

IBM i
7.5

Networking
IBM i NetServer



Note

Before using this information and the product it supports, read the information in [“Notices” on page 35.](#)

This document may contain references to Licensed Internal Code. Licensed Internal Code is Machine Code and is licensed to you under the terms of the IBM License Agreement for Machine Code.

© **Copyright International Business Machines Corporation 1998, 2022.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

IBM i NetServer.....	1
What's new for IBM i 7.5.....	1
PDF file for IBM i NetServer.....	1
Accessing IBM i NetServer with Linux and Samba client support.....	2
Getting started.....	2
Requirements.....	2
Configuring IBM i NetServer.....	2
Configuring and connecting your PC client.....	4
IBM i NetServer User Datagram Protocol broadcasts	4
IBM i NetServer and Domain Name System management.....	4
Connecting your PC client with DNS.....	5
Configuring your PC client with DNS.....	5
IBM i NetServer and Windows Internet Naming Service management.....	5
Connecting your PC client with WINS.....	5
Configuring your PC client with WINS.....	5
Configuring IBM i NetServer with the address of the network WINS server.....	6
PC client LMHOSTS static configuration files.....	6
Finding IBM i NetServer on the network.....	7
Administering IBM i NetServer.....	8
Viewing and configuring IBM i NetServer properties.....	8
Enabling IBM i NetServer support for Kerberos V5 authentication.....	8
Starting IBM i NetServer Configuration wizard.....	9
Additional configuration requirements for Kerberos V5 authentication enablement.....	9
Changing the IBM i NetServer server name.....	10
Disabled user profiles.....	11
Displaying disabled user profiles.....	11
Enabling a disabled user profile.....	11
Starting and stopping IBM i NetServer.....	12
Administering subsystems for IBM i NetServer	12
Setting the guest user profile for IBM i NetServer.....	13
Viewing IBM i NetServer status.....	14
Viewing a list of IBM i NetServer shared objects.....	14
Viewing a list of IBM i NetServer shared objects using IBM Navigator for i.....	14
Viewing a list of IBM i NetServer shared objects using Windows clients.....	14
Viewing and configuring IBM i NetServer shared object properties.....	15
Viewing shared object status.....	15
Viewing a list of IBM i NetServer sessions.....	15
Viewing IBM i NetServer session properties.....	15
Viewing IBM i NetServer session connection status.....	16
Stopping an IBM i NetServer session.....	16
File shares.....	17
Creating IBM i NetServer file shares.....	17
Controlling access to IBM i NetServer file shares.....	17
Stopping IBM i NetServer file sharing.....	18
Accessing file shares from a Windows client.....	18
Print shares.....	19
Creating a print share.....	19
PC client print device drivers for use with print shares.....	19
Stopping print sharing.....	20
Using print shares with Windows client.....	20
IBM i NetServer security.....	20

User profile authority requirements.....	20
Guest user profiles.....	21
Hiding IBM i NetServer from the network.....	21
Requiring clients to sign requests.....	21
Using authorization lists to restrict usage by user.....	22
Using Windows messenger service with IBM i NetServer.....	22
Enabling IBM i NetServer for messaging specific to Windows.....	23
Associated IBM i messages.....	23
Displaying a log of the message send attempts.....	23
Sending custom messages through IBM i NetServer.....	24
Tips and techniques.....	25
IBM i NetServer does not appear in Windows Network.....	25
IBM i NetServer fails to start.....	25
Starting IBM i NetServer at initial program load.....	26
IBM i NetServer security: Guest versus nonguest.....	26
API guides.....	27
Backup and recovery of configuration and share information	27
Troubleshooting IBM i NetServer.....	27
Troubleshooting user profile connections.....	28
Troubleshooting file share directory paths.....	29
Troubleshooting print share problems.....	29
Troubleshooting print problems when using guest support.....	30
Troubleshooting PC client connection problems.....	30
Troubleshooting file share problems.....	30
Troubleshooting print device driver problems.....	31
Troubleshooting IBM i NetServer using the QSYSOPR message queue.....	31
Troubleshooting IBM i NetServer location on the network.....	31
Troubleshooting IBM i NetServer using Windows messenger service.....	32
Notices.....	35
Programming interface information.....	36
Trademarks.....	36
Terms and conditions.....	37

IBM i NetServer

IBM® i Support for Windows Network Neighborhood (IBM i NetServer) is an IBM i function that enables Server Message Block (SMB) clients to access IBM i shared directory paths and shared output queues.

Windows clients on a network use the file and print sharing functions that are included in their operating systems. You do not need to install any additional software on your PC client to use and benefit from IBM i NetServer. However, if you need to administer IBM i NetServer properties from your PC client, you must have IBM Navigator for i and Host Servers (5770-SS1 Option 12) installed.

Note: By using the code examples, you agree to the terms of the [Code license and disclaimer information](#).

What's new for IBM i 7.5



Read about new or significantly changed information for the IBM i NetServer topic collection.

IBM i 7.5 updates

- Starting from IBM i 7.5, IBM i NetServer supports specifying additional server and share restrictions based on authorization lists. Users can be granted or denied access to the server or individual shares through access that is defined on authorization list objects. Shares with common security requirements can be secured through use of a shared authorization list. For more information, see [Using authorization lists to restrict usage by user](#).

How to see what's new or changed

To help you see where technical changes have been made, the information center uses:

- The  image to mark where new or changed information begins.
- The  image to mark where new or changed information ends.

In PDF files, you might see revision bars (|) in the left margin of new and changed information.

To find other information about what's new or changed this release, see the [Memo to users](#).


PDF file for IBM i NetServer

You can view and print a PDF file of this information.

To view or download the PDF version of this document, select [IBM i NetServer](#).

Other information

You can also view or print the following PDF:


The [AS/400 NetServer Advantage](#)  describes how to configure and administer IBM i NetServer shares and printers. It also describes considerations for moving file and print serving from an Integrated Netfinity Server using Warp Server/400 or Novell Netware to IBM i NetServer.

Saving PDF files

To save a PDF on your workstation for viewing or printing:

1. Right-click the PDF link in your browser.
2. Click the option that saves the PDF locally.
3. Navigate to the directory in which you want to save the PDF.
4. Click **Save**.


Downloading Adobe Reader

You need Adobe Reader installed on your system to view or print these PDFs. You can download a free copy from the [Adobe Web site \(www.adobe.com/products/acrobat/readstep.html\)](http://www.adobe.com/products/acrobat/readstep.html) .

Accessing IBM i NetServer with Linux and Samba client support

If you are using a Linux® client, you can use Samba to access IBM i NetServer.

IBM i NetServer also supports the Linux Samba client. This support allows a Linux client running Samba to connect to IBM i NetServer through the smbclient and smbmount client utilities. ASCII printing (text, PDF, and postscript) is supported through the smbclient utility.

The Linux requirement is a kernel version of 2.4.4, or later and Samba 3.0.9, or later. Samba is an open source client and file server that is compatible with Microsoft Networking, which comes with many current distributions of Linux. For more information about Samba, Samba commands, or to download the latest version, see the [Samba Web site \(www.samba.org\)](http://www.samba.org) .

Getting started with IBM i NetServer

With IBM i NetServer, personal computers that run Windows or Linux software can seamlessly access data and printers that are managed by IBM i.

Requirements for using IBM i NetServer

To make IBM i NetServer function properly, some prerequisites need to be fulfilled.

Here are the requirements for using IBM i NetServer:

- A system with IBM i V4R2, or later, must be installed and configured for a TCP/IP network.
- A system name does not conflict. See [Server name guidelines](#) for more information.
- You need a running network printing server to use IBM i NetServer print sharing capabilities. See [“Configuring IBM i NetServer” on page 2](#) for more information.
- The client for Microsoft Networks network component must be installed on your PC client. After this component and TCP/IP are installed and configured, you have access to the integrated file system directories and the output queues that are shared with the network.

Note: If Linux clients are used, the appropriate Samba support must also be installed.

- An IBM i NetServer server name and Internet Protocol (IP) address resolution strategy must be used; for example, Domain Name System (DNS), Windows Internet Naming Service (WINS), or LMHOSTS file.
- Option 12 (Host Servers), a feature of the operating system, must be installed for IBM i NetServer functions to work correctly.

Configuring IBM i NetServer

To verify whether IBM i NetServer is properly configured, you can use a series of commands.

You must have *IOSYSCFG special authority to change any part of IBM i NetServer configuration. In addition, you must have *SECADM special authority to change the IBM i NetServer guest user profile. These changes will take effect the next time IBM i NetServer is started.

To configure IBM i NetServer, follow these steps:

1. Verify that TCP/IP support is configured on your system.

You can use the Configure TCP/IP (**CFGTCP**) command to work with interfaces, routes, host table entries, and domain services. After the configuration is completed, use the Start TCP/IP (**STRTCP**) command to activate the support.

Note: You must have at least one external TCP/IP interface configured and active to use IBM i NetServer.

2. Use the Work with Subsystems (WRKSBS) command to confirm that the QSERVER subsystem has started.
3. Verify that the IBM i NetServer system name is unique on the network. To change the IBM i NetServer default system and domain name, use the following command:

```
CALL QZLSCHSN PARM(server-name domain-name  
'text description or comment' X'00000000')
```

After you change the IBM i NetServer server name, you should add it to the Domain Name System (DNS) or to your PC client's LMHOSTS file.

4. To change IBM i NetServer guest support, use the following command:

```
CALL QZLSCHSG (guest-user-profile X'00000000')
```

Users who require the file and print-sharing capabilities of IBM i NetServer but do not have a user profile need a guest user profile. IBM i NetServer does not automatically configure guest support. A user without a user profile will not be able to access IBM i NetServer.

5. To stop and start IBM i NetServer, use the following commands:

```
ENDTCPSVR *NETSVR
```

```
STRTCPSVR *NETSVR
```

Note: All configuration changes made to IBM i NetServer, with the exception of share and session administration, do not take effect until you stop and restart the IBM i NetServer.

