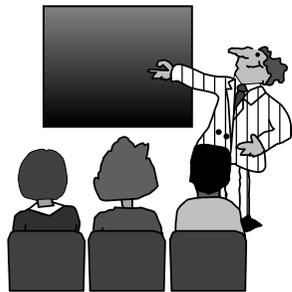




Surviving in mixed networks or how to connect to windows

Using eComStation and OS/2



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Schedule

- Some history and background info
- Simple home network
- Some server remarks
- Extras and utilities
- Questions





Some history and background info

About protocols and network
connections



TCP/IP

- Transport Control Protocol / Internet Protocol
- Developed by DARPA in the sixties for ARPANET (universities) and MILNET
- Build with flexibility and connectivity in mind
- First implemented in BSD Unix
- Nowadays implemented on almost every platform



Novell IPX/SPX

- Internet Packet Exchange / Sequenced Packet Exchange
- Adapted from Xerox for file and print services
- Developed in the seventies for small LAN (as NetBIOS) based on client/server model
- Provides connection services similar to TCP/IP



IBM NetBIOS or NETBEUI

- Originally developed by Sytec Inc. for IBM in 1983 for pc network.
- Not designed for large networks
- Newer implementations are SMB (Server Message Blocks) or CIFS (Common Internet File System)
- Nowadays mostly encapsulated in TCP/IP (Netbios over TCP/IP)



Comparison of the OSI model

Generalized	OSI Model	Net BEUI	TCP/IP	IPX/SPX
Application Layer	Application Layer	Application Layer	Process	NCP SAP RFP
Network Layer	Presentation Layer	NetBIOS		NetBIOS Transport SPX
	Session Layer			
	Transport Layer		Transport TCP	
	Network Layer		Internet IP	Network IPX
Data Link Layer	Data Link Layer	NDIS Interface 802.2 (MAC)	Network Access 802.3 802.4 802.5 LAP-B	Data Link 802.3 802.4 802.5
Physical Layer	Physical Layer			Physical Layer

Directory services

- A Directory Service organizes content into a logical and accessible structure.
- Provides a single, consistent database in which to store information about the network and all network-based resources- users, servers, files, printers, shares, etc.
- It acts as a central authority that can securely authenticate resources and manage identities and relationships between them



Directory services

- Novell: NDS / Edirectory
- MS: Active Directory
- UNIX: X.500
- LDAP



MS SMB/CIFS Networks

- Developed by IBM and MS/Intel (LAN Manager) as a client/server request-response protocol
- Can be used over Netbios, TCP/IP, NetBEUI and IPX/SPX
- Functions: mapping network drives, browsing, authentication and remote printer services
- Active Directory: Win2000 and 2003 server



Win9x networking

- Netbios
- TCP/IP
 - Netbios over TCP/IP
- Other protocols installed manually



Win NT/2k/XP/2003 networking

- TCP/IP
 - Netbios over TCP/IP
- Other protocols installed manually
- Plain Netbios can be installed from CD.
For 2k and up this is not recommended.
- Win 2003 server has extra security issues concerning Netbios ports.





Simple peer network

Or how to join the network



PC configuration

- Install a network interface card.
- Go to *System setup* and *Network Adapters en Protocol services, MPTS* and *LAN Adapters and Protocol support*.
- Install the drivers for the network card.
- Install network protocols.
 - TCP/IP
 - Netbios over TCP/IP
 - Netbios if necessary
- Do not restart. Go to *TCP/IP configuratie*.



MPTS configuration

Adapter and Protocol Configuration

Stage 1 - Add a network card:

- eCS install temporary driver definition
- No Network Adapter
- 3Com 3C3X9 PCI Token Ring Adapter
- 3Com EtherLink 16 (3c507) Family - OS/2
- 3Com EtherLink II (3c503) Family - OS/2

Buttons: Add network card, Change, Have disk...

Stage 2 - Choose protocols for the selected network card:

- NetWare NetBIOS Emulation over IPX - IBM Netware Requester
- IBM Kernel Debug Network Protocol
- IBM IEEE 802.2
- IBM OS/2 NETBIOS

Buttons: Add protocol, Have disk...

