated with it:

FACETTYPE=FacetWin

> FACETTYPE is set to "FacetWin" when running the FacetWin Terminal emulator.
>
> Note that if you run FacetTerm in a FacetWin terminal emulation session, FACETTYPE will be set to "FacetTerm".

FACETWINSLOT=n

> As the FacetWin Terminal emulator starts, it is assigned a number, starting at 1, that is not currently being used by another active terminal emulation session. Therefore, the first one has FACETWINSLOT=1, the second has FACETWINSLOT=2, the third has FACETWINSLOT=3. If the second session terminates, the next one that starts will get FACETWINSLOT=2.

FACETWININSTANCE=n

> As the FacetWin Terminal emulator starts, it is also assigned a number, starting at 1, that is not currently being user by another active terminal emulator session that is running from the same icon used to start this session. If you run three applications from the same icon, they will get FACETWININSTANCE=1 then FACETWININSTANCE=2 and then FACETWININSTANCE=3. If you run 3 different icons, they are all FACETWININSTANCE=1.

FACETWINIPADDR=nnn.nnn.nnn.nnn

> FACETWINIPADDR is the IP address of the PC as seen from the UNIX system. This is the IP address used to communicate with the PC.

FACETWINIPADDRPC=nnn.nnn.nnn.nnn

> FACETWINIPADDRPC is the IP address of the PC as seen from the PC. This can be different from the IP address as seen from the UNIX system if NAT (Network Address Translation) or VPN (Virtual Private Network) is being used. In these cases, the IP address as seen from the PC cannot be used to communicate with the PC.

FACETWINNBNAME=nbname

FACETWINNBNAME is the NetBIOS name of the PC, usually set on the Identification tab of the networking properties.

FACETWINPC=dnsname

FACETWINPC is the DNS name of the PC, usually set on the DNS tab of the TCP/IP properties.

FACETWINPRSHARE=printername

FACETWINPRSHARE is the NetBIOS name of the default printer on the PC when it is shared.

FACETWININFOSEQ=ENABLED

FACETWININFOSEQ indicates that the escape sequences to retrieve the same value as FACETWINIPADDRPC are enabled.

FacetWin PC Backup

Overview

FacetWin Version 3 includes a new method of backing up PCs to a disk archive or tape drive on a UNIX server. This supercedes the use of the older fct_client program that was originally provided for this purpose. The fct_client program is still included in FacetWin, but should be used for CIFS file transfer functionality only. The new backup feature is much better suited for backing up PCs. It allows multiple PCs to be backed up to the same archive and supports multi-tape archives by allowing you to either switch tapes in a single drive or specify multiple drives to be used in the backup.

There are several terms that need explanation before continuing.

File set refers to the set of files that will be backed up on a PC.

Backup set refers to a set of one or more PCs that are backed up in a single backup operation.

Disk archive refers to a disk file on the UNIX server that contains the backed up files from a PC.

Tape archive refers to one or more tapes that contain the backed up files from a PC.

Full backup refers to a backup in which all of the files defined by the file set are included in the backup.

Incremental backup refers to a backup in which only those files that have changed since the last full backup are included in the backup.

There are three main backup scenarios supported by FacetWin:

The backup can be managed completely by the system administrator. In this case, the administrator defines generic file sets to describe the files to be backed up on all the PCs. For example, you could define a generic file set that includes all of the C: drive minus the Windows and Program Files folders. This file set could be used to describe the files that need to be backed up on most PCs. Then the PCs are grouped together into backup sets and backed up interactively or scheduled for unattended backups.

The user can backup his own PC independently. Users can use the FacetWin Agent Control Panel to view the contents of their disks and define custom file sets. The Control Panel only allows users to do an interactive backup of their own PC. They cannot schedule backups and they cannot backup anyone else's PC. This feature must be enabled by the system administrator before it can be used. For instructions on enabling the "Backup Now" feature, see the section on the PC Backup Tab of the FacetWin Administrator.

The user and administrator can cooperate in the process by having the user define his file set(s) and by having the system administrator do the actual backup. The administrator might collect file sets for several PCs into a single backup set and then schedule an unattended backup.

When doing a backup, it is best to have closed all of the programs on your PC. Many programs lock the files that they use such that they cannot be read for the backup. Any file that cannot be read will be left out of the backup. Some of the Windows files will always be locked and cannot be backed up. When you configure a backup, you should select your files to be backed up, and not attempt to completely backup the operating system and the program files of the applications that you have loaded. If you have to completely restore a PC, you should do a fresh installation of the operating system and your applications, and then restore your files.

Backups can be done to disk archives or tape archives. You should limit your use of disk archives because they can use up excessive space on the UNIX server. Full backups should almost always be done to tape. However, incremental backups might be small enough that it could be very convenient for you to do most incremental backups to disk archives.

Before any tape backups can be done, the system administrator must define the tape drive configurations for the server where the backups will be done. The Administrator program can be used to set this up. See the section on the PC Backup Tab of the FacetWin Administrator for instructions. The system administrator may also edit the tape.cfg configuration file directly. See the section on PC Backup Configuration Files for more information.

Backing Up Your PC with the FacetWin Agent Control Panel

If you are a system administrator creating generic file sets for centralized backups, see the sections on Configuring Centralized PC Backups and PC Backup Tab of the FacetWin Administrator.

Users can backup their own PCs by using the FacetWin Agent Control Panel. To use this program, you must have installed FacetWin on your PC. For instructions on running this program see the section on Running the FacetWin Agent Control Panel. This program will present a property sheet. You will use the PC Backup tab on that property sheet to define file sets.

If your system administrator has enabled user backups, you can also specify information for doing a backup of each file set that you have defined. If not, you can still define your own custom file set for your PC, and ask the system administrator to run the backup for you. If user backups are enabled, then you can also restore files from any backups that you have done yourself with the Agent Control Panel.

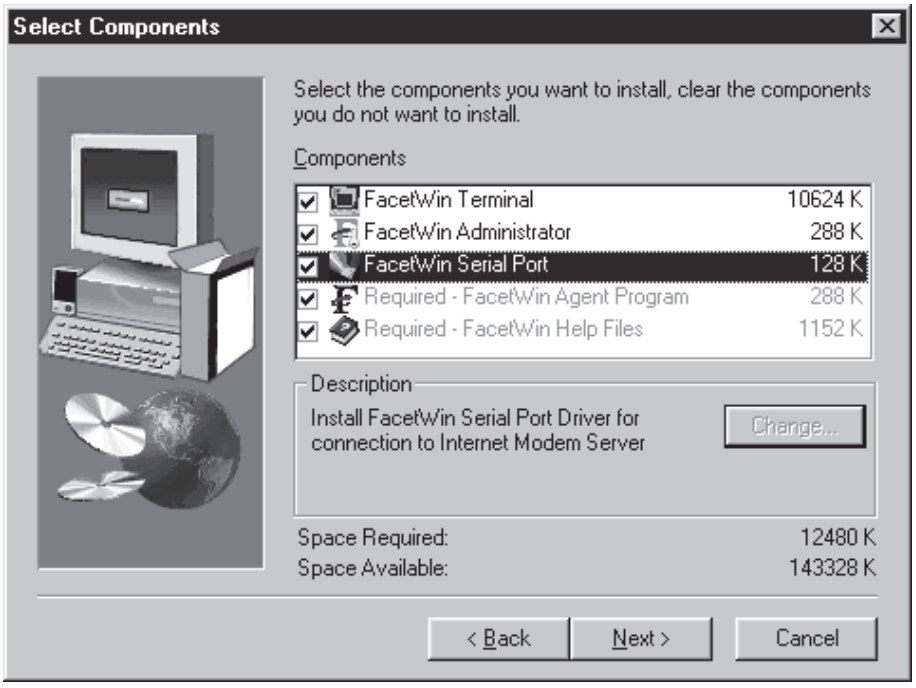
For instructions on using the PC backup tab, see the section PC Backup Tab of the Control Panel.

FacetWin Modem Services

Overview

The FacetWin Modem Server provides a way for PC users to access a pool of modems that are connected to the UNIX server. Users share the modems on a first-come, first-served basis. The modems can be divided into classes, and each class can be given a password. At least one modem class must be defined before the modem server can be used. For system administrator information on setting up modem classes, see the section on the Modems Tab of the FacetWin Administrator.

In order to use the modem server, you must install the FacetWin Serial Port Driver on your PC. This driver looks like a standard "COM" port driver to Windows applications, but actually works across the network with a modem on the UNIX server. Therefore, you can use the UNIX modems with Windows Dial-up Networking (Internet access) or most other applications that use a modem. Fax applications are not currently supported. The driver is currently only available for Windows 95/98. The driver is optionally installed during the PC installation of FacetWin. If you have already installed FacetWin on your PC but did not include the driver component, you may install again, this time selecting the driver for installation:



Once the driver is installed, you can define one or more new COM ports which will be linked to a modem class on the UNIX server. The FacetWin Agent Control Panel is used to setup these ports. For instructions on running this program see the section on Running the FacetWin Agent Control Panel. This program will present a property sheet. You will use the Modem Server tab on that property sheet to configure these special ports. For instructions on configuring FacetWin virtual serial ports, see the section on the Modem Server Tab of Control Panel. After you have associated a virtual serial port with a modem class on a UNIX server, you may use that serial port with your PC programs. Currently, this does not work reliably with Windows fax programs due to the critical timing required for fax operations.

FacetWin Agent

Overview

The FacetWin Agent is a program that runs in the background on your PC and communicates with FacetWin servers on the UNIX host. The agent communicates with the backup server to send files to be backed up and receive files to be restored. The agent must be running in order for your PC to be backed up.

The agent also displays messages sent from the FacetWin file and print server. If the agent is not running when a message is sent to your PC from the file and print server, the message will not be displayed.

Finally, the agent provides a user interface to FacetWin features that are configurable on your PC. This user interface is called the FacetWin Agent Control Panel. The control panel is a property sheet that allows you to configure your PC backups, your virtual serial ports for use with the modem server, and other miscellaneous features.

The agent is a mandatory component of the PC installation. If you have installed FacetWin on your PC, the agent should be installed, should be running, and will be started each time you start Windows (or login in the case of NT).

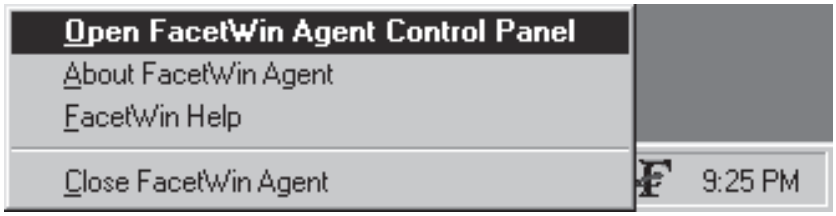
The Agent puts a FacetCorp logo icon in the task bar system tray:

The next sections discuss the FacetWin Agent Control Panel.

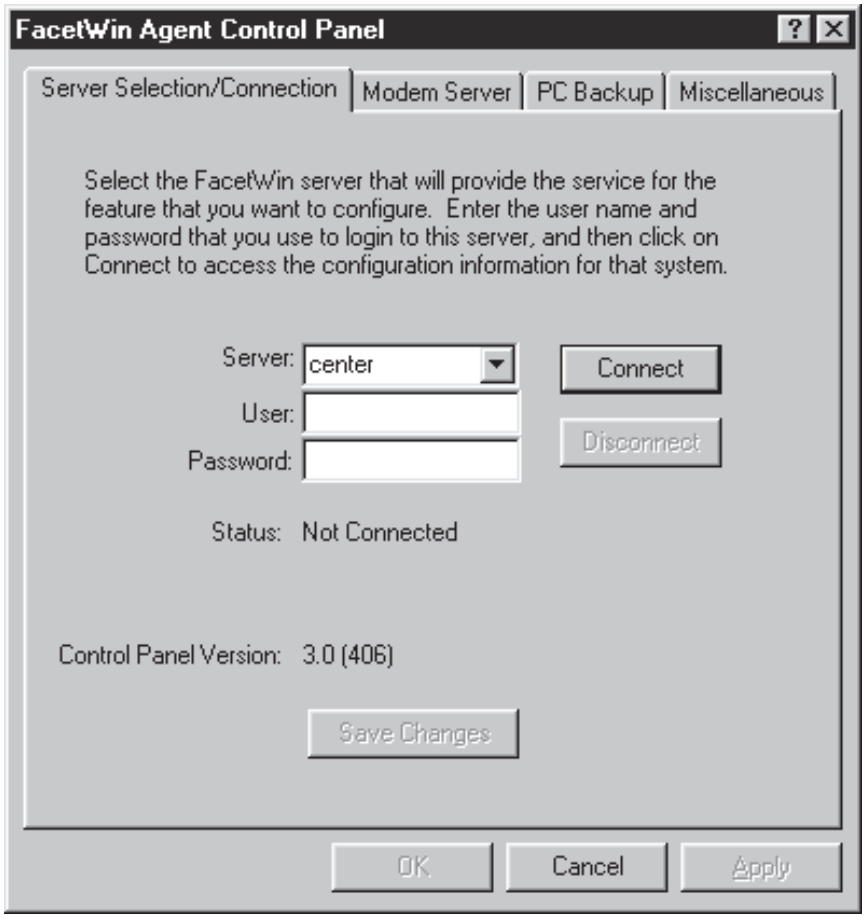
Running the FacetWin Agent Control Panel

You can invoke the FacetWin Agent Control Panel from the FacetWin group in the Windows Start menu, from the Agent's right click menu, or by double clicking on the Agent's icon in the system tray.

To access the agent's menu, right click on its icon in the system tray:



When you start the control panel, a property sheet will be displayed:



Before you can use the control panel, you must connect to the server that will be providing the services that you want to administer. For example, if you want to backup your PC, you must connect to the UNIX server that will do the backup. If you want to configure a FacetWin virtual serial port for use with the modem server, you must connect to the server where the modems are.

To connect, select the server and furnish a user name and password that are valid on that server. Then click on the Connect button. The control panel will load the configuration from the server, and then the other tabs will be selectable.

The items on this tab are:

- Server

  Enter the name of the FacetWin enabled host computer that will provide the services that you want to configure.

- User

  Enter the user name that you use to login to this server.

- Password

  Enter the password that you use on this server.

- Connect

  After you have entered the server name, the user name and password, you may click the Connect button to connect to the specified server and read its configuration into the property sheet pages. If the connect button is disabled, it means you are already connected to a FacetWin server.

- Disconnect

  Once you have connected to a FacetWin server, you may click the Disconnect button to disconnect from that server so that you may connect to and configure settings on another server. If the Disconnect button is disabled, it means you are not currently connected to a FacetWin server.

- Status

  The status area will show the progress of reading the FacetWin configuration. When the connection is complete and the configuration has been completely loaded, the status area will show that you are connected. It will also show some information about the FacetWin software installed on this server and whether or not the configuration has been modified.

- Save Changes

  If you want to save your changes without exiting from the Control Panel, click on this button or on the "Apply" button at the bottom of the property sheet. The configuration will be updated with any changes that you have made. This button is disabled when there are no new changes.

The general property sheet buttons that are the same regardless of the tab selected are:

- OK

  When you click on the property sheet OK button, any changes made will be applied to the server's configuration, and the Control Panel will exit.

- Cancel

  When you click on the property sheet Cancel button, the Control Panel will exit if no changes have been made. If changes have been made, a dialog box will notify you of this fact and give you the options of applying your changes before exiting, discarding the changes and exiting, or canceling and returning to the Control Panel.

- Apply

  If you want to save your changes without exiting from the Control Panel, click on the Apply button. The configuration will be updated with any changes that you have made. This button is disabled when there are no new changes.

- ?

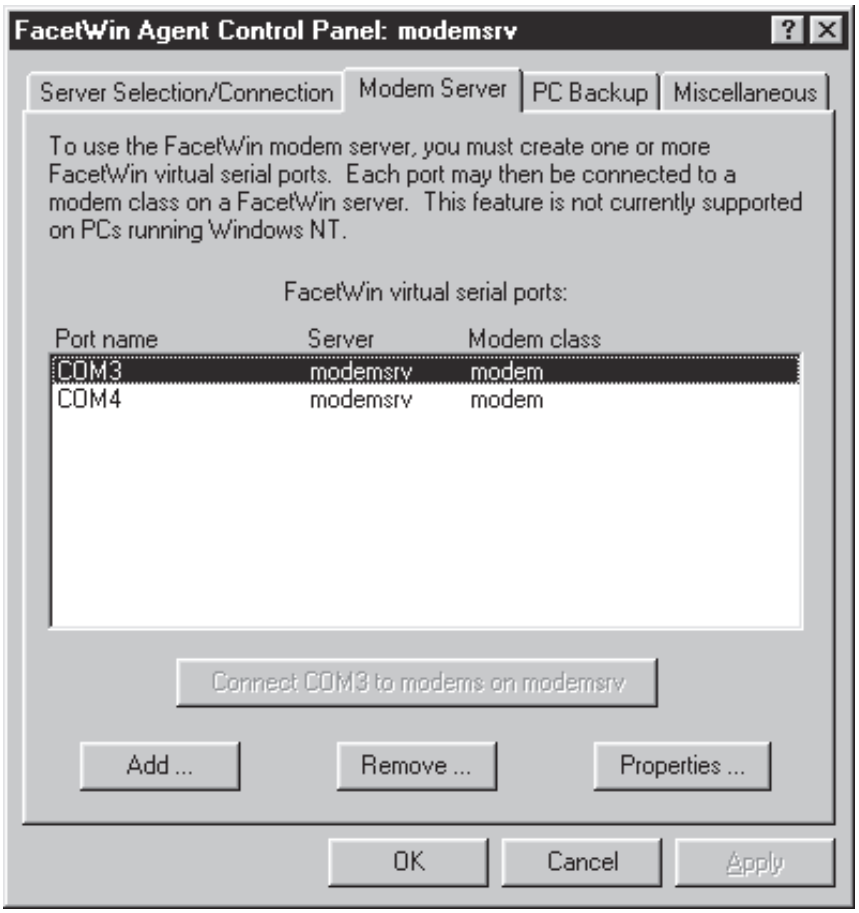
  The button with the question mark on the title bar is used to get context sensitive help. When you click on this button, the cursor will be changed to a help cursor. Move the help cursor over the item that you want help on, and then click on that item. A help box will pop-up with information about that item.

- x

  The button with an x on it in the title bar behaves the same as the Cancel button.

Modem Server Tab of the Control Panel

The Modem Server tab of the Control Panel is used to manage the FacetWin virtual serial ports:



Note that on a PC running NT, the items on this tab will be disabled since the virtual serial port driver is currently only supported on Windows 95/98.

If the Add button is enabled, then it means that the driver is supported on your PC and that the driver has been installed on the PC. If you have not installed the driver, run the FacetWin PC installation procedure again and select the virtual serial port driver for installation.

If you are not familiar with the FacetWin modem server, see the section Overview of the FacetWin Modem Services to understand the general concepts.

The items on this tab are:

- FacetWin virtual serial ports list

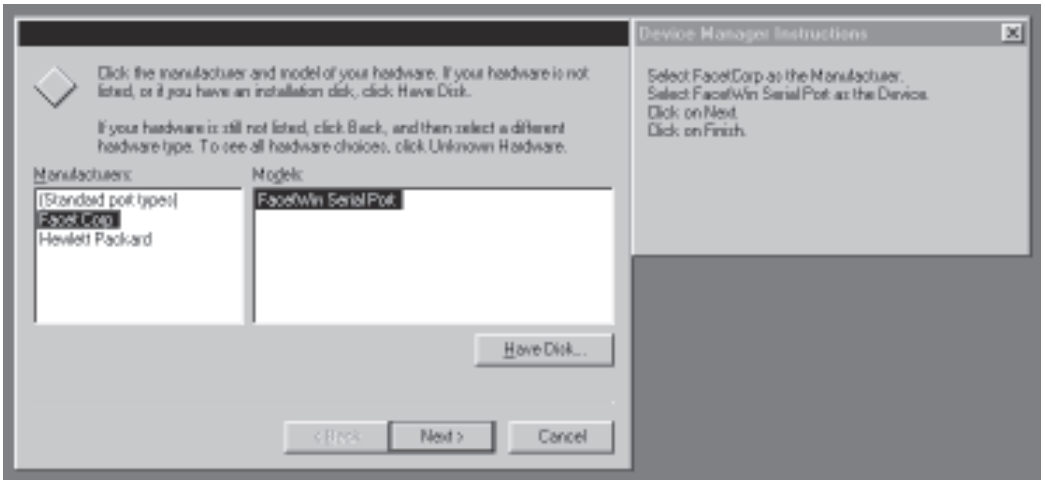
  This is the list of FacetWin virtual serial ports defined for this PC. Each entry displays the port name, the FacetWin server to which the port will connect, and the modem class on that server that is associated with the port.

- Connect port to modems on server button

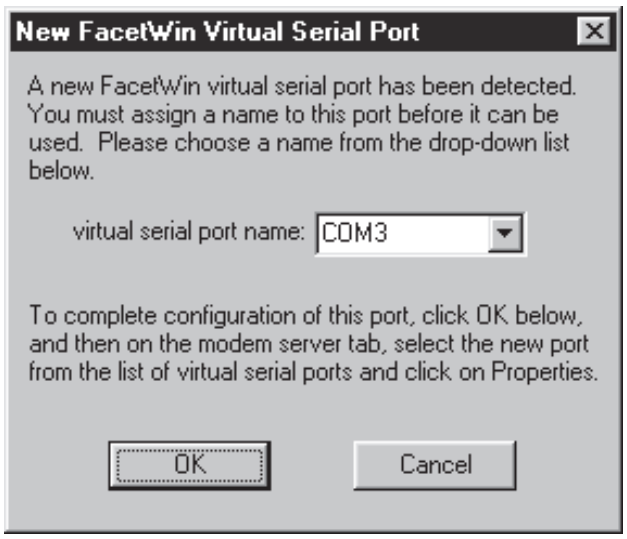
  When you select a virtual serial port in the list, the label on this button will change to indicate that clicking the button will associate the selected port to modems on the server to which you are currently connected. When you click the button, the properties for this port will be displayed so that you can select the modem class that the port will use.

- Add button

  Click on this Add button to create a new FacetWin virtual serial port. The Windows Add Hardware wizard will be run, and a window with instructions on how to use the wizard to create the new port will be displayed:



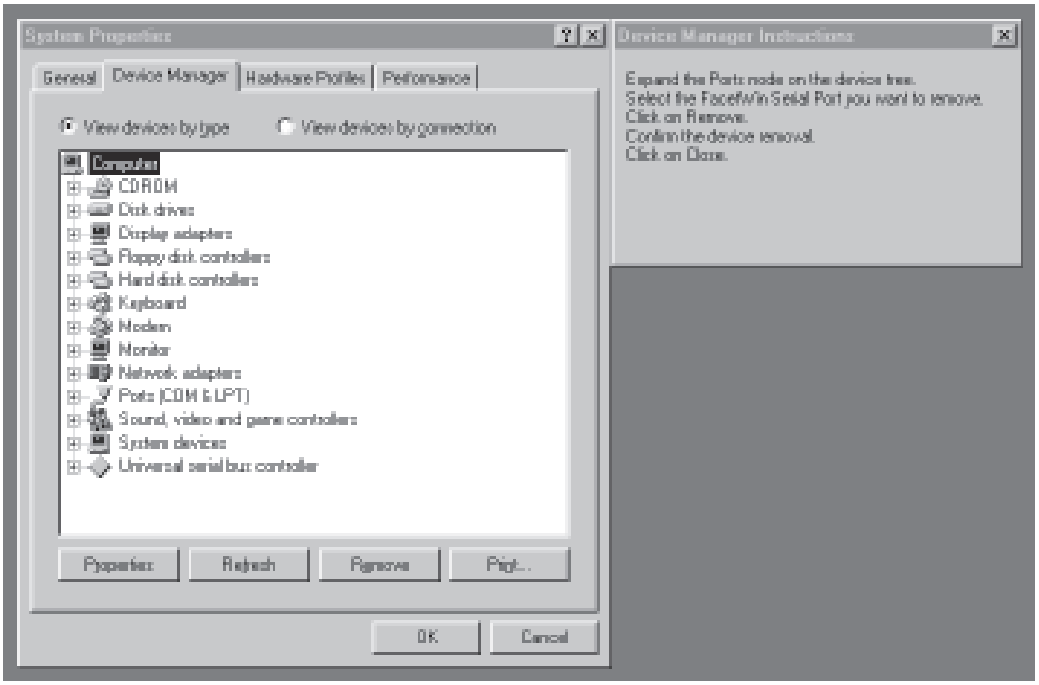
Follow the instructions for adding the port. After the Windows Hardware wizard has finished, you will be prompted to give a name to the new port:



To finish configuring the new port, select it in the list and click on the Connect port to modems button (see above).

- Remove button

  Click on this Remove button to remove a FacetWin virtual serial port. The Windows Device Manager will be run, and a window with instructions on how to use the Device Manager to remove the port will be displayed:

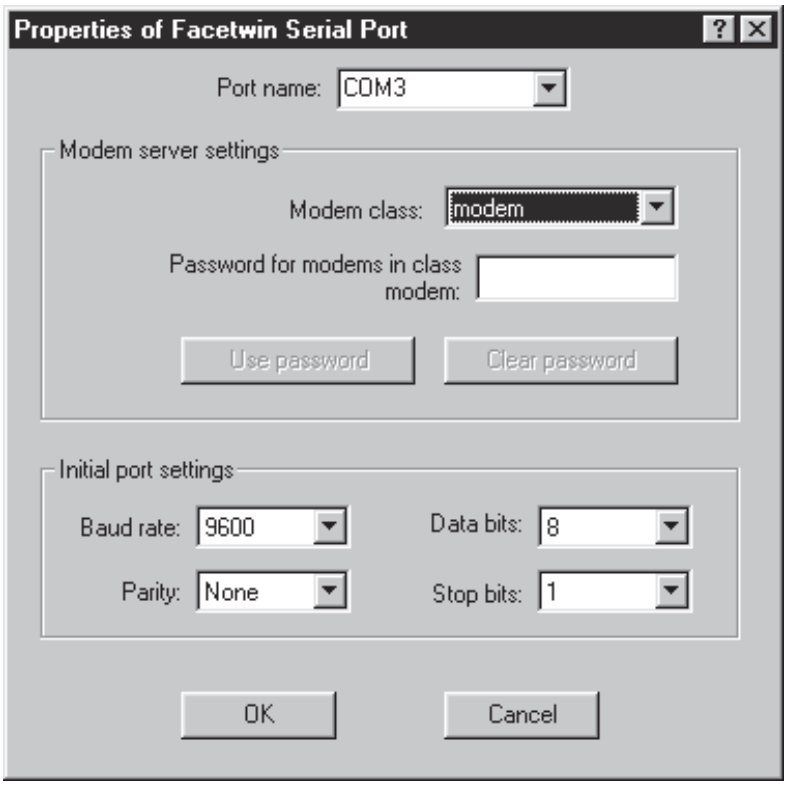


  Follow the instructions for removing the port.

- Properties button

  Click on this Properties button to view or modify the properties of the virtual serial port selected in the list. The Properties of FacetWin Serial Port dialog box will be displayed. This dialog box is discussed below.

When you first connect a port to a server or when you select a port in the list and click on the Properties button, the Properties of FacetWin Serial Port dialog box is displayed:



The items on this dialog box are:

- Port name

  Choose the name for this virtual serial port. All of the available "COM" port names will be in the list.

- Modem class

  This drop down list will contain the modem classes that are defined on this FacetWin host. Choose the modem class that you want to be associated with this virtual serial port.

- Password for modem class

  If the modem class that you chose has a password, you must enter the password here. To add a password, enter it and click on the "Use password" button. To remove the password for the PC, click on the "Clear password" button. To change an existing password, clear it first, enter the new password, and then click on the "Use password" button.

- Baud rate

  Choose the initial baud rate for the port.

- Parity

  Choose the initial parity setting for the port.

- Data bits

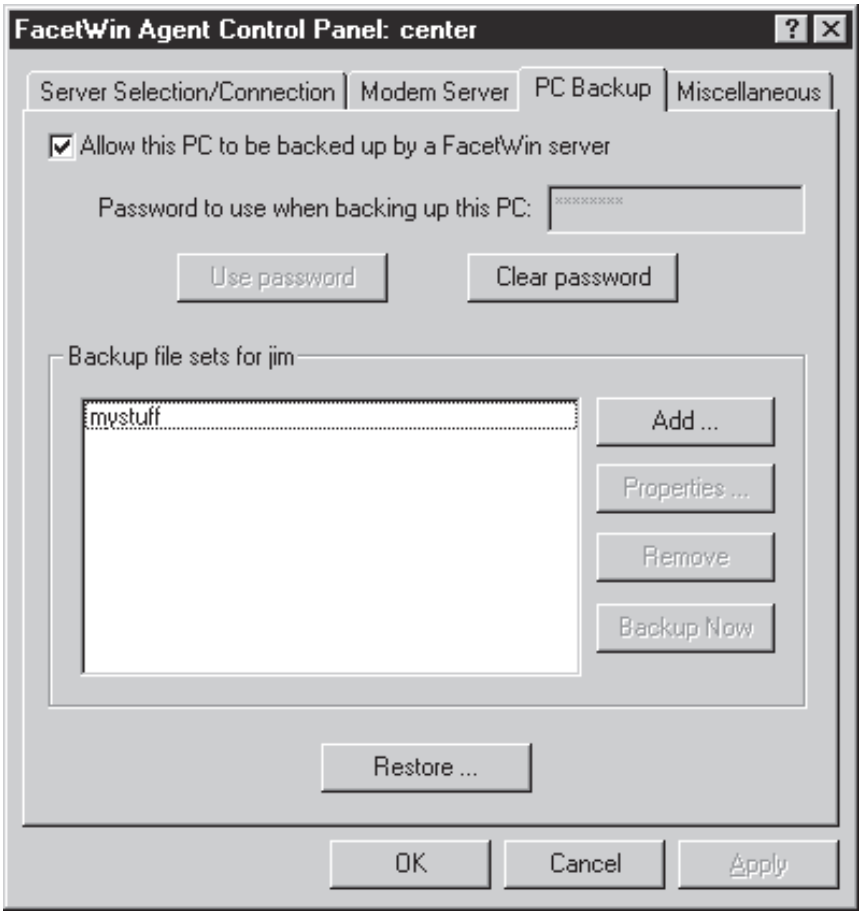
  Choose the initial value for the number of data bits for the port.

- Stop bits

  Choose the initial value for the number of stop bits for the port.

PC Backup Tab of the Control Panel

The PC Backup tab of the Control Panel is used to define files to be backed up by the system administrator in a centralized backup. In addition, if the system administrator has enabled user backups, then you can use this tab to backup your own PC. For a general overview of PC backups, see the section on Overview of the FacetWin PC Backup Services.



The items on this tab are:

- Allow this PC to be backed up by a FacetWin server

  You must check this box to enable a FacetWin server to backup your PC. By default, backups are disabled.

- Password to use when backing up this PC

  After you enable your PC for FacetWin backups, you may want to require a password to backup your PC. If the system administrator will be doing the backups, you must give him this password to be used when your PC is backed up. To add a password, enter it and click on the "Use password" button. To remove the password, click on the "Clear password" button. To change an existing password, clear it first, enter the new password, and then click on the "Use password" button.

- Backup file sets list

  Each file set specifies a group of files to be backed up in a single backup operation. After you define a file set, you can notify the system administrator that you would like to have it backed up. Optionally, you can specify the additional information necessary for doing the backup yourself if the administrator has enabled user backups.

- Add button

  Click on this Add button to create a new backup file set. A blank Backup File Set Properties dialog box will be presented.

- Properties button

  Click on this Properties button to modify the properties of the file set that is selected in the list. A Backup File Set Properties dialog box will be presented with the information about the file set filled in.

- Remove button

  Click on this Remove button to delete the file set that is selected in the list. If the system administrator is including this backup configuration as part of a centralized backup, you should notify him that you have removed this file set.

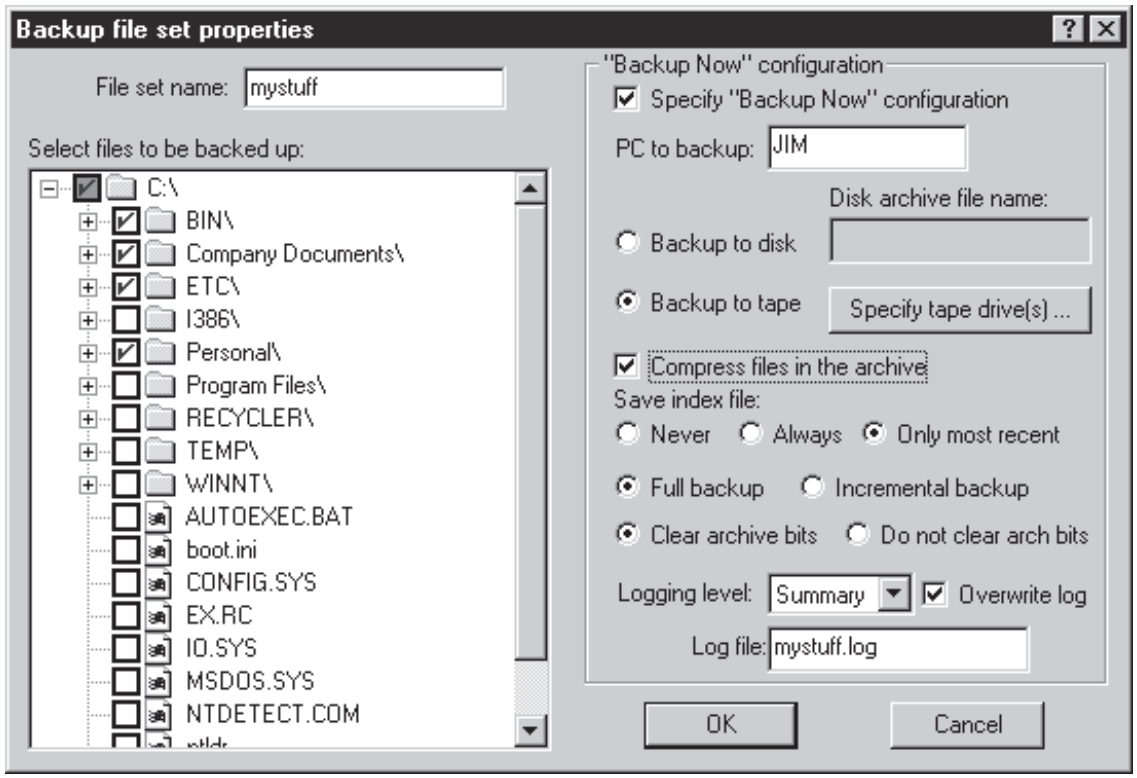
- Backup Now button

If user backups have been enabled by the system administrator and you have entered the information for doing your own backup of the file set selected in the list, then you can click on this "Backup now" button to start the backup.

- Restore

  Click on this button to setup for doing a restore. The Restore Files From a Backup dialog box will be presented. This dialog box is discussed below.

When you add a new file set or click on the Properties button to modify the properties of an existing file set, the Backup File Set Properties dialog box will be presented:



The items on the left side of the dialog box are mandatory:

- File set name

  Enter the name that you want to give this file set. The name must be a valid UNIX file name. UNIX file names can include upper and lower case letters of the alphabet, numbers, and the special characters # % + , . : = @ _ . The filename extension .fsd will be appended to the name you supply and the file set description file will be saved in the facetwin/Backup/filesets subdirectory of your home directory on the UNIX host. If you specify a Backup Now configuration, the file name extension .bsd will be appended to the name and the backup set description file will be saved in the facetwin/Backup/backupsets subdirectory of your home directory.

- Select files to be backed up

  Use this tree view of your PC's disk(s) to define the files to be included in this backup configuration. Click on the box next to an item to check or uncheck it. Checked files will be included in the backup. Directories that are checked with a gray background have part of their contents included in the backup.

The items on the right side of the dialog box are optional and will only be used if you are going to do your own backup with the Backup Now button on the main PC Backup tab.

- Specify "Backup Now" configuration

  Check this box if you want provide the information to do your own backup of this file set. Once this box is checked, the items below it will be enabled to allow you to specify the information necessary for doing a backup. If this check box is disabled, it means that user backups are disabled on this server.

- PC to backup

  Enter the name of the PC to backup. The name of this PC is filled in for you.

- Backup to disk

  If you select this radio button, then the backup will be done to a disk archive. This may be very convenient for backing up a small selective set of critical files or for doing incremental backups that result in a small set of files. You can backup and restore from a disk archive without ever having to deal with a tape or tape drive. However, disk archives should be reserved for these small backups only. For larger backups, you should choose to backup to tape.