6. Use the Work with Active Job (WRKACTJOB) command to verify that there is a QZLSSERVER job running under the QSERVER subsystem. If the QZLSSERVER job is not active, you must restart IBM i NetServer.
7. Use the Work with TCP/IP Network Status (NETSTAT *CNN) command to verify that the following entries appear in the NETSTAT output file. If you cannot find these entries, you must restart IBM i NetServer.

```
** netbios>001:27:44 Listen
```

```
** netbios>000:00:01 *UDP
```

```
** netbios>000:00:00 *UDP
```

```
** netbios>000:30:57 Listen
```

```
** cifs>427:49:42 Listen
```

Note: The NETSTAT command output might be many pages long.

8. Use the Work with Active Job (WRKACTJOB) command to ensure that there is a QNPSEVRD job active in the QSYSWRK subsystem. If there is no QNPSEVRD job, then you must use the Start Host Server (STRHOSTSVR *NETPRT) command to start the network print server. Starting the network print server ensures that IBM i NetServer print shares function properly.

Related tasks

[Starting and stopping IBM i NetServer](#)

You can start IBM i NetServer if you want to immediately begin sharing data and printers with your PC clients. You can stop IBM i NetServer to end all sharing of resources. You can also stop and then restart IBM i NetServer if you want to change the IBM i NetServer configuration.

Configuring and connecting your PC client

Configuring your client properly ensures that all supported PC clients can locate IBM i NetServer and use file and print shares.

Setting up a Windows PC client to find IBM i NetServer

IBM i NetServer supports Windows client versions that are currently supported by Microsoft.

Setting up a Windows PC client to find IBM i NetServer allows you to easily access shared resources from your Windows PC client.

You must first ensure that clients can locate IBM i NetServer on the network. If this is not the case, network PC clients can use Domain Name System (DNS), Windows Internet Naming Service (WINS), or a LMHOSTS file to locate IBM i NetServer.

Note: If IBM i NetServer and your Windows client are in the same workgroup (domain) and in the same subnet (network segment), then no additional setup on the client is needed. If you find IBM i NetServer only by the IP address, then no additional setup is needed.

If IBM i NetServer is not placed in the same workgroup and the same subnet as the PC client, the PC client must use one of the following approaches to locate IBM i NetServer:

- Make an entry for IBM i NetServer in the network Domain Name System (DNS) database. Using DNS is the easiest way to locate and connect to IBM i NetServer.
- IBM i NetServer is configured to register with Windows Internet Naming Service (WINS).
- Create entries for IBM i NetServer in PC client static configuration files (such as LMHOSTS).

IBM i NetServer User Datagram Protocol broadcasts

A system that is placed in the same workgroup (domain) and the same subnet (network segment) as the PC client uses IBM i NetServer User Datagram Protocol (UDP) broadcasts.

In many TCP/IP networks, various routers in the network filter out UDP broadcast frames. A client on one side of a router cannot find IBM i NetServer because the UDP broadcast cannot cross the router.

When setting up smaller networks to filter UDP broadcasts, you should consider using other mechanisms for locating the system.

Note: If you place all of your IBM i NetServer and PC clients in the same workgroup and the same subnet, then IBM i NetServer appears in Network without any additional configuration.

Related tasks

[IBM i NetServer and Domain Name System management](#)

If you use Domain Name System (DNS) to locate and connect to IBM i NetServer, you need to connect and configure your PC client with DNS first.

[IBM i NetServer and Windows Internet Naming Service management](#)

If you are using Windows Internet Naming Service (WINS) to locate and connect to IBM i NetServer, connect and configure your PC client with WINS first.

[PC client LMHOSTS static configuration files](#)

In large distributed networks, LMHOSTS static configuration files are helpful for mapping system names to IP addresses.

IBM i NetServer and Domain Name System management

If you use Domain Name System (DNS) to locate and connect to IBM i NetServer, you need to connect and configure your PC client with DNS first.

Related concepts

IBM i NetServer User Datagram Protocol broadcasts

A system that is placed in the same workgroup (domain) and the same subnet (network segment) as the PC client uses IBM i NetServer User Datagram Protocol (UDP) broadcasts.

Connecting your PC client with DNS

TCP/IP networks can use Domain Name System (DNS) to map system names to IP addresses.

In a DNS network, an entry tells clients in the network how to map the system name to its correct TCP/IP address.

If you want PC clients to access IBM i NetServer by using DNS, then you must add the IBM i NetServer system name and IP address to the DNS database on IBM i. Using DNS is generally the easiest way for clients to access IBM i NetServer on a distributed network.

To add a new DNS database entry for IBM i NetServer on the network, you must specify the IBM i NetServer server name.

Configuring your PC client with DNS

To avoid any potential conflicts in the client operating system, configure Domain Name System (DNS) entries for both the operating system and IBM i NetServer name. The NetServer name doesn't need to match the system name.

IBM i NetServer and Windows Internet Naming Service management

If you are using Windows Internet Naming Service (WINS) to locate and connect to IBM i NetServer, connect and configure your PC client with WINS first.

Related concepts

IBM i NetServer User Datagram Protocol broadcasts

A system that is placed in the same workgroup (domain) and the same subnet (network segment) as the PC client uses IBM i NetServer User Datagram Protocol (UDP) broadcasts.

Connecting your PC client with WINS

Windows Internet Naming Service (WINS) allows clients to map system names to their actual TCP/IP addresses.

Windows systems and Linux Samba servers can provide WINS, which allows clients to map system names to their actual TCP/IP addresses. WINS is a dynamic naming service that resolves NetBIOS computer names to IP addresses. Although IBM i cannot act as a WINS server, it can act as a WINS proxy. This enables non-WINS clients to obtain name resolution from WINS. A WINS proxy receives broadcasted name requests from non-WINS clients and resolves them by directing queries to a WINS server.

Note: Using WINS proxy is not a recommended method of resolving computer names to IP addresses.

You can specify an address for a network WINS server on the IBM i NetServer WINS configuration - Next start dialog box in IBM Navigator for i. Then you can configure clients to connect to IBM i NetServer by using the WINS server.

After you configure your PC clients and IBM i NetServer with WINS addresses, you do not need to perform any additional network configuration. PC clients can now locate and connect to IBM i NetServer by using WINS.

Configuring your PC client with WINS

When using WINS, you must configure IBM i NetServer with the IP address of the WINS and you also need to configure the client to use the same WINS IP address.

Configuring your PC client with WINS on Windows 10

Here are the steps for configuring your PC client for use with WINS on Windows 10.

To configure your client for use with WINS, follow these steps:

1. Click the **Start** button to open the **Start menu**.
2. Select **Control Panel**.
3. Click **Network and Internet**.
4. Click **Network and Sharing Center**.
5. Click **View status**.
6. Click **Properties**.
7. Select Internet **Protocol Version 4 (TCP/IP 4)** or **Internet Protocol Version 6 (TCP/IP 6)**
8. Click **Properties**.
9. Click **Advanced**.
10. Select the **WINS** tab.
11. Specify the WINS server IP addresses in the correct search order.
12. Click **OK**.

Configuring IBM i NetServer with the address of the network WINS server

Using IBM Navigator for i, you can configure IBM i NetServer with the address of the network Windows Internet Naming Service (WINS) server.

WINS allows PC clients to connect to and access IBM i NetServer shared resources.

To configure IBM i NetServer with the address of the network WINS server, follow these steps:

1. Open a connection to IBM Navigator for i on your system.
2. Expand **Network > Servers**.
3. Click **TCP/IP Servers**.
4. Right-click **IBM i NetServer** and select **Properties**.
5. Select the **WINS Configuration** tab.
6. Click **Expand Next Start**.
7. In the **Primary WINS server** field, enter the IP address of the network WINS server. IBM i NetServer uses this WINS server for client connections the next time you start IBM i NetServer.
8. In the **Secondary WINS server** field, enter the IP address of the secondary network WINS server. IBM i NetServer uses this secondary WINS server for client connections the next time you start IBM i NetServer.
9. In the **Scope ID** field, enter a text string to serve as the network scope for the WINS server. The WINS server uses this scope ID the next time you start IBM i NetServer.
Note: You must configure any PC clients that use IBM i NetServer with the same scope ID that you specify here. WINS also functions properly if you leave this entry for scope ID blank on both IBM i NetServer and any clients.
10. Specify whether you want to enable or disable the IBM i NetServer to act as a WINS proxy.
11. Click **Save** to save your changes.

PC client LMHOSTS static configuration files

In large distributed networks, LMHOSTS static configuration files are helpful for mapping system names to IP addresses.

Connecting your PC client with LMHOSTS

The operating systems on the supported PC client can provide static configuration files that map system names to TCP/IP addresses. These files are typically more difficult to manage than a solution that involves more centralized control; for example, a DNS or WINS server. This difficulty results because your network administrator must configure each PC client individually. However, static configuration files are useful in large distributed networks. In this environment, clients and servers exist in different subnets (network segments) and possibly different workgroups (domains). Static configuration files help clients locate servers.

All PC clients supported by IBM i NetServer provide the LMHOSTS file that can map system names to IP addresses. The LMHOSTS file contains IP addresses and system names. You can use these files to map the IP address for both the system and IBM i NetServer. Mapping the IP address for both the system and IBM i NetServer allows clients to find the system and IBM i NetServer in a large distributed network environment.

You can also add an entry into the LMHOSTS file that points to an LMHOSTS file that is administered centrally on IBM i. By pointing all clients to the central file on the system, you need to maintain only one LMHOSTS file for the network.

You can find more information about LMHOSTS files in the sample LMHOSTS file that is provided with your Windows operating system. Additional information is available in your operating system documentation.

Configuring your PC client with LMHOSTS

If you are using the LMHOSTS file, then you must configure LMHOSTS with the system name and IP address for IBM i NetServer to ensure client connectivity. To add a preloaded entry to the LMHOSTS file, follow these steps:

1. Go to the `\WINNT\system32\drivers\etc` directory.
2. Add the following entry to the LMHOSTS file:

```
TCP/IP-address iSeries-NetServer-server-name #PRE
```

```
10.5.10.1 QNETSERVER #PRE
```

For example, if the IBM i NetServer is a logon server, you can add the following entry to the LMHOSTS file:

```
10.5.10.1 QNETSERVER #PRE #DOM:netdomain (netdomain is the domain name that the logon server services).
```

Related concepts

[IBM i NetServer User Datagram Protocol broadcasts](#)

A system that is placed in the same workgroup (domain) and the same subnet (network segment) as the PC client uses IBM i NetServer User Datagram Protocol (UDP) broadcasts.

