



IBM eServerJ iSeriesJ

Session: 406170
26TB

iSeries NetServer: File and Print Serving Basics

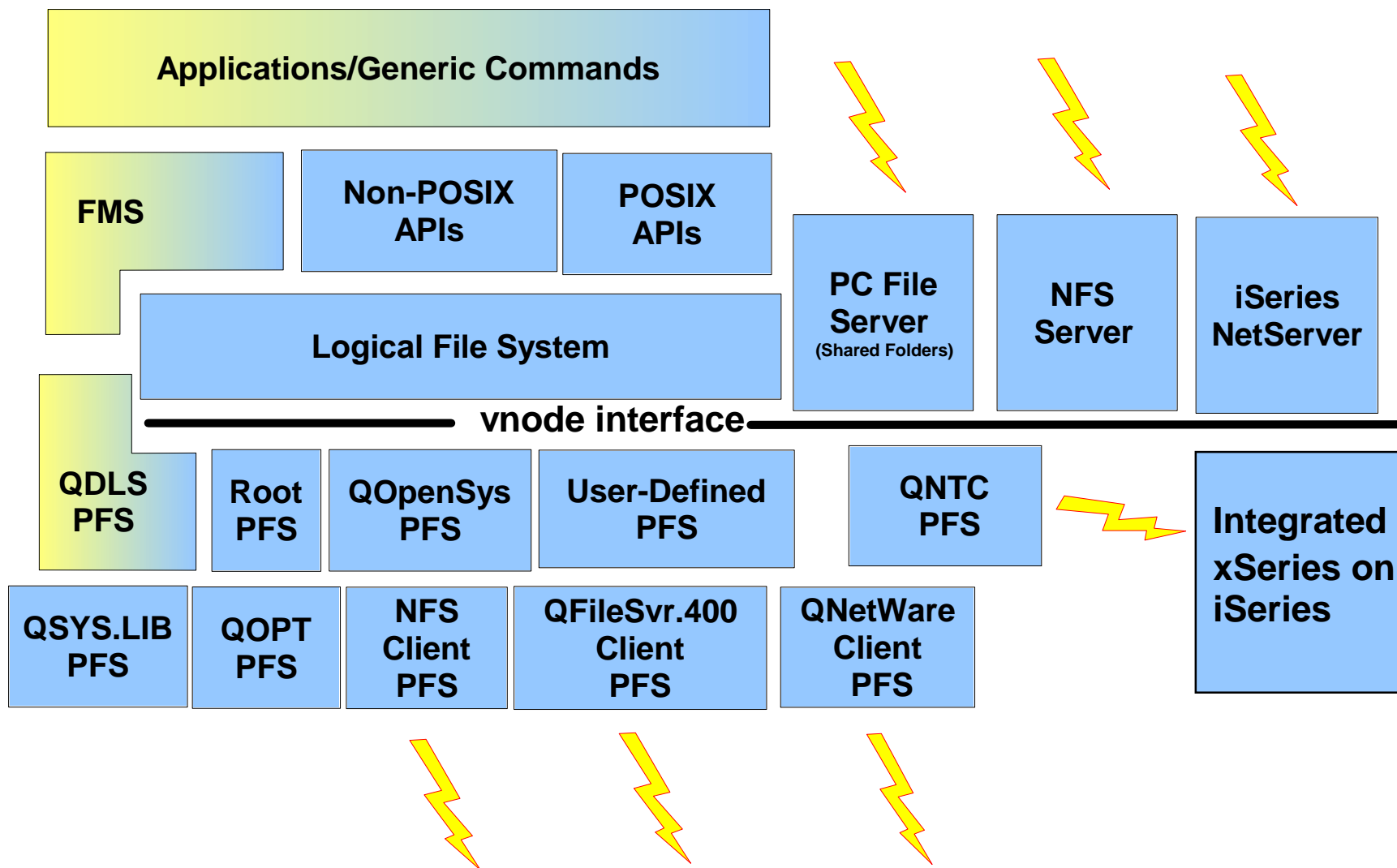
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March, 2003

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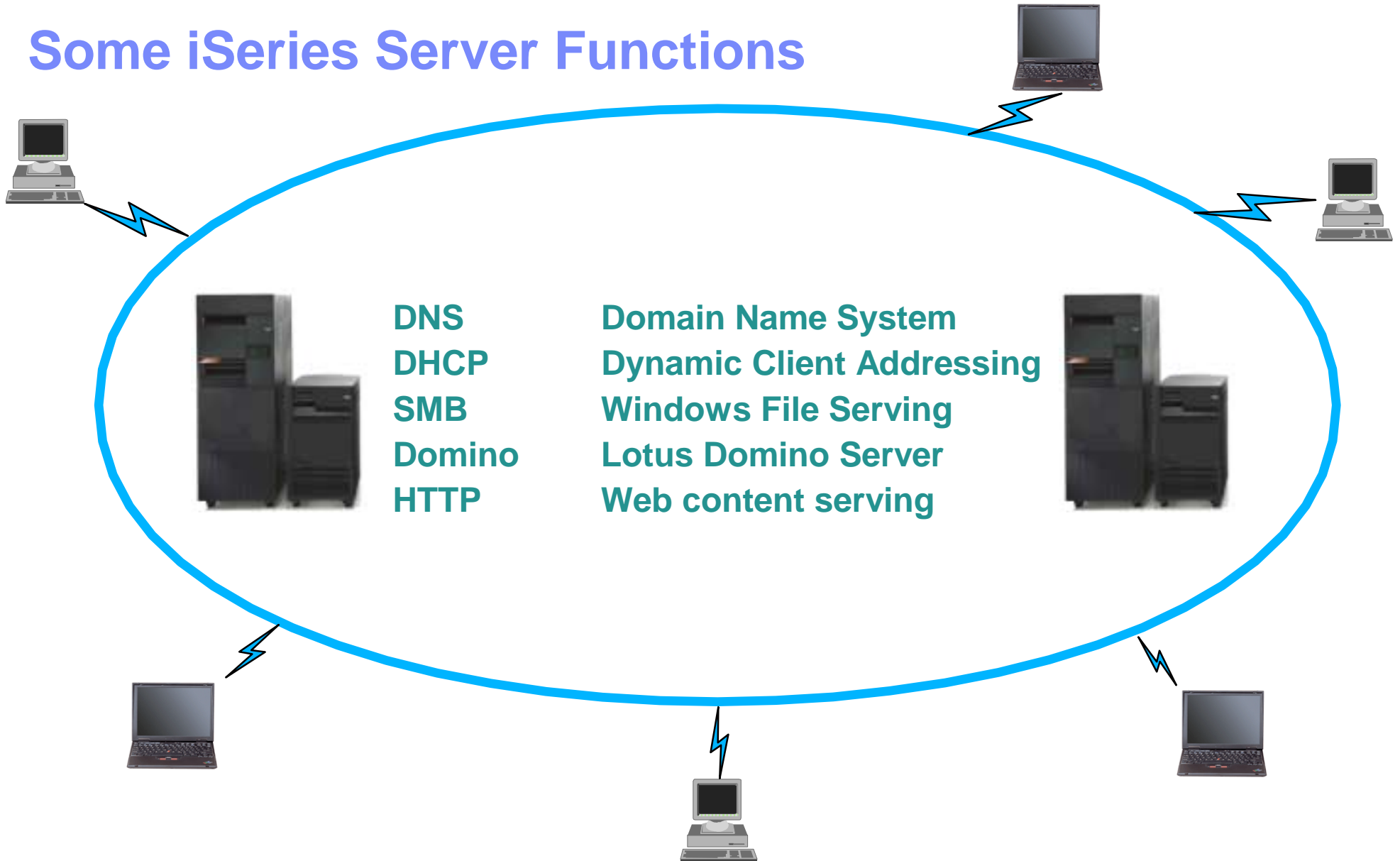
Agenda

- Welcome to the neighborhood
- What the end user sees
- Configuration
 - ▶ iSeries NetServer side
 - ▶ PC side
- Administration
 - ▶ Setting up and using file shares
 - ▶ Setting up and using print shares
 - ▶ Managing iSeries NetServer activity
- What's new!
- Resources & Information
- Conclusion

Integrated File System



Some iSeries Server Functions



Welcome to the neighborhood

"iSeries Support for Windows Network Neighborhood"

(iSeries NetServer)

- File and print serving for SMB or CIFS clients
- Compatible with Microsoft Networking
- Part of the base OS/400 Operating System
- Available in V4R2 and later
- Uses TCP/IP for connectivity
- Clients will not need additional software such as iSeries Access for Windows (formerly Client Access Express) to access files and printers on the iSeries

Welcome to the neighborhood

iSeries NetServer - Supported Clients

- Windows 95 (Not Supported in V5R2)
- Windows 98
- Windows Me (V5R1)
- Windows NT 4.0
- Windows NT 4.0 Terminal Server Edition
- Windows 2000
- Windows XP Professional (V5R2)
- Linux/Samba (V5R1 w/PTFs)

iSeries NetServer Uses:

Some examples:

- Share office documents (or .MP3 files) between users
- Install / use applications from a central server (files or CD)
- Access data in any iSeries file system
- Use iSeries as a logon server for Windows users and store user profile settings on the server

Why iSeries NetServer?

- Eliminate cost of administering multiple servers
 - ▶ Uses iSeries user profiles and security
 - ▶ OS/400 is single point for software maintenance
- Reduce cost of PC software and maintenance
 - ▶ Standard Windows user interface, no retraining required
- No special hardware required
 - ▶ Uses iSeries processor, disk and LAN adapters
- Simple, graphical administration and operations
 - ▶ Managed with iSeries Navigator
 - ▶ Point and click access to iSeries files and printers

iSeries NetServer & iSeries Access for Windows

iSeries NetServer

- Doesn't require proprietary client software
- Can share individual sub-directories
- May share directories with read only access
- iSeries NetServer can be hidden from the Windows Network Neighborhood by setting the browse interval property parameter to zero
- iSeries NetServer can 'hide' shares from the network by ending them with a \$

iSeries Access

- Has many functions not available in Windows, such as 5250, ODBC, data transfer, etc.
- No concept of "shares". All of IFS is made available in iSeries Navigator
- Only IFS permissions apply

What the End User Sees

- Finding a computer (server)
- Network Neighborhood (My Network Places)
- Connecting to a share
- Working with output queues
- Using Network DOS commands
- Encrypted password security
- Disabled Users

"Find Computer" - Connecting to iSeries NetServer

The screenshot shows the Windows XP Start menu with the 'Find' option selected. A sub-menu is open showing 'Files or Folders...' and 'Computer...'. The 'Find: Computer' dialog box is open, displaying the 'Computer Name' section with a dropdown menu set to 'qbridget'. The 'Find Now' button is highlighted. Below the dialog box, a table shows the search results.

Name	Location	Comment
Qbridget	Smb	os/400 file server for ...

1 computer(s) found

"Search for Computers" - Connecting with Windows 2000

My Network Places

- Open**
- Classi on Dir
- DEV/2000 Cmd Prompt Here
- Explore
- ez on Dir
- Search for Computers...**
- Map Network Drive...
- Disconnect Network Drive...
- Create Shortcut
- Rename
- Properties

Search Results - Computers

File Edit View Favorites Tools Help

← Back → Search Folders History

Address Search Results - Computers Go

Name	Location	Comment
qiSeries	Dom602	iSeries

Search for Computers

Computer Name:

Network Neighborhood and iSeries NetServer "Shares"

The image shows two overlapping Windows Explorer windows. The top window is titled "Network Neighborhood" and displays a table of network objects. The bottom window is titled "qbridget" and displays a detailed view of the selected "QCA400" share.

Network Neighborhood Window:

Name	Comment
Entire Network	Entire Network
Qbridget	os/400 file server for ...

