OS/2 Network interconnectivity

KEITH MERRINGTON

OS/2 Network interconnectivity

OS/2 has various types of network interconnectivity:

- FTP-File Transfer Protocol
- Email
- Rsync
- ....
- Peer to Peer
  - IBM File and Print Services
  - Samba

Peer to Peer (P2P)

Characteristics of a Peer Network

- Peer-to-peer networking is an approach to computer networking in which all computers share equivalent responsibility for processing data.
- Peer-to-peer networking differs from client-server networking, where certain devices have responsibility for providing or "serving" data and other devices consume or otherwise act as "clients" of those servers.
- Computers in a peer-to-peer network run the same networking protocols and software.
- Peer networks devices are often situated physically close to each other but some peer networks, utilize the internet and are geographically dispersed worldwide.
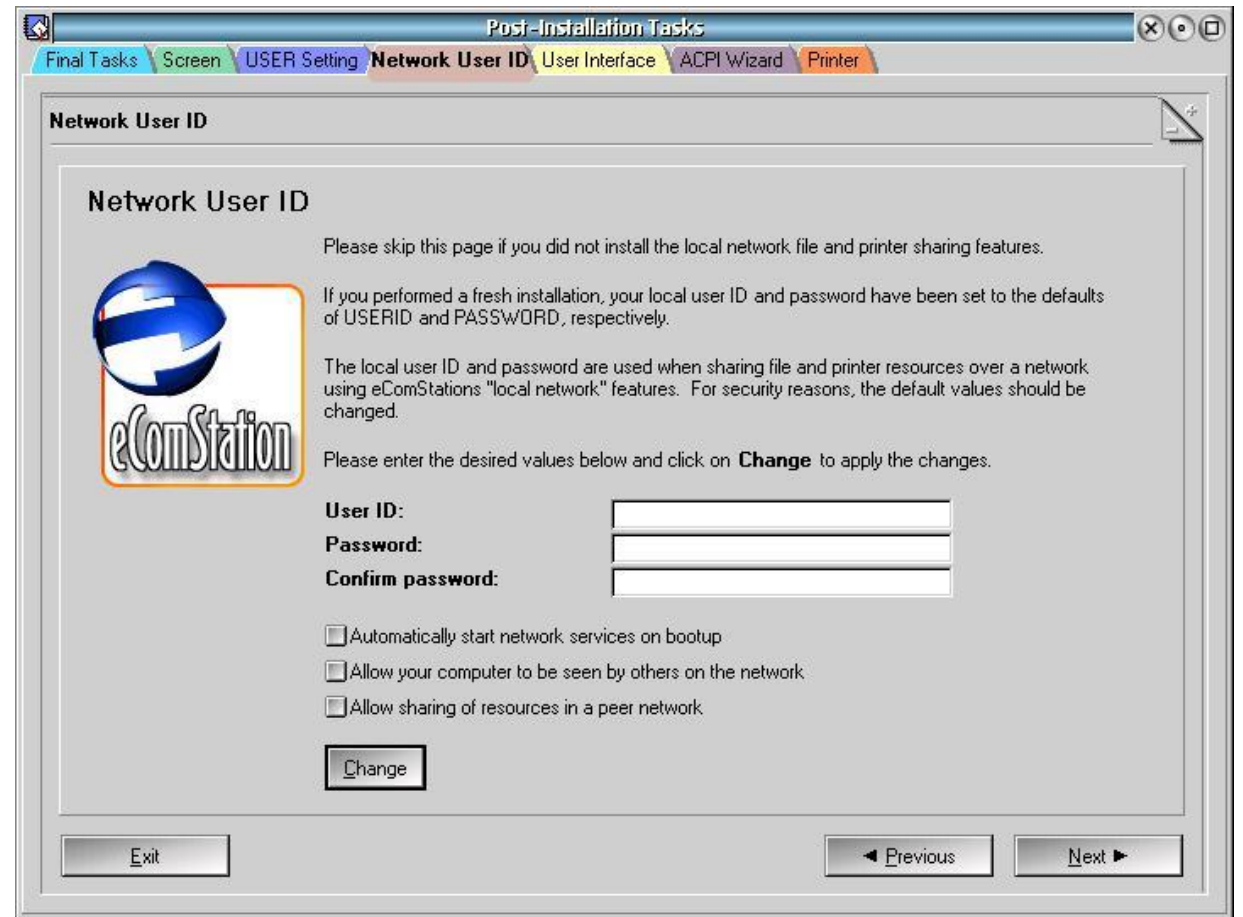
IBM File and Print Services

- IBM's SMB (Server Message Block), became the cornerstone for Windows networking

- Is robust works well within OS/2

- Poor security

- Due to changes in network protocols no longer works well with Windows and other networks.

- This protocol is still available under ArcaOs and can be installed during the installation of ArcaOS. However there are some actions you need to do!

Installation IBM File and Print Services - Ecs

During installation of Ecs on the network page just select IBM File and Print Client

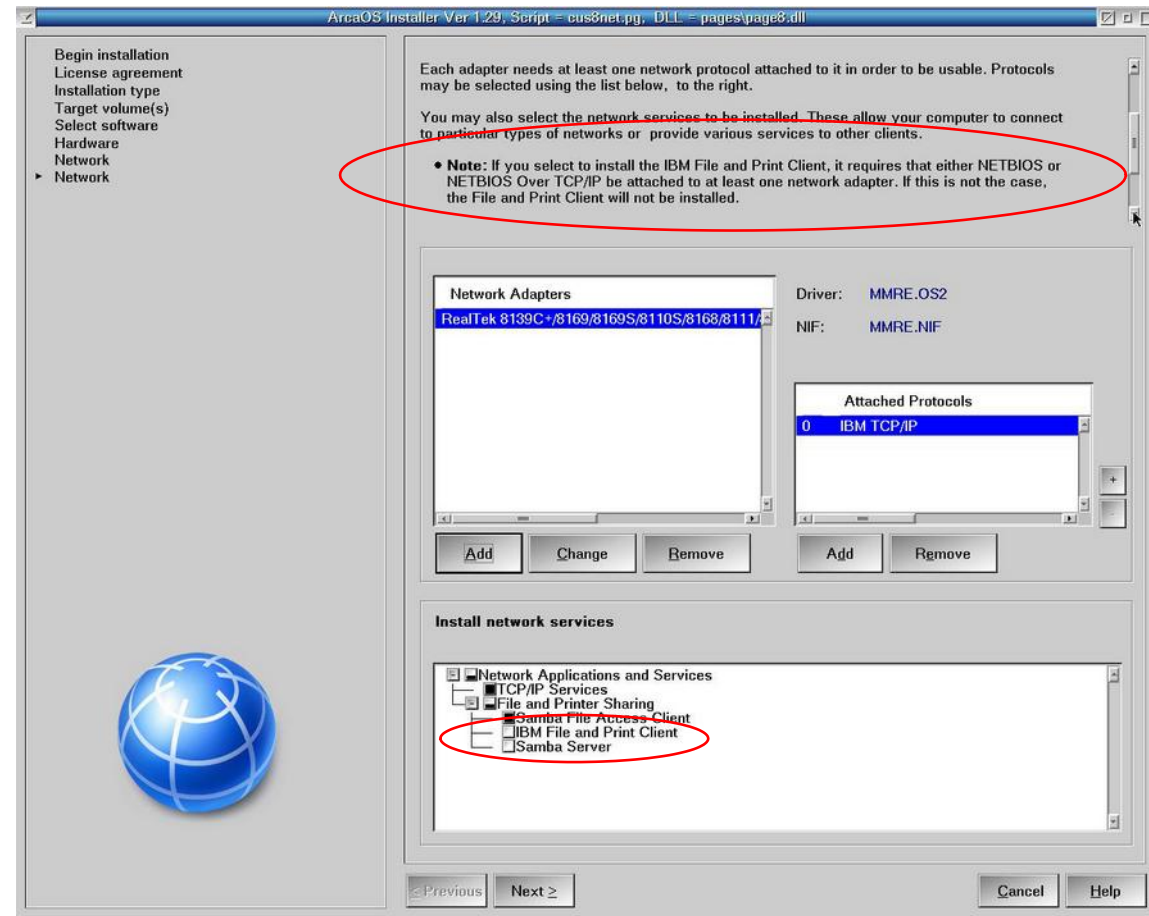During the Post installation phase, select the Network User ID tab and fill in as required

If you need to do this again run x:\ecs\system\sguide\install\run1st.cmd (where x is your boot drive)
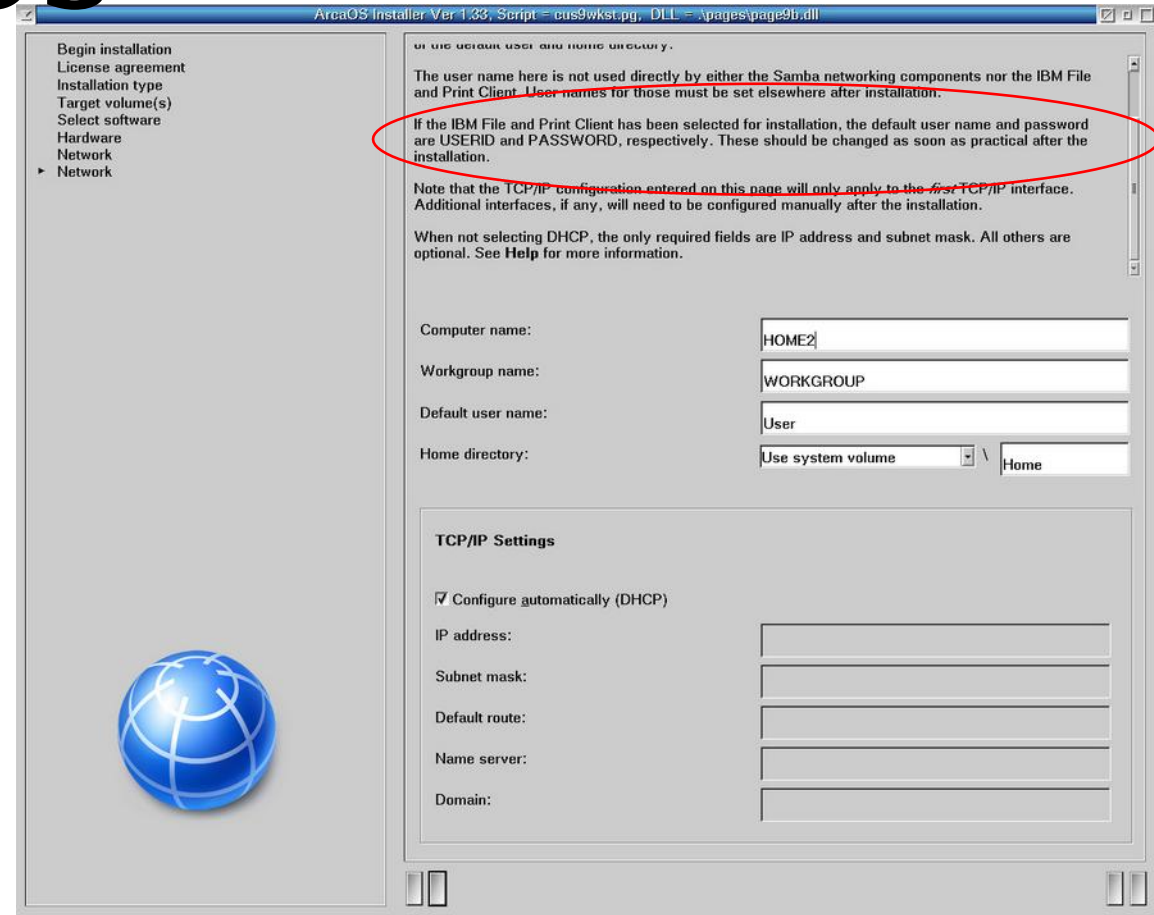
Installation IBM File and Print Services - ArcaOS

During installation of ArcaOS on the network page

- Add the protocol NETBIOS or NETBIOS over TCPIP
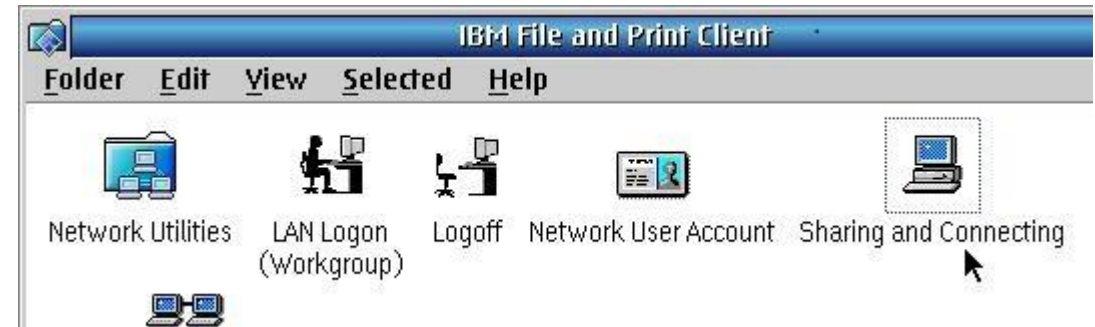
- Select IBM File and Print Client

Installation IBM File and Print Services - ArcaOS

During installation of ArcaOS on the workstation page there is the information about the default user name and password -
which you might miss in the info text if you did not scroll down

Configure - IBM File and Print Services -ArcaOS

- After installation you need to set up your userid and password by selecting 'Sharing and Connecting'.
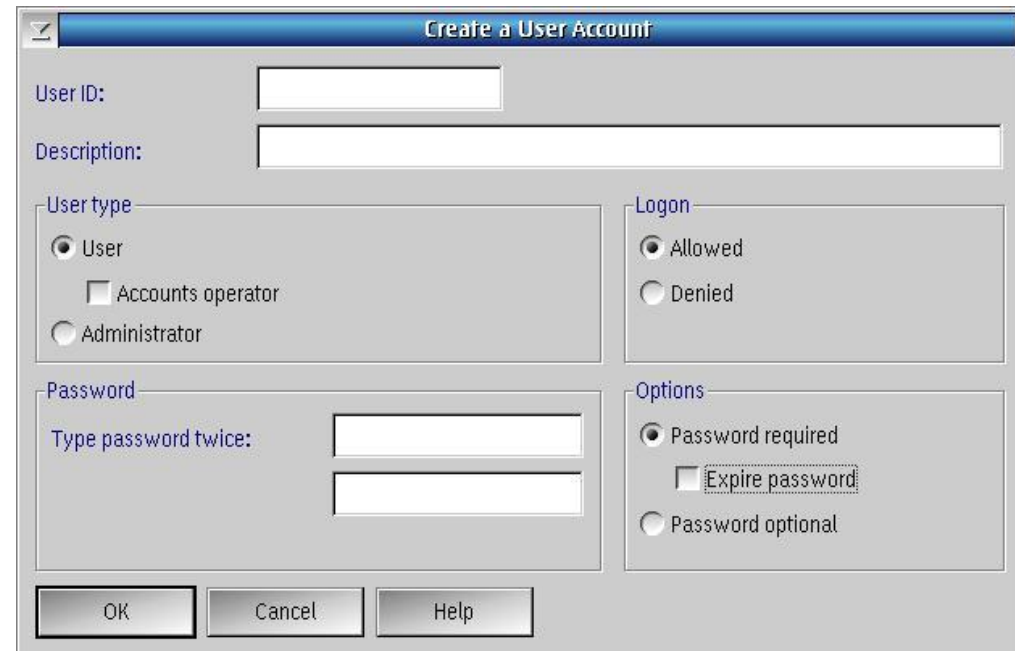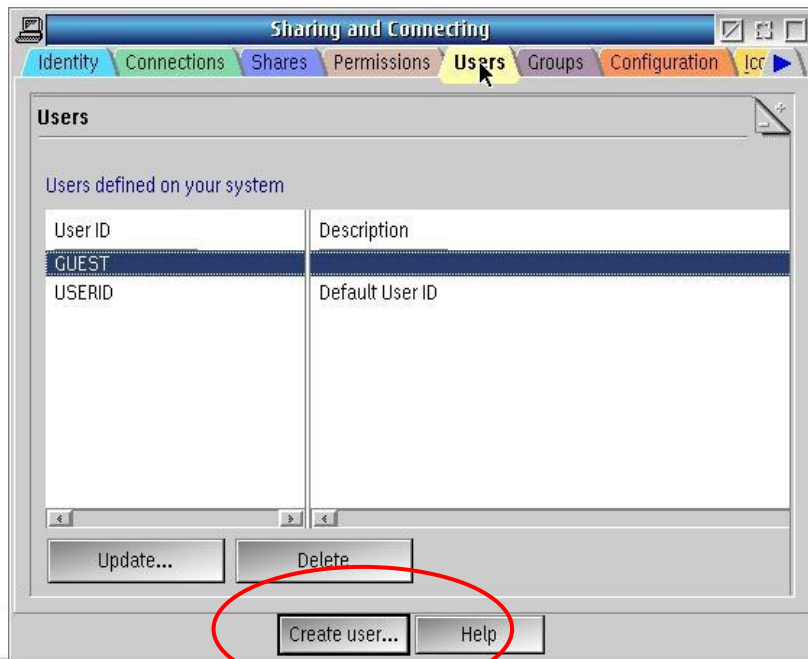

- After selecting the file and print client will be started and when ready (±5 secs) a login popup will be given.