- Disk archive name

  Enter the name of the disk archive file. If you enter a file name without a full path, the disk archive file will be put in the facetwin/Backup/archives subdirectory of your home directory on the UNIX host. The name must be a valid UNIX file name. The suffix ".fwarc" will be appended to the file if you do not include it.

  UNIX file names can include upper and lower case letters of the alphabet, numbers, and the special characters # % + , . : = @ _ .

- Backup to tape

  If you select this radio button, then the backup will be done to a tape archive. Tape archives can span multiple tapes. For large backups, you should choose to backup to tape. You should coordinate with the system administrator before using the tape drive.

- Specify tape drive(s) button

  If you have specified to backup to tape, click this button to access the tape device(s) that will be used in the backup. The "Tape drives to use for backup or restore" dialog box will be presented. This dialog box is discussed below.

- Compress files in archive

  Check this box if you want to compress the files in the archive. This allows you to fit more files on a tape or use less disk space for a disk archive. The default is to not compress the files in the archive.

- Save index file Always/Never/Only most recent

  These buttons determine whether an index to the backup is saved. An index is required for doing a restore, but may be created from an archive. Index file names include the name of the backup configuration and the date and time that the backup was run. Therefore, a different index file will be created each time you run the backup. You can choose to never save the index, always save the index file, or only save the index file from the most recent backup that you've done with this backup configuration.

- Full/Incremental backup

  These buttons allow you to select either a full backup or an incremental backup. In a full backup, every file that you have selected for backup will be backed up in the archive. In an incremental backup, only those files that you have selected that have their archive attribute set will be backed up in the archive. Usually, the archive attribute is reset during a full backup, and then set by Windows when the file is changed. Therefore, an incremental backup only backs up those files that have changed since the last full backup (or any backup that cleared the archive attributes).

- Clear/Do not clear archive bits

  These buttons allow you to select whether or not to reset the archive attribute on files that are backed up. The archive attribute is usually cleared by a full backup. Windows then sets the attribute when a file is changed. This allows an incremental backup to only backup those files that have changed since the last full backup. You will almost certainly want to clear the archive attributes on a full backup. If you are configuring an incremental backup, you will want to clear the archive attributes only if you want to save each incremental backup archive until you do the next full backup. Usually few enough files will have changed since the full backup that it is most practical to not clear the archive attributes, backup all files since the last full backup, and only save the last incremental backup.

- Logging level

  Choose the level of logging that you want the backup server to do. If you choose "No logging", no log file will be created. If you choose "Summary" logging, a moderate amount of summary information will be written to the log file. If you choose "Detail" logging, it will write some information about each file backed up to the log file. Detail logging can create a large log file. Summary logging is the default.

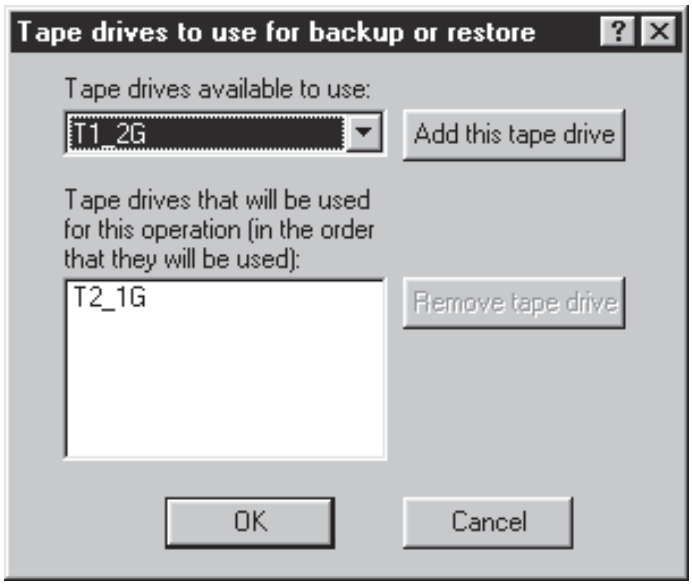
- Log file

  Enter the name of the log file. This will be filled in with the name of the backup configuration and a suffix of ".log". If you change the name of the log file, it must be a valid UNIX file name. If no path is given, then the log file will be created in the facetwin/Backup/logs subdirectory in your home directory on the UNIX host. If you specify a full path, the log file will be created where you specify, if possible.

- Overwrite log

  Check this box if you want the log file to be overwritten each time the backup is run. If you do not check this box, each backup will append its logging output to the log file. If you do not choose to overwrite the log file, you should check the size of it periodically to make sure that it does not get too large.

When you have chosen to backup to tape, and click on the Specify tape drive(s) button, the "Tape drives to use for backup or restore" dialog box will be presented:



The items on this dialog box are:

- Tape drives available to use

  This is a list of all the tape drive configurations defined on this server. Choose a drive from this list to add to the list of tape drives that will be used in the backup. If you only have one drive, the backup server will prompt you to change tapes when it reaches the end of a tape. If you have multiple drives, you can specify them here in the order that they will be used. This allows a multi-tape backup to run unattended.

- Add this tape drive

  Click on this Add button to add the drive selected from the drop-down list to the list of tape drives to be used below.

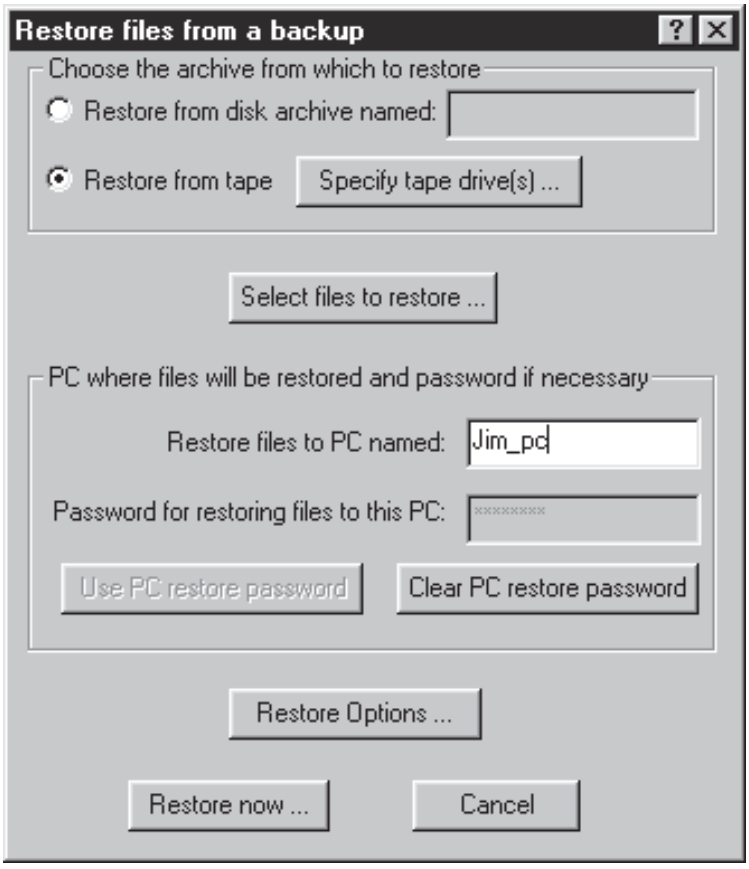
- Tape drives that will be used in the backup or restore

  This is the list of tape drives, in order, that will be used for the backup.

- Remove tape drive

  To remove a tape drive from the list of drives to be used for the backup, select the drive in the list of drives to be used and then click on this remove button.

When you click on the Restore button on the PC Backup tab of theControl Panel, the "Restore Files from a Backup" dialog box will be presented:



The items on this dialog box are:

- Restore from disk archive

  Click on this button if the archive from which you wish to restore is a disk archive.

- Disk archive name

  Enter the name of the disk archive from which you want to restore. It must be a valid UNIX file name. If you do not specify a full path, it will be assumed that the archive file is in the Backup/archives subdirectory of the FacetWin installation directory. If the archive file is somewhere else, provide a full path name.

- Restore from tape

  Click on this button if the archive from which you wish to restore is a tape archive.

- Specify tape drives button

  Click on this button to select the tape drive(s) that will hold the tape(s) from which files are to be restored. The "Tape drives to use for backup or restore" dialog box will be presented. This dialog box is discussed below.

- Select files to restore

  Click on this button to select the files that you want to restore from the backup. The name of the index file will be determined by reading the header from the archive. If the index does not exist, you will have the option of creating it. The index is necessary for displaying the files in the archive, so if you choose not to create an index, the file selection will be canceled. This button will be disabled until you have specified a disk archive name or the tape drive(s) that hold the tape archive. If it is a tape archive, you should have the tape in the drive before clicking on this button.

- Restore files to PC

  Enter the name of the PC to which the files should be restored. The PC from which the files were originally backed up will be filled in for you. If you are restoring to a different PC, enter that PCs name here.

- Password for restoring files to this PC

  If the PC to which you want to restore files has a backup password, you must enter the password here. To add a password, enter it and click on the "Use PC restore password" button. To remove the password for the PC, click on the

"Clear PC restore password" button. To change a password that you have already entered, clear it first, enter the new password, and then click on the "Use PC restore password" button.

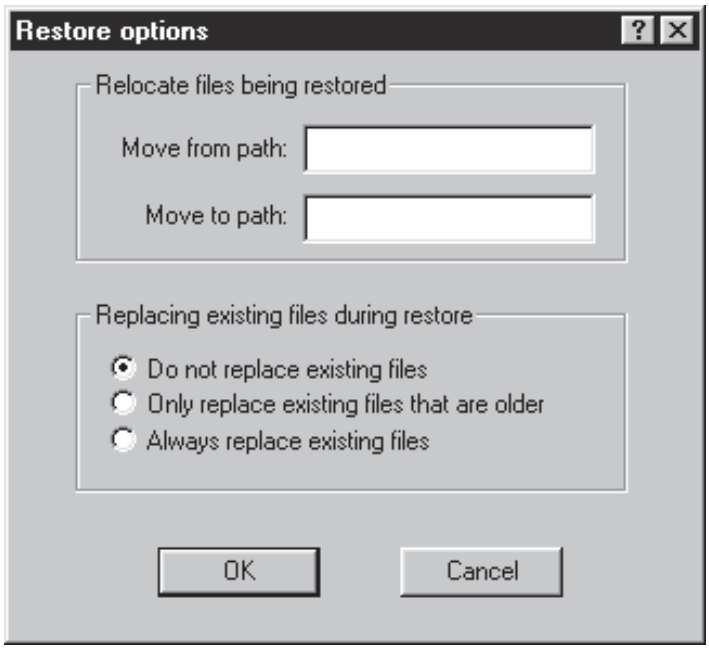
- Restore options

  When you click on this button, the Restore options dialog box will be presented. This dialog box is discussed below.

- Restore now

  Click on this button to begin the restore operation. This button will be disabled until enough information has been entered about the restore. Items that must be specified are the name of the disk archive or the tape drive(s) to use, the files to be restored, and the PC to which the files are to be restored.

If you click on the Restore Options button, the Restore options dialog box will be presented:



The items on this dialog box are:

- Relocate files being restored

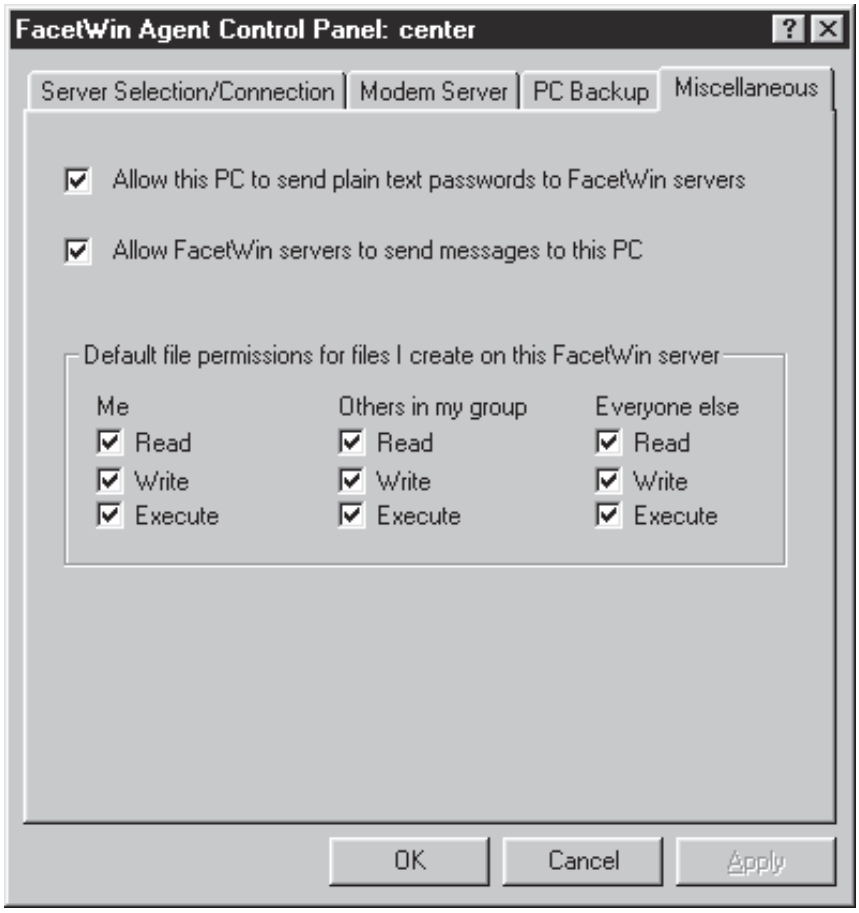
  These items allow you to relocate the files being restored from one directory to another. Enter the full path to the directory that you want to move files from, and the full path to the directory that you want to move the files to. In any file being restored, the "from" path will be renamed to the "to" path.

- Replacing existing files during restore

  These items allow you to specify whether existing files will be replaced during the restore. "Do not replace existing files" is the default. When this selection is made, a file will not be replaced with one from the backup archive, even if the one in the archive is newer. When you select "Only replace existing files that are older", then an existing file will only be replaced if it is older than the one in the backup archive. When you select "Always replace existing files", any existing files will be replaced by files in the backup archive, regardless of the date of the existing file.

Miscellaneous Tab of the Control Panel

The miscellaneous tab of the Control Panel contains a few FacetWin configuration options for your PC:



The items on this tab are:

- Allow this PC to send plain text passwords to FacetWin servers

  Check this box if you want to allow your PC to send plain text passwords to the FacetWin file server. This is necessary for the UNIX file services security mode. Your system administrator can tell you if you need this setting.

If this box is disabled, it is because the FacetWin host to which you are currently connected is using a security method which does not require the transmission of plain text passwords. This box may also be disabled if you are running a version of Windows that will not send plain text passwords.

- Allow FacetWin servers to send messages to this PC

  Check this box if you want FacetWin servers to be able to send messages to this PC. The FacetWin servers will use this mechanism to give you more informative messages than the standard Windows messages. The FacetWin Agent must be running in order to display the messages.

- Default file permissions for files I create on this FacetWin server

  These settings determine the default permissions that are used when a new file is created using the FacetWin file services. The system administrator can set these permissions for everyone. You only need to change them here if you want them set differently than the system wide settings.

FacetWin E-mail Services

The FacetWin E-mail service is provided by a single program that runs on the UNIX server named fct_pop3d. This program provides mail clients running on a PC with a means to retrieve and delete E-mail from the UNIX server. Any mail client that uses the POP3 protocol to get mail from a remote mail server may be used with the FacetWin E-mail service.

The E-mail options can be configured with the FacetWin Administrator program. See the section "Term Emul/E-mail Tab of the FacetWin Administrator".

FacetWin Time Synchronization

You can use FacetWin to set the clock on your PC to the time on the UNIX server. This can be done manually by running the MS-DOS window and executing the DOS command:

```
net  time  /set  /yes  \\servername
```

where servername is the name of the UNIX server running FacetWin that will be used to set the time. You may omit the \\servername parameter if you have a server on the network announcing itself as a time synchronization server. To enable a FacetWin server to make this announcement, see "Name Services Tab of the FacetWin Administrator".

If the PC is running the Windows 95/98 System Agent, you can schedule the net time command to be run automatically. If you do this, you will probably want to be sure that the properties on your MS-DOS window have the "Close on exit" option enabled. This will prevent the System Agent from leaving an idle MS-DOS window on the screen after executing the net time command.

Configuring FacetWin

Overview of FacetWin Configuration

The FacetWin servers operate according to the configuration information contained in a number of files that are installed on the UNIX server in the FacetWin installation directory (/usr/facetwin unless you specified differently during the installation). All of the configuration files are plain text files and include documentation in the form of comments in each file. You may edit these files directly using a UNIX text editor.

FacetWin also includes a Windows based administration program that can run on Windows95/98 or Windows NT 4.0. The FacetWin Administrator program is optionally installed as part of installing FacetWin on a PC.

You may use the administration program or edit the configuration files directly. Instructions for configuring FacetWin will be organized around the FacetWin Administrator program. The configuration files involved will always be identified and instructions for editing these files directly will be included.

Some FacetWin features are user configurable. Configuration of these features is described in the Using FacetWin sections.

The FacetWin Configuration Files

This section contains a list of the FacetWin configuration files and a brief description of the purpose of each.

If you use the FacetWin Administrator program to manage your FacetWin configuration, then these details may be irrelevant to you. However, if you wish to have a more complete understanding of how the configuration files are organized, or wish to edit these files directly, then you will find this information useful.

This section describes the general format of these files rather than providing detailed information about each configuration option. Each configuration option is explained in the appropriate FacetWin Administrator sections, which follow. The configuration files are also heavily commented, and therefore, internally documented. Any line beginning with "#" is a comment in the FacetWin configuration files. Leading spaces are significant and will prevent a keyword that should be at the beginning of a line from being recognized.

All file names are relative to the FacetWin installation directory. The default directory is /usr/facetwin. However, you may have overridden this default during the installation on the UNIX server. If so, the configuration files will be in whatever directory you chose. The installation directory is specified in the file /etc/facetwindir.

The FacetWin configuration files are:

- facetwin.cfg

  The facetwin.cfg file is the primary configuration file which contains settings for many of the servers. Each parameter setting in the file is in the form of:

  parameter_name=parameter_value

  Each parameter in the file will be preceded by comments describing the use of the parameter.

  When you install a new version of FacetWin, your existing facetwin.cfg file will not be overwritten. This keeps your existing configuration intact. Any new parameter not present in your existing facetwin.cfg file will be assumed to have its default value by the server that uses the new parameter. The new default facetwin.cfg file will be installed as facetwin.default. You can view this file looking for new parameters that you might want to use in your existing facetwin.cfg file. The FacetWin Administrator program will update your existing facetwin.cfg file with the default values of any new parameters when it is run after updating your FacetWin software.

- Share

  The Share file is where file and printer shares are defined. Each share is defined by a line in the file with the form:

  share_type share_name share_path share_comment

  where:

  share_type is "D" for a file (disk) share, and "P" for a printer share.

  share_name is the 1-12 character name of the share as it will appear in the Network Neighborhood. If you are using DOS clients, the share name should be restricted to 8 characters.

share_path is the path to the root of a file share. If the share is a printer share, then share_path is the path to the directory to be used to store temporary print files.

share_comment is the comment for the share that will be displayed in the Network Neighborhood when the details option is turned on. The comment can be 1-255 characters, although only 48 characters will be displayed in the Network Neighborhood.

When you upgrade FacetWin, your existing Share file will not be overwritten, and the new default Share file will be installed as Share.default.

- scripts/*printer_share_name*

  The scripts directory in the FacetWin installation directory must contain a shell script for each printer share defined in the Share file. The shell script should be written to assume that the $1 parameter is the name of the temporary file that has been created for the print job and which contains the data to be printed. Usually this script simply contains the appropriate lp command to print to the printer associated with the printer share:

  lp -d *unix_printer_name* -c -s

  where *unix_printer_name* is the name of the printer as it is known to the UNIX print spooler. The -c option causes the spooler to make a copy of the file before printing it, and the -s option causes the lp command to suppress some extraneous messages.

- printers/*remote_printer_name* and fct_pipes/*remote_printer_name*

  The printers and fct_pipes subdirectories in the FacetWin installation directory contain a file for each FacetWin remote printer that has been defined. These files are not meant to be edited with a text editor. They are managed either by the FacetWin Administrator program or the fct_rlpadmin program on the UNIX server.

- Security

  The Security file is used to restrict access to shares by UNIX user name or by PC machine name. Each line in the file describes an access restriction to a share and is in the form:

  share_name access_type name_type name_list

  where

  share_name is the name of the share to which that the access restriction applies.

  access_type is "none", "readonly", or "readwrite".

  name_type is "U" for user names or "M" for PC machine names.

  name_list is a list of the user or machine names to which the restriction applies.

  When you upgrade FacetWin, your existing Security file will not be overwritten, and the new default Security file will be installed as Security.default.

- fct_alias

  The fct_alias file is used to map different PC user names to a UNIX user name for file and printer services. Each line in the file is of the form:

  unix_user_name pc_user_name pc_user_name …

  where *unix_user_name* is the UNIX user name that will be used for any of the following PC user names. You may use multiple lines with the same UNIX user name to add more PC user names to the same alias.

  When you upgrade FacetWin, your existing fct_alias file will not be overwritten, and the new default fct_alias file will be installed as fct_alias.default.

- fctpasswd

  The fctpasswd file holds the encrypted user passwords when the LANMAN security method is being used. This file is managed with the fct_encrypt program. For information about this program run the command:

  man fct_encrypt

  on the UNIX system where FacetWin is installed.

- smbd.allow and smbd.deny

  The smbd.allow and smbd.deny files are used to allow or deny access to all file and printer shares by UNIX user name. Each line in either file is of the form:

  unix_user_name

  where *unix_user_name* is the name of a user exactly as it appears in the /etc/passwd file. Only one of these files should be used at a time. If the SMB server finds an smbd.allow file, it will consider the list of users in this file to be the only users that can access the file and print services on this server. If the smbd.allow file does not exist, the SMB server will look for the smbd.deny file. If that file exists, then all users except those listed in the smbd.deny file will have access to the file and print services on this server. Note that this method of restricting access is not as flexible as using the Security file, but is much simpler if the goal is to completely restrict some users from using the file and print services. There is currently no access to these files from the FacetWin Administrator program, so they must be edited manually.

- Systems

  The Systems file contains a line for each UNIX server on the network that has FacetWin installed on it. Each line describes how this server will cooperate with the server named in the line. Each line is of the form:

  system_name *exclusion_flags*

  where

  system_name is the host name of the UNIX server to cooperate with.

  exclusion_flags is a list of the single character flags:

  L — If the L flag is present, do not share licenses with the server named in the line.

  W — If the W flag is present, do not cooperate in WINS name resolution with the server named in the line.

  V — If the V flag is present, do not include the server named in the line in the list of servers that are available for terminal emulation, Administrator connections, or Agent Control Panel

connections (all VTP sessions). This does not actually preclude these functions on the named server, it just keeps the server out of the list of presented for connection in the terminal emulator, Administrator, or Agent Control Panel. This setting on the local host only matters to PCs which are using the local host as their WINS server.

Each flag must be enclosed by colons ":". If there are no flags, then the local server will cooperate with the listed server in all respects.

For example, these entries

```
host1
host2:L:
host3:W:
```

specify that host1, host2 and host3 are all included in the list of servers for terminal emulation, host 1 and host3 share licenses with this host, and host1 and host2 cooperate with this host in WINS name resolution.

- lmhosts

  The lmhosts file contains mappings of NetBIOS names to IP addresses that are to be pre-loaded into the FacetWin WINS server. Each line is of the form:

  IP_address *NetBIOS_name* #DOM:*groupname*

  where

  IP_address is the dotted IP address of the machine.

  NetBIOS_name is the NetBIOS name that this machine is to be known by.

  #DOM:groupname is an optional specification that will add the IP address as a member of the group specified by the name that follows the colon.

- license

  The license file contains encoded information about the FacetWin licenses installed on the server. This file should not be edited with a text editor. It is managed either by the FacetWin Administrator program or by the fct_licedit program on the UNIX server. For information about this program run the command:

man fct_licedit

on the UNIX system where FacetWin is installed.

- Modems

  The Modems file contains definitions for modem classes to be used by the modem server. Each line is of the form:

  tty_port *modem_class* p=*plain_text_password*
  or e=*encrypted_password*

  where

  tty_port is the UNIX device name for a port to which a modem is attached (such as /dev/tty1).

  modem_class is the name of the modem class to which this modem belongs.

  plain_text_password is the password for accessing the modem class in plain text (not encrypted). This item is optional.

  encrypted_password is an encrypted password. This item is optional.

  If you are adding a password by editing the Modems file, you would use the p= specification. If you are using the FacetWin Administrator to add a password, it will use the e= specification. You should not use both on the same line.

  When you upgrade FacetWin, your existing Modems file will not be overwritten, and the new default Modems file will be installed as Modems.default.

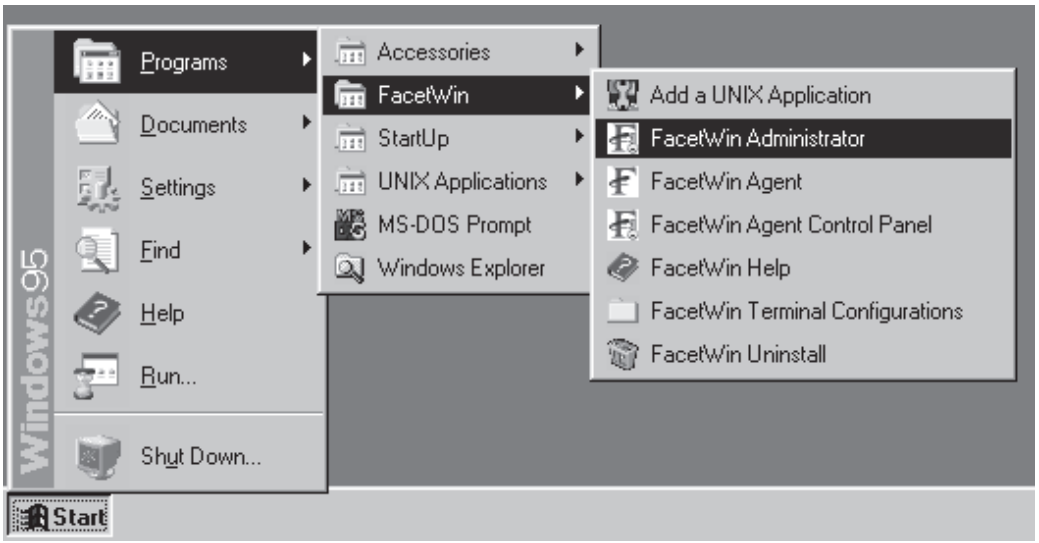
- Backup/backupsets
  Backup/filesets
  Backup/indexes
  Backup/logfiles
  Backup/archives
  Backup/tape.cfg

  The Backup subdirectory in the FacetWin installation directory contains the files that are used to configure the FacetWin PC backup facility. Use of these files requires a good understanding of the PC backup facility. Therefore these files are explained in the section Using FacetWin to Backup PCs.

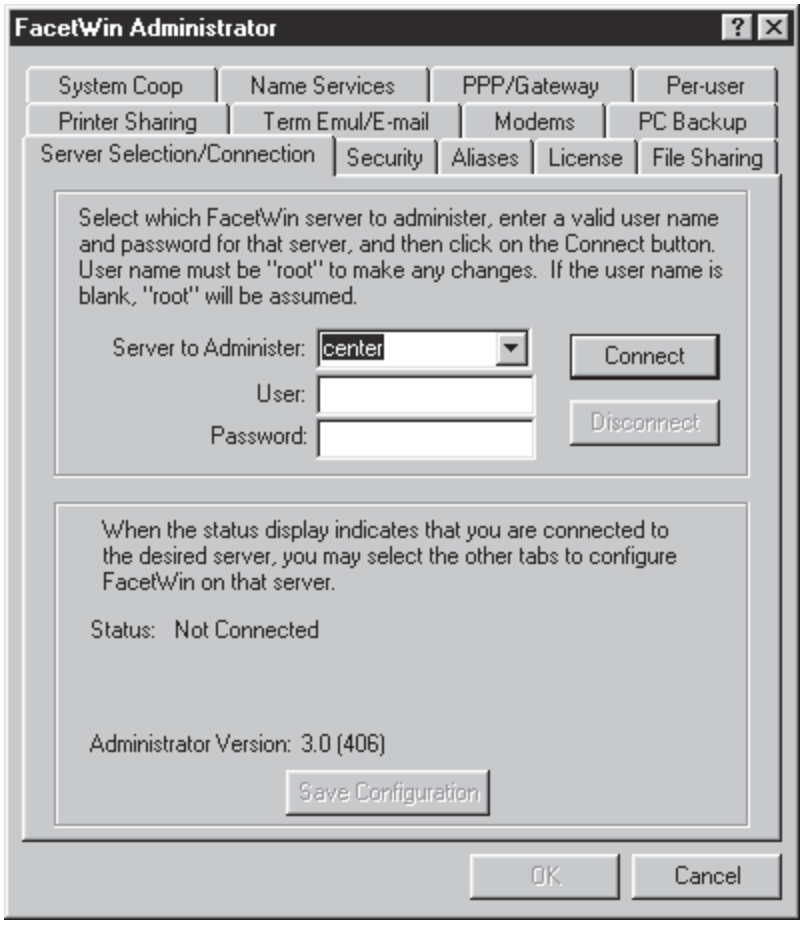
The FacetWin Administrator Program

Running the Administrator Program

The FacetWin Administrator program is run from the Start Menu:



The program presents a property sheet with a tab for each aspect of FacetWin configuration. The program begins with the Server Selection tab displayed:



You cannot select any of the other tabs until you have connected to a FacetWin enabled server. The following items on this tab are used to connect to a server:

- Server to Administer

  Yelect the UNIX server on which you wish to administer the FacetWin settings. If the server you want to administer is not in the list, you may type in its host name or IP address. In order for a server to be in the list it must be in the "Systems" file in the FacetWin installation directory on the UNIX machine that you are using as the WINS server for your PC.

- User

  Enter the name of a valid user on the UNIX server being administered. If you leave this entry blank, it will assume "root" as the user name. If you enter any name other than root, you will have read-only access to view the configuration, but you will not be able to make any changes.

- Password

  Enter the password for the user name you have used (root password if the user name was blank).

- Connect

  Click on the Connect button to connect to the specified server. If someone else is currently administering the same server with write privileges, a dialog box will notify you of this and give you the option of continuing in read-only mode. Once you are connected to a FacetWin server, the Connect button and the connection information that you supplied will be disabled until you disconnect.

- Status

  The status area will show the progress of reading the FacetWin configuration files. When the connection is complete and the configuration has been completely loaded, the status area will show that you are connected and will indicate if the connection is read-only. It will also show some information about the FacetWin software installed on this server and whether or not the configuration has been modified. Finally, it will show the version of the FacetWin Administrator program on the PC where it is being run.

After you have connected, you may select any of the other tabs. You may make any changes desired to the configuration (unless you are connected in read-only mode).

The other buttons on the Select Server tab are:

- Save Configuration

  If you wish to save your changes without exiting from the Administrator program, click on this button. The configuration on the server will be updated with any changes that you have made. This button is disabled when there are no new changes to be saved.

- Disconnect

  This button allows you to disconnect from the server without exiting the Administrator program. This is useful when you are administering multiple servers in one session of the Administrator. After disconnecting, the Disconnect button will be disabled. The connection information and the Connect button will become enabled again so that you can enter new connection information and connect to another server.

The general property sheet buttons that are the same regardless of the tab selected are:

- OK

  When you click on the property sheet OK button, any changes made will be applied to the server's configuration, and the administrator program will exit.

- Cancel

  When you click on the property sheet Cancel button, the administrator program will exit if no changes have been made. If changes have been made, a dialog box will notify you of this fact and give you the options of applying your changes before exiting, discarding the changes and exiting, or canceling and returning to the administrator program.

- ?

  The button with the question mark on the title bar is used to get context sensitive help. When you click on this button, the cursor will be changed to a help cursor. Move the help cursor over the item that you want help on, and then click on that item. A help box will pop-up with information about that item.

- x

  The button with an x on it in the title bar behaves the same as the Cancel button.

When the configuration is updated on the server, any configuration files that are being modified will have their previous version backed-up in a subdirectory named FCT_PREVCFG. The backed-up file will have its normal name with the date and time

that it is being backed up appended to the name in the form of .YYYYMMDDHHMMSS. For example, if the facetwin.cfg file is being changed on December 1, 1997 at 10:00:00, then the backed-up file would be:

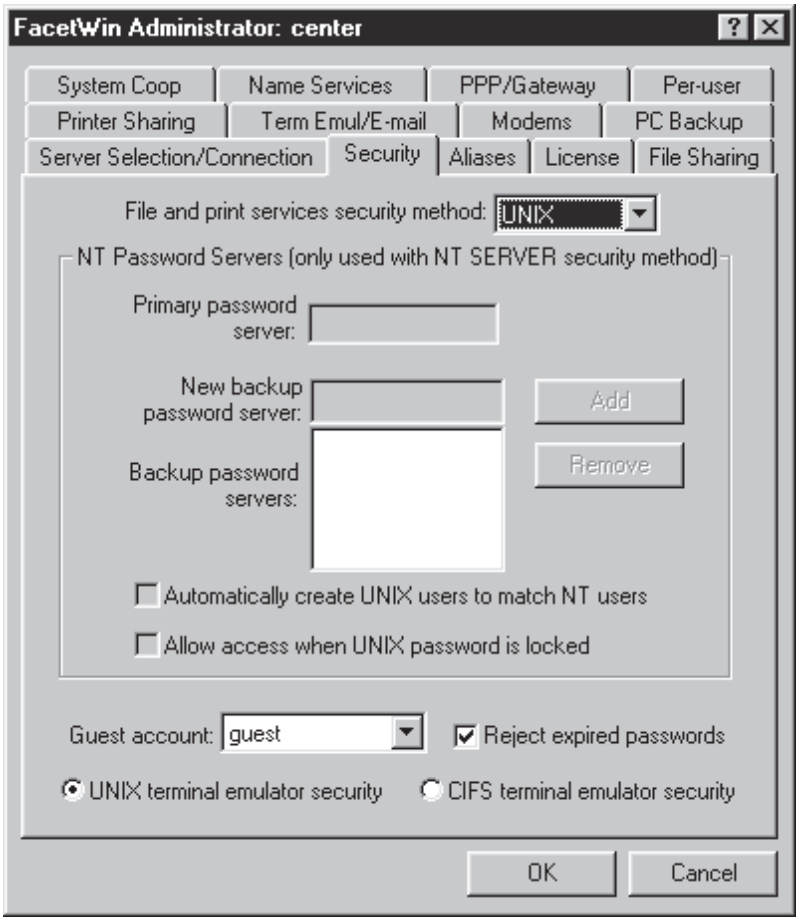
FCT_PREVCFG/facetwin.cfg.19971201100000

There is no automatic management of the backed-up files in the FCT_PREVCFG directory. Therefore, you should occasionally look to see how many of these files have been collected, and delete any that you are sure you will not need. Since all the FacetWin configuration files are text files, you can use the UNIX diff command to see what the differences are between versions of configuration files.

The following sections explain all of the configuration options as they are represented on each of the tabs of the FacetWin Administrator property sheet.

Security Tab of the FacetWin Administrator

The Security tab of the FacetWin Administrator contains the configuration options relating to user security:



- File and print services security method

  FacetWin has four types of user security for file and print services. All of the methods require that the user name used to logon to the Windows PC is the same as the user name on the UNIX server. The only exception is when the FacetWin "alias" feature is used to map one or more PC user names to a

different UNIX user name. For more information on user aliasing, see the section Aliases Tab of the FacetWin Administrator. The following are the four security methods for file and print services:

The NT SERVER method can be used in a network that uses an NT server to maintain Windows user names and passwords. The name of the NT Server used to authenticate passwords must be entered in the "Primary password server" box below. In addition, a list of backup password servers may be entered to allow alternate NT servers to be used when the primary password server is down. When a user connects to the UNIX file server, his user name and password is checked with the NT server. This method does not exchange plain text passwords over the network, and will work for all Windows clients. The user's Windows password can be different from his UNIX password. If you have an NT server on your network performing this function already, then this is the preferred security method for FacetWin file and print services.

The LANMAN security method checks the password that the user entered against an encrypted password that is stored in a file named "fctpasswd" on the UNIX machine. The Administrator program will create this file for you with entries for each user listed in the /etc/passwd file. Passwords are then entered for each user by running the fct_encrypt program. For information on running the fct_encrypt program see the UNIX "man" page for this command. This method does not exchange plain text passwords over the network, and will work for all Windows clients. The user's Windows password can be different from his UNIX password.