Finding IBM i NetServer on the network

You can use your PC client to find IBM i NetServer on the network. By doing so, you can access shared resources on the network and make sure that your connection method to IBM i NetServer is running.

Finding IBM i NetServer from the Windows client

You can use the Windows client to find IBM i NetServer. By doing so, you can access shared resources from your Windows client.

If IBM i NetServer and your client are in the same workgroup (domain) and in the same subnet (network segment), follow these steps to find IBM i NetServer:

For Windows 10:

1. Click the **Start** icon to open the **Start** menu.
2. Type "View network computers and devices" in the search bar.
3. Select the IBM i NetServer server name.

Windows clients support the addressing of systems by using both fully qualified names and Internet Protocol (IP) addresses. The use of fully qualified names and IP addresses allows Windows clients to access data on IBM i NetServer in the absence of other naming mechanisms.

You can use any of the following valid forms when addressing an IBM i NetServer with a Windows client.

- `qsystem1.mysite.com`
- `system1.mysite.com`

- 1.2.34.123

These forms also work from a Windows command prompt, as in the following examples:

- `dir \\qsystem1.mysite.com\qca400*.*`
- `del \\system1.mysite.com\jim.doc`
- `type \\1.2.34.567\scott.txt`

Related tasks

[Accessing file shares from a Windows client](#)

You can use your Windows client to access the file shares by using IBM i NetServer.

[Troubleshooting IBM i NetServer location on the network](#)

You can use the troubleshooting techniques if you have trouble finding IBM i NetServer on the network.

Administering IBM i NetServer

By administering IBM i NetServer, you can manage file and print shares and control other IBM i NetServer functions.

IBM Navigator for i provides the administration interface for IBM i NetServer.

Viewing and configuring IBM i NetServer properties

You can view and configure IBM i NetServer properties, such as general settings, security settings, and WINS configuration by using IBM Navigator for i.

To display IBM i NetServer properties using IBM Navigator for i, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network** > **Servers**.
3. Click **TCP/IP** to display a list of TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Properties**.

The IBM Navigator for i online help provides detailed information about each of the IBM i NetServer dialog boxes.

Enabling IBM i NetServer support for Kerberos V5 authentication

Kerberos provides strong authentication for client and server applications by using secret-key cryptography. IBM i NetServer also supports Kerberos Version 5 (V5) for user authentication.

To enable IBM i NetServer support for Kerberos V5 authentication, you must first have the IBM Navigator for i Security option, Network authentication service, and Enterprise Identity Mapping (EIM) configured.

You can enable IBM i NetServer support for Kerberos V5 authentication through IBM i NetServer properties. The configuration wizard helps you configure the necessary services required for use with Kerberos V5. You must also complete the additional configuration requirements for Kerberos V5 authentication enablement.

To enable IBM i support for Kerberos V5 authentication through IBM i NetServer properties, follow these steps:

1. In IBM Navigator for i, expand **Network** > **Servers**, select **TCP/IP Servers**.
2. Right-click **IBM i NetServer** and select **Properties**.
3. On the **Security** tab, click the **Expand Next Start** button.
4. In the Security Next Start dialog box, select one of the following authentication methods:
 - If you select **Passwords/Network authentication**, clients that do not support Kerberos or clients that do support Kerberos but are not currently participating in a Kerberos realm use encrypted passwords to authenticate.

- If you select **Network authentication**, all clients must use Kerberos to authenticate with the server. Therefore, only clients that support Kerberos V5 can connect to IBM i NetServer after this support is enabled.

5. Click **Save**.

Note: If you fail to complete all of the configuration requirements, you will be unable to use IBM i NetServer after you restart the server.

Related information

[Network authentication service](#)

[Enterprise Identity Mapping \(EIM\)](#)

Starting IBM i NetServer Configuration wizard

To use Kerberos V5 with IBM i NetServer, additional configuration is required. The configuration wizard helps you through the additional configuration requirements for using Kerberos V5 with IBM i NetServer.

To start the IBM i NetServer Configuration wizard, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network > Servers**.
3. Click **TCP/IP** to display a list of TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Configuration**.
5. Follow the instructions to complete the IBM i NetServer Configuration wizard.

Additional configuration requirements for Kerberos V5 authentication enablement

To use Kerberos V5 authentication with IBM i NetServer, you need to configure Enterprise Identity Mapping (EIM) and Network authentication.

Complete all the following steps:

1. If you currently have EIM and Network authentication service configured, skip this step and proceed to step 2. To configure EIM and Network authentication service, complete the following steps:

Note: The EIM configuration wizard gives you the option to configure Network authentication service, if it is not currently configured on your system. In this event, you must select to configure the Network authentication service because it is a required service to use Kerberos V5 authentication with IBM i NetServer. You must ensure that you select to add the IBM i NetServer service principals when you configure Network authentication service.

- a) Open IBM Navigator for i and connect to the system with which you want to work.
 - b) Expand **Network**.
 - c) Expand **All Tasks**.
 - d) Expand **Enterprise Identity Mapping**.
 - e) Expand **Configuration** and select **Configure**.
 - f) Follow the instructions in the EIM configuration wizard.
2. If Network authentication service is already configured on your system, manually add the service principal names to the keytab.

- a) **For supported Windows clients:**

```
cifs/<fully qualified name>@<REALM>
cifs/<qname>@<REALM>
cifs/<IP Address>@<REALM>
```

Keytab entries can be added by using the Kerberos Key Tab (QKRBKEYTAB) API. On a command line, use the following command string: `CALL PGM(QKRBKEYTAB) PARM('ADD' 'cifs/qname')` where *qname* is the fully qualified IBM i NetServer name, the fully qualified DNS name, or the IP address.

Note: Newer Windows clients do not allow accessing IBM i NetServer mapped drives with Kerberos credentials via IP address.

3. Setup is also required on the Windows Server domain controller that the IBM i NetServer clients use as the Key Distribution Center (KDC). Complete the following steps to configure an IBM i NetServer service principal on the Windows KDC:
 - a) Create a user in the Active Directory.
 - b) From an administrative command prompt, use the *ktpass.exe* tool to map a service principal to the newly created user. The password that is used for *ktpass* should match the password that is used to create the service principal on the IBM i system. Substituting your own parameters for the items in < >, use the appropriate command call as follows.
 - For currently supported Windows clients:

```
ktpass -princ cifs/<iSeriesNetServerName>@REALM> -mapuser <new user>
-pass <password>
```

Note: Only one principal can be mapped to a user. If both cifs/* and HOST/* principals are needed, each must be mapped to a separate Active Directory user.

- c) Repeat steps “3.a” on page 10 and “3.b” on page 10 if you want to access IBM i NetServer using more principal names.
- d) Restart the Windows client systems to ensure that any cached credentials for the server are cleared.

Related information

[Network authentication service](#)

[Enterprise Identity Mapping \(EIM\)](#)

Changing the IBM i NetServer server name

The IBM i NetServer server name is the name that you use to access your IBM i NetServer over the network and the Internet.

Under most circumstances, you do not need to change the server name that IBM i NetServer uses on the operating system. Even though you can connect to IBM i NetServer using any name you choose, you should not change the server name from its default. The name should be the same as your system name. However, if you must change the IBM i NetServer server name, review the naming guidelines beforehand. You can view the system name in the network attributes by using the Display Network Attributes (DSPNETA) CL command.

Note: You must have *IOSYSCFG authority to change the IBM i NetServer configuration. The change to the system name does not take effect until the next time IBM i NetServer is started.

To change the IBM i NetServer system name by using IBM Navigator for i, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network > Servers**.
3. Click **TCP/IP Servers** to retrieve a list of the TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Properties**.
5. On the General page, click **Expand Next Start**. In the **Server name** field, specify the name that IBM i NetServer should use.

Server name guidelines

The default name configured for IBM i NetServer is typically not the same as the TCP/IP system name. This is done to avoid conflicts with older versions of Client Access (pre-V4R4) that look for the system name. However, you are encouraged to have the IBM i NetServer name configured to be the same as the system name when possible.

Therefore, if you are using IBM i NetServer for the first time or if you have changed the TCP/IP name of your system, you should also change the IBM i NetServer name to match the system name when the following conditions are true:

- No Windows clients in the network are currently using Client Access for Windows 95/NT (pre-V4R4).
- No users currently have network drives or printers mapped to IBM i NetServer shares.

Note: If users in your network currently have network drives or printers mapped to IBM i NetServer shares, you should disconnect these mappings before changing the IBM i NetServer name. Otherwise, these mappings fail when automatically trying to reconnect using the older name. You should also update any DOS scripts on the clients that refer to the older IBM i NetServer name.

To avoid making all of these updates simultaneously, you can select the **Allow IBM i NetServer access using IBM i name on the IBM i NetServer** option in the General Next Start Properties dialog box before you change the IBM i NetServer name. The next time IBM i NetServer is stopped and restarted, both names will be recognized. The new system name can be used when you configure new Windows clients while the existing clients continue to use (map to) the previous name.

Disabled user profiles

IBM i NetServer uses user profiles and passwords to allow network administrators to control how users can access data. In addition, the QMAXSIGN system value specifies how many unauthorized sign-on attempts disable the user profile for IBM i NetServer use. IBM i NetServer also honors user profile MAXSIGN values.

A user profile becomes disabled when the user tries to access IBM i NetServer a specified number of times with an incorrect password. A user profile cannot become completely disabled when connecting to a system with IBM i NetServer. If a user exceeds the maximum number of sign-on attempts, the user profile becomes disabled for IBM i NetServer use only. Other types of access, such as a system sign-on, are not prevented.

Notes:

1. The QSYSOPR message queue displays the CPIB682 error message, which indicates when a user profile was disabled for use with IBM i NetServer.
2. Some clients will try a name and password several times without the user being aware of it. For example, if the user's desktop password does not match the user profile password, the client can try to access IBM i NetServer several times before displaying the Network Password window. When the correct password is supplied, the user profile might already be disabled for IBM i NetServer use on the system. If you encounter this situation, the maximum sign-on attempts allowed system value, QMAXSIGN, can be increased to accommodate multiple client authentication attempts. You can use the Work with System Values command `WRKSYSVAL SYSVAL (QMAXSIGN)` to change the maximum sign-on times. The user profile MAXSIGN value could also be increased.