- The defaults are USERID and

    PASSWORD

Configure - IBM File and Print Services

After login go to the User tab in "Sharing and Connecting" and then 'Create user …' to add yourself with a new name and password. After checking that this works, delete the USERID entry!
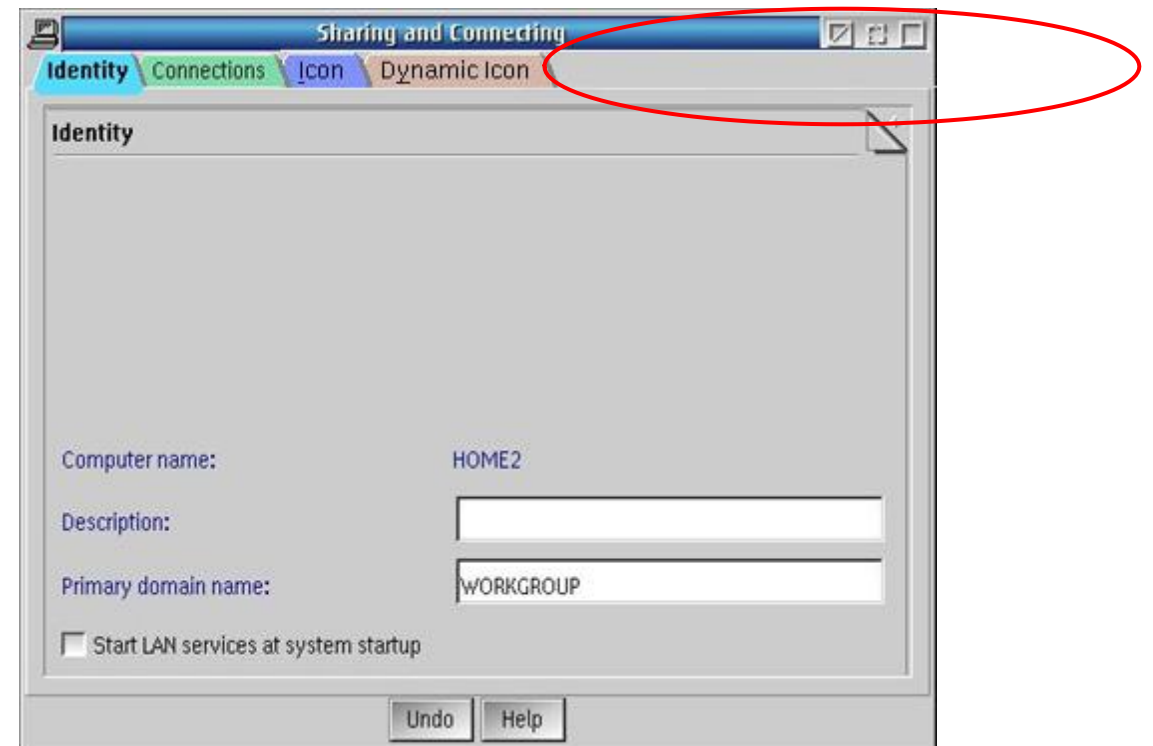
Configure - IBM File and Print Services

Make sure you give yourself administrator rights as otherwise you are limited
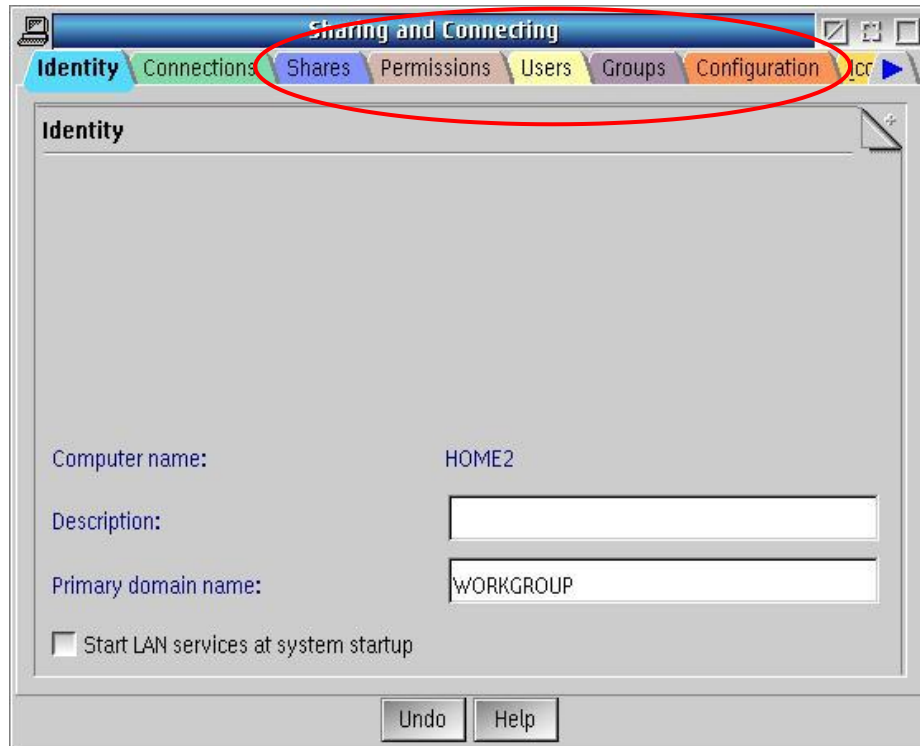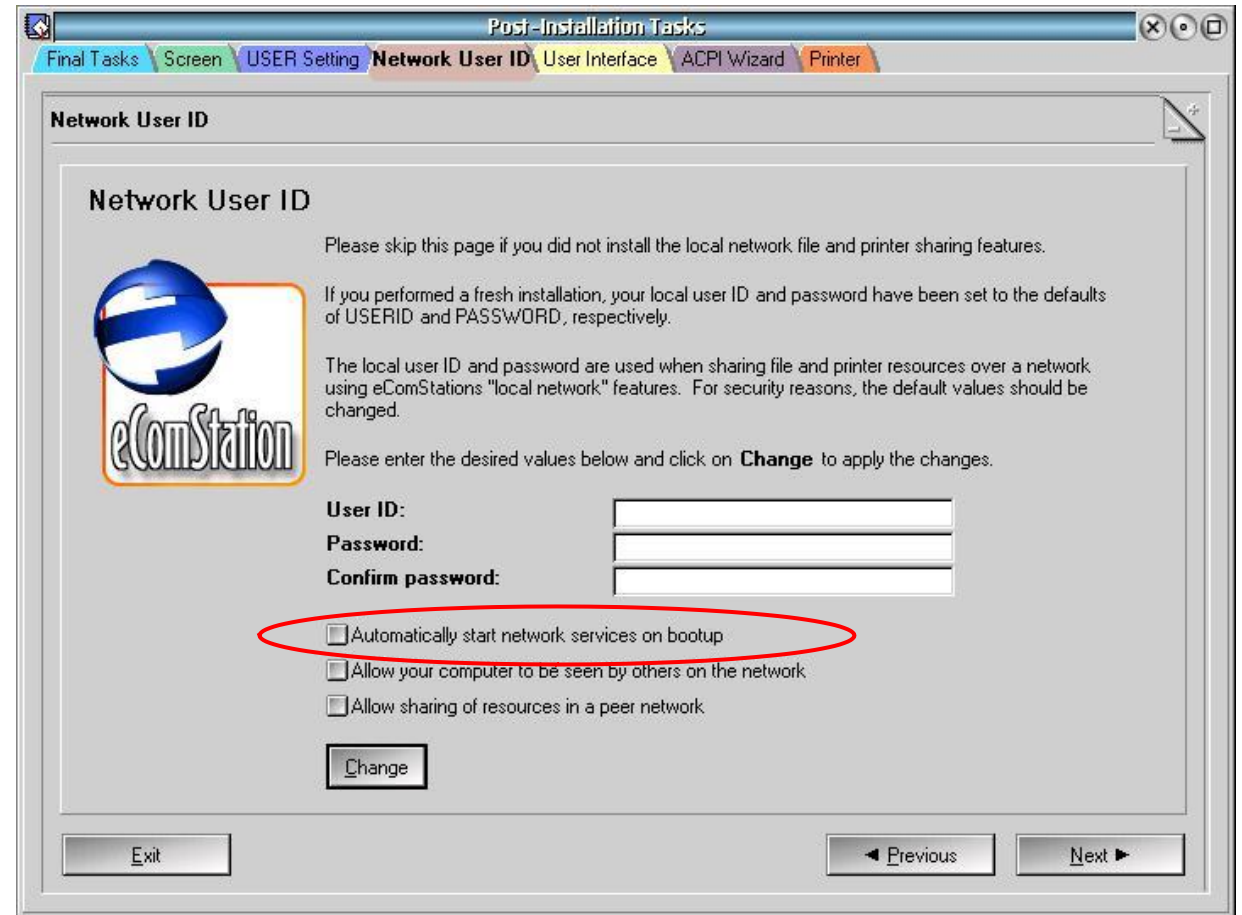

with adminstrator rights

without

Configure - IBM File and Print Services -Ecs

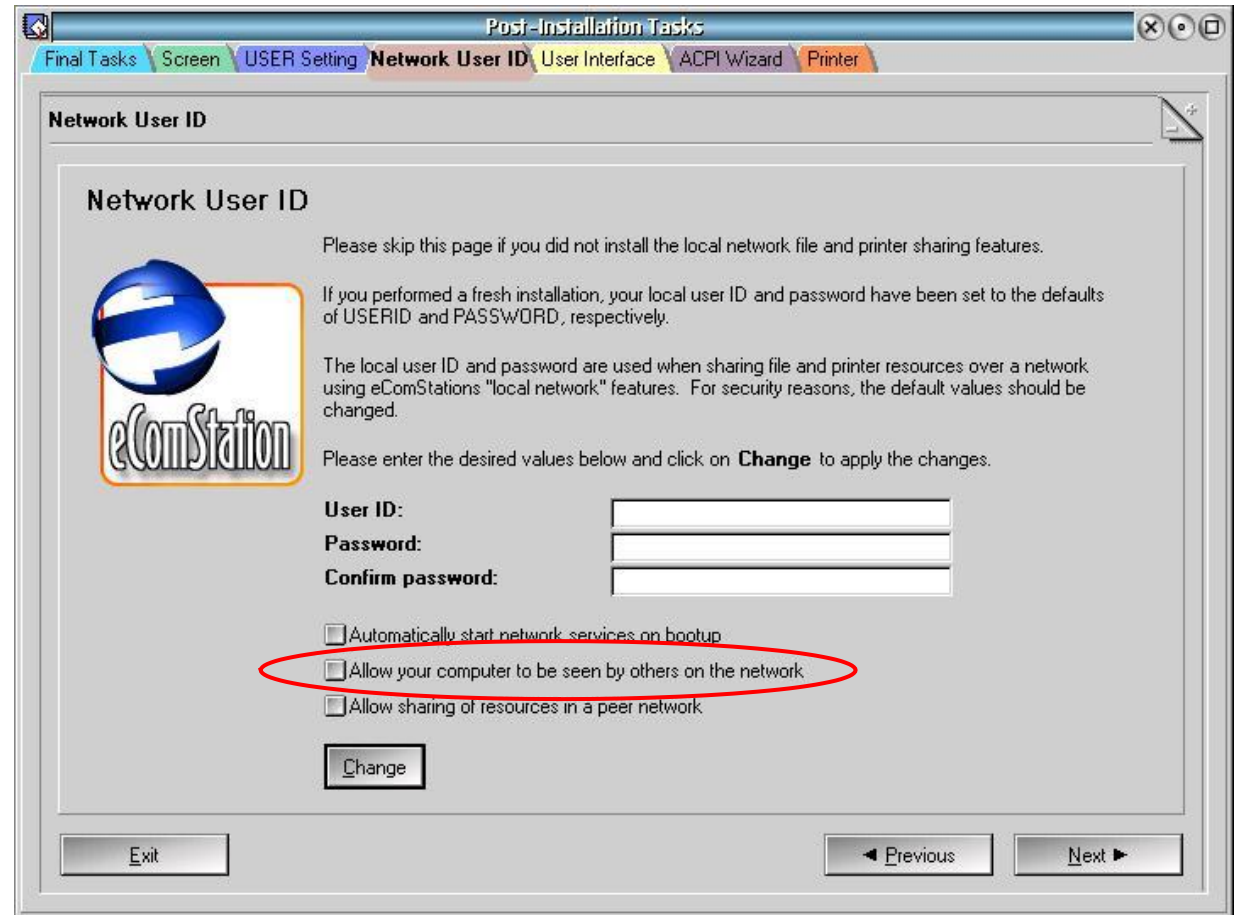- In Ecs you had the option to :

  1. Automatically start network services on bootup

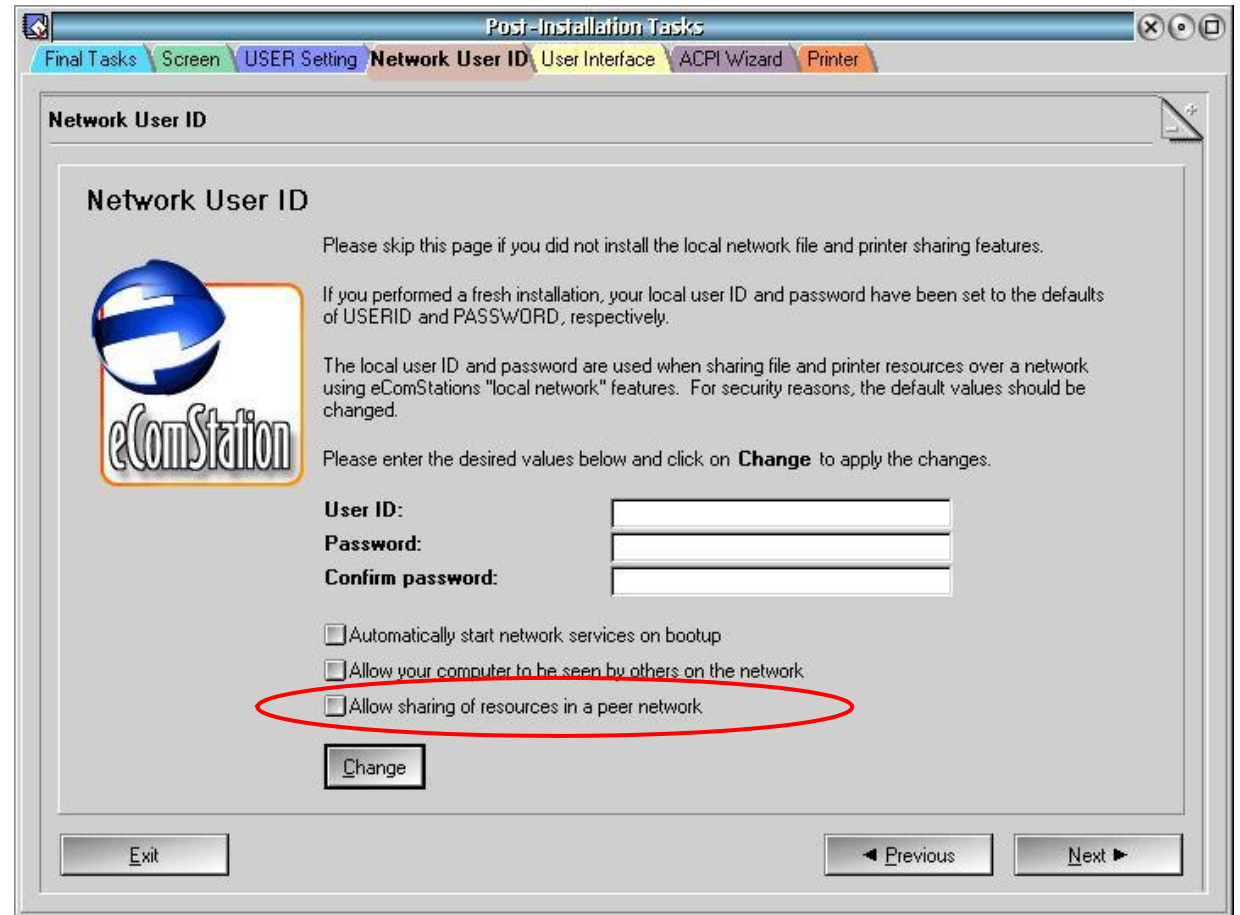# Configure - IBM File and Print Services -Ecs

- In Ecs you had the option to :

  1. Automatically start network services on bootup
  2. Allow your computer to be seen by others on the network

Configure - IBM File and Print Services -Ecs

- In Ecs you had the option to :

1. Automatically start network services on bootup
2. Allow your computer to be seen by others on the network
3. Allow sharing of resources in a peer network

Configure - IBM File and Print Services - ArcaOS

In ArcaOS

your computer will by default be seen by others on the network

To hide, edit IBMLAN/IBMLAN.ini and change the line from
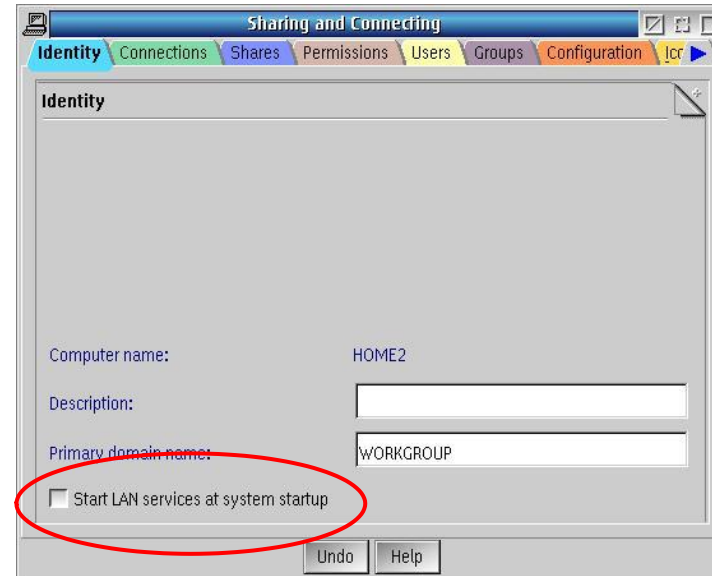   srvhidden = no
to
srvhidden = yes
   in ARCAOS srvhidden is set to no, in ECS it is set to yes)

Configure - IBM File and Print Services

In ArcaOS

- to Automatically start network services on bootup select in the Tab, "Identity" in Sharing and Connecting the "start LAN services at system startup" button, or use NET START PEER.

Configure - IBM File and Print Services

Allow sharing of resources in a peer network

In ArcaOS by default sharing of resources is enabled. This is controlled by the line (in IBMLAN/IBMLAN.ini)

wrkservices = MESSENGER,PEER

Configure - IBM File and Print Services

- To change your computer name and or domain name after installation edit the file X:\IBMLAN\IBMLAN.INI and at the lines
  Computername = HOME2
  Domain = WORKGROUP

- To use multiple domains, add the other domains to the line
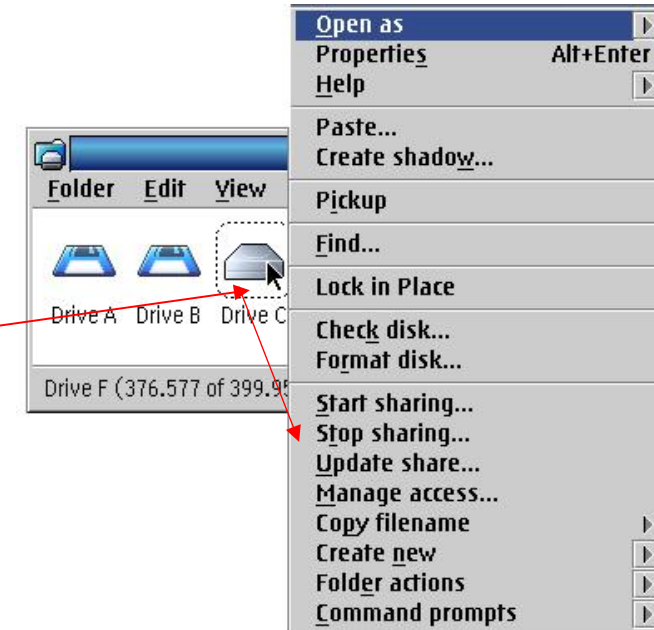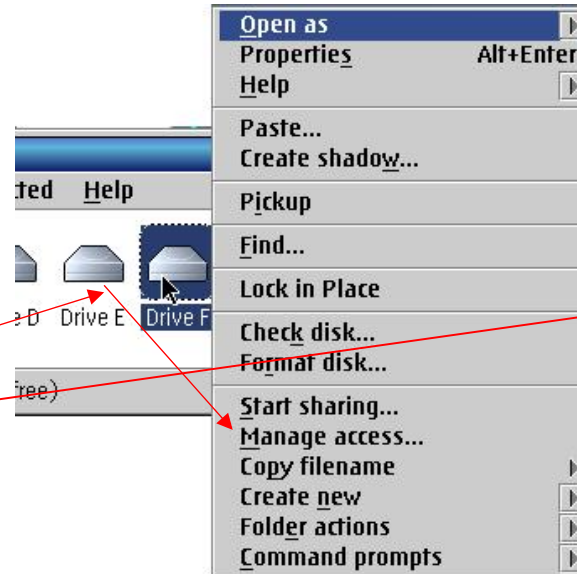 othdomains =

  Seperated by commas, eg:
  othdomains = MYDOMAIN,TEST

- In both cases either reboot or stop and start the requester

Selecting your shares (method 1)

To allow sharing of resources in a peer network select what you want to share:
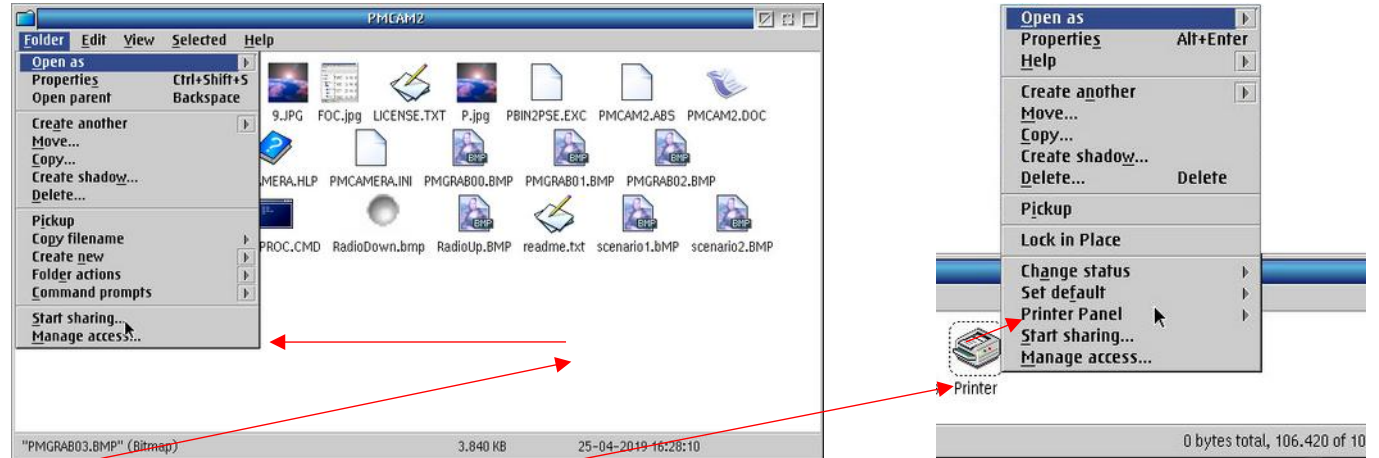
• Disk

