Microlynx Software Engineering

Topcat™

Installation Guide

Version 1.03

Contents

1.   Introduction

Topcat allows Acorn Computers to be used with a Microsoft® Windows NT® Server 4.0 to boot and use RISC OS applications.   When used with the Microsoft® Windows NT® Server 4.0 Terminal Server Edition andCitrix® Metaframe™ software, Acorn computers have access to a wide range of Windows applications.

This document describes how to installTopcat and set up and configure a Microsoft® Windows NT® Server 4.0 (NTS) to enable Acorn computers to boot from and use a NTS for loading RISC OS and Windows applications, web browsing and so on. The example configuration values are used to demonstrate the principles; if you are not using these values you will need to substitute them for appropriate ones.   The Microsoft DHCP server supplied with the NTS 4.0 product is used to allocate IP addresses to the client devices, and Simple TCP/IP Services are used to set the local clock on some Acorn computers.

It is assumed that you have a working NTS 4.0 system and are familiar with the following topics:

- Microsoft® Windows NT® Server 4.0, administration and configuration
- Citrix® Metaframe™ Administration and configuration
- Networking – NetBEUI and TCP/IP protocols

2.   Document Conventions

File names and commands are shown in Courier font typeface thus:
`\\Microlynx\Armboot$\!tcboot`

Parameters to be replaced by actual values are shown in angle brackets, thus:
`<IP address>`

3.   Hardware and software required

3.1.   Server

3.1.1.   Software
- Microsoft® Windows NT® Server 4.0 (or later) including Service Pack 3 (SP3) (if running RISC OS only), or
- Microsoft® Windows NT® Server 4.0 Terminal Server Edition and Citrix® Metaframe™ 1.0 (or later) Client/Server (if running RISC OS and Windows applications by the clients).

3.1.2.   Hardware
- Hardware to meet the requirements of Windows NT, plus 100 MBytes of free hard disc space.
- System RAM – 64MB is the minimum recommended (plus 8-16

MB for each supported client machine when in Windows mode).
- LAN: Ethernet 10BaseT network interface and cabling or other suitable network.

3.2.   Client machines

- Acorn computer(s) with RISC OS 3.10 or later version or NC OS 1.06 or later; client devices must haveTopcat Client software installed.
- Mouse.
- All machines networked using an Ethernet 10BaseT network or other suitable configuration.
- Clients configured for dynamic IP addressing, allocated by server.
- VGA-Compatible monitor (SVGA or better preferred).
- Web and e-mail access to download evaluation software and updates.

4.   Before You Begin

It is assumed that Windows NT 4.0 Server or Terminal Server Edition has been installed and configured on the server prior to proceeding.   Also ensure the network is running correctly, and the following protocols have been installed and are operating correctly before proceeding:

- NetBEUI
- TCP/IP

If appropriate, ensure that the Citrix® Metaframe software has been installed and configured, including support for**ica-tcp** sessions, and that the correct licenses have been added and activated.

5.   Installation sequence overview

- Install theTopcat software from the distribution CD by running`setup.exe.`

- Install the Microsoft DHCP server and Simple TCP/IP Services using the Network option from the Control Panel. These are supplied on the Microsoft NTS CD.

- If using Microsoft® Windows NT® Server 4.0, install (or re-apply) Microsoft Service Pack 3 (SP3). **NB. The service pack must be installed after the DHCP server as the support for BOOTP clients was only introduced from SP2 onwards.   (This is not necessary for the Terminal Server Edition, as SP3 is already incorporated - indeed you must not install Service Packs intended for NT Server 4.0 on the Terminal Server Edition, as they are incompatible.)**

- Configure the Server.

6.   Installation of Topcat

6.1.   To install Topcat:

1. On the server, start Microsoft Windows NT and log on as Administrator.

2. Insert the CD-ROM into the drive.

3. Select RUN from the Start menu and enter `X:\setup.exe`, where X is the drive letter of your CD-ROM.   Click on the OK button.

4. Follow the instructions on-screen.

5. You can choose where on the server's hard disk the Topcat software is installed.   By default, the location "`C:\Program Files\Microlynx\Topcat`" is used, where C: is the drive containing the Windows directory (WINNT or WTSRV).   We recommend using an NTFS partition (rather than a FAT partition) so that security permissions can be set.   You will then have the following file structure (where ... indicates the path to where you installed Topcat):

`...\Microlynx\Topcat\Armboot`	Base directory for Client booting – this is shared as '`Armboot$`'
`...\Microlynx\Topcat\Armboot\!tcboot`	default boot directory
`...\Microlynx\Topcat\RISC OS`	RISC OS files - this is shared as '`SERVER`' and will be displayed when the user clicks on the Disc drive icon on the Icon Bar.

