

Barr Enterprise **Print Server**

Solutions for Enterprise Output Management



Documentation Edition 24

Software Version 5.0.46 or later

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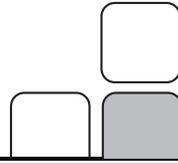
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Preface



Barr Enterprise Print Server comes with both a printed manual with getting started information and extensive online documentation.

This manual

Follow the instructions in this manual to install the Barr Enterprise Print Server hardware and software. The manual provides basic information to help get you started and print a test file. If you've purchased additional modules, review the chapters on BARR/FTP, BARR/NJE, BARR/PRINT390, BARR/PRINT TCP/IP, BARR/PRINT to EPS, BARR/RJE, BARR/TOOLS, or BARR/TRANSFORM. Refer to the Help for detailed instructions on configuring and operating Barr Enterprise Print Server. Chapter 12 explains how to launch and use the Help.

HTML Help

The Help gives you comprehensive step-by-step configuration and operation instructions for Barr Enterprise Print Server and any additional modules you have purchased. The Help also describes how to configure Windows printers, manage Spool services, and upgrade from Barr DOS-based products.

For the Barr Enterprise Print Server optional modules, the Help also provides detailed information on capturing an SNA communications trace, performing hardware diagnostics (if you buy additional Barr hardware), and setting up the SNA gateway and the mainframe to communicate with the Barr Enterprise Print Server.

You can view up-to-date Help files for the current software release by visiting the support page of the Barr Systems Web site (www.barrcentral.com).

Barr Technical Support

You can contact Barr Systems by e-mail, fax, or phone to work directly with a Support Analyst. Our Frontline and Research support is available five days a week, Monday – Friday, excluding bank holidays. Refer to the Technical Support Web site (www.barrcentral.com) for specific information regarding the hours of operation.

Other methods of technical support include on-site visits, remote control service, and FTP server access. You have two easy-to-use support options available 24 hours a day, 7 days a week using the Internet.

- **Knowledgebase** – The knowledgebase system (www.barrcentral.com/support/kb) offers a complete database of solutions to known problems. Our knowledgebase is designed to locate solutions based on the symptoms you are experiencing. We search the same knowledge when you call or e-mail us! When we solve your problem, we add it to our knowledgebase.
- **Case Manager** – If you’ve looked in our latest Help and knowledgebase and you still didn’t find your answer, you probably need our Technical Support. We’ve opened our case tracking system up to you on Barr Central through Case Manager (www.barrcentral.com/support/cases). With Case Manager you can create a new case, add notes to the case, check its status, and attach diagnostics. Barr Systems is notified of these events so our Support team knows what you need, and we keep in contact with you while the issue is being worked on.

When you contact Technical Support, please include the hardware serial number and software version number in your correspondence.

Barr Messages

Barr Systems provides messages that help to resolve problems concerning the installation, configuration, tuning, testing, and operation of our products. Message boxes display when the system needs to notify you about a particular situation or condition. See the *Interpreting Barr Messages* Help topic to learn more about the Barr messages.

The following buttons provide more detailed information about the message. They link directly to the Help or Knowledge Base system.

Button	Explanation
	Provides a link to the Help where additional information can be found. This will open an associated Help topic or the <i>Getting help</i> topic where you can search for related information.
	Provides a link to Barr Central (www.barrcentral.com) where an updated message might be available. You can link from this page in Barr Central to the Knowledge Base, a complete database of solutions to known problems. The Knowledge Base will locate solutions based on the symptoms you are experiencing.

Software version number

Once Barr Enterprise Print Server has been installed, from the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Spool Window**. From any of the Barr software menu bars, select Help | **About *software name***. The software version number and the hardware key serial number display in this window.

The Barr Technical Support analyst may also request version numbers for additional program files. Use Windows Explorer to navigate to the folder where you installed the Barr software (usually \\Program Files\Barr\Spooler\Exe). Select the program file name, right-click, and then select **Properties**. Select the **Version** tab and note the **File version** number.

Hardware serial numbers

You can obtain the hardware key serial number from the blue sticker on the hardware key. Once Barr Enterprise Print Server has been installed, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Spool Window**. From any of the Barr software's menu bars, select Help | **About *software name***. The software version number and the hardware key serial number display in this window.

If you purchased an optional Barr adapter, you can obtain the adapter serial number from any of the following places.

- Blue sticker on the adapter edge, visible from the rear of the computer
- Back of the adapter, where the serial number is handwritten in permanent ink
- Blue sticker on the adapter box

Components

You can obtain a list of the installed software, licensed software, and the installed hardware adapters on the **Components** dialog box. From the Spool Window menu bar, select Help | **About Spool Window**, and then click **Components**. The **Software** tab displays the installed and licensed software modules. The **Hardware** tab displays the installed hardware adapters.

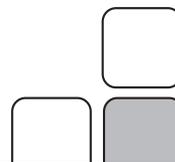
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- Jack Schudel, Northeast Regional Data Center, Gainesville, FL
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Notes:

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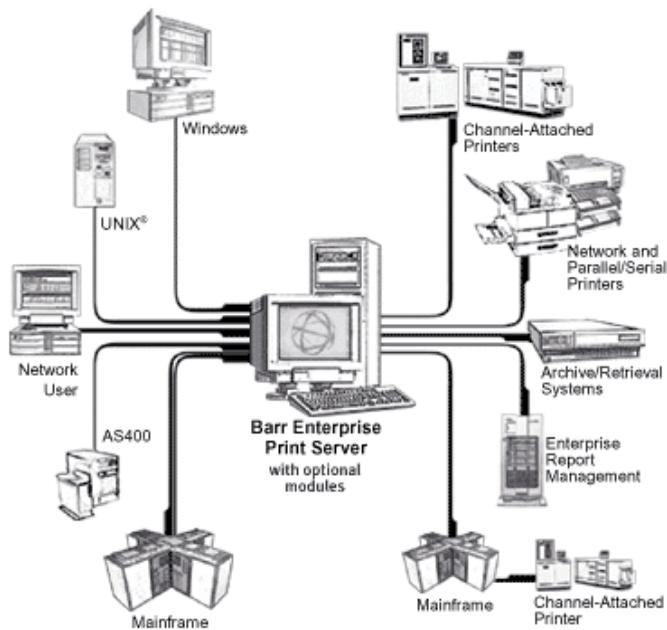
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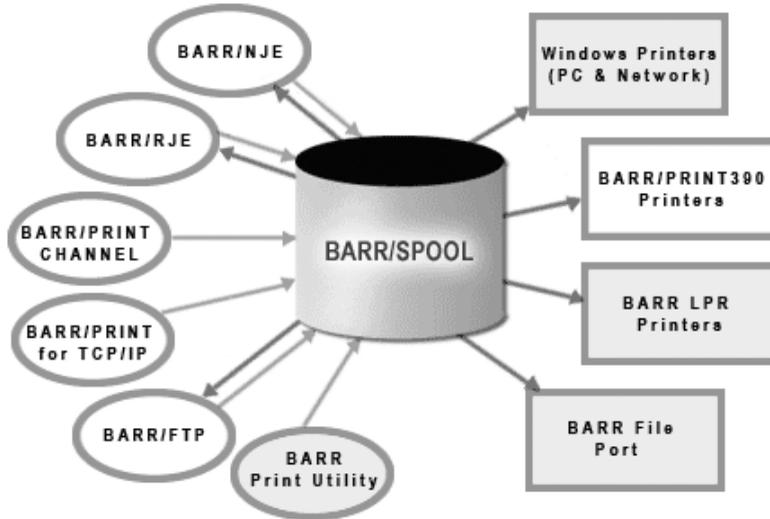
Barr Enterprise Print Server gives you complete control of printing and routing network documents. You can direct files from the LAN, Windows programs, or host computers to a variety of destinations, including printers and other hosts.



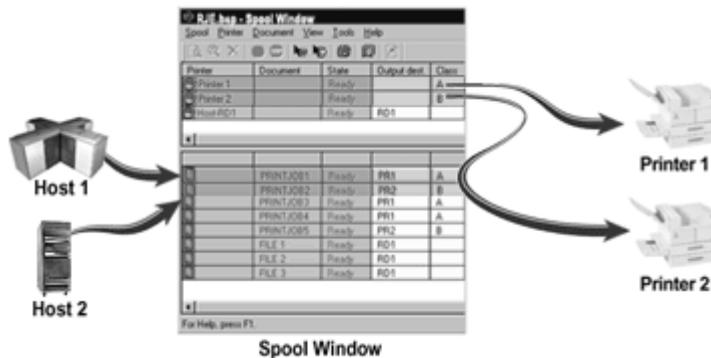
The hosts can vary from large IBM Mainframe systems, to midrange systems such as UNIX and AS/400 systems, to PCs and servers on a LAN. The printers and print destinations can be ordinary PC and network printers, channel-attached printers, folders on a network drive, other print servers or applications, or just about anywhere you want to route print output.

The diagram below shows the primary inputs and outputs of the Barr Enterprise Print Server. The core spooler (BARR/SPOOL) and the shaded modules are included as a part of the Barr Enterprise Print Server. The unshaded modules are additional product modules that can be purchased. Some of these products include hardware, such as the BARR/PRINT CHANNEL and BARR/PRINT390 options, which include channel adapters and cables.

Barr Enterprise Print Server Modules



The main user interface for controlling the Barr Enterprise Print Server is the Spool Window, shown below. From this interface, you can manage the routing of all documents from a single, combined print queue. At a glance, you get a comprehensive view of all documents and printers, instead of having to open separate windows to view individual queues for each destination device. You can also fully customize the queue display. While the spool is operating, you can sort documents a variety of ways and change what type of information displays for each document without interrupting spool activity. In addition, you can launch viewers for print files such as AFP, PCL, PDF, PostScript, SAP, TIFF, and Xerox Metacode right from the Spool Window.



The various input modules, such as BARR/RJE and BARR/PRINT TCP/IP, run as services in the background. Their job is to communicate with the host computers, receive jobs, and feed the jobs into the Spool Window. The operators of the software normally do not need to monitor the input connections, but simply see the jobs arriving in the lower part of the Spool Window.

The upper part of the Spool Window shows the various printers that have been defined to this system. The information entered into the columns on the printer lines control which jobs are routed to which printers. This information, which we refer to as routing criteria, can be edited by the operators, who also have the ability to start and stop the printers, change job states between Ready and Hold, and perform many other tasks. When a printer is started (set in a Ready state), any jobs in a Ready state that have attributes matching the routing criteria on the printer line will be printed to that printer. If the printers are set to a Ready state, the system will run unattended, using the routing criteria currently on the printer lines.

Control of documents and printers is at your fingertips. You can manually change document routing criteria, such as copies and priority, by editing the information displayed on screen. With a click of the mouse, you can start and stop all spool activity, start and stop individual documents or printers, or send commands to reset printers. If a printer jams, you can quickly redirect documents to another device.

Advanced features include routing copies of a single document to several different printers or automatically overriding document routing criteria. You can also use built-in utilities to create print banners and FCBs.