Stage 3 - Review the current configuration:

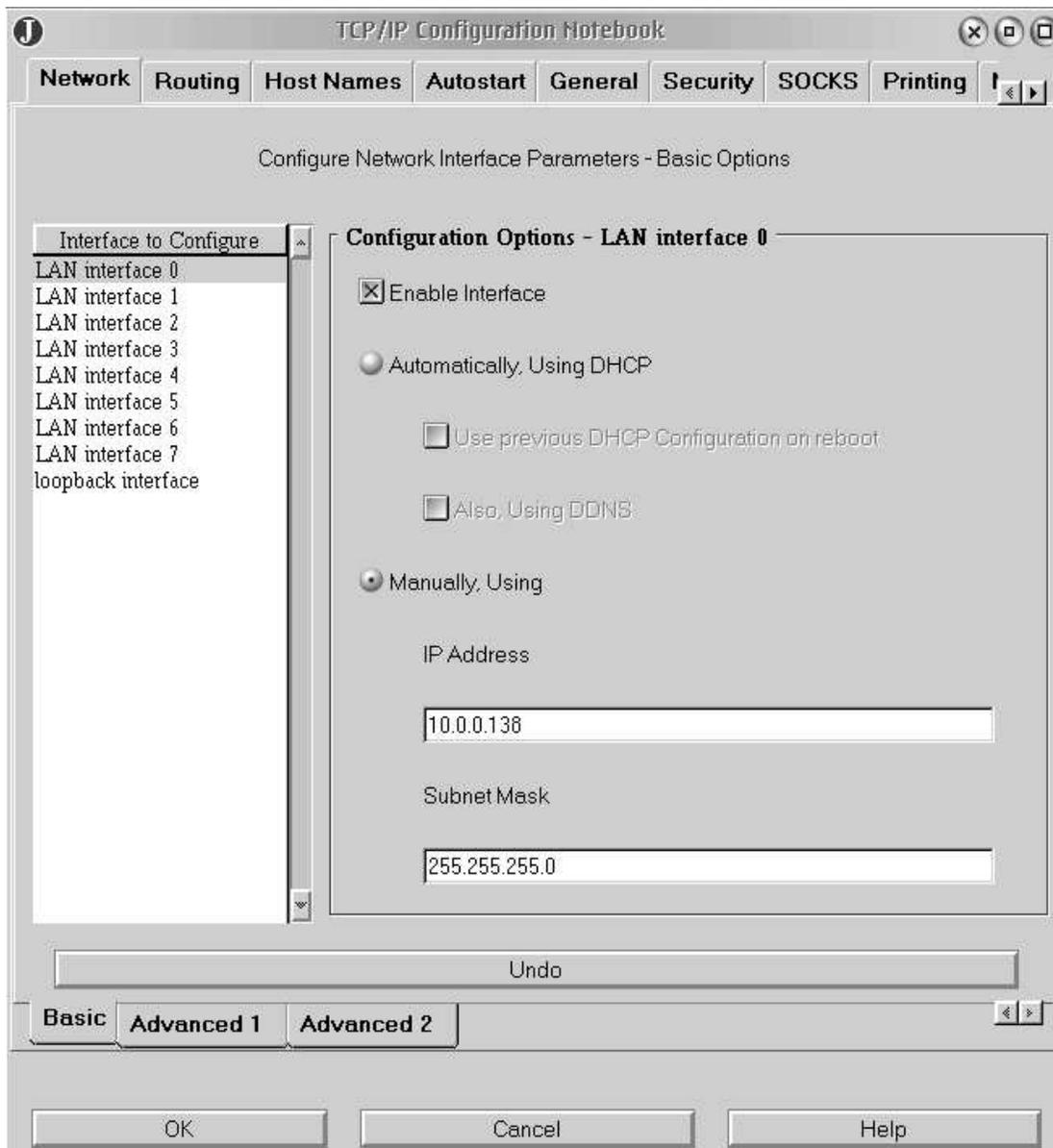
- RTL8139 Fast Ethernet Adapter (2002.02.13).....
 - 0 - IBM OS/2 NETBIOS
 - 1 - IBM OS/2 NETBIOS OVER TCP/IP
 - 0 - IBM TCP/IP

Buttons: Edit, Remove, Change number...