7.   Configuring the Server

7.1.   Setting 'Armboot' user password option

- Use **User Manager for Domains** (in Administrative Tools) to set the *Password never expires* option for user **Armboot**, like this:

- Click on OK.
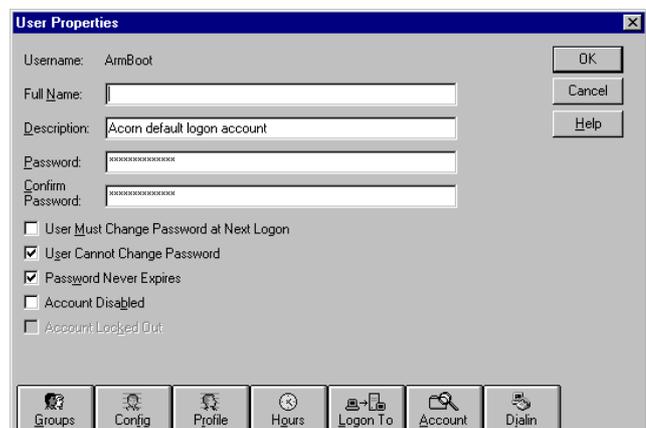
7.2. *Setting Directory Permissions*

The following assumes that Topcat is installed on an NTFS partition.   The aim of the following procedure is to set the Directory Permissions as follows:

- **Armboot** and **Riscos** (and all their sub-directories and files):**Everyone: Read; Administrators: Full Control**

Exceptions are:

The following directories need to be re-set to: **Everyone: Full Control**

- **Armboot\\!boot\Resource.~s\\!Scrap\Scrapdir.~s**

- **Armboot\\!Boot\Mchconfi.~g\Local\Www\Browse**

The following file needs to be set to: **Administrators: Full Control (only) - ie Everyone:** is Removed.

- **Armboot\Tcconfig\User**

Use **My Computer** or **Windows NT Explorer** to set the Permissions of the directories as follows:

Step 1. Find where the Topcat software is installed

Step 2. Open the **Topcat** directory.

Step 3. Using the right mouse button, click on the **Armboot** directory

Step 4. Select **Properties**.

Step 5. Click on the **Security** tab.   You should then see the window similar to this:

Step 1. Click on **Permissions**.

Step 2. Change **Everyone** to be Type of Access: **Read**.

Step 3. Add **Administrators** to have Type of Access: **Full Control**.

Step 4. Ensure the **Replace Permissions on Subdirectories** option is selected.   You should then have a window like this:
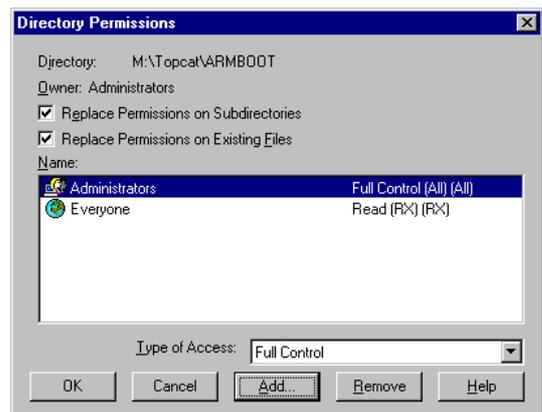
Step 5. Click on **OK**.   Confirm and then the system will carry out the changes.

Step 6. Repeat steps 3-10 for the **Riscos** directory.

Step 7. Open the **..\Armboot\!Boot\Resource.~s\!Scrap** direcory.

Step 8. In a similar fashion, reset the permissions for the Directory **Scrapdir.~s** for **Everyone** to be **Full Control,** and the **Adminstrators** entry can be removed.

Step 9. Open the **..\Armboot\!Boot\Mchconfi.~g\Local\Www** directory.

Step 10. In a similar fashion, reset the permissions for the Directory **Browse** for **Everyone** to be **Full Control,** and the **Adminstrators** entry can be removed.

Step 11. Open the **..\Armboot\Tcconfig** directory.

Step 12. In a similar fashion, remove the permissions for the file **User** for **Everyone**.

7.3. *Configuring IP Addresses*

Step 1. Install the Microsoft DHCP Server and Simple TCP/IP Services using the Network option from the Control Panel (if both already installed, skip this step):

- Click on the **Services** tab, and then the **Add** button.
- Select **Microsoft DHCP Server**.   Click **OK**.
- You may have to supply details where to find the Windows NT setup files and/or insert the Windows NT CD-ROM.   Follow the prompts on screen.
- Select **Simple TCP/IP Services**. Click **OK**.
- Again, you may have to supply details where to find the Windows NT setup files and/or insert the Windows NT CD-ROM.   Follow the prompts on screen.
- Click **OK**.

You will then have to restart the computer before proceeding.

Step 2. Apply (or re-apply if necessary) Service Pack 3 if running Windows NT Server 4.0. You will then have to restart the computer before proceeding. (If running Windows NT Server 4.0 Terminal Server Edition, skip this step.)

Step 3. Run the DHCP Manager application (inside Administrative Tools).