And you can make use of the Windows spooler services which provide the following advantages:

- Operate Barr Enterprise Print server in the background, even when programs are closed.
- Log on or off the computer where Barr Enterprise Print Server is installed without interrupting spool operation.
- Set up services to start automatically when you start the computer. If the computer restarts during unattended operation, spool operation can automatically restart.

For more information about Barr Enterprise Print Server features, see the product or module feature descriptions.

With BARR/FTP, BARR/NJE, BARR/RJE, and BARR/PRINT TCP/IP, you can receive documents from many different types of hosts on your enterprise network. BARR/FTP, BARR/NJE, BARR/RJE, and BARR/PRINT TCP/IP must be purchased separately as modules of the Barr Enterprise Print Server.

1.1 Features

Barr Enterprise Print Server is our complete Windows-based print management solution. Using our select hardware and software options, you can customize the print server to suit your unique printing and document management needs. With it, you can direct files from mainframes, UNIX hosts, AS400s, and Windows-based programs to multiple destinations, including network and channel-attached printers, as well as other hosts.

Barr Enterprise Print Server comes with many standard features. You can also purchase software options that provide additional functionality.

Standard features

Barr Enterprise Print Server includes the features described in this section.

Control user access

The system administrator determines which network users can view the spool queue and which features each user can access. An easy-to-use interface allows the system administrator to quickly define spool users and their privileges.

Receive files from a variety of sources

You can direct files to the spool from these sources, Windows programs and any local or network drive (using Barr Print Utility)

Route documents to a variety of destinations

When files arrive in the Barr spool queue, they are called *documents*. You can route spool documents to these destinations.

- Windows printers and print queues
- Novell print queues (requires the Windows client or gateway services for NetWare)
- Centronics and older line printers
- Another BARR/SPOOL
- Local computer or network

Print files with unlimited file sizes

Barr Enterprise Print Server supports printing files with unlimited file sizes.

Set document and printer attributes

BARR/SPOOL maintains complete mainframe-like spool queue attributes such as Job name, Form name, FCB name, UCS name, Priority, and Class. It also gives you complete control of attribute values.

- Change Spool Window printer and document attributes by clicking a column and typing a value.
- Use the Barr override table to assign initial attribute values or override them.
- Use the printer port properties to assign attribute values to jobs originating from third-party programs.
- Set attributes for LAN files you read in with the Barr Print Utility or the DOS PRT utility.

Balance printer load

BARR/SPOOL performs automatic load balancing (or load sharing) of printers to improve printer utilization. The software uses an algorithm to distribute new jobs evenly among the available printers. To set up load balancing for two or more printers, make sure the Spool Window printers are set to a Ready state, and that they share the same routing criteria, such as Form name and Class.

Manage documents

Barr Enterprise Print Server enhances Windows print services, creating a fully functional enterprise-class print server. You can control enterprise-wide document management from a single queue window (Spool Window). Document management eliminates printer down time and ensures that all devices are being used to the fullest potential.

- Control the order in which documents display in the Spool Window and the order in which they print.
- Delete documents or save them to another folder after they print.
- Route a document to the first available printer, a specific printer, or multiple printers.
- Schedule a document to print to a specific printer.

Collect and manage accounting data

Barr Enterprise Print Server aids in the monitoring, allocating, and billing of printing services. It helps to ensure that all printers are being used to their maximum potential by recording accounting data for completed print transactions.

Use forms

Barr Enterprise Print Server supports printer forms.

- **Vertical Forms Control** – On channel-attached printers, Barr Enterprise Print Server supports vertical forms control with the FCB. For ASCII printers, the software emulates vertical forms control.
- **Electronic Forms** – You can use form overlays to send EBCDIC or ASCII files that contain electronic forms or printer resources to the printer.

Send TCP/IP print jobs

You can send print output using a TCP/IP network using LPR printers with the 4.3 Berkeley Software Development (BSD) protocol.

Recover from errors

Barr Enterprise Print Server provides these error recovery features.

- Full error recovery guarantees data won't get lost from system failures.
- Powerful viewing and reprinting makes it easy to recover from printer errors.

Compress data

Data can be compressed to reduce data transmission times and bandwidth. Compressed files can be read in by Print Utility and decompressed as they enter the Spool Window. Data can also be compressed when they are written to disk or sent to another BARR/SPOOL computer. See the *Compressing data* Help topic for more information.

Encrypt data

Encryption can be used to ensure the privacy and authenticity of the message as well as the integrity of the message contents. You can use the Encryption Key Manager to encrypt data passed between Barr Enterprise Print Server computers so that only the transmitter and intended recipient can decode the message. See the *Encrypting data* Help topic for more information.

Optional features

You can purchase Barr Enterprise Print Server modules that provide the following features.

Send and receive mainframe jobs

With BARR/NJE, your computer can send and receive print data sets and jobs from one or more adjacent Network Job Entry (NJE) nodes. NJE is the way mainframes exchange print and job data sets. Using BARR/NJE with BARR/SPOOL gives you most of the features of the JES SPOOL, including all the features for naming, priority, copies, routing, and reprinting that are available in BARR/RJE or on the mainframe.

With BARR/RJE, your computer emulates an IBM 3770 device and supports SNA connections to mainframe job entry systems. BARR/RJE enables you to perform SNA file transfer, remote job entry, and remote printing from a computer.

Both BARR/NJE and BARR/RJE can connect to your mainframe using IBM's Enterprise Extender (HPR/IP). Using HPR/IP reduces your costs by eliminating the expenses associated with maintaining an SNA architecture on your network, simplifies your company network infrastructure, transports SNA over native IP network, requires no changes to SNA applications, uses OSA Gigabit Ethernet for SNA traffic, and enables single network transport.

Receive TCP/IP jobs

Receive jobs from any TCP/IP host, with LPR/LPD or direct socket connections, using the BARR/PRINT TCP/IP module. The BARR/PRINT TCP/IP module emulates an LPD, which is the standard print server emulation used in TCP/IP environments. BARR/PRINT TCP/IP also provides a direct socket connection, which may be more appropriate depending on your needs. Traditionally, TCP/IP hosts were computers running a UNIX operating system, such as a Sun Workstation, IBM RS/6000, or HP 9000. TCP/IP hosts now can be almost any type of computer, including Windows and Novell servers, DEC VAXs, IBM AS/400s, and IBM mainframes.

The BARR/PRINT TCP/IP module supports any number of simultaneous print requests on multiple queues or ports from any number of hosts.

Send and receive FTP jobs

With BARR/FTP, your computer can send and receive print jobs from any FTP host. BARR/FTP connects to and transfers files between your host and the Barr Enterprise Print Server using File Transfer Protocol (FTP). It allows you to send JCL, receive output, and monitor the JES queue using TCP/IP.

Print to PC-attached channel printers

With the BARR/PRINT390 module, your computer can drive up to eight daisy-chained S/390 channel-attached printers per adapter. This eliminates the need for expensive channel extenders.

Emulate mainframe-attached channel printers

With the BARR/PRINT CHANNEL product, your computer can emulate multiple 3211-type, channel-attached printers on the mainframe channel. This option enables you to route mainframe jobs to network printers.

Transfer LCDS and Metacode files to a Xerox DocuPrint EPS and DocuTech 2000 Series Production Publishers

With the BARR/PRINT to EPS module, you can connect to virtually any source that produces Xerox print files and automatically route them to your network-attached EPS printer.

View and reprint PCL and Xerox line data and Metacode files

BARR/TOOLS allows you to view and reprint your PCL and Xerox line data (DJDE) and Metacode files. It provides accurate page count data so you can use the Barr Enterprise Print Server Accounting features.

Process and transform AFP, PCL, PS, SAP, and Xerox Line Data (DJDE) and Metacode files

Depending on your requirements and configuration, BARR/TRANSFORM converts AFP, PCL, PS, SAP, and Xerox Line Data (DJDE) and Metacode files from their original format into ASCII text, PCL, PostScript, PDF, TIFF, or XML for printing, archiving, or viewing.

Split a single job, printing it to multiple printers

You can use BARR/PRINT SPLITTER to split text jobs, AFP jobs, and jobs containing Xerox Metacode or LCDS data. When the job is split, the print stream is split into 2 or more parts, up to 7. Job splitting allows multiple printers to print critical jobs quickly, always splitting on page or sheet boundaries.

Access the Spool Window remotely

With the BARR/Web Interface module, you can access the Barr Enterprise Print Server remotely. Remote users can monitor printers in their print center from the comfort of their office. Also, they can pause, cancel, and redirect print jobs to different printers, view text in the print files, and change a job's priority in the queue based on routing criteria.

1.2 System requirements

Install Barr Enterprise Print Server on a computer server or workstation that meets the following requirements.

BARR/SPOOL software requirements

For BARR/SPOOL, you need the following software installed.

- Microsoft Windows XP Professional, Microsoft Windows 2000, or Microsoft Windows 2003 Server



If you are upgrading from Windows NT or Windows 2000, see Section 2.5 for additional information. Follow the steps for Windows XP when working with Windows Server 2003.

- Microsoft Internet Explorer version 5.5 or later

Hardware requirements

The computer where you install Barr Enterprise Print Server must meet the minimum hardware requirements.

Minimum

- 1.0 GHz Pentium processor
- 512 megabytes (MB) of RAM
- 30 GB hard drive
- CD-ROM drive
- SVGA display
- Parallel or USB port
- PCI slots half length and full height for Barr adapters

Recommended

- 2.8 GHz processor with hyper-threading
- 1 GB of RAM
- 36 GB SCSI or SATA hard drive
- CDRW drive or USB flash drive
- Configured/tested backup system (dependent on downtime tolerance)



These are basic recommendations. Specific requirements are dependent on the operating system, expected production volume, and other applications.

BARR/NJE or BARR/RJE software requirements

You need one of the following packages if you are using the SNA link type with BARR/NJE or the MS/LUA link type with BARR/RJE.

- Microsoft Host Integration Server (HIS). Use one of the following installation methods.
 - Install HIS on the same computer as the Barr software.
 - Install HIS Client on the same computer as the Barr software, provided that HIS is installed elsewhere on your network.
- Microsoft SNA Server version 3.0 (with Service Pack 1) or later. Use one of the following installation methods.
 - Install SNA Server on the same computer as the Barr software.
 - Install SNA Server Client on the same computer as the Barr software, provided that SNA Server is installed elsewhere on your network.
- Microsoft SNA Workstation version 4.0 or later. Microsoft SNA Workstation and the Barr software must be installed on the same computer. SNA Server Client cannot communicate with Microsoft SNA Workstation. When configuring SNA Workstation, follow the instructions for Microsoft SNA Server.

BARR/Web Interface requirements

Web service computer

Software

- Microsoft Windows XP Professional, Microsoft Windows 2000, or Microsoft Windows 2003 Server
- Microsoft Internet Explorer version 5.5 or later
- Internet Information Server (IIS)
- .NET CLR

Hardware

Minimum:

- 1.0 GHz Pentium processor
- 512 megabytes (MB) of RAM
- 30 GB hard drive
- CD-ROM drive
- SVGA display
- Parallel or USB port

Recommended:

- 2.8 GHz processor with hyper-threading
- 1 GB of RAM
- 36 GB SCSI or SATA hard drive
- CDRW drive or USB flash drive
- Configured/tested backup system (dependent on downtime tolerance)



These are basic recommendations. Specific requirements are dependent on the operating system, expected production volume, and other applications.