The UNIX security method requires that the user's name and password entered when logging on to Windows is the same as his UNIX user name and password. The password that the user entered when he started his PC is checked against the UNIX password or shadow file. The PC will send the password on the network in plain text. The file and print server will use the standard UNIX password encryption scheme to validate the client. This method works well with Windows 95, Windows 3.11, and Windows NT 4.0 prior to service pack 3. It does not work with Windows NT 3.51 clients. Windows 98 and Windows NT 4.0 with service pack 3 or later require a registry change in order to allow them to send plain text passwords. See the help section for the Miscellaneous tab of the FacetWin Agent Control Panel for making the registry change.

The RHOST security method uses the standard UNIX .rhosts and hosts.equiv files to determine if a PC can log in as a particular user. The PC's IP address or DNS hostname is checked against the user's $HOME/.rhosts file and the /etc/hosts.equiv file. If it passes this test, the connection is allowed. This method does not exchange plain text passwords over the network, and will work for all Windows clients. The user's Windows password can be different from his UNIX password.

To configure by editing the configuration files:

The file and print services security method is specified in the facetwin.cfg file by the pass_security= parameter. All of the different options are listed in the file with the options not being used commented out (line starts with #). Select the method you want by removing the leading # on the line with the desired method. Be sure that all the other pass_security lines are commented out.

- Primary password server

  When using NT SERVER file and print services security, enter the NetBIOS name of the NT server that will be used to authenticate passwords. This name must be resolvable by the UNIX server. In addition, the following list of backup password servers may be used to specify alternate NT servers to be used for password authentication if the primary password server is down.

  To configure by editing the configuration files:

  In the facetwin.cfg configuration file, the NT SERVER security method is indicated by the line:

  pass_security=*nt_server_name*

  where *nt_server_name* is the name of the primary password server. All of the other pass_security lines should be commented out.

- Backup password servers

  This list of NT servers specifies other NT servers that can be used for password authentication if the primary password server is down. You may specify up to 32 backup password servers. Add new entries to the list by entering a server

name in the "New backup password server" box above and then clicking the Add button. To remove an entry from the list, click on the server to be removed, and then click the Remove button.

To configure by editing the configuration files:

The backup password servers are listed in the facetwin.cfg configuration file with one or more lines of the form:

backup_security=*backup_password_server_name*

where *backup_password_server_name* is the name of an NT server that can authenticate passwords when the primary password server is down.

- New backup password server

  Enter a new NT server to be added to the list of backup NT password servers.

- Add button

  After entering the name of a new server to add to the list of backup password servers, click on the Add button to add the server to the list.

- Remove button

  To remove a server name from the list of backup password servers, click on the server name in the list to select it, and then click on the Remove button.

- Automatically create UNIX users to match NT users

  Check this box if you want users to automatically be created as UNIX users if their user name has been authenticated by an NT server. This feature is only available when the security method for file and print services is set to NT SERVER. This option is not valid if a guest account is specified. This feature is disabled by default.

  You must supply a script that will be used to create the user on the UNIX server. This script must be in a file named /etc/fct_create_user, must be owned by root and its permissions must be set such that it is only writable by root. This script should expect to have the new user name supplied as the first

argument to the script. A sample script is included in /usr/facetwin/fct_create_user.sam (or if you installed FacetWin in an alternate location, substitute that directory name for /usr/facetwin).

To configure by editing the configuration files:

This feature is enabled in the facetwin.cfg file with the line:

```
automatic_unix_user_creation=YES
```

If this line is omitted, or if its value is NO, then this feature is disabled.

- Allow access when UNIX password is locked.

  Check this box if you want users whose passwords are locked on the UNIX server to be able to access the file and print services on the server. This feature is primarily used in conjunction with the automatic creation of UNIX users to match NT users. On some UNIX systems, the newly created user will have his password locked upon creation. Enabling this feature will allow that new user to gain access to the UNIX system without having to add a password for the user. This feature is only available when the security method for file and print services is set to NT SERVER. In this case, users are already being authenticated by the NT server, and it does not pose a security risk to allow them this access even though their passwords are locked. This feature is disabled by default.

  To configure by editing the configuration files:

  This feature is enabled in the facetwin.cfg file with the line:

  ```
  allow_access_when_password_is_locked=YES
  ```

  If this line is omitted, or if its value is NO, then this feature is disabled.

- Guest account

  File and print services may be made available to PC users who do not have an account on the UNIX server by specifying a valid UNIX user account as the "guest" account. The privileges granted to the guest user are the privileges associated with the guest account. NO password checking is performed. Because of this, a UNIX user account with UID = 0 cannot be designated as the guest account. This feature is disabled by default.

To configure by editing the configuration files:

The guest account is specified in the facetwin.cfg file by the line:

guest_account=*guest_name*

where *guest_name* is the name of the UNIX user account that will serve as the guest account for file and print services.

- Reject expired passwords

  Check this box if you want the CIFS/SMB (file and print services), POP3 (e-mail), and VTP (terminal emulation) servers to reject connections from users whose passwords have expired. This feature is valid for systems that have a shadow password file. This feature is disabled by default.

  To configure by editing the configuration files:

  This feature is enabled in the facetwin.cfg file with the line:

  reject_expired_passwords=YES

  If this line is omitted, or if its value is NO, then connections will be allowed even if the password has expired.

- UNIX/CIFS terminal emulator security

  These radio buttons select between the two terminal emulation security methods. UNIX terminal emulator security is the normal method in which the user supplies his user name and password and the normal UNIX password mechanism is used to authenticate the user. CIFS terminal emulator security allows the user to specify that his user name and password used as his Windows logon is to be used for terminal emulation sessions. In this case the terminal emulator session login will be authenticated using the same method as the file and print (CIFS) server. This "Simple Sign-on" feature allows the user to only have to sign-on to Windows, and have that user name and password also used in terminal emulation sessions.

  When the CIFS security method is in effect, users should check the box above the user name that is labeled "Use Windows User" on the connection tab of their terminal emulator properties. Then the user name and password should be omitted. In order to create a session that logs in as another user, they should uncheck the box, and enter the user name and password for the account that they want to use.

When you select the CIFS security method, a special file share called auth_t$ will be created for use in authenticating users. This share will appear in the list of file shares, but you may not alter its properties.

The UNIX terminal emulator security method is the default.

To configure by editing the configuration files:

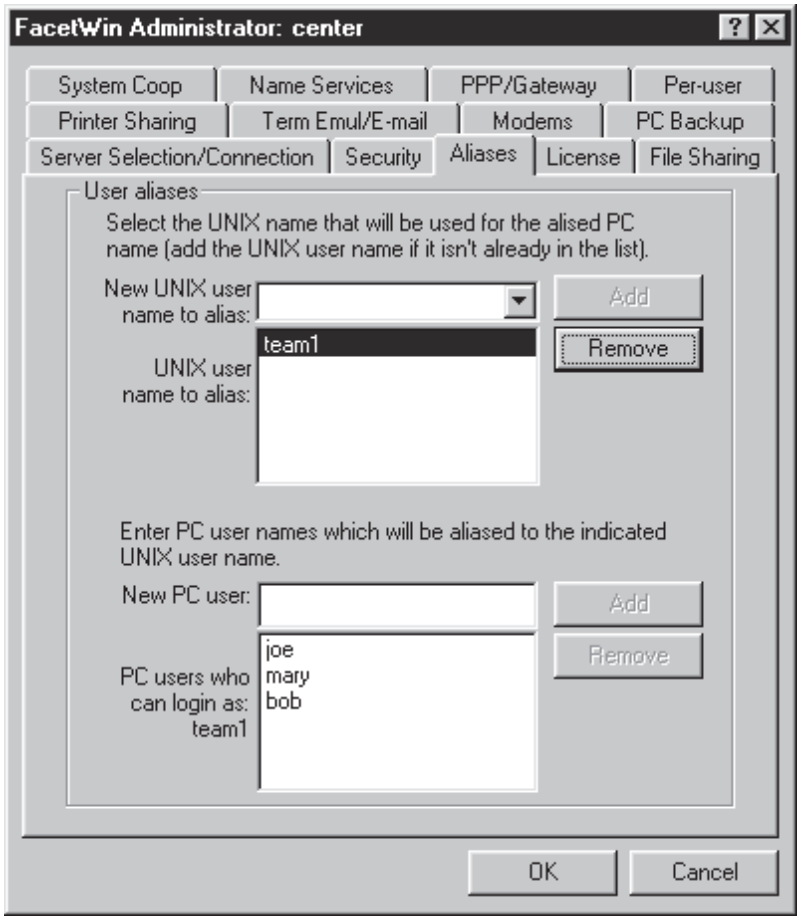
UNIX terminal emulator security is specified in the facetwin.cfg file by the line:

```
terminal_emulator_security=UNIX
```

Replace the value with CIFS to enable CIFS terminal emulator security.

Aliases Tab of the FacetWin Administrator

The Aliases tab of the FacetWin Administrator allows you to map a PC user name into a different UNIX user name. You may map multiple PC user names to the same UNIX user name. Note that UNIX user names are case sensitive. For example, tom and Tom would be two different UNIX user names. PC user names are case insensitive, and therefore, tom and Tom are the same PC user name. If you are using the UNIX security method, then the password associated with the PC user name must match the password associated with the UNIX user name.



- New UNIX user name to alias

  This drop-down list contains all the valid user names on the UNIX system. If you wish to alias PC user names to a particular UNIX user name, choose the UNIX user name from this list and click on the Add button to the right to add it to the list of UNIX user names which have PC user names aliased to them.

- UNIX user name to alias

  This is a list of the UNIX user names which have alias PC user names. Click on the UNIX name for which you want to provide an alias PC user name, then add the PC names to the list below.

- Add button (for UNIX user name to alias)

  When you have selected a new UNIX name to be aliased, click on the Add button to add this name to the list of UNIX names to be aliased.

- Remove button (for UNIX user name to alias)

  To remove a UNIX user name from the list of names to be aliased, click on the UNIX name in the list of UNIX user names being aliased, and then click on the Remove button.

- New PC user

  To add a PC name that is to be mapped to a UNIX name, first select the UNIX name that the PC name will be an alias for, then enter the PC user name here, then click the Add button to the right.

- PC users who can login as …

  This is the list of PC user names that will be equated to the UNIX user name that is currently selected in the list of UNIX user names being aliased.

- Add button (for list of PC users)

  When you have entered a new PC user name to be aliased to the UNIX user name selected above, click on this Add button to add this name to the list of PC user names.

- Remove button (for list of PC users)

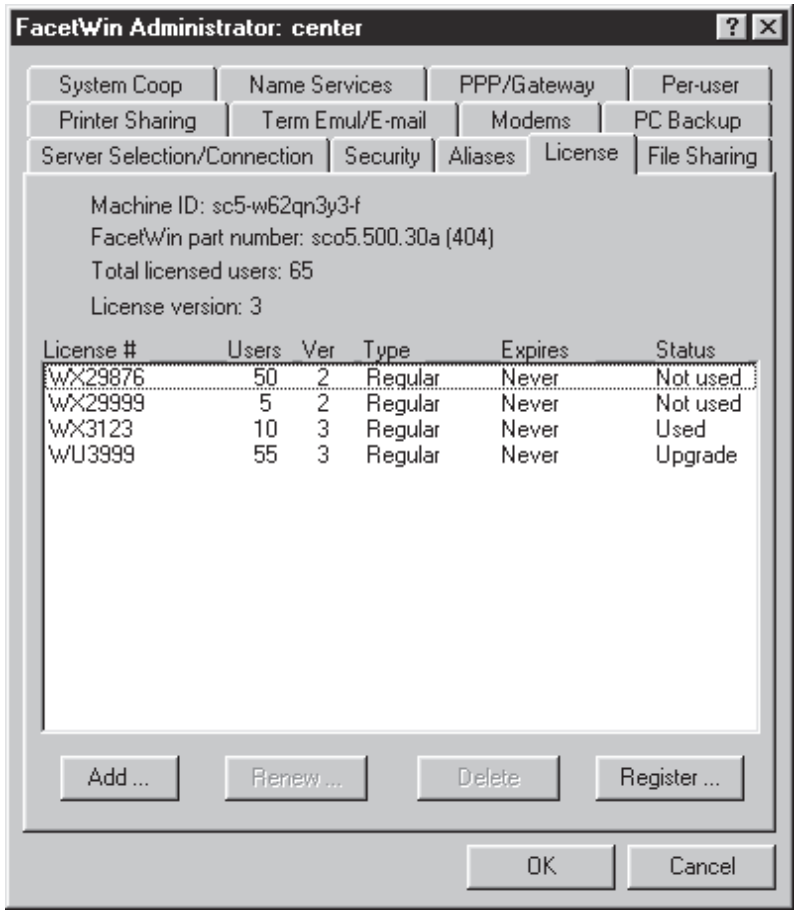
  To remove a PC user name from the list of names that will be equated to the above UNIX user name selected above, click on the PC user name in the list to the left, and then click on the Remove button to remove it.

  To configure by editing the configuration files:

  All of the alias information is in the fct_alias configuration file. The file consists of lines which begin with a UNIX user name followed by a list of PC user names that are to be equated to the UNIX name for the purpose of file and printer access. PC user names may contain spaces, and any name containing a space must be enclosed in double quotes.

License Tab of the FacetWin Administrator

The License tab of the FacetWin Administrator is used to manage the FacetWin licenses.



Licenses are assigned to a particular UNIX server, but may be shared among UNIX servers (see the Systems tab).

The items on this tab are:

- Machine ID

  This is the machine ID that your FacetWin licenses are associated with. You will need to know this ID when obtaining a registration key for FacetWin.

- FacetWin part number

  This is the part number for the FacetWin software installed on this server. You will need this part number when registering a FacetWin license.

- Total licensed users

  This is the total number of users who are licensed to use any FacetWin components on this server. This only includes licenses actually installed on this server, and does not include any licenses being shared from another server.

- License version

  This is the effective version of the combination of licenses installed.

A server can have multiple licenses, and the list box contains all of the licenses installed on the system, even if they are expired. The columns of information about each license are:

- License #

  This column shows the license number of each license in the list. You will need to know the license number when obtaining a registration key for FacetWin. The license number is on your license certificate.

- Users

  This column shows the user count for each license in the list.

- Type

  This column shows the type of each license in the list. The possible license types are:

  Demo.

  > This is a temporary license for evaluation purposes. It is created automatically when the product is run for the first time. Demo licenses expire after 30 days. Re-installing the product does not change the 30 day period. The demo license is for 50 users, and cannot be moved from one machine to another. Demo licenses cannot be shared with other servers. Demo licenses can be extended individually by contacting FacetCorp. The machine ID will be required to extend a demo license.

Demo Rider.

This is a license that temporarily upgrades your other licenses to a new version of FacetWin. This allows you to evaluate the features of the new version before buying a permanent upgrade to it. You can always install new versions of FacetWin over your existing installation. The demo rider is created automatically the first time you use a feature that is specific to the new version. This temporary upgrade will last for 30 days. After that period, the features specific to the new version will no longer work without a permanent upgrade. All of the features of the former version will continue to work properly.

Regular.

This is a normal license. These licenses are usually permanent, and in that case will not have an expiration date. A regular license can be shared among multiple servers.

Limited.

Limited licenses are created automatically when something happens to a machine that causes its machine ID to change. The cause of a machine ID change differs from one UNIX platform to another. The purpose of the limited license is to allow FacetWin to continue working for 30 days while a new registration key is being obtained for the new machine ID.

Unknown.

If a license type of "Unknown" is displayed, it indicates an error with this license.

- Expiration date

  This column shows the expiration date of the licenses in the list. A permanent license will be marked "Never".

- Status

  This column shows the status of each license. The possibilities are:

  Used

  This means that the license is contributing to the license count.

  Not used

  This means that the license is not contributing to the license count because it is not valid in combination with the other licenses, or because it is superceded by an upgrade license.

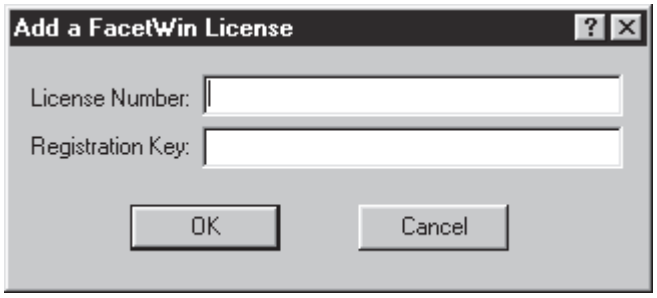
  Upgrade

  This means that the license is being used to upgrade one or more other licenses to a new version. The licenses that it upgrades will have a status of Not used.

  Expired

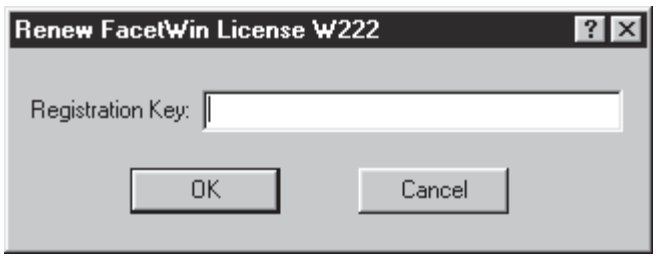
  This means that the license is not contributing to the license count because it has an expiration date that has passed.

To add a new license after you had received your registration key from FacetCorp, click on the Add button. The following dialog box will be presented:



Fill in the license number from your license certificate. Fill in the registration key that you received from FacetCorp. Click on OK to add the license, or Cancel if you want to cancel the license adding operation.

To renew an expired license, you must get a new registration key from FacetCorp. Then, select the expired license in the list and click on the Renew button. The following dialog box will be presented:



Fill in the registration key that you received from FacetCorp. Click on OK to renew the license, or Cancel to cancel the license renewal operation.

To delete a license, select the license in the list and click on the Delete button. Be careful! You will need a valid registration key to restore any license that you accidentally delete. A message box will be presented to confirm that you want to delete the license.

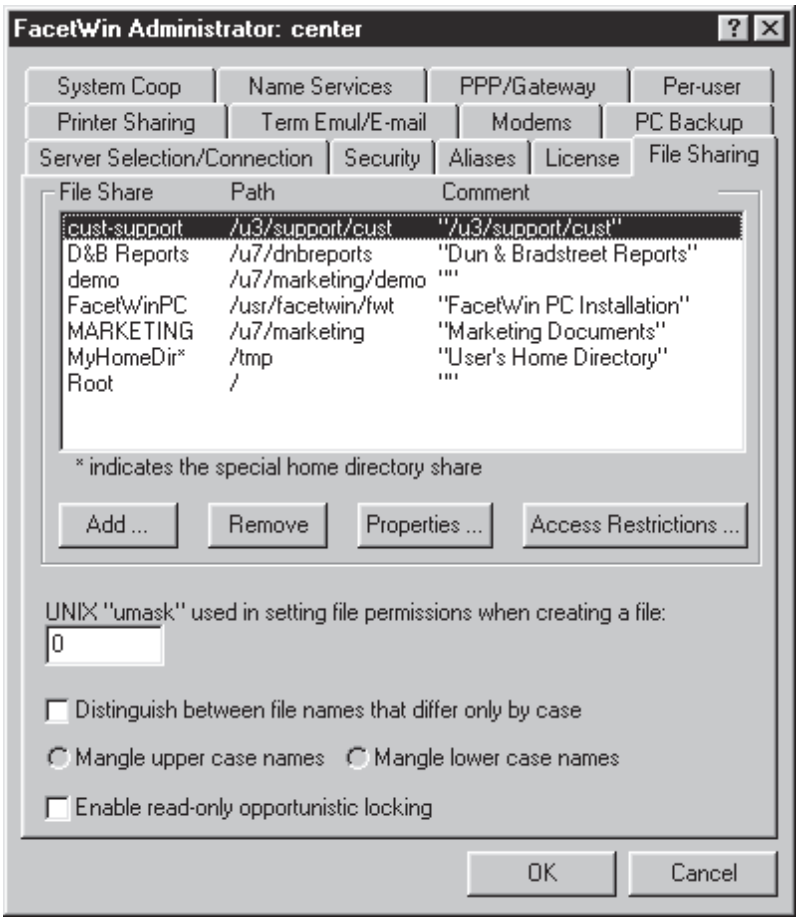
To configure by editing the configuration files:

The license information is kept in the license file. This file should not be directly edited. Either use the FacetWin Administrator to administer your licenses, or the UNIX command fct_licedit. For information on the fct_licedit program, read the "man" page with the UNIX command:

```
man  fct_licedit
```

File Sharing Tab of the FacetWin Administrator

The File Sharing tab of the FacetWin Administrator is used to manage the file shares on the server:



The items on this tab are:

- File Shares

  This list box contains a list of all the file shares on the server. The name of the share, the path to the root of the share, and the comment for the share are displayed in the list.

To configure by editing the configuration files:

The information about file and printer shares is in the Share configuration file. Each share is defined by a line in the file which contains the information about the share. The format for an entry in the share file is documented in the Share file comments.

- Special Home Directory Share Indicator

  The share that is designated as the special home directory share (if any) will have an asterisk after its share name.

  The home directory share is a special share that points to the home directory of each user who accesses the share. So, rather than pointing to a fixed directory as regular shares do, it points to a different directory for each user. A user's home directory is specified in the /etc/passwd file and is exported to the $HOMEDIR environment variable. There can only be one special home directory share on each FacetWin server. By default, a share named MyHomeDir will be the special home directory share.

  To configure by editing the configuration files:

  The special home directory share is identified in the facetwin.cfg file in the line:

  ```
  homedir_sharename=MyHomeDir
  ```

  If you want a share other than MyHomeDir to be the home directory share, substitute the name of the share in this line.

  If no such line exists in the file, or is commented out, then a share named MyHomeDir will be the special home directory share. This share is defined in the default Share file that is installed with FacetWin.

- Add button

  Click on the Add button to create a new file share. A blank file share dialog box will be presented to be filled in with the information about the new share being created. The file share dialog box is described below.

- Remove button

  To delete a file share, select the share to be deleted in the list. Then click on the Remove button.

- Properties button

  To modify the properties of a file share, select the share to be modified in the list. Then click on the Properties button. The file share dialog box with the information about the share will be presented. The file share dialog box is described below.

- Access Restrictions button

  Click on this button to view or modify the access restrictions associated with the selected share. The share access restrictions dialog box will be presented. This dialog box is described below.

- UNIX umask used in setting file permissions when creating a file

  Enter the UNIX umask to be used when new files are created by the FacetWin file server. This setting will be used for all users. It may be overridden by specifying a different umask for particular users on the Per-User tab. The default value is 0.

  For information about the UNIX umask value, run the UNIX command:

  ```
  man  umask
  ```

  To configure by editing the configuration files:

  The umask is specified in the facetwin.cfg file with the line:

  ```
  umask=nnn
  ```

  where *nnn* is the octal umask value to use.

- Distinguish between file names that differ only by case

  Check this box if you want the FacetWin file server to "mangle" names that would be indistinguishable to the Windows file system because they only differ by case.

  Windows does not allow two different file names to differ only by case. Therefore, the UNIX file names test, Test, and TEST would all evaluate to the same Windows file name. If you turn this feature on, the file server will mangle either files having any upper case (default) or lower case as selected by the radio buttons below. The file name is changed by appending ~*n* where *n* is

from the set { 1-9, a-z, 0!#$%&() }. For example, the name TEST would be changed to TEST~1. For systems requiring 8.3 formatted names, the server will append ~n if the name before the "." is 6 characters or less. Otherwise, it will replace the 7th and 8th characters with the "~n" characters. Note that this name mangling is internal to the server. The UNIX file name will not be changed on the disk.

The option is disabled by default, meaning that file names differing only by case will not be distinguishable.

To configure by editing the configuration files:

This feature is specified in the facetwin.cfg file by the line:

tilde_naming=OFF

Change the value to ON to turn on file name mangling.

- Mangle upper/lower case names

  These radio buttons determine whether UNIX file names having upper case characters or lower case characters will be mangled when the file name mangling feature is turned on.

  The default is for file names with upper case to be mangled since most UNIX file names are lower case. However, you may instead choose to have file names with lower case characters mangled.

  To configure by editing the configuration files:

  This option is specified in the facetwin.cfg file by the line:

  tilde_lc=NO

  To change it to mangle lower case names, replace the NO with YES.

- Enable read-only opportunistic locking

  Opportunistic locks (oplocks) are not currently supported by FacetWin. However, FacetWin can simulate oplocks on read-only shares. Enabling this option can give a significant speed increase for those applications that do a lot of read-

only accessing of database files. Remember this is only a simulation for oplocks. Any user that has write access to files on the share WILL NOT be prevented from updating files.

The default is for this option to be disabled.

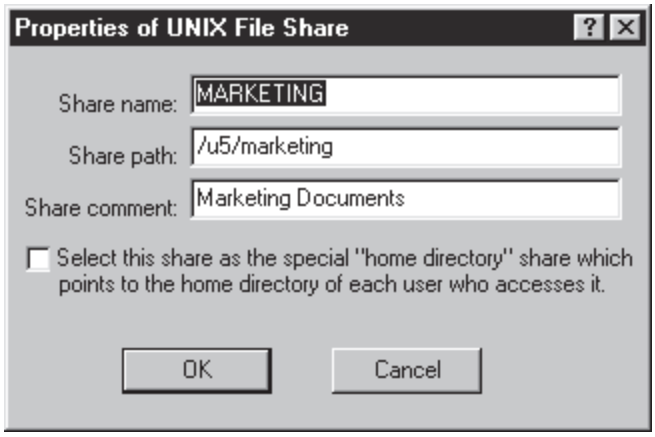
To configure by editing the configuration files:

This option is specified in the facetwin.cfg file by the line:

readonly_oplocks=NO

To enable the read-only oplocks, change the NO to YES.

When you add a new file share or click on the Properties button to modify the properties of an existing file share, the file share properties dialog box will be presented:



The items on this dialog box are:

- Share name

  This is the name of the file share as it will appear in the Network Neighborhood. Share names can be from 1 to 12 characters long. DOS clients may not be able to access shares with names greater than 8 characters.

- Share path

  The share path is the full UNIX path name of the directory that will be the root directory of the file share. If the share is the special home directory share, then this is the directory to be used if the user's home directory specified in the /etc/passwd file does not exist.

- Share comment

  The share comment is optional. If you supply a comment it will appear in the comment section of the Windows Network Neighborhood when the details option is turned on. The comment can be 1-255 characters, although only 48 characters will be displayed in the Network Neighborhood.

- Select this share as the special home directory share

  Check this box if this file share is to be assigned the special home directory share status. The home directory share is a special share which points to the home directory of each user who accesses the share. So, rather than pointing to a fixed directory as regular shares do, it points to a different directory for each user. A user's home directory is specified in the /etc/passwd file and is exported to the $HOMEDIR environment variable. There can only be one special home directory share.

  Note that by default a share named MyHomeDir is interpreted as being the special home directory share. Therefore, if there is a share named MyHomeDir, and no other share has been specified as the special home directory, then you cannot remove this special status from the MyHomeDir share.

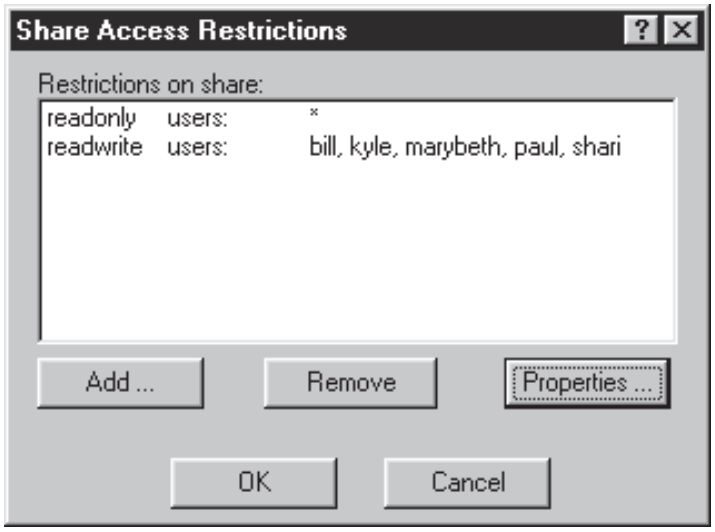
- OK button

  Click on the OK button to exit the share properties dialog box and save any changes that you have made to this file share.

- Cancel button

  Click on the Cancel button to exit the share properties dialog box and discard any changes you have made to this file share.

When you select a file share and then click on the Access Restrictions button, the Share Access Restrictions dialog box is presented:



The items on this dialog box are:

- Restrictions on share

  This is a list of restrictions on the currently selected file or printer share. Each restriction indicates the privileges allowed, whether the privileges are for Windows user names or PC machine names, and then a list of the names given those privileges. The privilege types are:

  none

  The users/machines associated with this restriction will not have any access to the share and the share will not appear in their Network Neighborhood.

  readonly

  The users/machines associated with this restriction will only have read access to the share (not applicable to printer shares).

readwrite

The users/machines associated with this restriction will have full read and write access to the share.

Note that the individual files in a file share are further protected by the file permissions on each individual file. Therefore, a person may have read/write access to the share, but may have read-only or no access to a particular file depending on the UNIX file permissions.

To configure by editing the configuration files:

The share access restrictions are in the Security file. Each line of the file contains a list of PC user names or machine names that have the access privilege specified for the share specified.

- Add button

  Click on this button to add a new restriction. A blank Access Restriction Properties dialog box will be presented. This dialog box is described below.

- Remove button

  To remove a restriction, select the restriction to be removed, then click on the Remove button.

- Properties button

  To modify a restriction, select the restriction and then click on the Properties button. The Access Restriction Properties dialog will be presented. This dialog box is described below.

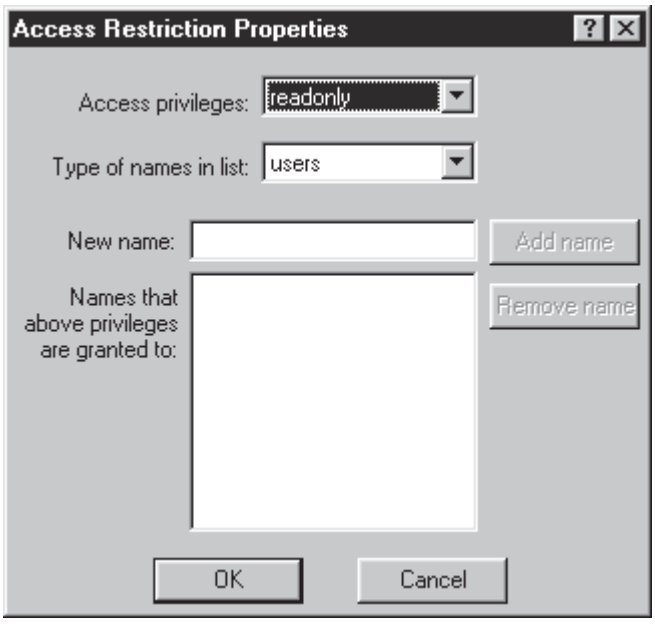
- OK button

  To accept any changes that have been made to the restrictions for the currently selected share, click on the OK button.

- Cancel button

  Clicking on the Cancel button will discard any changes that have been made to the restrictions for the currently selected share.

When you click on the Add or Properties buttons of an access restriction, the Access Restriction Properties dialog box is presented:



This dialog box is used to enter the properties for a single restriction on a share. The items on the dialog box are:

- Access privileges

  Choose the access to be provided to users in this restriction. Access types are:

  none

  The users/machines associated with this restriction will not have any access to the share, and the share will not appear in their Network Neighborhood.

  readonly

  The users/machines associated with this restriction will only have read access to the share (not applicable to printer shares).

  readwrite

  The users/machines associated with this restriction will have full read and write access to the share.

- Type of names in list

  The name type indicates whether the restriction will contain a list of PC user names or PC machine names.

- New name

  Enter a new name to be added to the restriction list here.

- Add name button

  After you have entered a name to be added in the box to the left, click on the Add button to add the name to the list of users/machines to which this restriction applies.

- Names that privileges are granted to

  This is the list of users or machines to which the restriction applies.

- Remove name button

  To remove a name from the restriction list, select the name to be removed and then click on the Remove button.

- OK button

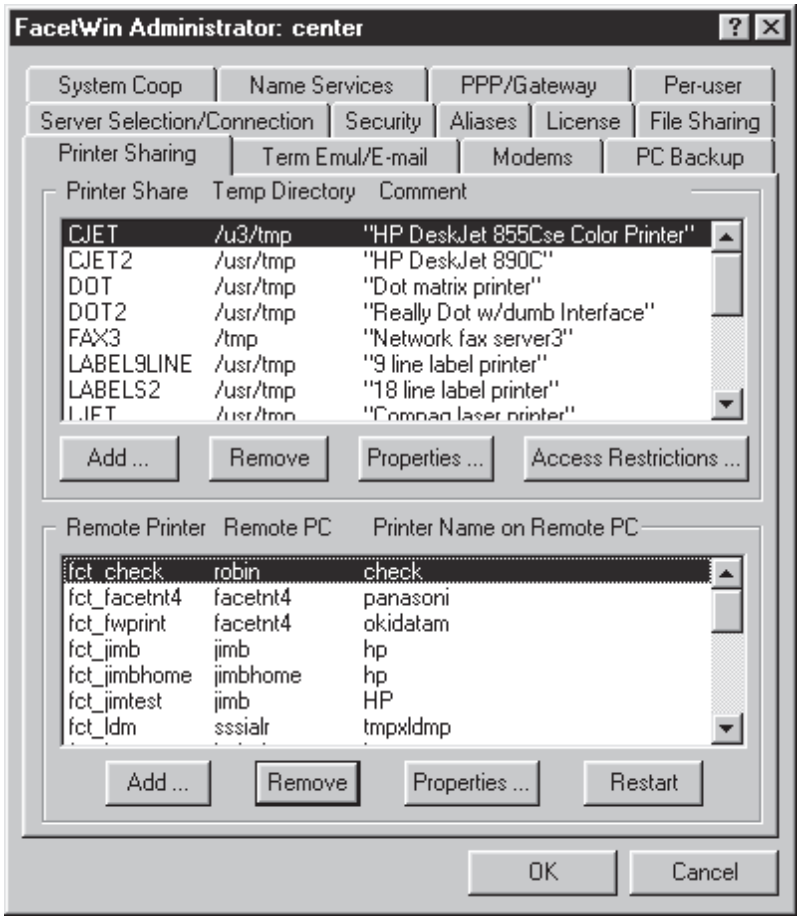
  Click on the OK button to exit this dialog box and accept any changes that have been made to this restriction.

- Cancel button

  Click on the Cancel button to exit this dialog box and discard any changes that have been made to this restriction.

Printer Sharing Tab of the FacetWin Administrator

The Printer Sharing tab of the FacetWin Administrator is used to manage the printer shares on the server. It is also used to manage the remote printers that can be accessed by UNIX applications:



The items on the top section of this tab are:

- Printer shares (UNIX printers shared with PCs)

  This is the list of UNIX printers on this server that are being shared as printers on the Windows network. The name of the share, the path to the temporary directory for storing print jobs, and the comment for the share are displayed in the list.

To configure by editing the configuration files:

The information about file and printer shares is in the Share configuration file. Each share is defined by a line in the file that contains the information about the share. The format for an entry in the share file is documented in the Share file comments. Each printer share also requires a printing script in the scripts subdirectory that has the same name as the share. Printer script files are described in the section The FacetWin Configuration Files.

- Add button for printer share

  Click on the Add button to add a new printer share. A blank Properties of UNIX Printer Shared with PCs dialog box will be presented for you to fill in the details about the new share. This dialog box is described below.

- Remove button for printer share

  To remove a printer share, select the share to be removed in the list above, and then click on the Remove button.

- Properties button for printer share

  To change the properties of an existing printer share, select the share in the list above, and then click on the Properties button. The Properties of UNIX Printer Shared with PCs dialog box will be presented with the settings for the share. This dialog box is described below.

- Restrictions to access button

  Click on this button to view or modify the access restrictions associated with the share. The Share Access Restrictions dialog box will be presented. This dialog box is described in the previous section on the File Sharing Tab of the FacetWin Administrator.

The items on the bottom section of the Printer Sharing Tab are:

- Remote printers (PC printers shared with UNIX)

  This is the list of printers that are attached to PCs and configured as devices in the UNIX printer spooler system. This capability is often referred to as "remote printing" since it is commonly used to enable a printer attached to a PC at a remote location to be used as a UNIX printer.

To configure by editing the configuration files:

The information about each remote printer is kept in configuration files in the printers subdirectory in the FacetWin installation directory on the server. Each file has the same name as the remote printer. In addition, the named pipes used with each remote printer are kept in the fct_pipes subdirectory. Because the remote printing facility must interact with the UNIX print spooler system, editing the configuration file for a remote printer is not sufficient to have the change take effect. Instead the UNIX command fct_rlpadmin is used to define a remote printer configuration. For information about this command run the UNIX command:

```
man  fct_rlpadmin
```

- Add button for remote printer

  Click on the Add button to add a new remote printer. A blank Properties of PC Printer Shared with UNIX dialog box will be presented for you to fill in the details about the new share. This dialog box is described below.