Buttons: OK, Cancel, Help

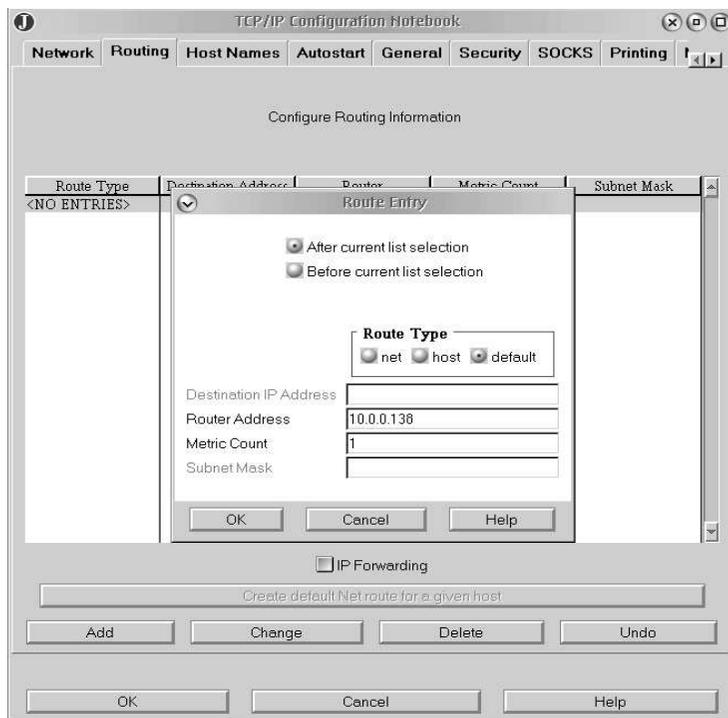


TCP/IP configuration



- Click on *LAN interface 0* and *Enable*.
- Click on *DHCP* or *Manually*
- If *DHCP* no further config is needed.
- If *Manually* type in the *IP adres* and *Netmask*.

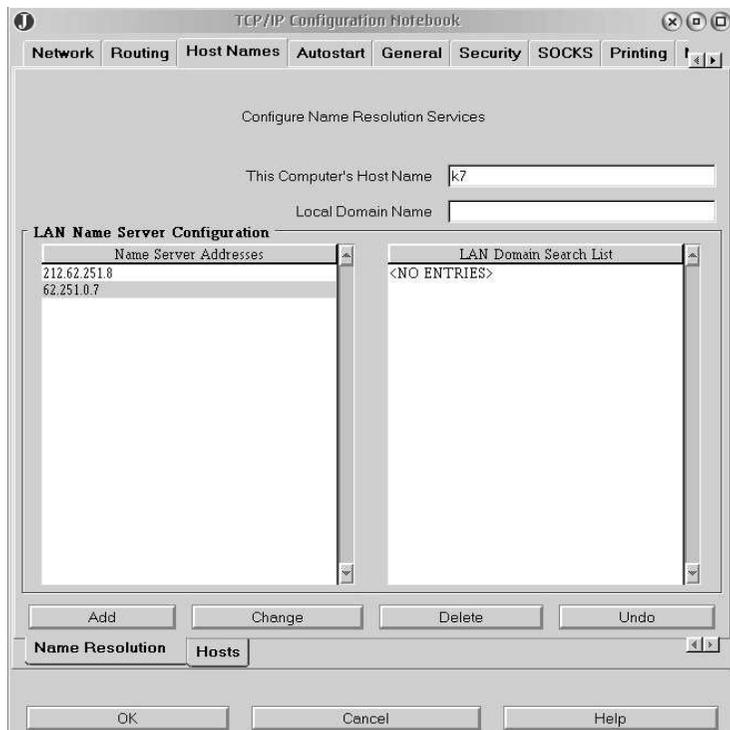
Router IP adres



- Click on *Add* and *Default*.
- Type in the IP nr of the router.
- Click on *OK*.
- Go to *Host names*.



Host names / DNS adres



- Click on *Add* and type in the DNS IP nr in.
- Click on *OK* to close off.
- Click on *OK* to restart the pc or Click on *Cancel* to do it manually; `x:\mptn\bin\setup` on the commandline.