Client computer

- Java JRE 1.4.1 or later
- Java Web Start 1.2 or later

Option hardware requirements

Some options for the Barr Enterprise Print Server require additional hardware.

- If you purchased the BARR/NJE or BARR/RJE module, you need hardware for communicating with the mainframe. This hardware must be installed in the server computer. The type of host connection hardware you need depends on your connection type: 802.2 LLC2, HPR/IP, SDLC, channel (for BARR/NJE only), or network. For BARR/NJE, if you have an SDLC host connection, you can purchase the corresponding hardware from Barr Systems. For network host connections (802.2 LLC2 or HPR/IP) or connections between computers, you must have network hardware from another vendor.
- To use the BARR/PRINT TCP/IP module, you need network hardware for communicating with the TCP/IP host. This hardware must be installed in the computer running the BARR SpoolCore service.
- To use the BARR/PRINT390 module, you need to install the CHANNEL-OUT hardware in the computer running the BARR SpoolCore service.

1.3 Section 508 – Software accessibility

In 1998, Congress amended the Rehabilitation Act to require Federal agencies to make their electronic and information technology accessible to people with disabilities. Inaccessible technology interferes with an individual's ability to obtain and use information quickly and easily. Section 508 was enacted to eliminate barriers in information technology, to make available new opportunities for people with disabilities, and to encourage development of technologies that will help achieve these goals. The law applies to all Federal agencies when they develop, procure, maintain, or use electronic and information technology.

Barr Systems believes that Section 508 compliance is important for industry, government, and essential for people with disabilities. We proactively design accessible products and document how our products meet the Section 508 Standards. The Barr Enterprise Print Server meets most of the Section 508 software accessibility standards. The few exceptions in our product are not significantly disruptive to product functionality. In some instances, the functionality is accessible through equivalent, alternative means. Barr Systems is committed to devoting the time and resources necessary to ensure that all users enjoy access to our products, technologies, and services. We continue to deliver on our commitment by making each new release of our products more accessible than the last.

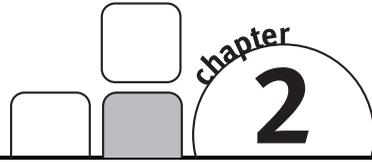
1.4 Package contents

Your Barr Enterprise Print Server package includes the following items.

- CD-ROM containing the Barr Enterprise Print Server software, any additional modules you purchased, and HTML Help
- Activation code, which is printed on the CD
- Hardware key used for software copy protection
- *Barr Enterprise Print Server* manual (this manual)

See the corresponding hardware manual for a list of the hardware package contents for option hardware, such as the CHANNEL-OUT hardware for the BARR/PRINT390 module.

Install the Software and Hardware



Follow the instructions in this chapter to install the Barr Enterprise Print Server software and hardware on your computer. When you finish the installation, refer to the getting started chapters of this manual or the Help for configuration instructions.

2.1 Choose an account type



You must be a member of the local **Administrators** group on the computer where you install the Barr Enterprise Print Server.

You can install the Barr Enterprise Print Server on one of the following platforms: workstation, stand-alone server, or domain controller. During installation, you will be given the choice of installing the software in a system account or a user account.

System account



If the service will be connecting to or accessing shared network resources, we recommend configuring the service to run in a user account. Any time the service requests access to a system resource, the service is identified to the resource as the user for which the service was configured to run. Running the service in a user account usually provides the system administrator with a greater degree of flexibility in selecting the resources to which the service will have access.

The system account is a predefined local account used by system processes. If you are installing the software on a machine running in a stand-alone environment, or if security is not an issue, selecting the system account usually simplifies the management of the service.

The Barr Enterprise Print Server modules that are services will inherit the security context of the Service Control Manager. The system account is not associated with any user accounts and does not use credentials such as a domain name, user name, or password. Since the account does not have credentials, it has limited access to network resources and shared objects. It does, however, have almost unlimited access to local resources.

User account

We recommend configuring the service to run in a user account if the service will be connecting to or accessing shared network resources. Any time the service requests access to a system resource, the service is identified to the resource as the user for which the service was configured to run. Running the service in a user account usually provides the system administrator with a greater degree of flexibility in selecting the resources to which the service will have access.

If you select to install on a user account, you will be prompted for a domain name, account (logon name), and password. The Barr Enterprise Print Server modules that are Windows services will be configured to run as this user.

Domain

There are three possible entries for the domain field: you can leave it blank, enter the local computer name, or enter the domain name. If you leave the domain name blank, the installer will assume you intend to use a local account on the computer to which you are installing.

Table 2-1 describes how the domain entry affects new and existing user accounts on a workstation or stand-alone server.

TABLE 2-1
Workstation/Stand-alone Server Installation

Domain Field	New User Account	Existing User Account
Blank	Creates a new user account on the local computer.	Uses the existing account on the local computer.
Local Computer Name	Creates a new user account on the local computer.	Uses the existing account on the local computer.
Domain Name	Creates a new user account in the specified domain.	Uses the existing account in the specified domain.

When installing on a primary or backup domain controller, the user account will always be a domain user account. Remember that domain accounts are visible to the entire network.

If you install the Barr Enterprise Print Server on a backup domain controller, or specify a domain user account during installation, the primary domain controller for the specified domain must be online and available during the installation process.



Installing the software on a domain controller can affect the performance of the Barr Enterprise Print Server, depending on the number of users serviced by the domain controller.

Complete the following steps to obtain a value for the domain.



If you are installing into a workgroup environment, it is best to use the computer name.

1. Open the Windows Network utility. (From the taskbar in Windows 2000, click Start | Settings | **Network and Dial-up Connections**. From the taskbar in Windows XP, click Start | Control Panel | **Network Connections**.)
2. On the menu bar, select Advanced | **Network Identification**.
3. On the **Network Identification** tab in Windows 2000, or the **Computer Name** tab in Windows XP, you will see the **Full computer name** and the **Domain**. You can use these values for the settings on the **User Account Information** dialog box during installation of the Barr software.

Account

During installation, you can enter the name of an existing user account, or you can create a new account by entering a user name that does not currently exist. For both new and existing accounts, the installer will add the account to the local **Administrators** group, if it is not already a member. The user will also be granted the necessary rights to log on as a service and to log on as a batch job. These rights must be set on the user account for the Barr Enterprise Print Server to function correctly.

We recommend you enter a new account and allow the Barr Enterprise Print Server to create it for you. If the account is a domain user account, the user installing the Barr Enterprise Print Server must also be in the domain **Administrators** group, or have the necessary permissions to create a domain user account.

You can view a list of current user accounts defined on the computer, from the Windows user utility (Local Users and Groups in Windows 2000 and User Accounts in Windows XP).

Password

The password you provide depends upon the account you use. If you are creating a new account, then you can use any password you want. If you are using an existing account, be sure to use the same password as entered in the Windows user utility.

If you install Barr Enterprise Print Server under an existing user account, and the account policies have changed requiring a longer password, you will receive an error indicating the specified password is too short. To correct this problem, change the account password to be at least as long as required by the system where the account was created.



Do not change the password of the user account used to install Barr Enterprise Print Server. If the password is changed, Barr Enterprise Print Server will not start.

2.2 Demonstration mode

A keyless demonstration mode is available for the Barr Enterprise Print Server. When you are in the demonstration mode, each time you start BARR/SPOOL a splash screen appears that provides you with the information such as the options enabled, data size restrictions, expiration date, and order information.

For new users (without hardware keys) – Install the Barr Enterprise Print Server software. The setup program copies files from the Barr Enterprise Print Server CD to your computer. This will give you access to all features of the Barr Enterprise Print Server in demo mode.

For licensed users (with hardware keys) – If you would like try a feature you currently don't have licensed, remove the hardware key and restart the computer. This will give you access to all features of the Barr Enterprise Print Server in demo mode. It is important to remember that while your hardware key is removed, your licensed modules will also operate in demo mode.

2.3 Install or reinstall Barr Enterprise Print Server



You must be a member of the local **Administrators** group on the computer where you install the Barr Enterprise Print Server.

If you are installing an upgrade and are using a USB key, you must remove the key before beginning the upgrade installation.

Follow the instructions in this section to install the Barr Enterprise Print Server software and hardware. If you are reinstalling the Barr Enterprise Print Server or installing a newer version, first perform the steps in Section 2.4 to remove the existing software.

The setup program copies files from the Barr Enterprise Print Server CD to your computer. Before you run the setup program, exit all Windows programs.

1. Insert the Barr Enterprise Print Server CD into the CD-ROM drive. The Welcome screen automatically displays. If auto run is disabled on your system or if the Welcome screen does not automatically display, right-click **Start** on the taskbar and select **Explore**. Navigate to the CD-ROM drive and double-click **autorun.exe**.



2. Click the links to learn more about the software before you install.
 - **View Upgrading Instructions** – Links to important information for customers upgrading from a previous version.
 - **View Help** – Links to the Barr Enterprise Print Server Help where you can learn more about configuring and using the software.
 - **View ReadMe** – Links to information on product issues that are not fixed in this version of the software.
 - **View Release Notes** – Links to information on enhancements and fixes included in this version of the software.
 - **Visit Barr Central** – Links to the Barr Systems Web site.
3. Click **Install Software** to begin installation of the Barr Enterprise Print Server. You can exit the setup program at any time by clicking **Cancel**.
4. Read the information on the **Welcome** dialog boxes, and click **Next**.
5. Review the **License Agreement**. To install the software, you must accept the terms of the license agreement. Click **Yes**.
6. Choose whether or not to read the Readme file that describes new program features, fixes, and unresolved issues.
7. On the **User Information** dialog box, type your name and your company name. This information is required. Click **Next**.

8. On the **Choose Destination Location** dialog box, select the folder where you want to install Barr Enterprise Print Server. You can use the default path or click **Browse** to navigate to a folder. Click **Next**.
9. On the **Component Selection** dialog box, verify that the correct components are selected to install. Click **Next**. The first time you install the software all components will be selected by default. If you install an upgrade, your previously installed components will be automatically selected.
10. On the **Select Program Folder** dialog box, select the folder for storing Barr Enterprise Print Server program icons. Click **Next**.
11. On the **User Account Information** dialog box, select whether you will be installing the software in a system account or a user account. If you will be accessing a network drive, you must select **User account**. For more information on accounts and user rights, refer to Section 2.1.
 - **System account** – This is a predefined local account used by system processes. If you are installing the software on a machine running in a stand-alone environment, or if security is not an issue, selecting **System account** usually simplifies the management of the service.
 - **User account** – Use this if the service will be connecting to or accessing shared network resources. This will provide the system administrator with greater flexibility in selecting the resources to which the service will have access.