Step 4. Double click on the **Local Machine** and then the menu option **Scope|Create.** Add start and end IP addresses for the IP address pool. Ensure that the Server's IP address and the Client address pool are on the same sub-net and that the sub-net masks allow the client machines to 'see'

the server.   If you are using a private network for testing purposes then you can use the following example (where the server's IP address is 192.168.0.1:
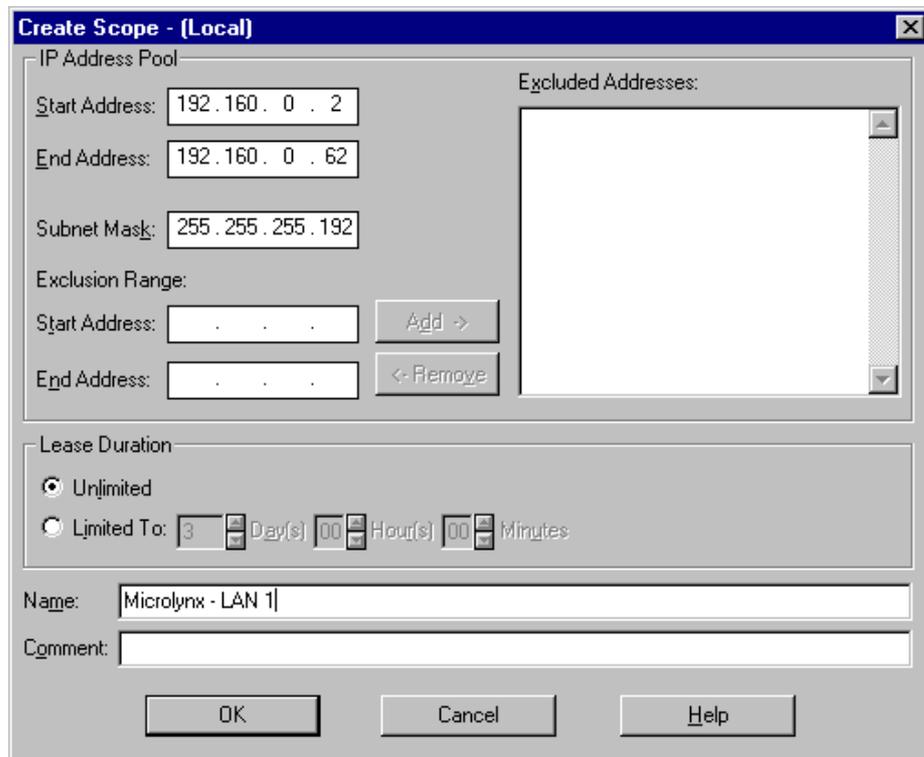
Step 5. Select **Unlimited** Lease Duration.

Step 6. Click on OK and then answer YES to activate the new scope.

Step 7. Select the **DHCP_Options->Scope** menu option and make the following option active with the value:

067 Bootfile Name: `\\<Computer Name>\Armboot$\!tcboot`

where `<Computer Name>` is the name of the Computer as shown in the Network dialog box in Control Panel.   Substitute your computer's name in place of the name '**Microlynx**' in the examples below:
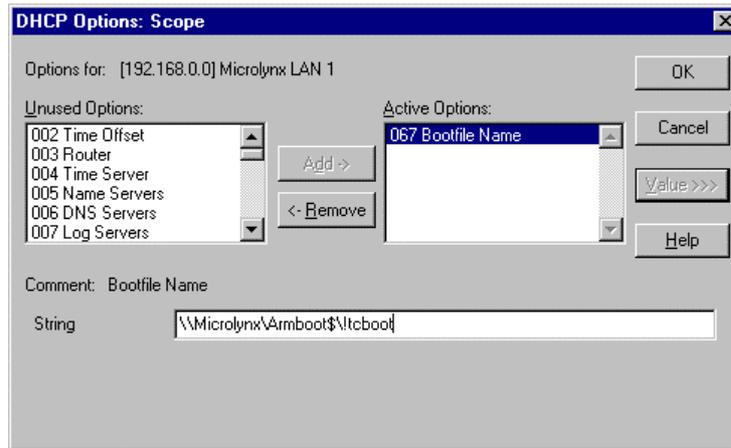
Step 8. Select the **Scope|Add Reservations** menu option and then add the reserved IP addresses for the client machines. For example:
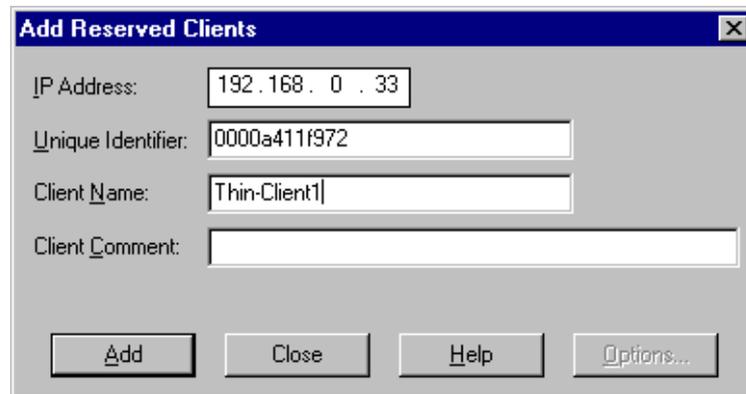
This **IP address** is the one that will be allocated to the specified client. The **Unique Identifier** is the Ethernet MAC address (Physical address) of the client, this is usually found on the outside of the box or packing slip, and may be displayed on screen when switched on.

Other clients can be added also using this method (Step 8) , however we recommend testing with one client initially.

Close the DHCP Manager application. It should now be possible to connect the client to the network, switch it on and check that it is able to find out its IP address from the server (ie: it will get past the **Cannot find a bootp server** error).

If all elements have been correctly configured, the clients should boot into the opening screen.   If not see the *Troubleshooting* section 13 below.