- Remove button for remote printer

  To remove a remote printer configuration, select the printer in the list above and then click on the Remove button.

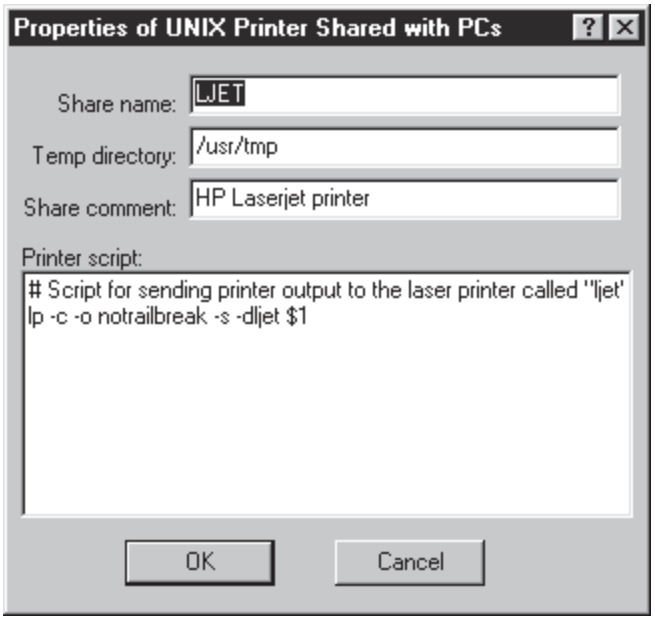
- Properties button for remote printer

  To change the properties of an existing remote printer, select the printer in the list above, and then click on the Properties button. The Properties of PC Printer Shared with UNIX dialog box will be presented with the settings for the remote printer. This dialog box is described below.

- Restart button for remote printer

  To restart a remote printer's server on the UNIX system, select the remote printer in the list and then click on the Restart button. The server will be automatically restarted when any changes to a remote printer are saved.

When you add a new printer share or click on the Properties button to modify the properties of an existing printer share, the printer share properties dialog box will be presented:



The items on this dialog box are:

- Share name

  Enter the printer share name. Share names can be from 1 to 12 characters long.

- Temp directory

  Enter the full UNIX path to the directory where temporary print files will be written.

- Share comment

  The share comment is optional. If you supply a comment it will appear in the comment section of the Windows Network Neighborhood when the Network Neighborhood details feature is turned on. The comment may be 1 to 255 characters long.

- Printer script

  Enter the script that will be run to print to the UNIX printer associated with this printer share. A typical script would be:

  lp -c -s -d *unixprintername* $1

  where:

  lp is the command to print a file through the standard UNIX print spooler. Depending on your UNIX platform, you may use a different command. For example, if you have AIX, you may use qprt.

  The -c switch causes a temporary copy of the file to be made from which to print.

  The -s switch suppresses some extraneous messages from the spooler.

  The -d switch specifies the printer to use where *unixprintername* is the name of the printer as it is known to the UNIX spooler system.

  The $1 argument indicates that the name of the file to print is given as the first argument to the script. This is required because the FacetWin file and print server will call the script with this argument.

  To configure by editing the configuration files:

  The script files for printer shares are kept in the scripts subdirectory and the name of each script must match the share name. Be sure that the UNIX permissions for the script file include execute permissions.

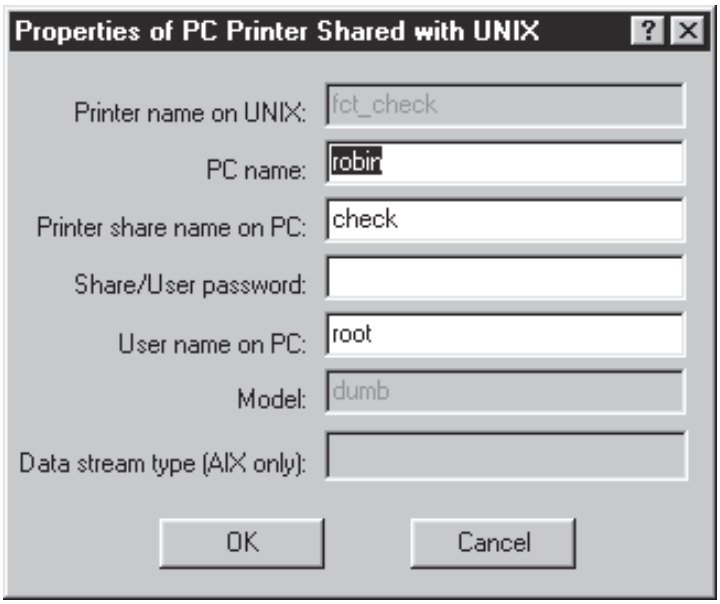
- OK button

  Click on the OK button to exit this dialog box and save any changes that you have made to this printer share.

- Cancel button

  Click on the Cancel button to exit this dialog box and discard any changes you have made to this printer share.

When you add a new remote printer or click on the Properties button to modify the properties of an existing remote printer, the remote printer properties dialog box will be presented:



The items on this dialog box are:

- Printer name on UNIX

  Enter the name that the remote printer will have in the UNIX print spooling system. This name must begin with "fct_". Since this name is used by the UNIX spooler system, you must remove and re-add the printer in order to change its name.

- PC name

  Enter the machine name of the PC that the remote printer is attached to.

- Printer name on PC

  Enter the name of the printer as it is shared by the PC it is attached to.

- Share/User password

  If the printer attached to the PC is protected by either share level or user level security, enter the password here. Otherwise, leave this blank. If you are changing a printer definition, the password will have been encrypted, and will be displayed as <encrypted>. If you do not change this entry, the existing encrypted password will be used. If you change this entry, the new contents will be used as the password. To remove a password, blank out the entry.

- User name on PC

  Enter the Windows logon name of a user who has permission to use this printer share. If the share is not protected by user level security, you may enter any name you want. If you leave it blank, the Administrator program will provide a dummy name in the configuration file in the /usr/facetwin/printers directory.

- Model (Printer type on AIX)

  If your UNIX print spooler uses printer models or types, enter the appropriate model or type name to be used with this printer. If this option is not used by your print spooler, you may leave this entry blank. FacetWin does not support printer models on UNIX platforms which use the /etc/printcap file to describe printers to the lp system. Since this information is used by the UNIX spooler system, you must remove and re-add the printer in order to change its model or type.

- Data stream type (AIX only)

  On AIX systems, a data stream type must be specified. For information on data stream types run the AIX command:

  ```
  man mkvirprt
  ```

  Since this information is used by the AIX spooler system, you must remove and re-add the printer in order to change its data stream type.

- OK button

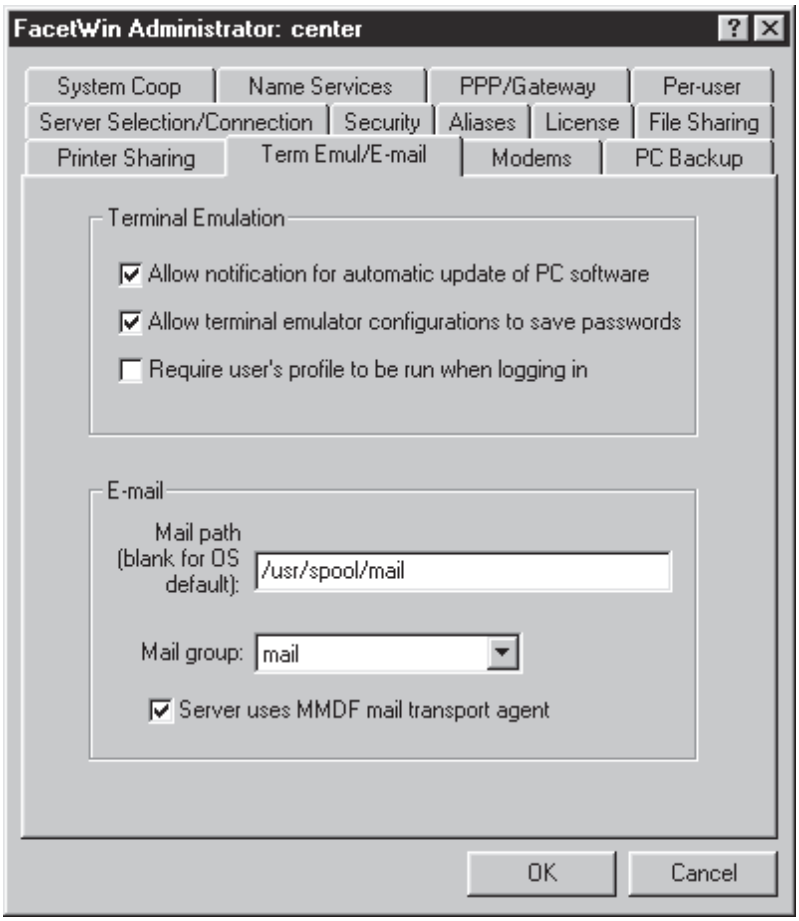
  Click on the OK button to exit this dialog box and save any changes you have made to this remote printer configuration.

- Cancel button

  Click on the Cancel button to exit this dialog box and discard any changes you have made to this remote printer configuration.

Term Emul/E-mail Tab of the FacetWin Administrator

This tab contains options for the server that works with the terminal emulator and the POP3 e-mail server:



The items which affect terminal emulation sessions are:

- Allow notification for automatic update of PC software

  Check this box to allow users to be notified of the availability of new FacetWin software for their PCs. Enabling this feature allows users to automatically upgrade their PCs with the latest FacetWin software. By default, this feature is enabled.

To configure by editing the configuration files:

This feature is enabled by including the line in the facetwin.cfg file:

PC_upgrade=OK

To disable the feature, change the line to:

PC_upgrade=NO

- Allow terminal emulator configurations to save passwords

  This feature allows users to save their passwords with terminal emulation session configurations. By default, this feature is enabled. This is convenient for users because they do not have to enter their password each time they run a terminal emulator session unless they choose not to save the password in particular configurations.

  However, this may present a security problem at your site. If so, you can disable the feature for all users on this server such that they cannot save passwords in terminal emulation configurations and will be forced to enter a password any time a terminal emulation session is invoked.

  To configure by editing the configuration files:

  This feature is enabled by including the line in the facetwin.cfg file:

  saved_passwords=YES

  To disable this feature, change the line to:

  saved_passwords=NO

- Require user's profile to be run when logging in

  The terminal emulator property sheet includes a check box where the user can choose to have their UNIX profile run when the session starts. You can force the profile to be run regardless of what the user enters in the terminal emulator property sheet by enabling this feature. The default is for this feature to be disabled (allows users to choose on terminal emulator property sheet).

To configure by editing the configuration files:

This feature is enabled by including the line in the facetwin.cfg file:

require_profile=YES

To disable this feature, the line should read:

require_profile=NO

The items which affect the POP3 e-mail server are:

- Mail path

  Enter the full path to the directory on the server where the users' mailbox files are located. If this entry is blank, then the default mail directory for your operating system is used.

  To configure by editing the configuration files:

  The mail path is specified in the facetwin.cfg file with the line:

  mailpath=*/usr/mail*

  where */usr/mail* is replaced with the path to the appropriate directory on this server. The default facetwin.cfg file has this line commented out. If this line is missing or commented out, the POP3 server will use the default mail directory for your operating system.

- Mail group

  Select the UNIX group name that should be associated with the users' mailbox files. On most systems this should be "mail".

  To configure by editing the configuration files:

  The mail group is specified in the facetwin.cfg file with the line:

  mailgroup=*mail*

  where *mail* would be replaced if necessary with the proper mail group on this server.

- Host uses MMDF transport agent

  Check this box if your UNIX system uses MMDF for its mail transport agent. All messages in the mailbox file will have four ^A (control A) characters at the beginning and end of each message if MMDF is the mail transport agent.

  The default on SCO systems is for this option to be enabled. The default on all other systems is for it to be disabled.

  To configure by editing the configuration files:

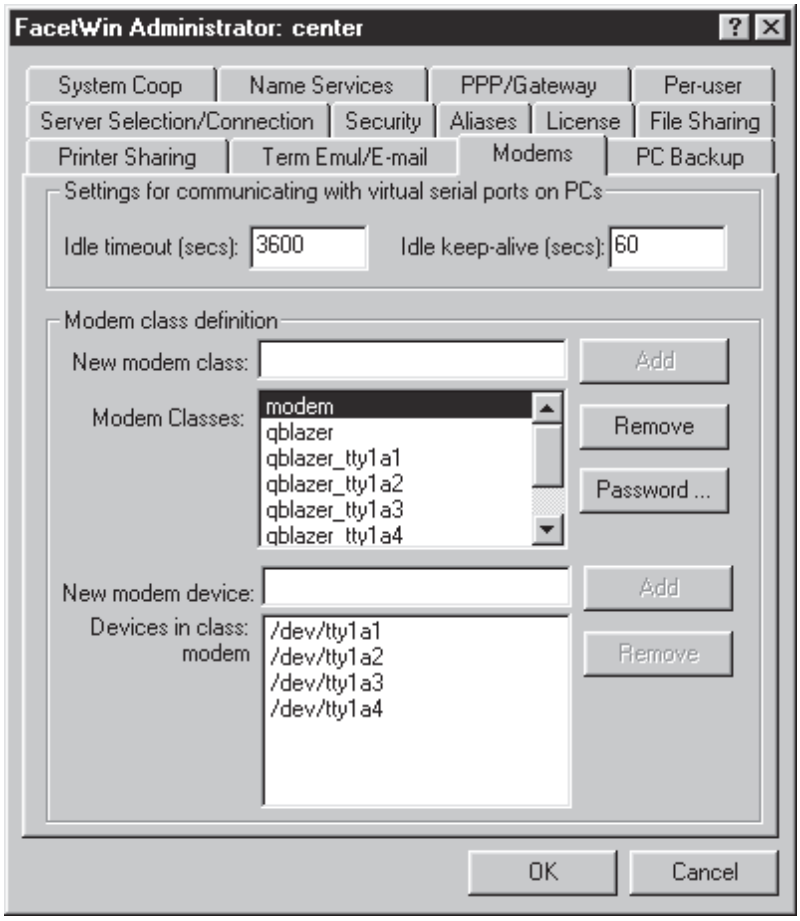
  This option is enabled by including the line in the facetwin.cfg file:

  ```
  mail_transport_agent=MMDF
  ```

  If this line is commented out, or not included in the file, then the option will be disabled.

Modems Tab of the FacetWin Administrator

The Modems tab of the FacetWin administrator allows you to group modem devices on the UNIX server together into modem classes that may then be accessed by the modem server on a first come, first served basis.



The items at the top of this tab affect the way that the modem server works with the FacetWin virtual serial port driver on the PC:

- Idle timeout

  If the modem is idle (no characters received from the modem) for this many seconds, the server will disconnect. The timeout should not be set to a low value because it will disconnect people while they are filling out web forms, etc. Setting the timeout value to -1 disables the timeout feature. The default value is 3600 (1 hour).

  To configure by editing the configuration files:

  This setting is specified in the facetwin.cfg file with the line:

  idle_modem_timeout_seconds=*nsec*

  where *nsec* is the number of seconds for the timeout or -1 to disable the timeout.

- Idle keep-alive

  If the modem is idle (no characters received from the modem) for this many seconds, the server will send a probe message to the PC to make sure that it is still connected. If the user has turned off the PC, or if it has crashed, this keep-alive message will cause the server to exit and free the modem. Setting this to -1 will disable the keep-alive feature. The default value is 60 (1 minute).

  To configure by editing the configuration files:

  This setting is specified in the facetwin.cfg file with the line:

  idle_modem_keepalive_seconds=*nsec*

  where *nsec* is the number of seconds for the timeout or -1 to disable the keep-alive messages.

The items in the lower section of the tab are used to define the modem classes:

- New modem class

  Enter the name of a new modem class that you want to define. Click on the Add button to the right to add this new class to the list of modem classes.

- Add button (for modem classes)

  After entering the name of a new modem class, click on this Add button to add the new modem class to the list of modem classes on this server.

- Modem classes

  This is the list of all modem classes defined on this server. When you select one of these classes, the devices in that class will be listed in the list box below.

- Remove button (for modem classes)

  To remove a modem class, select the modem class to be removed in the list of modem classes, then click on this Remove button. This will remove the modem class and all associated devices from the modem server configuration.

- Password button

  You can assign a password to each modem class to enforce utilization of different groups of modems by specific groups of users. Select a modem class and then click on the Password button to modify the password for the modem class. The Password for Modem Class Dialog Box will be presented. This dialog box is described below.

- New modem device

  Enter the name of a new device to be added to the modem class selected in the list above. This should be the full path to the device entry as it is defined on the UNIX system, such as:

  /dev/tty01

- Add button (for modem devices)

  To add a device to the modem class that is selected, enter the device name in the box to the left, then click on this Add button.

- Devices in class

  This is the list of devices that are associated with the modem class that is selected from the list above. These are the actual UNIX device names for the ports that the modems are attached to.

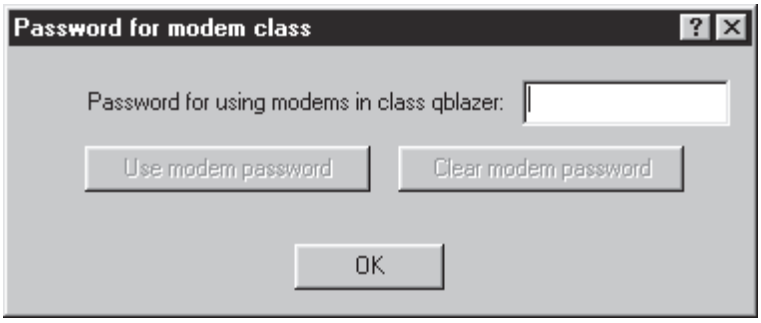
- Remove button (for modem devices)

  To remove a device from the modem class currently selected, select the device in the list to the left, then click on this Remove button. This will only remove the one device selected.

  To configure by editing the configuration files:

  All of the modem class information is in the Modems configuration file. This file consists of lines which begin with a UNIX modem device name followed by the name of the modem class that the device is being assigned to. A modem device may belong to more than one modem class. For more information see the section The FacetWin Configuration Files or read the comments in the Modems file itself.

When you select a modem class and click on the Password button, the Password for Modem Class dialog box will be presented:

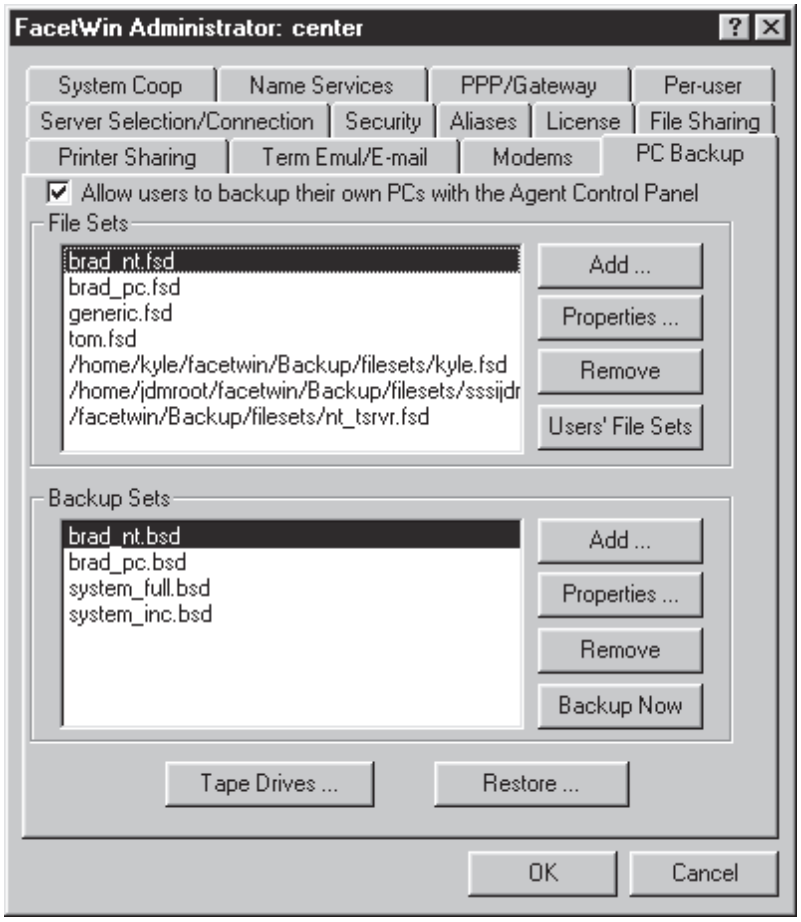


If there is no modem password for this modem class, then the password entry box will be blank. To add a password, enter it and click on the "Use modem password" button. To remove the password for the modem class, click on the "Clear modem password" button. To change an existing password, clear it first, enter the new password, and then click on the "Use modem password" button.

PC Backup Tab of the FacetWin Administrator

For a general introduction to the FacetWin PC Backup facility, read the section Using FacetWin to Backup PCs. For a system administrator's view of centralized backups read the section Configuring Centralized PC Backups.

The PC Backup tab contains items that the system administrator can use to configure centralized backups of the PCs on the network:



The first item on the tab is:

- Allow users to backup their own PCs with the Agent Control Panel

  Check this box to allow users to backup their own PCs using the FacetWin Agent Control Panel. The default is for this feature to be disabled.

  To configure by editing the configuration files:

  This feature is specified in the facetwin.cfg file by the line:

  ```
  allow_user_backups=NO
  ```

  Change the value to YES to enable user backups.

The file set items are:

- File Sets list

  A file set specifies a group of files to be backed up. A file set can be generic and used to specify files to backup on multiple PCs, or it can be tailored specifically for a particular PC. File sets created in the Administrator program will generally be generic. File sets that are specific to a PC are more easily created by the user with the FacetWin Agent Control Panel program running on his PC.

  To create a new file set, click on the Add button. To view or change the properties of a file set, select the file set in the list and click on the Properties button. To remove a file set, select it in the list and click on the Remove button.

  File sets created by users with the FacetWin Agent Control Panel, will be in their home directories. Any of these file sets that are referenced by a backup set will be included in the list of file sets. To scan all home directories for any other users' file sets, click on the "Users' File Sets" button. Any file sets found will be added to the list.

  To configure by editing the configuration files:

  File set descriptions are kept in the Backup/filesets subdirectory of the FacetWin installation directory. File set description files have a file name extension of .fsd. For details about the format of the backup configuration files see the section PC Backup Configuration Files.

- Add button (in the File Sets group)

  To add a new file set description, click on the Add button in the File Sets group. A blank Properties of File Set dialog box will be presented. This dialog box is described below.

- Properties button (in the File Sets group)

  To change a file set description, select the file set in the list and then click on the Properties button. The Properties of File Set dialog box will be presented with the file set information. This dialog box is described below.

- Remove button (in the File Sets group)

  To remove a file set description, select the file set in the list and then click on the Remove button. If the file set is referenced in a backup set, you will be warned. If you choose to delete the file set anyway, the Administrator program will remove any references to it in the backup sets.

- Users' File Sets button

  Click on this button to scan users' home directories for any file sets that they have defined that are not already in this list. Only those user file sets that are referenced in a backup set will be included in this list initially.

The backup set items are:

- Backup Sets list

  A backup set specifies how to backup one or more PCs in a single archive. For each PC to be backed up in the archive, you must specify the file set to use when backing up the PC and other settings, such as whether it is a full or incremental backup.

  To create a new backup set, click on the Add button. To view or change the properties of a backup set, select the file set in the list and click on the Properties button. To remove a backup set, select It in the list and click on the Remove button.

  To perform a backup on the selected backup set, click on the "Backup Now" button. If you have made any changes to the configuration, you must reselect the Connection tab and save your changes before performing the backup.

Backups may also be scheduled using the UNIX "cron" facility. See the help section titled "Scheduling Backups".

To configure by editing the configuration files:

Backup set descriptions are kept in the Backup/backupsets subdirectory of the FacetWin installation directory. Backup set description files have a file name extension of .bsd. For details about the format of the backup configuration files see the section PC Backup Configuration Files.

- Add button (in the Backup Sets group)

  To add a new backup set description, click on the Add button in the Backup Sets group. A blank Properties of Backup Set dialog box will be presented. This dialog box is described below.

- Properties button (in the Backup Sets group)

  To change a file set description, select the backup set in the list and then click on the Properties button. The Properties of Backup Set dialog box will be presented with the backup set information. This dialog box is described below.

- Remove button (in the Backup Sets group)

  To remove a backup set description, select the backup set in the list and then click on the Remove button.

- Backup Now button

  Click on this button to perform an interactive backup using the backup set description selected. If you have made any changes to the configuration, you must reselect the Connection tab and save your changes before performing the backup.

The buttons at the bottom of the PC Backup tab are used to define tape drives for the backup system and to perform a restore:

- Tape Drives button

  Click on this button to administer the tape drives defined for this server. The Tape Drives Dialog Box dialog box will be presented. Use this dialog box to define the tape drive configurations for this server. This dialog box is described below.

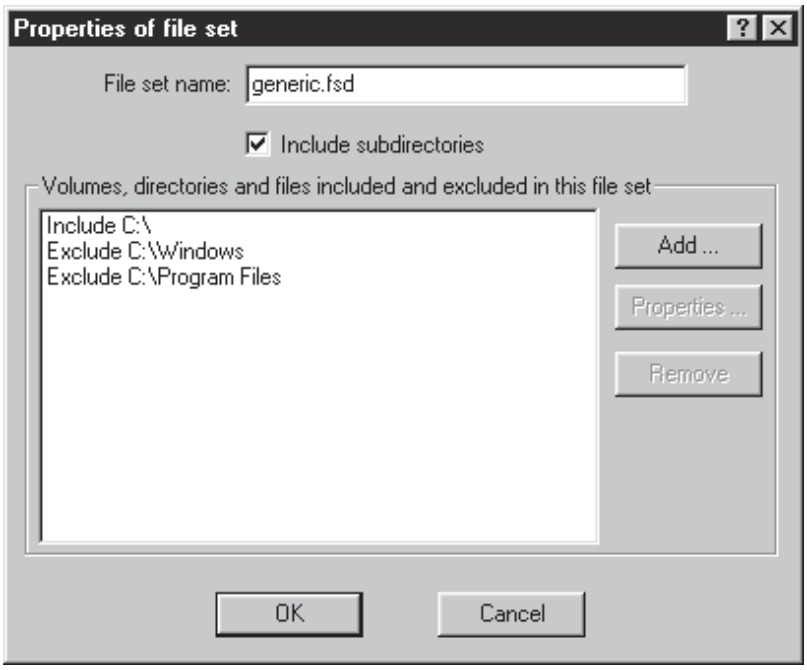
  To configure by editing the configuration files:

  Tape drive configurations are kept in the file Backup/tape.cfg in the FacetWin installation directory. For a description of the format of this file see the section PC Backup Configuration Files.

- Restore button

  Click on this button to perform a restore. The Restore Files From a Backup Dialog Box dialog box will be presented. Use this dialog box to specify the restore settings and to actually perform the restore. This dialog box is described below.

When you add a new file set or click on the Properties button to modify the properties of an existing file set, the Properties of File Set dialog box will be presented:



The items on this dialog box are:

- File set name

  This is the name of this file set description. It must be a valid UNIX file name. Unless you specify a full path the file will be created in the Backup/filesets subdirectory of the FacetWin installation directory. You should keep all centralized file set descriptions in this default directory, but if you are viewing a user defined file set, the full path to the file will appear here. If you change the name of a file set description that is referenced in a backup set description, the Administrator program will also change the reference in the backup set description for you. The file name extension for file set descriptions is ".fsd". If you leave off the ".fsd" extension, it will be added for you.

- Include sub-directories

  If you check this box, then all subdirectories of any directory that you specify to include will also be included. If you do not check this box, then only the directory and the files within it will be included. The default is to include subdirectories.

- Volumes, directories, and files included and excluded in this file set

  This is a list of the files and directories to be included in or excluded from a backup. Each entry should be the full path to the file or directory to be included or excluded in the backup. They must be valid Windows path names. If you do not specify a drive, the C: drive will be assumed. The items in the list can be in any order.

- Add

  To add a new file set item to be included or excluding, click on the Add button. A blank "Directory or file to include/exclude in file set" dialog box will be presented. This dialog box is discussed below.

- Properties

  To change a file set item, select the item in the list, and then click on the Properties button. The "Directory or file to include/exclude in file set" dialog box will be presented with the information for the selected item filled in.

- Remove

  To remove a file set item, select the item in the list, and then click on the Remove button.

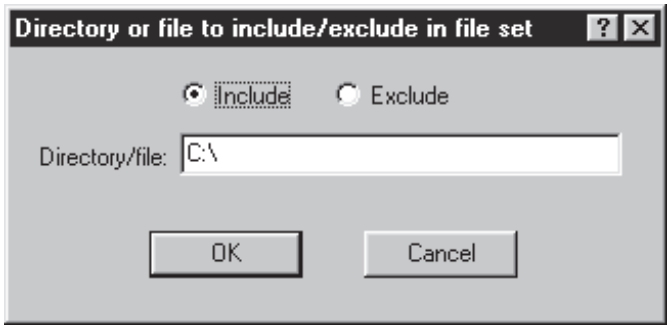
- OK

  Click on the OK button to save the changes to the file set and exit the "Properties of File Set" dialog box.

- Cancel

  Click on the Cancel button to discard any changes you have made to this file set and exit the "Properties of File Set" dialog box.

When you click on the Add or Properties button on the File set properties dialog, the File set item dialog box will be displayed:



The items on this dialog box are:

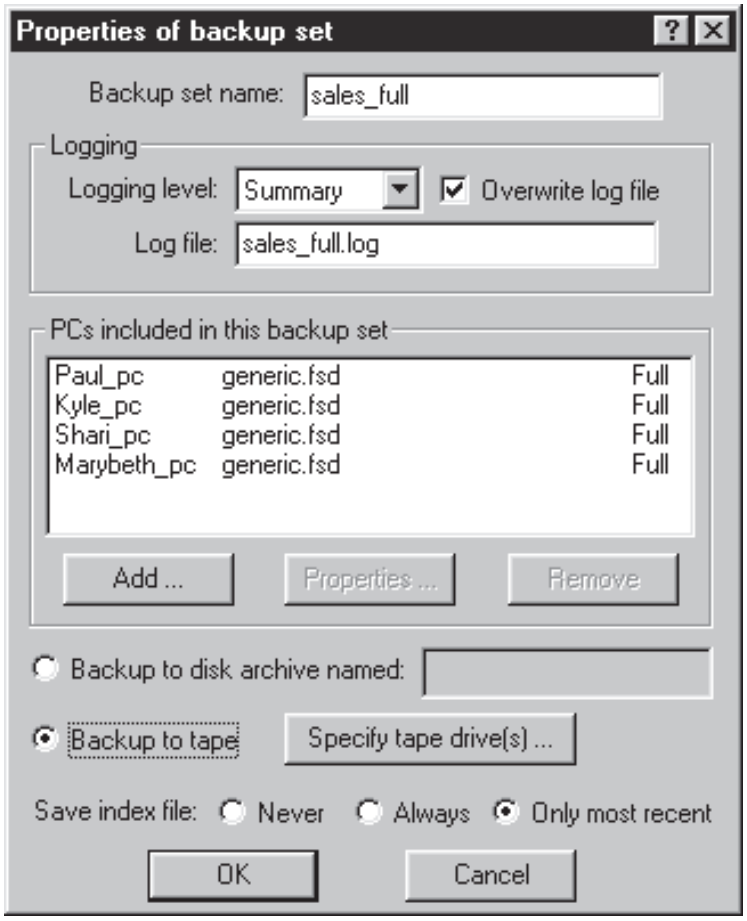
- Include/Exclude radio buttons

  This setting determines whether the file or directory that you enter is to be included or excluded in the file set.

- Directory/file

  Enter the full path of the file or directory to be included or excluded in the file set. If you leave off the drive identifier, the backup server will assume the C: drive.

When you add a new backup set or click on the Properties button to modify the properties of an existing backup set, the Properties of Backup Set dialog box will be presented:



The items on this dialog box are:

- Backup set name

  This is the name of the backup set description file. It must be a valid UNIX file name. The suffix ".bsd" will be added to the file name if the name does not end in this suffix. Backup sets will be put in the Backup/backupsets subdirectory of the FacetWin installation directory. You should not specify a full path for the backup set, only its file name.

- Logging level

  This item specifies what level of logging should be done when this backup set description is used to do a backup. If you choose "No logging", then no log file will be created. If you choose "Summary", only summary information about the backup will be included in the log file. If you choose "Detail", then all the information in a summary log plus information about each file backed up will be logged. Summary logging is the default.

- Log file

  This is the name of the log file. It must be a valid UNIX file name. You should not specify a path. Log files will be created in the Backup/logs subdirectory of the FacetWin installation directory. You will probably want to give it the same name as the backup set description, except with an extension of ".log". If you leave off the .log extension, it will be added for you.

- Overwrite log file

  Check this box if you want the log file to be overwritten each time a backup is run using this backup set description. If you do not check the box, each backup will append its output to the log file. If you choose not to overwrite the log file, you should check the size of the log file periodically to ensure that it does not get too large.

- PCs included in this backup set

  This is a list of the PCs that are included in this backup set. The PC name, file set description being used, and an indication of full or incremental backup is included in the list. When the backup is done using this backup set description, all of these PCs will be backed up in the same archive.

- Add

  Click on this Add button to add a PC to the list of PCs that will be backed up with this backup set description. A blank "Properties of PC Backup" dialog box be presented for you to fill in the details about backing up this PC. This dialog box is discussed below.

- Properties

  Click on this Properties button to view or modify the backup settings for the PC that is selected in the list. The "Properties of PC Backup" dialog box will be presented with the details about backing up this PC filled in. This dialog box is discussed below.

- Remove

  Click on this Remove button to remove the selected PC from the list of PCs to be backed up with this backup set description.

- Backup to disk archive

  If you select this radio button, then the backup will be done to a disk archive. This may be very convenient for backing up a small selective set of critical files or for doing incremental backups that result in a small set of files. You can backup and restore from a disk archive without ever having to deal with a tape or tape drive. However, disk archives should be reserved for these small backups only. For larger backups, you should choose to backup to tape.

- Disk archive name

  Enter the name of the disk archive that will hold the backup. It must be a valid UNIX file name. If you do not specify a full path, the archive file will be created in the FacetWin installation directory on the server, in the Backup/archives subdirectory. If you want to locate the archive file somewhere else, provide a full path name. FacetWin disk archives have the file name extension ".fwarc". If you leave off the .fwarc extension, it will be added for you.

- Backup to tape

  If you select this radio button, then the backup will be done to a tape archive. Tape archives can span multiple tapes. For large backups, you should choose to backup to tape.

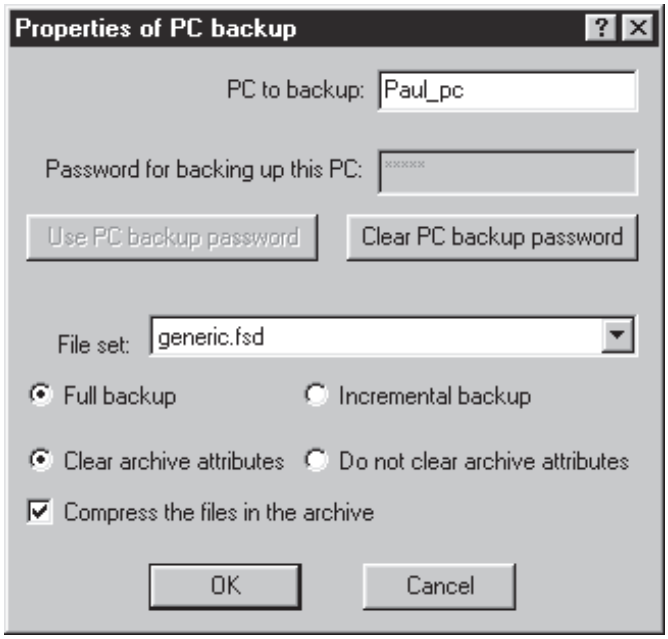
- Specify tape drives

  If you have specified to backup to tape, click this button to access the tape device(s) that will be used in the backup. The "Tape drives to use for backup or restore" dialog box will be presented. This dialog box is discussed below.

- Save index file Always/Never/Only most recent

  When a backup is run, the server can retain the index to the backup. An index is required to do a restore, however, you may create an index from a backup archive. Index files can be moderately large since they have information about every file in the backup archive. You can choose to never have the index file retained, always have the index file retained, or only retain the most recent index file. Index file names begin with the backup set name (without the .bsd extension) and end with MM.DD.YYYY.HH.MM.SS where MM.DD.YYYY is the date the backup was done, and HH.MM.SS is the time that the backup was done. Index files are created in the Backup/indexes subdirectory of the FacetWin installation directory.