If you select **User account**, enter the **Domain, Account** (logon name), and **Password** for the account. If you leave the **Domain** field blank, the computer you are logged in to is assumed to be the domain. If you enter an account that does not currently exist, you will be asked if you wish to create a new account.
12. On the **Start Copying Files** dialog box, verify that the setup settings are correct. If you are reinstalling Barr Enterprise Print Server, the **Running Programs Detected** dialog box displays if Barr Enterprise Print Server or a corresponding service is running. Minimize the setup program and verify that jobs are not in the process of being received or printed. Click **Next**.
13. On the **Setup Complete** dialog box, choose whether or not to read the Readme file or the Getting started Help. Click **Finish**.
14. Restart your computer to ensure that all services can be started.
15. Open the Spool Window to activate the software before your grace period expires (usually 30 days). You can receive your activation code by clicking **Get Code** on the activation dialog, visiting www.barrcentral.com/activate, or contacting Barr Systems Technical Support. Activation codes are valid only for a single version of the Barr Enterprise Print Server.

Install the hardware key

After you install the Barr software, you must install the hardware key on a parallel port (LPT1, LPT2, or LPT3) or USB port on your computer. Hardware keys that attach to parallel ports act as a pass-through to the printer or other peripherals so it does not prevent the port from being used for other purposes. If more than one program requires a hardware key, daisy chain the keys together from the same port. You can also attach a printer to the parallel port where the hardware key is installed. Plug the hardware key into the parallel port, and then plug the printer into the hardware key. Hardware keys that attach to the USB port can be attached to a hub to allow other connections to the USB port.

After you install the Barr software and the hardware key, you can obtain the hardware key serial number from any of the Barr software menu bars. Select Help | **About software name** on the menu bar.



If you are adding a new module to a previous installation of the Barr Enterprise Print Server software, then you must follow the steps in the *Using Key Client* Help topic to upgrade your hardware key.

Install additional hardware

Install any additional hardware, such as the CHANNEL OUT adapter for the BARR/PRINT390 module. Install any necessary hardware as described in the appropriate hardware manual.

Start the services

The setup program stops the Barr Enterprise Print Server and Windows spooler services. After you install Barr Enterprise Print Server and restart your computer, these services start automatically.



If you purchased the BARR/NJE module, set up NJE at your host and computer before you start the BARR NJE service (see Chapter 5).

If you purchased the BARR/PRINT TCP/IP module, complete the following steps to start the BARR LPD service.

1. Open the Windows Services utility. (From the Windows 2000 taskbar, click Start | Settings | Control Panel | Administrative Tools | **Services**. From the Windows XP taskbar, click Start | Control Panel | Administrative Tools | **Services**.)
2. Right-click the BARR LPD service, and then select **Start**, or on the menu bar select Action | **Start**.
3. Close the Services utility.

2.4 Remove Barr Enterprise Print Server

Use the Uninstall program to remove the Barr Enterprise Print Server from your computer. The Uninstall program removes the items installed by the setup program, including the following items.

- Barr port monitors
- Barr software files
- Barr default configuration files (such as the default Print Utility control file, spool.ctr)

The Uninstall program does not remove information created during Barr Enterprise Print Server configuration and operation. If you intend to reinstall the software, keep these items. To completely remove the program, you need to manually remove the following items.

- Custom Windows printers for Barr Enterprise Print Server
- Barr device drivers for Windows printers (from the Windows Explorer, navigate to the \\WINNT\INF folder, and delete the Barr?.inf, Barr?.pnf, and NTprint.pnf files)
- Barr Enterprise Print Server spool and retain documents and folders
- Barr Enterprise Print Server spool utility files or folders (overlays, forms, FCBs, banners, trailers, override tables, and Print Utility control files)
- User-created configuration files (such as spool custom settings files [.bsp] or Print Utility custom control files [.ctr])
- Registry-stored configuration information (from the Configuration Utility)
- Configuration settings and files (from the Backup Configuration Utility)

Usually, you do not need to stop any Windows services before you remove Barr Enterprise Print Server. When you reinstall, the setup program automatically stops the Windows spooler and any Barr services before it installs the Barr software.

Complete the following steps to remove the Barr Enterprise Print Server components that were installed by the setup program.

1. Stop all Barr Enterprise Print Server printers from the Spool Window (click the toolbar's **Stops All Printers** button) and verify that they have stopped. Also, verify that no jobs are being received (from Windows programs, the Barr Print Utility, or host systems).
2. Close all Barr Enterprise Print Server programs and utilities.
3. If you are using a hardware key on a USB port, remove the key.
4. From the taskbar, click Start | Programs | Barr Enterprise Print Server | **Uninstall Barr Enterprise Print Server**. The Uninstall program will close any open programs. Any unsaved data will be lost.
5. From the **Confirm File Deletion** dialog box, click **Yes** to continue (or **No** to cancel).

6. While removing the software, the **Remove Shared File** dialog box may display. Select **Yes** to remove the file, or select **No** to leave the file. If other Barr programs use the file and you select **Yes**, those programs may not function properly. Because leaving the file will not harm your system, we recommend selecting **No**.
7. Restart your computer.

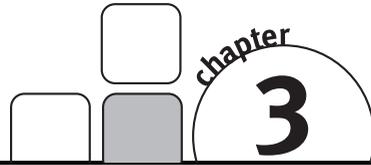
2.5 Upgrade to Windows XP or Server 2003

Version 3.2 of the Barr Enterprise Print Server supports Windows XP and version 4.0 supports Windows Server 2003, and Windows 2000. If you have a current version of the Barr Enterprise Print Server software on your computer and you are upgrading from Windows NT or Windows 2000, complete the following steps after you have installed the Windows XP or Server 2003 software.

1. Remove the Barr software (see Section 2.4). Your current Barr configuration files will remain intact. Use the Backup Configuration Utility to back up any specific configuration files. See the *Using the Backup Configuration Utility* Help topic for more information.
2. Install the software, version 3.2 or later for Windows XP or version 4.0 or later for Windows Server 2003 (see Section 2.3).
3. Open the Windows Device Manager.
4. Click the plus sign (+) next to **Unknown Devices** to expand the list.
5. Right-click the device named **Unknown PCI Device** and select **Uninstall**. Complete this step for each unknown PCI device listed.
6. On the menu bar, select Action | **Scan for hardware changes**. Windows will install the adapters using the correct drivers. See your Windows Help for additional information.

Notes:

BARR/SPOOL



Getting Started

BARR/SPOOL is the core module of the Windows-based Barr Enterprise Print Server. BARR/SPOOL automates, controls, and routes data received from various sources and bound for many destinations. It has an easy-to-use interface that controls printing and file document transfers.

BARR/SPOOL features a fully customizable Spool Window designed so you can set job priorities, and rearrange and resort jobs to suit your changing needs. BARR/SPOOL supports a variety of output destinations and an unrestricted number of printers and print jobs. You can also personalize settings for different operators.

BARR/SPOOL includes the following features.

- Supports the following formats: ASCII, EBCDIC, AFP, Adobe PDF and PostScript, Xerox Metacode and LCDS, and PCL
- Routes files to multiple destinations, including channel, network, parallel, and serial-attached printers
- Routes files to network directories, storage devices, and data transform software
- Drives an unlimited number of printers
- Provides personalized settings for different operators
- Supports unattended operation
- Processes jobs independently of one another with no arbitrary limits on the number of concurrent tasks
- Performs automatic load balancing (or load sharing) by distributing new jobs evenly among the available printers
- Manages and stores host resources (FCB, UCS)
- Manages forms overlays (EBCDIC or ASCII files)
- Supports electronic forms, replacing pre-printed forms
- Supports Windows printers and Novell print queues
- Uses Barr LPR port to print to TCP/IP based printers
- Supports Data Products, Centronics, and older line printers with the Barr ASCII printer driver
- Provides multiple-copy printing
- Displays real-time status for each printer

- Reprints and restarts at any location within the job
- Prints nonstop during spool viewing and reprinting

Follow these procedures to set up BARR/SPOOL with the minimum required features for printing a test file.

1. Install the software (Chapter 2)
2. Assign user access rights
3. Start spool operation
4. Define printers
5. Enable the retain feature
6. Print test documents

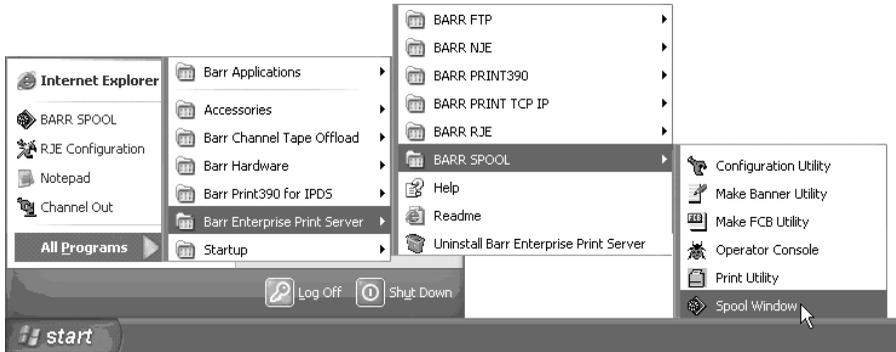
3.1 Assign user access rights

Before you can configure or operate BARR/SPOOL, you must be logged on as the system administrator to have full user access rights, or the system administrator must grant you the corresponding user access rights. Also determine which network users will be permitted access to various BARR/SPOOL features. You will use this information when you set up user access rights.

1. Compile a list of user names and corresponding domains.
2. Determine the type of tasks each user needs to perform. For example, can a specified user only view the list of spool files, or can they delete spool documents, disable spool printers, and change configuration information? Some tasks require additional rights. For example, to configure BARR/RJE you must be a member of the local **Administrators** group.
3. Organize users who will perform the same tasks into local or domain groups. Create the groups and assign users to them. You can now assign the appropriate user rights.

3.2 Start spool operation

When you open the Spool Window, the BARR SpoolCore service automatically starts, if it is not already started. When the BARR SpoolCore service is started, BARR/SPOOL can receive and route spool documents. To open the Spool Window, from the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Spool Window**.



3.3 Define printers



To add a Windows printer, you must be a member of the **Administrators** group. If you are using Windows 2000, you can also be a member of the **Printer Operators** or **Server Operators** group or a **Power User** on a workstation.

You need to define Windows printers to use with BARR/SPOOL. In most cases, Windows printers represent physical destinations to which the spool can route files. In some cases, Windows printers are input devices used to direct output from Windows programs into the spool.

Windows printers are one way to direct data into the spool. However, all data that leaves the spool must be routed by a Windows printer to its destination. Windows printers are defined with the Windows Add Printer Wizard. They consist of a port and a device driver.

You can define local printers, which are directly connected to the computer running BARR/SPOOL, or network printers, which reside elsewhere on the network, as follows. If the printer is on the network, you must be logged on to the same user account specified during installation. Follow the steps in the *Connecting to a network printer* Help topic for more information.

- Define a printer (manually)
 - For printing to a line printer
 - For printing to a Null printer
 - For printing to a Novell print queue
 - For printing to a TCP/IP printer
 - For printing to a Windows printer
 - For sending jobs to the host (For BARR/FTP, see Chapter 4. For BARR/NJE, see Chapter 5. For BARR/RJE, see Chapter 9).
- Define a printer (automatically)
 - For printing to a channel printer (refer to Chapter 6)
 - For printing to a TCP/IP print queue
 - For printing to a Xerox EPS (refer to Chapter 8)
 - For routing to another BARR/SPOOL
 - For writing to a TCP/IP socket
 - For writing to disk

Define a printer (manually)

To define a printer, you must configure a Windows printer, enable the Windows **Print directly to the printer** setting for Barr ports, and create a spool printer to route the data.