8.   Overview of Client Boot sequence

When the client is switched on, it goes through the following boot sequence provided static addressing has not been configured into the client:

1. Client broadcasts its physical (MAC) address in a **bootp** request message.

2. The DHCP Server recognises this message, and does a lookup in its database to see if the hardware address is listed. If so, it sends a bootp reply to the client comprising, among other things, the client's IP address, netmask and location of bootfile. The client reads its IP address, netmask and bootfile location from this reply.

3. The client connects as user 'Armboot' and runs the specified bootfile, which downloads the necessary software to the client and presents the opening screen.

9.   Booting Options

It is possible to configure clients to boot to the RISC OS desktop, to the Windows logon screen, into a Web browser or to a Selection screen which allows any of the other three options to be selected.   These options are 'global' - ie will apply to all clients configured in this particular scope.   By default, the system is delivered booting into the RISC OS desktop.   The other options can be selected as follows:

Step 1. Using Windows NT Explorer, locate the
  `…\Microlynx\Topcat\Armboot\!tcboot` directory on the Server's disk.   (See section *To install Topcat:* above.)

Step 2. Rename the `!run` file as `!runriscos` or similar.

Step 3. **To boot into Windows:** Rename the `!runica` file as `!run`
  To boot into the Web Browser: Rename the `!runwb` file as `!run`
  To boot into Select Screen: Rename the `!runselect` file as `!run`

Next time the clients are re-booted, the new configuration will take effect.

10.   Creating User Accounts

This is accomplished using the **User Manager for Domains** (in **Start|Programs|Administrative Tools**) utility.   It is recommended that a single user account is created and all settings made and tested before using this account as a template for additional accounts.   See the Windows NT documentation for further details.   (In the examples that follow, an example user called **User1** is created - change this as necessary for 'real' users.)

New User dialog box:

Username: User1
Full Name: First User
Description:
Password: ******
Confirm Password: ******

☐ User Must Change Password at Next Logon
☐ User Cannot Change Password
☐ Password Never Expires
☐ Account Disabled

[Add] [Cancel] [Help]

Groups | Config | Profile | Hours | Logon To | Account | Dialin
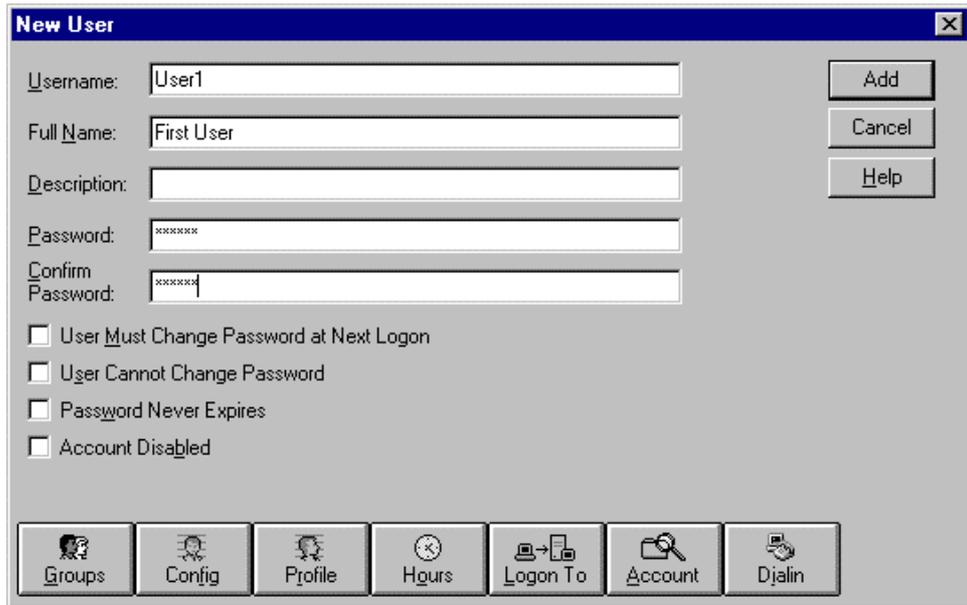
If you require a Home directory which is common for RISC OS and Windows sessions, then first create the user with an appropriate profile, with a home directory specified, for example:

User Environment Profile dialog box:

User: User1 (First User)

[OK] [Cancel] [Help]

User Profiles
User Profile Path:
Terminal Server Profile Path:
Logon Script Name:

Home Directory
◉ Local Path: M:\Users\%username%
○ Connect [▼] To [ ]

Terminal Server Home Directory
◉ Local Path: [ ]
○ Connect [▼] To [ ]