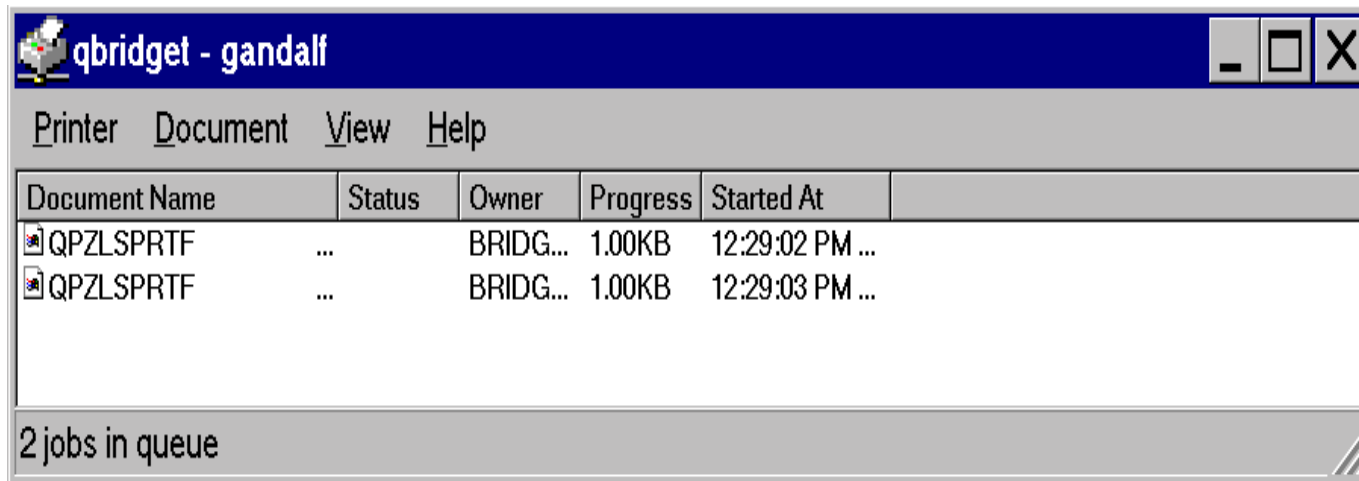
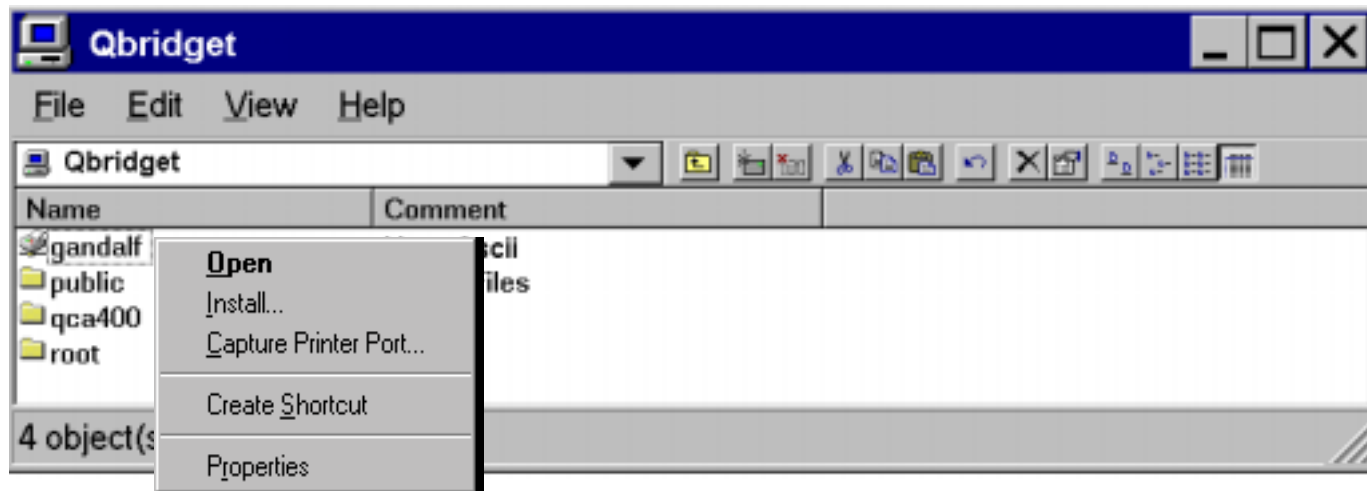
3 object(s)

qbridget Window:

Name	Comment
AUDIO	John's Music
GANDALF	User ASCII
QCA400	CA/400
QIBM	Ibm product directories
ROOT	Root

1 object(s) selected

Working with Printers and Output Queues



Printer status window

Access from a Command Prompt

```

Command Prompt
C:\>net use K: \\iserv5bd\home
The command completed successfully.

C:\>net print \\iserv5bd\asc5bd
Printers at \\iserv5bd

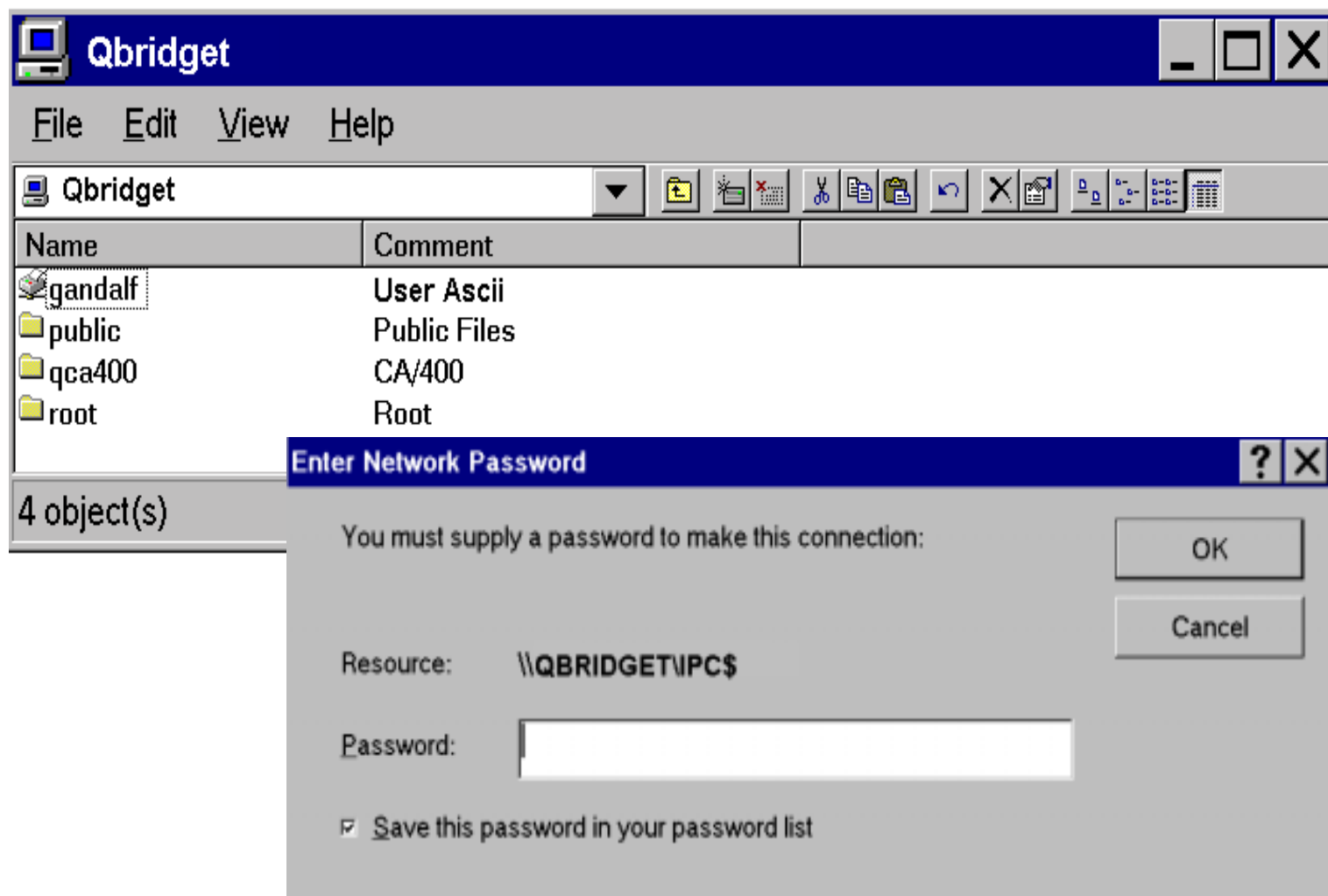
Name                               Job #      Size      Status
-----
ASC5BD Queue                        5 jobs
  SMBGUEST                          1         1024     Waiting
  CSKY                               2         1024     Waiting
  SMBGUEST                          3         1024     Waiting
  SMBGUEST                          4         1024     Waiting
  MARQUIS                           5         1024     Waiting
The command completed successfully.

C:\>net view \\samwise
Shared resources at \\samwise

Samba Server
Share name  Type      Used as  Comment
-----
csky       Disk      Home Directories
smbinfo    Disk      smb info collection
smbtest    Disk      smb test utilities
The command completed successfully.

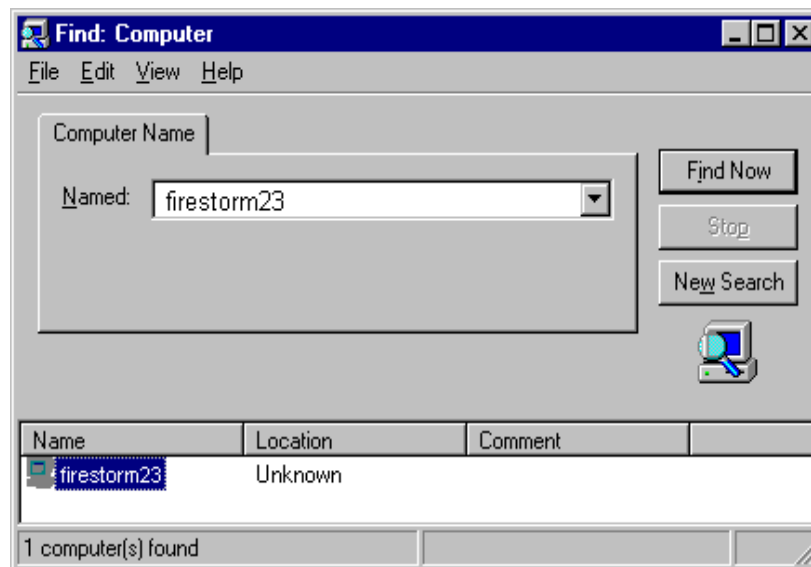
```

Security



Disabled Users

- A user becomes disabled for iSeries NetServer access when the number of password violations exceeds the QMAXSIGN system value.
 - ▶ Prior to V5R1, this could easily happen from a Windows client if you don't increase the value for QMAXSIGN
 - ▶ A disabled NetServer user is NOT disabled for other ways of iSeries access (i.e. the profile does not get disabled)



Configuring iSeries NetServer

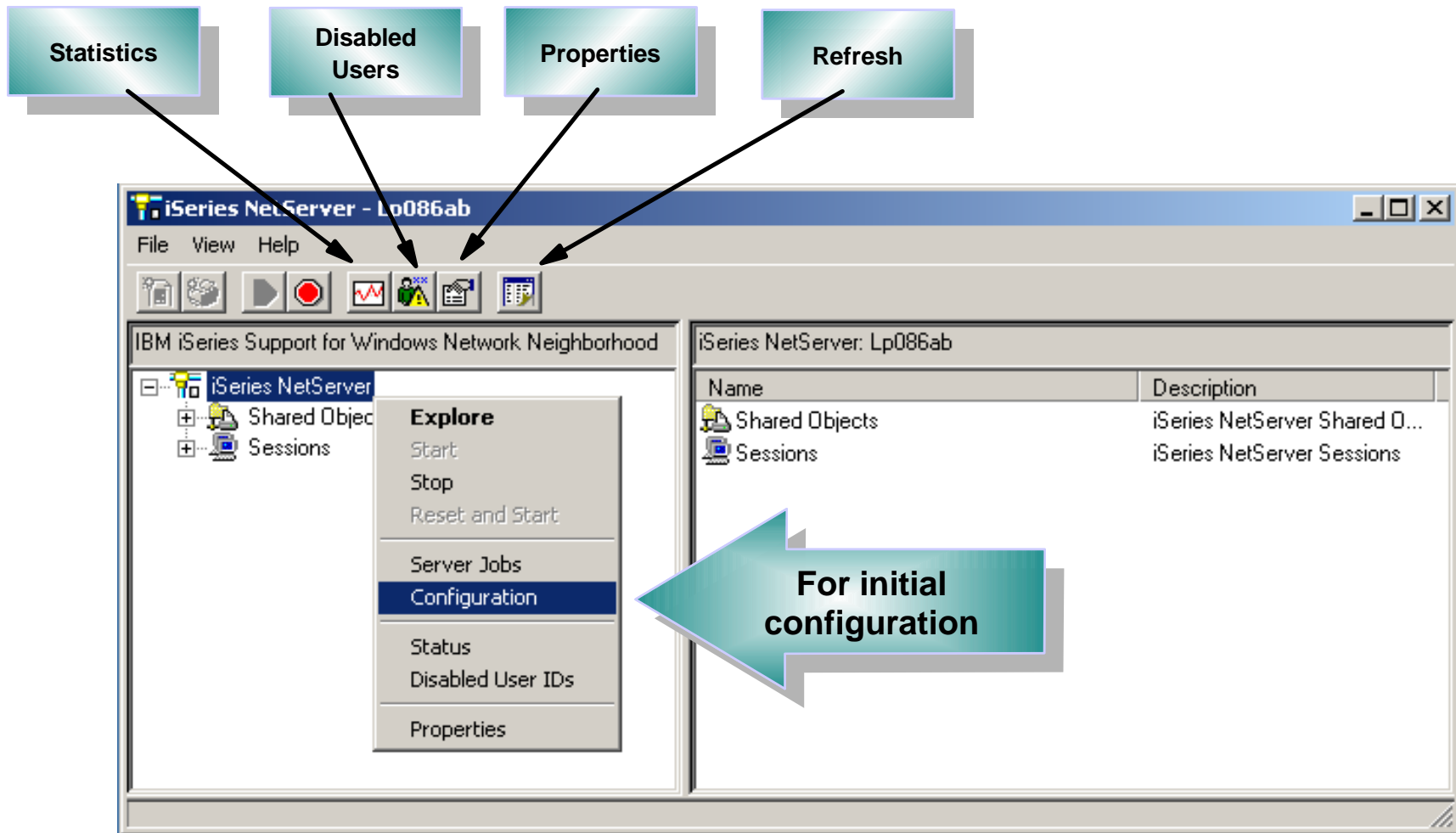
- iSeries Navigator Interface
- The iSeries NetServer Window
- New configuration wizard
- General properties
- Advanced properties
- Prerequisites to starting the server

Locating iSeries NetServer in iSeries Navigator

The screenshot shows the iSeries Navigator interface. On the left, a tree view under 'My Connections' shows the path: Management Central (Lp086ab) > My Connections > Lp086ab > Network > TCP/IP Configuration > Servers > TCP/IP. The 'iSeries NetServer' icon is highlighted. A context menu is open over it, with 'Open' selected. At the bottom left, a status bar reads 'Opens iSeries NetServer.'