Selecting your shares (method 1)

To allow sharing of resources in a peer network select what you want to share:

• Disk
•Directory
•Printer
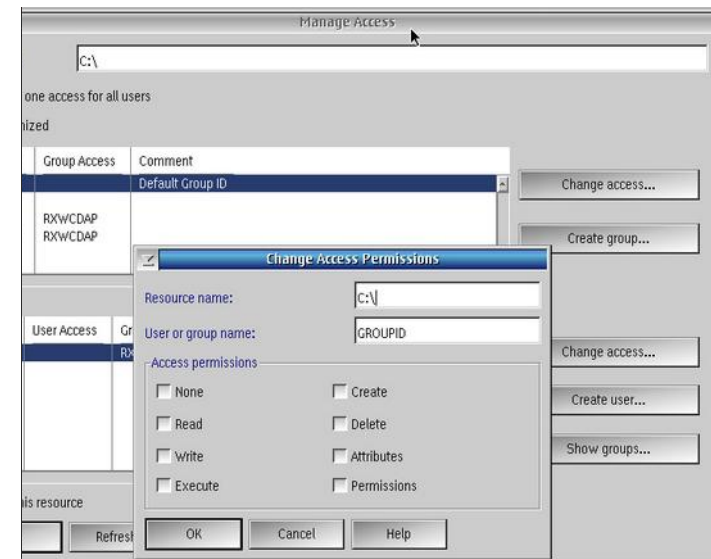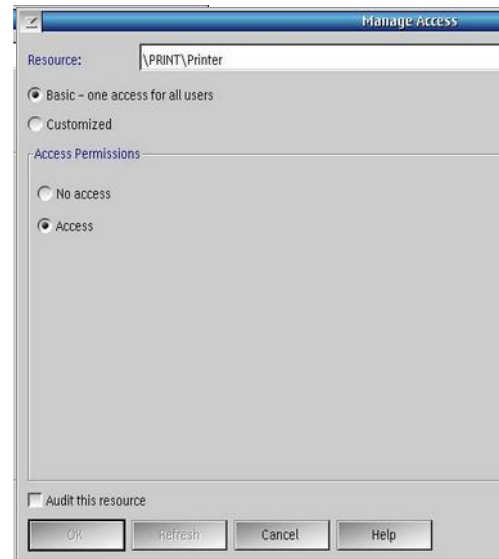•Serial devices

Selecting your shares (method 2)

18

Managing access – Basic /Customised

Basic   Customised

Disk/Directory
Printer

Note in Access Permissions : Do not select any permissions if you do not want the user to have any specific permissions to the resource. Then the user has only the group permissions. This is not the same as selecting None, which restricts the user from any access to the resource.

Access Permissions (Group and/or User)

None(N)   Cannot access the resource.

Read(R)   Read or run files not change them

Write(W) Only write to files not create them

Create(C)   Create and write files & subdirectories

Execute(X)   Run programs in the directory or drive*

Delete(D)   Can delete files & subdirectories*

Attributes(A)   Can change the attributes (i.e. Archive   *
attribute)

Permissions (P)   Can change the access permissions for the
* resource.

These permissions are valid for directory and drive resources only. Not for printer or serial device resources.
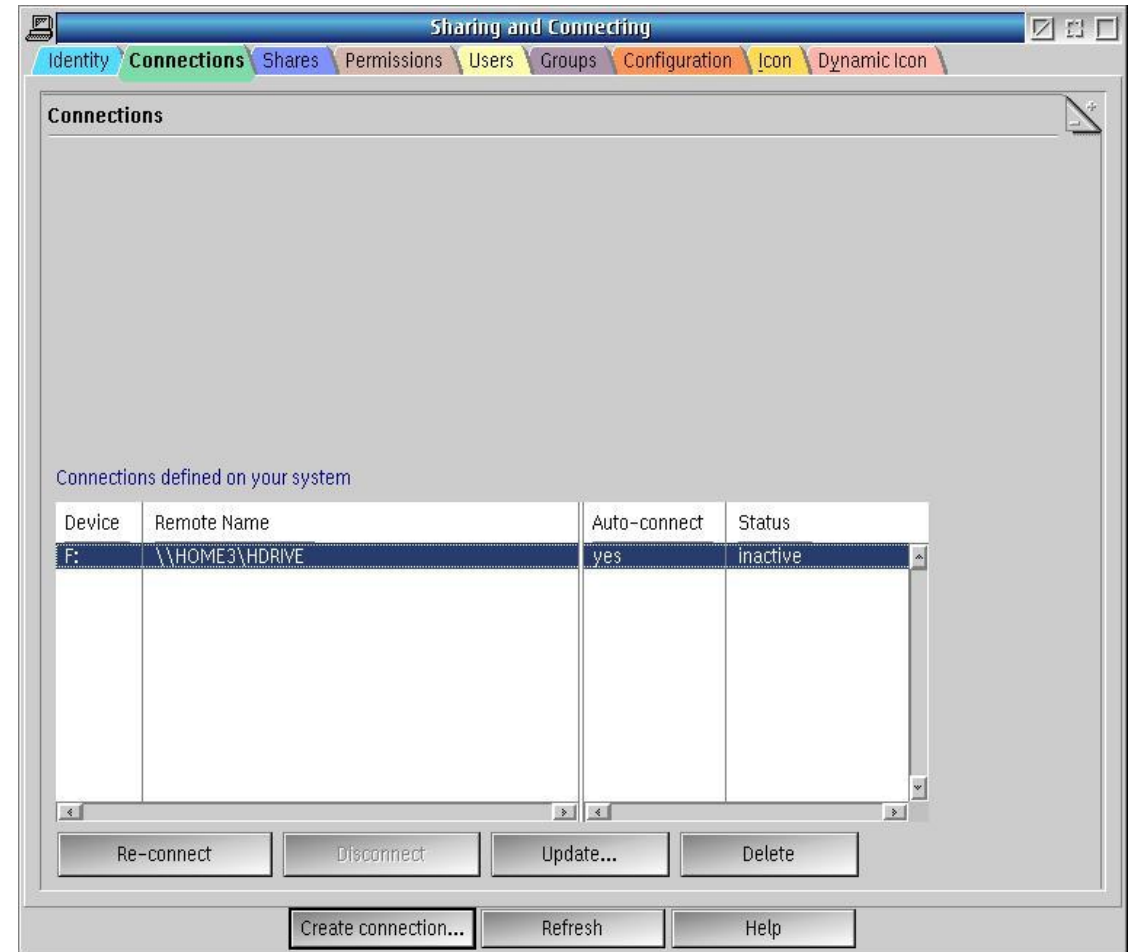
Sharing and Connecting – Connections

The status of any connections to this PC from another network resource

•Inactive: A connection that was previously available (previous session)

•Active : A connection that is available

Note: you can also re-connect /create /delete or update a resource
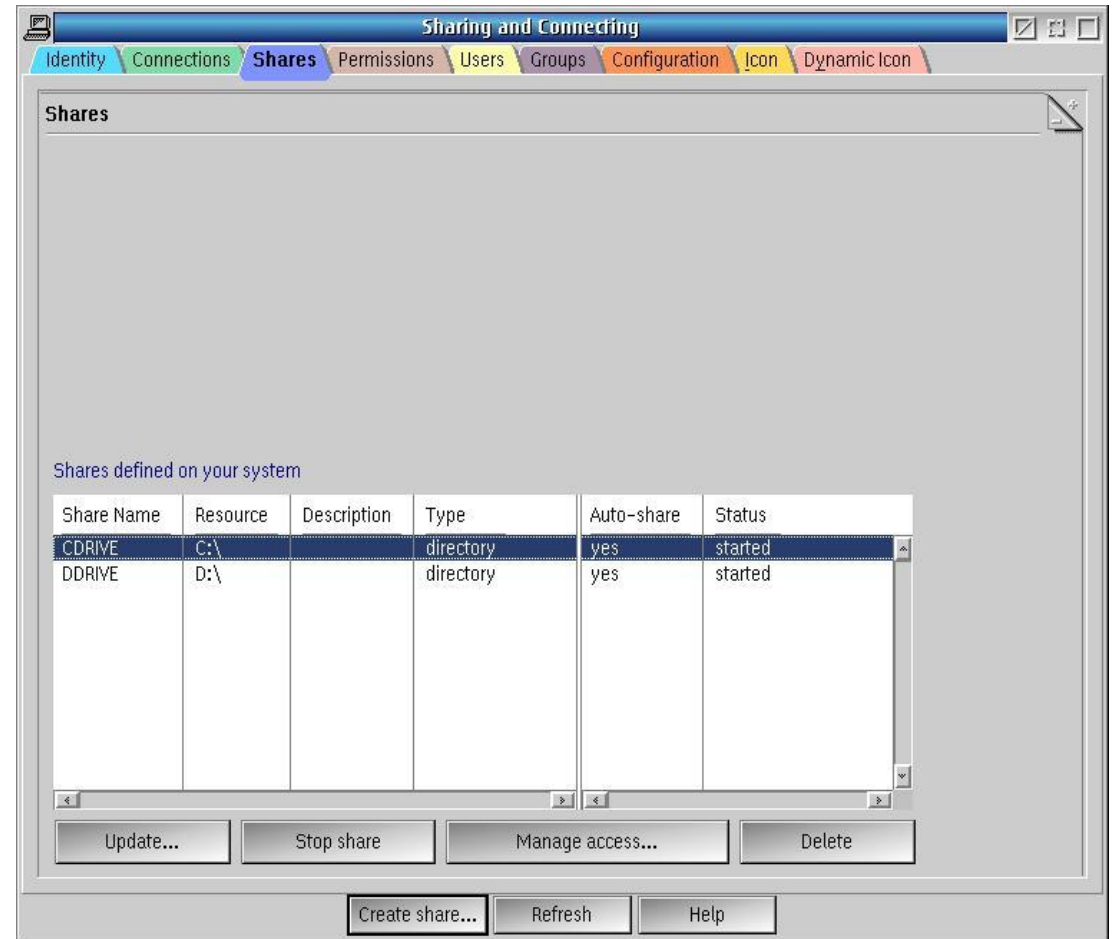
Sharing and Connecting - Shares

The status of any shares on this PC

•Started : The share is available

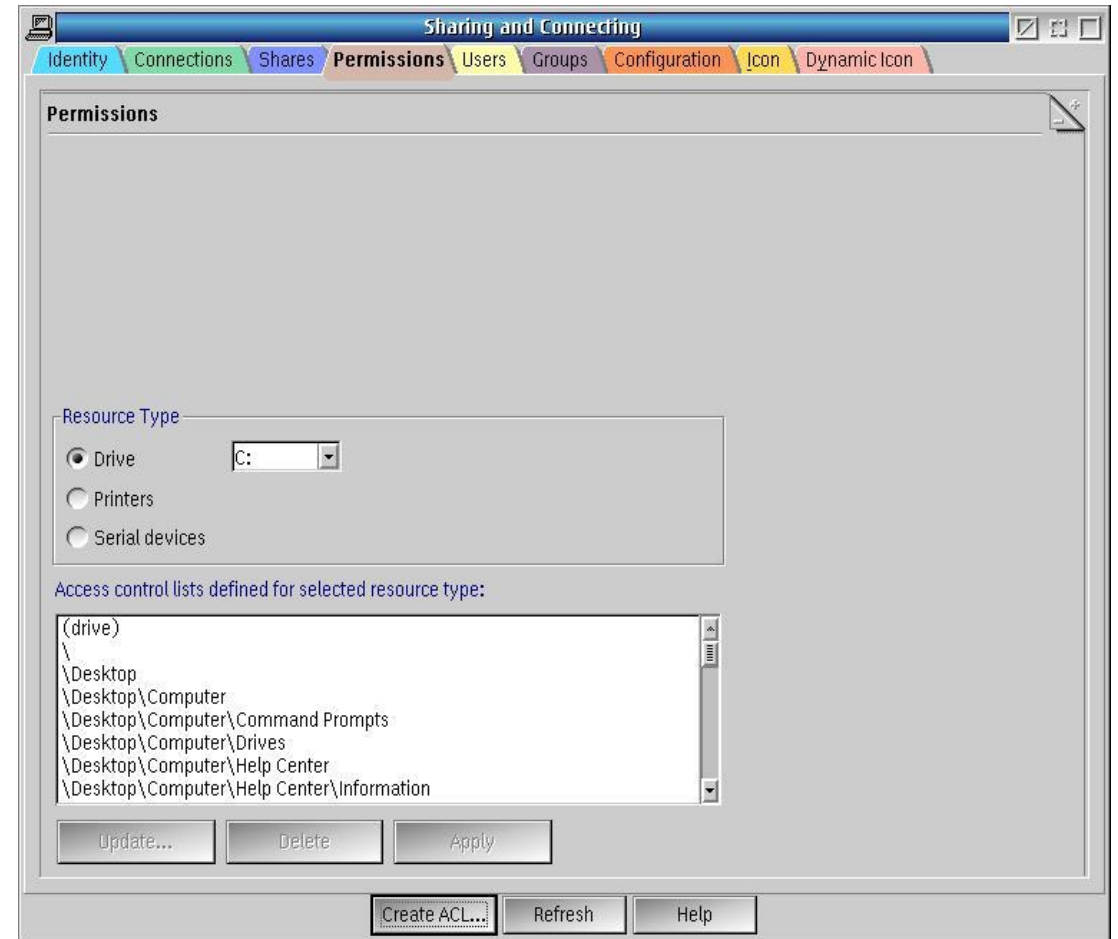•Stopped : The share is not available

Note: you can also start / stop /delete create or manage the access of a specific share

Sharing and Connecting - ACL

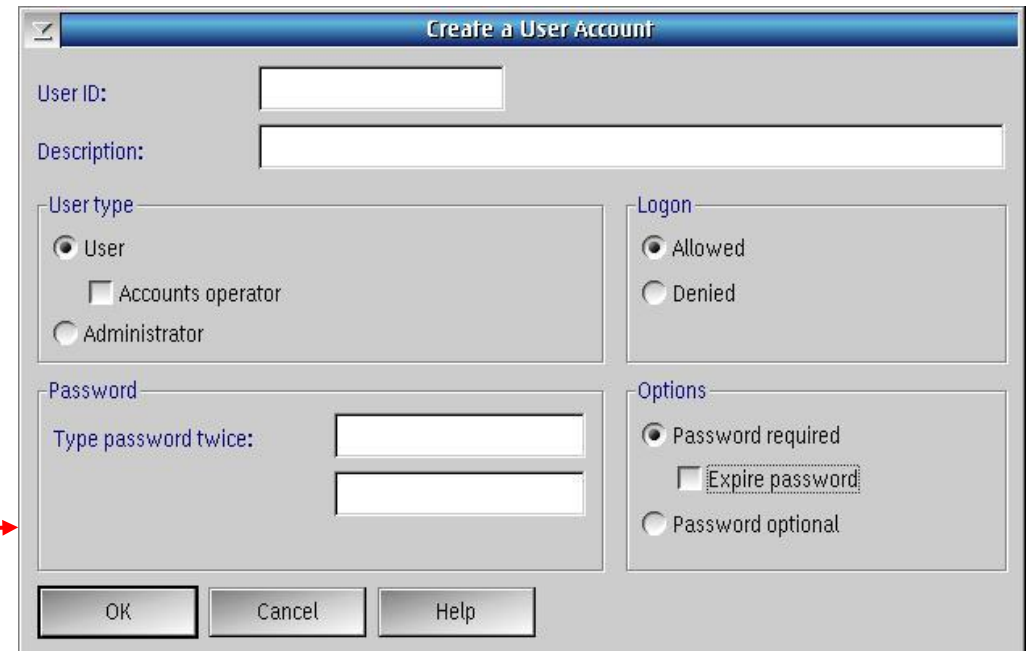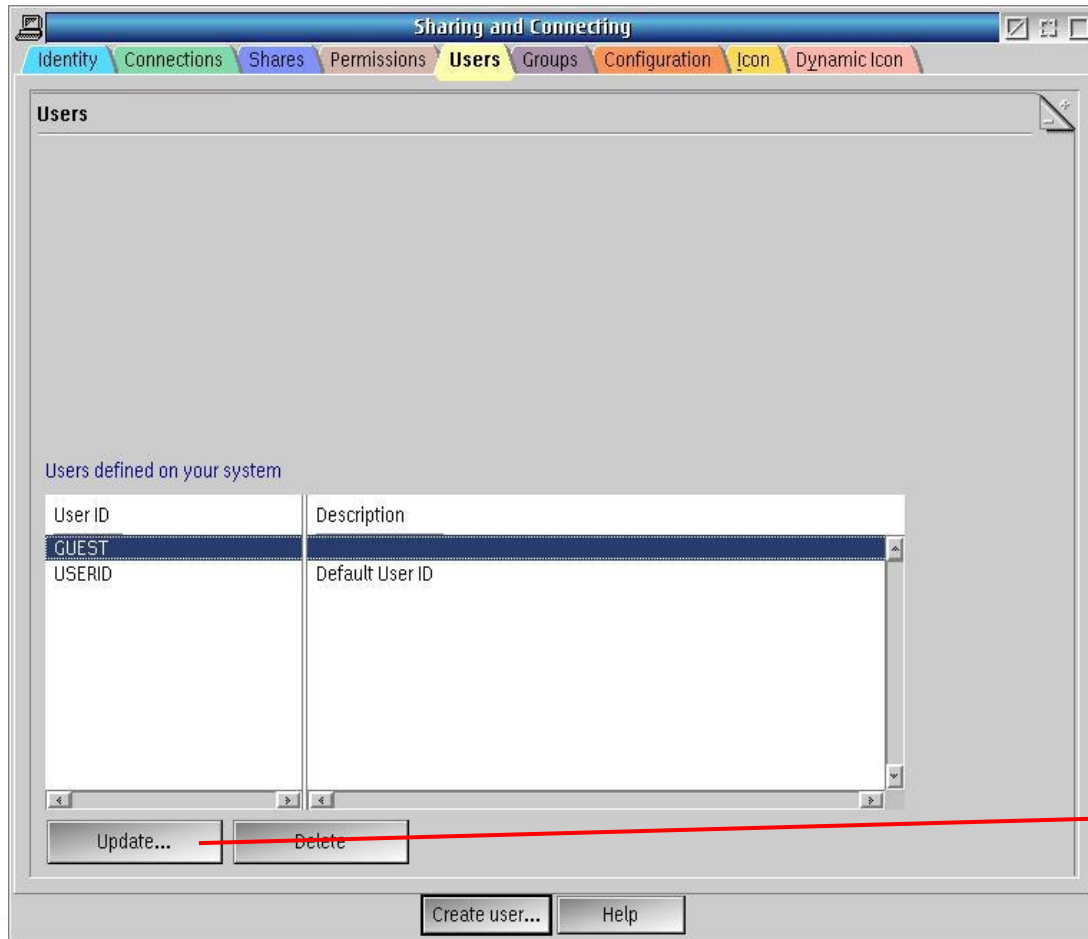The access control list (ACL) defined to a particular drive, printer or serial device.