☐ Map Root (Netware Home Dir Only)
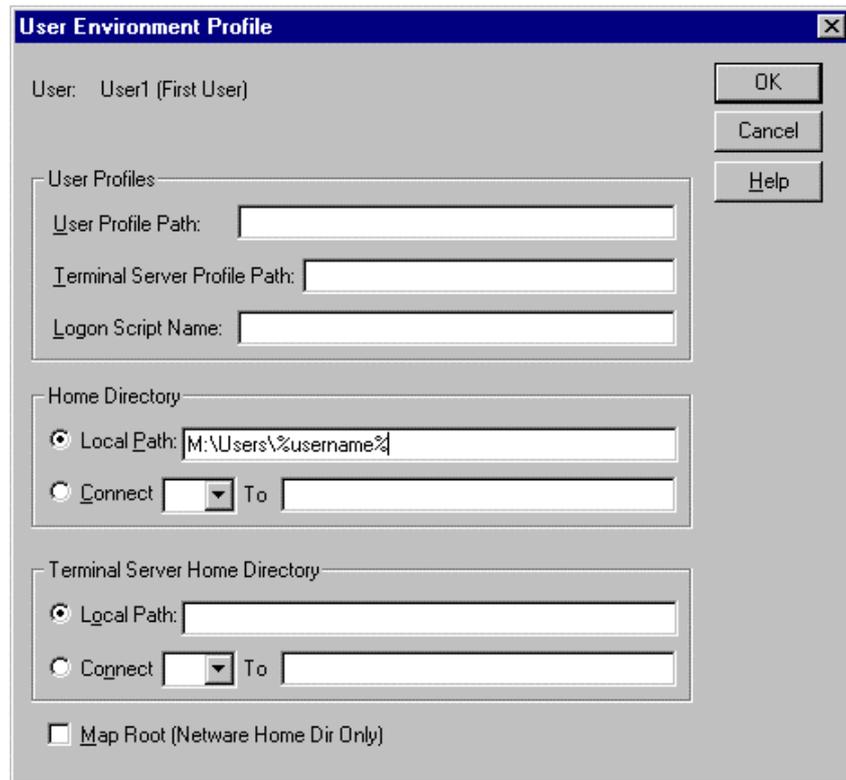
(Use of %USERNAME% in place of the actual users login name allows many accounts to be managed or modified together.)

This will create the Home Directory: **M:\Users\User1**.   (Change this to an appropriate value for your system.)   In order to make this accessible from RISC OS, the user's home directory, in the example: **M:\Users\User1,** should be 'shared', as **User1$ -** ie the Username with a '$' appended.   It will then be

possible to logon to this share from RISC OS using the 'Logon' icon on the Icon Bar, for example:
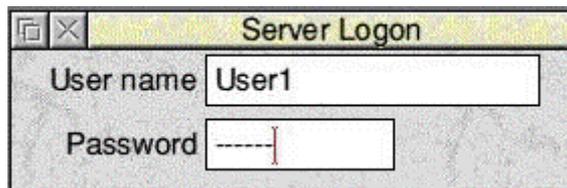
Set up the 'Permissions' on the share appropriately -eg Full Control to User1. (For more information on NT Security issues, see the Microsoft Windows NT Documentation, the Zero Administration Kit and the Microsoft Web site - see the section *Other References* below.

11.   Metaframe Launch File from RISC OS

The file used to start a Windows session from the RISC OS desktop is called (as seen from Windows):

```
…\Microlynx\Topcat\RISC OS\Metafram.~e\ntserver
```

It is necessary to modify this file after installation as described in the following sections. (This needs to be done from Windows, as the file is Read-only from RISC OS.   You can use a text editor, such as Notepad to edit the file.   Users can however, copy this file to their home area in RISC OS and modify it to suit their own needs.)

11.1. Server Name

In the `ntserver` file, replace the name `Saturn` in the line:

```
Address=Saturn
```

with the name of your server.

11.2. Screen Resolution

The screen resolution in Windows will adopt that current when the ICA Client is launched.   If this is not defined, or cannot be supported, it will default to 640 x 480 pixels.   It is possible to request a specific resolution by removing the ';' at the beginning of the line, and if appropriate, replacing the `800` and `600` by your desired horizontal and vertical screen resolution values in the lines:

```
DesiredHRes=800
DesiredVRes=600
```

Example values are: 640 x 480, 800 x 600 etc, depending on the capability of your monitor.

11.3. Colour Palette

By default, the number of colours is 256 (0x0002).   By setting the

parameter:

```
DesiredColor
```

to the value 0x0001, and removing the ';' at the start of the line, will select 16 colour mode.   No other values are valid.

12.   Configuring Printers

12.1. IN RISC OS

12.1.1. Local Printer

To use a local printer connected direct to the client, use the !Printers application in the normal way.   See the RISC OS User Guide - in the **Manuals** folder (click on the **Server** icon on the Icon bar in RISC OS, then double-click on **Manuals**, then **Contents**) - for details.