When you click on the Add or Properties buttons to add or modify the properties of a PC to be included in a backup set, the "Properties of PC Backup" dialog box will be presented:



The items on this dialog box are:

- PC to backup

  This is the name of the PC to be backed up. To find out the name of a PC, right click on the Network Neighborhood icon on the PC's desktop and choose Properties from the menu. The Network property sheet will be presented. Select the Identification tab. The Computer name on that tab is the name to be used here.

- Password for backing up the PC

  If the PC to be backed up has a backup password, you must enter the password here. To add a password, enter it and click on the "Use PC backup password" button. To remove the password for the PC, click on the "Clear PC backup password" button. To change an existing password, clear it first, enter the new password, and then click on the "Use PC backup password" button.

- File set

  Select the file set that will be used to describe the files that are to be backed up on this PC. The list to choose from will include all of the file sets that are listed on the main PC Backup tab.

- Full / Incremental backup

  Specify whether a full or incremental backup will be done of this PC. A full backup will backup every file that is matched by the file set description. An incremental backup will backup only those files which match the file set description and which have the archive attribute set.

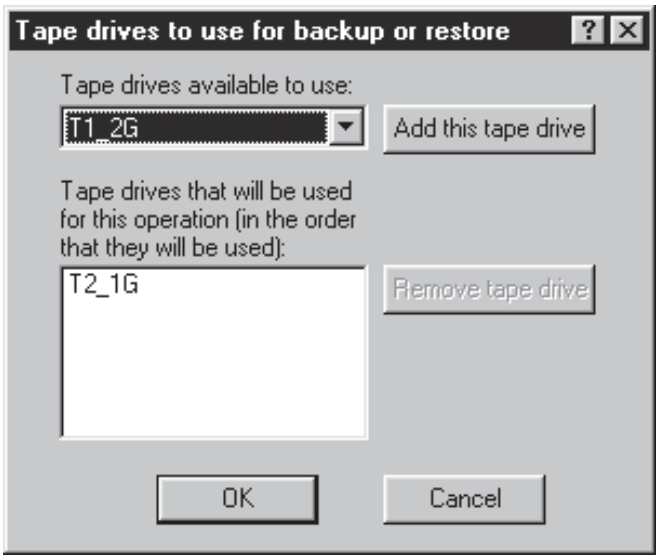
- Clear / Do not clear archive attributes

  Specify whether or not to clear the archive attribute on files that are backed up. Generally, you will want to specify that the archive attributes are cleared when doing a full backup and that they are not cleared when doing an incremental backup.

- Compress the files in the archive

  Check this box if you want to compress the files in the archive. This allows you to fit more files on a tape or use less disk space for a disk archive. The default is to not compress the files in the archive.

When you have chosen to backup to tape, and click on the Specify tape drive(s) button, the "Tape drives to use for backup or restore" dialog box will be presented:



The items on this dialog box are:

- Tape drives available to use

  This is a list of all the tape drive configurations defined on this server. Choose a drive from this list to add to the list of tape drives that will be used in the backup. If you only have one drive, the backup server will prompt you to change tapes when it reaches the end of a tape. If you have multiple drives, you can specify them here in the order that they will be used. This allows a multi-tape backup to run unattended.

- Add this tape drive

  Click on this Add button to add the drive selected from the drop-down list to the list of tape drives to be used below.

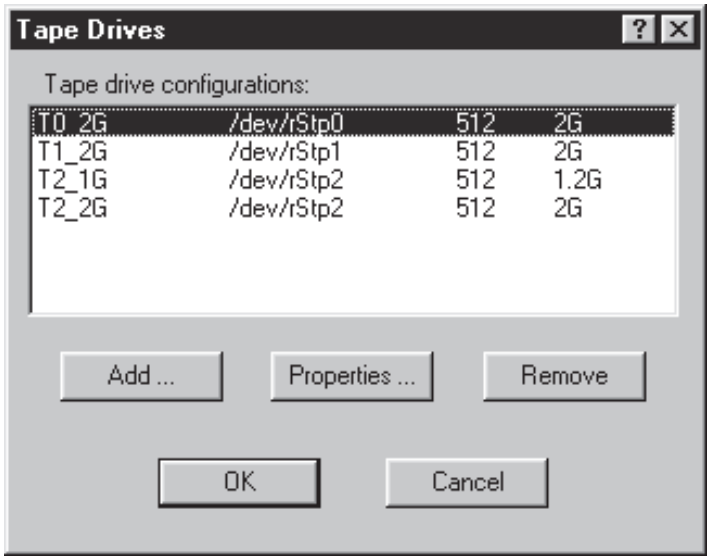
- Tape drives that will be used in the backup or restore

  This is the list of tape drives, in order, that will be used for the backup.

- Remove tape drive

  To remove a tape drive from the list of drives to be used for the backup, select the drive in the list of drives to be used and then click on this remove button.

When you click on the Tape Drives button on the PC Backup tab, the Tape Drives dialog box will be presented:



The items on this dialog box are:

- Tape drive configurations

  This is the list of tape drives that have been defined for this server. Each tape drive definition includes tape capacity information as well as tape device information. Therefore, even if you only have one tape drive on your system, you might have multiple tape drive definitions if you use tapes of different capacities. The columns in the list are tape drive name, the UNIX device entry for the drive, the tape block size in bytes, and the capacity of the drive in megabytes or gigabytes.

- Add button

  Click on this Add button to create a new tape drive definition. The Tape Drive Properties dialog box will be displayed. This dialog box is discussed below.

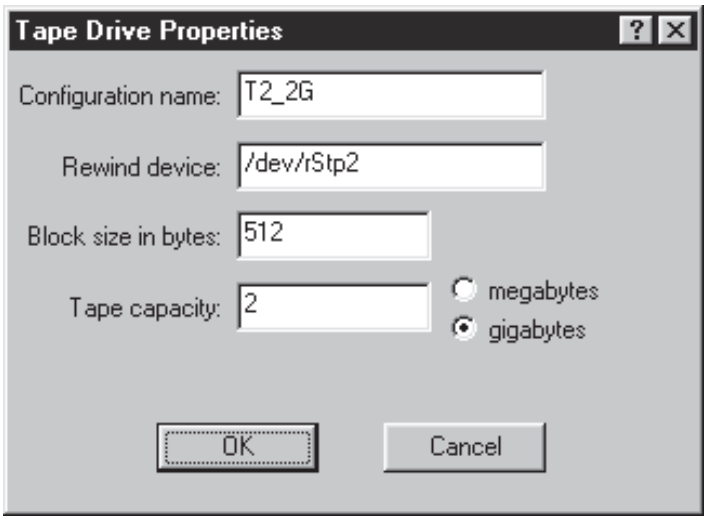
- Properties button

  To modify the properties of an existing tape drive entry, select the entry in the list and then click on this Properties button. The Tape Drive Properties dialog box will be presented. This dialog box is discussed below.

- Remove button

  Click on this Remove button to remove the tape drive selected in the list.

When you add a new tape drive configuration or modify the properties of an existing entry, the Tape Drive Properties dialog box is presented:



The items on this dialog box are:

- Configuration name

  This is the name of the tape drive configuration. This name is used in backup set descriptions to refer to this configuration.

- Rewind device

  This is the UNIX device name for the tape drive that is used when you want to rewind the tape after closing it.

- Block size in bytes

  This is the block size to use when writing to this tape device. It should be a multiple of the physical tape block size which is usually 512 bytes. You can achieve significant performance increases with larger block sizes. The maximum block size you can specify is 32768 (32K).

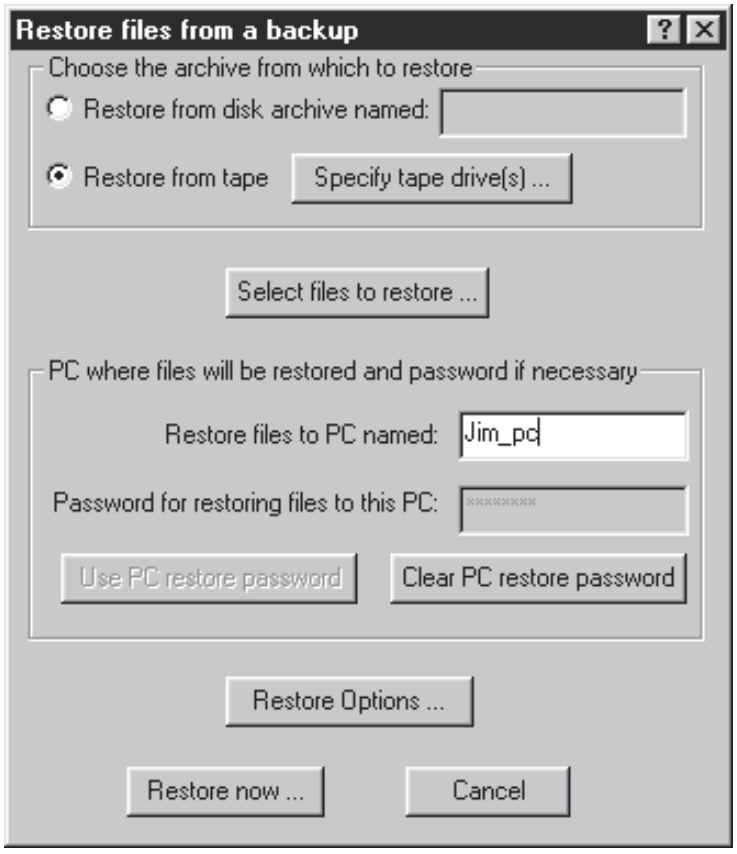
- Tape capacity

  This entry along with a selection of the megabytes or gigabytes indicator specifies the capacity of the tape that will be used with this configuration.

- Megabytes / Gigabytes indicator

  Selection of megabytes or gigabytes along with the Tape capacity specification indicates the capacity of the tape that will be used with this configuration.

When you click on the Restore button on the PC Backup tab, the Restore Files from a Backup dialog box will be presented:



The items on this dialog box are:

- Restore from disk archive

  Click on this button if the archive from which you wish to restore is a disk archive.

- Disk archive name

  Enter the name of the disk archive from which you want to restore. It must be a valid UNIX file name. If you do not specify a full path, it will be assumed that the archive file is in the Backup/archives subdirectory of the FacetWin installation directory. If the archive file is somewhere else, provide a full path name.

- Restore from tape

  Click on this button if the archive from which you wish to restore is a tape archive.

- Specify tape drives button

  Click on this button to select the tape drive(s) that will hold the tape(s) from which files are to be restored. The "Tape drives to use for backup or restore" dialog box will be presented. This is the same dialog box used to specify the tape drives for a backup. This dialog box was discussed above.

- Select files to restore

  Click on this button to select the files that you want to restore from the backup. The name of the index file will be determined by reading the header from the archive. If the index does not exist, you will have the option of creating it. The index is necessary for displaying the files in the archive, so if you choose not to create an index, the file selection will be canceled. This button will be disabled until you have specified a disk archive name or the tape drive(s) that hold the tape archive. If it is a tape archive, you should have the tape in the drive before clicking on this button.

- Restore files to PC

  Enter the name of the PC to which the files should be restored. The PC from which the files were originally backed up will be filled in for you. If you are restoring to a different PC, enter that PCs name here.

- Password for restoring files to this PC

  If the PC to which you want to restore files has a backup password, you must enter the password here. To add a password, enter it and click on the "Use PC restore password" button. To remove the password for the PC, click on the "Clear PC restore password" button. To change a password that you have already entered, clear it first, enter the new password, and then click on the "Use PC restore password" button.

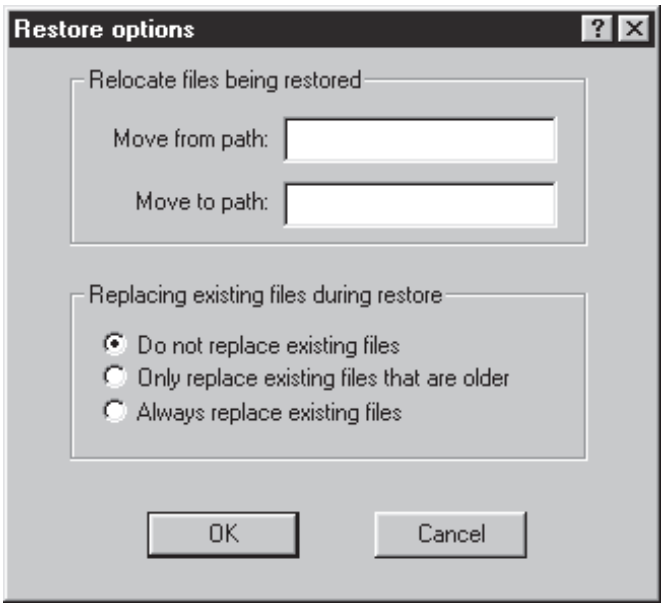
- Restore options

  When you click on this button, the Restore options dialog box will be presented. This dialog box is discussed below.

- Restore now

  Click on this button to begin the restore operation. This button will be disabled until enough information has been entered about the restore. Items that must be specified are the name of the disk archive or the tape drive(s) to use, the files to be restored, and the PC to which the files are to be restored.

If you click on the Restore Options button, the Restore options dialog box will be presented:



The items on this dialog box are:

- Relocate files being restored

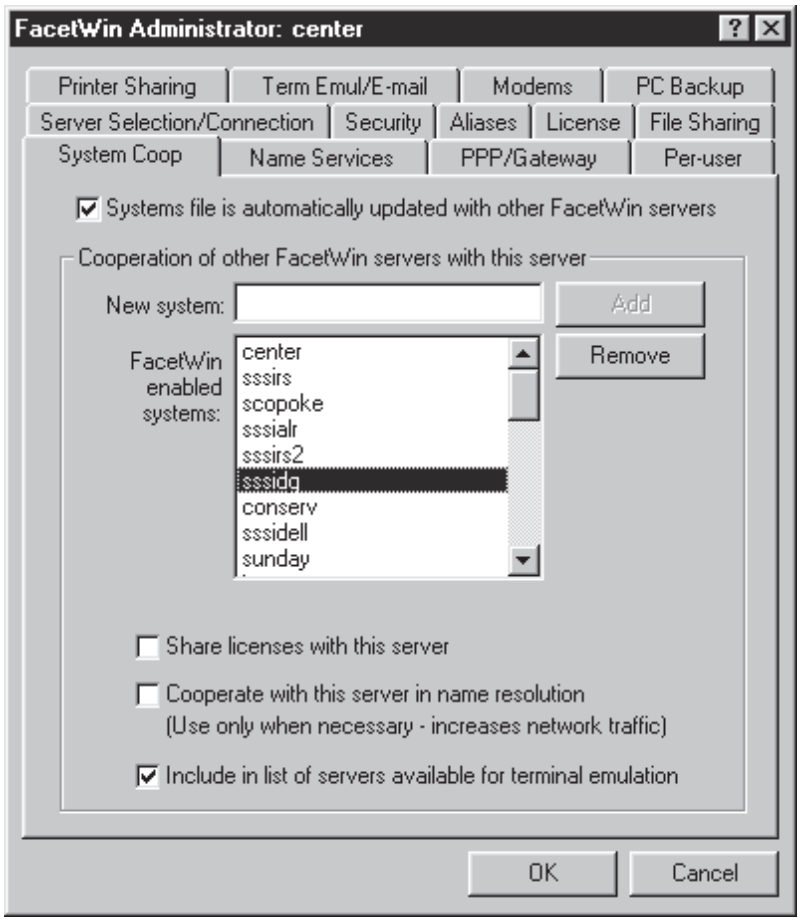
  These items allow you to relocate the files being restored from one directory to another. Enter the full path to the directory that you want to move files from, and the full path to the directory that you want to move the files to. In any file being restored, the "from" path will be renamed to the "to" path.

- Replacing existing files during restore

  These items allow you to specify whether existing files will be replaced during the restore. "Do not replace existing files" is the default. When this selection is made, a file will not be replaced with one from the backup archive, even if the one in the archive is newer. When you select "Only replace existing files that are older", then an existing file will only be replaced if it is older than the one in the backup archive. When you select "Always replace existing files", any existing files will be replaced by files in the backup archive, regardless of the date of the existing file.

System Coop Tab of the FacetWin Administrator

The System Coop tab contains the options which control how multiple FacetWin servers cooperate on the network:



The items on this tab are:

- Systems file is automatically updated

  Check this box if you want the Systems file on this server to be automatically updated with default entries for other FacetWin servers on the network. A default entry in the Systems file will have license sharing and WINS cooperation disabled and inclusion in the list of servers for terminal emulation enabled.

To configure by editing the configuration files:

This option is enabled in the facetwin.cfg file by the line:

```
auto_update_systems_file=YES
```

If this line is commented out, or if the value is "NO", then this feature will not be enabled.

All of the remaining items on this tab describe the cooperation between the server being configured, and another FacetWin enabled server on the network.

To configure by editing the configuration files:

The cooperation between this server and other servers is determined by the contents of the Systems configuration file. Each line in this file begins with the name of another FacetWin server followed by "exclusion" flags surrounded by a colon ":" on either side. The exclusion flags are "L" to exclude license cooperation, "W" to exclude WINS server cooperation, and "V" to exclude this server from the list of servers available for terminal emulation (VTP server). For example, the line:

```
bigserver:W:
```

would mean that the server named "bigserver" would cooperate with the local host where this Systems file resides in sharing licenses and "bigserver" would appear in the list of servers available for terminal emulation. However, the "W" exclusion flag means that this server would not cooperate with the local host in WINS server name resolution.

Note that on the System Coop tab of the administrator program, you check the boxes to enable the cooperation. If you are editing the Systems configuration file, you enter an exclusion flag to disable the cooperation.

The system cooperation items are:

- New system

  Enter the name of a system that you want to add to the list of FacetWin enabled systems on the network.

- Add button

  To add a new system to the list of FacetWin enabled servers, enter the name of the system in the box to the left, then click on this Add button to add the system to the list.

- FacetWin enabled systems

  This is the list of FacetWin enabled servers on the network.

- Remove button

  To remove a system from the list of FacetWin enabled servers, select the system to be removed from the list, and then click on this Remove button.

- Share licenses with this server

  Check this box if you want the server selected in the list to share licenses with the server being configured. Note that you must also configure the other server to share licenses with this server. For example, to enable license sharing between servers A and B, you must configure server A to specify license sharing with server B and you must also configure server B to specify license sharing with server A.

- Cooperate with this server in name resolution

  Check this box if you want the server selected in the list to cooperate in WINS server name resolution with the server being configured. Note that you must also configure the other server for WINS cooperation with this server. For example, to enable WINS cooperation between server A and server B, you must configure server A to specify WINS cooperation with server B and you must also configure server B to specify WINS cooperation with server A.

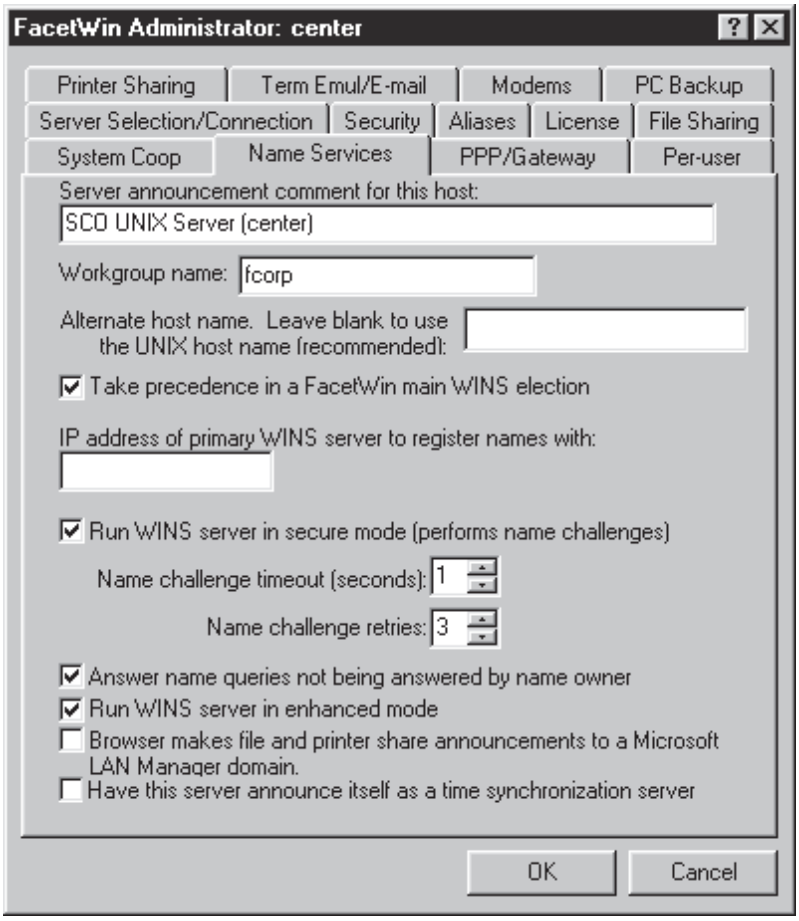
  WINS cooperation is a way to get two or more FacetWin WINS servers to share their information. By querying one WINS server, you gain access to the information stored on all of the other cooperating WINS servers. This is only beneficial on a multiple subnet LAN in which all of the machines cannot be configured to use a single WINS server, especially with LAN Manager 2.x and Windows 3.x machines that cannot specify a WINS server.

- Include in list of hosts available for terminal emulation

  Check this box if you want the server selected in the list to be included in the list of servers available for terminal emulation. A PC running the FacetWin terminal emulator gets the list of available hosts from the server configured as its primary or secondary WINS server. Therefore, in order to obtain this list, the PC must be configured to have a FacetWin enabled server as either its primary or secondary WINS server.

Name Services Tab of the FacetWin Administrator

The Name Services tab of the FacetWin Administrator contains settings which affect how this server is identified on the Windows network as well as settings which affect how the FacetWin WINS and browser servers operate on this host:



The items on this tab are:

- Server announcement comment

  The server comment is the descriptive comment that the server sends when it announces its presence to the network. It may be 1-48 characters in length. This comment will appear next to the server name in the Network Neighborhood when the details option of the Network Neighborhood is turned on.

To configure by editing the configuration files:

The server comment is specified in the facetwin.cfg file by the line:

srvcomment=*comment*

where *comment* is the comment that you want for this server.

- Workgroup name

  Enter the Windows workgroup that this server belongs to. This is setup when you install FacetWin. The workgroup name can be from 1 to 15 characters.

  To configure by editing the configuration files:

  The workgroup is specified in the facetwin.cfg file by the line:

  workgroup=*groupname*

  where *groupname* is the name of the workgroup to which the UNIX server belongs.

- Alternate host name

  By default, FacetWin will use the official UNIX hostname, usually obtained from a DNS server or the /etc/hosts file. This hostname shows up in the Windows Network Neighborhood and is registered with the WINS server as the NetBIOS name for this server. This option allows you to use a hostname other than the default hostname. The alternate hostname can be from 1 to 15 characters.

  NOTE: This option may cause less reliable hostname resolution for this server on the network. Do not use this feature unless you have a legitimate need to browse this server using a name other than the official host name. This might be necessary when more than one protocol is being used to access shares on the same server, such as SMB, NFS, and Netware.

  To configure by editing the configuration files:

  The alternate host name is specified in the facetwin.cfg file by the line:

  alternate_hostname=*name*

  where *name* is the alternate name you want to assign. If this line is commented out or doesn't exist, then the official UNIX host name will be used.

- Take precedence in a FacetWin main WINS election

  When WINS servers are configured for cooperation through the Systems tab of the FacetWin Administrator (Systems file), enable this option on one of the systems to give a specific WINS server priority for the role of Main WINS server. If WINS server cooperation is not being used, then this option should be disabled. The default is for it to be disabled.

  To configure by editing the configuration files:

  This option is enabled in the facetwin.cfg file by the line:

  wins_election_priority=YES

  If the line is commented out, doesn't exist, or has a value of NO, then this server will not take precedence in an election among FacetWin WINS servers.

- IP address of primary WINS server to register names with

  This option allows you to use another UNIX or NT server as the primary WINS server for your network. To enable this option, enter the IP address for the primary WINS server here. FacetWin will then be able to properly register and refresh its names with the primary WINS server.

  To configure by editing the configuration files:

  This option is specified in the facetwin.cfg file with the line:

  primary_wins_server=*IP_address*

  where *IP_address* is the dotted IP address of the server that you want names registered with.

- Run WINS server in secure mode (perform name challenges)

  When the WINS server is in secure mode, it decides when a currently registered NetBIOS name can be registered to another machine by performing name challenges. When the WINS server is in non-secure mode, any machine on the network may overwrite a currently registered NetBIOS name by sending an overwrite request to the WINS server. The WINS server assumes that the machine issuing the overwrite request has successfully performed the name challenge, but there is no assurance of this. It is recommended that the WINS server be kept in secure mode. This option is turned on by default.

To configure by editing the configuration files:

This option is specified in the facetwin.cfg file with the line:

nbns_secure_server=YES

To disable the option, set the value to NO.

- Name challenge timeout

  When the WINS server is running in secure mode, this is the number of seconds that the WINS server will wait between name challenges. This timeout can be from 1 to 10 seconds with 1 being the default.

  To configure by editing the configuration files:

  This parameter is specified in the facetwin.cfg file with the line:

  nbns_nm_chall_timeout=*n*

  where *n* is the number of seconds to wait between retries.

- Name challenge retries

  When the WINS server is running in secure mode, this is the number of times the WINS server will challenge the owner of a name before making the name available. The number of retries can be from 0 to 10 with 3 being the default. Setting this parameter to 0 will disable name challenges.

  To configure by editing the configuration files:

  This parameter is specified in the facetwin.cfg file with the line:

  nbns_nm_chall_retries=*n*

  where *n* is the number of times to retry a name challenge.

- Answer name queries not being answered by name owner

  This option allows the WINS server to answer broadcast name queries that are not being answered by the name owner, but that are registered with the FacetWin WINS server. This may be useful if the name owner is outside the local broadcast area, such as PPP clients. The default is for this option to be turned on.

To configure by editing the configuration files:

This option is specified in the facetwin.cfg file with the line:

```
wins_answer_bcast_queries=YES
```

To disable this option, change the value to NO.

- Run WINS server in enhanced mode

  Windows PCs that do not have a WINS server specified will do broadcast name registrations. This option allows the WINS server to run in an enhanced mode in which it registers these broadcast registered names so that it can answer direct queries on them. The broadcast registered names will be handled at a lower priority than directly registered names. The default is for this option to be turned on.

  To configure by editing the configuration files:

  This option is specified in the facetwin.cfg file with the line:

  ```
  enhanced_wins=YES
  ```

  To disable this option, change the value to NO.

- Browser makes file and printer share announcements to a Microsoft LAN Manager
  domain

  This option allows the browser daemon to make file and printer sharing announcements to a Microsoft LAN Manager 2.x domain. This option should only be enabled if there is such a legacy domain on the network. The default is for this option to be disabled.

  To configure by editing the configuration files:

  This option is specified in the facetwin.cfg file with the line:

  ```
  lm_announce=NO
  ```

  To enable LAN Manager domain announcements, change the value to YES.

- Have this server announce itself as a time synchronization server

  Check this box if you want this server to announce itself as a time synchronization server. This will allow PCs on the network to set their time with the "net time" command without having to specify which server to get the time from.

  To configure by editing the configuration files:

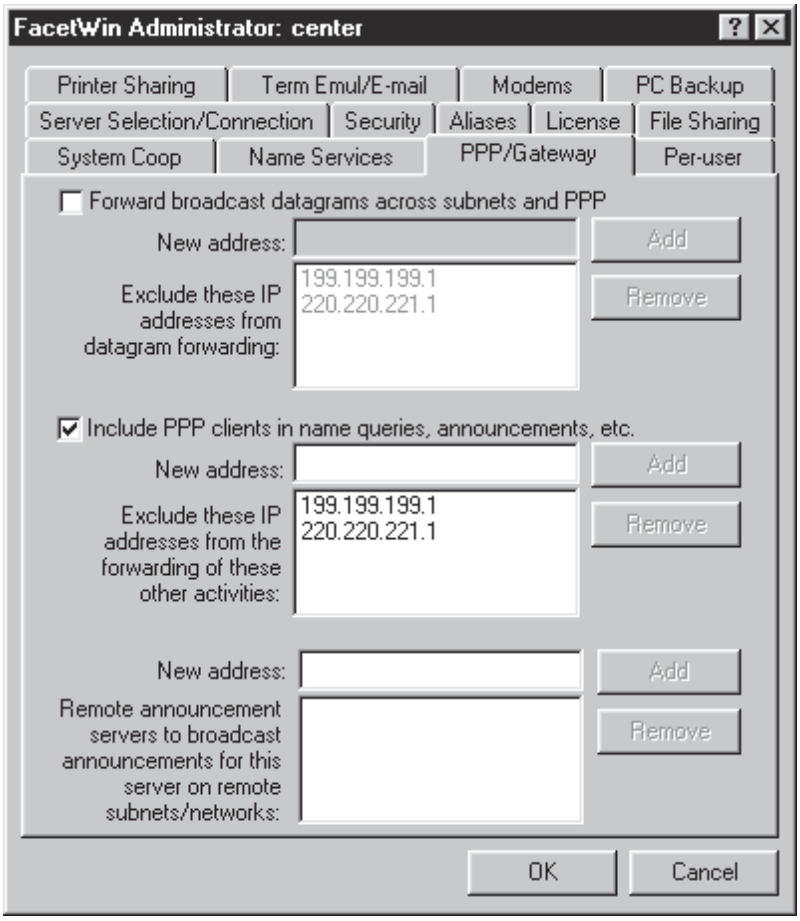
  This option is specified in the facetwin.cfg file with the line:

  ```
  network_time_server=NO
  ```

  If you want to enable this announcement, change the value to YES.

PPP/Gateway Tab of the FacetWin Administrator

The PPP/Gateway tab of the FacetWin Administrator contains items which determine how the FacetWin WINS and browser servers will interact with servers on other networks or subnets:



The first group of items determine whether broadcast datagrams will be forwarded across subnets and PPP connections. You specify if the feature is enabled, and if it is, create a list of any interfaces that should be excluded from this datagram forwarding. The items in this group are:

- Forward broadcast datagrams across subnets and PPP

  This option allows the browser daemon to forward UDP port 138 broadcast datagrams to other interfaces configured on this host. This option can be used to make 2 subnets routed by the FacetWin server appear as 1 subnet in the Windows Network Neighborhood. The default is for this option to be disabled.

  To configure by editing the configuration files:

  This option is enabled in the facetwin.cfg file with the line:

  ```
  datagram_forwarding=YES
  ```

  If the line is commented out, doesn't exist, or has a value of NO, then this option will be disabled.

- New address

  Enter the IP address of a new interface that you want to add to the list of interfaces that are excluded from datagram forwarding. Click on the Add button to the right to add this new interface to the list of those excluded from datagram forwarding. This option is only available if datagram forwarding is enabled.

- Add button

  After entering the IP address of a new interface to add to the list of those excluded from datagram forwarding, click on this Add button to add the new interface to the list.

- Exclude these IP addresses from datagram forwarding

  This is a list of the IP addresses of interfaces that are to be excluded from datagram forwarding. This list is only enabled if datagram forwarding is enabled.

  To configure by editing the configuration files:

  Interfaces that should be excluded from datagram forwarding are specified in the facetwin.cfg file by one or more lines of the form:

  disable_datagram_forwarding_ip=*IP_address*

  where *IP_address* is the dotted IP address of an interface to be excluded from datagram forwarding.

- Remove button

  To remove an interface from the list to be excluded from datagram forwarding, select the IP address to be removed in the list, then click on this Remove button.

The second group of items determine whether PPP connected clients are included in name queries, server announcements, broadcast name registrations and master browser announcements. You specify if the feature is enabled, and if it is, create a list of any PPP interfaces that should be excluded from the forwarding of these activities. The items in this group are:

- Include PPP clients in name queries, announcements, etc.

  This option allows the FacetWin servers to include PPP connected clients in network activities such as name queries, server announcements, broadcast name registrations, and master browser announcements. This option can be used to make PPP clients appear as if they are part of the same subnet as the PPP server. The default is for this option to be enabled.

  To configure by editing the configuration files:

  This option is specified in the facetwin.cfg file with the line:

  ```
  other_ppp_activity=YES
  ```

  To disable this option, change the value to NO.

- New address

  Enter the IP address of a new interface that you want to add to the list of PPP interfaces that are excluded from activities such as name queries, server announcements, etc. Click on the Add button to the right to add this new interface to the list. This option is only available if the "Include PPP clients ..." option is enabled.

- Add button

  After entering the IP address of a new interface to add to the list of PPP interfaces excluded from activities such as name queries, server announcements, etc., click on this Add button to add the new interface to the list.

- Exclude these IP addresses from the forwarding of these other activities

  This is a list of the IP addresses of PPP interfaces that are to be excluded from activities such as name queries, server announcements, etc. This list is only enabled if the "Include PPP clients ..." option is enabled.

  To configure by editing the configuration files:

  PPP interfaces that should be excluded from name queries, etc. are specified in the facetwin.cfg file by one or more lines of the form:

  disable_other_ppp_activity_ip=*IP_address*

  where *IP_address* is the dotted IP address of a PPP interface to be excluded from the activities associated with the other_ppp_activity option.

- Remove button

  To remove a PPP interface from the list to be excluded from activities such as name queries, etc., select the IP address to be removed in the list, then click on this Remove button.

The third group of items provide a way to list any FacetWin servers which are on another network or subnet that should broadcast server announcements for this server on their subnets or networks. The items in this group are:

- New address

  Enter the IP address of a new system that you want to add to the list of remote FacetWin systems that are to broadcast announcements on their remote subnet/network. Click on the Add button to the right to add this new system to the list.

- Add button

  After entering the IP address of a new system to add to the list of remote FacetWin systems that are to make remote announcements, click on this Add button to add the new system to the list.

- Remote announcement servers to broadcast announcements for this server on remote subnets/networks

  This is a list of the IP addresses of remote FacetWin systems that are to broadcast announcements on their remote subnet/network for this server. This will cause this server's name to show up in the remote network's Network Neighborhood.

  To configure by editing the configuration files:

  Remote announcement servers are identified in the facetwin.cfg file by one or more lines of the form:

  remote_announcement_server=*IP_address*

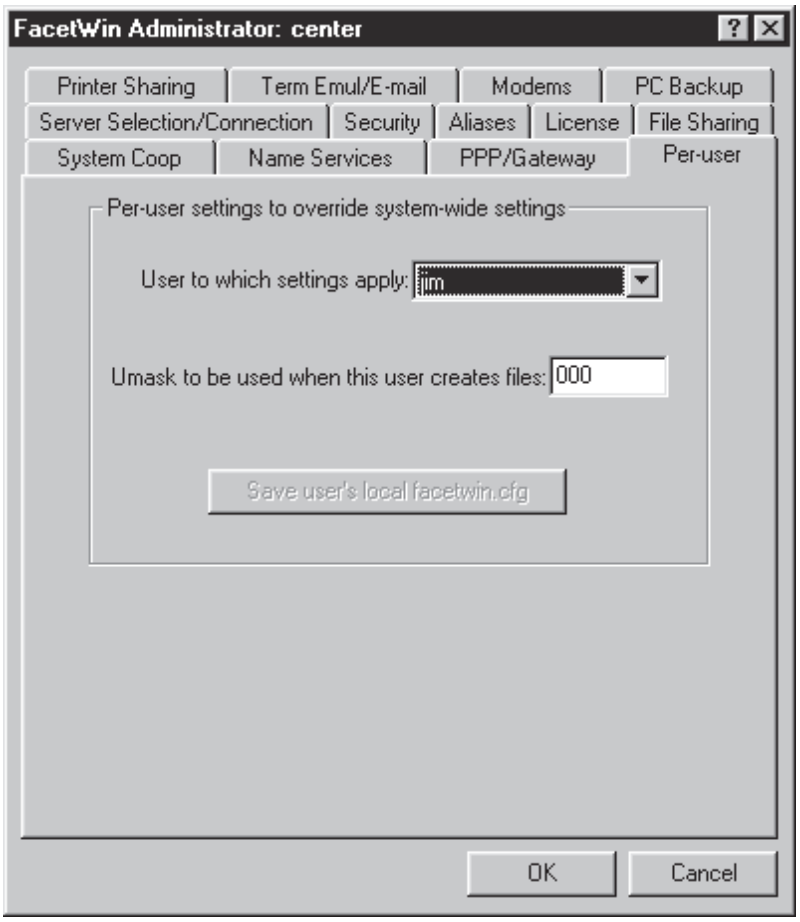
  where *IP_address* is the dotted IP address of a FacetWin enabled system that will make announcements on its subnet/network for this server.