Displaying disabled user profiles

You can use IBM Navigator for i to display the detailed information about the disabled user profiles.

To display the disabled IBM i NetServer users, follow these steps:

1. From IBM Navigator for i, expand **Network > Servers**.
2. Click **TCP/IP Servers** to view a list of TCP/IP servers available.
3. Right-click **IBM i NetServer** and select **Disabled User IDs**.

Enabling a disabled user profile

You can enable a IBM i NetServer user profile that has been disabled by using IBM Navigator for i or by stopping and restarting IBM i NetServer.

To use IBM Navigator for i to enable a disabled IBM i NetServer user profile, follow these steps:

Note: You need *IOSYSCFG and *SECADM authorities to enable a disabled user profile through IBM Navigator for i.

1. From IBM Navigator for i, expand **system > Network > Server**.
2. Click **TCP/IP** to view the list of TCP/IP servers available.
3. Right-click **IBM i NetServer** and select **Open**.
4. Click **File** in upper left corner.
5. On the pull-down menu, select **Disabled User IDs**.
6. Click a disabled user ID and select **Enable User ID**.

Another way to enable a disabled IBM i NetServer user is to stop and then restart IBM i NetServer.

Related reference

[IBM i NetServer security: Guest versus nonguest](#)

Typically you can access IBM i NetServer by using a user profile. The guest profile will be used when the requested ID (as sent by Windows or Samba) is not found.

Starting and stopping IBM i NetServer

You can start IBM i NetServer if you want to immediately begin sharing data and printers with your PC clients. You can stop IBM i NetServer to end all sharing of resources. You can also stop and then restart IBM i NetServer if you want to change the IBM i NetServer configuration.

IBM i NetServer starts automatically when TCP/IP is started. If you need to restart IBM i NetServer, follow these steps:

1. Open a connection to IBM Navigator for i on your system.
2. Expand **File System**.
3. Right-click **File Shares** and select **Open IBM i NetServer**.
4. Right-click **IBM i NetServer** and select **Start**.

If you do not have IBM Navigator for i installed, use the following command to start IBM i NetServer:

```
STRTCPSVR *NETSVR
```

To stop IBM i NetServer, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network > Servers**.
3. Click **TCP/IP Servers** to retrieve a list of TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Stop**.

If you do not have IBM Navigator for i installed, use the following command to stop IBM i NetServer:

```
ENDTCPSVR *NETSVR
```

Related tasks

[Configuring IBM i NetServer](#)

To verify whether IBM i NetServer is properly configured, you can use a series of commands.

Administering subsystems for IBM i NetServer

You can administer the subsystems in which user jobs are run. For example, you can create separate subsystems for users or groups of IBM i NetServer users, add prestart jobs to subsystem descriptions, and specify the subsystems.

The QSERVER subsystem is still included with the same default prestart job entries. If a client attempts to use a subsystem that does not have prestart job entries defined, the system then runs in the QSERVER subsystem using batch-immediate jobs. If this occurs, the jobs maintain the same name, but might have

a job type of BCI (batch-immediate) instead of PJ (pre-start) when viewed on the Work With Active Jobs (WRKACTJOB) display.

System performance

The End TCP/IP Server (ENDTCPSVR) command and the End Server (QZLSENDS) API also take a longer time to complete when ending IBM i NetServer. These commands take more time to process because all of the jobs associated with the server must be ended when the daemon job is ended.

The connection time might also be slightly longer when batch-immediate jobs are used.

Adding prestart jobs to a subsystem description

When you configure clients to run jobs in a subsystem other than QSERVER, you must also add the necessary prestart jobs to the subsystem description. For example, to add prestart jobs for QZLSFILE to another subsystem, use the following command string (inserting your own subsystem name): `ADDPJE SBS(subsystemname) PGM(QSYS/QZLSFILE) USER(QUSER) STRJOBS(*YES) INLJOBS(1) THRESHOLD(1) ADLJOBS(5) JOB(*PGM) JOB(QSYS/QZLSPJ) MAXUSE(200) WAIT(*YES) POOLID(1) CLS(QSYS/QPWFSEVER *CALC *NONE *CALC)`. Adding prestart jobs for QZLSFILET is similar to adding prestart jobs for QZLSFILE. Substitute QZLSFILE with QZLSFILET in the previous command string and change the following parameters: `ADLJOBS(0)`, `JOB(QSYS/QZLSPJ)`, and `MAXUSE(1)`.

This command starts one prestart job in the subsystem that you configured. This job is used when a new connection is established to IBM i NetServer. For QZLSFILE, when the number of prestart jobs drops below one, five more prestart jobs are started to be used by future connections. For QZLSFILET, only one job runs in a subsystem.

Specifying subsystems

To specify the subsystems that IBM i NetServer server jobs run in, follow these steps:

1. From IBM Navigator for i, expand **Network > Servers**.
2. Click **TCP/IP**.
3. Right-click **IBM i NetServer** and select **Properties**.
4. Click the **Subsystems** tab.
5. Specify the subsystem settings that you want to use.
Use the **Help** button to find information about individual fields.
6. Click **OK** when you are finished.

Related concepts

[Troubleshooting user profile connections](#)

When you try to access a file share, errors might occur because of user profile problems.

Setting the guest user profile for IBM i NetServer

A guest user profile provides a base level of access for clients who do not have a valid user profile. According to the needs, you can grant different levels of authority to different guests by setting the guest user profile.

You can set the user profile that IBM i NetServer uses for guest users using IBM Navigator for i. You can also specify what level of authority guests will have to IBM i shared resources using IBM i NetServer. You need input/output system configuration (*IOSYSCFG) and security administrator (*SECADM) special authority to change the guest user profile information. The change to the guest user profile does not take place until the next time IBM i NetServer is started.

To set the guest user profile for IBM i NetServer, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network > Servers**.
3. Click **TCP/IP Servers** to retrieve a list of TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Properties**.

5. Go to the **Security** tab and click **Expand Next Start**.
6. In the **Guest user ID** field, type the user profile that you want guests to have when they use IBM i NetServer.

Notes:

- a. If you leave this field blank, then unknown users do not have access to resources through IBM i NetServer.
- b. The guest user profile that you specify cannot have any special authorities. Guests should have little or no authority on IBM i.

Related concepts

Guest user profiles

IBM i NetServer supports guest user profiles, also known as an *anonymous user profile*.

Viewing IBM i NetServer status

The IBM i NetServer Status contains important statistical information that can help you to effectively administer IBM i NetServer.

You can refresh the current statistics for the system, reset all values to 0, or set the time interval between refresh requests from the IBM i NetServer Status.

When you set the time, in minutes, between refresh requests to the host for IBM i NetServer status, the timed refresh values are saved so that you do not have to refresh each time the IBM i NetServer Status is opened. Timed refresh values are saved for each system, not for each user.

To display IBM i NetServer status, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network > Servers**.
3. Click **TCP/IP Servers** to display a list of TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Status**.

The IBM Navigator for i online help provides more details about each field on the IBM i NetServer Status.

Viewing a list of IBM i NetServer shared objects

You can view a list of the objects that IBM i NetServer is currently sharing by using IBM Navigator for i.

You can use IBM i NetServer to access shared resources on a IBM i network. These shares consist of the following items, called **shared objects**:

- **File shares**, which share integrated file system directories
- **Print shares**, which share output queues

Viewing a list of IBM i NetServer shared objects using IBM Navigator for i

Using IBM Navigator for i, you can view a list of objects that IBM i is currently sharing with PC clients by using IBM i NetServer.

To view a list of currently shared objects from IBM Navigator for i, follow these steps:

1. From IBM Navigator for i, expand **File System**.
2. Click **File Shares** to view a list of currently shared objects.

Viewing a list of IBM i NetServer shared objects using Windows clients

Using Windows clients, you can view a list of objects that IBM i is currently sharing with PC clients by using IBM i NetServer.

For Windows:

1. Open Windows Explorer.
2. Type \\<server_name> in the address bar and hit enter.

Note: You must enroll all users who are working with shared objects from the QDLS file system into the system distribution directory. Users who are not enrolled in the system distribution directory are not able to access file shares from the QDLS file system. Use the Add Directory Entry (ADDDIRE) CL command to enroll users in the system distribution directory.

Viewing and configuring IBM i NetServer shared object properties

You can access the server attributes for IBM i NetServer shared objects through IBM Navigator for i, which allows you to display and change the properties of a file share.

To view the properties for an IBM i NetServer shared object, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Go to File System > File Shares
3. Right-click on a share and select 'Properties'

Viewing shared object status

By viewing the current statistics for a shared object connection to IBM i NetServer through IBM Navigator for i, you can acquire information such as workstation name, user name, share type, and time connected.

You cannot change or reconfigure shared object statistics because they are records that contain information only.

To display IBM i NetServer shared object status, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Go to File System > File Shares
3. Right-click on a share and select 'Properties'
4. Scroll down to the Sessions table of the Properties panel
5. These are the active sessions

Viewing a list of IBM i NetServer sessions

IBM i NetServer starts a session whenever a client successfully accesses a shared file or print resource. The session displays the PC client, user name, and session ID. You can view a list of active IBM i NetServer sessions.

To view a list of active IBM i NetServer sessions, follow these steps:

1. Select a File Share and open Properties
2. Scroll down to see a list of active sessions

Viewing IBM i NetServer session properties

By viewing the attributes for an active IBM i NetServer session through IBM Navigator for i, you can see the properties of the clients that use IBM i shared resources.

You cannot change or reconfigure these properties because they are records of client activity that contain information only.

To display the properties for an IBM i NetServer session, follow these steps:

1. From IBM Navigator for i, go to File System > File Shares
2. Right-click on a share and select 'Properties'
3. Scroll down to the Sessions table of the Properties panel
4. These are the active sessions

IBM i NetServer supports multiple users, including guests, logged on from the same workstation. Information for each session displays the actual user name even if the guest account was used for authentication. As a result, you can see duplicate sessions with the same workstation and user name. Information will be displayed for the following fields:

- Workstation Name
- Session ID
- User Name
- Time Active
- Time Idle
- Number of connections
- Number of files opened
- Used guest user for logon

Notes:

1. If multiple sessions have been established, they can end when the IBM i NetServer idle time-out value has expired. This occurs regardless of whether there are open files for that session.
2. Multiple users can be active from the same workstation. Ending a user session ends only the IBM i NetServer file and print activity for that session. However, when the client workstation detects the loss of connectivity for one of the sessions, the client workstation can decide to end them all and optionally establish new sessions.