Note: you can, using the GUI create an ACL

Sharing and Connecting - Users

Here the current users are listed and can be changed / updated /deleted

Sharing and Connecting - Groups

Here the current groups are listed and can be changed / updated /deleted
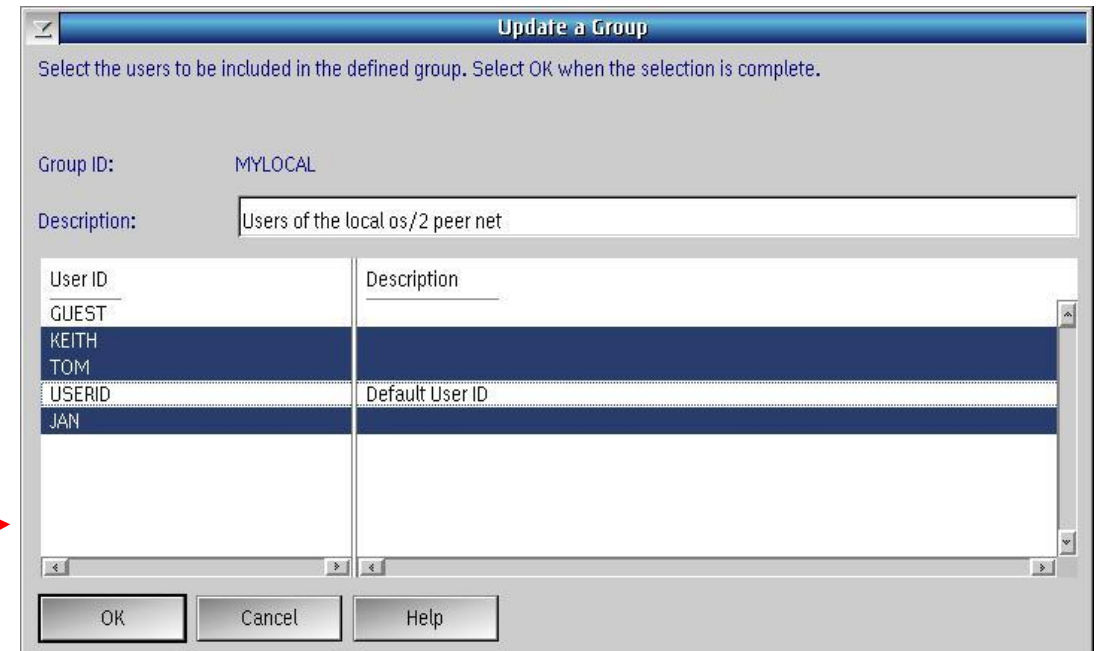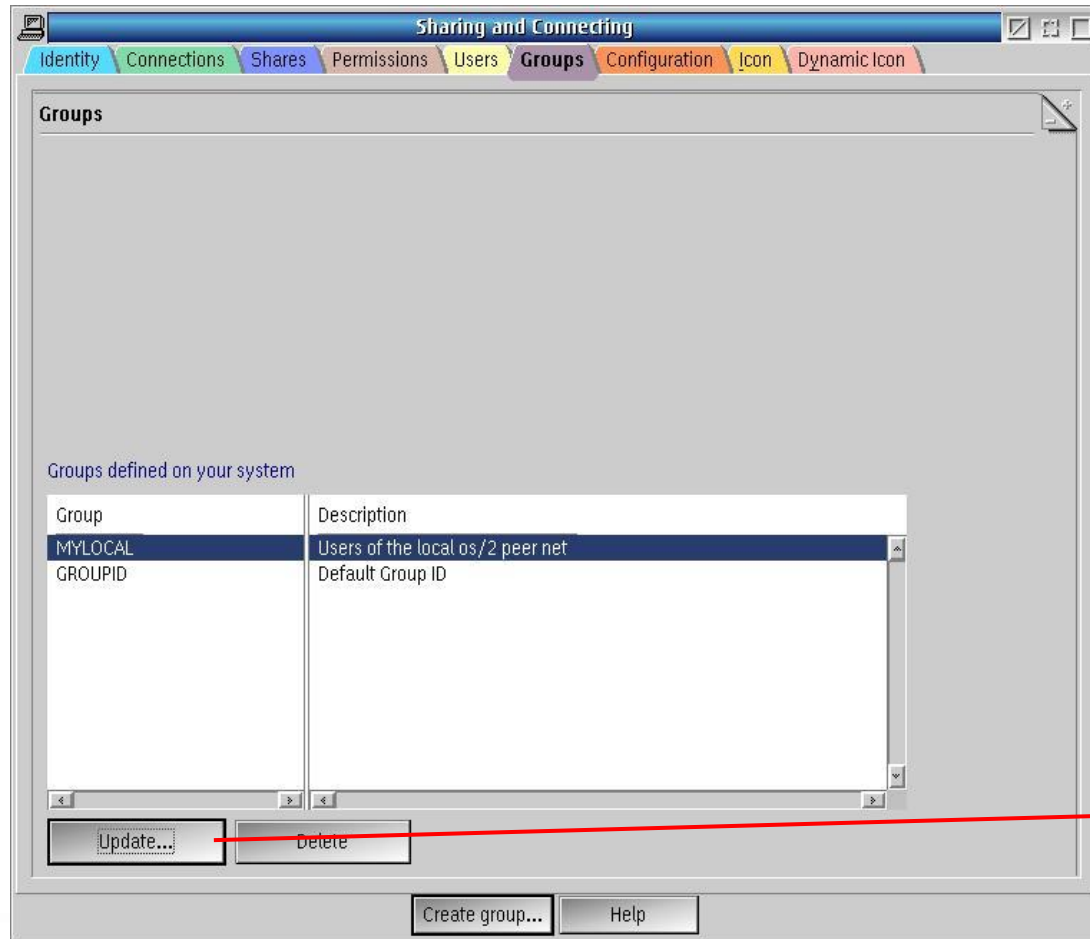
Sharing and Connecting - Configuration

page 1

page 2

Samba

- Samba is a free software re-implementing the SMB networking protocol
- Samba provides file and print services for various Microsoft Windows, Linux and OS/2clients
- The name originally SMB server had to be changed as this was a trademark of Syntax.
- The name Samba was the first word found using grep -i '^s.*m.*b' /usr/share/dict/words

Samba – OS/2

In OS/2 there are two parts to SAMBA

1. ArcaMapper - the Samba client in ArcaOS (3.3.16)
2. Samba Server - the Samba server in ArcaOS (3.6.25)

Currently not at the same level!

The new solution - Samba

ArcaMapper is the OS/2 client in ArcaOS which will connect to other networks supporting SMB such as:

- Windows
- Linux
- OS/2

- It is found in the Network folder on the desktop
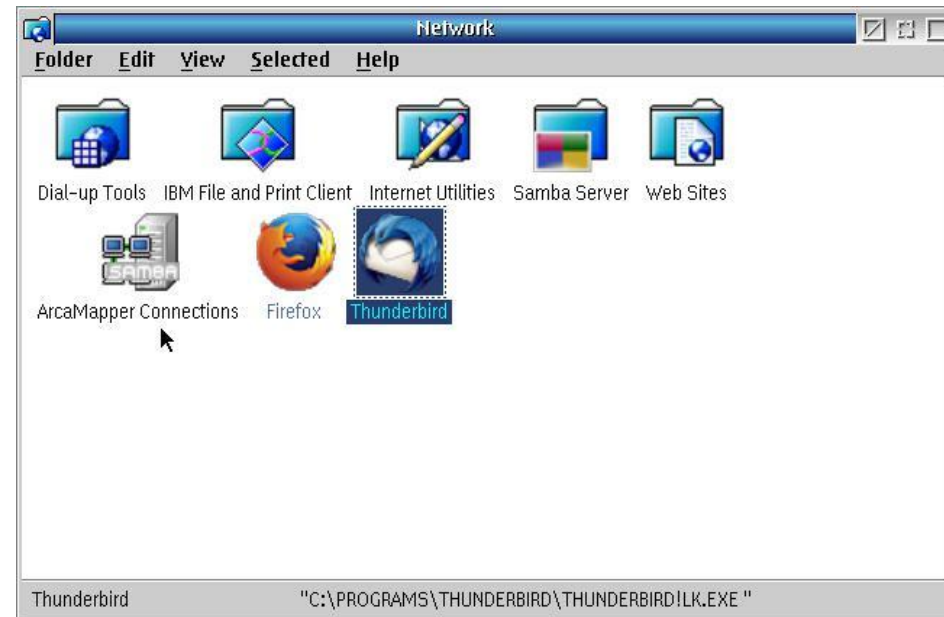
Samba Client – ArcaMapper

- A virtual drive is "Attached" to the system and the various shares are "Mounted" to the virtual drive.
- NETDRIVE provides OS/2 with virtual drives which allows ArcaMapper to map a share to a drive letter as OS/2 does not have Virtual drives
- One virtual drive can have multiple shares mounted to the same drive
- Normally you first "unmount" a share/resource and then "detach" the drive
- NETDRIVE does not directly support printers!

Samba Client – ArcaMapper
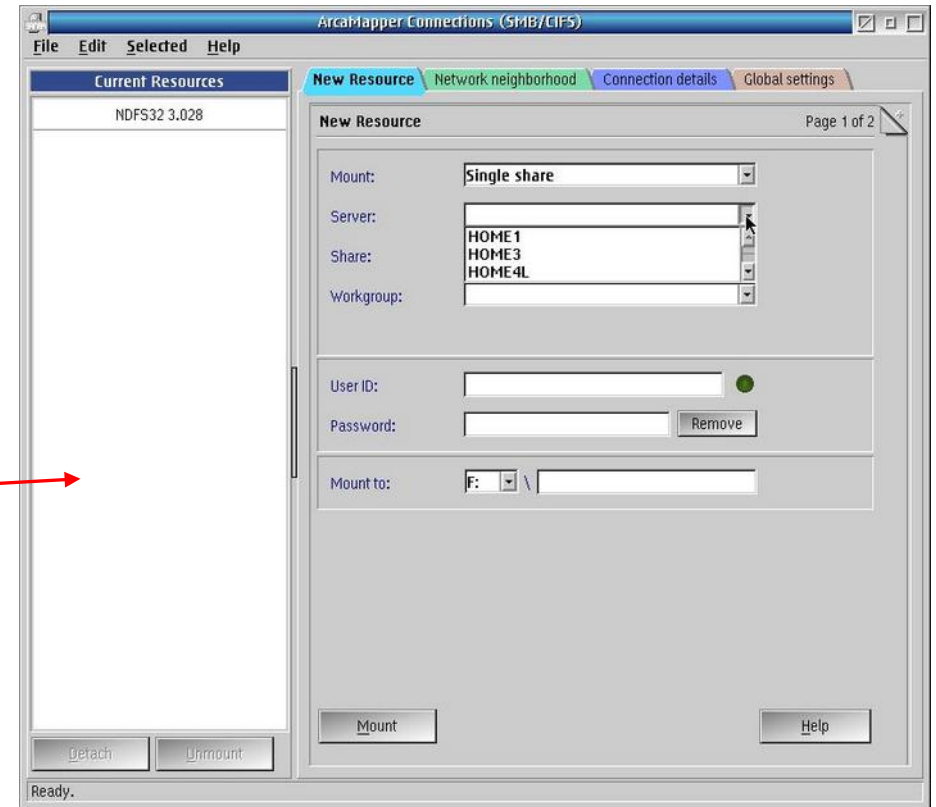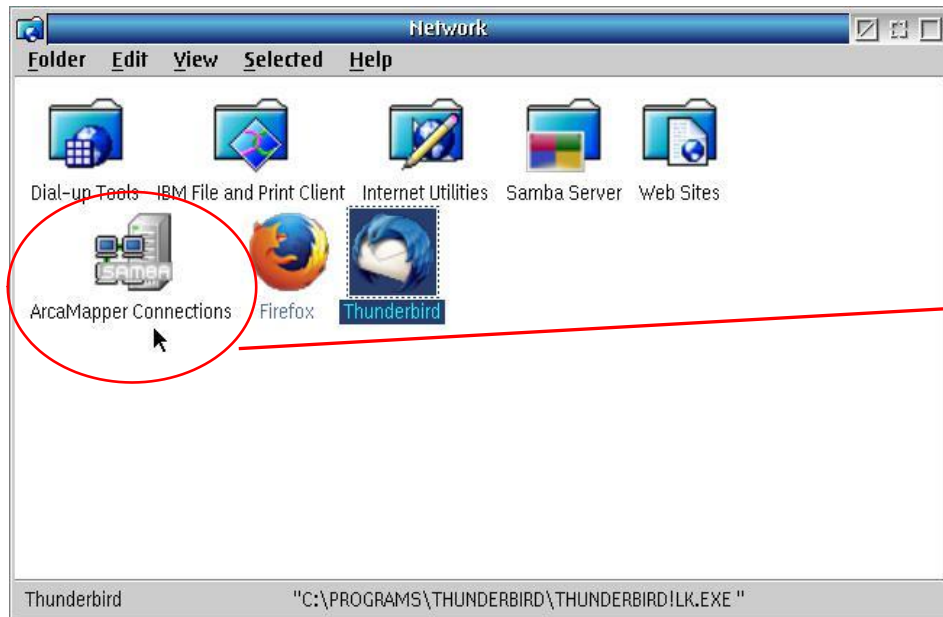
ArcaMapper - mount a share (method 1)

1. Select the type of share
   - Single share
   - All shares on server
   - All servers in workgroup

2. The Server

3. The Share

4. The workgroup

5. Enter User ID and Password

6. Select the virtual drive to mou

7. Press "Mount"
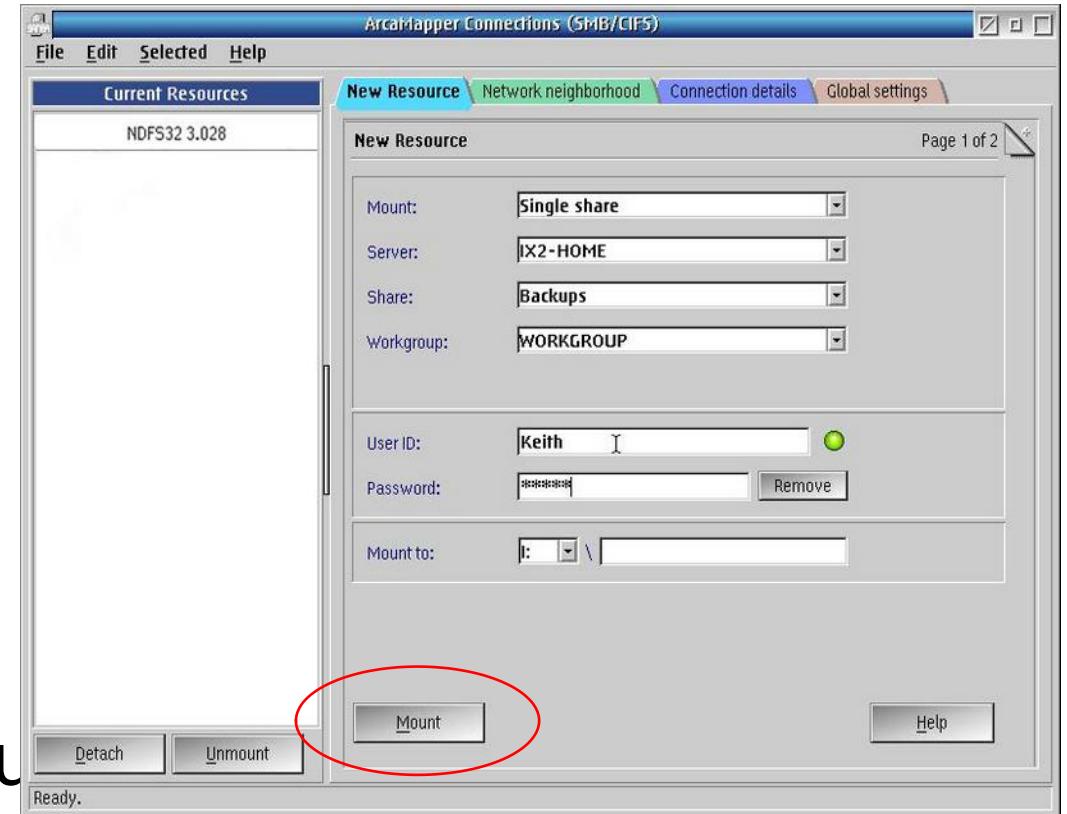
ArcaMapper - mount a share (method 1)

Notes:

The button *Remove* only clears your input, it does not remove a password?

The LED seems to have the same function as *Remove"* when pressed

Mount is in two parts:

- The virtual drive (auto attach)
- The mount point is effectively a subdirectory of the drive (auto creation)
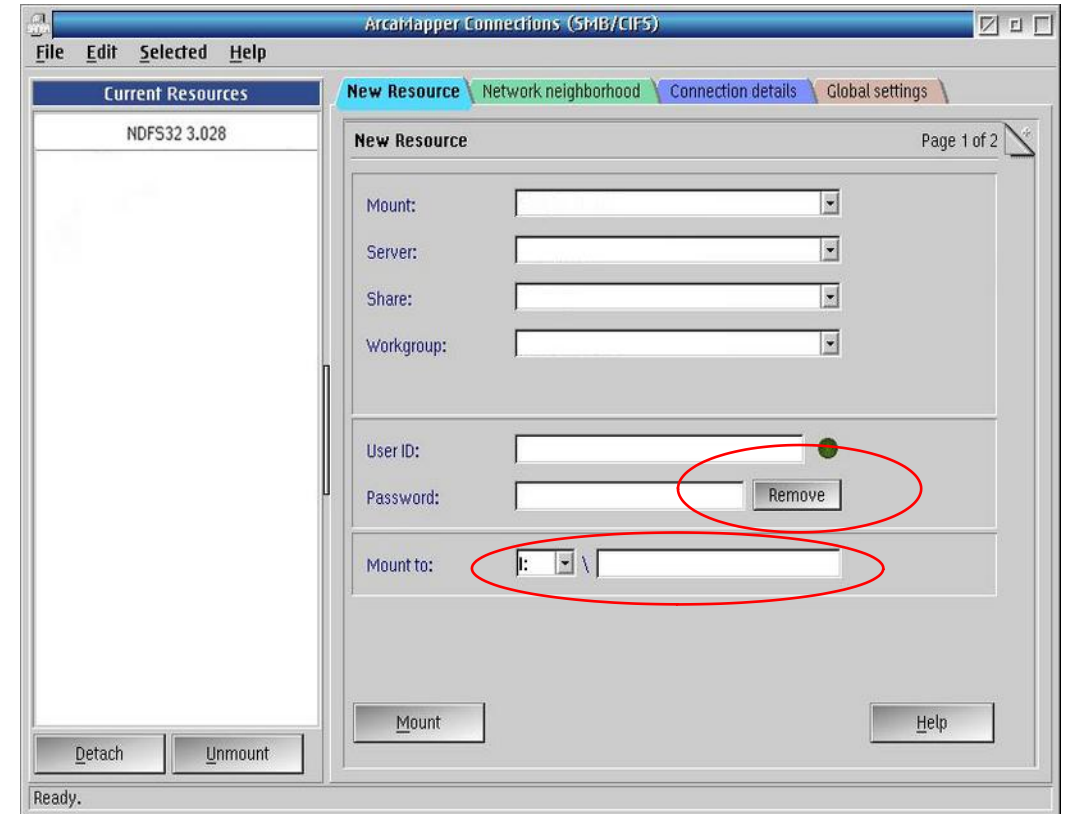
ArcaMapper - mount a share (method 2)
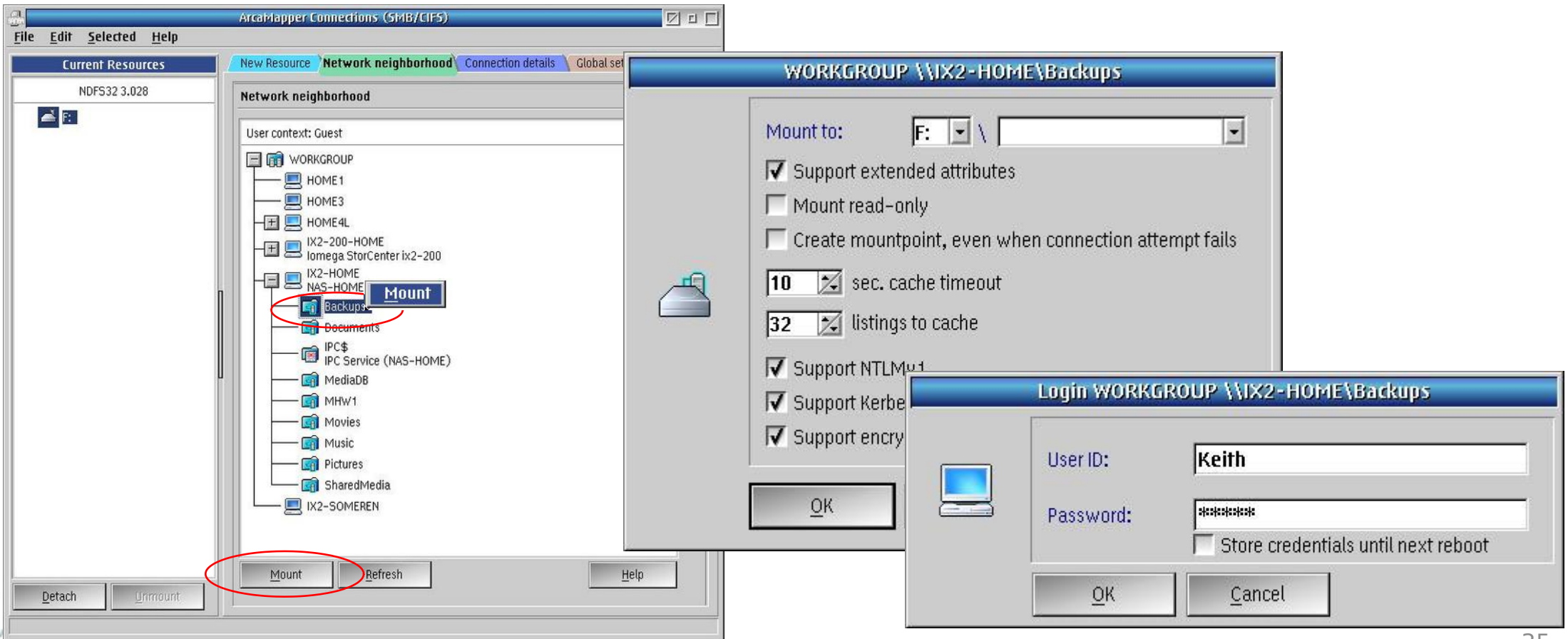
ArcaMapper - mount a share (method 3)

After having mounted you shares use the menu

   File -> Autostart -> Enable

So that next time when the startup folder is executed and your shares will be mounted.