- Remove button

  To remove a remote announcement server, select the IP address to be removed in the list, then click on this Remove button.

Per-user tab of the FacetWin Administrator

The Per-user tab of the FacetWin Administrator contains settings that may be set up individually for each user, overriding the system-wide settings:



The items on this tab are:

- User to which settings apply

  Select the user for whom the user specific values will be shown. This drop-down box will contain a list of all the user accounts on this UNIX server.

- Umask to be used when this user creates files

  If the umask to be used when creating files for the user selected above is different from the system-wide setting on the File Sharing tab, then enter the umask here. If there is no difference from the system-wide setting, no entry is necessary here.

  For information about the UNIX umask value, run the UNIX command:

  man umask

  To configure by editing the configuration files:

  This per-user setting is specified by the following line in a facetwin.cfg file that resides in the user's home directory on the UNIX server:

  umask=*nnn*

  where *nnn* is the octal umask value. If the setting is the same as the system-wide setting, this entry is not necessary.

Configuring FacetWin Remote Printing

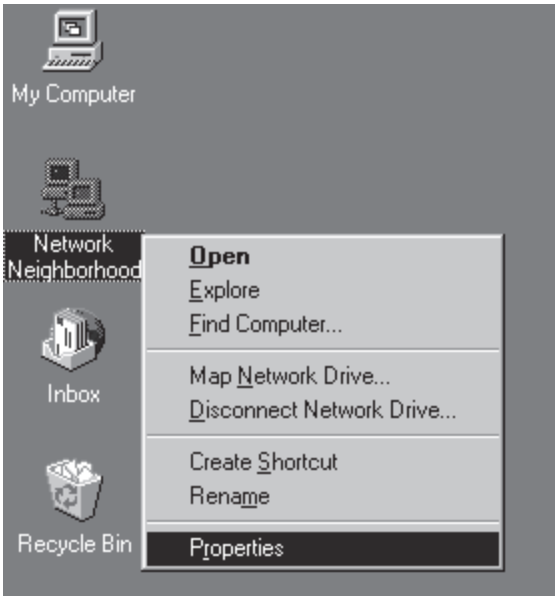
Overview of FacetWin Remote Printing

FacetWin remote printing allows for the printing of files from a UNIX server to a printer attached to a remote PC. The printer on your PC therefore becomes a printer available to the UNIX printer spooler. You can use this feature whether your PC is connected to the network, or connected via a dial-up connection.

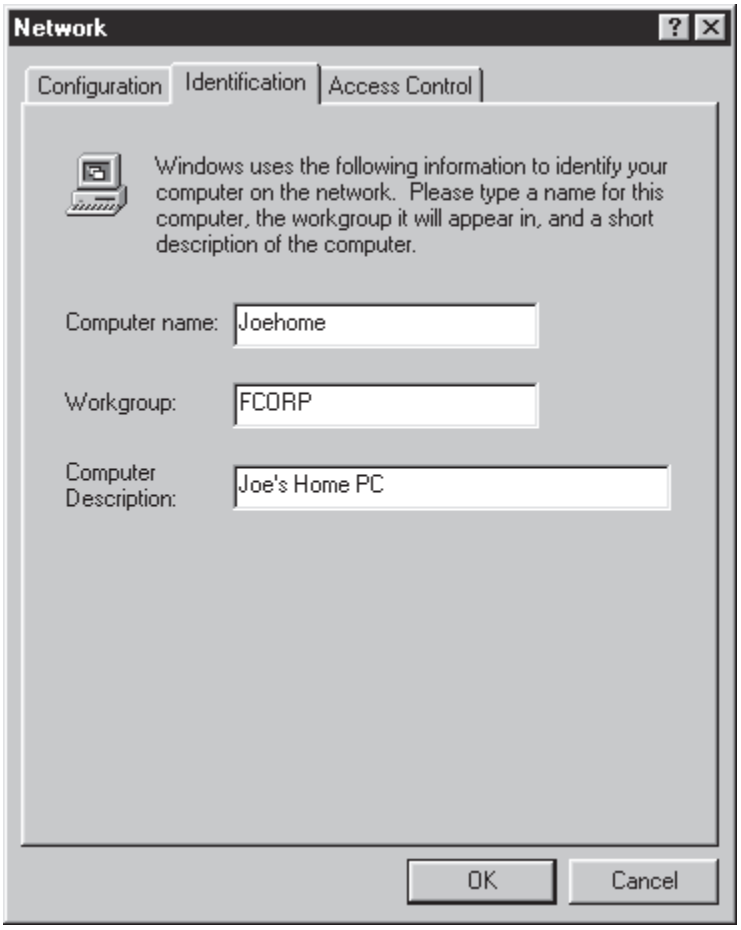
Setting up the PC for remote printing

In order to do remote printing from the UNIX server, three things are needed from the PC. The first is the machine name of the PC. The second is to enable file and printer sharing for the PC. The third is to share the PC's printer.

To determine the machine name, right click on the Network Neighborhood icon on the desktop:

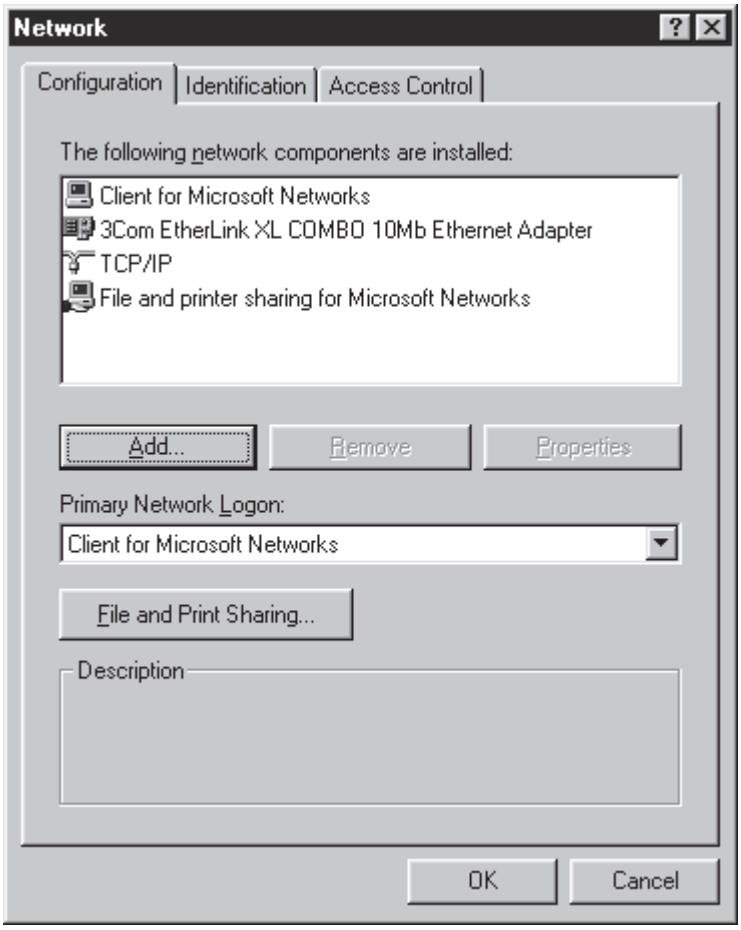


Select the Properties option on the menu to display the property sheet. Select the Identification tab:



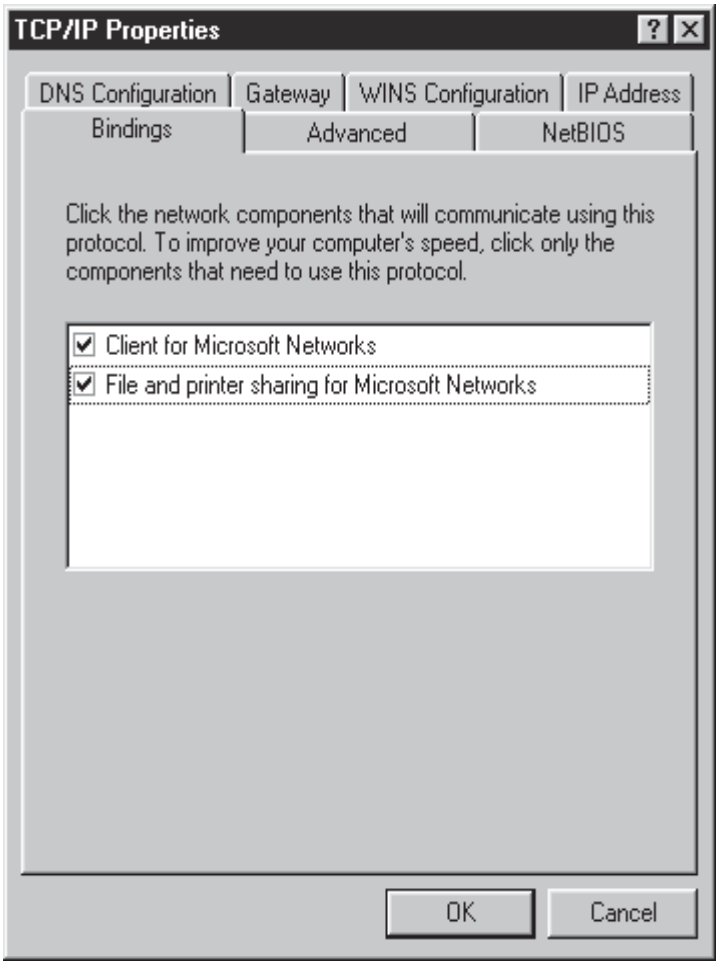
The "Computer name" item contains the machine name to use.

Before you can share your printer for use as a UNIX printer, the file and printer sharing must be enabled. Select the Configuration tab of the Network Properties. It should include the "File and printer sharing for Microsoft Networks" service:

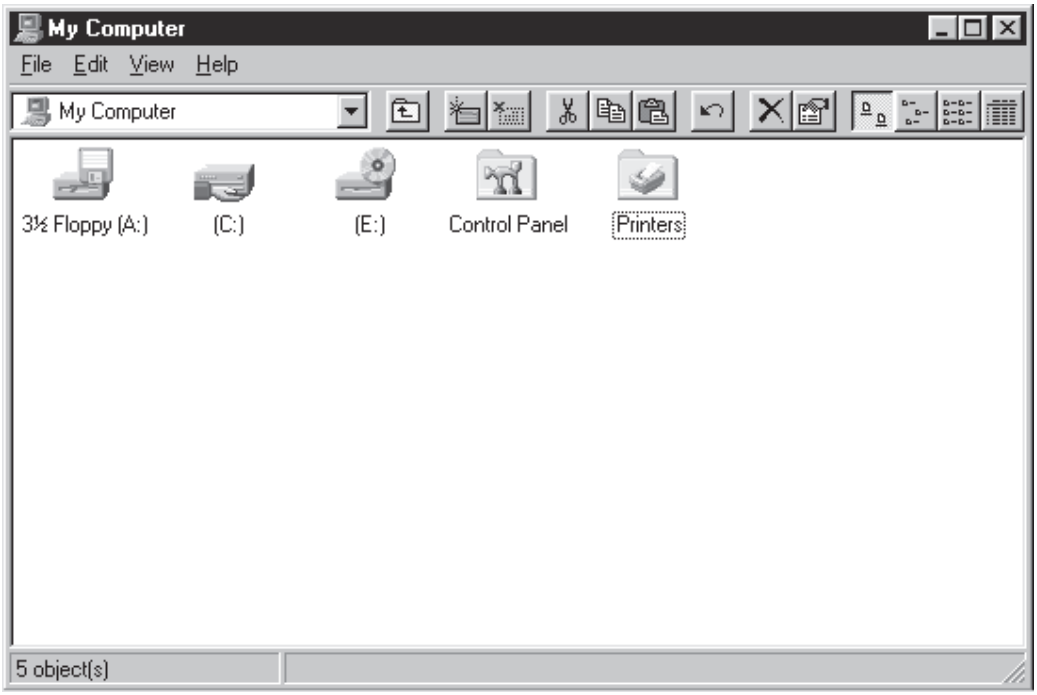


If this service is not in the configuration, you should add it.

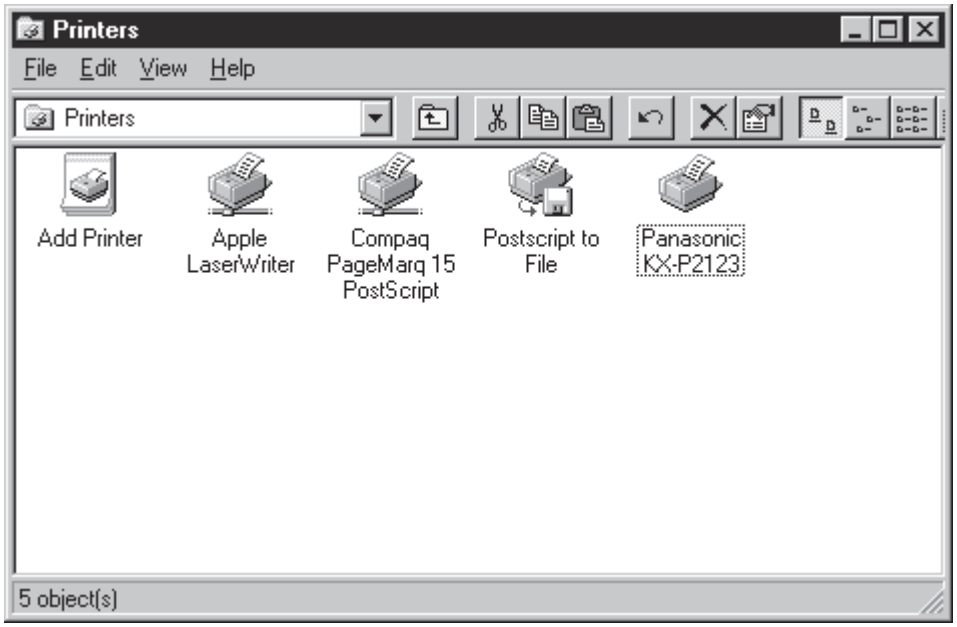
Next select the TCP/IP item, and click on the Properties button to bring up the TCP/IP property sheet. Choose the Bindings tab, and be sure that the "File and printer sharing for Microsoft Networks" item is checked:



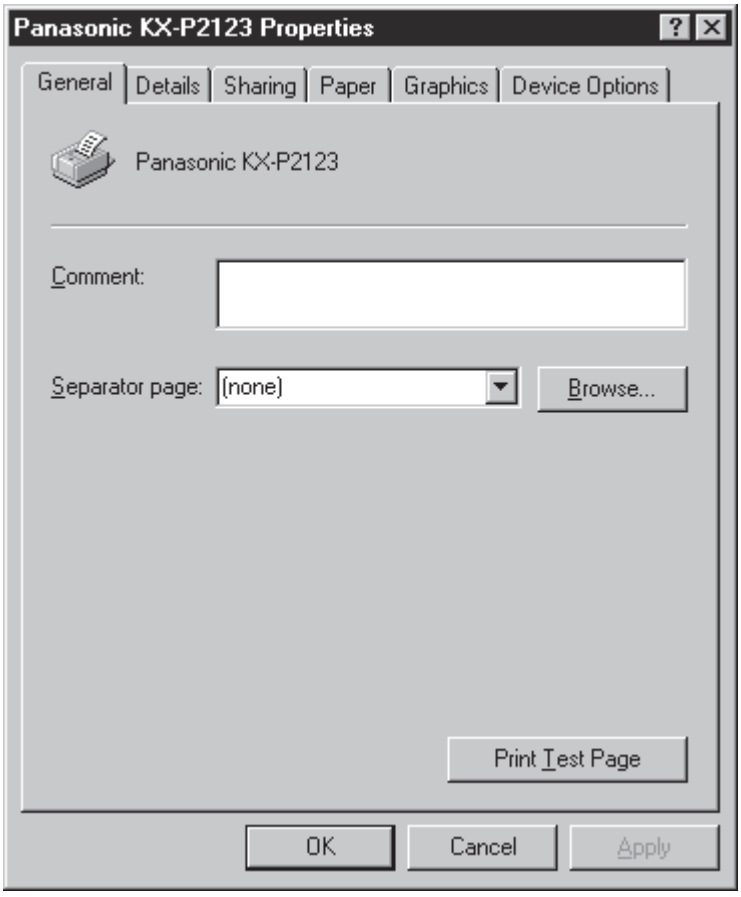
Finally, to share the PC's printer, double click on the "My Computer" icon on the desktop. This will cause the presentation of an explorer window showing your computer's storage devices and system folders:



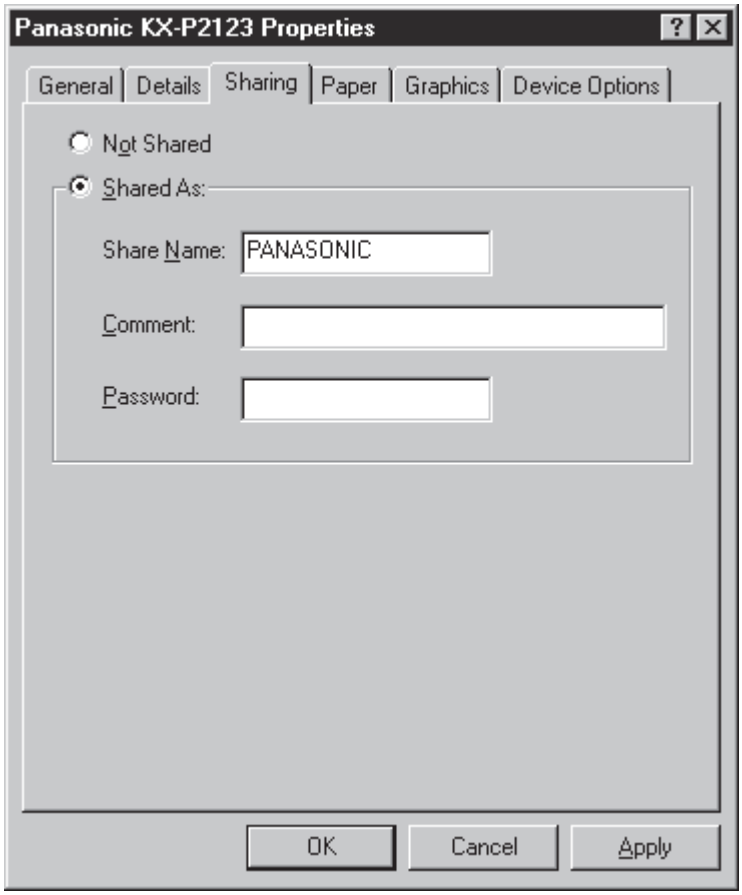
Double click on the printer folder to bring up the list of available printers:



Right click on the printer you want to share, and choose the "Properties" item on the menu to bring up the printer's property sheet:



Click on the Sharing tab:



Select the "Shared As" button and enter a name in the Share Name item. This is the name you will use when setting up remote printing for this printer on the UNIX server. The comment field is optional. Enter a password in the Password field if you wish to restrict access to the printer. Note that the screens shown above are what you would see if your PC is set up for Share level security. For User level security, the Share property sheet would be different.

Using the fct_rlpadmin Command to Setup Remote Printing on the UNIX Server

To set up remote printing on the UNIX server, you can use the FacetWin Administrator program. See the section "Printer Sharing Tab of the FacetWin Administrator".

You may also use the "fct_rlpadmin" script on the UNIX server to setup remote printers. That procedure is described here. The fct_rlpadmin script will set up the UNIX printer and queue names and start the FacetWin remote print process called "fct_remprt" for each remote printer that is created. The format for adding a remote printer is:

fct_rlpadmin -a *printer_name* -m *lpmodel_name*
-n *remote_name* -p *password* -r *remote_printer*
-u *user_name*

printer_name is a name that you supply to refer to the printer in the UNIX spooler system. To distinguish FacetWin remote printers from other printers, the prefix "fct_" will be inserted in front of the printer name that you supply. When printing to the remote printer you use "fct_*printer name*" as the name of the device to which the print job is directed.

lpmodel_name is an optional parameter to select a model interface program to use for formatting the data to be sent to the remote printer. This option is not available on all UNIX systems. On AIX the printer "type" will be used here.

remote_name is the computer name associated with the remote PC that has the printer to be used. This name is found on the PC's network property sheet under the Identification tab.

password is the password (if any) that was specified when the printer was shared. If the PC is in Share level security, this is the password assigned to the printer. If the PC is in User level security, this is the password assigned to the user. If no password was assigned when sharing the printer, then this parameter may be omitted.

remote_printer is the share name assigned on the PC when the printer was marked for sharing.

user_name is a required parameter when establishing a SMB session with the PC. If the PC is using User level security, it must be a name known to the PC. If the PC is using Share level security, you must still supply this parameter, but the name you use will not be checked by the PC.

As an example, the following command will setup a remote printer on a PC with the machine name of "nomad". The printer has been assigned the share name "panasonic". The PC is using share level security. There is no password assigned to the printer. The printer will be called "fct_lpnomad" in the UNIX spooler system.

```
fct_rlpadmin -a lpnomad -n nomad -r panasonic -u harry
```

After the script has finished, the printer is ready to be used. Remember that "fct_" has been prepended to the printer name. To print a UNIX file named "file1" on this printer using the "lp" UNIX command, you would enter:

```
lp -d fct_lpnomad file1
```

The command to remove a printer from remote printing is:

```
fct_rlpadmin -d printer_name
```

To remove printer "fct_lpnomad" the command would be:

```
fct_rlpadmin -d lpnomad
```

Configuring Centralized PC Backups

Overview

This section provides information for the system administrator who wants to create centralized backup configurations to backup the PCs on the network. For a general introduction to the FacetWin PC Backup facility, first read the section Using FacetWin to Backup PCs.

You can configure PC backups using the PC Backup Tab of the FacetWin Administrator. You may also edit the configuration files manually. See the next section, PC Backup Configuration Files for a description of these files.

Before any tape backups can be done, you must define the tape drive configurations for the server where the backups will be done. Click on the "Tape Drives" button on the PC Backup tab of the administrator to define the drives that you will use. Even if you only have one drive, you might define several configurations since the configuration includes the tape capacity as part of its definition and you might tapes of several different capacities.

Next, you must either create generic file set descriptions that can apply to multiple PCs, or have the users create their own file set descriptions that are customized for each of their PCs. You can create generic file set descriptions using the PC Backup tab of the Administrator. Users can define their own file sets using the PC Backup Tab of the FacetWin Agent Control Panel. If you want to create file set descriptions by manually editing the files, put these files in the Backup/filesets subdirectory of the FacetWin installation directory.

Finally, you must create backup set descriptions that describe each type of backup session that you will run. A backup set can include multiple PCs and can use multiple tape drives in doing the backup. You can create backup set descriptions using the PC Backup tab of the Administrator. If you want to create backup set descriptions by manually editing the files, put these files in the Backup/backupsets subdirectory of the FacetWin installation directory.

Once a backup set is defined, you are ready to do the backup that it describes. On the PC backup tab of the Administrator, you can use the "Backup Now" button to run a backup interactively. For information on scheduling a backup to run unattended, see the section Scheduling Unattended PC Backups.

PC Backup Configuration Files

All of the configuration files for centralized PC backups are kept in the Backup subdirectory of the FacetWin installation directory (/usr/facetwin/Backup is the default). All of the directories and files listed below are in this Backup directory. The FacetWin Administrator may be used to manage these files, or you may edit them manually.

- tape.cfg

  This file contains a description of each tape drive / tape capacity combination that will be used to backup PCs. The file tape.sample is installed on the server when you install FacetWin. This file contains comments that explain the format of the file. As an example, your tape.cfg file might contain:

  ```
  T1_1G:/dev/rmt1:32768:1G
  T1_2G:/dev/rmt1:32768:2G
  T2_1G:/dev/rmt2:32768:1G
  T2_2G:/dev/rmt2:32768:2G
  ```

  The combination of two tape drives on the system and two different tape capacities, requires these four entries. The fields on each line are tape configuration name, rewind device name of the tape drive, block size in bytes, and tape capacity in megabytes(M) or gigabytes (G). The fields are separated by colons.

- filesets/*.fsd

  The file set descriptions are kept in files in the filesets subdirectory and have a file name extension of .fsd. The file set description contains lines that specify files or directories to include or exclude, and whether to include subdirectories. The file sample.fsd is installed on the server when you install FacetWin. This file contains comments that explain the format of the file. As an example, you might create a file called w95cdrive.fsd that contains:

  ```
  include_subdirectories=YES
  include=C:\
  exclude=C:\Windows
  exclude=C:\Program Files
  ```

This file set description would probably describe an appropriate set of files to backup on PCs having only a C: drive running Windows 95/98. You can create as many .fsd files as required to describe the backups required of different PCs. Users may also create their own customized file set descriptions using the PC Backup Tab of the FacetWin Agent Control Panel. File set descriptions that users create this way will be stored in the facetwin/Backup/filesets subdirectory of their home directories.

- backupsets/*.bsd

  The backup set descriptions are kept in files in the backupsets subdirectory and have a file name extension of .bsd. The backup set description contains lines that specify the archive type (disk or tape), logging options, index file options, and which PCs to backup using what file set description. The file sample.bsd ins installed on the server when you install FacetWin. This file contains comments that explain the format of the file. As an example, you could create a file called sales_full.bsd that contains:

```
server_logging=SUMMARY
server_logfile=sales_full.log
overwrite_logfile=YES
tape_device=T1_4G
tape_device=T2_4G
save_index_file=MOST_RECENT
file_set=sales1 w95cdrive.fsd full clear_archive_attributes compress
file_set=sales2 w95cdrive.fsd full clear_archive_attributes compress
file_set=sales3 w95cdrive.fsd full clear_archice_attributes compress
```

  When the backup server is run with this backup set description, it will back up the three PCs named sales1, sales2, and sales3. It will use the w95cdrive.fsd file set description to define which files to backup. It will do full backups of all the PCs and will reset the archive attribute on all files that are backed up. It will write first to the tape in the drive specified in the T1_4G tape configuration and then to the tape in the drive specified in the T2_4G tape configuration. It will write summary logging information to sales_full.log and will overwrite the log file each time the backup is run.

- archives/*.fwarc

  The archives subdirectory is the default location for disk archives if the archive name is specified in a backup set description without a full path. You may locate disk archives somewhere else by providing a full path in the

  disk_archive=

  specification in the backup set description.

- indexes/*

  The indexes subdirectory is where index files are kept. An index file is needed to do a restore. A unique index file is created each time a backup is done with a backup set. The name of the index is the backup set description name (without the .bsd) and the date and time of the backup. In the backup set description, you indicate whether you want the backup to keep all index files, only the most recent one, or no index files. If you need to do a restore from an archive and you do not have the index from the backup, you can create the index using the Administrator or the fct_bkutil command. You can get help on the fct_bkutil command by running:

  man fct_bkutil

Running the Backup Server

A backup or restore is performed by running the fct_bkup command. Even if you use the "Backup Now" or "Restore" buttons on the Administrator, or Agent Control Panel, this command is run on the host. The fct_bkup command is installed in the bin subdirectory of your FacetWin installation directory. The usage of the command is:

fct_bkup -b|-r -F filename [-P pathname] [-D]

where

-b : indicates backup

-r : indicates restore

-F : specifies a backup description file

-P : specifies the path to an alternate backup directory tree

-D : indicates that backup server is being run as a daemon

You must include either the -b or -r to indicate backup or restore. You must also specify the backup set description with the -F switch. You can optionally use the -P switch to indicate the path of a backup directory other than the Backup subdirectory in the FacetWin installation directory. This is used to run a backup that a user has defined that is in the facetwin/Backup subdirectory of his home directory. The -D switch is used to let the backup server know that it is being run as a daemon process and has no interaction with a user.

An example of a command to run a backup interactively is:

/usr/facetwin/bin/fct_bkup -b -F sales_full.bsd

The -b switch indicates that you are doing a backup rather than a restore. The -F switch is used to specify the name of your backup set description. Since a full path is not specified, it is assumed that the backup set description is in the Backup/backupsets subdirectory of the FacetWin installation directory.

Scheduling Unattended PC Backups

To schedule unattended backups, you will use the UNIX cron facility to run the FacetWin backup server. You must have already created all of the backup configuration files necessary for the backup. This can be done with the PC Backup Tab of the Administrator, or by editing the files described in PC Backup Configuration Files.

To schedule a backup to run unattended, you would ensure that you have the appropriate tape(s) in the drive(s), then use the UNIX cron facility to execute the appropriate fct_bkup command according to the desired schedule. You should use the -D switch so that the backup server will not attempt to interact with a user. If you are unfamiliar with the cron facility, on your UNIX system run the command:

```
man crontab
```

An example crontab entry to run a backup is:

```
0  3  *  *  6  /usr/facetwin/bin/fct_bkup  -b  -F  sales_full.bsd  -D
```

This runs the backup described by the backup set description in sales_full.bsd every Saturday morning at 3:00AM. The backup server is run in daemon mode (will not attempt to interact with a user to insert a new tape, etc.).

Restoring Files from a PC Backup

To restore a file from a backup, you can use the PC Backup Tab of the Administrator or the PC Backup Tab of the Agent Control Panel. You may also create the configuration files necessary to run the restore manually. The configuration files necessary for doing a restore are described below. Even if you plan to use the Administrator or Control Panel to perform the restore, an understanding of the configuration files necessary may be helpful in understanding the restore process.

The index from the backup is required to perform a restore. If you do not have the index from the backup, you may recreate the index from the archive. The Administrator and Control panel will do this for you automatically, or you can run the fct_bkutil command manually to create the index. See the man page for the fct_bkutil command for details.

The restore process uses a file set description and a backup set description just as a backup does. The file set description describes which files are to be restored from the backup archive. The Administrator and Control Panel will present a tree view of the files in the archive and allow you to select which files to restore by checking them in the tree view. They will create a file set description named restore.fsd. The format of a file set description being used for a restore is the same as one being used for a backup with one exception. You should include the option

source_computer=computer_name

to specify which computer backed up in the archive had the file(s) to be restored. You may restore files to a computer that is different from the source computer.

The Administrator and Control Panel will also create a backup set description named restore.bsd. The format for the backup set description for a restore is the same as when being used for a backup with the following exceptions:

The save_index_file option is not used in a restore.

You should include the option overwrite_files=YES/NO/OLDER to specify whether the restore process should overwrite and existing file with the one from the archive.

You can relocate files being restored from their original location from which they were restored. The options restore_source=path and restore_destination=path are used to specify this relocation. Any occurance of the source path in a file being restored will be replace with the destination path.

Once the file set description and backup set description are set up for the restore, you can use the fct_bkup command to do the restore. The command would be:

/usr/facetwin/bin/fct_bkup -r -F restore.bsd

This instructs the backup server to do a restore using the backup set description named restore.bsd which resides in the Backup/backupsets subdirectory of the FacetWin installation directory.

Of course, you can use the Administrator or Agent Control Panel to do the restore and these details will be handled for you.

Configuring a FacetWin Dial-up Connection

Overview of Setting up a FacetWin Dial-up Connection

You can use all of the features of FacetWin over a dial-up connection. This is done by making a PPP connection between the PC and the UNIX server. Once this connection is made, the FacetWin name server will allow your PC to function just as though it were actually on the local area network. Of course, the data will be transferred at the speed of your serial connection rather than the faster speeds associated with a network connection. Therefore, you must use good judgment in your uses of FacetWin when using this kind of connection. For example, keeping large image files on the server, and loading them across this connection would probably be unacceptably slow. On the other hand, loading moderate size word processing files across this kind of connection, while slower than network speeds, will probably be quite acceptable to you. In addition, the performance of terminal emulation sessions should be acceptable.

Configuring PPP on the UNIX Server

The task of setting up PPP on your UNIX server will be different depending on the version of UNIX you have. If you do not have TCP/IP configured at all, you must do this first. Once TCP/IP is configured, then you can proceed with the PPP configuration. Your operating system documentation should provide the necessary information to do this. In addition, the FacetCorp support staff may be able to provide additional information about configuring PPP on some of the more popular UNIX platforms.

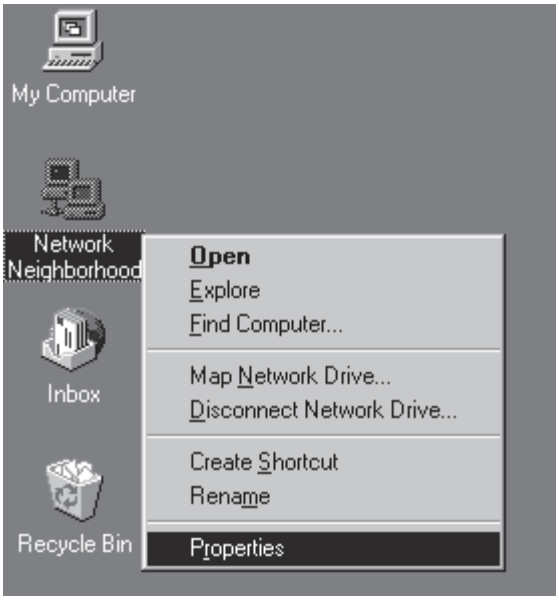
You should create one or more login accounts on the UNIX server for running the PPP connection. You may wish to configure only one account and have it assign an IP address dynamically from a pool on each login. Or, you may decide to give each user his own PPP login which uses a fixed IP address for that user. Because the passwords associated with FacetWin terminal emulation sessions are encrypted with the IP address, this second method which provides a fixed IP address for each user is preferable.

Configuring the Dial-up Adapter on the PC

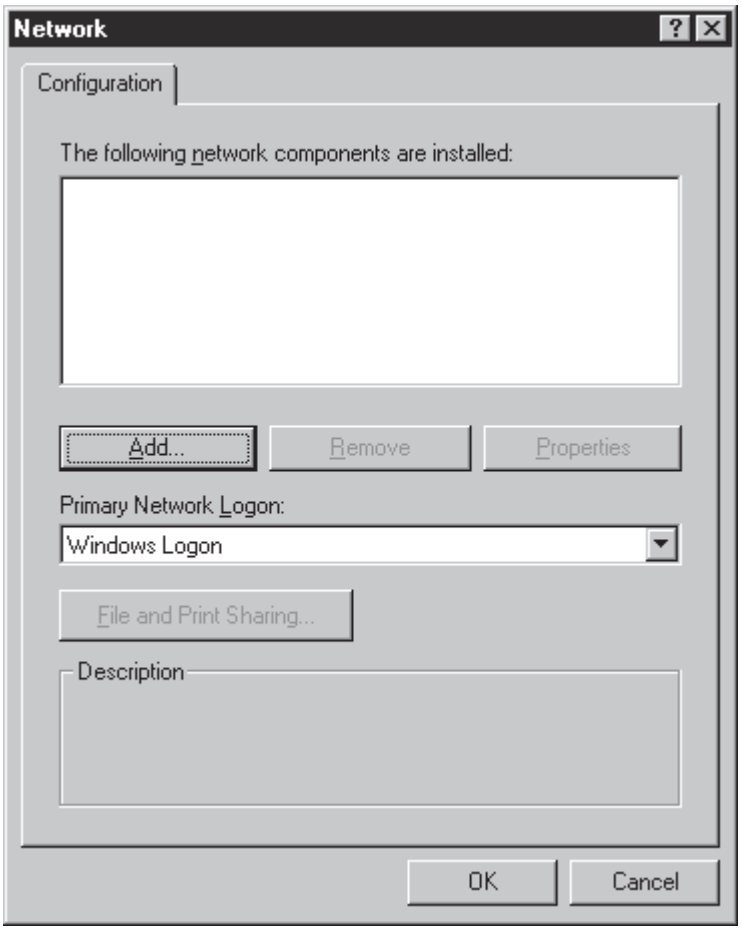
Once you have PPP configured on the UNIX server, you are ready to set up Dial-up Networking on the remote PC. Dial-up networking is available only on Windows 95+ and Windows NT 4+.

The first step will be to set up the dial-up adapter with TCP/IP in the Network Neighborhood properties.