Viewing IBM i NetServer session connection status

You can view the current statistics for a file share session connection to IBM i NetServer through IBM Navigator for i.

You cannot change or reconfigure the session connection statistics because they are records of client activity that contain information only.

To display IBM i NetServer session connection status, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Go to File System > File Shares
3. Right-click on a share and select 'Properties'
4. Scroll down to the Sessions table of the Properties panel
5. These are the active sessions

Note: IBM i NetServer supports multiple users, including guests, logged on from the same workstation.

Stopping an IBM i NetServer session

IBM i NetServer supports multiple users, including guests, logged on from the same workstation. You can end single or multiple user sessions on a workstation to stop a client's use of file and print shares on a specific session.

If multiple users are active from the same workstation, ending a user session ends only the IBM i NetServer file and print activity for that session. In addition, ending an active IBM i NetServer session stops the client's use of file or print shares on that session. To stop an active session, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network** > **Servers**.
3. Click **TCP/IP** to retrieve a list of TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Open**.
5. Expand **Sessions**.

6. Right-click the user sessions and select **Stop**. If more than one session is active on this same workstation, you are given the option of ending multiple user sessions on the workstation.

Note: Stopping the session of a client does not stop the client from reconnecting to the system and using IBM i NetServer again.

File shares

An IBM i NetServer file share is a directory path that IBM i NetServer shares with clients on the network.

A file share can consist of any integrated file system directory. You can create, display, configure, and end IBM i NetServer file shares.

In general, all integrated file system limitations and considerations apply when you access shared directories with IBM i NetServer.

Starting from V6R1, IBM i NetServer supports IPv6 access in the file sharing function.

Related concepts

Case sensitivity of file systems for IBM i NetServer

All file systems, except for three, are case insensitive and do not cause case sensitivity conflicts with supported PC clients.

Creating IBM i NetServer file shares

You can share any directory in the integrated file system with clients in the network by using IBM i NetServer. Creating a file share allows PC clients to easily access resources on the system.

IBM i NetServer does not share the entire integrated file system with the network by default.

To create a new file share by using IBM Navigator for i, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **File System**.
3. Click **File Shares** to view a list of currently shared objects.
4. Select **New File Share...** from the **Actions** drop down menu.
5. Use the Create IBM I NetServer File Share page to configure the new file share with a name, description, access, maximum number of users, and directory path name.
6. Use the Text Conversion section to identify which file types must have their contents converted from the file coded character set ID (CCSID) to the CCSID you specify for the share.

The IBM Navigator for i online help provides more details about IBM i NetServer file share properties.

Controlling access to IBM i NetServer file shares

You can assign an access setting for IBM i NetServer file shares to control the PC clients' level of access to objects in the directory paths of the integrated file system.

If you set the access of a file share to **Read only**, then clients do not have the authority to change a file. If you set the access of a file share to **Read/Write**, then client users can change any files they have authority to in the shared directory paths.

To set the access for an IBM i NetServer file share, follow these steps:

1. Open a connection to IBM Navigator for i on your system.
2. Expand **File System**.
3. Click **File Shares** to view a list of currently shared objects.
4. Right-click a file share and select **Properties**.
5. Click the pull-down menu in the **Access** field.
6. Set the file share access to read only by selecting **Read only**. Set the file share access to read/write by selecting **Read/Write**.

Stopping IBM i NetServer file sharing

You can stop file sharing with other clients.

To stop the sharing of an integrated file system directory, follow these steps:

1. Open a connection to IBM Navigator for i on your system.
2. Expand **File System**.
3. Click **File Shares** to view a list of currently shared objects.
4. Right-click a shared file and select **Stop Sharing....**

Note: A file share that is stopped is still available to all clients that are already using the share. A stopped file share is not available for any new client requests. Any attempts to create a new connection to the stopped share will fail.

Accessing file shares from a Windows client

You can use your Windows client to access the file shares by using IBM i NetServer.

To access file shares by using a Windows client, you can either map file shares to logical drives or use Universal Naming Convention (UNC) mapping. However, working with logical drive letters might be easier.

To map an IBM i NetServer file share to a logical drive on your Windows client, follow these steps:

1. Right-click the **Start** button and choose **Explore** to open the Windows Explorer.
2. Open the **Tools** pull-down menu on the Windows Explorer and select **Map network drive**.
3. Select the letter of a free drive for the file share.
4. Enter the name of an IBM i NetServer file share.

For example, you can enter the following syntax:

```
\\QSYSTEM1\Sharename
```

Note: QSYSTEM1 is the IBM i NetServer server name on IBM i, and Sharename is the name of the file share you want to use.

5. Click **OK**.

Related tasks

[Finding IBM i NetServer on the network](#)

You can use your PC client to find IBM i NetServer on the network. By doing so, you can access shared resources on the network and make sure that your connection method to IBM i NetServer is running.

Case sensitivity of file systems for IBM i NetServer

All file systems, except for three, are case insensitive and do not cause case sensitivity conflicts with supported PC clients.

The following three file systems, however, are case sensitive:

- QOpenSys
- User-Defined File System (UDFS), if specified case-sensitive when created
- Network File System (NFS), depending on which remote file system you access

The case of file names is significant in case-sensitive file systems. The names can consist of both uppercase and lowercase characters. For example, the QOpenSys file system can have three files in it with the following names:

```
NETSERVE.DAT  
NetServe.DAT  
netserve.DAT
```

These three files have technically different names (because QOpenSys is case-sensitive) and represent three distinct, separate objects on the system.

All the PC clients that IBM i NetServer supports are case insensitive. The case of file names is insignificant because all file names are translated automatically into uppercase. For example, from the three example files that are listed above, all the PC clients IBM i NetServer supports would recognize only the following file:

```
NETSERVE.DAT
```

Therefore, IBM i NetServer might not work correctly when using files in case sensitive file systems.

All other file systems are case insensitive and do not cause case-sensitivity conflicts with supported PC clients.

Print shares

A *print share* is an output queue that is shared with PC clients on the network. You can share any output queue with the clients by using IBM i NetServer.

You can create, display, configure, and end print shares. A print share consists of any output queue and supports the following spooled file types:

- User ASCII
- Advanced Function Printing
- SNA Character String
- Auto-select

The spooled file type determines how the spooled files are created on your system. If autoselect is not used, the spooled file type must correspond exactly to the output queue destination, or you will receive a print error.

Starting from V6R1, IBM i NetServer supports IPv6 access in the print sharing function.

Creating a print share

You can share any output queue with PC clients in the network by creating an IBM i NetServer print share.

To create a new IBM i NetServer print share by using IBM Navigator for i, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network > Servers**.
3. Click TCP/IP to retrieve a list of the TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Open**.
5. Right-click **Shared Objects** and select **New** and then select **Printer**.
6. In the **General - Properties** dialog box, configure the new print share with a name, description, output queue, library, printer driver, spooled file type, and printer file.

The IBM Navigator for i online help provides detailed information about the IBM i NetServer print share dialog box.


PC client print device drivers for use with print shares

IBM i NetServer acts as a print server that makes the services of the IBM i network print server available to PC clients. The network print server provides client access to print objects and resources.

Network Print Server allows clients with the correct print device drivers to spool print jobs onto output queues of various spooled file types. These spooled file types are as follows:

- User ASCII
- Advanced Function Printing (AFP)
- SNA Character String (SCS)
- Auto-select

You can access AFP and SCS print device drivers for the supported Windows PC clients in either of the following ways:

- AFP print device drivers are available for free download from the [IBM Printing systems Web site](http://www.printers.ibm.com) (www.printers.ibm.com) .
- You can also find stand-alone AFP and SCS print device drivers in the Qca400\Win32\Install\Printer folder. Under the appropriate directory for your client type, you can find the AFP and SCS print device drivers.

Stopping print sharing

You can stop print sharing by using IBM Navigator for i.

To stop print sharing from IBM Navigator for i, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network** > **Servers**.
3. Click **TCP/IP** to retrieve a list of the TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Open**.
5. Expand **Shared Objects**.
6. Right-click a shared printer and select **Stop Sharing**.

Using print shares with Windows client

You can use your Windows client to access IBM i print shares by using IBM i NetServer.

To use your Windows client to access print shares, follow these steps:

For Windows 10:

1. Open **Printers and Scanners**.
2. Click **Add a printer or scanner**.
3. Click "The printer I want isn't listed."
4. Type the UNC path (\\server\printer) to the printer share. Click **Next**.
5. Provide other printer information as prompted.

IBM i NetServer security

By using IBM i NetServer securely, you can ensure that only authorized users can access IBM i NetServer resources, configuration, or shared data.

User profile authority requirements

You can secure IBM i NetServer by controlling user profile authorities.

IBM i NetServer authenticates client files and print requests that are based on the user identity (user ID) and password that are used in the Windows desktop logon. If a user profile matches the Windows desktop client user ID, then the passwords are checked. If the passwords do not match, IBM i NetServer prompts the client to enter the correct one.

Note: If the Windows user ID is longer than 10 characters (also the maximum length of the user profile name), then IBM i NetServer truncates the Windows user ID to 10 characters and attempts to match it with a user profile. For example, a user profile called ADMINISTRATOR can be created to match the Windows Administrator user without requiring guest support.

In order to access IBM i NetServer shared resources, clients might not need a user profile that matches their Windows desktop user. IBM i NetServer can provide guest support for those clients that need only basic file and print services. This support is not automatically enabled.

To configure this support, follow these steps:

1. Right-click the IBM i NetServer icon and select **Properties**.
2. Select the **Security** tab.
3. Click the **Expand Next Start** button.
4. Specify the guest user profile name in the Guest user ID field.

Note: You need *IOSYSCFG and *SECADM special authorities to change the IBM i NetServer guest configuration. Changes take effect the next time IBM i NetServer is started. In addition, the guest user profile should not have any special authorities and should have access only to those integrated file system directories and output queues that are used for basic file and print services.

Guest user profiles

IBM i NetServer supports guest user profiles, also known as an *anonymous user profile*.