To define a Windows printer

To define a printer, first select the port and then select the device driver. Barr printer definitions depend on the file formats the Windows printers will handle. Adding a Windows printer to use with BARR/SPOOL is similar to adding a Windows printer for use with any other Windows program. First you define the port, and then you select the device driver.

1. Open Windows Add Printer Wizard.
2. Select to define a local printer. Click **Next**.
3. Create a new port. See the following table for the list of available ports.

Ports	Explanation
Barr FTP port	Spool output to an FTP host.
Barr LPR port	Spool output to route ASCII files to a TCP/IP LPD host.
Barr NJE port	Spool input to an NJE host.
Barr RJE port	Spool output to an RJE host.
Local port (LPT1, COM1)	Spool input from Windows programs or output to local or network printers.

4. Enter the **Port name**. Click **OK**.
5. Depending on the port you choose, a configuration dialog box appears. Configure the desired port and click **OK**. See the Help for more information about configuring ports.
6. Click **Next**.
7. Select the appropriate device driver. See the following table for a list of available device drivers and their uses. In the **Manufacturers** list, you will typically select **Barr** or your printer's manufacturer.



The first time you select a Barr printer driver or select to replace the existing Barr printer driver, you must browse to the specific driver location. The drivers are located in \\Program Files\\Barr\\Spooler\\Drivers*driver name* folder, unless an alternate path was specified during installation.

Device Drivers	Explanation
Barr ASCII printer driver	Spool output to legacy ASCII line printers.
Barr EBCDIC printer driver	Spool input from Windows programs.
Barr Jobs to Mainframe printer driver	Spool input intended for hosts, and spool output to hosts.
Printer-specific driver	Spool input or output.

8. Select **Keep existing driver**. Click **Next**.
9. Enter the **Printer name** as you want it to appear in the Windows Printers folder. Choose whether or not to use this printer as your default printer (for example, printing from other programs or printing sample banners). Click **Next**.
10. Choose whether or not this printer will be shared with other network users. If this printer will be shared, type a share name. Click **Next**.



To set up a printer for sharing, the printers and the users who will access it must be assigned to the same domain. You also must assign corresponding printer permissions from the **Security** tab of the shared printer's **Properties** dialog box.

If the Windows printer is shared, you cannot select the **Bypass the Windows spooler** option on the **Advanced Printer Options** dialog box for the associated spool printer.

11. Choose whether or not to print a test page. Click **Next**, and then click **Finish**. The new printer displays in the Windows Printers folder. To define another printer, select **Add Printer** in the Printers folder.

12. If you selected the Barr ASCII - Printer Driver, complete the following steps to configure the document defaults.
 - a. From the **Printers** folder, right-click the printer you just defined using the Barr ASCII printer driver and select **Properties**.
 - b. From the **Advanced** tab, click **Printing Defaults**.
 - c. Expand the **Document Options** tree and set **Top Margin** to **Off**. This setting affects the extra blank line automatically sent by the GDI within Windows. See the *Troubleshooting printers* Help topic for more information.
 - d. If you want to ignore all of the page breaks in the data, job, or FCB definition, set **Page Breaks** to **Off**.
 - e. Click **OK**.

To enable the Windows 'Print directly to the printer' setting

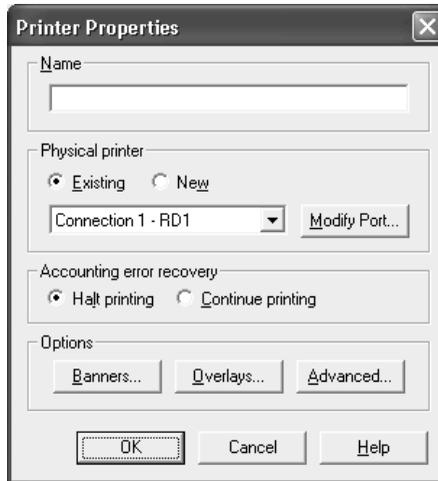
When you use a Barr port to define a Windows printer, you must enable the Windows **Print directly to the printer** setting. This setting ensures that BARR/SPOOL can recover from any errors that might occur while jobs are being routed from the Barr spool queue to their final physical destination. This setting also prevents double spooling with the Barr spooler and the Windows spooler. See the *Enabling the 'Print directly to the printer' setting* Help topic for a description of the advantages and disadvantages of using this setting. Complete the following steps to enable the Windows **Print directly to the printer** setting.

1. From the Windows Printers folder, right-click the printer and select **Properties**.
2. From the printer's **Properties** dialog box, select the **Advanced** tab.
3. Select **Print directly to the printer**.
4. Click **OK**.

To define a spool printer

Complete the following steps to define a spool printer for your Windows printer. Spool documents will be routed to this physical device. The options you specify will affect all documents you send to it.

1. Open the Configuration Utility.
2. From the **Spool Printers** tab, click **Add**. The **Printer Properties** dialog box displays.



3. Enter the printer **Name**. The printer name cannot contain a backslash (\). This name displays in the Spool Window's printer list and is called the spool printer.
4. Under **Physical printer**, select **Existing**. From the drop-down list, select the printer you just defined.



If you are not able to view network printers, the user who created the connections to the network printers might have been logged on to the wrong user account. When you create the network printers, you must be logged on to the same user account specified during installation. Once the printers are created, all users with valid user rights in the Barr Enterprise Print Server can log on and the network printers will be available.

5. Click **Banners** to select the header and trailer files and specify how they will be applied to print jobs (optional). The **Banner Options** dialog box displays.
6. Click **Overlays** to setup overlays and configure how they will be applied to print jobs (optional). The **Overlay Options** dialog box displays.
7. Click **Advanced** to specify advanced printer options. If spool documents are already in destination-ready format, you must select the corresponding **Special** data handling option. Refer to the Help for more information.
8. Click **OK** to save your changes.

Define a Barr printer (automatically)

Complete the following steps to automatically create a printer for printing to a channel printer, printing to a TCP/IP print queue, printing to a Xerox EPS, routing to another BARR/SPOOL, writing to an IP socket, or writing to disk.

1. Open the Configuration Utility.
2. From the **Spool Printers** tab, click **Add**. The **Printer Properties** dialog box displays.



3. Enter the printer **Name**. The printer name cannot contain a backslash (\). This name displays in the Spool Window's printer list and is called the spool printer.

- Under **Physical printer**, select **New**. From the drop-down list, select the appropriate printing type. This will create a new physical device to which the spool documents will be routed. The following table lists the available options and the ports and printer drivers associated.

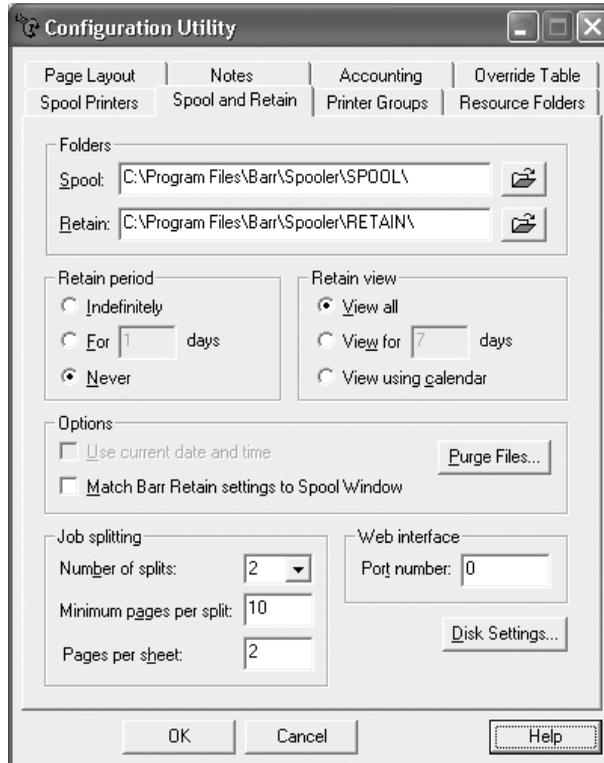
Option	Port	Printer Driver
Print to a channel printer	Barr PRINT390 Port	Barr PRINT390 Printer Driver
Print to a TCP/IP print queue	Barr LPR Port	Barr ASCII Printer Driver
Print to a Xerox EPS	Barr IP Port	Generic/Text Only
Route to another BARR/SPOOL	Barr LPR Port	Generic/Text Only
Write to an IP socket	Barr IP Port	Generic/Text Only
Write to disk	Barr File Port	Generic/Text Only

- Click **OK**. A message box will display when the printer has been successfully created.
- Before using the printer, you must configure the port. Click **Modify Port** to display the appropriate port configuration dialog box. Refer to the Help for more information.
- When you finish configuring the port, click **OK**. This adds the printer and returns you to the **Printer Properties** dialog box so you can configure the spool printer.
- Click **Banners** to select the header and trailer files and how they will be applied to print jobs (optional). The **Banner Options** dialog box displays.
- Click **Overlays** to setup overlays and configure how they will be applied to print jobs (optional). The **Overlay Options** dialog box displays.
- Click **Advanced** to specify advanced printer options. If spool documents are already in destination-ready format, you must select the corresponding **Special data handling** option.
- Click **OK**.

3.4 Enable the retain feature

While you are learning to use BARR/SPOOL, you might want to enable the retain feature so you can reuse your test files or recover from errors. When you enable the retain feature, spool files are saved to the Retain folder after they are printed or deleted. For more information on the retain feature, see the *Enabling and disabling the retain feature* Help topic.

1. Open the Configuration Utility.
2. Select the **Spool and Retain** tab.



3. Next to **Retain**, verify the directory where you want to store retained documents is specified. Click the folder button to modify the location.
4. Under **Retain period**, select one of the retain options: **Indefinitely** or **For ___ days**. (If you select **For ___ days**, be sure to enter a retain period.)



BARR/SPOOL examines a document's age only when the BARR SpoolCore service is restarted. If you are retaining documents for a set period, you must periodically restart the service to delete the old documents.

5. Under **Retain view options**, select which retain files to display.
 - Select **View all** to display all the documents in the retain folder.
 - Select **View for __ days** and enter the number of days to display retain files.
 - Select **View using calendar** to display the **Retain Start/End Date & Time** dialog box each time the Retain Window is opened.
6. Under **Options**, specify whether to change the document's date and time to the current date and time when it is copied to the Retain folder. If you do not select **Use current date and time**, the document's original date and time are preserved.
7. Click **OK** to close the Configuration Utility. When you exit the Configuration Utility, you are prompted to stop and restart the BARR SpoolCore service for the changes to take effect. Click **Yes** at the prompt. Depending on the nature of the changes, there may be a 20-second delay when restarting the service.

3.5 Print test documents

After you run the setup program, you can print a Barr-supplied test file. You can also use Print Utility to send an ASCII test file to the spool. Select how you want to send the file to the spool and complete the following steps.