12.1.2. Network Printer

To use a printer connected to the server or network, this is also possible using Omniprint.   Basically, the Printer needs to be 'shared' - log on as Administrator to the Server, and open the **Printers** folder (in **My Computer**), select the desired printer, and right-click then select **Properties**.   In the dialogue box, select the **Shared** option enter a unique name in the Share Name box.   Click on the **OK** button. (Note, you can include information as to the printer's location, eg room number, in the printer's name to assist users choosing the nearest printer to their current location.)
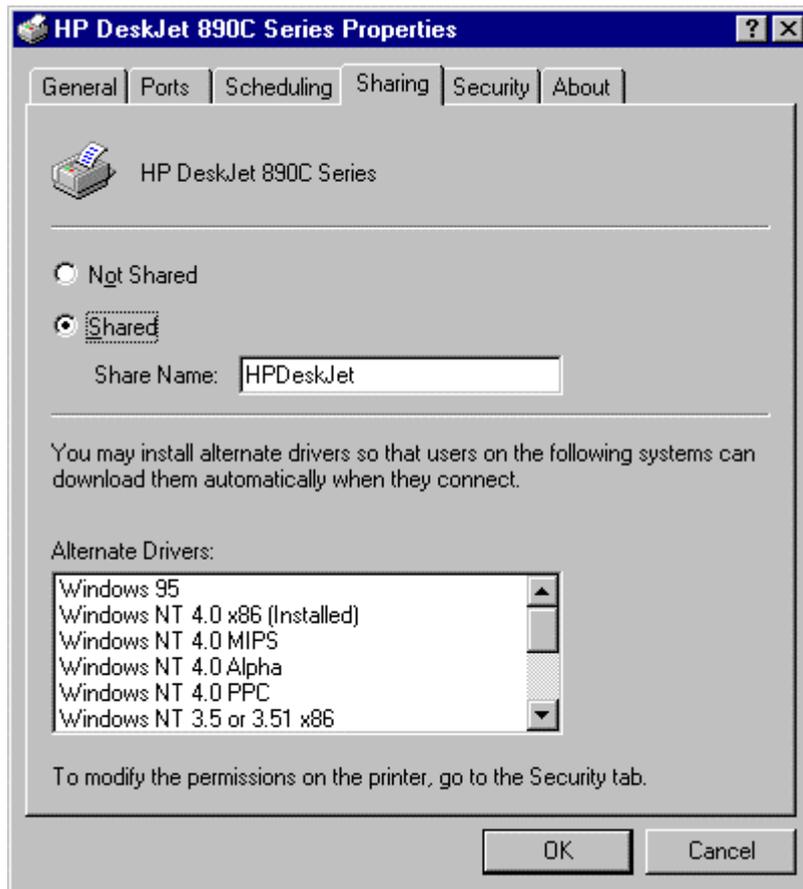
Next, you need to configure the !Printers application in RISC OS.
Double-click on the !Printers application and drag and drop a suitable
printer driver on to the printer icon on the Icon Bar.   Follow the
instructions given in theOmniclient User Guide - in the **Manuals**
folder (click on the **Server** icon on the Icon bar in RISC OS, then
double-click on **Manuals**, then **Contents**) - under '*Printing using
Omniprint*' - see example below:

```
                         Connections
                           DJ850C
                  Print in background  ☐
      ◯ Parallel
      ◯ Serial        Baud rate    75
                      Data bits    8 bits
                        Parity     None
                      Stop bits    1 bit
                      X-On/X-Off   ☐
      ◯ Net
      ◯ NFS             Server
                        Printer
                        Username
                        Options
      ● File    anMan;Microlynx;HPDeskjet:
                  Append to file ✓
      ◯ Direct drive
        Cancel                          OK
```
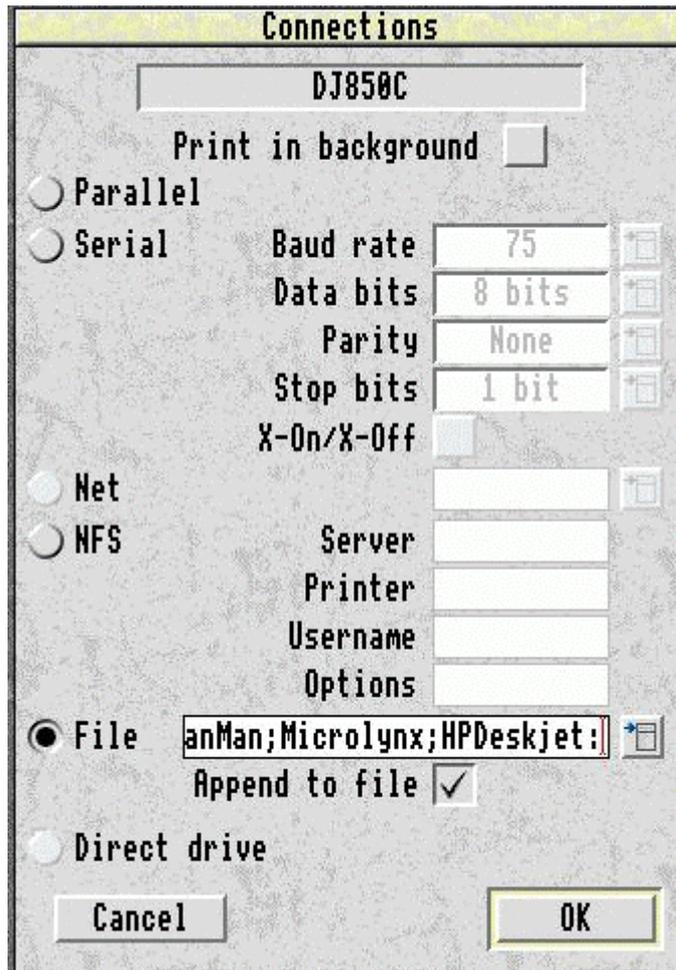
Select **File** and enter the filename in the following form:

`Omniprint#LanMan;<Server>;<Printer>:`

where `<Server>` is the name of the server, and `<Printer>` is the 'shared' name of the printer. If the printer is connected to a server on the network other than the server on which Topcat is installed, you may have to add the user name and password - see the Omniclient user guide for more details.