IBM i can automatically map an unknown user to the guest user profile if you specify a guest user profile. Your network administrator can specify and change the guest user profile that IBM i NetServer uses if necessary on the IBM i NetServer Advanced - Next start page within IBM Navigator for i. In general, the guest user profile should have few authorities because the guest user is considered an untrusted user.

Related tasks

[Setting the guest user profile for IBM i NetServer](#)

A guest user profile provides a base level of access for clients who do not have a valid user profile.

According to the needs, you can grant different levels of authority to different guests by setting the guest user profile.

Hiding IBM i NetServer from the network

For an added measure of security, you can hide IBM i NetServer from the Windows My Network Places.

To hide IBM i NetServer from the network, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network > Servers**.
3. Click **TCP/IP Servers** to display a list of TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Properties**.
5. Click the **Advanced** tab and click the **Expand Next Start** button.
6. Unselect the **Send browse announcements** box.

Note: Setting the browsing announcement interval to None stops the host announcements to the network. The default browsing announcement interval is 720 seconds, or 12 minutes.

Related reference

[IBM i NetServer does not appear in Windows Network](#)

IBM i NetServer might not appear in Windows Network for a variety of reasons.

Requiring clients to sign requests

Communications between client and server can be made more secure by requiring clients to sign requests.

This is done using a key derived from the client's authentication data. By default, clients are not required to sign requests.

To require clients to sign requests, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network > Servers**.
3. Click **TCP/IP Servers** to display a list of TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Properties**.

5. Click the **Security** tab and click the **Expand Next Start** button.
6. From the **Require clients to sign requests** drop down box, choose **Yes, Optional**, or **No**.

Using authorization lists to restrict usage by user

Starting from IBM i 7.5, IBM i NetServer supports specifying additional server and share restrictions based on authorization lists. Users can be granted or denied access to the server or individual shares through access that is defined on authorization list objects. Shares with common security requirements can be secured through use of a shared authorization list.

Authorization list restrictions layer with other protection provided by the server and shared file system. Shares that are defined as read only will always be read only regardless of access granted by an authorization list. The most restrictive access rule always determines the level of access.

Note: Authorization lists do not restrict access to users with *ALLOBJ special authority. Any user profile with *ALLOBJ special authority will be able to access IBM i NetServer as if there is no authorization list restriction in place. This can be used to create administrative shares that can only be accessed by IBM i administrative profiles by specifying an authorization list that only lists public *EXCLUDE.

When specifying an authorization list for the server:

- If a user is given at least *USE authority to the authorization list, that user will be allowed to access the server.
- If the user has less than *USE authority to the authorization list, the user will be denied access to the server, and a VP (Network Password Error) audit record of Error Type A (Authorization list (AUTL) permission failure) will be created.

When specifying an authorization list for a share:

- If a user is given *CHANGE or greater authority to the authorization list, that user will be allowed read/write access to the share.
- If a user is given *USE authority to the authorization list, that user will be allowed read only access to the share.
- If the user has less than *USE authority to the authorization list, the user will be denied access to the share, and a VP (Network Password Error) audit record of Error Type A (Authorization list (AUTL) permission failure) will be created.

Related information

[VP \(Network Password Error\) journal entries](#)

Using Windows messenger service with IBM i NetServer

IBM i NetServer can automatically send informational messages to users in some situations.

Under the following situations, IBM i NetServer automatically sends informational messages:

- The user password is about to expire.
- The user is denied access for a variety of reasons when trying to connect to a share through IBM i NetServer.
- Active users need to be alerted that the administrator is about to stop IBM i NetServer.

Note: The Messenger service is disabled by default or removed in currently supported versions of Windows. Informational messages that are sent by IBM i NetServer might not be processed by those clients.

Related concepts

[Troubleshooting IBM i NetServer using Windows messenger service](#)

You can use Windows messenger service to troubleshoot problems with IBM i NetServer.

Enabling IBM i NetServer for messaging specific to Windows

Administrative alerts are turned off by default. You can enable IBM i NetServer for messaging specific to Windows.

To enable messaging specific to Windows, follow these steps:

1. Open IBM Navigator for i and connect to the system you want to work with.
2. Expand **Network > Servers**.
3. Click **TCP/IP Servers** to display a list of TCP/IP servers available.
4. Right-click **IBM i NetServer** and select **Properties**.
5. Click the **Advanced** tab and click the **Expand Next Start** button.
6. Click the check box next to **Allow administrative alerts**.
7. Specify the **Minimum message severity**.

Valid values are from 0 to 99.

Associated IBM i messages

Some IBM i messages have been added to accommodate messaging support specific to Windows.

These messages are not issued on IBM i. Only the text of the messages is used (with replacement) to send as a network message to the client user attempting to connect.

These messages are as follows:

CPIB68A

No user profile found for user &1.

CPIB68B

The profile for user &1 is disabled.

CPIB68C

The password for user &1 is expired.

CPIB68D

No password exists for user &1.

CPIB68E

User &1 is disabled for IBM i NetServer access.

CPIB68F

User &1 was enabled for IBM i NetServer access.

CPIB690

Password for user &1 will expire in &2 day(s).

CPIB691

User &1 has successfully connected.

CPIB692

User &1 encountered Kerberos error &2 connecting through IBM i NetServer.

Note: You must set the minimum message severity value to 10 to send the CPIB691 welcome message each time a user connects. Otherwise, set the value to 20 to ignore this message. The value of 30 disables information messages CPIB68F, CPIB690, and CPIB691.

Displaying a log of the message send attempts

To display a log of network messages that the server attempted to send, you can use the IBM i NetServer maintenance program.

The log contains a maximum of the last 500 messages by default. These messages are deleted when the log is dumped. You can only see the network messages logged since the last time that they were dumped.

To call the maintenance utility, use the following command:

```
CALL PGM(QZLSMAINT) PARM('32')
```

The log is dumped into a spooled file in the QSECOFR output queue. Use the Work with Spooled Files (WRKSPLF QSECOFR) command to display the queue.

Example: Spooled file dump of logged messages

TIME	NAME	IP-ADDR	TYPE	RC	MESSAGE
1/23/02 17:39:55	SMBTEST1	C0050939	2	0	CPIB68B: THE PROFILE FOR USER SMBTEST1 IS DISABLED.
1/23/02 17:40:16	JOE1	C005095D	7	0	CPIB690: PASSWORD FOR USER JOE1 WILL EXPIRE IN 3 DAY(S).

Note: If the RC column is not 0, then there was either an error delivering the message to the user or the client's message handling service reported an error condition.

Sending custom messages through IBM i NetServer

If you have built the GO NETS tools for IBM i NetServer using the QUSRTOOL library support, you can use the Send NetServer Message (SNDNSVMSG) command to send custom messages to registered users on the network.

The Send NetServer Message (SNDNSVMSG) command is available through option 14 on the GO NETS menu, and it functions like the NET SEND command on Windows.

The user can use the GO NETS tools to use commands or a menu (instead of the NetServer APIs) to add, change, display, and work with shares; start and end NetServer; and change and display NetServer configuration information.

Examples

Note: By using the code examples, you agree to the terms of the [“Code license and disclaimer information”](#) on page 32.

Sending a Windows message to user name JOE1 on the network and to user KRISTY on client machine WORKSTATION1

```
SNDNSVMSG MSG('Reminder: Memo is due today.') TONETID((JOE1) (KRISTY WORKSTATION1))
```

Because a workstation name is not provided for the first user (JOE1), the message is sent to the PC that holds the NetBIOS name. Normally, when a Windows 2000, Windows XP, or Windows Server 2003 workstation is started, the workstation registers its NetBIOS name on the local subnet and with WINS (when WINS is configured).

When a user logs on, then the user's name is also registered with the messenger service. To see which names are registered with the messenger service, specify NBTSTAT -a workstation from a command prompt. The following example output shows four registered message names on workstation HORSE:

```
NetBIOS Remote Machine Name Table
```

Name	Type	Status
HORSE	<00> UNIQUE	Registered
DEPT8	<00> GROUP	Registered
HORSE	<20> UNIQUE	Registered
DEPT8	<1E> GROUP	Registered
HORSE-AFS	<20> UNIQUE	Registered
HORSE	<03> UNIQUE	Registered
HORSE\$	<03> UNIQUE	Registered
MANNY	<03> UNIQUE	Registered

Sending a Windows message to all users who have active session connections to IBM i NetServer

```
SNDNSVMSG MSG('&1, the Hawthorne server will be taken down for a disk
replacement at 1pm') TONETID((*ALLNSVCNN))
```

The &1 can be used to indicate the user name for replacement text in the message.

Sending a Windows message to all users who have made a connection in the past to IBM i NetServer (since it was restarted)

```
SNDNSVMSG MSG('Good morning, dedicated users!') TONETID((*ALLUSERS))
```

Messages cannot be longer than 126 character.

Tips and techniques

These tips and techniques help solve problems or make IBM i NetServer work more efficiently for you.

IBM i NetServer does not appear in Windows Network

IBM i NetServer might not appear in Windows Network for a variety of reasons.

IBM i NetServer takes advantage of the Microsoft proprietary browsing protocol, which allows IBM i NetServer to appear in Windows Network. The browsing protocol results in a separate list of computers for each protocol on each adapter. As a result, because IBM i NetServer does not support NetBIOS, when you transfer these lists, you might lose those non-NetBIOS supporting computers from the list.

It is a good idea to make all the computers in the same subnet members of the same domain (workgroup). This ensures that the browse announcements from IBM i NetServer are received by a computer capable of gathering information for the Windows Network Neighborhood.

IBM i NetServer might also be hidden from the network because of the interval setting for browse announcement.

Related tasks

Hiding IBM i NetServer from the network

For an added measure of security, you can hide IBM i NetServer from the Windows My Network Places.

IBM i NetServer fails to start

If IBM i NetServer fails to start, you can view the message in the QSYSOPR message queue. Use this message to find the cause of the problem.

The message reads as follows:

```
Message ID . . . . . : CPIB683      Severity . . . . . : 40
Message type . . . . . : Information
Date sent . . . . . : 04/01/98      Time sent . . . . . : 14:02:55
```

```
Message . . . . . : The IBM i Support for Windows Network Neighborhood
                    (IBM i NetServer) was unable to start.
Cause . . . . . : The required IBM i NetServer job QZLSSERVER was unable to
start because of reason code 5. See the following reason codes and their
meanings:
  1 - Unable to retrieve user credentials.
  2 - Unable to retrieve credentials.
  3 - Exchange user profile failed.
  4 - Unable to obtain lock for service program QZLSSRV1 in library QSYS.
  5 - Start of the NetBIOS over TCP/IP failed with return code 3420.
  6 - Start of the internal server failed with return code 3420.
  7 - Error occurred when sharing resources with the network.
```

Use the help information about this message to help you find the cause of the problem.