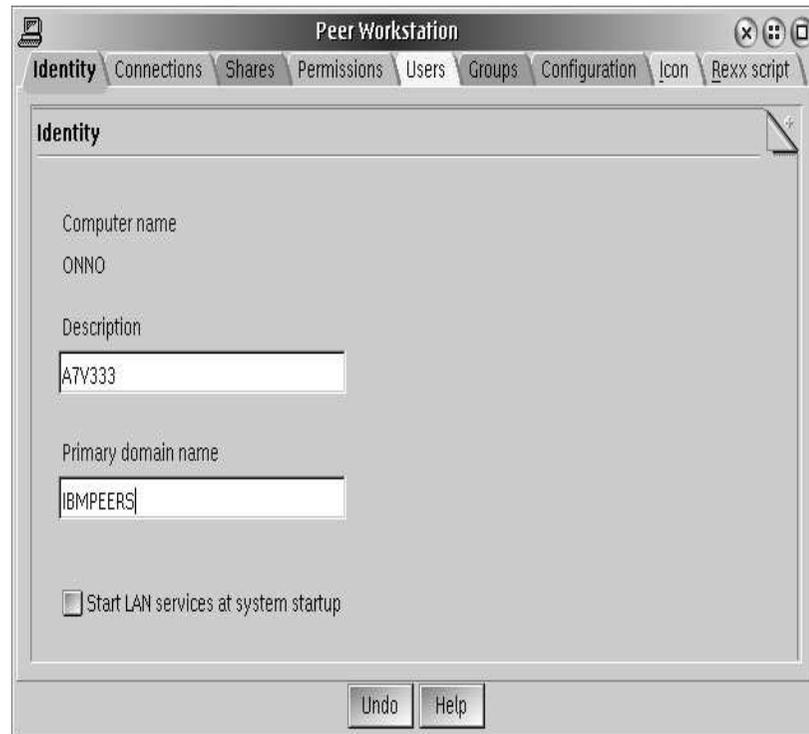
Netbios workgroup / domain name

- Make sure that the netbios workgroup or domain name is the same for all pc's.
(uppercase only!)
- Standard name for OS/2 is IBMPEERS and can be changed in the *File and print sharing* or in the `x:\ibmlan\ibmlan.ini` file.
- In Win9x it can be found in the properties of the My network
- In Win2k/XP its in the properties of My computer

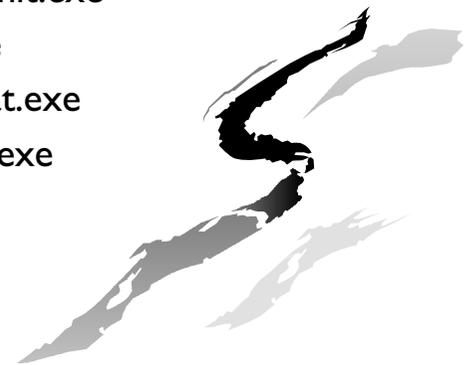


OS/2 or eCS configuration

- During OS installation: *Print and Filesharing*
- Check `x:\ibmlan\ibmlan.ini`



```
net1 = NETBEUI$,0,LM10,34,100,14
net2 = TCPBEUI$,1,LM10,34,100,14
wrkservices = PEER,MESSSENGER
wrknets = net1,net2
COMPUTERNAME = K7
DOMAIN = IBMPEERS
srvhidden = no
srvnets = NET1,NET2
messenger = services\msrvinit.exe
peer = services\peerinit.exe
replicator = services\replicat.exe
requester = services\wksta.exe
```