The file X:\os2\arcamap.ndc is used to store the data
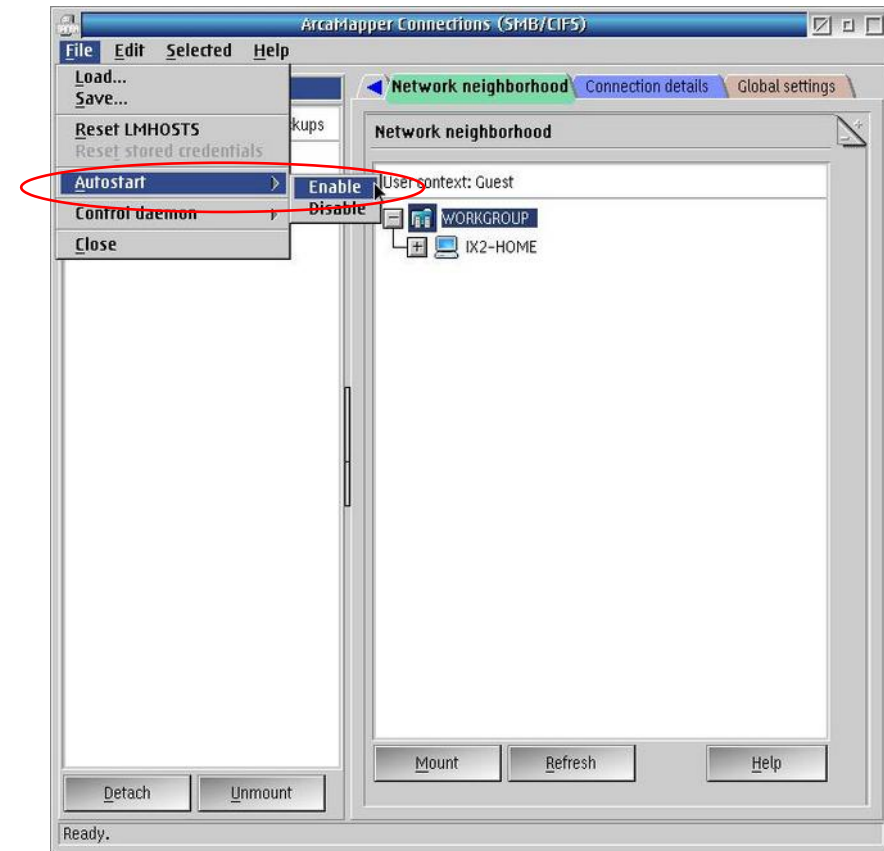
ArcaMapper - Network Neighborhood (**Nethood**)

In the TAB Network the various domains are shown with their shares.

The shares although for OS/2 (IBM Peer Share) are shown as are the Linux shares, the Windows (W10) shares are not shown!
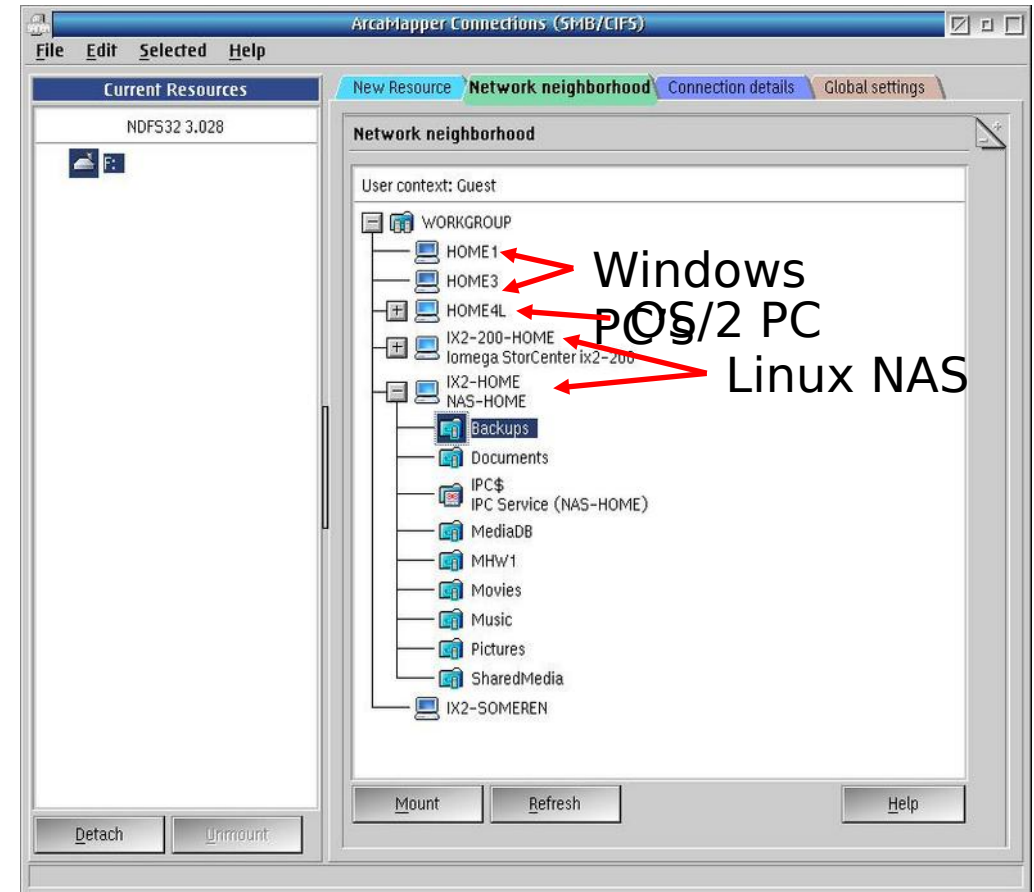
ArcaMapper – Nethood
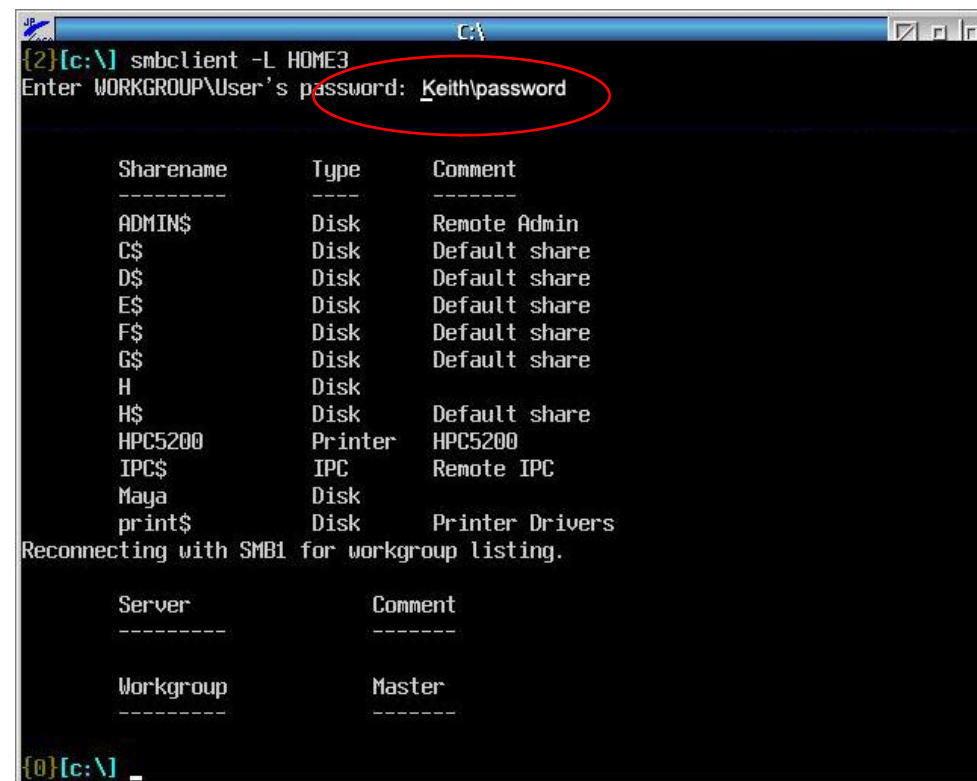
If you need to find the names of the Windows (W10) shares this can be done from the command line using the command smbclient:

smbclient -L Host

And then enter the user and password as

user\password

THE PASSWORD IS DISPLAYED IN PLAIN TEXT!

ArcaMapper – Network Nebourhood

On some windows (w10)machines you need also to specify the workgroup using -W followed by the workgroup

smbclient -L Host –W WORKGROUP

And then enter the user and password as

user\password

THE PASSWORD IS DISPLAYED IN PLAIN TEXT!
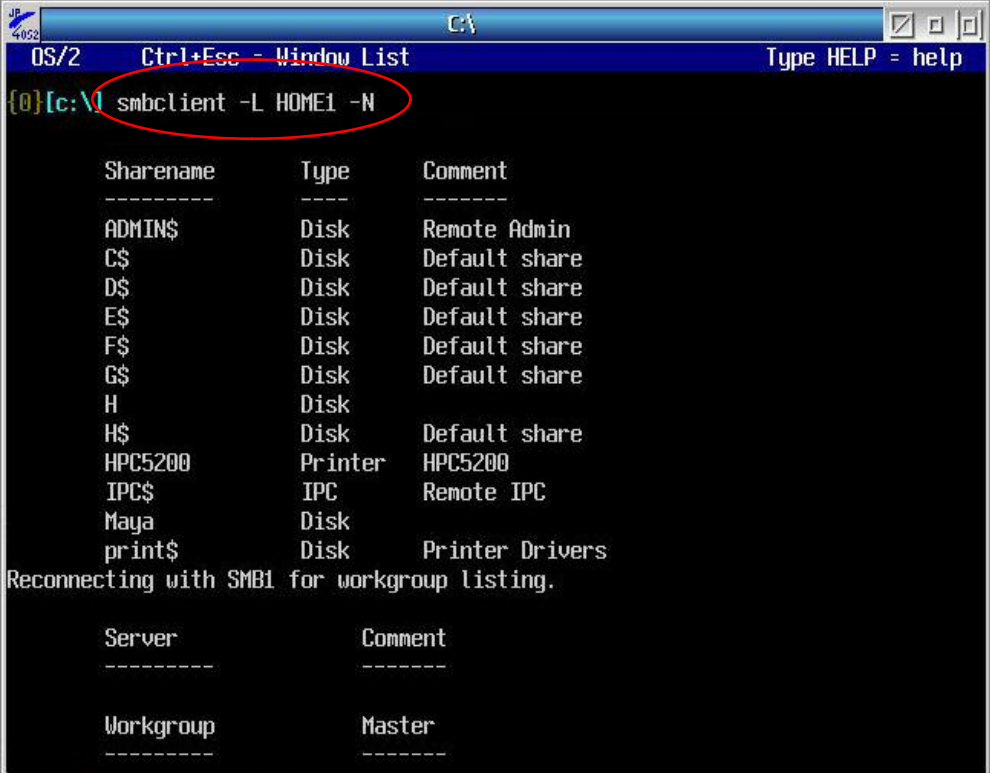
ArcaMapper – Network Neighbourhood

On some windows (w10)machines you may be able to use –N to avoid entering the password!

smbclient –L Host -N

ArcaMapper – smbclient

There are various and different versions of the smbclient on the various systems (OS/2 Ecs and ArcaOS)

They all seem to work slightly differently

ArcaMapper – Network Neighbourhood

Note in Samba Status monitor – Samba Server – the W10 shares are shown!
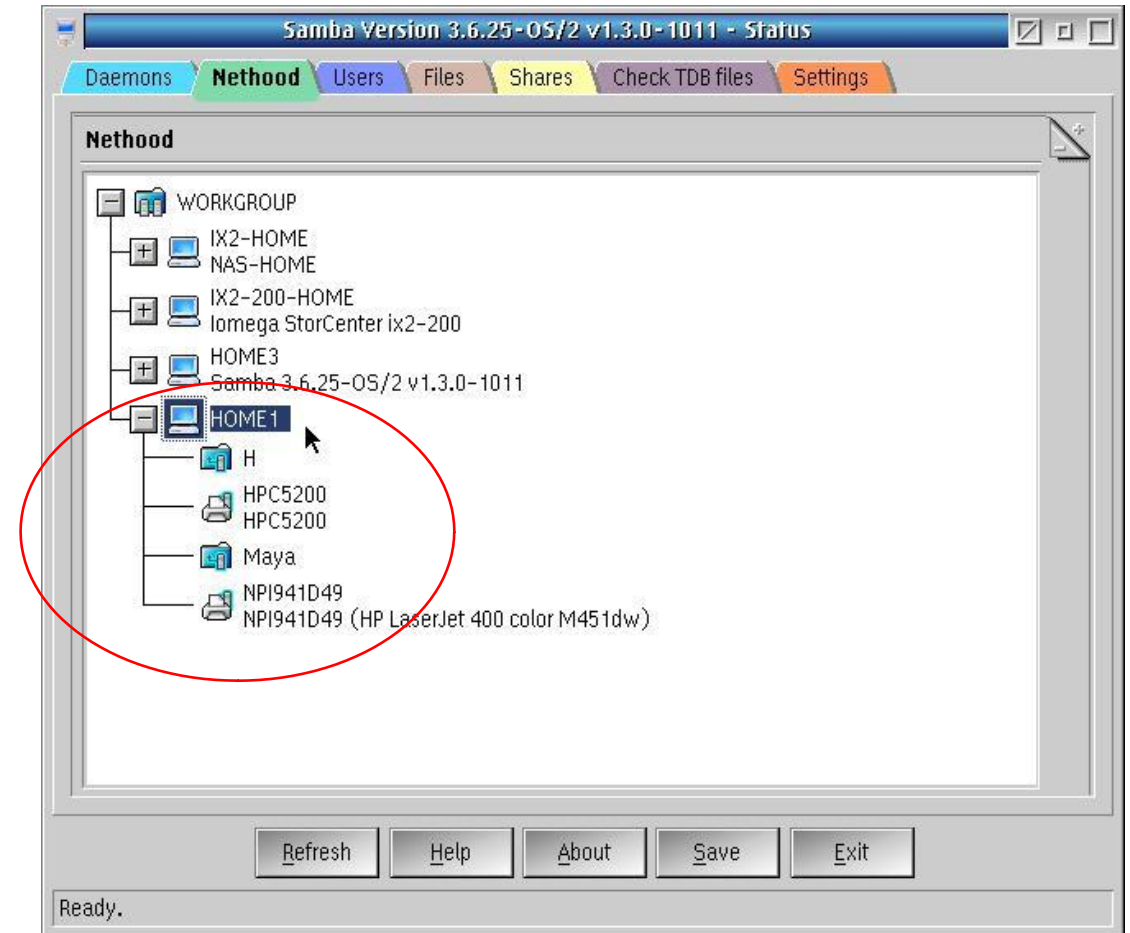
ArcaMapper – Connection details

In the TAB Connection details the various connections are shown with:

Status	an icon indicating connection status
Mount to	The virtual drive share is mounted to
Workgroup	The workgroup for the share
Server	The host or server concerned
Share	Share name
User ID	The user assigned to this share
EA	EA support status
R/W	Access mode (Read or Read Write)
Timeout	Cache timeout in seconds
Cache	Listing to cache (default 32)
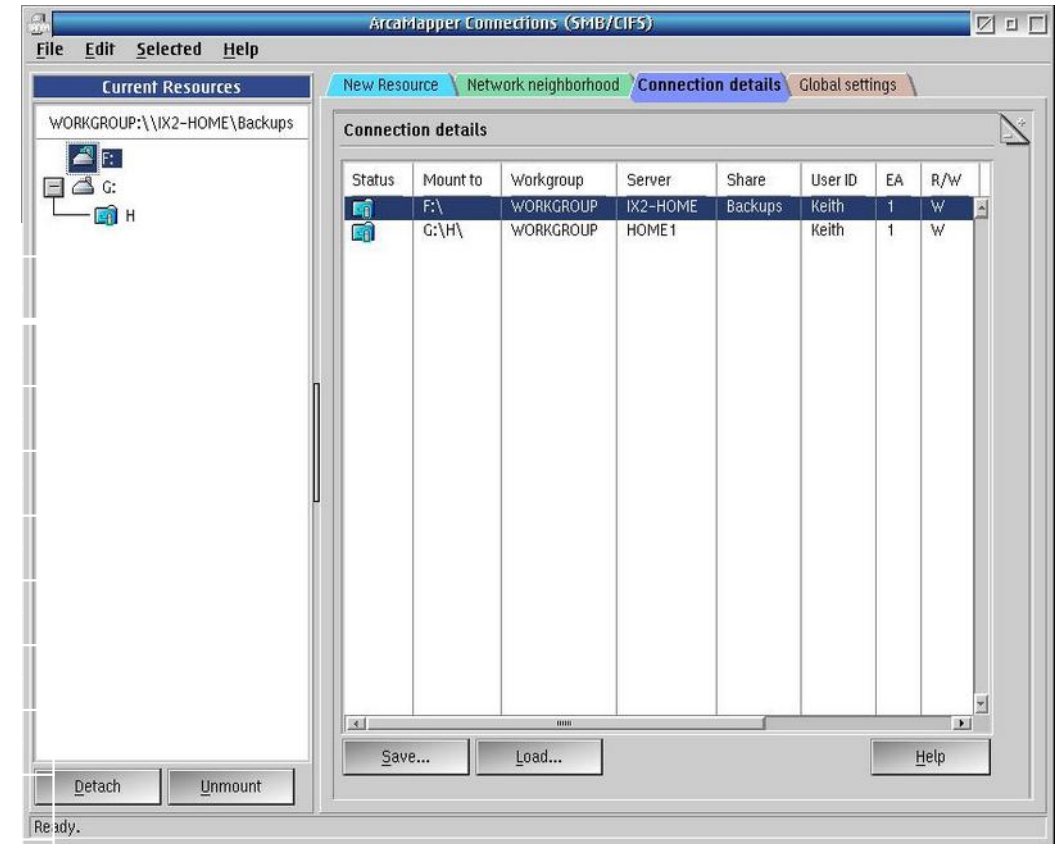
ArcaMapper – Global Settings

In the TAB Global Settings you can change/set the following:

1. Authenticate for browsing
   This (theoretically) allows browsing to use the userid and password supplied.

2. Refresh Network neighbourhood immediately
   This (theoretically) will refresh the browsing window. Generally the refresh key is required

3. Use Broadcasts instead of local master browser(LVM)
   Query network nodes instead of querying the local master browser.
   (one of the computers in a network is the master browser – in my case the NAS)

ArcaMapper – Global Settings - 2

In the TAB Global Settings you can change/set the following:

4. Show all (special) shares

    This (theoretically) shows special shares such as IPC$. In my case no windows shares are shown!