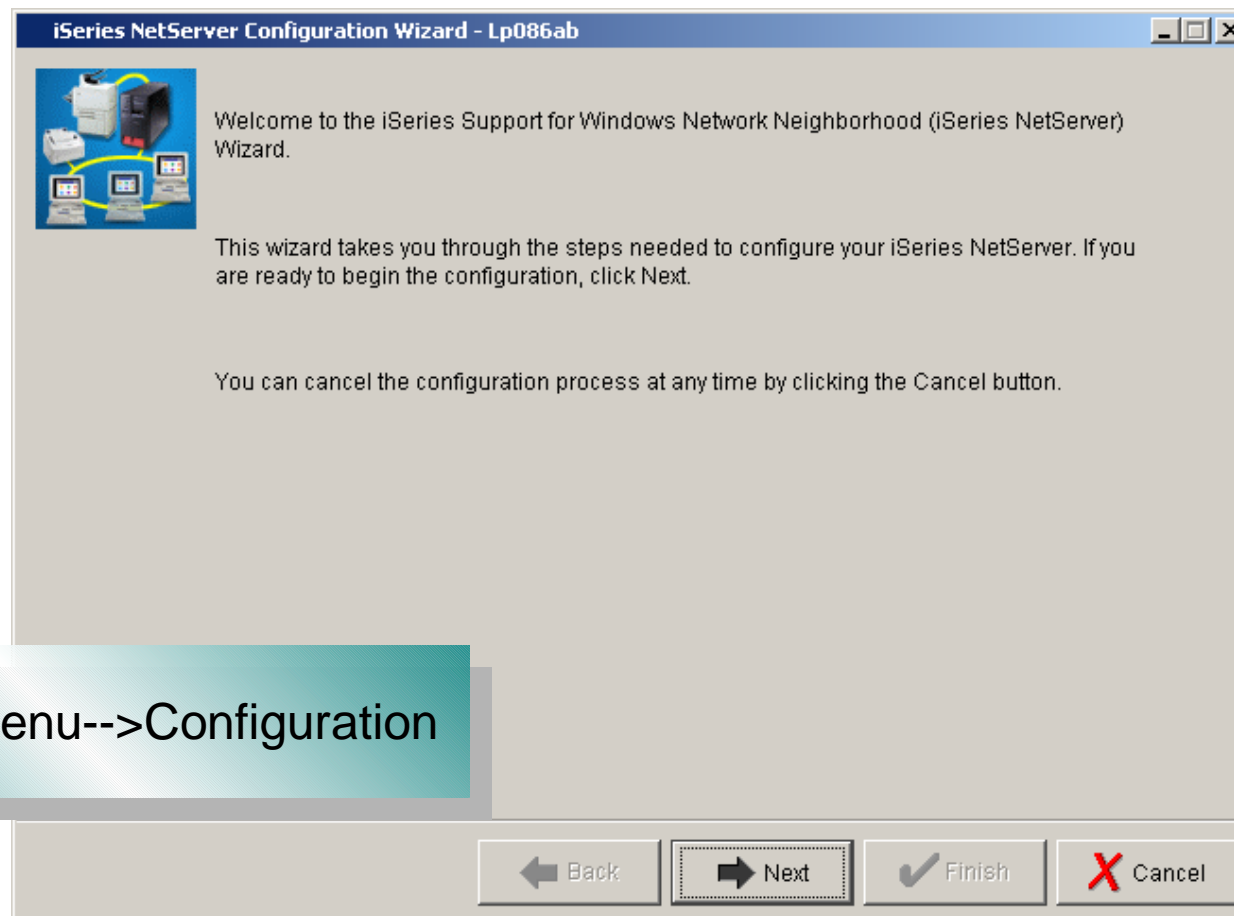
Server Name	Status	Description
BOOTP/DHCP Relay Agent	Stopped	Bootp relay agent
BOOTP	Stopped	Bootp
DDM	Started	DDM
DHCP	Stopped	DHCP
RouteD	Stopped	RouteD
RPC	Stopped	RPC
TFTP	Stopped	Trivial FTP
NFS	Stopped	Network file system
iSeries NetServer	Started	iSeries Support for Windows Network Neighborhood
INETD	Stopped	INETD
EDRSQL	Stopped	Extended Dynamic Remote SQL
SNTP	Stopped	SNTP
QoS	Stopped	Quality of Service
RADIUS NAS	Stopped	RADIUS Network Access Server
WebFacing	Stopped	WebFacing server
System Debug	Stopped	Graphical system debug server
Management Cent	Stopped	Management Central
DLFM	Stopped	Datalinks File Server
ASFTomcat	Stopped	ASFTomcat server
Triggered Cache M	Stopped	Triggered cache manager
FTP	Started	FTP
LPD	Started	LPD
POP	Stopped	POP
Remote Execution	Stopped	Remote execution
SMTP	Started	SMTP
TELNET	Started	TELNET
HTTP administration	Stopped	HTTP administration
Directory	Started	Directory