Print the test document

These steps tell you how to print the Simple Printer Test included in the print document named SIMPLE. This test assumes you have successfully defined a spool printer that works for 3211-type mainframe printers and desktop laser printers. For desktop laser printers, this test prints in portrait mode, so the printout is truncated to 80-character lines.



Before you print the SIMPLE test file, set up the retain feature or copy the file so you can print it again later if you have not already done so.

The attributes for the printer and the document must match for the file to print. Complete the following steps from the Spool Window.

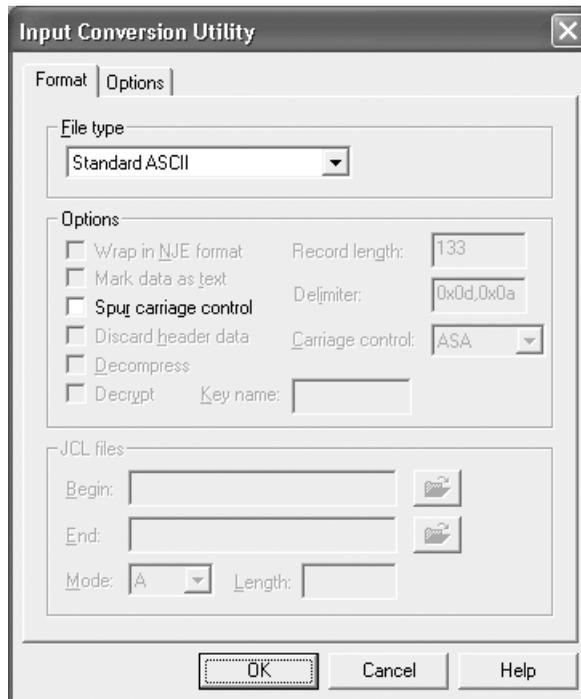
1. Set the spool printer to Disabled by right-clicking the printer row and selecting **Disabled**.
2. Set the spool printer class to A by clicking the printer's **Class** column and typing **A**.
3. Set the spool printer to Ready by right-clicking the printer row and selecting **Ready**.
4. Set the SIMPLE document's state to Ready by right-clicking the document row and selecting **Ready**. The SIMPLE document will print to the selected printer and the file will be retained in the specified folder.

Use Print Utility to send an ASCII file to the spool

Print Utility sends files to the spool. It converts files to the internal BARR/SPOOL format and adds document attributes that you select.

Complete the following steps to send an ASCII text file to the spool.

1. Create and save a simple ASCII file with the Windows Notepad.
2. Open the Spool Window. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Spool Window**.)
3. On the menu bar, select Tools | **Print Utility**.
4. From the **Manual Spooling** tab, click **Add**.
5. Navigate to the folder that contains the ASCII file, select the file, and click **Open**. The Input Conversion Utility displays.



6. From the **Format** tab, select **Standard ASCII** and click **OK**. The selected file briefly displays in the **Manual Spooling** tab's **Files currently spooling** list. It disappears quickly, so you might not see it display. The spooled document displays in the Spool Window's document list.

7. Close Print Utility.
8. Complete the following steps from the Spool Window to match the printer and document attributes and print the document.
 - a. Set the spool printer to Disabled by right-clicking the printer row and selecting **Disabled**.
 - b. Set the spool printer class to A by clicking the printer's **Class** column and typing **A**.
 - c. Set the spool printer to Ready by right-clicking the printer row and selecting **Ready**.
 - d. Set the document's state to Ready by right-clicking the document row and selecting **Ready**.

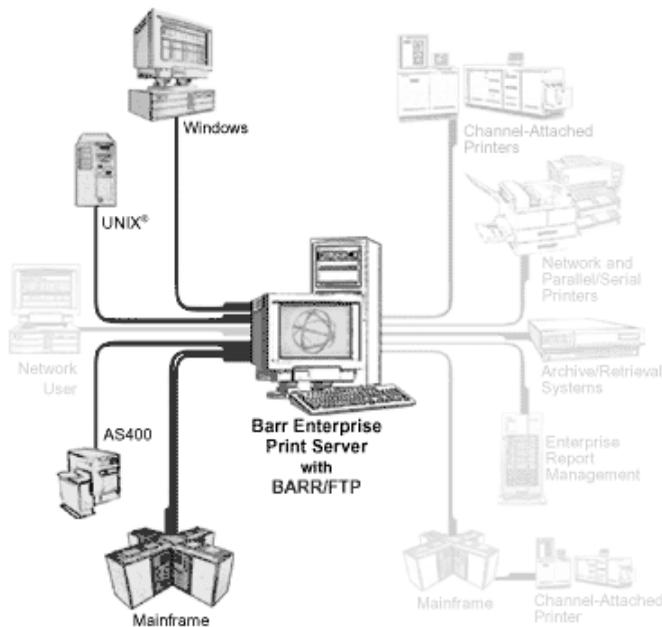
Notes:

BARR/FTP

chapter 4

Getting Started

BARR/FTP is a File Transfer Protocol (FTP) client module that is fully integrated with the Barr Enterprise Print Server software to allow automated FTP file transfer capabilities for uploading and downloading files to and from the Barr computer. It is an FTP client application that enables user-configurable FTP server sites to upload or download files to Barr Enterprise Print Server.



To upload files to a host computer, BARR/FTP uses the FTP put command to 'put' files into a pre-configured location on an FTP server or host computer. The FTP output device is configured as a spool printer in the Spool Window.

To download files, the BARR/FTP client polls a watch directory on the FTP server periodically. Each time it polls, it asks for a directory listing, then uses the FTP get command to 'get' all available files, and then deletes these files from the FTP server directory. The watch directory is user-configurable.

BARR/FTP supports the standard FTP protocol, but also supports the FTP connection that IBM offers for the JES2 input and output queues. This allows the Barr Enterprise Print Server to submit (put) JCL to the JES2 input queue using FTP, and to retrieve (get) jobs down from the JES2 output queue. In this mode, it can support text or line data, but not binary formats such as BARR/TRAN or Xerox Metacode.

BARR/FTP includes the following features and benefits.

- Simplifies support for network by avoiding the use of SNA
- Provides flexibility by allowing you to transfer files automatically or manually
- Supports IBM's JES extensions to FTP
- Easily connects to the FTP server using a host name or IP address
- Opens and closes connections automatically
- Supports receiving individual and multiple spool files
- Implements RFCs 959 and 1123

The BARR/FTP module allows you to connect to and transfer text files between your JES FTP host or standard FTP server and the Barr Enterprise Print Server. Files are transferred using FTP. The BARR/FTP module can send and receive text files to and from the FTP host or FTP server. The FTP server can also send and receive binary files.

Sending files

To send files to a JES FTP host or a standard FTP server you must configure the host (JES only), an FTP connection, and a printer to route the data. You must also configure the Spool Window for routing documents to the spool printer. This is done by adding the Output dest. - NJHGPRTR column to the Spool Window and setting the output destination for printers and documents.

To a JES FTP host	To a standard FTP server
4.1 Configure the host (JES only)	4.2 Add an FTP connection
4.2 Add an FTP connection	4.3 Define a printer
4.3 Define a printer	4.4 Configure the Spool Window
4.4 Configure the Spool Window	

Receiving files

To receive files from a JES FTP host or a standard FTP server you must configure the host (JES only), configure an FTP connection, and then automatically or manually get the files.

From a JES FTP host	From a standard FTP server
4.1 Configure the host (JES only)	4.2 Add an FTP connection
4.2 Add an FTP connection	4.5 Get files
4.5 Get files	

4.1 Configure the host

You can use the BARR/FTP module to connect to and transfer files between your JES FTP host and the Barr Enterprise Print Server using FTP. With the BARR/FTP module, you can send files to or receive files from the FTP host.

If you are using the JES host type, complete the following steps to verify your host and JCL files are configured properly.

1. Ask the host programmer to enable TCP/IP and FTP on the host.
2. Ask the host programmer to set up a user name and password in the host security systems (for example, RACF). These parameters will be used as the **User name** and **Password** specified on the **General** tab. Users will need rights to submit files.
3. Use the following procedure to verify that the host is setup correctly. If the test fails, contact your host programmer to verify your host configuration is correct.
 - a. Open Internet Explorer.
 - b. In the **Address** box, type **ftp://** followed by the host address and then press ENTER. A screen appears asking for your user name and password. This host address will be used as the **Host address** specified on the **General** tab.
 - c. Enter the **User name** and **Password**. If you are able to connect, then your host is configured correctly.
4. Any text JCL can be submitted using BARR/FTP, including JCL with embedded text data. To receive the output through BARR/FTP, however, the following parameters must be set.
 - a. The job name must be your user name plus one character. In the following example, the user name is P390 and the job name is P390B.
 - b. The SYSOUT class must be a held class. In the following example, class H is used because that is a held class on this system.

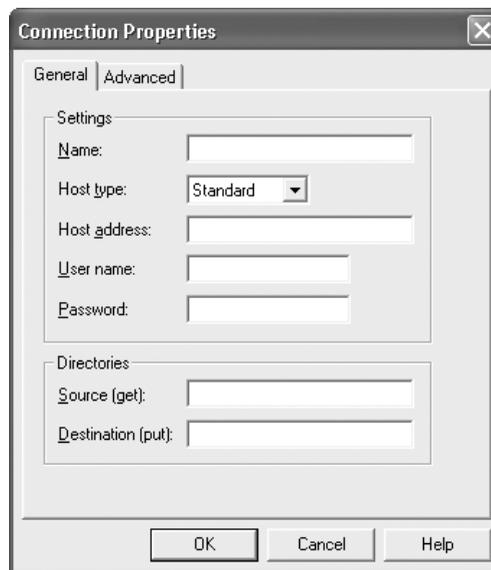
The parameters that must be configured are shown in bold in the following example.

```
//P390B    JOB ( ), 'IEBGENER', CLASS=A, MSGCLASS=L, MSGLEVEL=(1,1) 00010001
//STEP1TP EXEC PGM=IEBGENER                                00020001
//SYSPRINT DD SYSOUT=D                                    00030001
//SYSIN    DD DUMMY                                        00031001
//SYSUT2   DD SYSOUT=(H, , 1)                            00040002
//SYSUT1   DD DSN=TEST.BIGFILE.ASCII, DISP=SHR           00050001
```

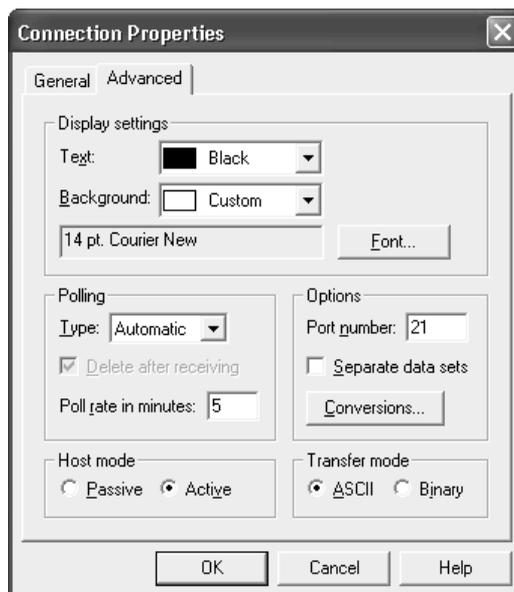
4.2 Add an FTP connection

Complete the following steps to add an FTP connection.