5. Remember inactive connections

    Keeps track of connections that currently cannot be reconnected

6. Store credentials until next reboot

    The last used, credentials are stored in memory for reuse. You don't have to keep typing in the same userid and password

ArcaMapper – Global Settings - 3

In the TAB Global Settings you can change/set the following:

7. WINS server

   The IP address of the server

8. Name resolution order

   The order in which names are resolved to optimize speed for Samba client

9. Manage LMHOSTS

   The Samba client manages the LMHOSTS file – this file contains the list of ip addresses and NetBios names

ArcaMapper – Global Settings - 4

In the TAB Global Settings you can change/set the following:

7. Logging

    The IP address of the server

8. Log level

    The level to be used when logging is enabled

9. Debug

    When enabled a console is opened displaying the program actions

10. Mini Icons

    Use mini icons in the Browse and Resource window

ArcaMapper – Bugs (2.6.20180622)

BEWARE:

If an item is selected and then with the menu "Selected" all of the options will refer to an incorrect item if previously a different selection was made, and using the RMB and the popup menu Information was selected. So you might do things on the wrong host
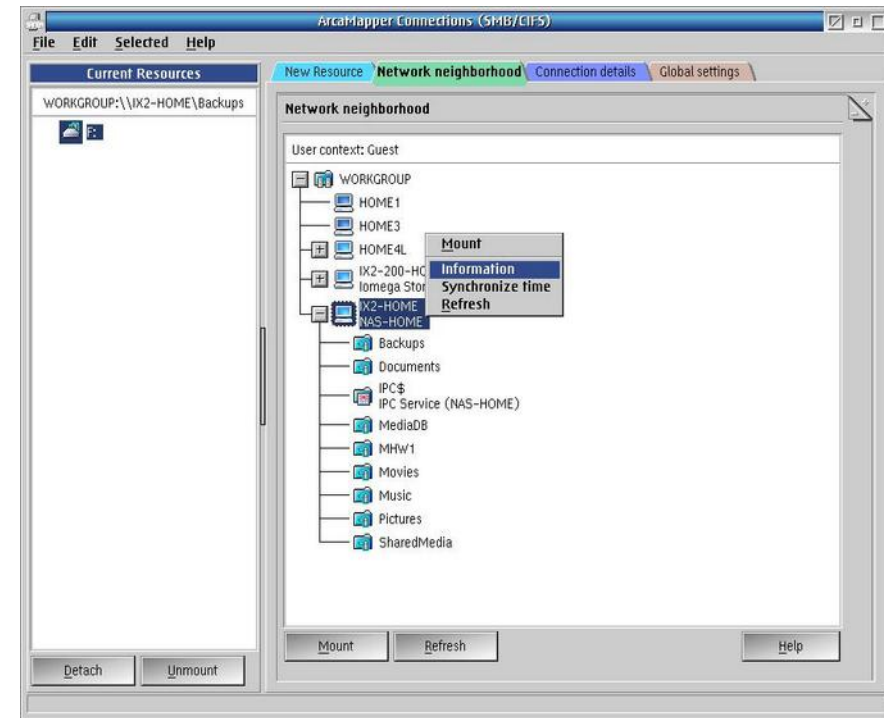
Windows – tweaks

On some windows 10 machines you __may__ need to enable SMB 1.0

To do this select windows features and scroll down to SMB 1.0 and tick the box

Sometimes the firewall or Virus scanner may block access! Disable and then try again
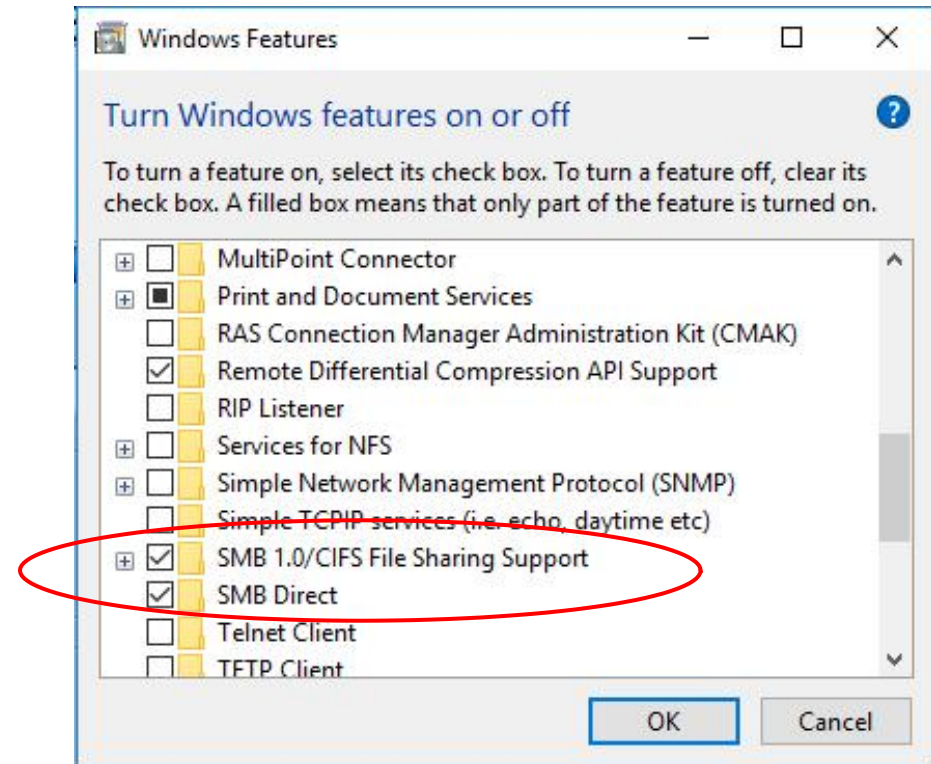
SAMBA Server

The Samba server provides the services so that other hosts can find and connect to the shares on this machine.

- In order to use the server NETBIOS over TCPIP may NOT be used. Samba encapsulates NETBOIS in TCPIP
- So SMB Server and IBM Peer networking cannot co-exist

SAMBA Server

- The SAMBA Server is a set of programs – the are:

Simple SAMBA Configuration Centre (sscc.exe /install|/config)
Users and Groups (smbusers.exe)
Status (smbmon.exe)
Reload configuration (smb.cmd /reload)
Restart Server (smb.cmd /restart)
Start Server (smb.cmd /start)
Stop Server (smb.cmd /stop)
Find SMB/CIF machines (findsmb.cmd -X)
Edit config & various info

SAMBA Server - Configuration

The simple Samba Configuration Centre is what it is says

A *simple* configuration tool

When run for the first time the program (ssc.exe) is run with the parameter   /install

After running the parameter is dynamically changed to

/config

So if you need to redo things change the parameter back to /install in the program's properties.

Make sure that Samba is not running !

Simple Samba Configuration Center
(installation)

Let's keep it simple and select :

1. Erase current "smb.conf" …
2. Erase current "Backend" …
3. Erase current "lmhosts" …
4. Install libraries using YUM
5. Press *"Continue"*
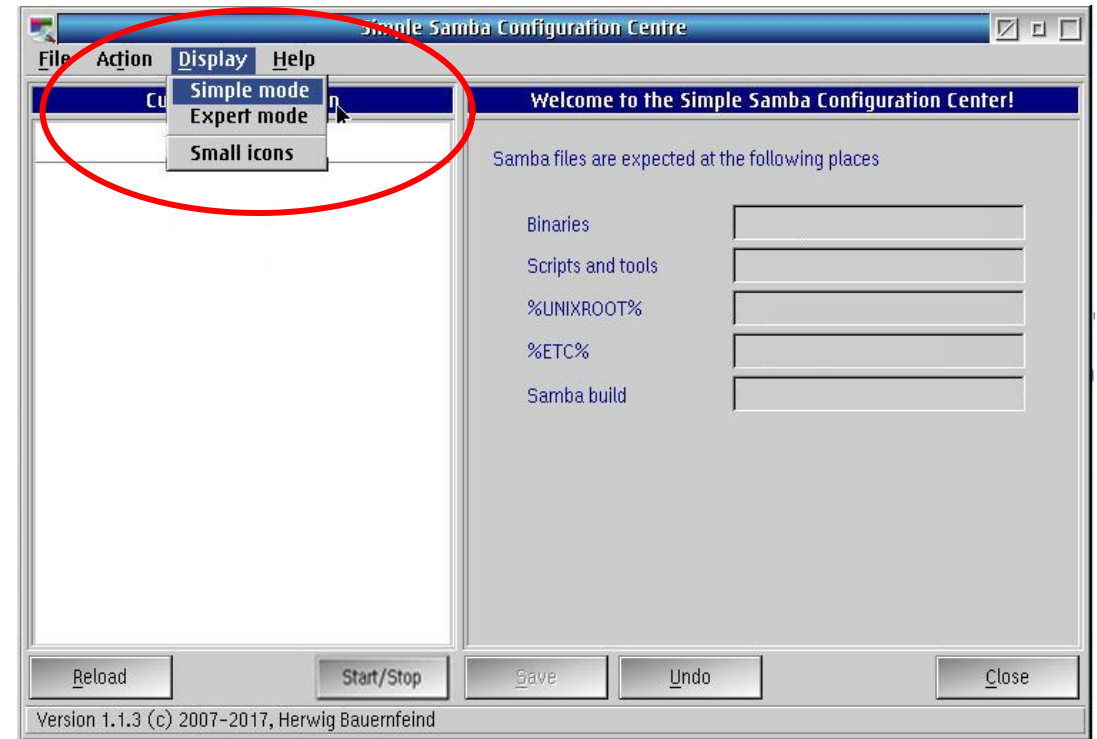
Simple Samba Configuration Center (installation)

1. After pressing *Continue* the installation may take <u>several</u> minutes while YUM is busy

2. You can show the progress if you open the minimized yum program

Simple Samba Configuration Center
(installation)

You might get some messages but then eventually the installation mode window appears.

1. Enter a password (twice) for the root account (min 5 characters)

2. Leave the rest as is

3. Select either

   - Create Samba default configuration
   - Migrate IBM Peer/LANServer configuration

Simple Samba Configuration Center
(installation)

- Samba Default configuration will map all your drives

-IBM Peer migration will use your previously defined shares

-You will be informed :
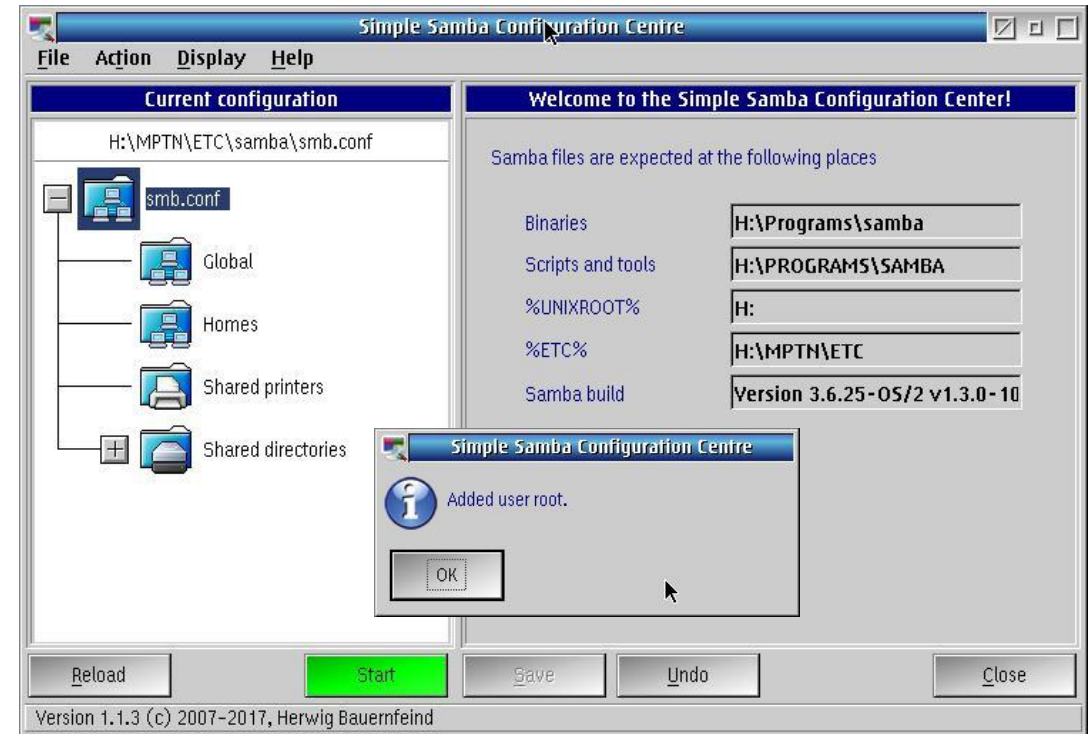
  User "root" added

Simple Samba Configuration Center (installation)

- Samba Default configuration will map all your drives

-IBM Peer migration will use your previously defined shares

-You will be informed :

 User "root" added
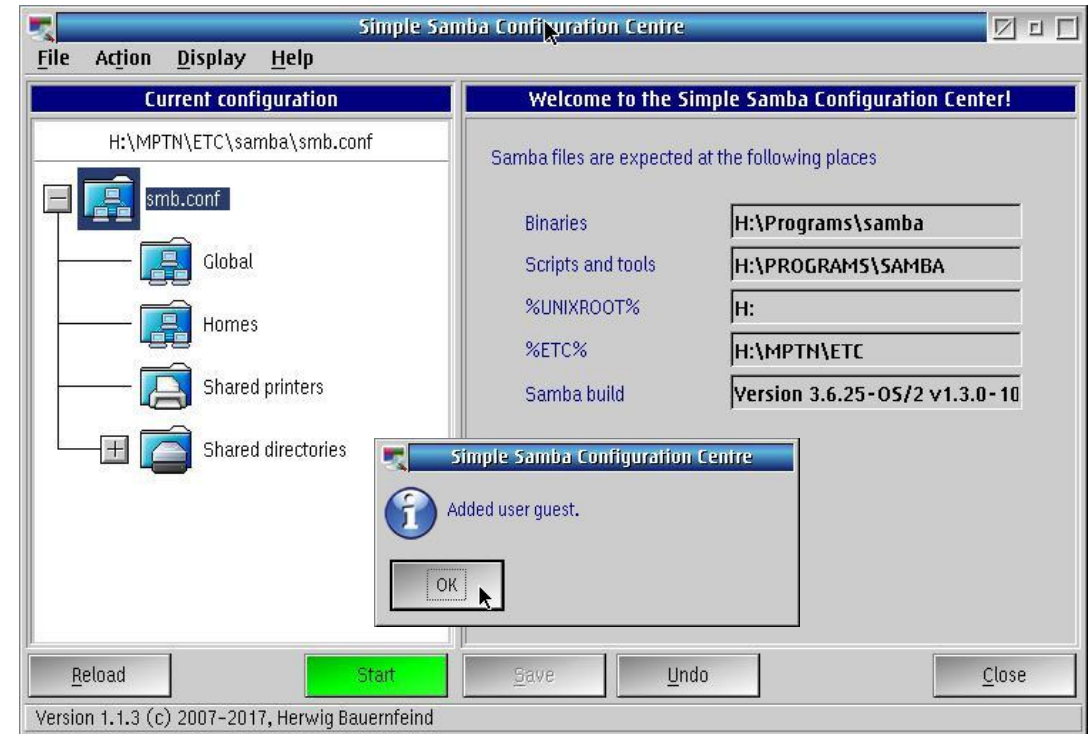
 User "guest" added

Simple Samba Configuration Center
(installation)

- Samba Default configuration will map all your drives

-IBM Peer migration will use your previously defined shares

-You will be informed :

    User "root" added

    User "guest" added

    Add user "User later

4. Press close
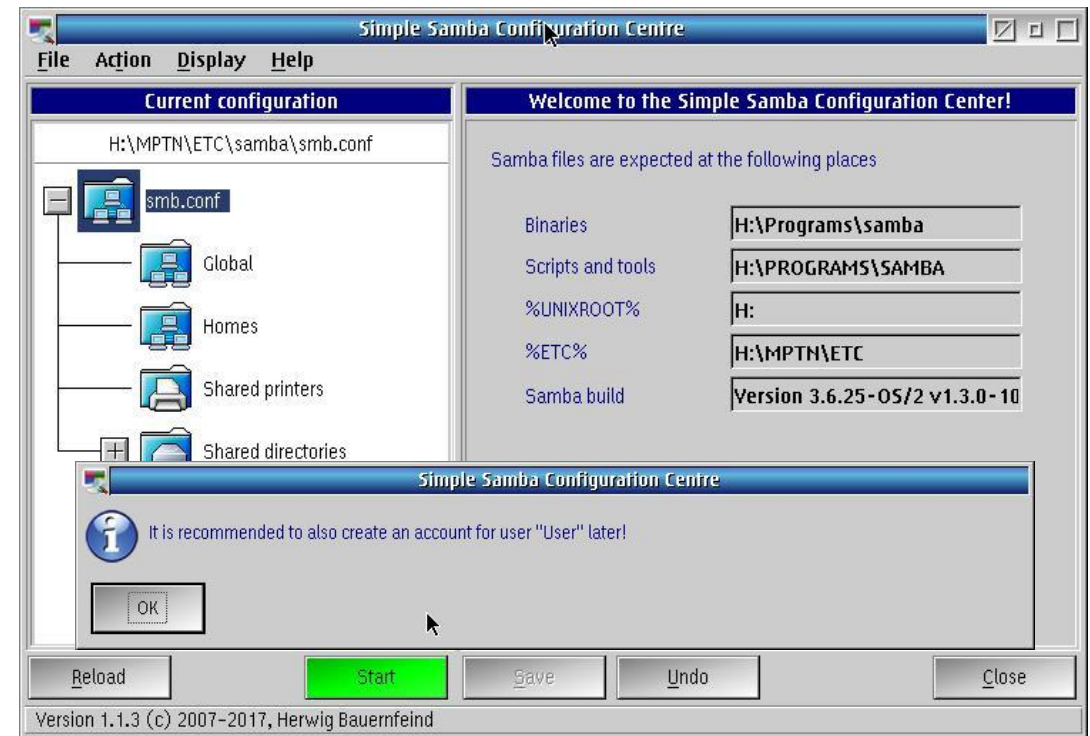
Backends

During the installation you can select one of two backends:

1. smbpasswd
2. tdbsam (default)

In Samba the backend refers to the encrypted password and account database
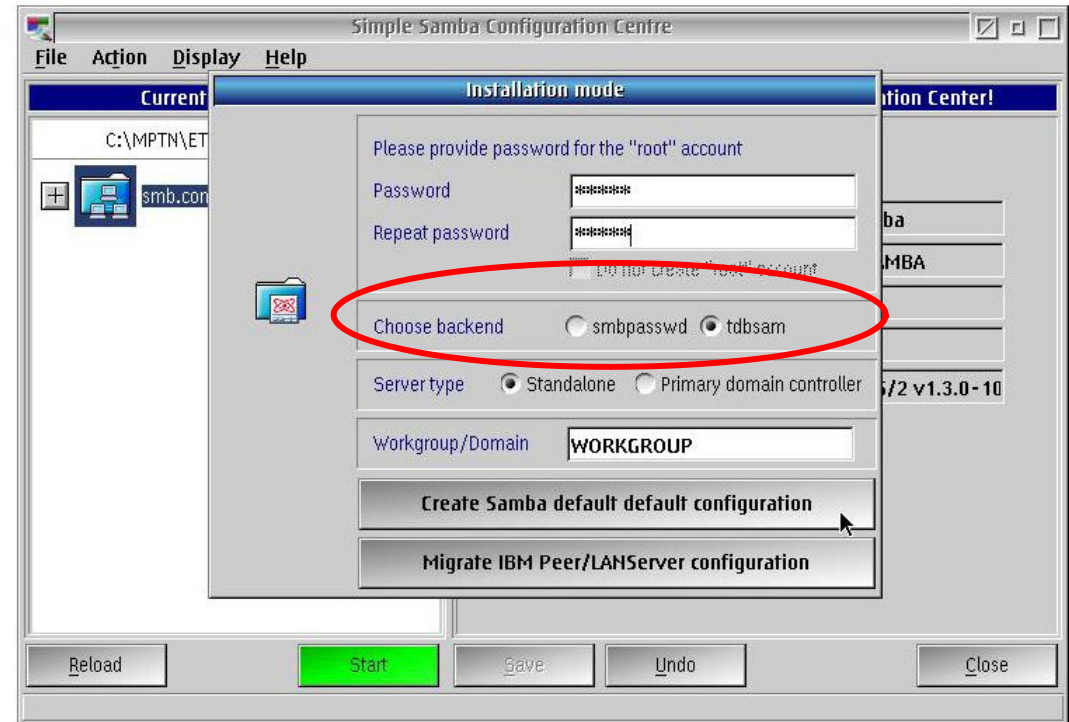
Backends (password & account databases)

The three encrypted password database backends that are fully maintained (by the Samba Team) are:

1. tdbsam (a trivial database that allows multiple simultaneous writers, binary based file format) [1]

2. smbpasswd (being obsoleted) This file format has evolved with Samba and has had different formats in the past. [1]

3. ldapsam (Lightweight Directory Access Protocol directory)[2]
   Not used in OS/2

[1] tdbsam is recommended for new installations that do not require UNIX user and group account information
[2] Only the ldapsam backend stores both POSIX (UNIX) and Samba user and group account information in a single repository.