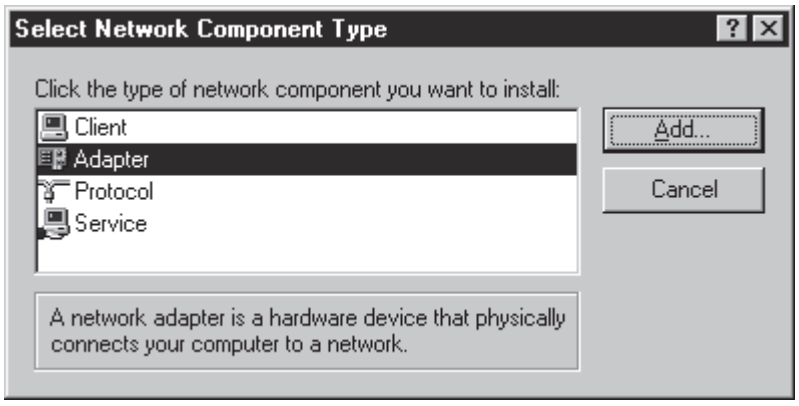
Right click on the Network Neighborhood icon on your desktop, and choose the Properties item on the menu:



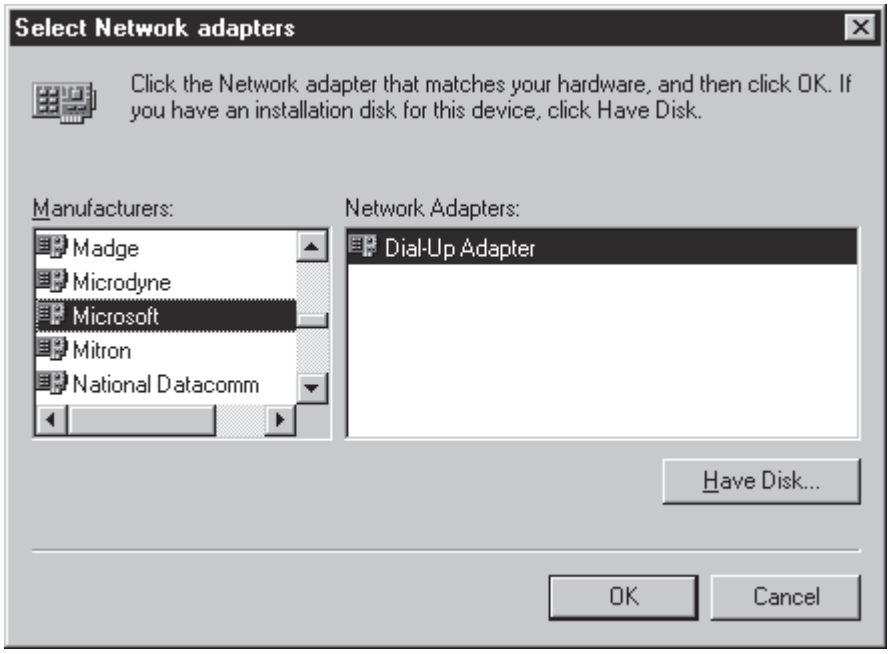
Initially your network configuration will be empty. The first component that you will need to add is the dial-up adapter. Click on the "Add..." button:



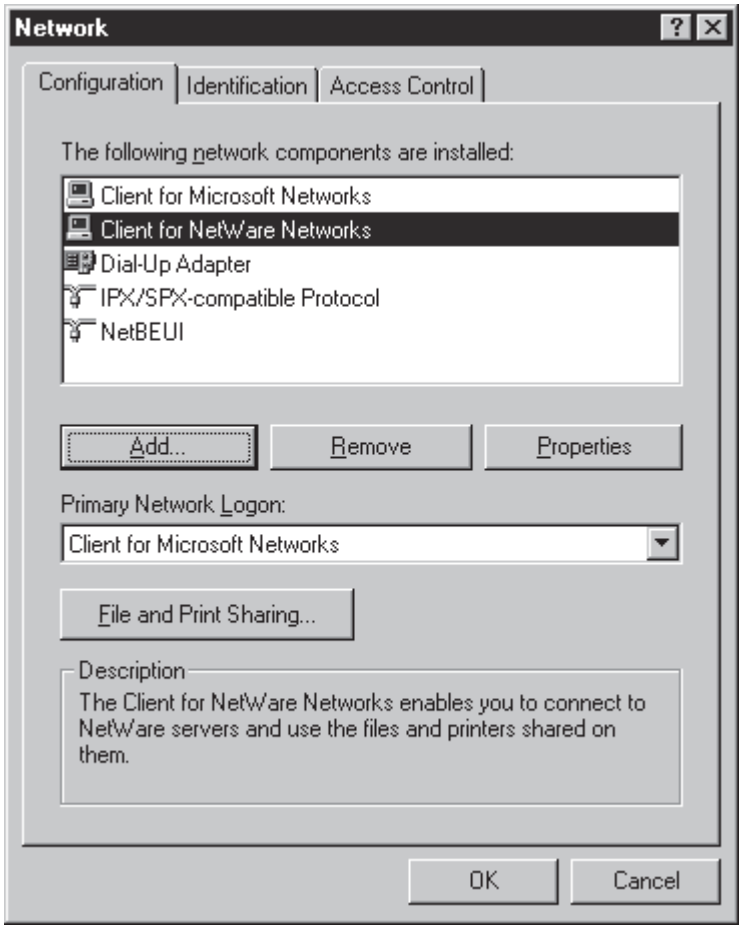
The next window presented will prompt you for the type of component you want to add. Select "Adapter" and click on the "Add..." button:



The adapter selection screen will be presented. Select "Microsoft" as the manufacturer, and "Dial-up Adapter" as the adapter to add, then click the "OK" button:

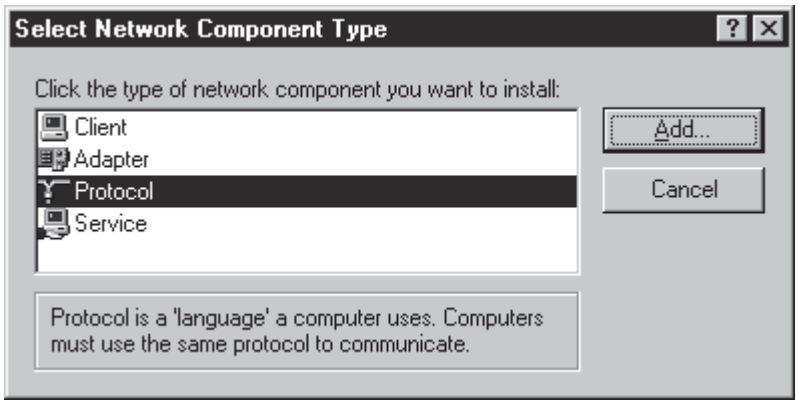


This will add the dial-up adapter to your configuration. It may also add some other network components by default:

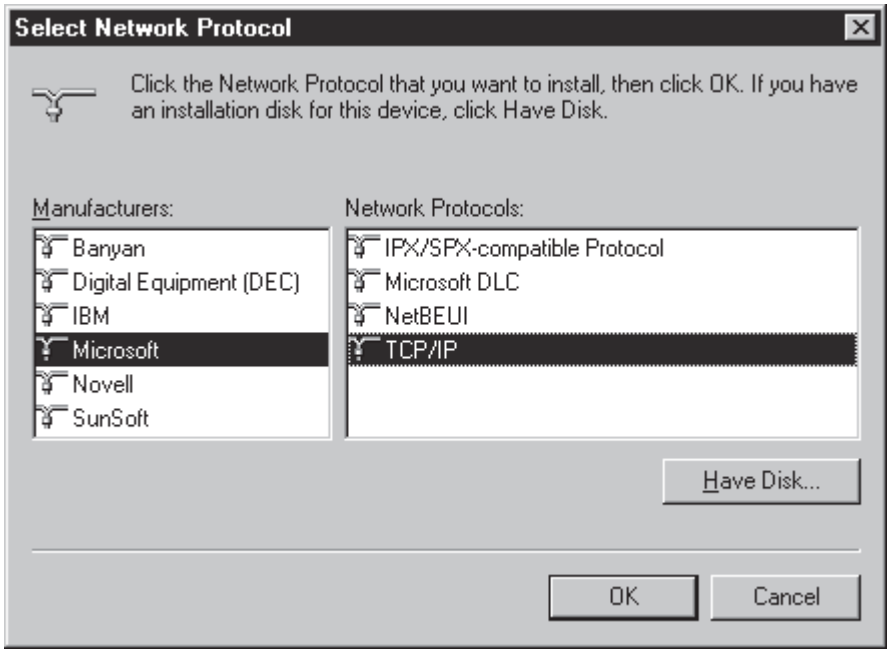


You will not need all of these components for use with FacetWin. If it automatically added the Netware client and IPX/SPX protocol, select each of these and click on the Remove button.

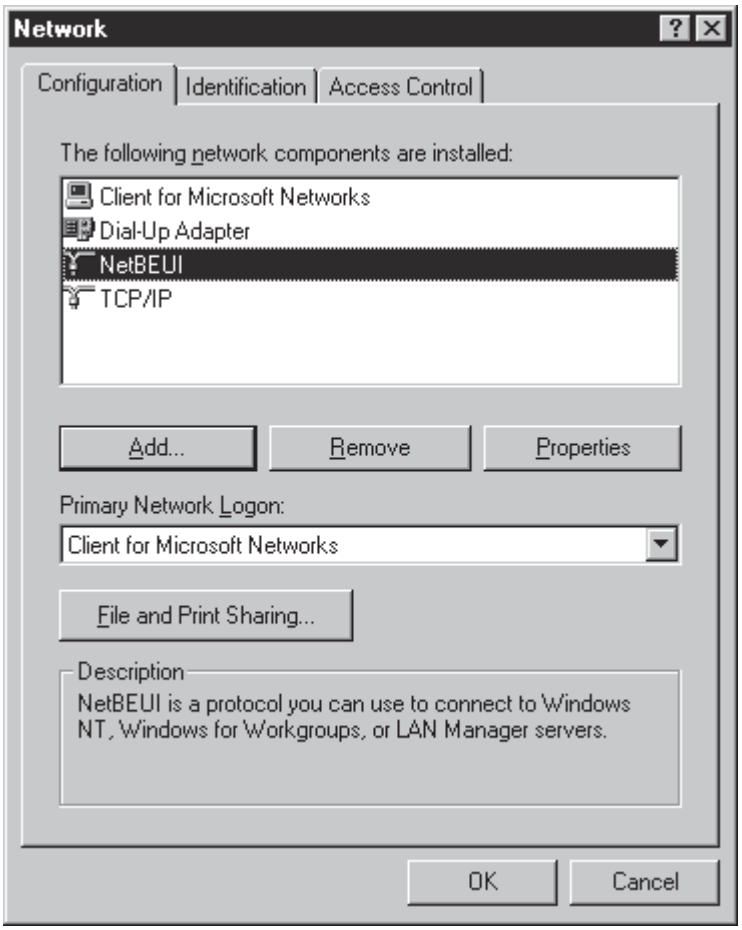
Next, click on the "Add..." button again, and this time select "Protocol" as the type of component to be added. Click the "Add..." button on the component type screen:



The protocol selection screen will be presented. Select "Microsoft" as the manufacturer, "TCP/IP" as the protocol to add, and click the "OK" button:

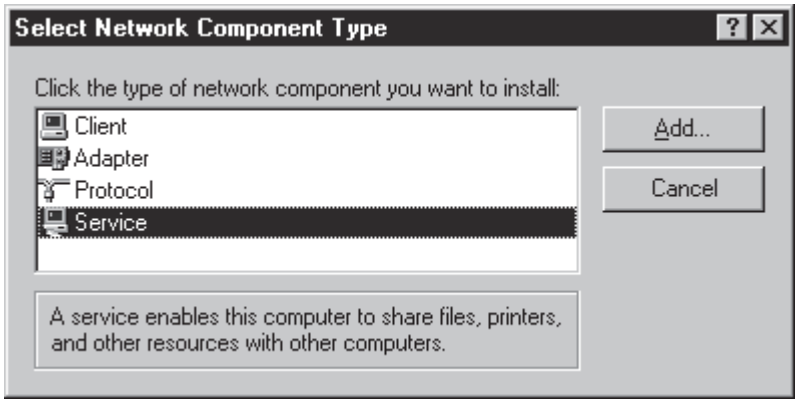


Now your list of network components should look like this:

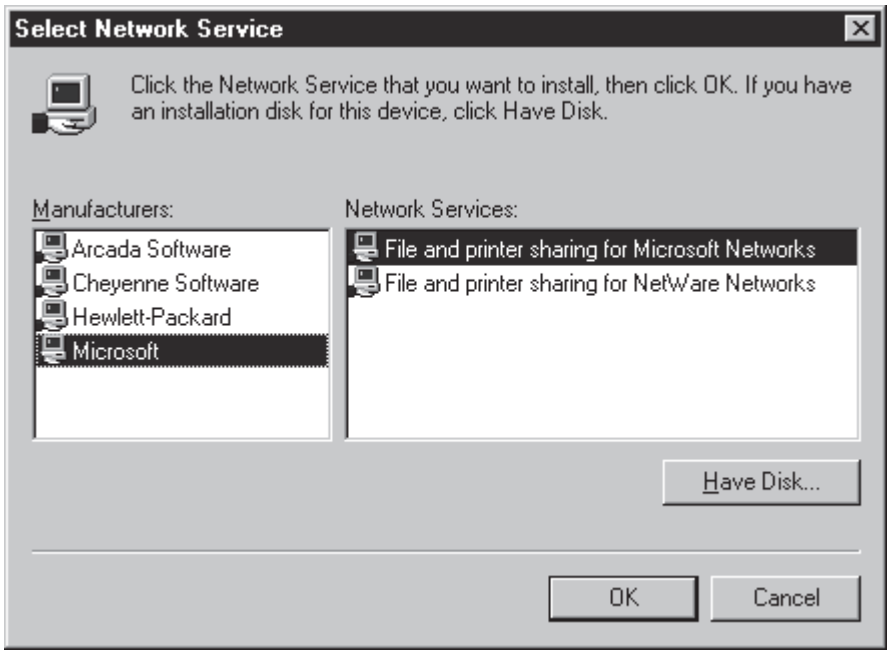


You can now select the NetBEUI protocol and click the "Remove" button to remove it from the component list. Note that you cannot remove the NetBEUI protocol until the TCP/IP protocol has been installed. If you do so, it will remove all components, apparently because there is no protocol installed.

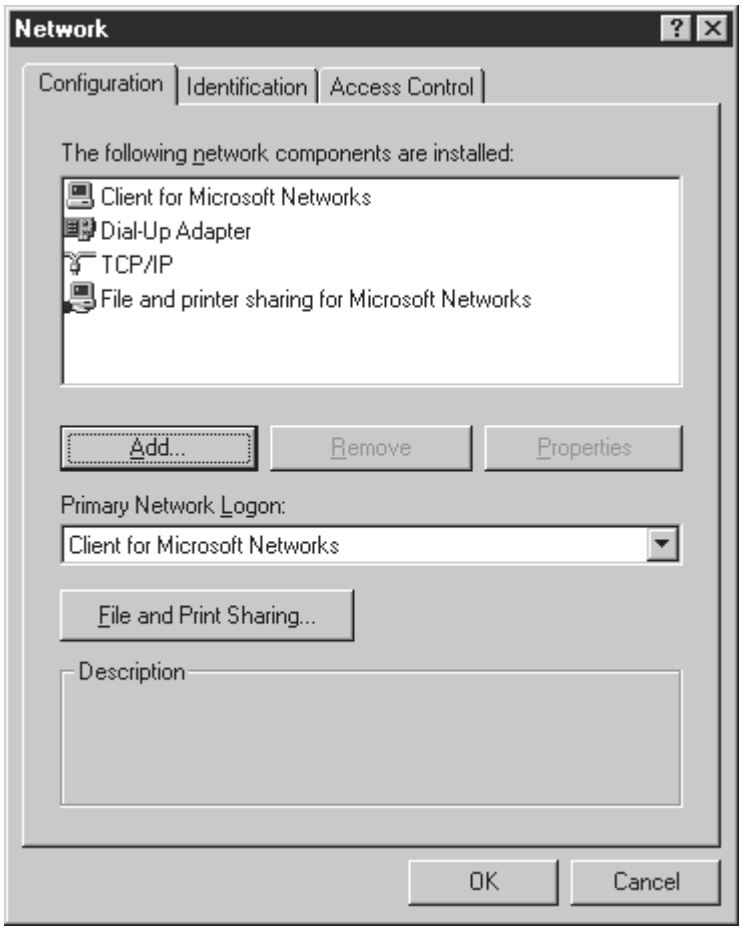
Click on the "Add..." button again and this time select "Service" as the type of component to be added. Click on the "Add..." button on the component type screen:



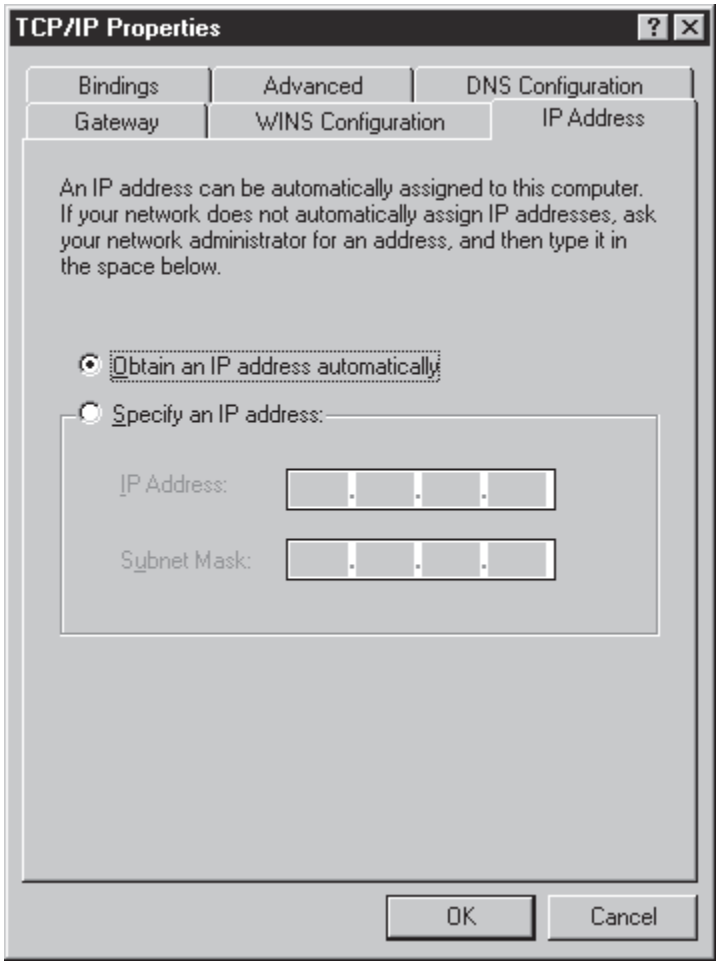
The service selection screen will be presented. Select "Microsoft" as the manufacturer, "File and Printer Sharing for Microsoft Networks" as the service, and click the "OK" button:



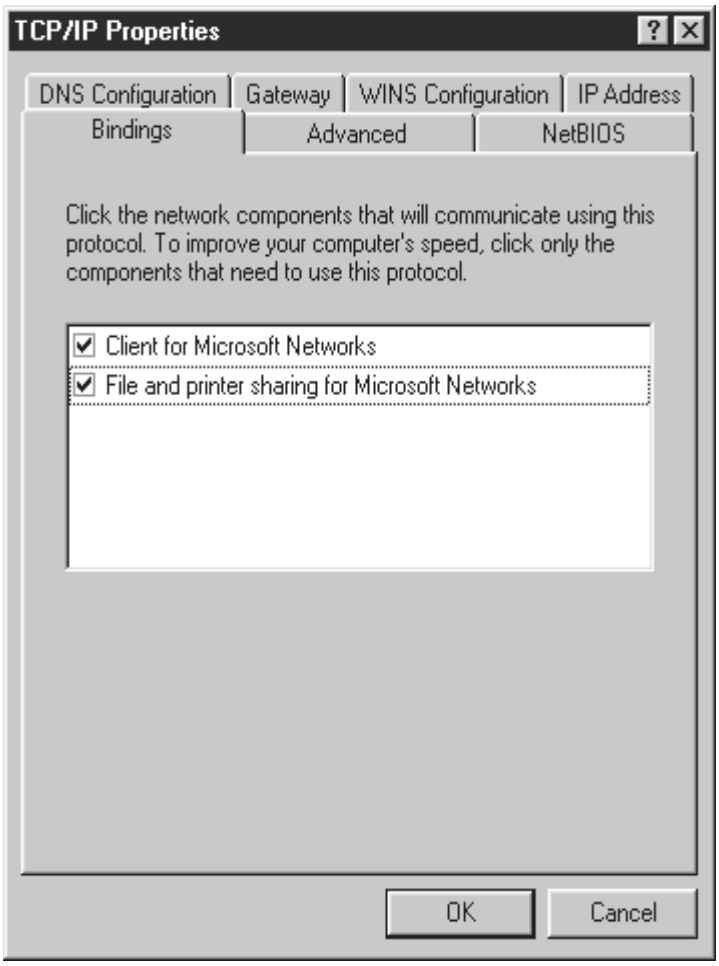
Now your list of components should look like this:



Select the TCP/IP item, and click on the "Properties" button. The first tab of the property sheet will be the IP Address tab. You should select the option to obtain an IP address automatically:

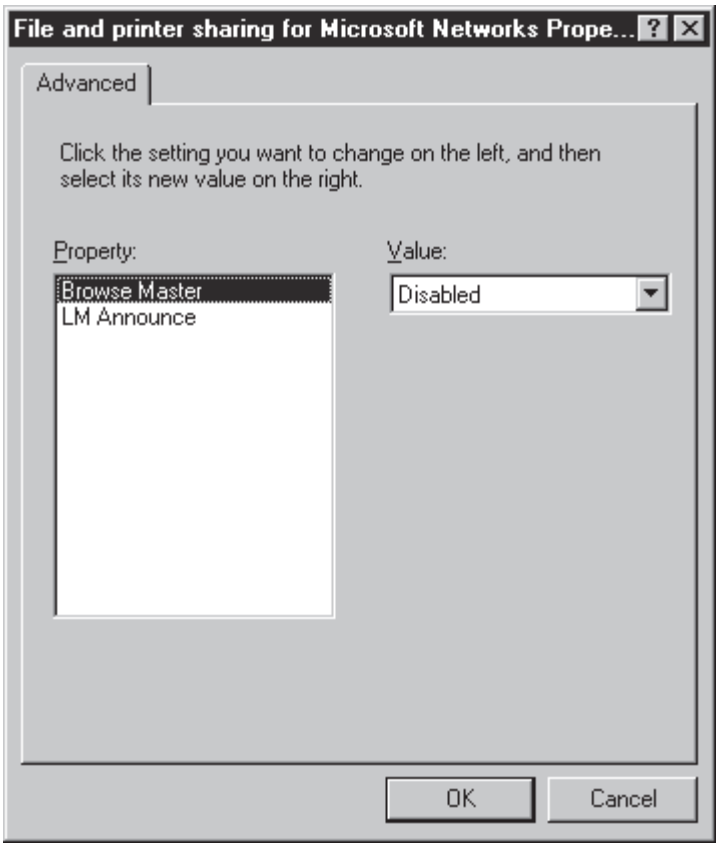


Most of the other TCP settings will be made in the Dial-up networking configuration rather than here in the main TCP/IP configuration of the Network Neighborhood properties. The only other TCP/IP setting that you will want to make here is on the Bindings tab. Both of the options on that tab should be checked:



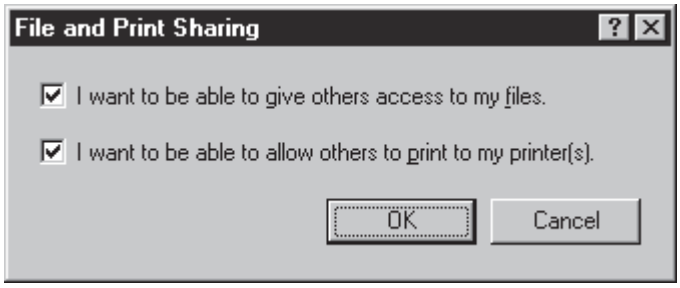
Click "OK", to save these TCP/IP settings.

Next select the "File and printer sharing for Microsoft Networks" component, and click the "Properties" button. The value for the "Browse Master" item should be set to "Disabled":



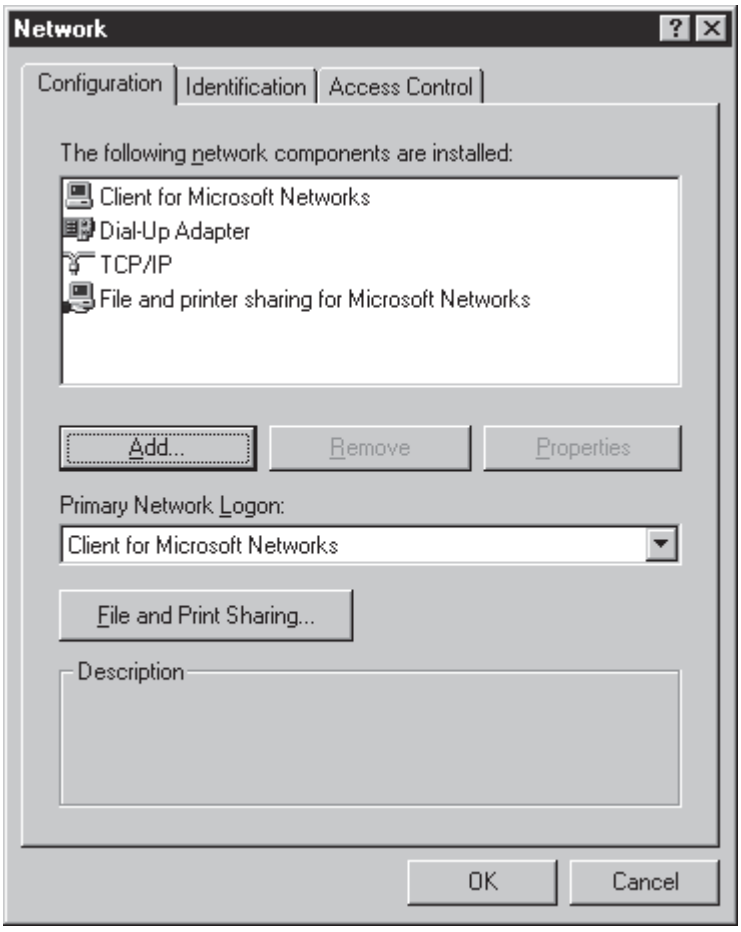
Click the "OK" button to save these properties.

Click on the "File and Print Sharing..." button. Both of the options presented should be checked:

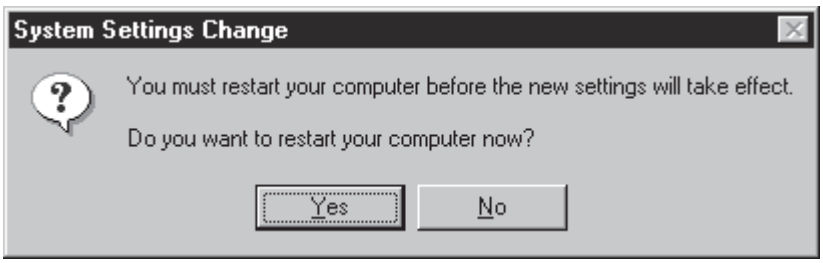


Click "OK" to save these settings.

Finally, click on the "OK" button on the Network Neighborhood properties, to save all the changes you have made:



You will be prompted to re-boot your PC:

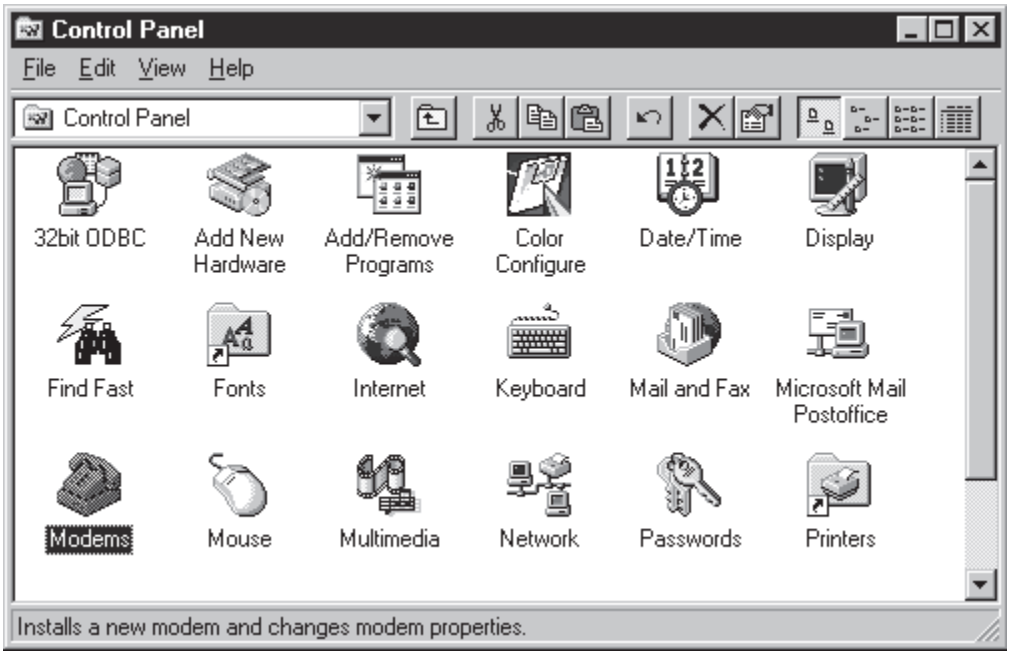


Close any applications you have running, and then click the OK button to re-boot. That completes the setup of your dial-up adapter and the TCP/IP settings associated with it.

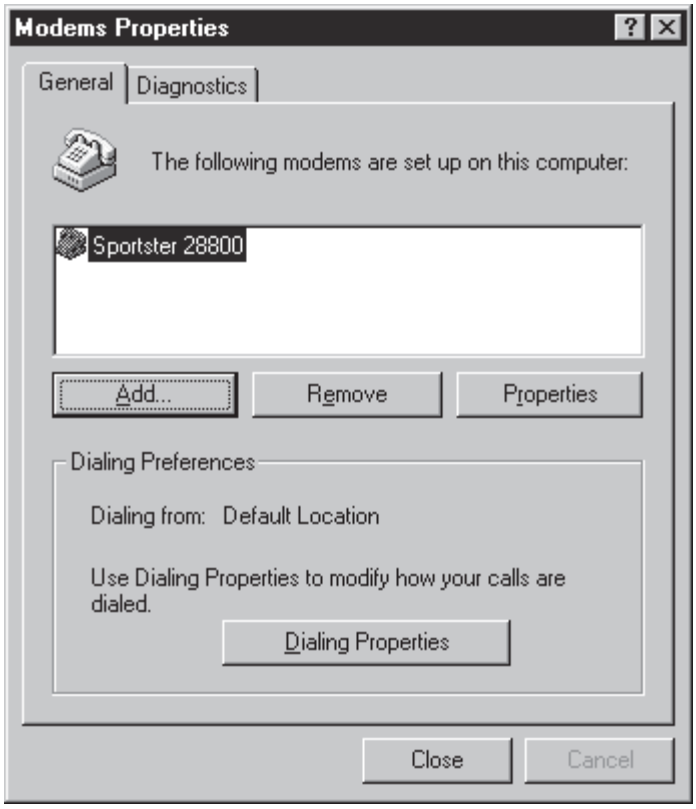
Configuring a Modem for Use with a Dial-up Connection

This section describes the setup of a modem that will be used when dialing into a UNIX system running FacetWin. If you had the modem connected to the PC when you initially installed Windows, it probably automatically detected the modem and configured it for you. However, you should probably review the settings outlined here, to be sure that it is configured correctly.

Double click the "My Computer" icon on your desktop, then double click the "Control Panel" icon. Find the "Modems" icon in the control panel window:



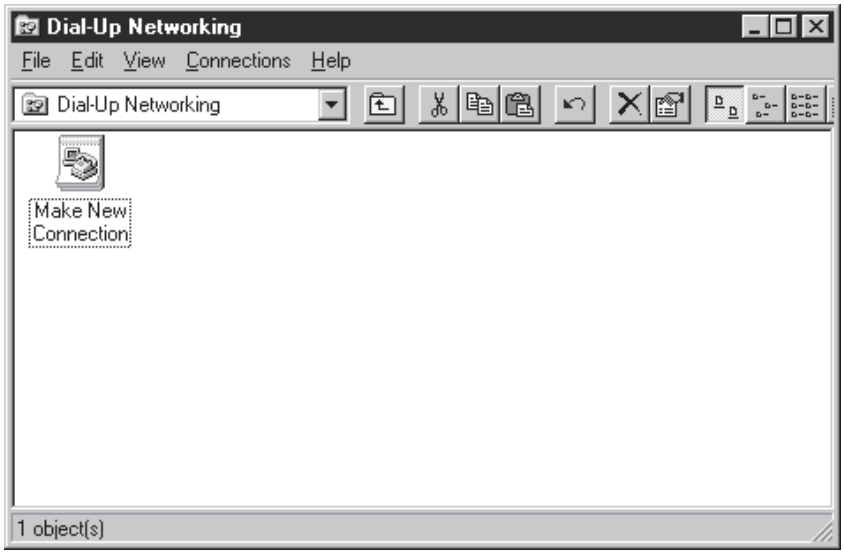
Double click on this icon, and the Modem properties window will be presented:



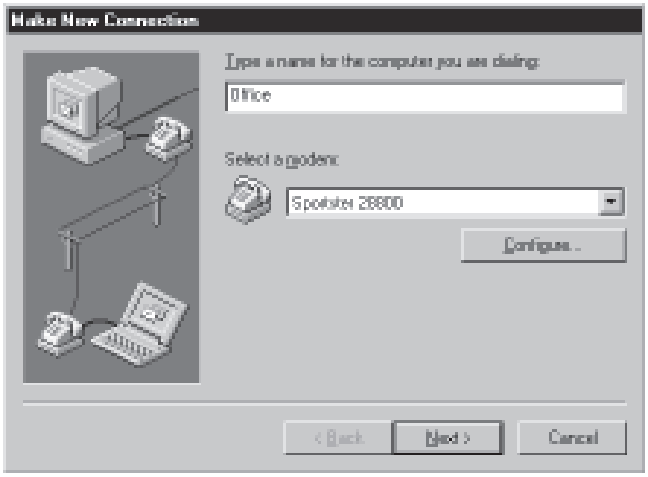
If the modem connected to your computer is not in the list, click on the "Add..." button to run the "Install a new modem" wizard. Follow the instructions on the screen, allowing automatic detection of your modem. It will probably detect your modem automatically, but if it does not, you will need to select it from a list. Once your modem is in the list, you are ready to proceed to the next section to configure a Dial-up Networking connection.