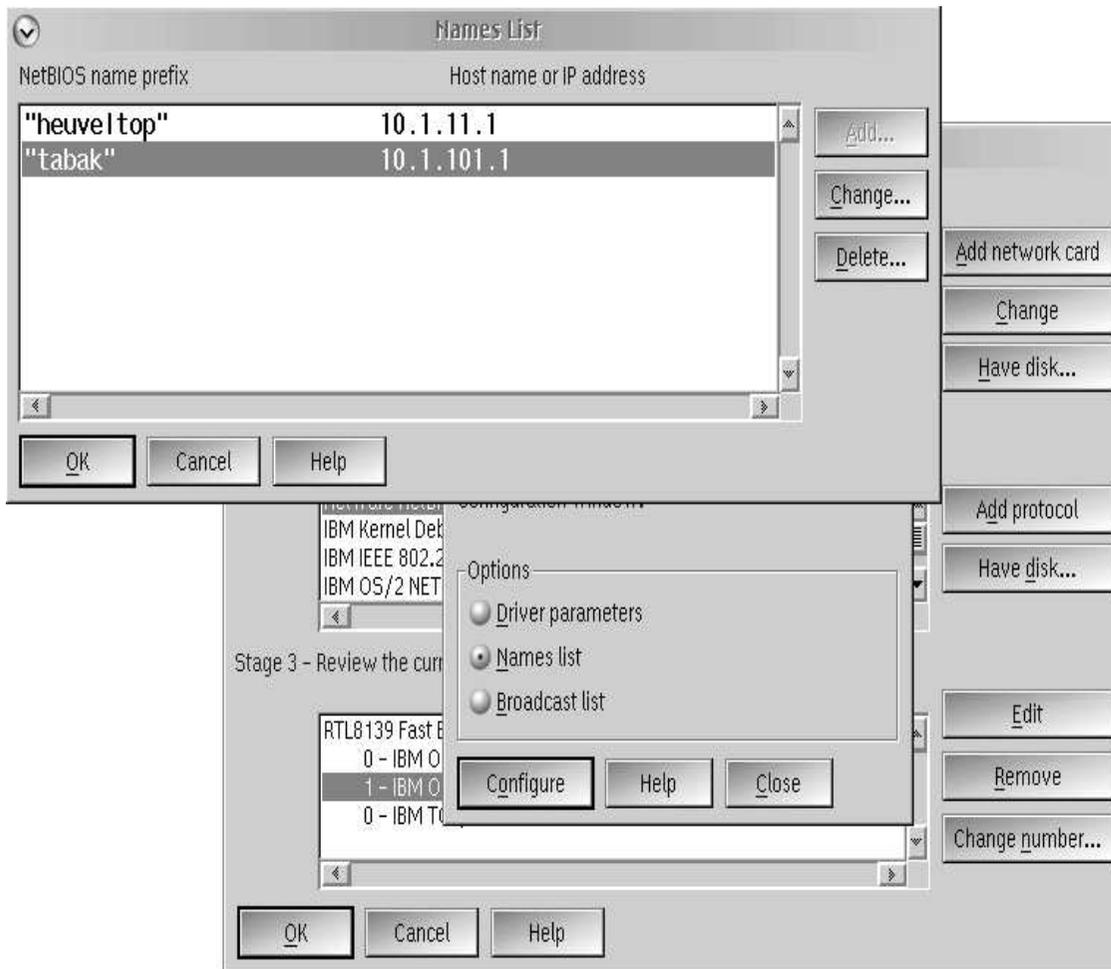


OS/2 / eCS MPTS configuration

- Goto MPTS or Adapters and protocols
- Install/configure Netbios and Netbios over TCP/IP
- If needed add the following:
 - Select *Netbios over TCP/IP* and click on edit.
 - Add in *Names list*:
Netbios name of the network, ic: *IBMPEERS* and an IP adress, ic the router adres, 192.168.1.1
 - Add in *Broadcast list*: IP adress with the broadcast adress (usually x.x.x.255), ic: 192.168.1.255
 - Click on OK for previous screen.
- Select *Netbios Socket Acces* and click on configure.
- Click on close and exit.