1. Open the FTP Manager. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR FTP | **FTP Manager**.)
2. On the menu bar, select Connections | **Add**. The **Connection Properties** dialog box displays.
3. Select the **General** tab and complete the following steps.



- a. Type the connection **Name**. The connection name is limited to 8 characters and cannot contain the following characters, \/:*?<>|. This is the connection name that will appear in the connection list. When sending files to the FTP host, the NJHGPTR Output dest. field must equal the connection name.
 - b. Select the **Host type**. Select **Standard** if the host is a UNIX system. Select **JES** if the host is a JES system. The default host type is Standard.
 - c. Type the **Host address**, which must be unique and corresponds directly to the host name. The host address is required and can be an FTP or IP address.
 - d. If the host requires a user name to log on, type the **User name**. If a user name is not required, leave this field blank.
 - e. If the host requires a password to log on, type the **Password**. If a password is not required, leave this field blank.
 - f. If **Standard** is selected as the **Host type**, enter the entire path of the **Source** directory. When receiving files, this is the location on the host that the files will be retrieved from. You must type the entire path of the folder or the path relative to the FTP user home directory (for example, if your home directory is at \FTP\UserName, you can either specify \FTP\UserName\MySourceFiles or \MySourceFiles).
 - g. If **Standard** is selected as the **Host type**, enter the entire path of the **Destination** directory. When sending files, this is the location on the host that the files will be placed. You must type the entire path of the folder or the path relative to the FTP user home directory (for example, if your home directory is at \FTP\UserName, you can either specify \FTP\UserName\MyDestFiles or \MyDestFiles). The source directory and the destination directory cannot be the same location.
4. Select the **Advanced** tab and complete the following steps.



- a. Under **Polling**, select the polling type from the drop-down list. Select **Automatic** to retrieve files automatically based on a time interval. Select **Manual** to manually retrieve files. The default polling type is Automatic.
 - If you select **Automatic**, specify the **Poll rate in minutes**. The poll rate specifies how often to poll and get files from the source. This number is in minutes and must be at least one. The default value is 5.
 - If you select **Manual**, select **Delete after receiving** to delete files from the source after the files have been retrieved. If this option is not selected, the same file may be repeatedly transferred from the host.
 - b. Under **Options**, enter the host's **Port number**. The port number must be from 1 through 65536. The default value is 21.
 - c. Select **Separate data sets** if you would like data sets to be sent as separate files. By default, this option is not selected.
 - d. Click **Conversions** to specify the format of incoming files using the Input Conversion Utility. See the *Format tab* and the *Options tab* Help topics for more information.
 - e. Select the **Host mode**. A **Passive** host mode is where the client creates a session to receive data. An **Active** host mode is where the host creates a separate or new session to transfer data in response to a request from the client.
 - f. Specify the **Transfer mode**. Select **ASCII** to send and receive ASCII text. Select **Binary** to send or receive any type of file. The option you select depends on the host mode selected on the **General** tab. When using the JES host type, always select the ASCII transfer mode. When using the Standard host type, always select the Binary transfer mode. The default selection is ASCII.
 - g. If desired, under **Display settings** specify the text color, background color, and the font. You can configure the window specifically for each connection.
5. Click **OK** to save the connection.

4.3 Define a printer

To send jobs to the host, you need to route jobs into the spool from other programs and define a Windows printer and spool printer to route jobs from the spool to the host computer. If you are using BARR/FTP, you can also use this procedure to send jobs to an FTP Server.



To add a Windows printer, you must be a member of the **Administrators** group. If you are using Windows 2000, you can also be a member of the **Printer Operators** or **Server Operators** group or a **Power User** on a workstation.

Before you add a Barr FTP port, you must first use the FTP Manager to add a connection (see Section 4.2).

To define a Windows printer

To define a Windows printer, you must first select the port, and then select the device driver. Complete the following steps to define a Windows printer.

1. Open Windows Add Printer Wizard.
2. Select to define a local printer. Click **Next**.
3. Create a new port selecting the **Barr FTP Port**.
4. Enter the **Port name**. Click **OK**, and then click **Next**.



Include the connection name in the port name so you can easily identify the ports later. We recommend you name the port *Connection name - Send to Host*.

5. In the **Manufacturers** list, select **Barr**. In the **Printers** list, select **Barr Jobs to Mainframe - Printer Driver**. Click **Next**.
6. Select **Keep existing driver**. Click **Next**.
7. Enter the **Printer name** as you want it to appear in the Windows Printers folder. Select **No** to indicate that this printer will not be used as the default Windows-based printer. Click **Next**.
8. Choose whether or not this printer will be shared with other network users. If this printer will be shared, type a share name. Click **Next**.



To set up a printer for sharing, the printer and users who will access it must be in the same domain. You must assign corresponding printer permissions from the **Security** tab of the shared printer's **Properties** dialog box.

9. Choose **No** to skip printing a test page. Click **Next**, and then click **Finish**. Windows installs the drivers and displays the new Windows printer in the Printers folder. To define another printer, open the Printers folder and select **Add Printers**.
10. Enable the Windows **Print directly to the printer** setting.
 - a. From the Windows Printers folder, right-click the printer you just defined and select **Properties**.
 - b. From the **Advanced** tab, select **Print directly to the printer**.
 - c. Click **OK**.

To define a spool printer

Spool printers route jobs from BARR/SPOOL to a physical destination. You need to define spool printers that send the jobs to the host and associate them with the Windows printers you created for sending jobs to the host. The options you specify for a spool printer affect all documents you send to it.



The FTP spool printer you define in the Spool Window will send the specified FTP jobs to any of the FTP connections configured in the FTP Manager, providing the printer's NJHGRTR field is blank.

Complete the following steps to define a spool printer that sends jobs to the host.

1. Open the Configuration Utility.
2. From the **Spool Printers** tab, click **Add**. The **Printer Properties** dialog box displays.
3. Enter the printer **Name**. The printer name cannot contain a backslash (\). This name displays in the Spool Window's printer list and is called the spool printer.
4. Under **Physical printer**, select **Existing**. From the drop-down list, select the printer you just defined.
5. Under **Options**, click **Advanced** to specify advanced printer options. Review the following table to select the desired options.

Options	Required	Optional	Don't Use
Printer initialization files			X
Page layout			X
Code page			X
If FCB is not found, use default FCB named 'STD'			Ignored
Printer in Disabled state at startup		X	
Printer can be hidden		X	
Printer does not check jobs for valid data type		X	
Bypass the Windows spooler	X		
Special: Pass data to printer without conversion			X
Special: Pass the archive format to LPR port			X
Special: Printer uses transform			X

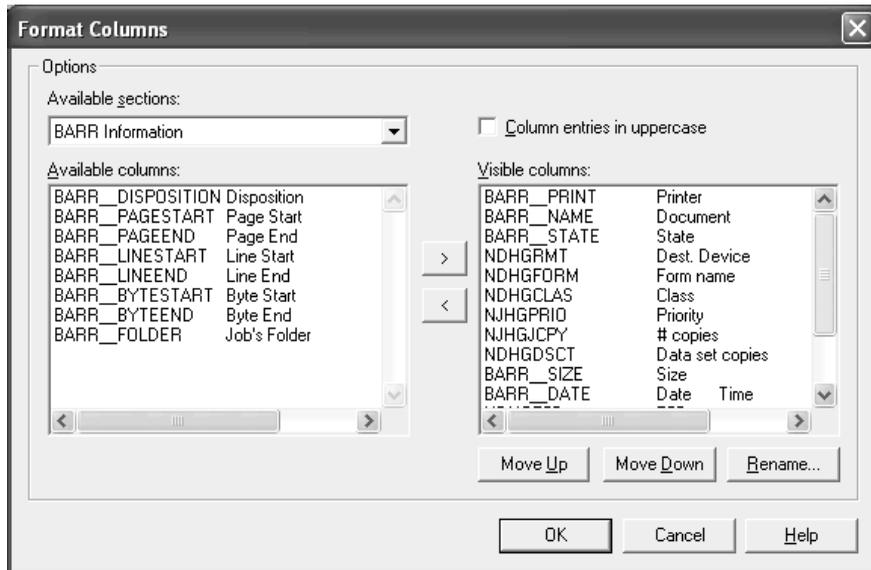
6. Close the Configuration Utility.

4.4 Configure the Spool Window

To send jobs to the JES FTP host, you must use the header's NJHGPRTR Output dest. field as part of the routing criteria. This is done by adding the Output dest. column to the Spool Window and setting the output destination for printers and documents. The Output dest. field must be populated with the name of the FTP connection configured in the FTP Manager.

Complete the following steps to configure the spool.

1. Open the Spool Window. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Spool Window.**)
2. On the menu bar, select View | **Format Columns.** The **Format Columns** dialog box displays.



3. From the **Available sections** list, select **Job Header General Section.**
4. From the **Available columns** list, select **NJHGPRTR Output dest.**
5. Click the right arrow (>) to add the field to the **Visible columns** list.
6. Arrange the column order by selecting a field in the **Visible columns** list and clicking **Move Up** and **Move Down.** The first column in the list displays as the leftmost column on the Spool Window. You can also rename the column heading by clicking **Rename.**
7. When you have finished selecting and arranging columns, click **OK.**
8. On the Spool Window, right-click the printer and select **Disable.**
9. Click the **Output dest.** Column for your printer, enter the name of the FTP connection configured in the FTP Manager, and press ENTER. The connection name is specified on the **General** tab.

10. Use one of the following methods to set the document's Output dest. to the connection name.
 - For documents received with BARR/PRINT CHANNEL, BARR/RJE, BARR/FTP, BARR/NJE, or TCP/IP socket, set the field manually on the Spool Window. To do this, click the **Output dest.** column for your printer, enter the name of the FTP connection, and then press ENTER.
You can also create an override table to populate the NJHGPRTR job header field automatically. See the *Using an override table to auto-assign header fields* Help topic for more information.
 - For documents sent with Print Utility, you can assign the value when you send the files to the spool. See the *Adding files to the spool* Help topic for more information.
11. Right-click the printer and select **Ready**.
12. Right-click the document and select **Ready**.



You can save your Spool Window column settings to a file by selecting View | **Save Settings As** on the menu bar.

4.5 Get files

After you have added an FTP connection, you will use the FTP Manager to retrieve files from the JES FTP host or standard FTP server. Files can be retrieved automatically and manually.

To automatically get files

Complete the following steps to configure a connection to automatically get files from the host.

1. Open the FTP Manager.
2. From the connection list, double-click the appropriate connection. You can also select the connection and select Connections | **Modify** on the menu bar, or right-click the connection and select **Modify**. The **Connection Properties** dialog box displays.
3. On the **Advanced** tab, select **Automatic** from the **Type** drop-down list.
4. Enter the **Poll rate** in minutes, which specifies how often to poll and get files from the source. This number must be at least one.
5. Click **OK** to save the settings. The connection will automatically get files in the interval specified.

To manually get files

Complete the following steps to manually get files from the host.