Configuring a Dial-up Networking Connection for Dialing into a Remote UNIX Server

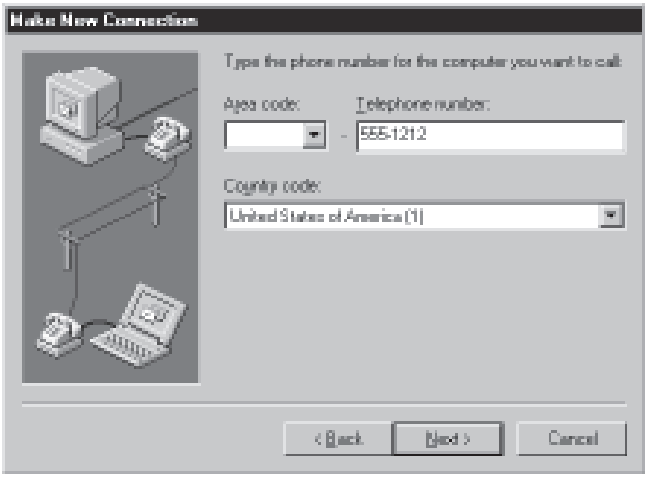
This section completes the configuration required to dial into a remote UNIX server running FacetWin. Begin by double clicking on the "My Computer" icon on your desktop, then double click on the "Dial-Up Networking" icon. You will be presented with a window, which has an icon for adding a new dial-up networking configuration:



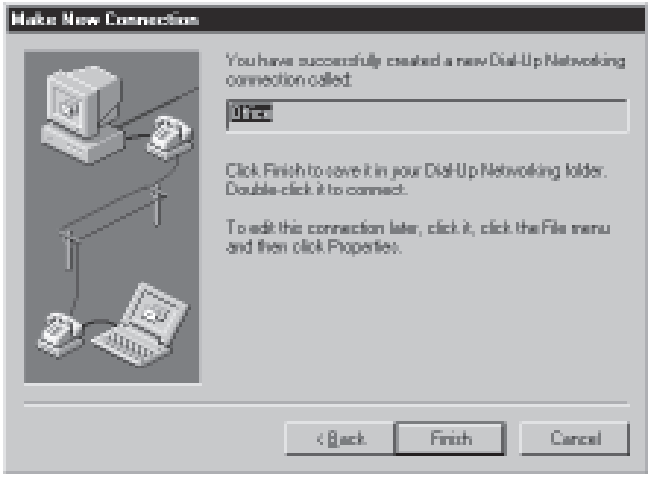
Double click on this "Make New Connection" icon, and it will open the new connection wizard. Enter a name for the connection, and select the modem that will be used:



Click on the "Next" button, to proceed to the next screen. On this screen, you will enter the phone number, including area code if necessary, for dialing the remote UNIX system:

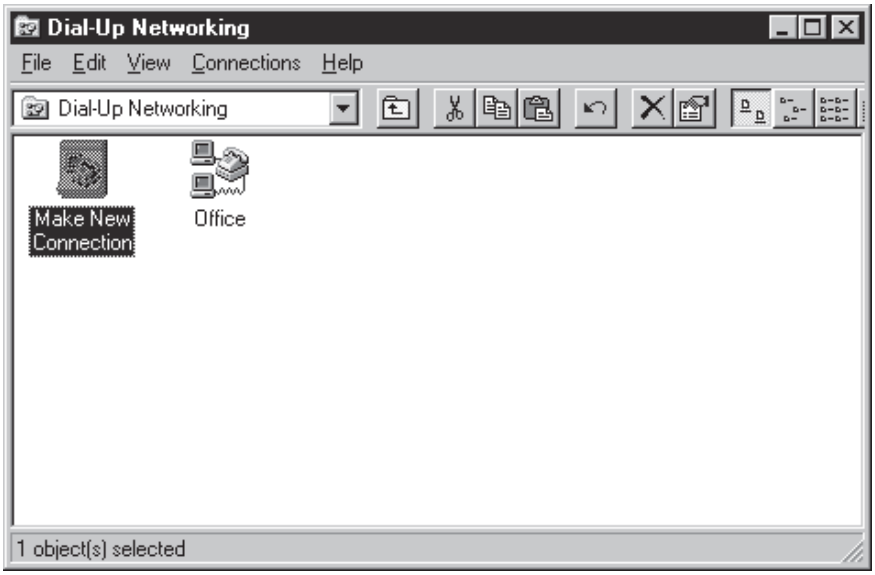


Click on the "Next" button, and the last screen of the connection wizard will be displayed:

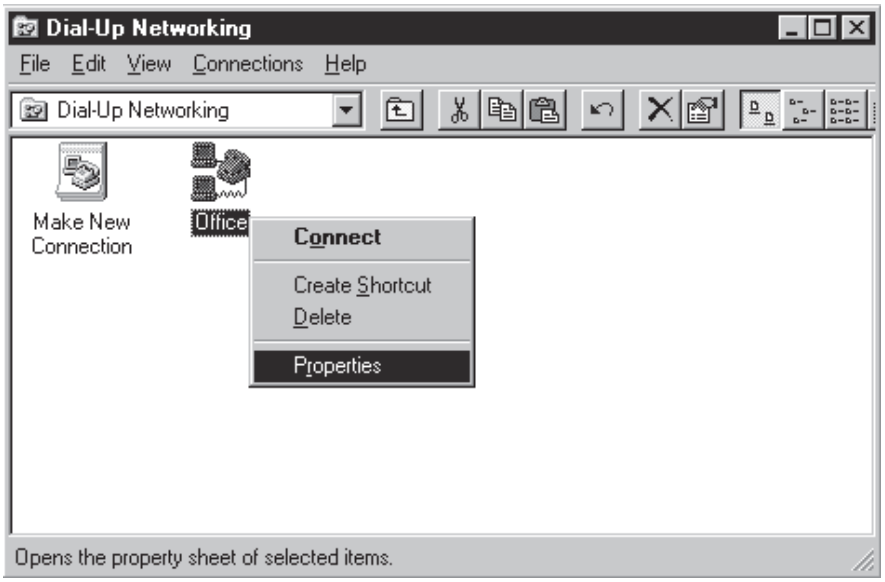


There is nothing to do on this screen but click on the "Finish" button.

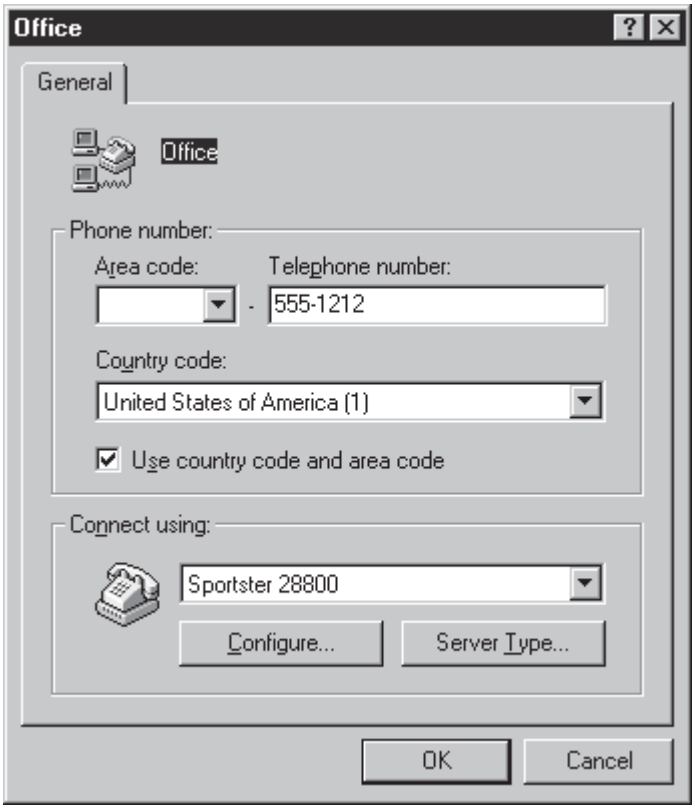
Now your new connection will be in the Dial-Up Networking window:



However, before you can use it, there is a little more configuration to do. To access these last configuration options, right click on your new Dial-up networking connection:

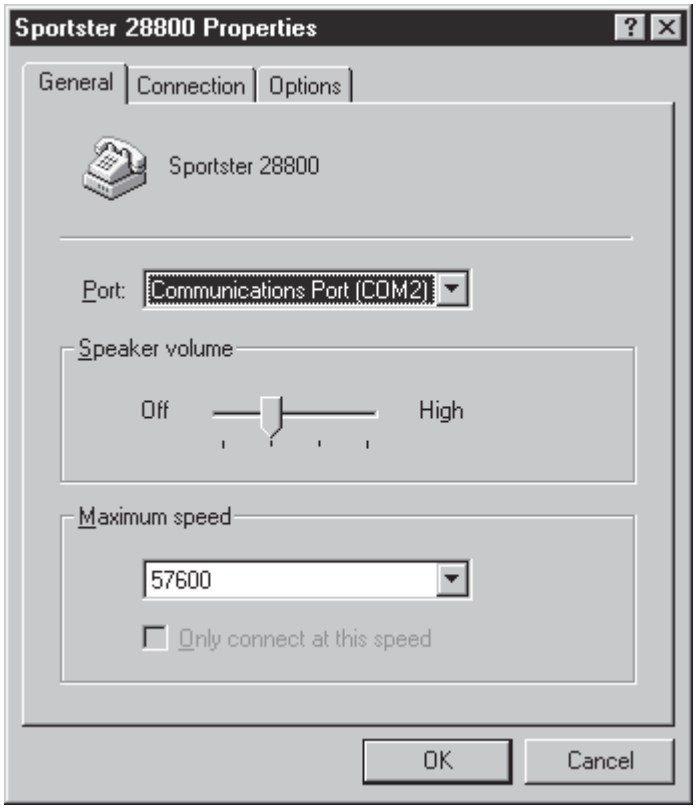


Select the Properties item on the menu. This will cause the property sheet for your connection to be displayed:

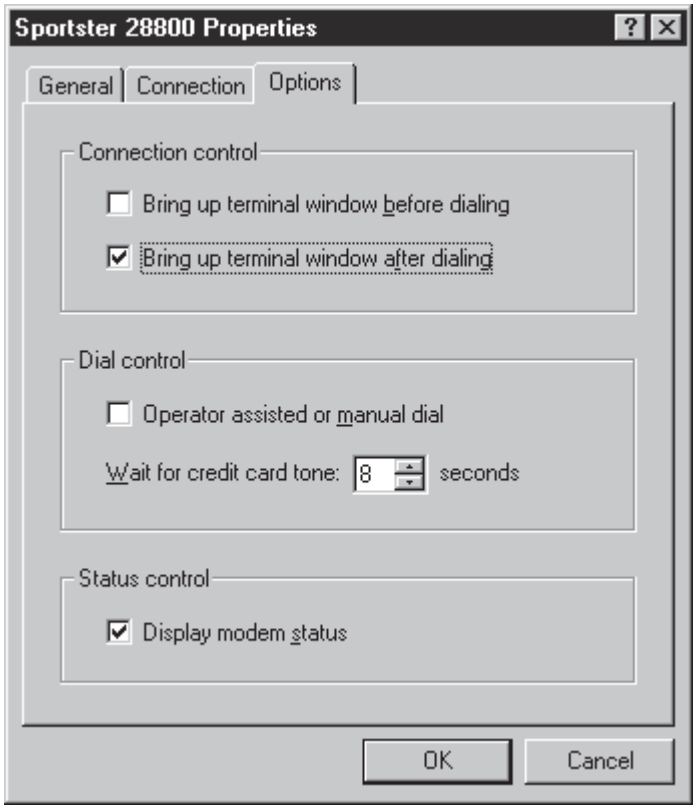


If the remote modem is directly connected to the UNIX server, and the server presents a normal login and password sequence, then it should be possible for Dial-up networking to login to your system automatically. (Note: SCO UNIX does not allow an automatic login due to the fact that it does not accept a login name immediately after presenting the login prompt.)

If, instead, your modem is connected to another device, such as a terminal server, or if you have problems getting the automatic login to work, you have two choices. You can use the Dial-Up Scripting Tool which is in the Start menu under the Accessories group, or you can configure the connection for a manual login. Use of the scripting tool is beyond the scope of this document. The following will show you how to prepare to login manually. Click on the "Configure..." button on this property sheet, to bring up the Modem properties:

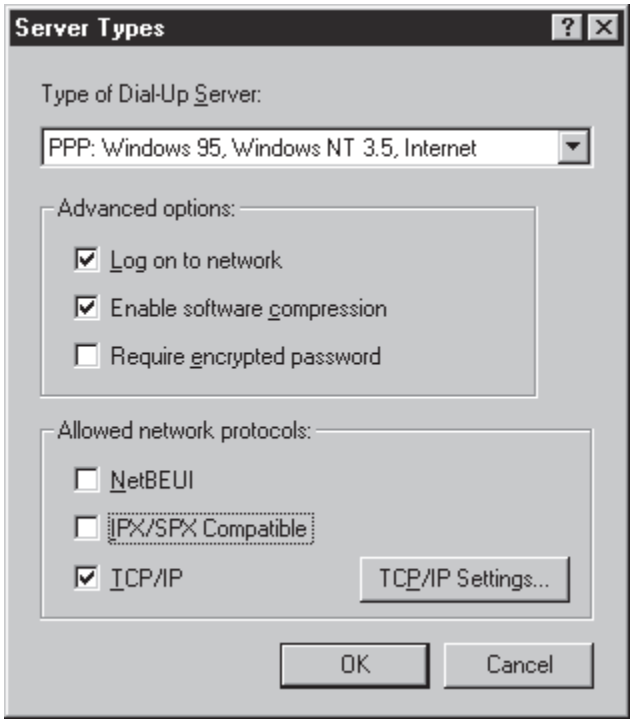


Select the "Options" tab. Check the "Bring up terminal window after dialing" box:

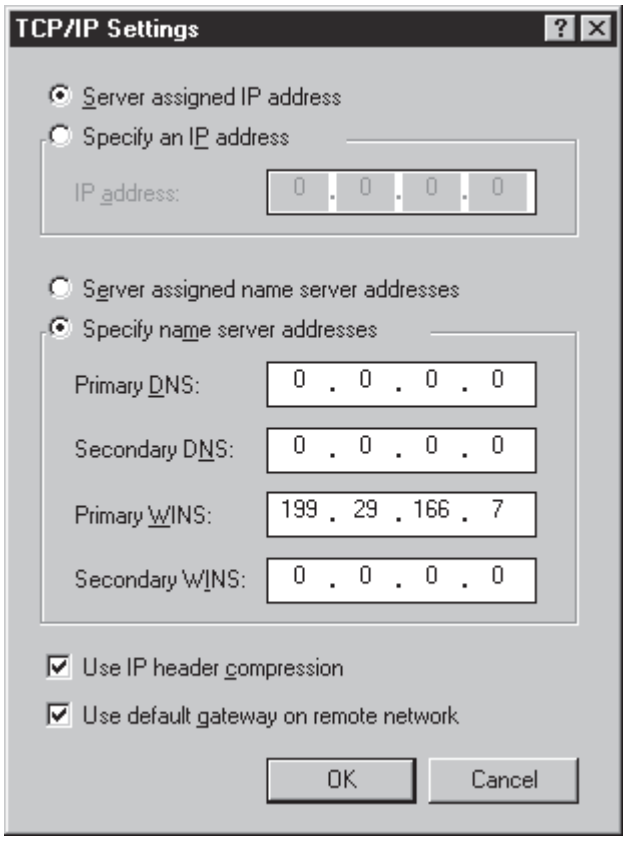


This will cause a small terminal emulator window to be presented after connecting to the UNIX system so that you can login manually. Click "OK" on the Modem properties, and you will return to the Dial-up networking configuration properties.

The remainder of the configuration is the same whether you will be doing a manual or automatic login. Click on the "Server Type..." button. Configure it as shown below:



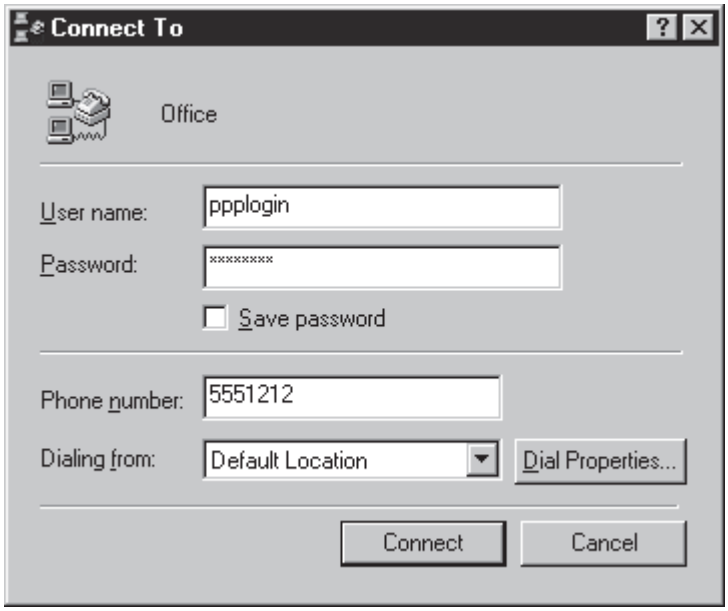
Click on the "TCP/IP Settings..." button. The TCP/IP settings that will be used with this connection will be displayed. Select the "Specify name server addresses" option. If you have DNS configured on your network, enter the address of the DNS server(s). In the "Primary WINS" field, enter the IP address of the server running FacetWin that your PC will be connected to:



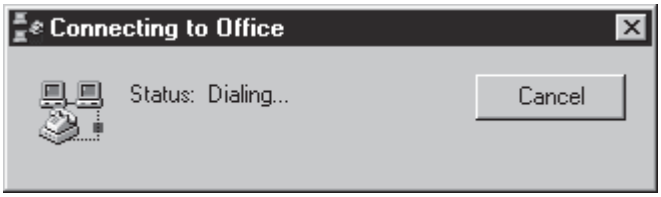
Click the "OK" button on all the dialog boxes that have been brought up (there should be 3). You are now ready to connect to the UNIX server.

Making a Dial-up Connection to the UNIX Server

To make the connection to the UNIX server, begin by double clicking on the Dial-up Networking connection that you configured in the previous section. It will present the connection screen:

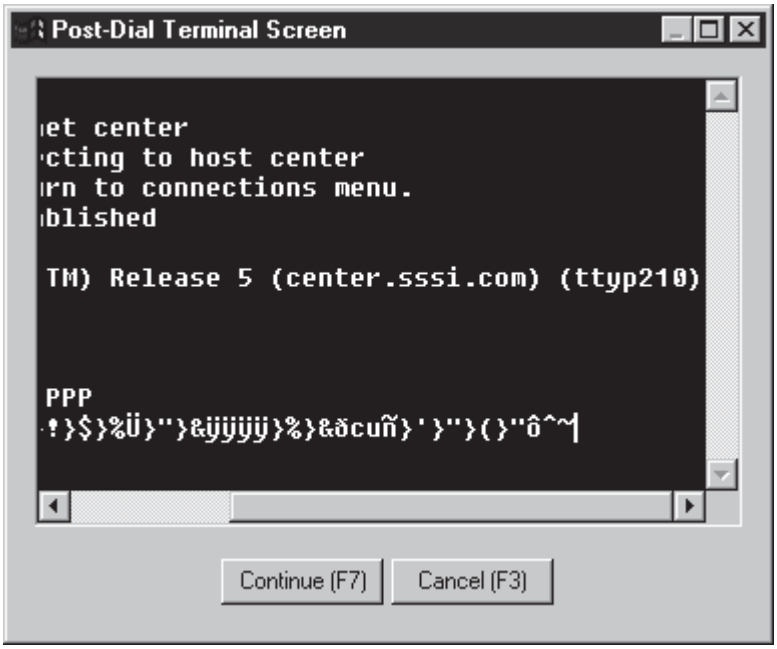


Enter the login and password for the PPP account that you have set up on the UNIX server for this purpose. Click on the "Connect" button. It should dial the remote system, and complete the modem connection. While it is doing this, the following window will be displayed:

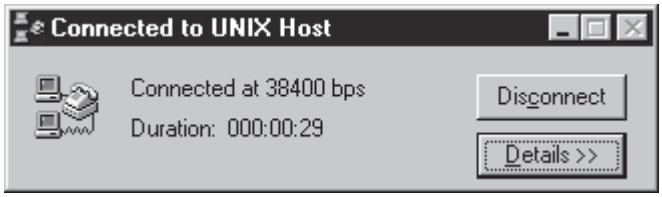


If you had checked the box to bring up a terminal window after dialing, that window will be presented now for you to manually login to the system. Otherwise, it will attempt to login automatically.

If you are logging in manually, then after you login, the PPP program will be run on the server. It will output some initial protocol that looks something like this:



Click on the "Continue" button or press F7, and the connection should be completed. If it succeeds, you will be given a dialog box like this:



You should not click on the "Disconnect" button until you are ready to terminate the PPP connection to the server. Therefore, while you are using the connection, it is best to minimize the window so that it is out of the way and you don't accidentally click the Disconnect button.

After about a minute, you should be able to double click on the Network Neighborhood and see the UNIX server and all the other PCs networked to it. At this point, you can proceed to use the file and printer services of FacetWin, define terminal emulation sessions, etc.

Troubleshooting

FacetWin and the UNIX syslog File

Most of the FacetWin server programs have no direct user interface, since they work with built-in parts of the Windows operating system. For this reason, FacetWin makes heavy use of the UNIX syslog facility to log messages about its operation. The following explains how to find your system's syslog file(s), and how to prevent them from becoming too large.

You can determine the name of the syslog file(s) on your system by looking in the "/etc/syslog.conf" file. This file usually comes from the operating system vendor configured such that all of your messages go to the same file. If you do not understand your syslog.conf file, you can use the command:

```
man syslogd
```

to get the system documentation on this file and its use by the syslogd process.

Once you have determined the name of your system's syslog file, you can look for FacetWin messages in that file by editing it, or using "cat" or "pg" to display the contents of the file. It may become very large, and the UNIX "tail" command is helpful in looking at the end of the file in this case.

If the file becomes too large, you will want to reset it back to zero length occasionally. You don't want to just delete the file because the syslogd program has it constantly open. Instead, copy the syslog to another file, if you want to save it for later review. Then, make the syslog file zero length. For example if your syslog file is "/var/adm/syslog", you would use the following commands:

```
cd  /var/adm

cp syslog syslog.bak                (optional)

>  syslog
```

When doing this, be sure that you are making the actual file zero length, and not a symbolic link to it. SCO systems will probably specify a file in the syslog.conf that is actually a symbolic link to the real file somewhere else. It is the actual file that needs to be emptied with the ">" command.

FacetWin Browsing and Connection Problems

If, after installing the FacetWin software on the UNIX server, you cannot see that server in the Windows Network Neighborhood, follow the instructions in this section to troubleshoot the problem.

The Microsoft Windows "browsing" concept is meant to make name resolution on the network very dynamic instead of the more static approach of maintaining a list of machines on the network. The downside to this more dynamic approach is that it is very complicated, and therefore doesn't always work!

When the UNIX server with FacetWin does not show up in the network neighborhood, it can be due to two different scenarios:

1. FacetWin may be working properly, but the UNIX computer is not showing up in the Network Neighborhood.

2. There is a problem in the network configuration that is preventing the PC from contacting the FacetWin servers on the UNIX machine.

Before determining which of these problems you have, you should begin by testing to make sure that a basic TCP/IP network connection can be made between UNIX and the Windows PC. This is done by "pinging" the UNIX machine from the PC and vice-versa. From an MS-DOS prompt on the PC or at the UNIX command line, run the command

ping *hostname*

or

ping *IP_address*

where *hostname* and *IP_address* are the name and IP address of the other machine. If the ping is not successful in both directions, then a problem exists with the hardware or TCP/IP configuration on one of the machines. This problem must be resolved before continuing. Consult your Windows and UNIX documentation to determine how to test to see if the hardware is working and how to do the basic TCP/IP configuration for that operating system.

Once you can ping both ways between the PC and UNIX server, you are ready to determine if you have a browsing problem or a connection problem. Click on the Start button on the task bar of the PC, select the Run option, and type in:

IP_address

where *IP_address* is the IP address of the UNIX server, and click on the OK button. If a window pops up with the UNIX IP address as the title and the window contains the two default shares, FacetWinPC and MyHomeDir, then FacetWin is working. You should proceed to the section "Troubleshooting a FacetWin Browsing Problem" below.

If you get any other result, such as \\xxx.xxx.xxx.xxx is not accessible, then proceed to the section "Troubleshooting a FacetWin Connection Problem" below.

If the UNIX server shows up in the Network Neighborhood, but you cannot access the server when you double click on its icon in the Network Neighborhood, then you also have a connection problem and should proceed to "Troubleshooting a FacetWin Connection Problem".

Troubleshooting a FacetWin Browsing Problem

If you can connect to a FacetWin host, but it does not appear in your network neighborhood, you have a browsing problem. Browsing works by servers (PCs or UNIX) periodically broadcasting HostAnnouncement packets on their local subnet. These announcements are picked up by the local Master Browser which must be a Windows95+ or Windows NT server. The Master Browser can then be queried for a list of servers. TCP/IP broadcast packets will not cross a router unless the router can be configured to forward these packets.

FacetWin supports only NetBIOS over TCP/IP (NBT) browsing. Windows supports NetBIOS Frames (NBF or NetBEUI) browsing as well as NBT browsing. Any PC which does not have TCP/IP installed will never see a FacetWin server in the Network Neighborhood because they will only get the NBF browse list. Windows PCs that have both TCP/IP and NetBEUI components installed might need to set TCP/IP as the default protocol to see the FacetWin servers in the Network Neighborhood.

The recommended configuration for browsing is:

- Install TCP/IP on each PC and set this as the primary protocol.

- Pick one UNIX or NT server to be used as a WINS server and configure all of the other machines to use it. To set the primary WINS server on a UNIX host running FacetWin, see the section Name Services Tab of the FacetWin Administrator. Note that you may not be able to run the FacetWin Administrator since you are having networking problems, but this section will also provide instructions on editing the configuration files directly on the UNIX host.

The following is a list of browsing problems we have encountered on some networks and the solutions to each.

- UNIX system is not in your workgroup

  When you double click on Network Neighborhood, you should see the Entire Network (a globe icon) and each machine in your workgroup. If the UNIX machine does not show up in your initial Network Neigborhood list, double click Entire Network and see if it appears in another workgroup. Workgroups show up as a "3 little computers in a triangle" icon. A Windows workgroup is set in the Network Neighborhood properties under the Identification tab. The UNIX machine's workgroup that was defined upon installation is stored in the facetwin.cfg file. If the UNIX workgroup is changed, the FacetWin servers must be restarted. This can be done with the 'fct_adm' command on the UNIX host.

- No PC browse servers

  If there are no PC browse servers on a network then browsing will not work. FacetWin's fct_brwd program is a browse client but not a browse server. Windows95 comes default with File and printer sharing for Microsoft Networks disabled which means it's only running a browse client and not a browse server. If all of the Win95 PCs on the network are configured in this manner and there are no NT machines in the workgroup, then there will be no browse server to collect and distribute the browse list that FacetWin announces to. The solution is to make sure that at least 1 (preferably more) PC(s) have a browse server enabled. For Windows95 PCs, File and printer sharing for Microsoft Networks must be added to the Network Neighborhood components and Browse Master must be set to Automatic or Enabled under the File and print sharing properties. When the File and printer sharing for Microsoft Netwoks service is installed, the default setting for Browse Master is "Automatic". See the section Preparing a PC for FacetWin.

- Subnet masks/Netmasks do not match

  The announcement packet that the fct_brwd process sends will only reach Browse Masters that are in the same subnet. Therefore, the subnet masks should match between the PCs and the UNIX machine. The PC's subnet mask will be on the IP Address tab of the TCP/IP properties. The UNIX netmask can be determined with the UNIX command:

  ```
  ifconfig interface
  ```

  where interface is the interface name associated with the ethernet card. To find out what interface is associated with the ethernet card, check the routing tables with the command:

  ```
  netstat -rn
  ```

  and look under the Interface column. The netmask of the UNIX system will be displayed in hexadecimal. A string of 2 f's (ff) is equal to 255. So the netmask 0xffffff00 is the same as 255.255.255.0.

- Names in conflict

  If a PC has a name in conflict, its TCP/IP layer will quit working. If the PC supports NetBEUI then the Network Neighborhood will continue to show a list of other servers that support NetBEUI, otherwise the list will be empty. FacetWin does not support NetBEUI and therefore no FacetWin servers will show up in this list. Names become in conflict when a PC receives multiple responses to a name query. This can happen if two machines on the network have the same name. The only way to resolve a names in conflict problem is to reboot the PC.

  To check a PC for names in conflict, run

  ```
  nbtstat -a *
  ```

  from an MS-DOS prompt on the PC. If the status of any of the names listed is "Conflict", then you have a names in conflict problem and should reboot that PC.

- Datagram forwarding

  The datagram_forwarding feature of fct_brwd may cause confusion among Master Browsers on different subnets, especially in the presence of NTs. The solution is to disable datagram forwarding. See the section PPP/Gateway Tab of the FacetWin Administrator.

If all else fails, it is possible to create a shortcut in the Network Neighborhood that points to the FacetWin server. On the PC, click Start/Find/Computer and enter the UNIX hostname. Then, just drag and drop the icon onto the Network Neighborhood window. This will allow browsing from the Network Neighborhood but the browsing problem will still need to be resolved for browsing to work in some PC applications.

Troubleshooting a FacetWin Connection Problem

If you get the error:

> *hostname* is not accessible

when double-clicking your server icon in Network Neighborhood, then you have a connection problem. This section provides a number of things to check in troubleshooting this problem.

- Check the Network Neighborhood Properties on the PC.

  Bring up the Network Properties sheet by right clicking on the Network Neighborhood icon and choosing "Properties" from the menu that is presented.

  On the Identification tab, the entry in the Workgroup field should match the workgroup setting in the FacetWin configuration on the UNIX host. The workgroup for the host was specified when FacetWin was installed. To check the workgroup setting on the UNIX host, see the section Name Services Tab of the FacetWin Administrator. Note that you may not be able to run the FacetWin Administrator since you are having networking problems, but this section will also instruct you on editing the configuration files directly on the UNIX host.

  Return to the Configuration tab of the PCs Network Properties. Single-click the TCP/IP component attached to your Ethernet adapter and click Properties.

Make sure the PC's subnet mask matches your UNIX netmask if both machines are on the same subnet. The PC's subnet mask will be on the IP Address tab of the TCP/IP properties. The UNIX netmask can be determined with the UNIX command:

ifconfig *interface*

where *interface* is the interface name associated with the ethernet card. To find out what interface is associated with the ethernet card, check the routing tables with the command:

netstat -rn

and look under the Interface column. The netmask of the UNIX system will be displayed in hexadecimal. A string of 2 f's (ff) is equal to 255. So the netmask 0xffffff00 is the same as 255.255.255.0.

Click the WINS Configuration tab and ensure that you have enabled WINS Resolution for that PC. The primary WINS server entry should be set to the IP address of your UNIX host. If you have an NT server that you wish to be the primary WINS server, then set the UNIX host as the secondary WINS server. If the UNIX host is not the primary WINS server, configure FacetWin on this host to have the address of the NT machine that is acting as the primary WINS server. See the section Name Services Tab of the FacetWin Administrator. Note: Some versions of Windows95 require that both primary and secondary WINS server fields have an entry even if they are identical. So, if you only have one WINS server, enter the same IP address for both. Otherwise, you may find that Windows95 will automatically disable WINS resolution after rebooting your PC.

Still in the TCP/IP properties, click the Bindings tab and ensure that Client for Microsoft Networks and File and printer sharing for Microsoft Networks are both bound to TCP/IP (both boxes should be checked). Click OK to the TCP/IP properties to return to the Network properties Configuration tab.

Make sure "Client for Microsoft Networks" and "File and printer sharing for Microsoft Networks" are both installed. Check the properties of File and printer sharing to make sure that Browse Master is set to Automatic or Enabled.

- Make Sure FacetWin is Running on the UNIX Server.

  Upon the completion of the FacetWin installation, there should be at least three FacetWin daemons running as processes. To verify, run the following command on the UNIX host:

  ```
  ps -ef | grep fct_
  ```

  or

  ```
  ps -aux | grep fct_                # for some Sun and LINUX systems
  ```

  Output should be similar to:

```
root 16876   1  0 14:03:06 ? 00:00:11 usr/facetwin/sys/fct_licd -D
root  1916   1  0   Jul-16 ? 00:02:51 /usr/facetwin/sys/fct_brwd -D
root  2089   1  0   Jul-16 ? 00:03:06 /usr/facetwin/sys/fct_winsd -D
```

  If the output from your ps command does not include these three processes, you can start them up with the following command:

  ```
  /etc/fct_winsd_all  start
  ```

  Very old versions of FacetWin do not have this command. If your system does not have this command, you can start each of the servers by changing directory to the "sys" directory that is in the FacetWin installation directory (/usr/facetwin/sys by default). Then start any server that is not running with the appropriate command:

  ```
  ./fct_licd  -D
  ./fct_brwd  -D
  ./fct_winsd  -D
  ```

  After restarting the FacetWin servers, check your syslog for any errors pertaining to FacetWin or a failed network connection. See the section FacetWin and the UNIX syslog File for information about FacetWin's use of the syslog file.

- Make Sure You Have a Valid FacetWin License

  Run the command:

  fct_licinfo | pg

  and verify that there is a positive value for "Licensed Users". If fct_licinfo fails to return the license server information, check the loopback address as described in the Networking Errors section below.

  If the value for "Licensed Users" is zero, run the program fct_licedit, select item #2 and observe the contents of your license table. If you have a demo license, it should look similar to this:

```
LINE MACH ID  LICENSE #        USERS TYPE        EXPIRES
---- -------- ---------------- ----- ----------- ------------
   1 enignbq3    Demo             50  Demo        ()
```

  A regular license would have different values for "license #", "users", "type", and "expires".

  If this table is empty, add your FacetWin license or contact FacetCorp for a demo license key.

- Checking for Networking Errors

  First, check the syslog file for errors. If there are no errors reported in the syslog file, then it's possible that inetd has not properly (if at all) configured the socket that FacetWin utilizes to setup a NetBIOS session between the PC and UNIX server.

  On the UNIX host, run the command:

  netstat -an | grep 139

  You should at least get the following back:

```
tcp        0      0  *.139        *.*     LISTEN
udp        0      0  *.139        *.*
```

  If netstat reports either port 139 is not configured, or is idle, then this indicates that the FacetWin installation failed to modify the correct inetd.conf and services files. If this is the case, you probably have an older version of FacetWin

that did not provide checking for "alternate" directories for these files (most systems use /etc). Check the "build number" that is contained in the /usr/facetwin/partno.txt file. The build number is the number in parentheses. If this number is less than 240, you should upgrade your FacetWin software.

If none of the above troubleshooting steps yield any pertinent answers, you may have some discrepancies in your host TCP/IP configuration. It is possible an IP address may have been changed in one place and not updated in another, or your routing tables don't have the same information as the file /etc/hosts. Whatever the reason for the discrepancy, the best place to verify this is to view the host's routing table. On SCO, this is done with the command:

```
netstat -rn
```

Typical output from this command is:

```
Routing tables
Destination      Gateway           Flags    Refs      Use
Interface
199.29.172.1     199.29.166.7      UGH         0        0 e3B0
199.29.193.1     199.29.166.7      UGH         0        0 e3B0
199.29.190.1     199.29.166.7      UGH         0        0 e3B0
199.29.171.1     199.29.166.7      UGH         0        0 e3B0
199.29.191.1     199.29.166.7      UGH         0        0 e3B0
199.29.170.1     199.29.166.7      UGH         0        0 e3B0
220.220.221.1    199.29.166.7      UGH         0        0 e3B0
199.199.199.1    199.29.166.7      UGH         0        0 e3B0
127.0.0.1        127.0.0.1         UH          1        0 lo0
220.220.221.2    199.29.166.7      UGH         0        0 e3B0
199.199.199.2    199.29.166.7      UGH         0   160042 e3B0
199.29.166.250   127.0.0.1         UGH         0        0 lo0
199.29.166.252   127.0.0.1         UGH         0        0 lo0
220.220.220      199.29.166.7      UG          0     6314 e3B0
222.222.222      199.29.166.65     UG          1      348 e3B0
199.29.166       199.29.166.1      U          30 13344375 e3B0
```

When looking for clues, consider the following:

- Interface lo0 (loopback) should ALWAYS have IP address 127.0.0.1
- Confirm the addresses are correct, keeping in mind your netmasks.
- If the host also serves as a Gateway, ensure that they both share the same IP address.

If you find errors in your routing tables, you probably need to go back to your TCP/IP configuration utility (such as SCO's "netconfig" or AIX's "smit tcpip") and modify your current configuration. This utility should update your routing tables (as well as /etc/hosts) after modification.

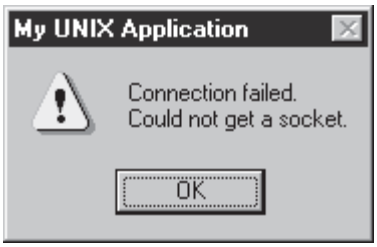
Troubleshooting Terminal Emulator Connection Problems

This section relates the various error messages that you may get when you have connection problems to the possible causes. Many of these problems are due to the TCP/IP properties being set up properly. If that is the case for the error message that you are getting, the see the section Preparing a PC for FacetWin.

The following messages indicate that you do not have the Windows TCP/IP protocol installed:

The next message indicates that the TCP/IP properties on your PC are not set up correctly:

This message indicates that the TCP/IP properties on your PC are not set up correctly, or you have so many TCP/IP connections running, that Windows had no more TCP/IP sockets available:



This message indicates that you have given an invalid name for the server, or the name cannot be resolved because the TCP/IP properties are not set up correctly:

These errors indicate that the server specified in the configuration is not running or does not have its TCP/IP operating properly:

These errors indicate that the FacetWin terminal session server is not installed properly on the server:

These errors indicate that the connection to the server failed sometime during the startup of the session. Check the syslog on the server for related messages. For information on the syslog file refer to the section FacetWin and the UNIX syslog File.

Troubleshooting Terminal Emulator Emulation Problems

If your application does not draw the screen properly when running in the FacetWin terminal emulator, then it is probably because it is using screen control sequences that are not recognized properly by FacetWin. If this is the case, you should call FacetWin technical support. Before you call, you can gather some information about the problem by doing the following:

- Turn on the "Beep Emulation Errors" option.

  This setting is found on the Options Tab of the terminal emulator property sheet. When this option is turned on, the emulator will "beep" whenever it encounters an escape sequence that it does not recognize.

- Turn on the "Record Errors to File" option.

  This setting is also on the Options Tab of the property sheet. When this option is turned on, the emulator will record any emulation errors to a file. This file will be in the "errors" subdirectory in the FacetWin installation directory on the PC. It will have the same name as the current application title.

- Turn on the "Capture to File" option.

  This setting is also on the Options Tab of the property sheet. When you turn this option on, everything that your application writes to the screen will also be written to a file. The capture file will be in the "capture" subdirectory in the FacetWin installation directory on the PC. The default name of the capture file is the application title with a ".txt" extension. Note: While this option is turned on the emulator will be noticeably slowed down. This option could also use a large amount of disk space if you left it on for a long terminal session.

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