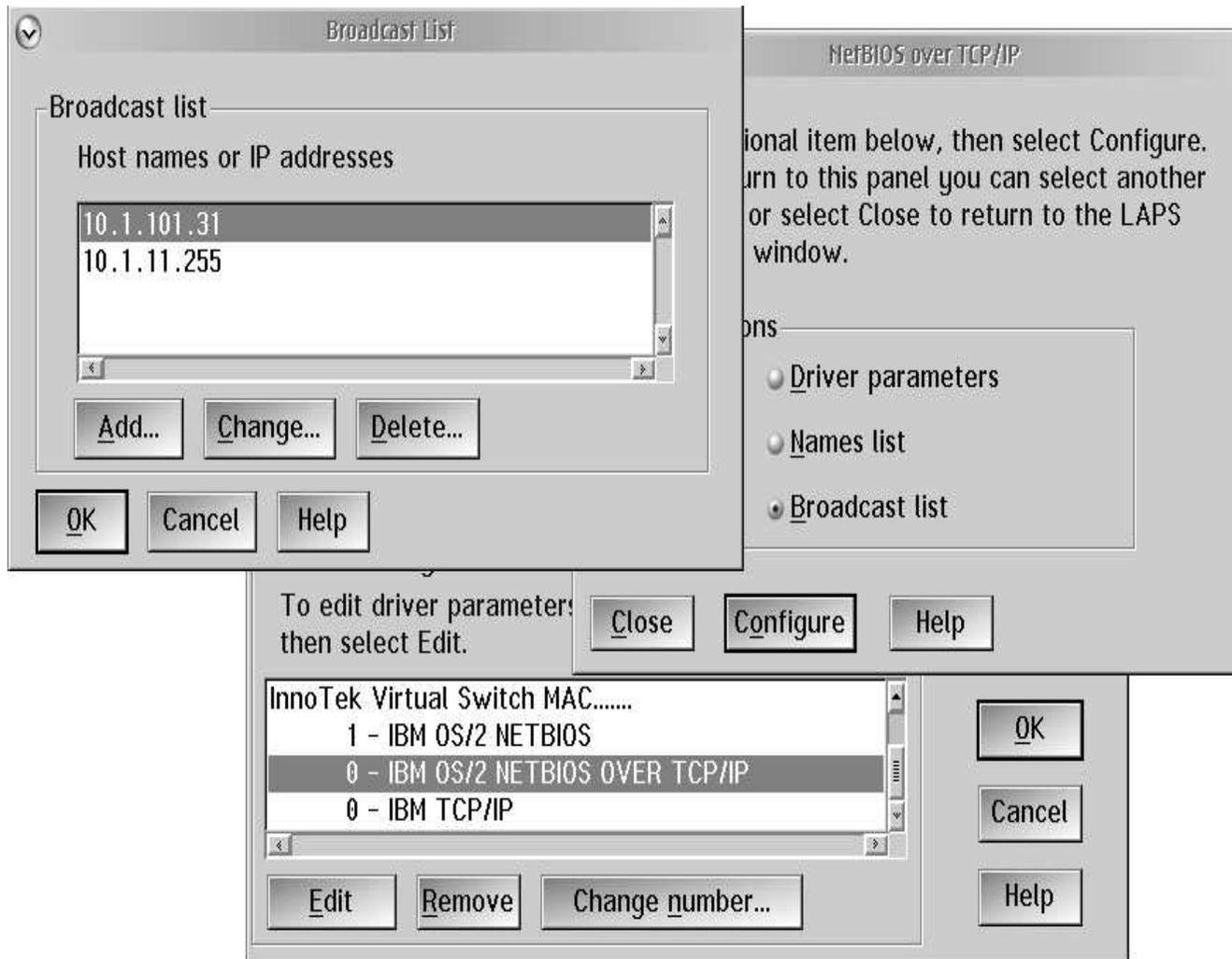
MPTS: Names



- Select Netbios over TCP/IP and click on edit.
- Add in Names list: Netbios name of the network, ic: IBMPEERS and an IP address, ic the router adres, 192.168.1.1



MPTS: Broadcast



- Add in *Broadcast list* the broadcast address: `ic 192.168.1.255`
- Close off
- Restart the pc.



Windows configuration

- Windows can now see and browse the OS/2 pc but OS/2 cannot browse the windows pc.
- Edit the registry.
 - Go to Start, open a command prompt and start regedit or reg32.
 - Search for LMannounce and change the 0 in 1



Fire up the network

- Go to *Sharing and connecting*. It can be found on different places in OS/2 and eCS.
- Fill in your *Username* and *Password*.
- If you do not succeed and you are certain that you have filled in a password during installation try the following. Go to *User Account Management* in the *System Setup* and type after *USER ID: userid* and after *PASSWORD: password*. If this works you can make another account with your name and password.



The last bits

- If everything is correct you are now logged in locally.
- Click again on *Sharing and connecting* and you can now set up your peer to peer network, i.e. sharing network drives and -printers from other pc's.
- Do not forget to share your own drives or printers. You can do that from above settings or directly from the cursor. Click on a drive icon with your right mouse button and select *Start sharing*. Fill in the necessary info, click on *Manage Access* and under *Access permissions* on *Read/Write*. Close off and the drive will be available on the network.