iSeries NetServer Management Window



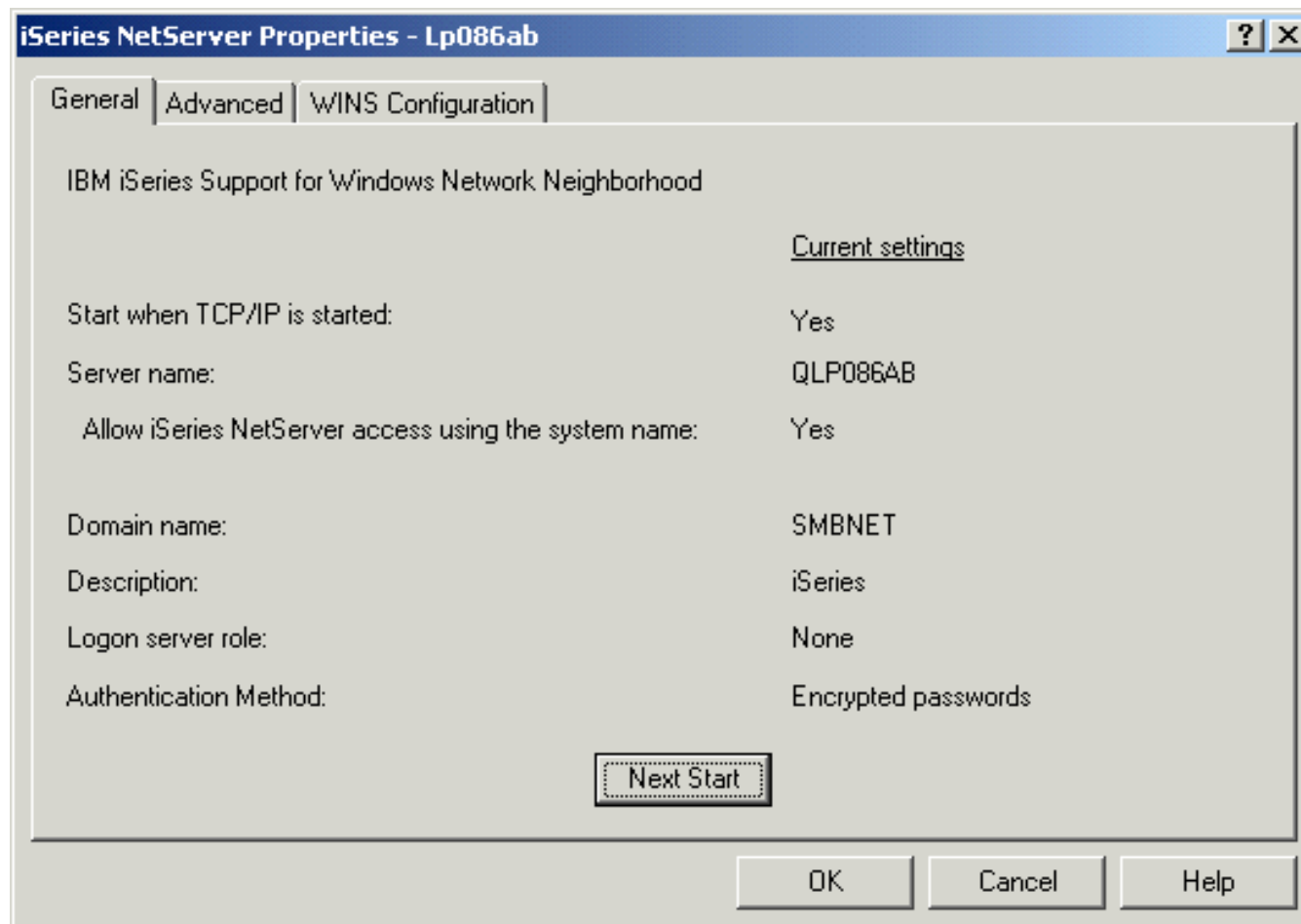
V5R2 View

Use the Wizard in V5R1 and Later



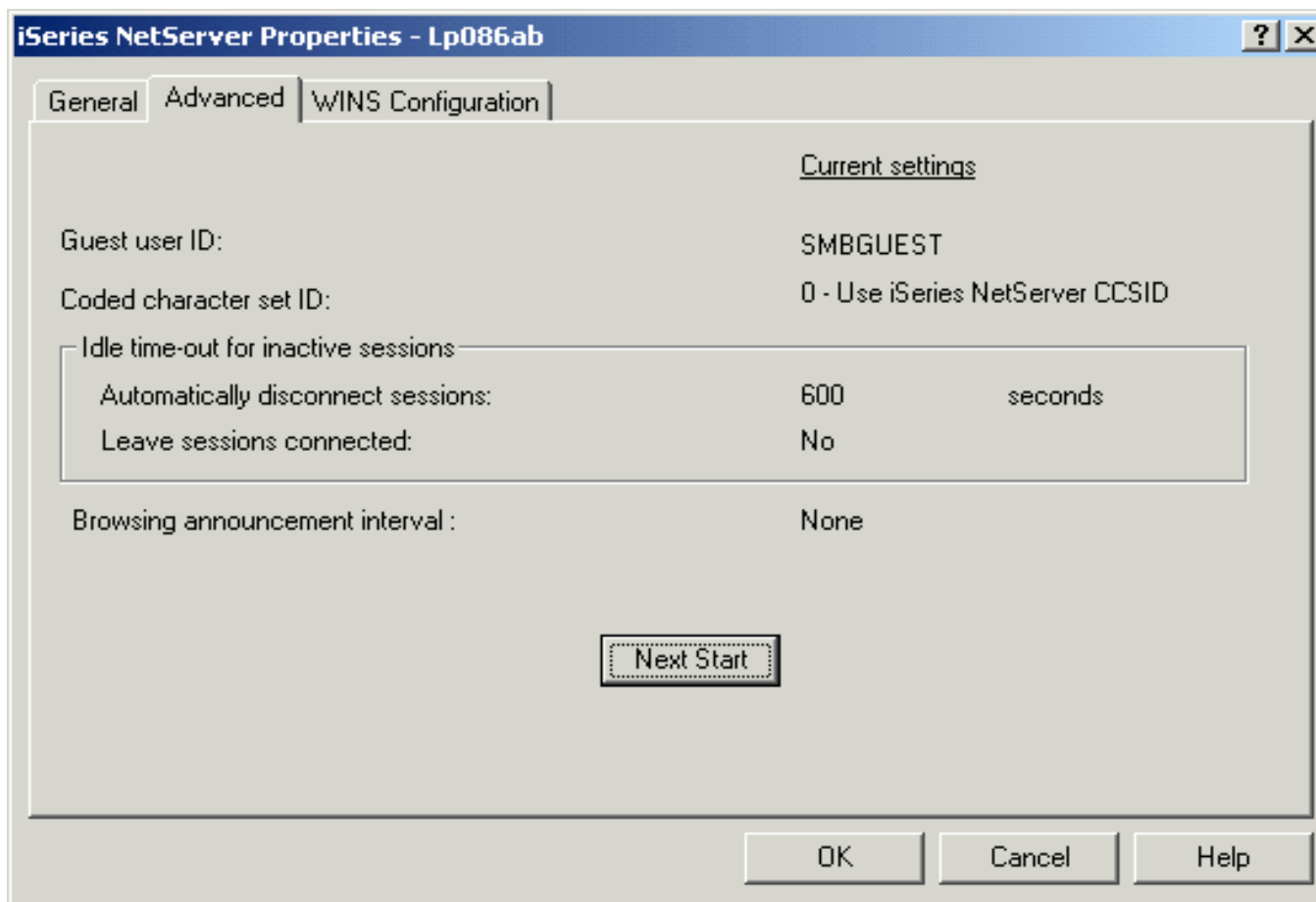
Choose File Menu-->Configuration

Properties: General Tab



V5R2 Properties dialog

Properties: Advanced Tab



V5R2 Properties dialog

iSeries Setup - Prerequisites

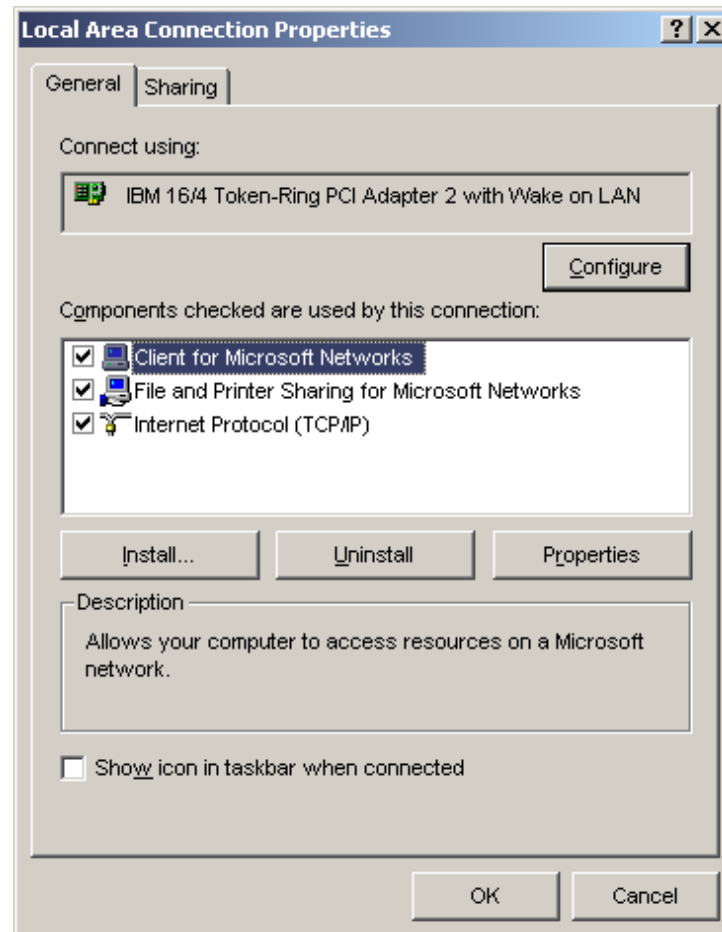
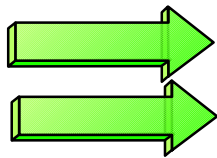
- TCP/IP support configured
- QSERVER subsystem started
 - ▶ STRSBS SBS(QSERVER)
 - ★ If using the subsystem support provided in V5R2, the alternate subsystems must be started as well.

PC Configuration

- Client for Microsoft Networks
- Complex TCP/IP networks
- Name resolution considerations
- WINS
- LMHOSTS file

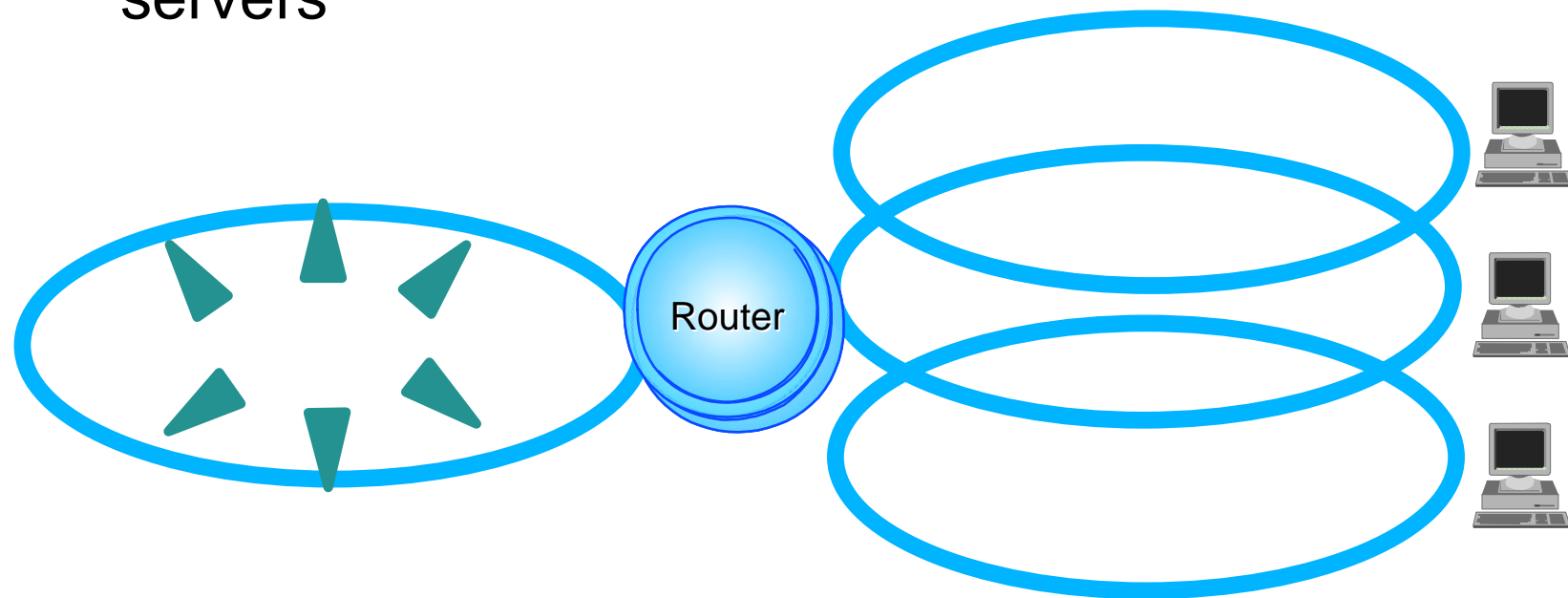
PC Setup

Use "Client for Microsoft Networks"



Complex TCP/IP Networks

- Broadcasts get discarded by routers
- Need some other method for clients to locate servers



Name Resolution

Example ordering of resolution options a client could take

1. Cache
2. WINS
3. DNS
4. Broadcast
5. Lmhosts file

WINS Configuration - iSeries NetServer

iSeries NetServer WINS Configuration Next Start - Lp086ab

IBM iSeries Support for Windows Network Neighborhood

Primary WINS server: 1.2.3.4

Secondary WINS server: 1.2.3.5

Scope ID:

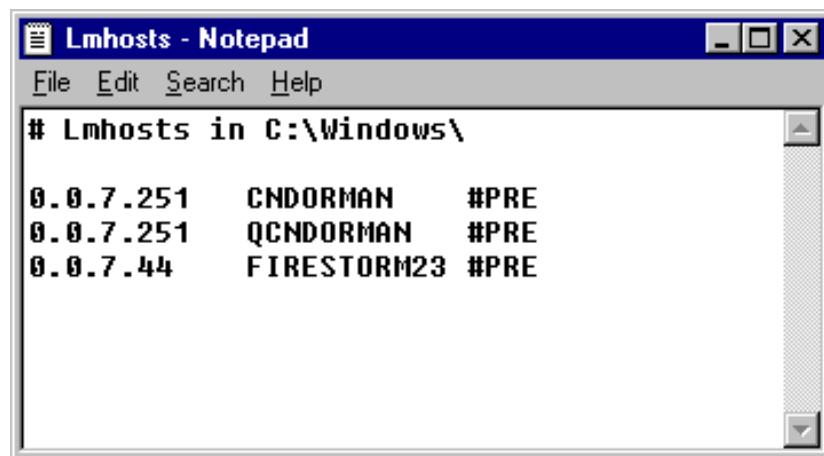
Enable WINS proxy

Reset to Current

OK Cancel Help

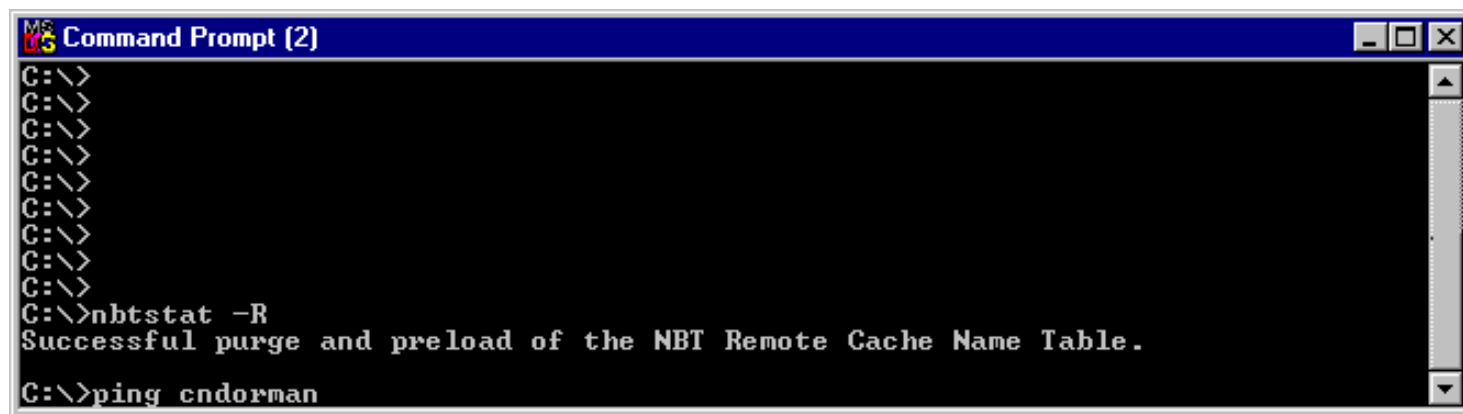
'Next Start' dialog for iSeries NetServer - WINS properties tab

Name Resolution - Lmhosts file



```
Lmhosts - Notepad
File Edit Search Help
# Lmhosts in C:\Windows\
0.0.7.251   CNDORMAN   #PRE
0.0.7.251   QCNDORMAN  #PRE
0.0.7.44    FIRESTORM23 #PRE
```

- Using #PRE causes these entries to get preloaded in the name cache when the client boots.



```
Command Prompt (2)
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>
C:\>nbtstat -R
Successful purge and preload of the NBT Remote Cache Name Table.
C:\>ping cndorman
```

- You can also purge the name cache and repopulate the preloaded entries from the command line.

Administering iSeries NetServer

Setting Up File Shares

- Designing a file sharing solution
- Creating the directory structure
- Sharing the individual folders
- Text conversion
- Mapping drives
- IFS directory permission considerations
- Backup/Restore

File Sharing Example

Qiserver shares:

Public

Home

Home/Chuck

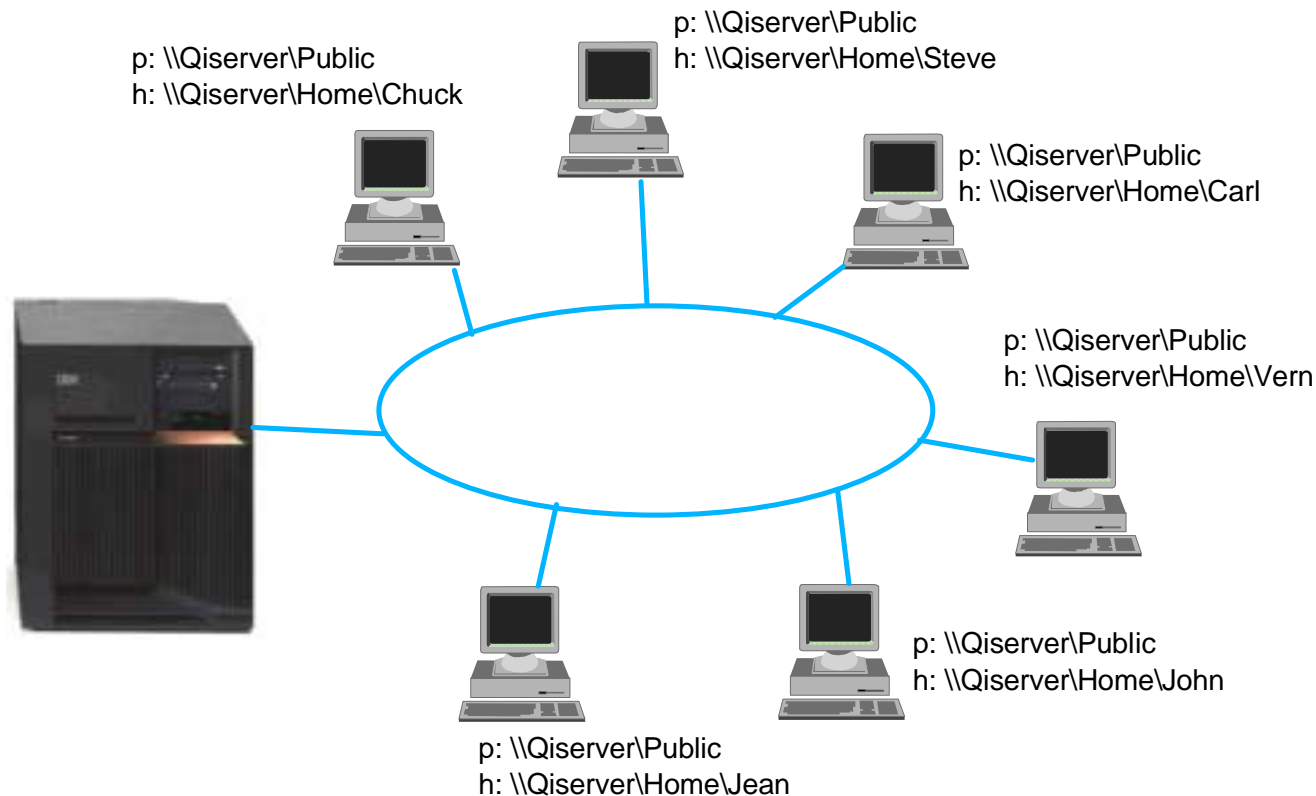
Home/Steve

Home/Carl

Home/Vern

Home/John

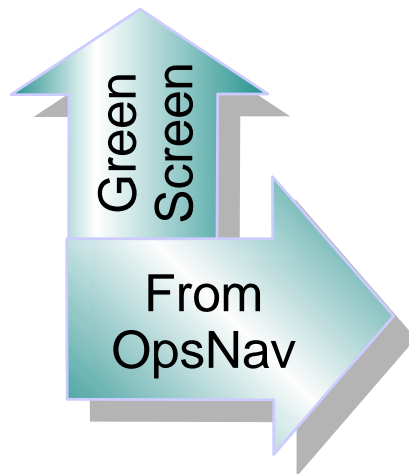
Home/Jean



Creating the directories

MKDIR DIR('\NetServer')

- Create the iSeries NetServer branch of the iSeries integrated file system



The screenshot shows the AS/400 Operations Navigator interface. The left pane displays a tree view of the file system with 'NetServer' selected. A context menu is open over 'NetServer', and 'New Folder...' is highlighted. A 'New Folder - Cndorman' dialog box is displayed, with 'Public' entered in the text field. Below the dialog box, a bullet point states: 'Create the public directory where applications are stored'.

Name	Size	Type	Modified
Presentation		File Folder	9/7/00 9:49 AM

Sharing iSeries Directories

The screenshot shows a Windows-style dialog box titled "iSeries NetServer File Share - Lp086ab". It has two tabs: "General" (selected) and "Text Conversion". The dialog is for configuring a file share named "Public".

IBM iSeries Support for Windows Network Neighborhood

Share name: Public

Description: Public Applications

Access: Read only

Maximum number of users:

- No maximum
- Maximum users (0 - 2147483647): 0

Path name: /NetServer/Public Browse...

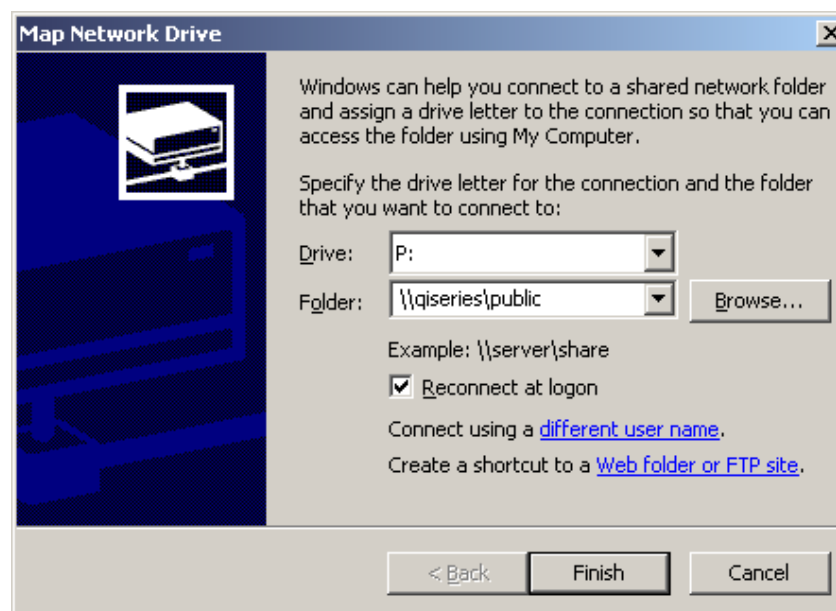
Buttons: OK, Cancel, Help

iSeries Navigator Shows Shares

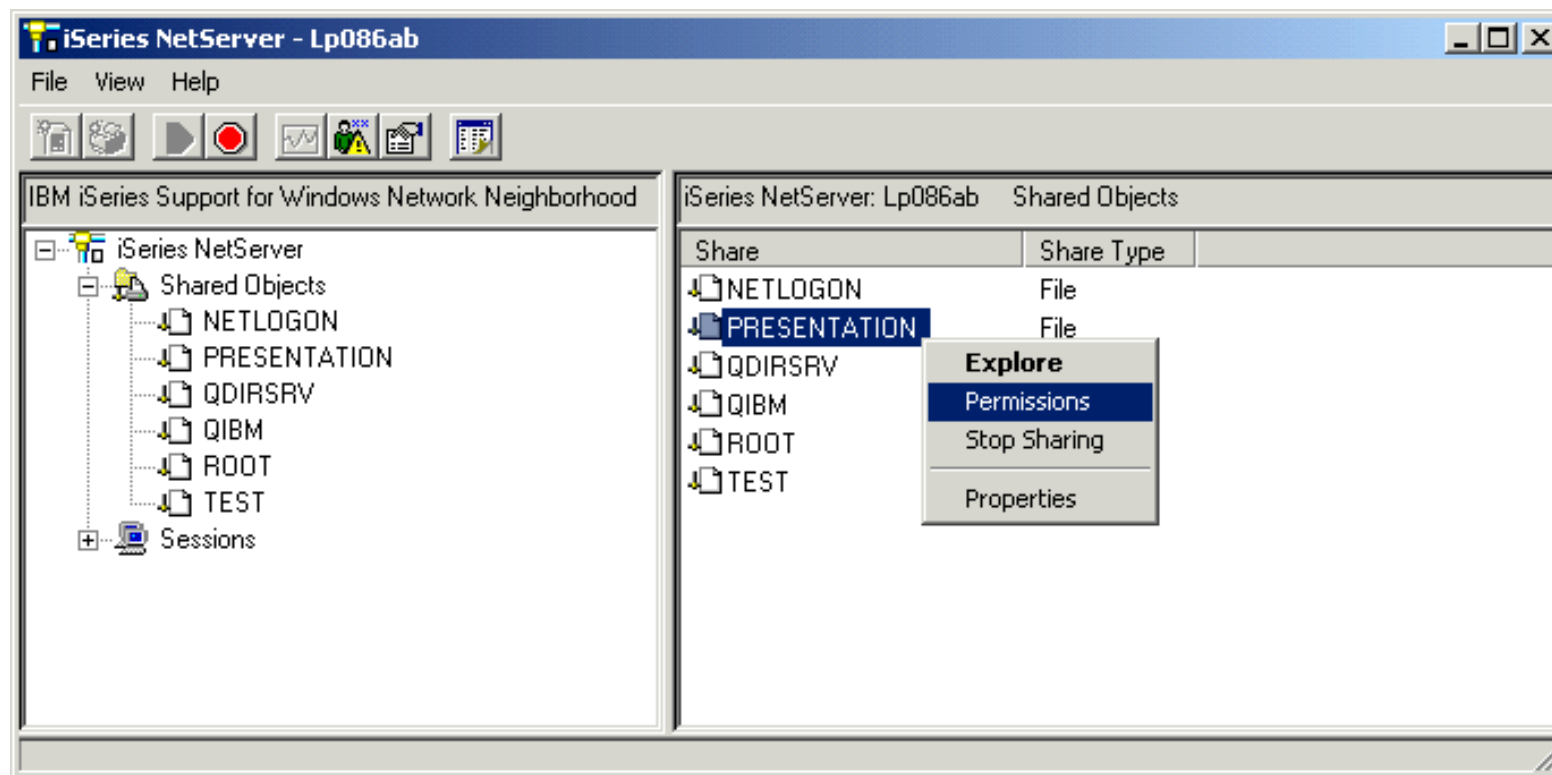
The screenshot shows the iSeries Navigator interface. On the left, a tree view displays a directory structure under 'Environment: My Connections'. A green arrow points to the 'smbtest6' folder, with the text '"hand" indicates a share'. The main pane shows a table of files and folders for 'Lp086ab: smbtest6'. A context menu is open over the 'SubDir' folder, with the 'Sharing' option selected, and a sub-menu showing 'New Share...'. The status bar at the bottom indicates 'Creates a new iSeries Netserver share.'

Name	Size	Type	Changed	Accessed
SubDir		File Folder	7/15/2002 3:52 PM	7/15/2002 3:52 PM

Mapping drives

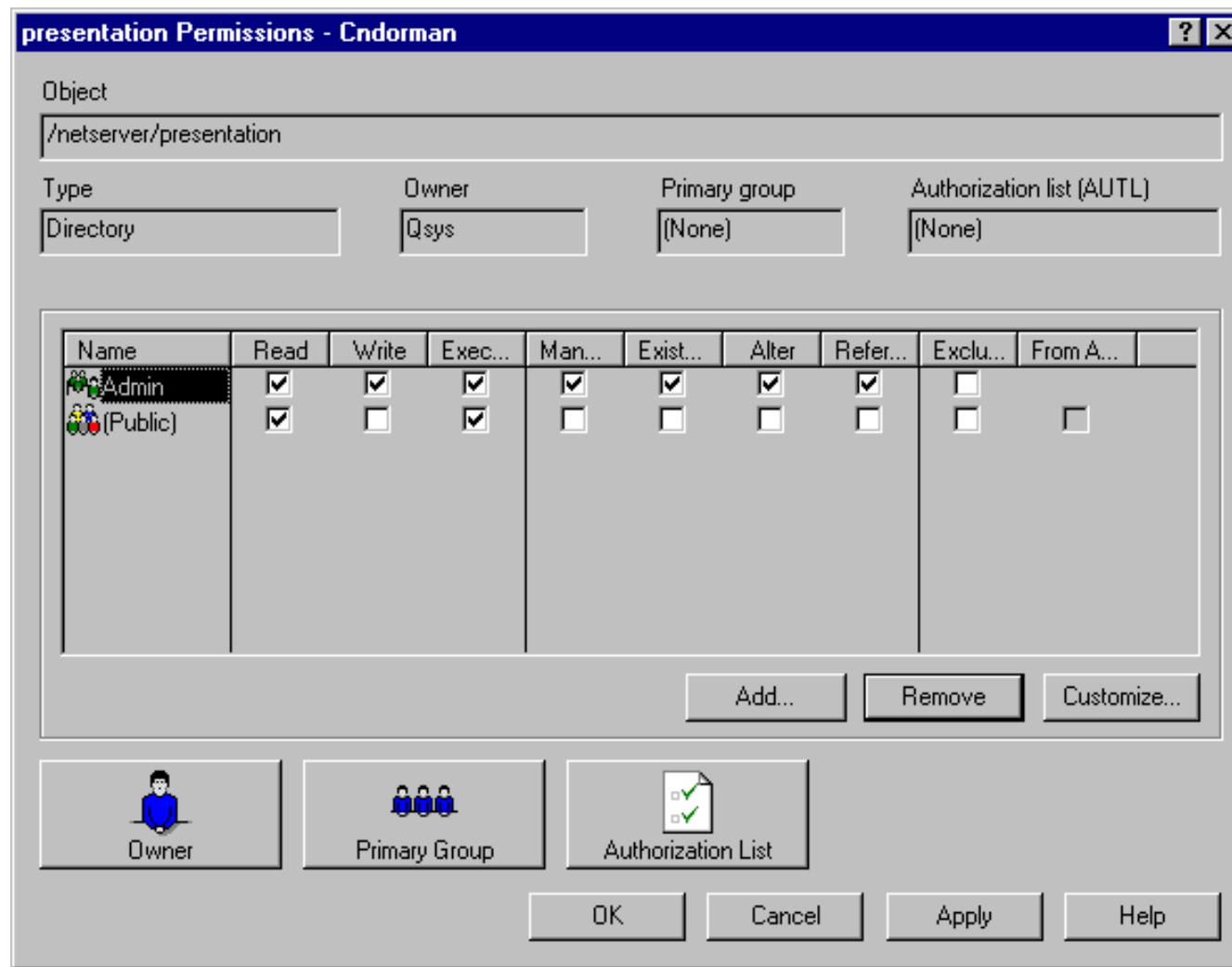


Open iSeries NetServer



Viewing shares from the iSeries NetServer window with additional administrative options.