Server types

In Samba there are three main server types

1. Standalone Server
2. (Primary) Domain Controller
3. Domain Member Server

The ArcaOS implementation is for types 1 and 2

SAMBA Server – Configuration tabs

1. Re-open SSCC

2. Select Global (left panel)

3. Check in the first tab of the global settings that the Workgroup has the correct name and any of the other items are as you require
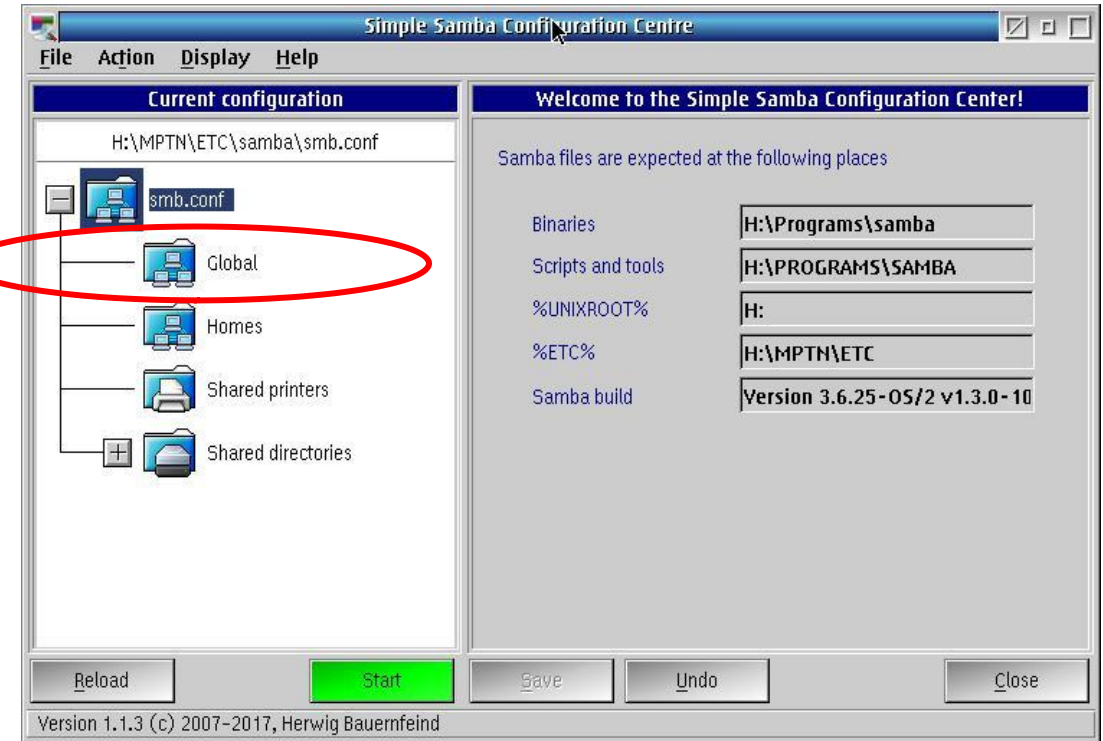
SAMBA Server – Configuration Tabs

In the other tabs there are more configuration items you can select.

in the Simple mode

and in the Expert mode there are

(29 tabs!!)

even more items

All the information is stored in smb.conf in the [global] section
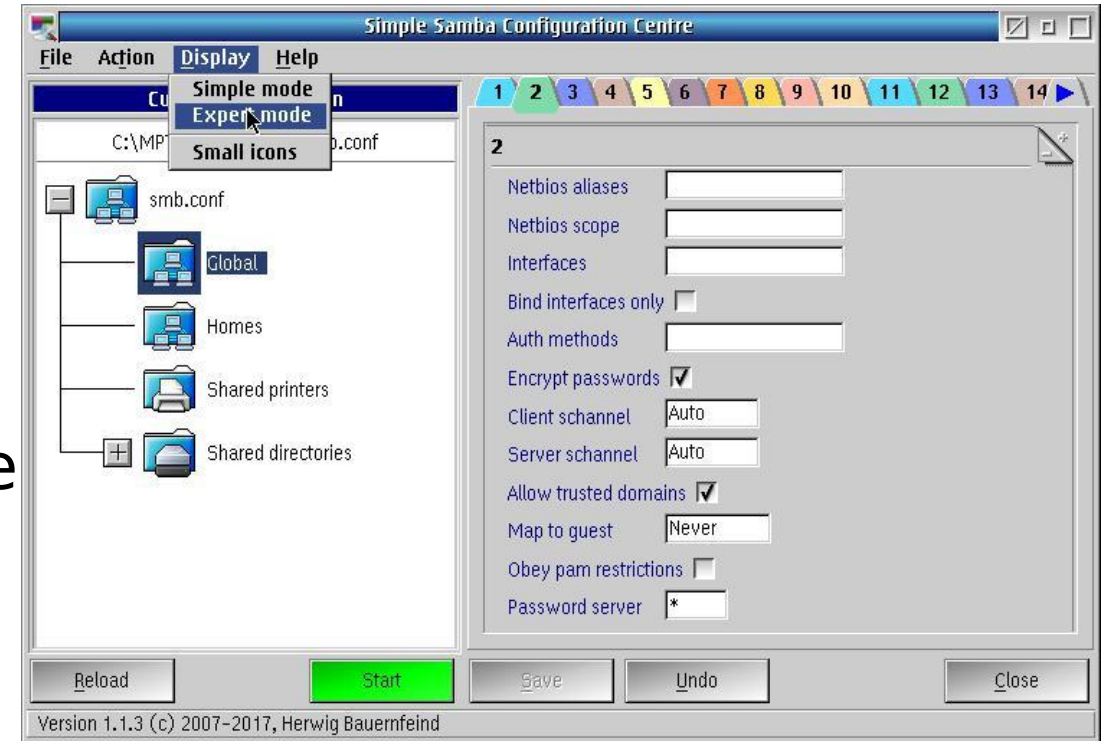
smb.conf

The samba configuration file is divided into sections:

    Global

    Homes

    Printers

    Shares (name of the shared resou
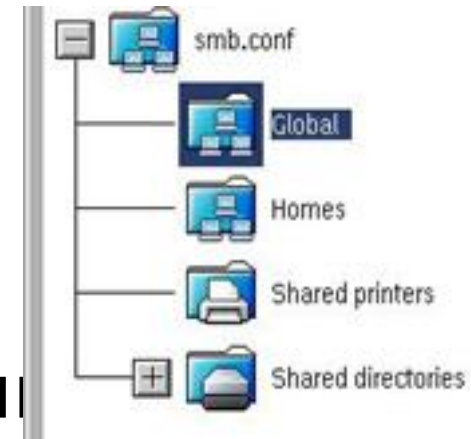
Comments are indicated by a # at column 1 and sections are between square brackets i.e. [GLOBAL]

My smb.conf

```
# Samba config file created using SSCC ver. 1.1.3
# from User@HOME3
# Date: 17 May 2019 11:12:49
[global]
    null passwords = Yes
    guest account = guest
    username map = G:\MPTN\ETC\samba\private\
smbusermap
    log file = G:\MPTN\ETC\samba\log\log.smbd.%U.%M
    time server = Yes
    load printers = No
    printcap name = G:\etc\printcap
```

And a lot more

My smb.conf

[HOMES]
    comment = Home directory
    path = G:/MPTN/ETC/samba/homes/%u
    read only = No
    browseable = No

[HDRIVE]   This is one of my
shares
    path = H:/
    read only = No
    hide files = /*. SF/root/

My smb.conf

```
# [PRINTER4L]
comment = Printer
path = G:/MPTN/ETC/samba/spool/Printer
read only = No
create mask = 0700
guest ok = Yes
printable = Yes
print ok = Yes
printing = os2
print command = G:\Programs\samba\smbprint.exe "%s" "%p" "%J" "%c"
                                          "%z"
lpq command = lpq.exe -s %i -p %p
lprm command = lprm.exe -s %i -p %p %j
printer name = Printer
```

My smb.conf

[JDRIVE]　　　　　　　　　　　　This is the other share
　　comment = Drive J: (JFS)
　　path = J:/
　　read only = No
　　guest ok = Yes
　　hide files = /*. SF/

SAMBA Users
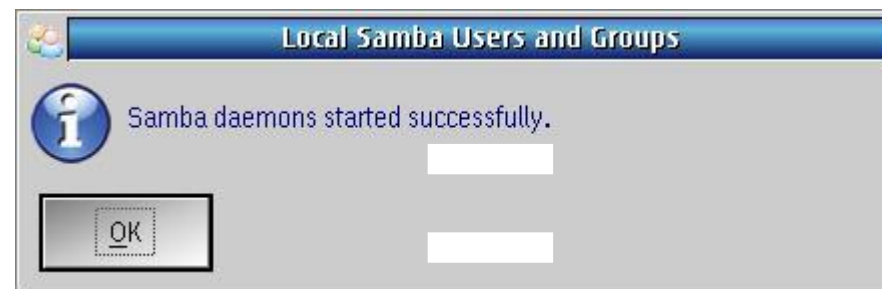
To define users run the
🖼gram

"Samba Users and
Groups"

t
the daemons started correctly
and then the login appears

Login using root and the
password you created

SAMBA Users

In the Users dialog you can :

1. Create a User
2. Edit a User
3. Delete a User
4. Join a User to a group
5. Leave a group
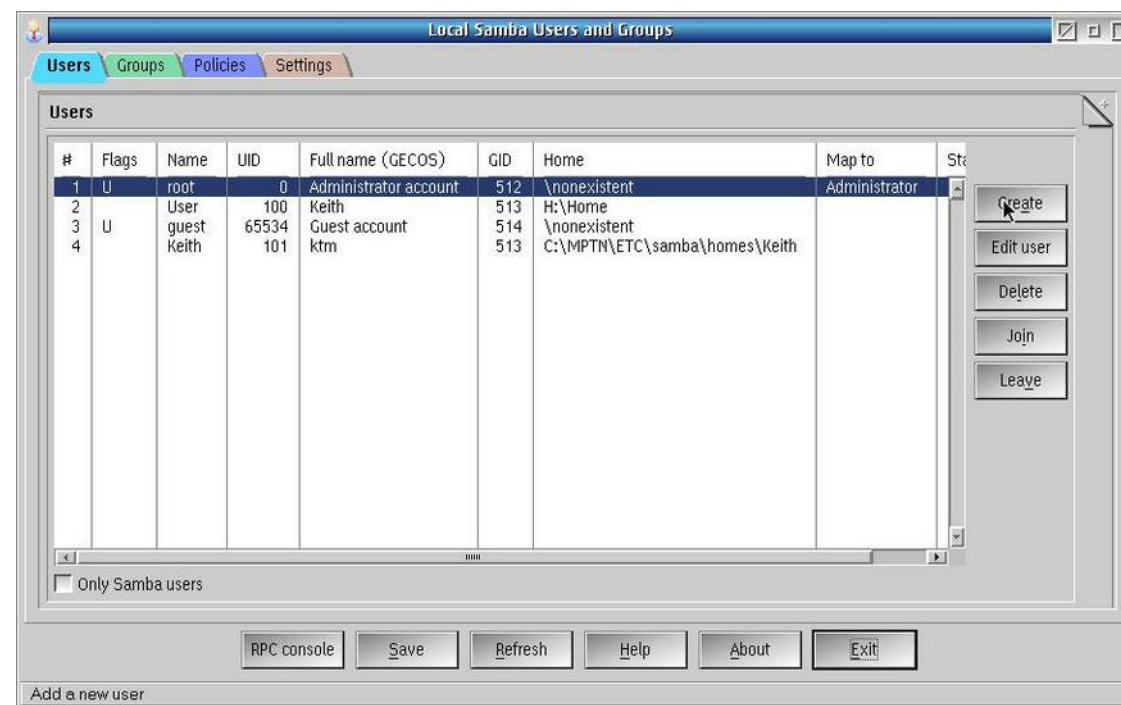
The same options are available via RHB as is the selection of symbol or details view

SAMBA Users – create a user

In the Users dialog you specify :

1. User
   1. name
   2. Full name (free format info)
   3. kLibC user - ???

2. Account type
   1. Standard
   2. Alternative
   3. Administrator
   4. Guest

3. Password
   1. Password expiry
   2. SWAT
   3. Account activation
   4. SWAT (Samba Web Administration Tool) allowed

4. Primary Group (ID of available groups)

5. Home - Directory (if any)

SAMBA Users – edit a user

You can only edit a user from the user tab in the users and groups GUI where you select the user.

It is not possible to change the account type, but it is possible to:

- Change the password
- Change password expiration
- Account activation
- Reset logon hours

The profile and membership tabs allow no editing, just info

This is probably possible via the pdbedit console
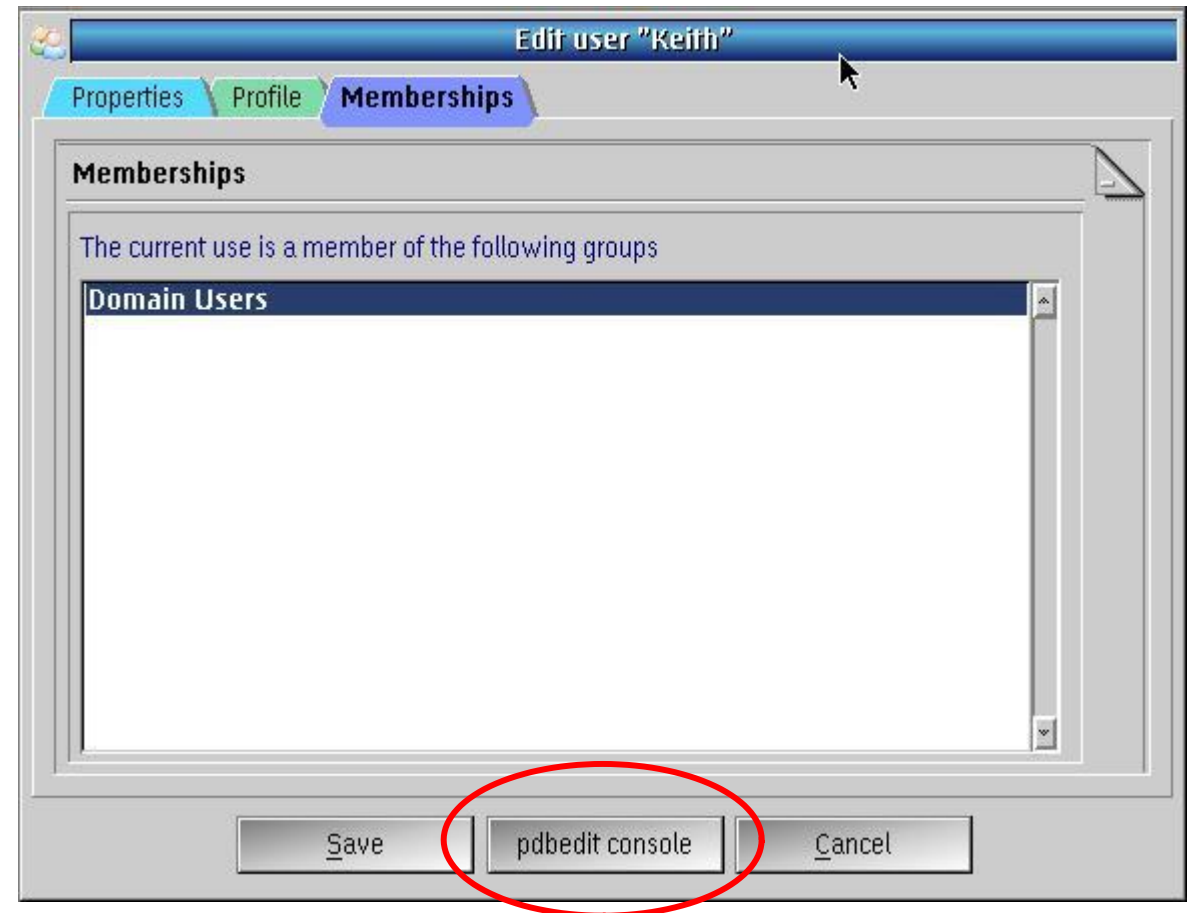
SAMBA

In the Groups dialog you can:

1. Create/Delete a Group

2. Map/Unmap a kLIBC group to Samba group

3. Create a group restoration script (makes a cmd)

4. Create well known Samba Groups (removes existing groups first!)

These options don't work (for me)!!!

Again same options via RHB
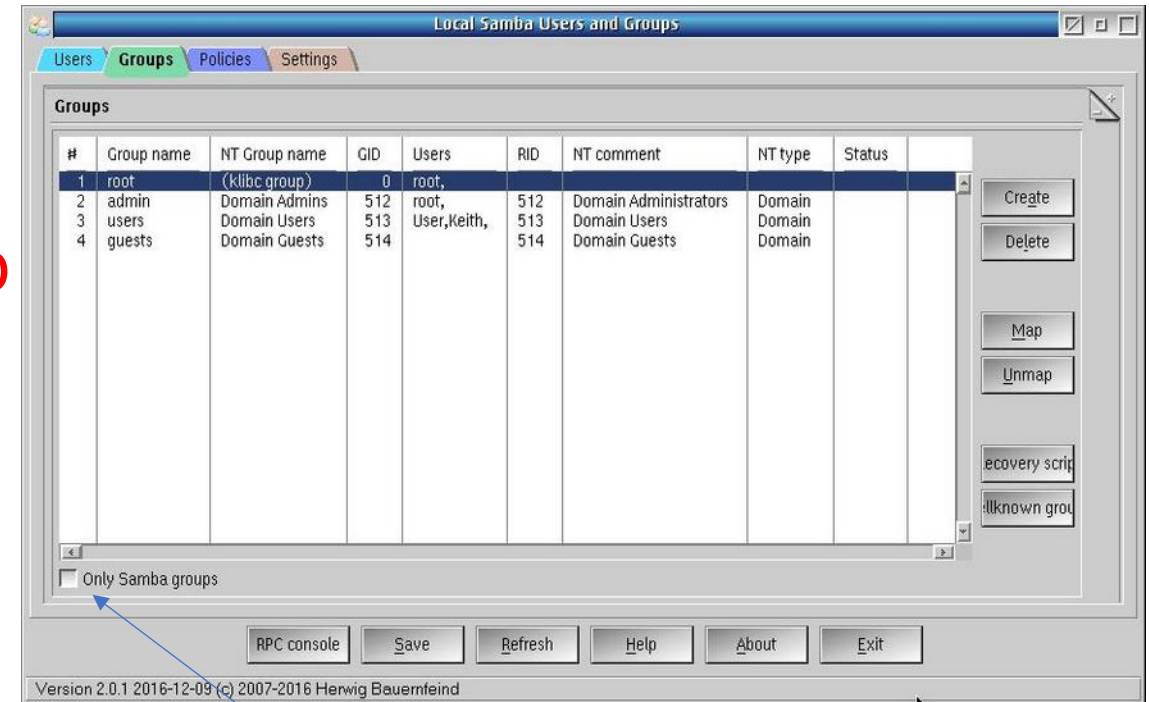
shows/hides only Samba groups

SAMBA Policies

In the Policy dialog you can select

1. *bad lockout attempt* = n
This will block this user when a passwor[d]
has incorrectly been used n times. 0 is n[o]
lockout!