Starting IBM i NetServer at initial program load

IBM i NetServer can be started and ended as an individual TCP/IP server by using the Start TCP/IP Server and End TCP/IP server commands.

IBM i NetServer is now automatically started and ended as a TCP server when the Start TCP/IP (STRTCP) or End TCP/IP (ENDTCP) commands are called. Additionally, IBM i NetServer can be started and ended as an individual TCP/IP server with the use of the Start TCP/IP Server (STRTCPSVR SERVER(*NETSVR)) and End TCP/IP Server (ENDTCPSVR SERVER(*NETSVR)) commands.

You can specify whether the IBM i NetServer starts automatically when TCP/IP is started by selecting the **Start when TCP/IP is started** option on the IBM i NetServer General Next Start dialog box. This value affects TCP/IP start behavior (it is not an IBM i NetServer property), so the changes do not take effect immediately. When using IBM Navigator for i, you can follow the following steps to find this dialog box:

1. In IBM Navigator for i, expand **Network > Servers** and select **TCP/IP Servers**.
2. Right-click **IBM i NetServer** and select **Properties**.
3. Select the **General** tab.
4. Press the **Expand Next Start** button.

The QZLSSERVER job is in the QSERVER subsystem. The Start Server (QZSLSTRS) and End Server (QZLSEND) APIs start and end the server. Because of this, no changes are needed in your startup program if the QSERVER subsystem is started before TCP/IP is started.

IBM i NetServer security: Guest versus nonguest

Typically you can access IBM i NetServer by using a user profile. The guest profile will be used when the requested ID (as sent by Windows or Samba) is not found.

The guest user profile allows the file and print sharing by users who otherwise would not require a user profile.

When using IBM i NetServer, normal user profiles and passwords apply. By default, only users with valid user profiles and passwords can access resources on the system. Windows clients offer the option to select a different user ID. If the passwords do not match, you will see a password window. Windows can optionally be set to remember the password.

A user profile is disabled from using IBM i NetServer when the user has tried to access IBM i NetServer a number of times with an incorrect password. The system value name QMAXSIGN specifies how many unpermitted access attempts disable a user profile. The Windows operating system will try to access IBM i NetServer again when access is denied. So it might appear that the QMAXSIGN limit is reached before the number of times actually tried by the client. If the user profile does become disabled for IBM i NetServer, you can use several methods to re-enable the user profile.

If a user profile is not found that matches the user ID that is used to access IBM i NetServer, you can use an optionally configurable guest user profile. This guest, created by the IBM i administrator who has *SECADM special authority, should only have a password if guest print sharing is being used, and must not have any special authorities. The guest user profile allows file and print sharing by users who otherwise would not require a user profile.

Note: The guest user profile must have a password if it is to be used for accessing print shares because the network print server requires one.

Related tasks

[Enabling a disabled user profile](#)

You can enable a IBM i NetServer user profile that has been disabled by using IBM Navigator for i or by stopping and restarting IBM i NetServer.

API guides

You can access all of the administrative functions that are available through IBM Navigator for i by using application programming interfaces (APIs). This means that you can administer IBM i NetServer through your CL, COBOL, RPG, C, and C++ programs.

The following list shows APIs that are currently available for administering IBM i NetServer:

- [Add File Server Share \(QZLSADFS\)](#)
- [Add Print Server Share \(QZLSADPS\)](#)
- [Change File Server Share \(QZLSCHFS\)](#)
- [Change Print Server Share \(QZLSCHPS\)](#)
- [Change Server Guest \(QZLSCHSG\)](#)
- [Change Server Information \(QZLSSCHSI\)](#)
- [Change Server Name \(QZLSCHSN\)](#)
- [End Server \(QZLSEENDS\)](#)
- [End Server Session \(QZLSEENDS\)](#)
- [List Server Information \(QZLSLSTI\)](#)
- [Open List of Server Information \(QZLSOLST\)](#)
- [Remove Server Share \(QZLSRMS\)](#)
- [Start Server \(QZLSSTRS\)](#)

Related information

[Application programming interfaces](#)

Backup and recovery of configuration and share information

IBM i NetServer uses files in the integrated file system to store configuration values and share entries. You should back up these files every time you save the entire system and each time you change the administration of IBM i NetServer.

In addition, plan the frequency of your save operations carefully to ensure that you always have a usable backup available if your system should fail.

This is the location of the IBM i NetServer configuration and share data files on the system: /QIBM/UserData/OS400/NetServer.

The following specific files are needed:

- **Qzlsfcfg**: The file contains configuration information.
- **Qzlsshr**: The file contains share information.
- **Qzlsxtxxx**: The file contains text conversion information for a file share, where xxx is a file share name.

Related information

[Recovering your system](#)

Troubleshooting IBM i NetServer

The problems you encounter when you use IBM i NetServer might relate to the status of IBM i NetServer, the PC client connections, or the user profile.

You might experience various difficulties when trying to locate IBM i NetServer on the network or using IBM i NetServer resources. Troubleshooting IBM i NetServer helps to solve the specific problems.

Troubleshooting user profile connections

When you try to access a file share, errors might occur because of user profile problems.

- **Lack of authorization**

User profiles might not be authorized to a particular shared directory. If this occurs, ensure that the user can access the directory by using control language (CL) commands, such as the Work with Object Links (WRKLNK) command.

- **Attempting to connect with incorrect password**

Users might be unable to use IBM i NetServer if they attempt to connect with an incorrect password too many times. If this occurs, then the system sends a message (CPIB682) to the QSYSOPR message queue. This message indicates that the user profile has been disabled for IBM i NetServer access. This does not disable the user profile for IBM i, but it does stop the user profile from accessing IBM i NetServer.

Note: IBM Navigator for i has a function to monitor messages from the QSYSOPR message queue. An administrator can use this function to be alerted to profiles being disabled for IBM i NetServer use. The administrator can use IBM Navigator for i to periodically look at a list of disabled users and re-enable users from the window. To find all disabled user profiles, right-click **IBM i NetServer** and select **Disabled Profiles**.

- **QZLSFILE and QZLSFILET jobs are not configured for a subsystem**

Clients should connect to IBM i NetServer by using their valid user profiles and not the guest user profile. The QZLSFILET or QZLSFILE job might be in the QSERVER subsystem for each active client user that connects to an IBM i NetServer file share. However, QZLSFILET and QZLSFILE jobs can run in another subsystem if the user has configured other subsystems to run IBM i NetServer jobs. Message CPIAD12 in the job log indicates which user or client the QZLSFILE job is servicing. A QZLSFILET job might have numerous messages in the job log because it services multiple clients. From IBM Navigator for i, under **Network > Servers > TCP/IP**, double-click **IBM i NetServer** and then click **Sessions**. A listing of users and their respective workstation names, logon types, and server sessions is displayed.

- **Trying to access a non threadsafe file system while running threaded**

A client that is running threaded will receive "access denied" type errors when trying to access a non threadsafe file system (such as QDLS or QNetWare). The client will also receive errors when attempting to map a drive to a non threadsafe file system when the client session is running threaded. For a listing of file systems that are not threadsafe, see [File system considerations for multithreaded programming](#).

As of V5R4, IBM i NetServer by default services file shares in a multithreaded job. The threaded activity for all sessions in a subsystem runs in the pool of threads in the QZLSFILET job for that subsystem. Non threaded client activity is still run in QZLSFILE jobs.

A QZLSFILE job in the correct subsystem is still required to launch a threaded session. Whether a client can run threaded is determined when it first maps a drive to the integrated file system. The first phase of mapping the first drive for a client runs in a QZLSFILE job. If the session can run threaded, the session is transferred into the single QZLSFILET job in the subsystem. If the file system is not threadsafe, or the ADDEXITPGM THDSAFE() option for the QIBM_QPWFS_FILE_SERV exit point is specified as *UNKNOWN or *NO, or QZLSFILET is not present in the subsystem, the client runs in a QZLSFILE job for this session. The QZLSFILE job log records when a client starts. When a client ends the session, the QZLSFILE job returns to prestart wait status and its job log is cleared. When a client starts a session with a QZLSFILET job, message CPIAD12 is written into its job log. Because the QZLSFILET job is used by multiple client sessions, the session end message, CPIAD13, is written to its job log when a user/client session is ended. These messages will accumulate in the job log.

To prevent "access denied" type errors, the recommended solution is to avoid starting the QZLSFILET job in the QSERVER subsystem (or other user subsystems). This might involve configuring user subsystems in IBM Navigator for i so that some clients run threaded and others run non-threaded. Use the following command to remove the prestart job entry for QZLSFILET from the QSERVER subsystem:

```
RMV PJE SBSD(QSYS/QSERVER) PGM(QSYS/QZLSFILET)
```


If a prestart job entry is to be removed from a different subsystem, then that subsystem needs to be specified instead of QSERVER along with its correct library (the program remains the same).

Programs created with the activation group new ACTGRP(*NEW) option will cause multithreaded jobs to end when the program returns. Therefore, when clients might run in a threaded environment (QZLSFILET job), a program created with ACTGRP(*NEW) should not be registered for exit point QIBM_QPWFS_FILE_SERV.

- **Active print users**

Active print users will have a job in QUSRWRK that connects to IBM i NetServer. A message in the job log indicates to which user the QNPSEVS job belongs.

Related tasks

[Troubleshooting file share problems](#)

If you experience problems with IBM i NetServer file share readiness, check the status of IBM i NetServer on the system.

[Administering subsystems for IBM i NetServer](#)

You can administer the subsystems in which user jobs are run. For example, you can create separate subsystems for users or groups of IBM i NetServer users, add prestart jobs to subsystem descriptions, and specify the subsystems.

Related information

[Activation groups and threads](#)

Troubleshooting file share directory paths

You might receive errors when accessing an IBM i NetServer file share if the directory path you have specified does not exist in the integrated file system.