iSeries Directory Permissions



Backup and restore made simple

- Use established iSeries backup and restore strategy
 - ▶ SAV command to save directories
 - ▶ RST command to restore directories
- No additional steps required for the end user
- Build seamlessly on emerging technologies
 - ▶ Journaled File Systems
 - ▶ Independent ASPs

Administering iSeries NetServer

Setting Up Print Shares

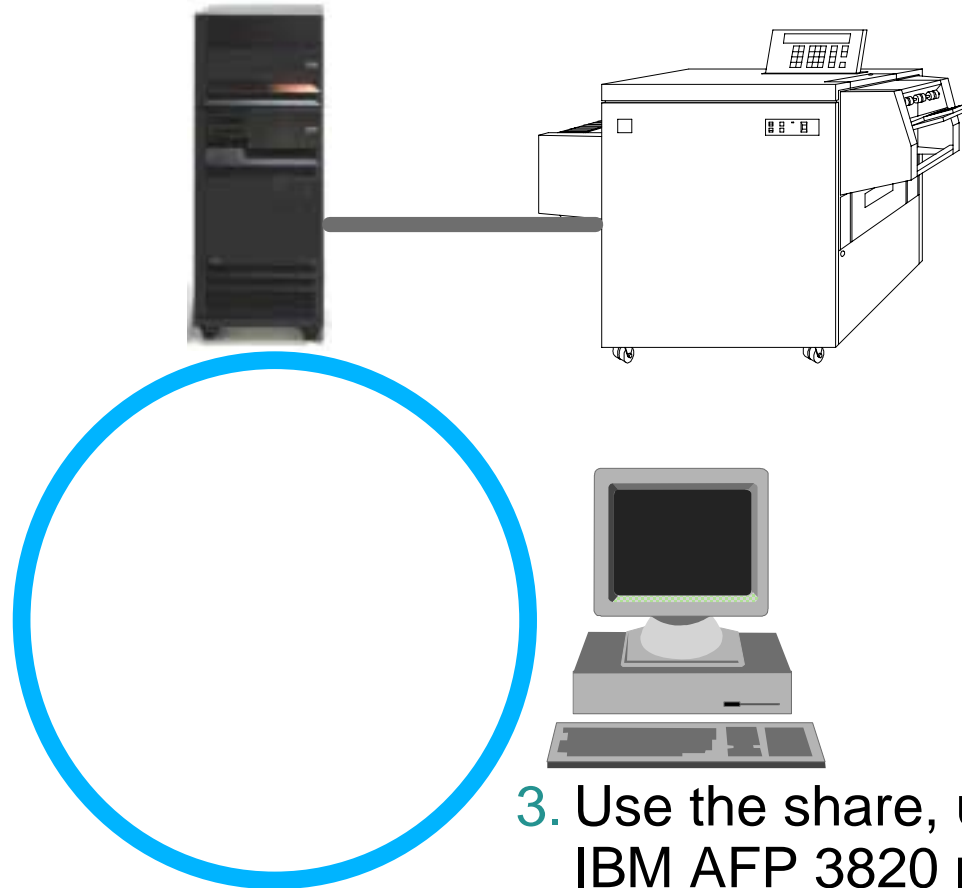
- PC to AFP printing
- Sharing an output queue
- Installing a network printer on the client
- TCP/IP printing

Print share example

PC printing to AFP printer

1. Create outq on the iSeries for AFP printer

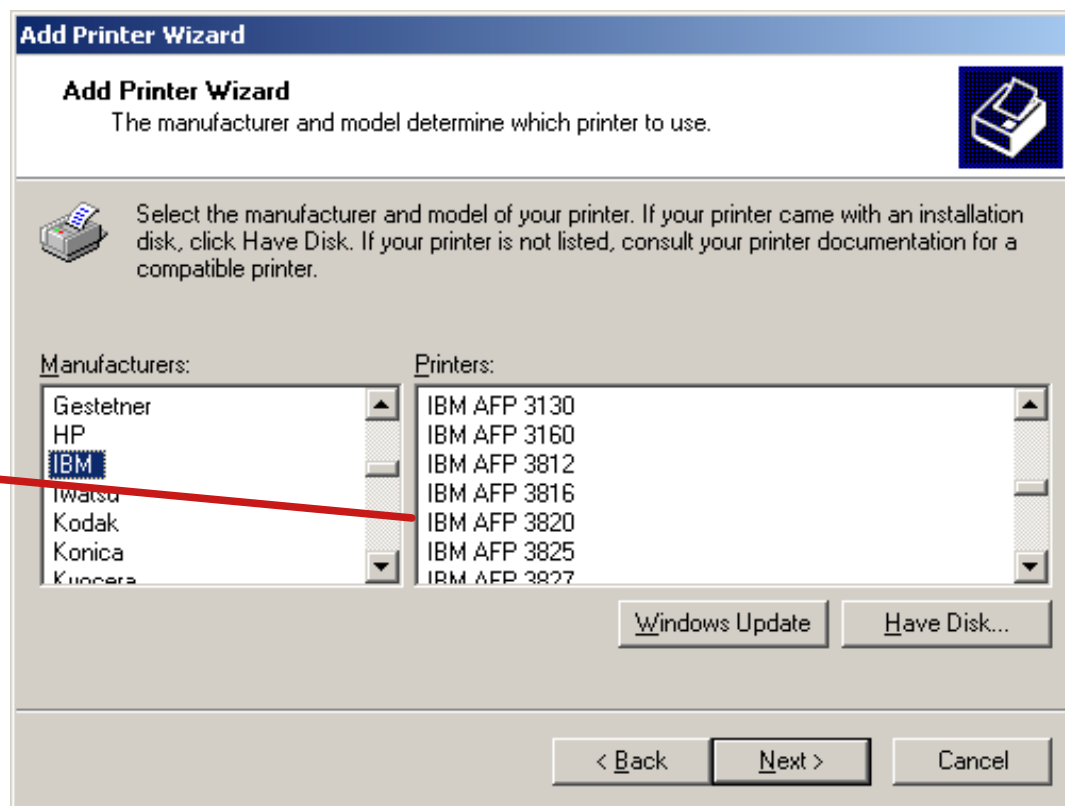
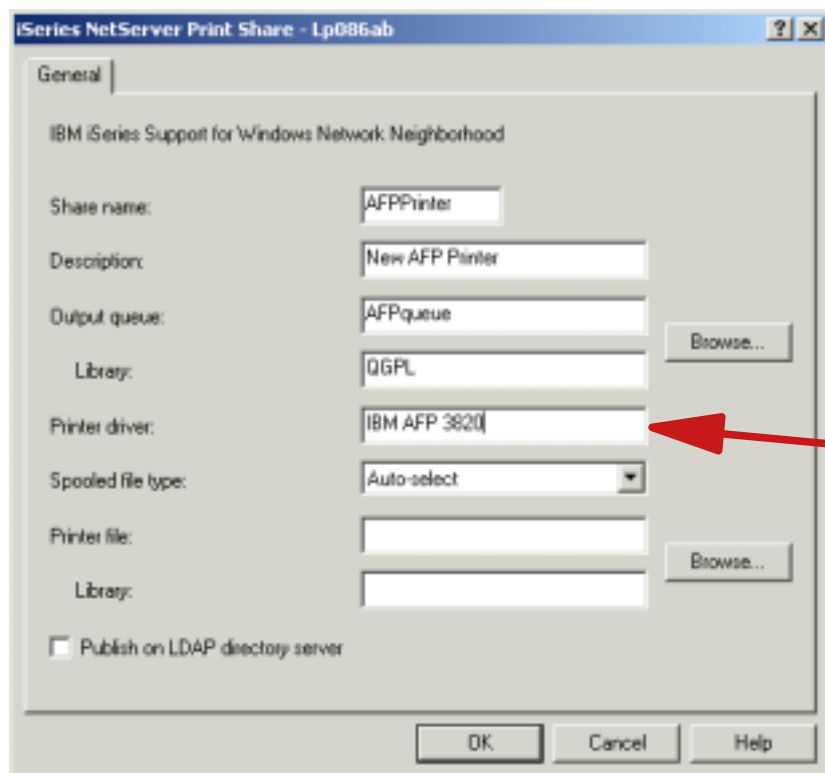
2. Share the OUTQ with "IBM AFP 3820" printer driver, *AFP spool file type



3. Use the share, using IBM AFP 3820 print driver

Sharing an Output Queue

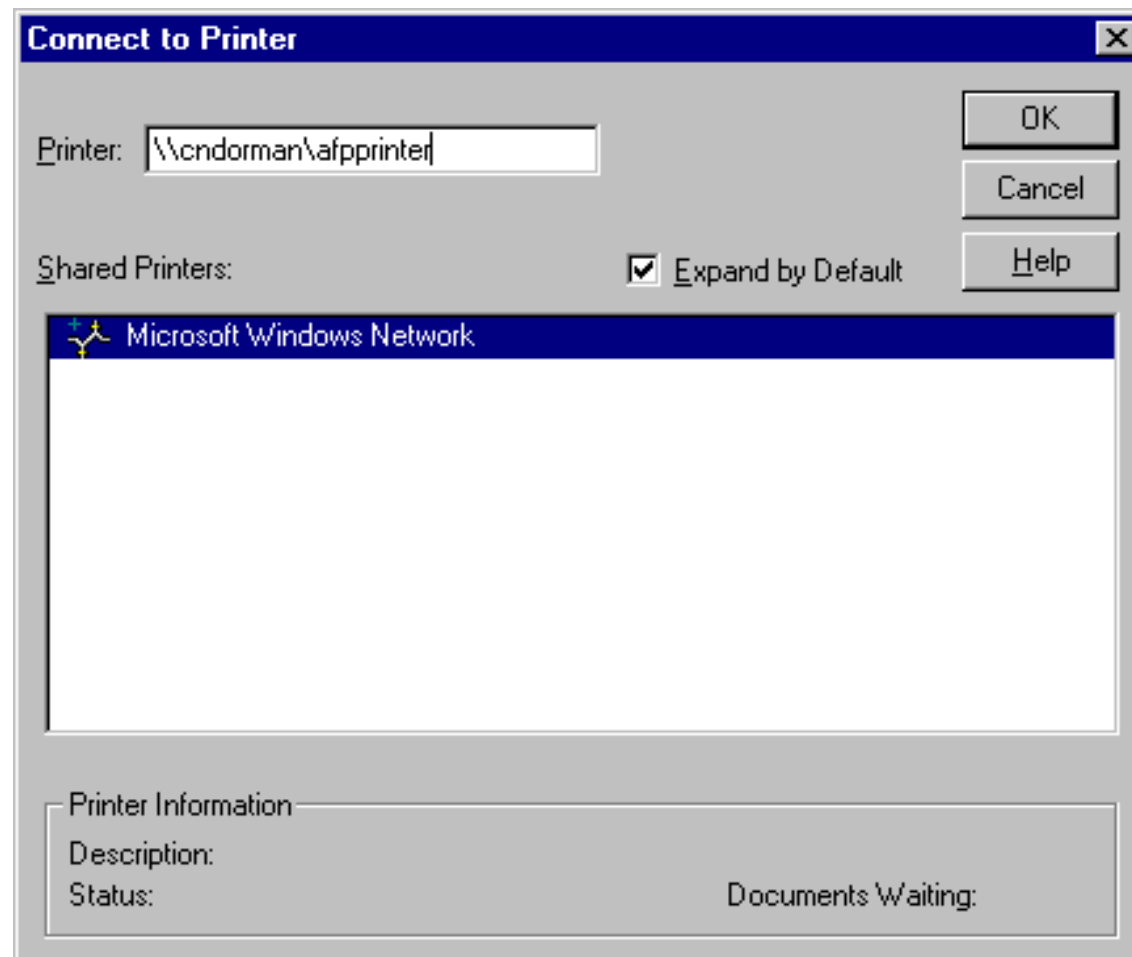
Step 2: Use Operations Navigator to create the printer share.



Use the *Add Printer Wizard* to see the list of printer drivers that your computer knows about.