2. disconnect time
?

3. *lockout duration*
The time a lockout exists in minutes
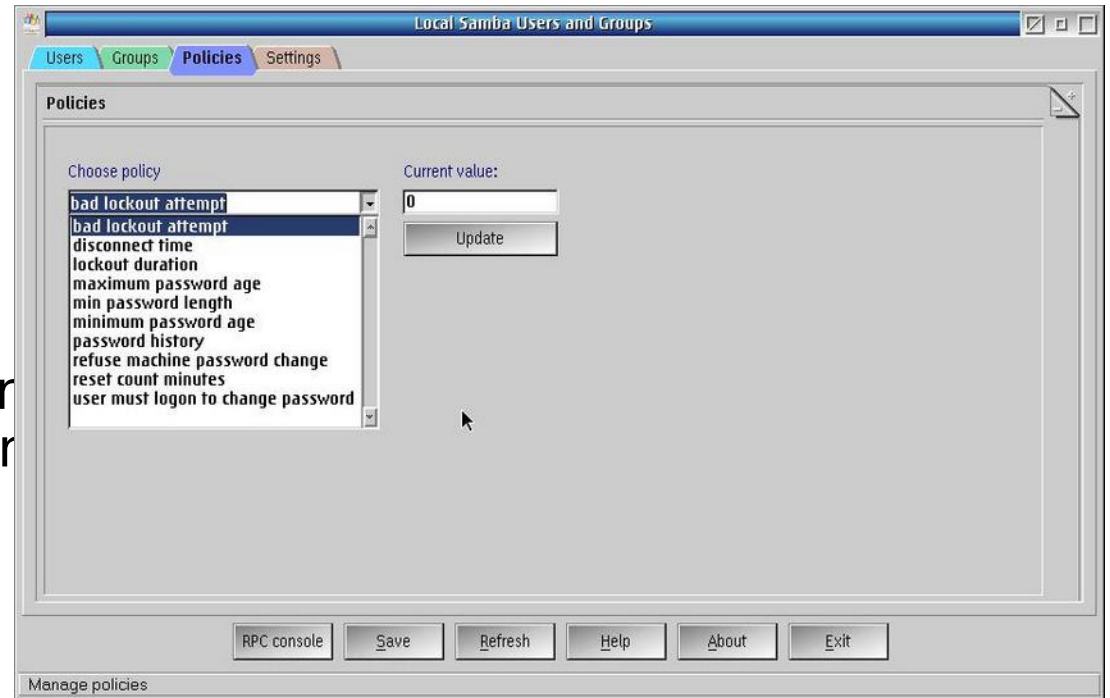
SAMBA Policies

In the Policy dialog you can select

4. maximum password age
The time a password is valid in seconds
0 =allow immediate password change
(max = 2^{32} -1)

5. min password length
The minimum password length allowed (default 5)

6. minimum password age
The minimum password age (default 0 = allow immediate change)
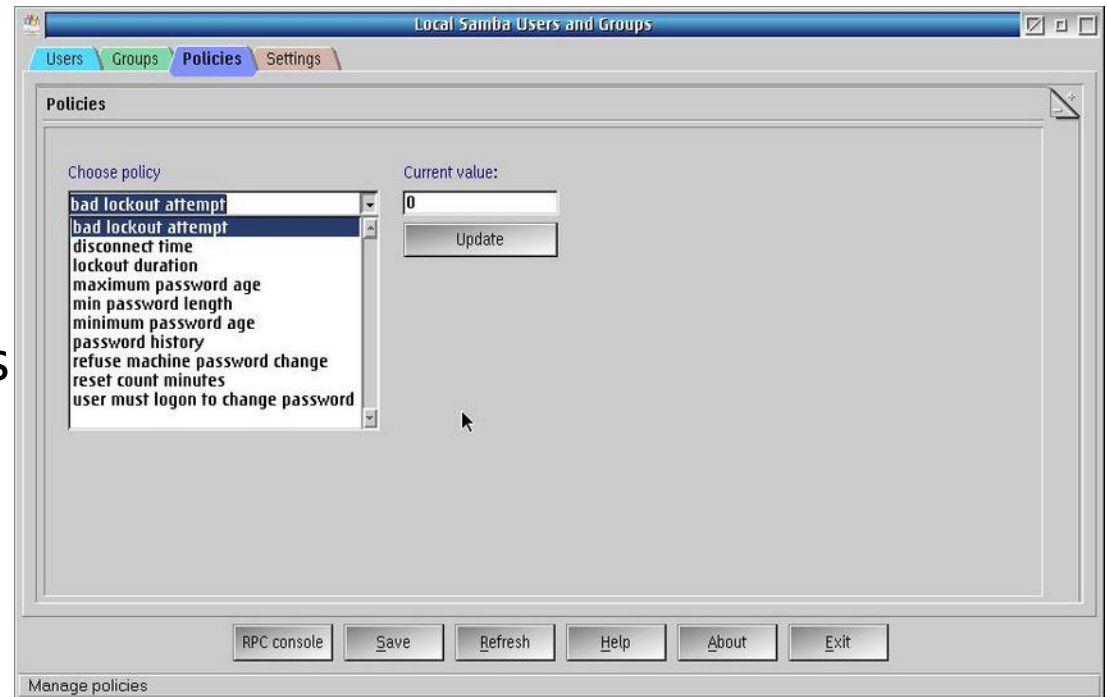
SAMBA Policies

In the Policy dialog you can select

7. password history
Number of unique passwords before old password
may be reused (default – 0 = off)

8. refuse machine password change
Stops the client from changing its machine password

9. reset count minutes
Reset time after lockout in minutes (default: 30)

10. user must logon to change
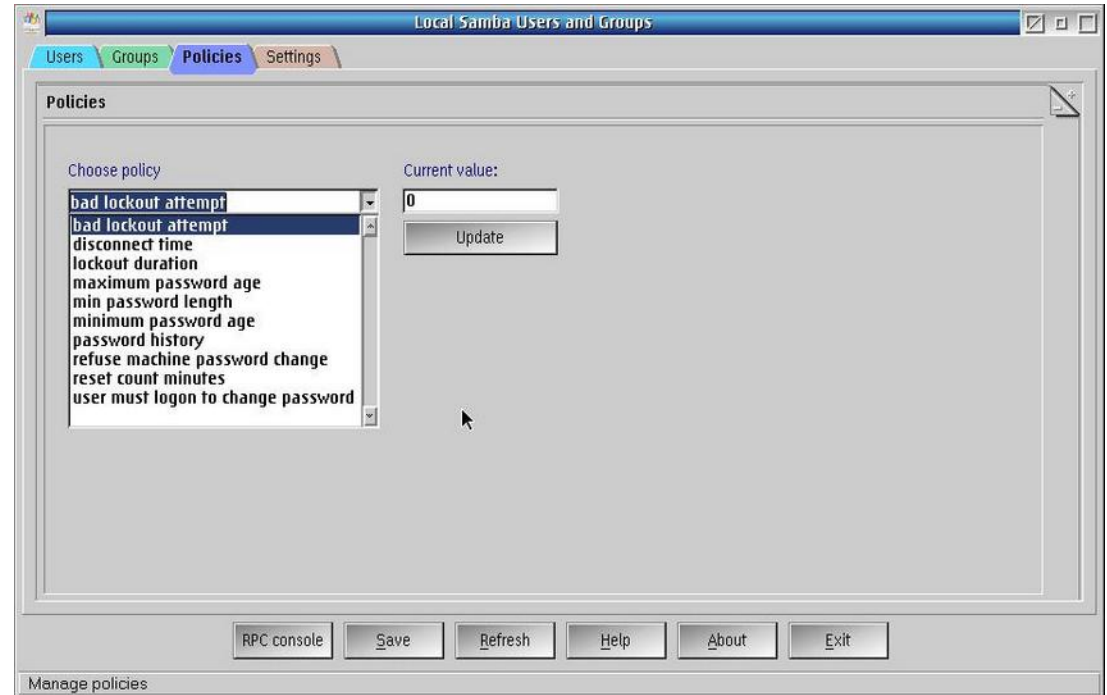
SAMBA Remote Procedure Call console

In the Users dialog you can handle users, groups policies and settings

Additionally there are the buttons:

Remote Procedure Call console

Save, Refresh , Help

About and Exit

See https://mirrors.dotsrc.org/samba/HOWTO/Samba-Rights-HOWTO
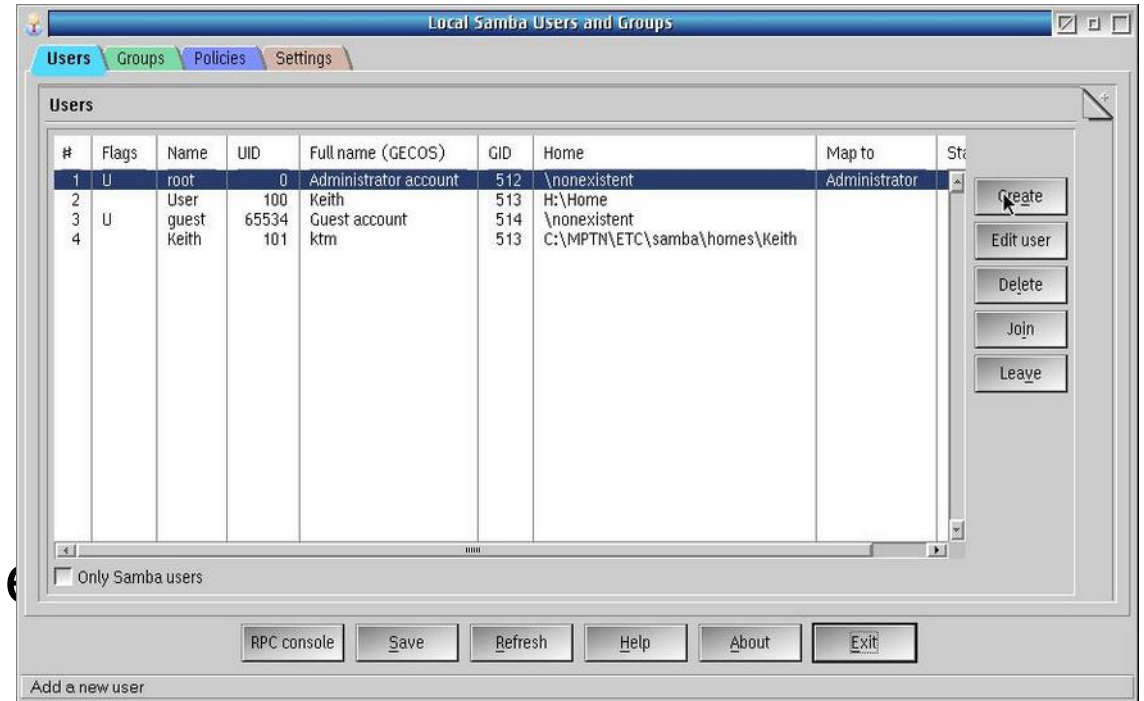
SAMBA Flags

N: No password required

D: Account disabled

H: Home directory required

T: Temporary duplicate of other account

U: Regular user account

M: MNS logon user account

W: Workstation Trust Account

S: Server Trust Account

L: Automatic Locking

X: Password does not expire

I: Domain Trust Account
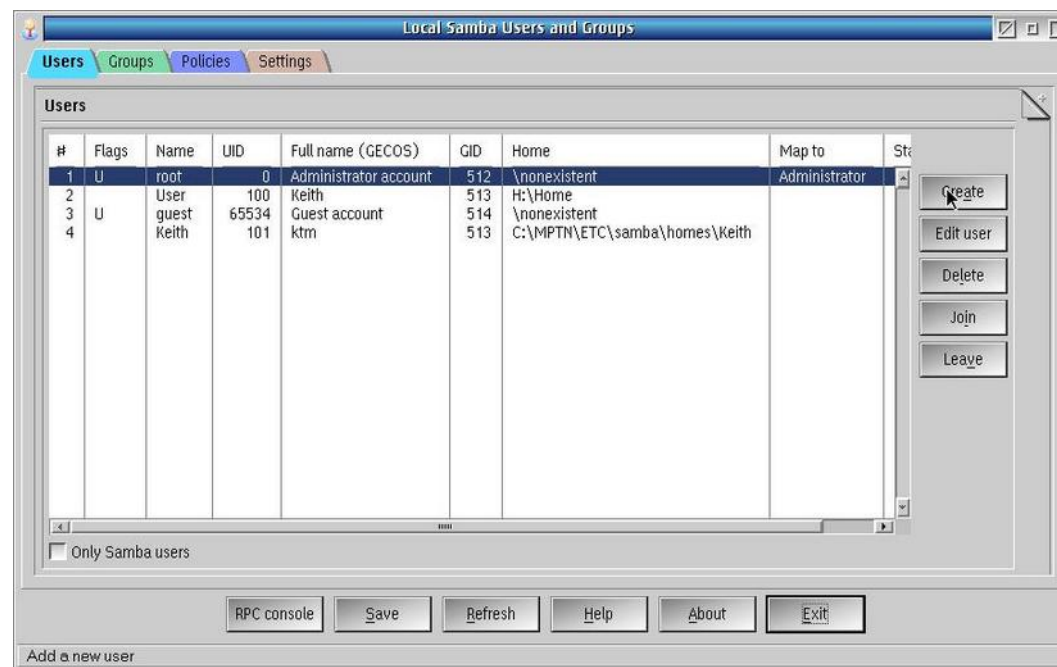
Auto start ArcaMapper and Samba Server

- By default ArcaMapper and the Samba server do not start automatically.

- In ArcaMapper select Autostart -> enable.
- If required modify in the startup f...
  parameters to add a startup dela...
  seconds with -delay <n seconds

Note:
by default you should save your
Connections to a file
X:\OS2\ARCAMAP.ndc
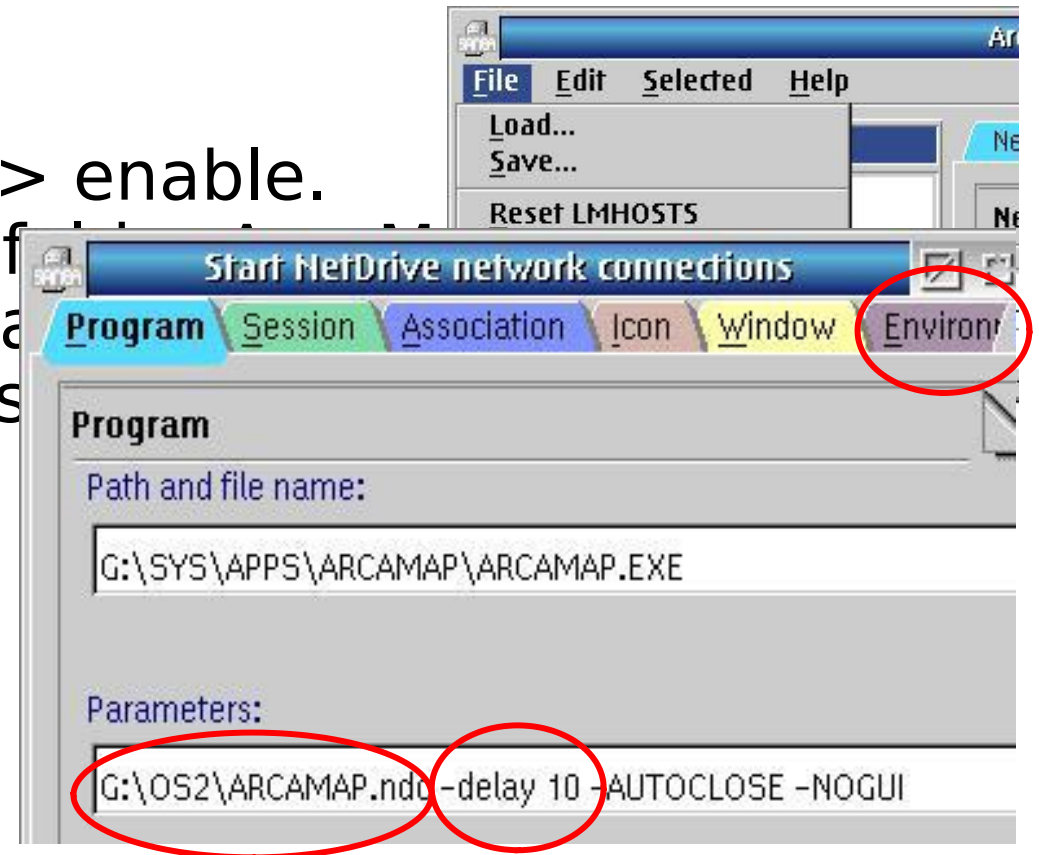
Auto start ArcaMapper and Samba Server

- By default ArcaMapper and the Samba server do not start automatically.

- The Samba Server daemons are started via a script "smb.cmd" with the option start. The same script is also used to stop, and restart the daemons.

- To start samba either make a script :

'sleep 10'
say "starting Samba"
call smb 'start'

- And call this in the startup folder

Performance – my experiences!

Source	Destination	FileSize	Time in secs	MB/Sec
W10 (Home1)	Samba (HOME3)	1.379.926.016	24.9	55,42
Samba (HOME3)	W10 (Home1)	1.379.926.016	20.6	66.99
W10 (Home1)	W10 (Home3)	1.379.926.016	10.6	130,18
W10 (Home3)	W10 (Home1)	1.379.926.016	10.6	130,18

Things to know!

- When copying a file across the network EA's are not always copied, and not all filesystem support EA's!
- OS/2 filenames are not case sensitive, copying a file containing an upper case character may result in having two files with the same "basic" name!

   i.e. Filename.ext and filename.ext

  In a command line window, the two files will be shown with their case

   but NOT in a the workplace shell!

Whats happening

- A Samba 4 client is in the 5.0.3.8. beta version of ArcaOS
- Samba client 4.9.5. currently available from the arcanoae-sub repository (ditto for Heimdal 7.5.0). Samba 4.10.1 is currently in testing with no stated release date (this includes an updated/matching NetDrive plugin - 3.6
- I have no info on the Sever side but may be Silvan can comment
- The current release from the Samba group is 4.10 was released in March. Samba 4 is all about AD support

Conclusions

- The current OS/2 implementation of SAMBA is here and there incomplete.
- The installation is vastly better than it was. Automatic update with YUM is a big help.
- Unfortunately there are NO help files in the OS/2 implementation and only very limited hints.
- There are many options and associated programs (pbedit, rpc, swat, etc.) that makes it somewhat complex.
- It works well enough for most people!
- The current version on OS/2 does not (yet) support Active Directory.
- Personally I don't have enough knowledge to test all of the options!
- It provides OS/2 with a network capability to connect to most other networks!

Food for thought – Documentation on the net

- **SYNOPSIS of the smb.conf file** https://www.samba.org/samba/docs/current/man-html/smb.conf.5.html

- **Using Samba, 2nd Edition -** https://www.samba.org/samba/docs/using_samba/toc.html

- **Samba User Documentation** https://wiki.samba.org/index.php/User_Documentation

THANK YOU