If you have specified a directory path for a file share, but the directory path does not exist on IBM i, then clients will receive an error. The directory path that you specify on the File Share General-Properties dialog box must exist on the system for clients to avoid an error.

Troubleshooting print share problems

You might experience problems when using an IBM i NetServer network printer online for a variety of reasons.

- The network printer might not work online because the user does not have authorization to the output queue. If this occurs, you should ensure that the user can access the output queue by using control language (CL) commands, such as the Edit Object Authority (EDTOBJAUT) command.
- You might experience difficulty with spooling print jobs to an output queue when using an IBM i NetServer print share. For IBM i NetServer print shares to function properly, the network print server must be running. If you do not start the Network Printing Server, then IBM i NetServer print shares will not function.
- Clients should connect to IBM i NetServer by using their valid user profiles and not the guest user profile. There is one QNPSEVS job entry in the QUSRWRK subsystem for each active client that connects to an IBM i NetServer print share. The QNPSEVS job starts when a client connects to a shared print resource.
- The guest user profile must have a password and be enabled.
- A maximum of 350 spooled files will be displayed in a network printer window.

Troubleshooting print problems when using guest support

When you use the IBM i NetServer guest support to access the output queues, you might experience trouble when trying to access the server. In addition, your specified printer might not go online.

If this is the case, you must add a password to the IBM i NetServer guest user profile, for example, SMBGUEST. You must also ensure that you enable the user profile. The network print server requires a password for authentication although it will not prompt the user to enter a password.

The addition of a password in the SMBGUEST user profile does not affect users who access IBM i NetServer file and print shares. When a user requires guest support for file and print services, IBM i NetServer does not prompt the user for the SMBGUEST password. Because the SMBGUEST user profile has a password and is enabled, set the initial menu parameter to *SIGNOFF, INLMNU(*SIGNOFF), to deny signon access.

Troubleshooting PC client connection problems

You can test whether your connection method to IBM i NetServer (for example, Domain Name System) is running if you experience connection problems.

To test your connection, follow these steps:

1. Open a Windows command prompt from your PC client.
2. Enter the PING command to test your client connection to IBM i.
For example, you can ping IBM i NetServer by entering this command:

```
ping QSYSTEM1
```

Note: QSYSTEM1 is the server name of IBM i NetServer on IBM i.

If you get a positive return value, then the client connection to IBM i NetServer is operating normally. This means that the method the client uses to connect to IBM i NetServer and to the system is working.

Tips:

- Run `nbtstat -A ip-address-of-server` from a command prompt on the client to check connectivity:
`C:\WINDOWS>nbtstat -a qnetserver`. If the name of the system is unknown or cannot be resolved, the use of `nbtstat` can also be helpful.
- Another way to check client connectivity to the system is to see whether there is an active NetServer session for the client. Using IBM Navigator for i, under **Network > Servers > TCP/IP**, double-click **IBM i NetServer**, and then click **Sessions**. A listing of users and their respective workstation names, logon types, and system sessions is displayed.

Troubleshooting file share problems

If you experience problems with IBM i NetServer file share readiness, check the status of IBM i NetServer on the system.

To check the status of IBM i NetServer, follow these steps:

1. Verify that the system has started the QSERVER subsystem.
If the system has not already started the QSERVER subsystem, then start it by using the Start Subsystem (STRSBS) CL command.
2. Verify that the system has started the QZLSSERVER job within QSERVER.
If the system has not already started the QZLSSERVER job, then start it by using the STRTCPSVR *NETSVR CL command.
3. Verify that the QZLSFILE prestarted job is waiting for a program start request (PSRW status on the Work with Active Jobs display).
If threaded support is required, verify that the QZLSFILET job is awaiting client requests for file or print serving (TIMW or TIMA status on the Work with Active Jobs display).

If neither the QZLSFILET nor a QZLSFILE prestarted job is waiting for a program start request, then use the Start Prestart Jobs (STRPJ) CL command. This starts the prestarted job.

Note: If a subsystem is configured to start the QZLSFILET job, that single QZLSFILET job services multiple clients and their respective threadsafe file shares. There are multiple QZLSFILE jobs in a subsystem, and each one supports one client and all of the thread unsafe file shares that are accessed by a Windows client when using IBM i NetServer. However, if not running threaded, Linux connects to a separate QZLSFILE job for each mount of an IBM i NetServer share.

4. Add the QZLSFILET or QZLSFILE prestarted job to the QSERVER subsystem description (or a different subsystem description if you have configured others) if it is not already present.

You can use the Add Prestarted Job Entry (ADDPJE) CL command to add the prestarted job entry.

Related concepts

[Troubleshooting user profile connections](#)

When you try to access a file share, errors might occur because of user profile problems.

Troubleshooting print device driver problems

You might notice unreadable printed text when using the Advanced Function Printing (AFP) print device drivers that you download from the IBM Printing systems Web site.

The unreadable text occurs because the AFP print device driver substitutes fonts when using information that is directly embedded into the print stream of your print job. There are two options available for you to solve the problem:

- Turn off **Font Substitution** and turn on **Create Inline Form Definition** in the printer properties on your PC.
- Install license program AFP Fonts 5769FN1 and AFP DBCS Fonts 5769FNT.

Related information

[Installing, upgrading, or deleting IBM i and related software](#)

Troubleshooting IBM i NetServer using the QSYSOPR message queue

The system operator's message queue, QSYSOPR, contains important information for troubleshooting IBM i NetServer. Messages are logged to the QSYSOPR message queue each time IBM i NetServer starts and stops and when there are any specific errors to report.

The first message indicates whether IBM i NetServer initialized completely during startup. This message is important because it not only specifies whether IBM i NetServer started properly, but also lists the IBM i NetServer server name.

If IBM i NetServer fails to start successfully, the QSYSOPR message queue logs an error message that indicates the reason for the failure.

Using Display Log (DSPLOG) to find IBM i NetServer

The Display Log (DSPLOG) CL command with parameter MSGID(CPIB680) displays a message that indicates when IBM i NetServer started. The message also specifies the IBM i NetServer system name. You might need to adjust the beginning date of the search by using the PERIOD parameter. The message should read as follows:

```
Support for Windows Network Neighborhood (IBM i NetServer) SERVER_NAME Initialization Complete.
```

Troubleshooting IBM i NetServer location on the network

You can use the troubleshooting techniques if you have trouble finding IBM i NetServer on the network.

If you experience problems when trying to find IBM i NetServer on the network, you can take several steps to resolve the problems:

1. Ping the IBM i NetServer server name.

Pinging the IBM i NetServer server name reloads the IBM i NetServer IP address into the PC client cache file.

2. Verify that you are using the correct system name for IBM i NetServer.

The QSYSOPR message queue specifies the correct IBM i NetServer system name.

3. Verify that you have configured your PC client to properly resolve the IBM i NetServer system name to an Internet Protocol (IP) address.

Configure your PC client to resolve the IBM i NetServer system name to an IP address in one of the following ways:

- Map the IBM i NetServer system name to its IP address by using the Domain Name System (DNS).
- Map the IBM i NetServer system name to its IP address by using the Windows Internet Naming Service (WINS).
- Map the IBM i NetServer system name to its IP address by adding an entry to the LMHOSTS file.

Related tasks

Finding IBM i NetServer on the network

You can use your PC client to find IBM i NetServer on the network. By doing so, you can access shared resources on the network and make sure that your connection method to IBM i NetServer is running.

Troubleshooting IBM i NetServer using Windows messenger service

You can use Windows messenger service to troubleshoot problems with IBM i NetServer.

A user trying to connect to a share through IBM i NetServer might be denied access for the following reasons:

- The password does not match.
- There is not enough authority to the underlying file system object.
- The user profile does not exist.
- The user profile is disabled.
- The user is disabled for IBM i NetServer access.
- The password is expired.
- The user profile does not have a password.
- There was a Kerberos authentication failure.

In each of the previous situations, the client typically does not report a meaningful error message to help distinguish the problem. Support has been added to IBM i NetServer to allow messages to be sent over the network to client users on Windows 2000 and Windows XP, as well as Linux operating systems. This can greatly improve problem analysis for user profile connectivity problems.

Related concepts

Using Windows messenger service with IBM i NetServer

IBM i NetServer can automatically send informational messages to users in some situations.

Code license and disclaimer information

IBM grants you a nonexclusive copyright license to use all programming code examples from which you can generate similar function tailored to your own specific needs.

SUBJECT TO ANY STATUTORY WARRANTIES WHICH CANNOT BE EXCLUDED, IBM, ITS PROGRAM DEVELOPERS AND SUPPLIERS MAKE NO WARRANTIES OR CONDITIONS EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT, REGARDING THE PROGRAM OR TECHNICAL SUPPORT, IF ANY.

UNDER NO CIRCUMSTANCES IS IBM, ITS PROGRAM DEVELOPERS OR SUPPLIERS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY:

1. LOSS OF, OR DAMAGE TO, DATA;
2. DIRECT, SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; OR
3. LOST PROFITS, BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS.

SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF DIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, SO SOME OR ALL OF THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan Ltd.
1623-14, Shimotsuruma, Yamato-shi
Kanagawa 242-8502 Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Corporation
Software Interoperability Coordinator, Department YBWA
2800 37th Street NW
Rochester, MN 55901-4441
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

Each copy or any portion of these sample programs or any derivative work, must include a copyright notice as follows:

© (your company name) (year). Portions of this code are derived from IBM Corp. Sample Programs.

© Copyright IBM Corp. _enter the year or years_.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Programming interface information

This NetServer publication documents intended Programming Interfaces that allow the customer to write programs to obtain the services of IBM i.

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "[Copyright and trademark information](http://www.ibm.com/legal/copytrade.shtml)" at www.ibm.com/legal/copytrade.shtml.

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other product and service names might be trademarks of IBM or other companies.

Terms and conditions

Permissions for the use of these publications is granted subject to the following terms and conditions.

Personal Use: You may reproduce these publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative works of these publications, or any portion thereof, without the express consent of IBM.

Commercial Use: You may reproduce, distribute and display these publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these publications, or reproduce, distribute or display these publications or any portion thereof outside your enterprise, without the express consent of IBM.

Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the publications or any information, data, software or other intellectual property contained therein.

IBM reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the publications is detrimental to its interest or, as determined by IBM, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

IBM MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.



Product Number: 5770-SS1