Installing a network printer

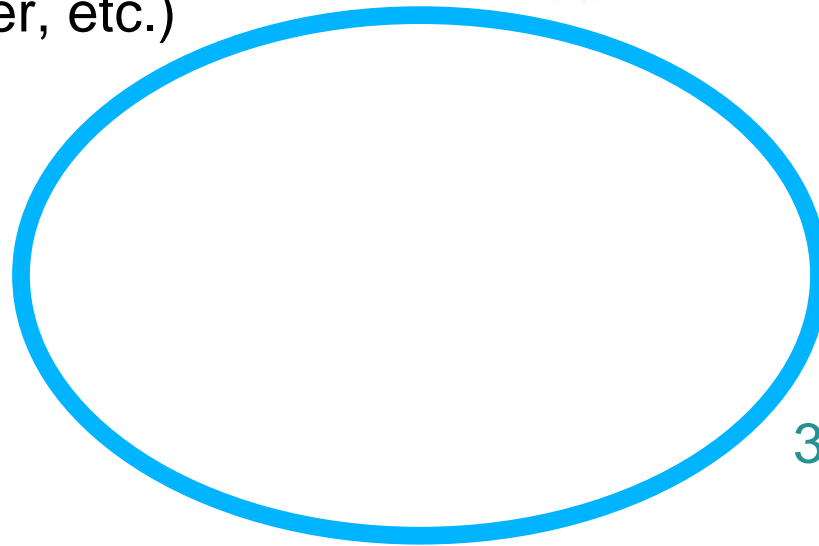
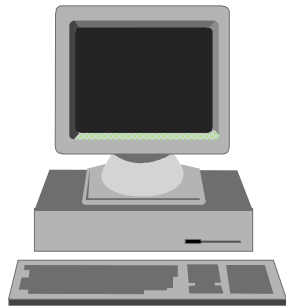
Step 3: Connect to the print share



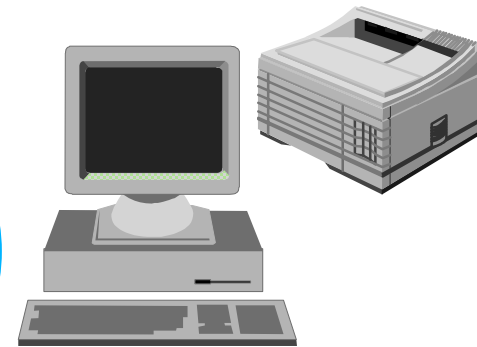
Another iSeries NetServer Print Scenario

PC printing to PC-type printer

1. Create outq connecting iSeries to LaserJet Printer (via iSeries Access, TCP/IP, network printer, etc.)



2. Share the outq, with "LaserJet" printer driver, and *USERASCII spool file type



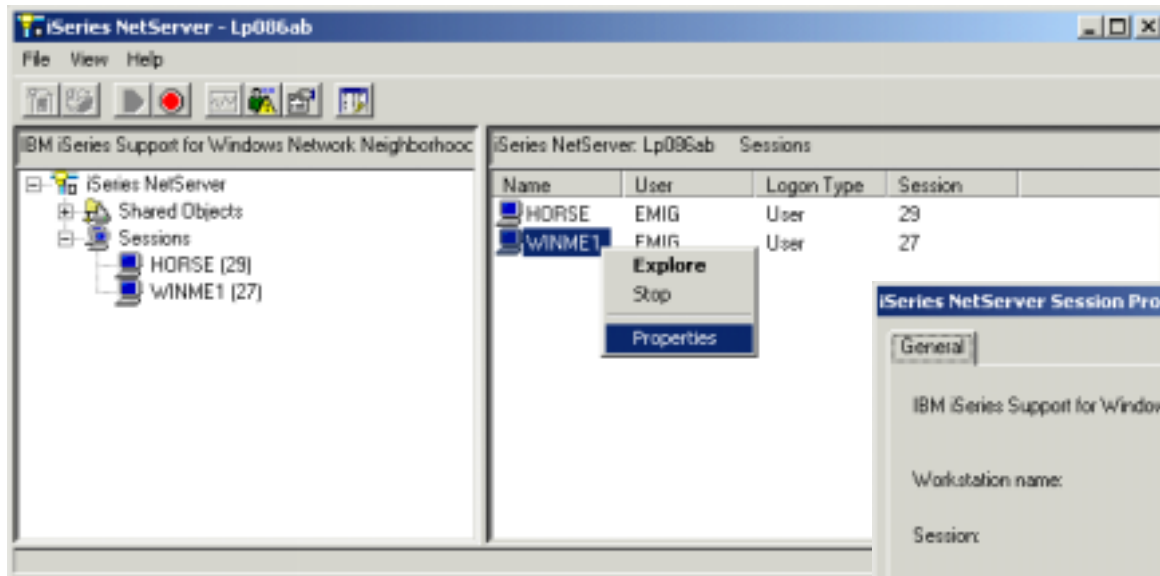
3. PC uses the share, and specifies LaserJet printer driver

Administering iSeries NetServer

Managing Activity

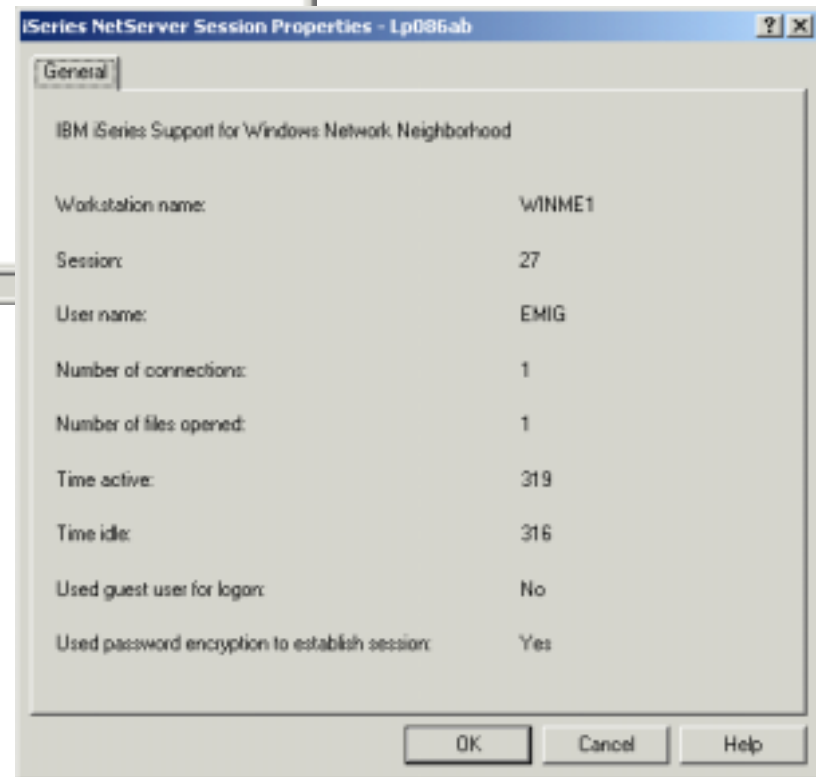
- Working with sessions
- Viewing statistics
- QZLSFILE file jobs
- Checking print readiness
- Checking NBT readiness
- Using NBTSTAT utility

Seeing Who is Connected to iSeries NetServer

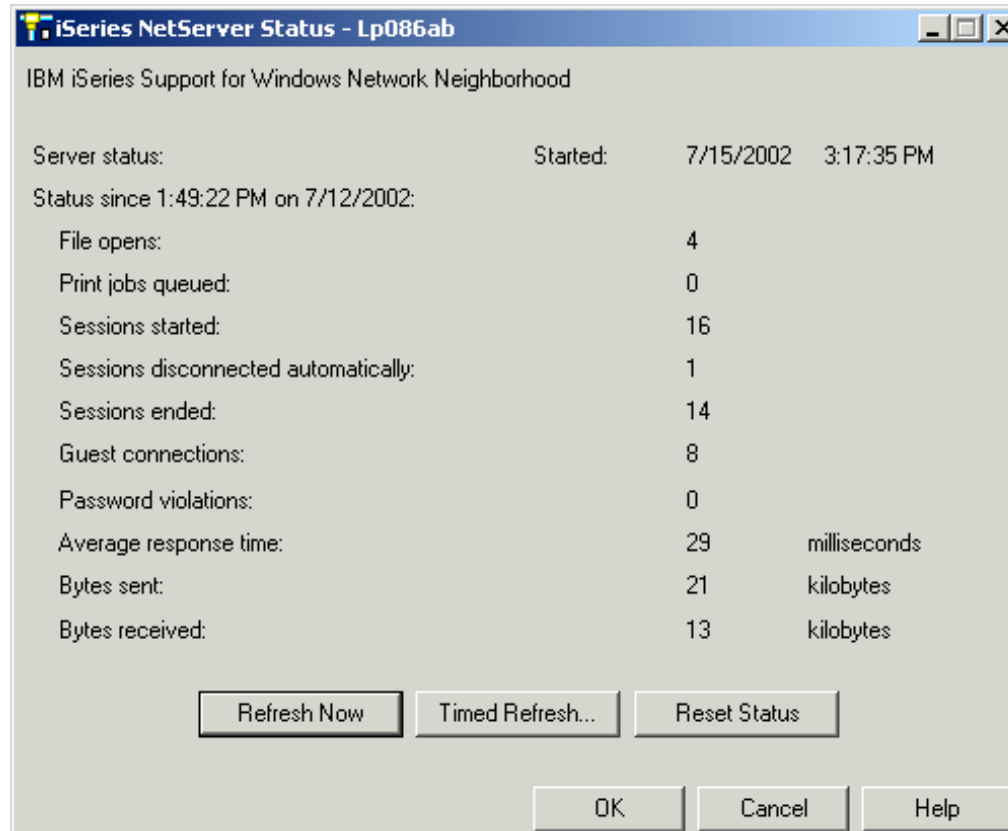


Working with Sessions

Properties displays the session connection status information



iSeries NetServer Status



iSeries NetServer Status - Lp086ab

IBM iSeries Support for Windows Network Neighborhood

Server status: Started: 7/15/2002 3:17:35 PM

Status since 1:49:22 PM on 7/12/2002:

File opens:	4	
Print jobs queued:	0	
Sessions started:	16	
Sessions disconnected automatically:	1	
Sessions ended:	14	
Guest connections:	8	
Password violations:	0	
Average response time:	29	milliseconds
Bytes sent:	21	kilobytes
Bytes received:	13	kilobytes

Refresh Now Timed Refresh... Reset Status

OK Cancel Help

V5R2 Status Window

Management Tips

Determining Print Readiness

The screenshot shows the iSeries Navigator interface. On the left, a tree view shows the hierarchy: Work Management > Active Subsystems > Qpservd. A callout box points to this job with the text: "Network print server in QSYSWRK SBS". The main pane displays a table of jobs in the Qsyswrk subsystem.

Job Name	Detailed Status	Current User	Type
Qsyswrk	Waiting for dequeue	Qsys	Subsystem
Crtprfda	Waiting for dequeue	Qsys	Batch - Server
Qdirsrv	Waiting for signal	Qdirsrv	Batch - Server
Qgldpuba	Waiting for signal	Qdirsrv	Autostart - Server
Qgldpube	Waiting for signal	Qdirsrv	Autostart - Server
Qhttp	Waiting for select	Qtmhhttp	Batch
Qiwvppjt	Waiting for request	Quser	Prestart batch - Server
Qmsf	Waiting for dequeue	Qmsf	Batch
Qneosoem	Waiting for time interval	Quser	Autostart
Qneosoem	Waiting for time interval	Quser	Batch
Qneosoem	Waiting for time interval	Quser	Batch
Qpservd	Waiting for select	Quser	Batch - Server
Qpasvrp	Waiting for dequeue	Qsys	Batch
Qpasvrs	Waiting for time interval	Qsys	Batch
Qpasvrs	Waiting for time interval	Qsys	Batch
Qpasvrs	Waiting for time interval	Qsys	Batch
Qpasvrs	Waiting for time interval	Qsys	Batch
Qpasvrs	Waiting for time interval	Qsys	Batch
Qpasvrs	Waiting for time interval	Qsys	Batch
Qrwtlstn	Waiting for select	Quser	Batch - Server
Qsnmpsa	Waiting for dequeue	Qtcp	Batch - Server
Qsqsrvr	Waiting for condition	Qdirsrv	Prestart batch - Server
Qsqsrvr	Waiting for condition	Qsys	Prestart batch - Server

Determining NBT Readiness

Work with TCP/IP Connection Status System: RCHASTAZ

Type options, press Enter.
 3=Enable debug 4=End 5=Display details 6=Disable debug
 8=Display jobs

Opt	Remote Address	Remote Port	Local Port	Idle Time	State
*	*	*	ftp-con >	000:43:29	Listen
*	*	*	telnet	000:02:15	Listen
*	*	*	smtp	115:18:26	Listen
*	*	*	netbios >	115:18:45	Listen
*	*	*	netbios >	000:00:17	*UDP
*	*	*	netbios >	000:00:16	*UDP
*	*	*	netbios >	000:53:35	Listen
*	*	*	snmp	000:01:04	*UDP
*	*	*	389	115:19:02	Listen
*	*	*	445	115:18:38	Listen
*	*	*	drda	000:47:13	Listen
*	*	*	ddm	115:20:31	Listen

More...