12.2. In Windows

12.2.1. Local Printer

Connecting a printer to a client device is not recommended, as this will adversely affect performance, and also, the configuration from Windows is not saved from one session to another, so it will be necessary to re-install the printer from the client computer when in windows.

In order to print to a locally-connected printer:

Step 1   Ensure the !Printers application is running and a suitable printer is configured and connected to the local port before

starting the ICA Client to run Windows.
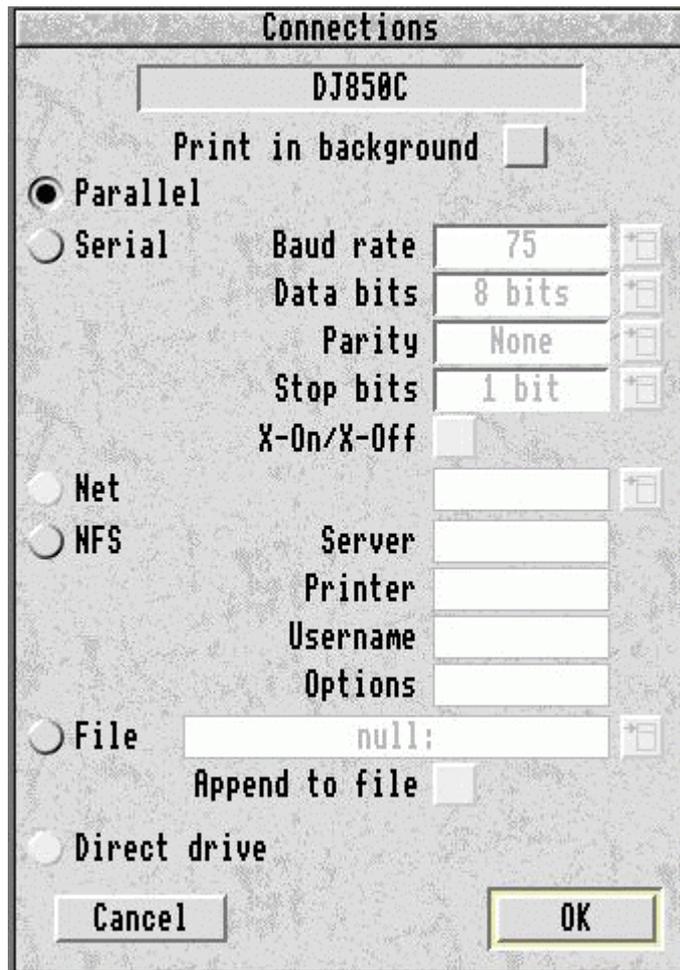
Step 2   Next, log on to Windows from the client by double-clicking
on the appropriate ICA file - usually called**NTServer**.
Step 3   Open the **Printers** application and double-click on the**Add
Printer** icon.
Step 4   Select Network printer server and click Next.
Step 5   Double-click on the **Client** icon under **Client Network.**   One
or more printers named**Internet00000....** or similar should
appear.   Select the appropriate printer and click on**OK**.
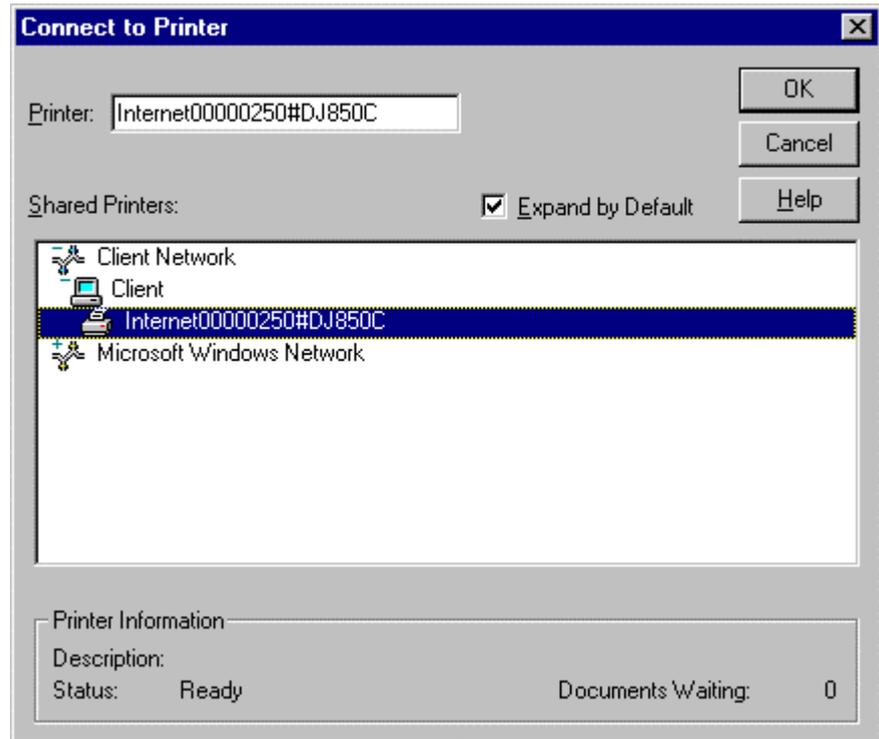
Step 6   If the Server does not have a printer driver installed, you will
          have to select the appropriate driver from the list supplied.