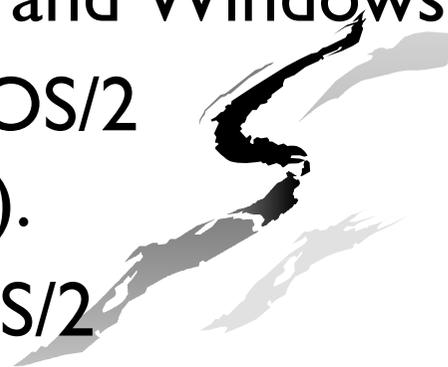


Client/Server network

Win2k/+ and OS/2 WSEB



Client server relation

- Platforms using standard login software
 - Windows to Windows server
 - eCS and OS/2 to OS/2 WSEB or Novell
 - Linux to Linux Samba server
 - Solutions:
 - Primary logon Client for Windows (to WSEB).
 - Novell Netware Client for eCS, OS/2 and Windows
 - Comtarsia Logon Client for eCS and OS/2 (to WSEB, Windows AD, SAMBA 3.0).
 - SAMBA client or server for eCS or OS/2
- 

Windows problems

- Win2k up to sp3 and XP have problems with disconnecting sessions leading to the net3101 error (The system ran out of resources) in WSEB.
- Win2003 by default doesn't allow old systems to connect due to its high security policy.



Let Win2k and up behave

- On Win2k sp4, XP and 2003 change the following
 - Click Start, click Run, type regedit, and then click OK.
 - Locate and then click the following key in the registry:
HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\lanmanworkstation\parameters
 - On the Edit menu, point to New, and then click DWORD.
 - Type **EnableDownLevelLogOff**, and then press ENTER.
 - On the Edit menu, click Modify.
 - Type 1, and then click OK.
 - To send non encrypted passwords to the server add:
EnablePlainTextPassword = 1



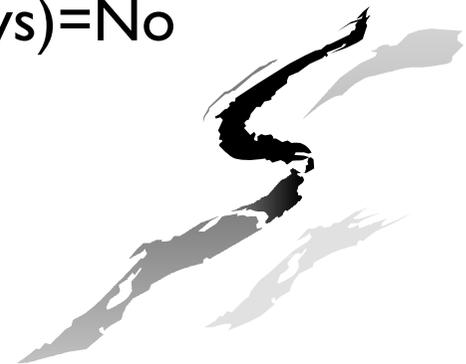
WSEB change

- If the connection from win2k with SP up to 3 is flaky (NET3101) try this setting in the file x:\ibmlan\ibmlan.ini
 - [server]
 - autodisconnect = 120
- Install script to check all sockets and close if needed
 - Goto Hobbes and search for net3101



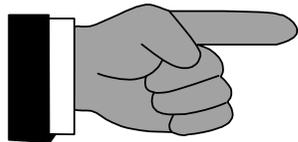
Windows 2003 server behaviour

- Extra security is blocking OS/2 connection
- Goto: Computer configuration \Windows configuration \Security Params\Local policy \Security Params\ or run: gpedit.msc and check/change the following:
 - Microsoft network server->use digital signing (always)=No
 - Client of ms network:->use digital signing (always)=No
 - LAN Manager verification level->NTLM & LM
 - Status of guest account-> Yes (if needed)
Warning: This disables password checking.



Some extras and utilities

Just checking



Network testing

- Ping xxx.xxx.xxx.xxx
 - for test of live IP address
- Tracerte xxx.xxx.xxx.xxx
 - to see all routers along the route
- net view : overview of connected network pc (servers or peers)
- netstat -r : for routing overview
- arp -a : for connected IP/MAC addresses



Troubleshooting I

- IBMLAN.INI is missing. Reinstall Print&filesharing
- If connecting to other pc's is not working: check your Netbios name (upper/lowercase), network settings or reinstall MPTS & Print&filesharing
- If OS/2 only gives the root directory of a share: Logon local and refresh the *Manage Acces* and *Read/write* of that drive.
- If TCP/IP or internet is not working: check TCP/IP config or reinstall



Troubleshooting 2

- Browsing network drives from Workplace Shell gives only root on win2k/XP pc. FAT32 problem->convert to NTFS or use a file browser.
- Local login problem: Go to *User Account Management* in the *System Setup* and type after *USER ID: userid* and after *PASSWORD: password*.
- Reinstall network can be found on the cd or in Local system, Install/remove (Desktop) s:\cid\server\mpts.exe
s:\cid\server\tcpapps\install.cmd

Questions

- If time permits