F5=Refresh F11=Display byte counts F13=Sort by column
 F14=Display port numbers F22=Display entire field F24=More keys

Active NetBIOS ports

Native SMB over TCP port (V5R1 and later)

Management Tips

Using NBTSTAT on client

```
Command Prompt
C:\>nbtstat -a qrchas5bd
Local Area Connection:
Node IpAddress: [9.5.9.93] Scope Id: []

      NetBIOS Remote Machine Name Table

      Name                Type                Status
      -----
      . . . MSBROWSE_... <01>  GROUP              Registered
      SMBMANIA             <1E>  GROUP              Registered
      SMBMANIA             <1C>  GROUP              Registered
      SMBMANIA             <1B>  UNIQUE             Registered
      SMBMANIA             <1D>  UNIQUE             Registered
      SMBMANIA             <00>  GROUP              Registered
      QRCHAS5BD            <00>  UNIQUE             Registered
      QRCHAS5BD            <20>  UNIQUE             Registered

      MAC Address = 00-04-AC-AD-46-A7

Local Area Connection 2:
Node IpAddress: [0.0.0.0] Scope Id: []

      Host not found.

C:\>_
```

Conclusion

- Web resources
- Books
- Informational APARs
- What's New in V5R1
- What's New in V5R2
- Take-home messages

Resources...

- iSeries NetServer Web Site:
 - ▶ <http://www.ibm.com/servers/eserver/series/netserver/>
 - Introduction Articles and Presentations
 - What's New?
 - Information APARs
 - Links to Technical References
 - Operations Navigator Instructions
- iSeries Infocenter
 - ▶ <http://www.ibm.com/eserver/series/infocenter>
- Diagnostics Aids Volume 2
 - ▶ Expansion of VLOGs
 - ▶ Expansion of Trace Points
- The AS/400 NetServer Advantage Redbook: SG24-5196

Other resources...

- iSeries NetServer Informational APARs
 - ▶ II11081 - V4R2 PTF Information
 - ▶ II11239 - Tips and Techniques
 - ▶ II11435 - Support of Windows Terminal Server Edition
 - ▶ II11938 - Support of Windows 2000
 - ▶ II11752 - V4R3 PTF information
 - ▶ II12091 - V4R4 PTF Information
 - ▶ II12537 - V4R5 PTF Information
 - ▶ II12924 - V5R1 PTF Information
- PTF information for supported releases
 - ▶ http://www.ibm.com/eserver/series/netserver/ptfs_main.htm

iSeries NetServer Advanced Support

What's New in V5R1?

- Domain Logon Support
- More Security options
- Disabled Users Administration
- Configuration Wizard in OpsNav
- Large File Support (> 2GB)
- Session management enhancements for WTS
- Added support for Windows NT background services
- Printer shares can be published in Directory Services
- Support for Linux

iSeries NetServer Advanced Support

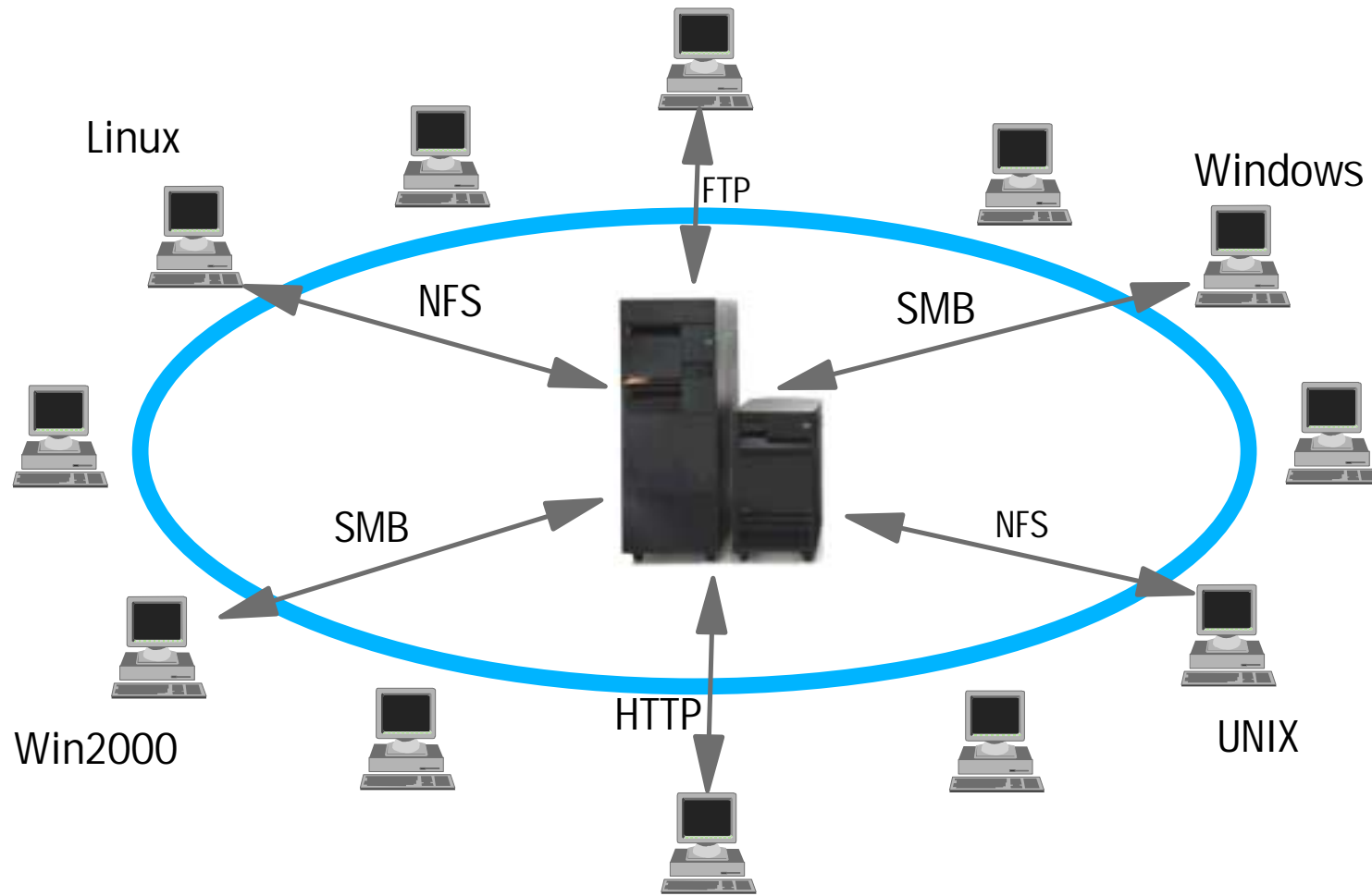
What's New in V5R2?

- Name change to iSeries NetServer
- User defined subsystems for iSeries NetServer jobs
- Support for Kerberos V5 authentication
- Linux/Samba support integrated into the server
- QUSRTOOL for menu driven use of iSeries NetServer API's
- Support for Windows XP Professional

iSeries NetServer Changes the Playing Field

- **iSeries becomes a more natural server in the enterprise, as well as in the Internet!**
- **As customers continue to migrate to iSeries Access for Windows, iSeries NetServer steps up to provide the seamless file and print services required.**
- **For those clients requiring only file and print services, iSeries NetServer provides it using native Windows networking protocols. No extra client software needed.**
- **iSeries NetServer grows with your needs, providing advanced function for automatic text conversion, Domain Logon Services, and support for Linux clients.**

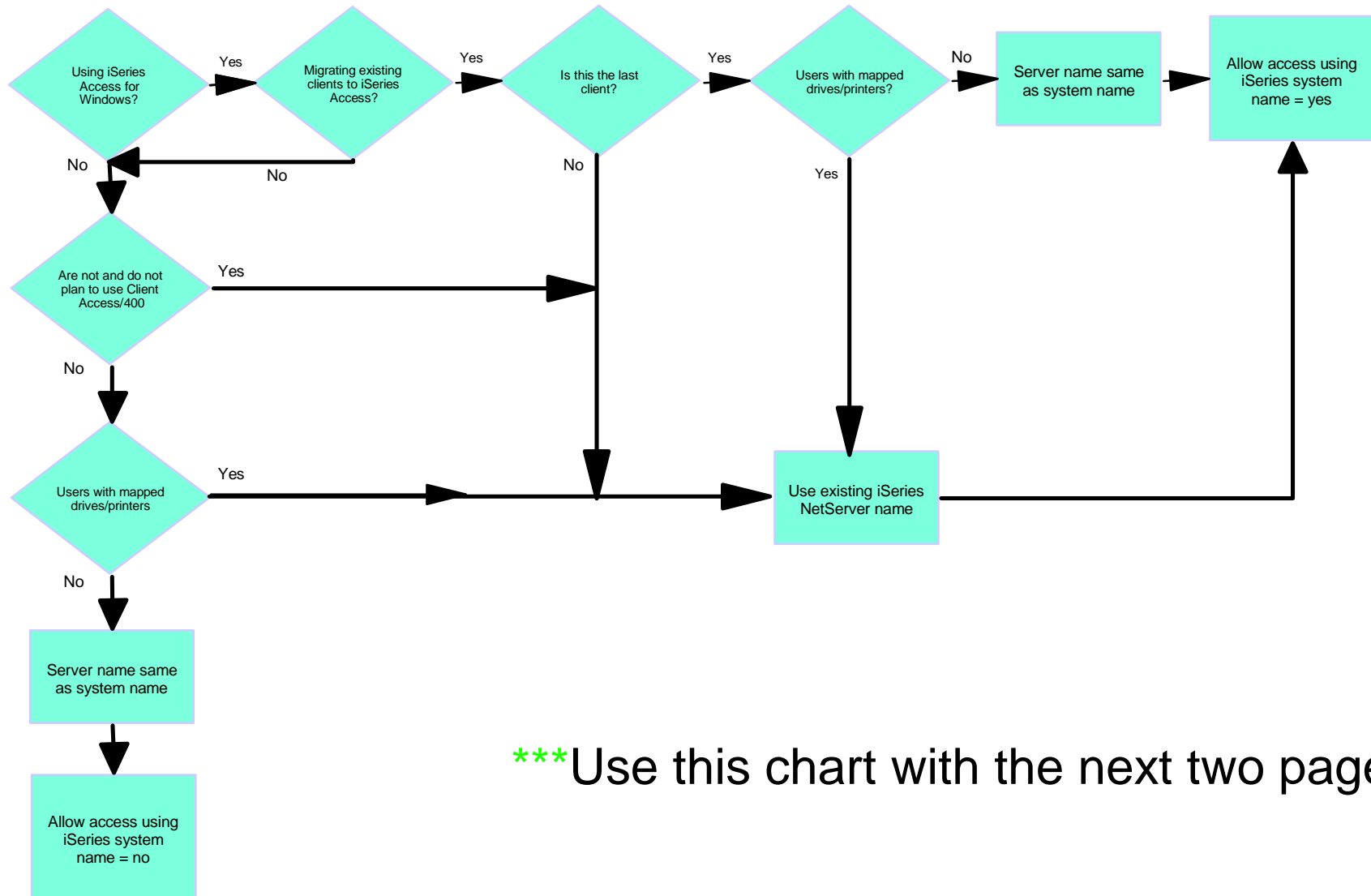
iSeries: Speaking your language



Questions?

Appendix
Naming iSeries NetServer

Decision tree for naming your iSeries NetServer



*** Use this chart with the next two pages

Naming iSeries NetServer (Continued)

- Use same name as iSeries system name?
 - ▶ There are no Client for Microsoft Networks-iSeries NetServer clients with network drives currently mapped using an iSeries NetServer name different than the iSeries system name.
 - ▶ Are not using Client Access network file and print (other than Express) in network, now and in the future.
- Use name **different** than iSeries system name?
 - ▶ There is a mixed environment with both Client Access network file and print users (other than Express), and Client for Microsoft Networks-iSeries NetServer users.
- Select 'Allow iSeries NetServer access using iSeries name'?
 - ▶ There are Client for Microsoft Network-iSeries NetServer clients with network drives and printers mapped using an iSeries NetServer name different than the iSeries system name.
 - ▶ Migration from previous Client Access Family members to Express is complete for all clients in the network and you do not plan on using Client Access network drives and printers (other than Express) in the future.
 - ▶ There are no Client Access network drives and printers users (other than Express) in the network.

iSeries NetServer Properties - Next Start

Be cautious when you choose to select the Allow iSeries NetServer access using system name box. The iSeries system name is not enabled by default because this can cause conflicts if you still have Client Access Family members (other than Express) in your network.

When Client Access and iSeries NetServer use the same server name, both servers will attempt to answer a client request. The first one to satisfy the client's request takes control, producing inconsistent results for the client.

If you have ONLY Express clients in your network and do not have resources mapped to iSeries NetServer using a name that is not the same as the system name, then it is safe (and recommended) that iSeries NetServer and the system name are the same.

iSeries NetServer General Next Start - Lp086ab

IBM iSeries Support for Windows Network Neighborhood

Start when TCP/IP is started

Server name:
LP086AB

Allow iSeries NetServer access using the system name

Domain name:
MyDomain

Description:
OS/400 SMB Logon Server

Logon server role: Server

Authentication method: Encrypted passwords

Reset to Current


OK Cancel Help

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