Step 7   You then have the option of making this the default printer.
          Then click **Finish** to complete the installation.

Note that it will be necessary to repeat Steps 3-7 each time you log on
to Windows as the printer will be disconnected when you log off.

12.2.2. Network Printer

Printing to a printer connected to the Server is available to a client
without any special configurations.   Similarly other network printers
which have been set up will be available to the client.   Follow the
instructions provided by Windows NT.

13.   Troubleshooting

If your installation fails to operate correctly, check the error message received and
refer to the relevant paragraph below.

13.1.   *Cannot find a bootp server*

This means there is a problem with the network connection or the BOOTP
server. Check all network connections.   Check that the DHCP Server is
installed and running and it is configured correctly.   Check that the client
machine is configured not to use static IP addressing.   On the Acorn Thin-
Client, this can be checked by holding down both Alt keys and re-booting the
client.   If some clients boot correctly, but one does not, check that the
offending client's MAC address has been correctly entered into the DHCP
Manager. (**Scope|Active Leases**, select IP address then **Properties**).

13.2. I/O error in server browser

This usually occurs when the **003 Router** entry in the DHCP Manager (**DHCP Options|Scope**) has not been set up correctly. Check that you have entered the correct IP address of the server.

13.3. The Winframe Server you have selected is not accepting connections

Most likely that the Citrix Metaframe has not been installed or has not been configured correctly. Check that the **ica-tcp** session is installed and enabled (use **Terminal Server Connection Configuration** in **Administrative Tools**). Check also that Logons are enabled (select the **ica-tcp** connection, then click on **Connection|Edit…** and then the **Advanced…** button).

13.4. Error: Cannot find given server (Error number &1660A)

This error can result from a number of factors. Check the following:

- The server Computer Name has been configured correctly in the DHCP Manager **067 Bootfile Name** option - this must be the same as is configured in the **Control Panel|Network|Identification** field. Note that the case of the letters is unimportant -ie Upper- or Lower-case letters can be used, or a mixture.
- The NetBEUI protocol is running correctly (**Control Panel|Network|Protocols**).

13.5. Error: Share name does not exist (Error number &16623)

Check the Share name entered in the DHCP Manager DHCP Options|Scope **Bootfile Name** is correct (see section *Configuring the Server*).

13.6. Error: File 'Lanman::Armboot.$.!tcboot not found (Error number &D6)

This will occur if the **!tcboot** folder does not exist in the client's boot path (Armboot$), if the **!run** file does not exist in the **!tcboot** folder, or if the entry in the DCHP Manager DHCP Options|Scope **Bootfile Name** is incorrect – in this latter case the file name in the error message will change according to what has been entered (see section *Configuring the Server*).

13.7. Bootfile name has not been configured by bootp.

Check that the client has not been configured for static ip addressing. On the Acorn Thin-Client, this can be checked by holding down both Alt keys and re-booting the client.

13.8. Error from server (Error number &1660C)

This error can arise if the password for the ArmBoot user has expired, or has been set to "*User Must Change Password at Next Logon*". Use **User Manager for Domains** (in Administrative Tools) to check that the following settings are activated:

13.9. Network Protocol Error (Error number &1660F)

This error can occur if the user ArmBoot has been deleted or is missing.
Either re-install Topcat, or add the Armboot user using **User Manager for
Domains** (in Administrative Tools) - see example in paragraph 13.8 - the
password should be set to the value given in the file:

```
Armboot\TCConfig\User
```

13.10. Error Access not allowed (Error number &166B4)

This error will occur if the user ArmBoot password is incorrect or missing.
Either re-install Topcat, or edit the Armboot user using **User Manager for
Domains** (in Administrative Tools) - see example in paragraph 13.8 - the
password should be set to the value given in the file:

```
Armboot\TCConfig\User
```

13.11. Error: User account has been disabled (Error number &1663D)

This error will occur if the user ArmBoot has been disabled.   Edit the
Armboot user using **User Manager for Domains** (in Administrative Tools) -
see example in paragraph 13.8 - and re-enable the account, by clearing the
Account Disabled check box.

13.12. Error: no such connection

This error has been seen when the user ArmBoot has been set to "*User Must
Change Password at Next Logon*" **and** "*User Cannot Change Password*".
These two options are not compatible with each other, and it is not normally
possible to set a user in this way.   However, this situation can occur if the

Armboot user's password expires - so ensure you have set the "*Password Never Expires*" option.   Use **User Manager for Domains** (in Administrative Tools) - see example in paragraph 13.8 - to clear the "*User Must Change Password at Next Logon*" option check box.

14.   Un-installing Topcat

If you need to un-install Topcat, use the **Control Panel|Add/Remove Programs** - select **Microlynx Topcat** from the list and click on the **Add/Remove** button. This will remove Topcat from your computer.   Note that the un-install program may not be able to delete the **…\Microlynx\Topcat** folder and sub-folders, as the 'shares' may prevent this;   just delete these manually.   Similarly, you will need to use **User Manager for Domains** to delete the default user **Armboot**.

15.   Other References

Further information relating to this product can be found on the following Web sites:

http://www.microlynx.co.uk/
http://www.microsoft.com/ntserver/
http://www.citrix.com/
http://www.acorn.co.uk/

- End -