1. Open the FTP Manager.
2. From the connection list, select the appropriate connection.
3. Get files by using one of the following methods. Any available files will be retrieved to the Spool Window.
 - Click the **Get** button on the toolbar.
 - On the menu bar, select Connections | **Get**.
 - Right-click and select **Get**.

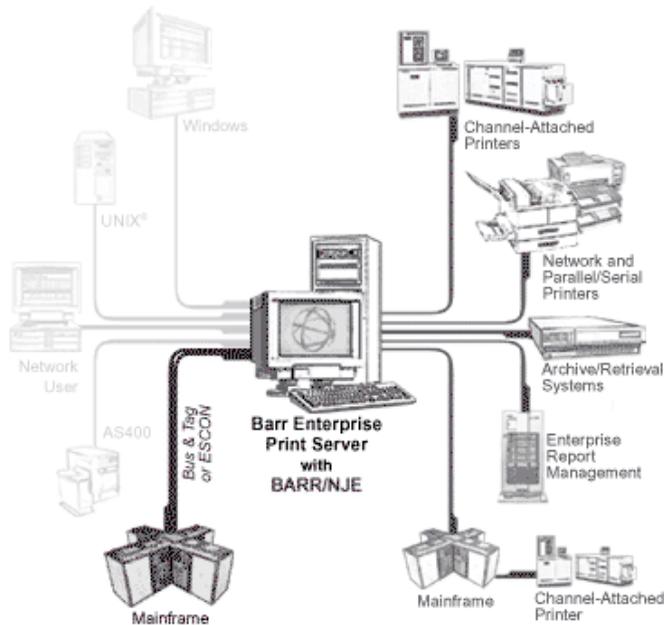
Notes:

BARR/NJE

chapter 5

Getting Started

BARR/NJE is a software module of the Barr Enterprise Print Server that provides a powerful way to exchange print and job data sets between IBM mainframes and the Barr Enterprise Print Server in a peer-to-peer network. By providing access to more than 200 information fields (such as JOBNAME, FORMNAME, FCBNAME, UCSNAME, Priority, and Class), it allows you to build customized job routing rules and take control of your document distribution.



The combination of BARR/SPOOL and BARR/NJE provides most of the features of the MVS/JES and VSE/POWER spool, including all the features for naming, routing, and reprinting jobs that are available in the BARR/RJE DOS product. BARR/NJE is capable of exchanging print and job data sets with other NJE nodes. BARR/SPOOL manages the NJE print and job data sets, and maintains them in the spool folder.

You can define multiple NJE nodes on the BARR/NJE computer. Each Barr NJE node has a defined connection with an adjacent NJE node at a host. The Barr NJE node is not limited to sending jobs to the adjacent NJE node. Print and job data sets can be routed to any NJE nodes in your NJE network. The Barr NJE node can also receive jobs from any NJE node.

BARR/NJE connects in multiple ways:

- IP via the Enterprise Extender (HPR/IP) link
- DLSw via connections to your mainframe through special routers that encapsulate SNA protocols within a TCP/IP packet
- 802.2 LLC2 across token ring or Ethernet to host
- SDLC connections (at up to 2.048 Mbps) with V.35, X.21, RS530, RS449, or V.24/RS232 cable
- Channel-to-Channel (CTC) NJE connection (CTC NJE) with ESCON or Bus & Tag cable. With CTC NJE, there is no need to interface with VTAM/SNA or TCP/IP.
- SNA gateways such as Microsoft HIS, Microsoft SNA Server, or Microsoft SNA Workstation. The SNA gateway connects to the mainframe through DLC, SDLC, or CHANNEL (Bus & Tag or ESCON). BARR/NJE connects to the SNA gateway via TCP/IP, IPX/SPX, or NetBEUI protocols

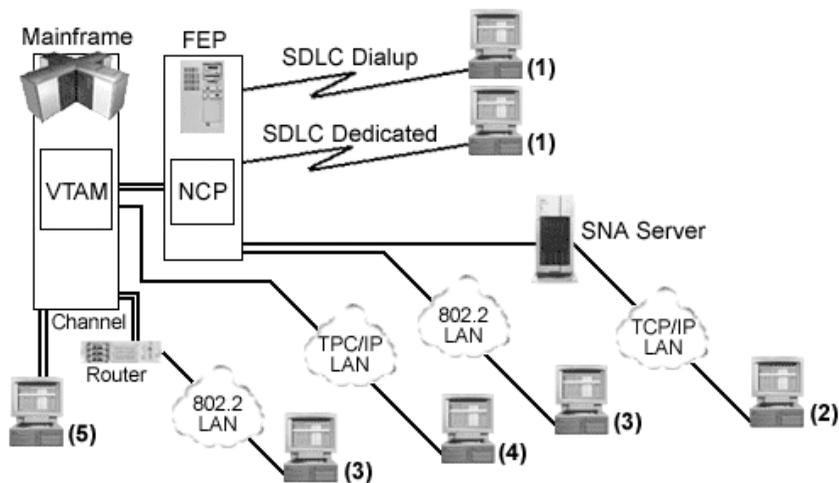
BARR/NJE includes the following features and benefits.

- Connects to multiple hosts and receives multiple jobs simultaneously
- Routes data from the mainframe to parallel, serial, network-attached, TCP/IP-attached, and remote S/390 channel-attached printers using BARR/PRINT390
- Provides access to more than 200 header information fields (such as JOBNAME, FORMNAME, FCBNAME, UCSNAME, Priority, and Class) that can be used to customize job routing
- Sends print output from the LAN to multiple hosts and their attached printers
- Acts as intermediate NJE node for routing
- Routes data from host to host
- Operates with Barr SNA communications stack – eliminates the need for SNA Server or Microsoft's Host Integration Server
- Integrates with host-based security features
- Supports JES commands for controlling host printers
- Receives print data sets and jobs in their binary form
- Integrates your entire data processing infrastructure by attaching your network of mainframes to your open systems network
- Integrates with NetView for centralized link management
- Prints to an unlimited number of network-attached printers without any additional host software

- Reduces and/or eliminates SNA traffic on your LAN/WAN
- Supports large record length when receiving from the host

BARR/NJE uses an IBM-based protocol that works over SNA. With Barr-developed SNA link services, you can connect a network of computers to the mainframe without an SNA gateway. This simplifies the configuration process because it is only necessary to configure the host and the Barr software. Alternatively, BARR/NJE can connect through an SNA gateway (Microsoft SNA Server or Microsoft Host Integration Server [HIS]) or a channel-attached (CTC) connection. The Barr SNA link services and the SNA gateway emulate a 3174 Cluster Controller, a PU type 2.

The following diagram shows the connection types available and the software and hardware required to connect BARR/NJE to your mainframe SNA network.



Connection Type	Requires
(1) SDLC	BARR/SYNC adapter
(2) MS/LUA	SNA gateway software (must be purchased separately)
(3) 802.2 LLC2	DLC protocol (comes with operating system)
(4) HPR/IP	Ethernet adapter
(5) Channel	BARR/CHANNEL adapter

When you configure BARR/NJE, there are three available connection types: Barr SNA, SNA, and CTC.

Barr SNA – The Barr-developed link services connect a network of computers in a LAN to the mainframe, or establish individual connections between remote computers and the mainframe using modems. This option provides an easier configuration process because you do not need to configure an SNA gateway. Barr SNA provides the following communication links.

- **802.2 LLC2** – Uses any interface network card, such as Ethernet or token ring, to connect to the mainframe. Requires installing the DLC protocol, which comes with your operating system.
- **SDLC** – Uses a modem or CSU/DSU (Channel Service Unit/Data Service Unit) to connect to the mainframe. Requires the BARR/SYNC adapter, which we provide to you.
- **HPR/IP** – Uses any interface network card such, as Ethernet, to connect to the mainframe.

SNA – The Microsoft LUA (MS/LUA) option connects a network of computers in a LAN (using TCP/IP) to your mainframe. An SNA gateway, Microsoft SNA Server or HIS, is necessary to interface between the remote computers and the mainframe. With SNA, you must configure the host, the SNA gateway, and BARR/NJE. If you use JES2 as your host spooler, you can also configure auto-start parameters for the host.

CTC – The channel-to-channel (CTC) option connects remote computers directly to the mainframe using channel cables. The channel cables transfer data at a faster rate than the other connection types. CTC, however, does not provide the same flexibility, such as giving you access to networks over long distances. With CTC, you only need to configure the host and BARR/NJE; an SNA gateway is not required.

For all connection types, setting up BARR/NJE requires configuring the host and the remote computer. The extent to which you configure the host and the remote computer depends on the complexity of your NJE network. The steps in the following sections were developed to provide minimal interruption to your host and must be followed in order.



To install and configure the BARR/NJE software, you must be a member of the local **Administrators** group on the computer where you install the Barr Enterprise Print Server. If you have been assigned the **Configure – NJE** user access right on the computer to which you are trying to connect, but are not a member of the **Administrators** group, the NJE Configuration Utility will operate in read-only mode. If you are not an **Administrator**, you must be assigned the **NJE Console** user access right to access the NJE Console.

1. Gather host parameters (5.1)
2. Configure the connections
 - Barr SNA (5.2)
 - SNA (5.3)
 - CTC (5.4)
3. Communicate with the host (5.5)

5.1 Gather host parameters

For BARR/NJE to communicate with your host, your host programmer must define BARR/NJE to your host as one or more NJE nodes. Each Barr NJE node requires a separate host definition. If you are using an HPR/IP (Enterprise Extender) connection, you must also configure TCP/IP and a VTAM major node definition. Before you begin, gather the following information from your host programmers based on your connection type (Barr SNA, SNA, or CTC) and host (JES2, JES3, or POWER).

VTAM host configuration (Barr SNA and SNA only)

Ask your VTAM programmer to add an NJE logical unit (LU) name and number to the SNA gateway physical unit (PU). For more information, see the *Configuring VTAM* Help topic or the *BARR/NJE Host Definition Guide*.

LU name: _____

LU number: _____

IDBLK: _____

IDNUM: _____

MAXDATA: _____



Give the LU name to the host programmer. It is important that the VTAM and host programmers use the same LU name.

Additional VTAM and TCP/IP configuration (Barr SNA – HPR/IP only)

Ask your host programmer to make one time configuration changes to your TCP/IP profile, VTAM startup, and XCA major node. These changes are required to support HPR/IP (Enterprise Extender) connections. For more information, see the *Configuring TCP/IP and VTAM for HPR/IP* Help topic.

Host name or IP address (**LVIPA1** parameter): _____

NETID: _____

CPNAME (if NOT using Autogen): _____

CTC host configuration

If you use a CTC connection, you must configure the CTC device. Ask your host programmer to configure the CTC device, where BARR/NJE emulates a 3088 CTC adapter. See the *Configuring a CTC device* Help topic for more information.

JES2 host configuration

Ask the host programmer to add a Barr node name and provide the host node name. The host node name is the NJE node name in SYS1.PARMLIB(JES2PARM) that is implied by the **OWNNODE=I** parameter. The host programmer must also provide the number of streams. These values must match the **JTNUM**, **JRNUM**, **STNUM**, and **SRNUM** settings in SYS1.PARMLIB(JES2PARM). For more information, see the *Configuring JES2* Help topic or the *BARR/NJE Host Definition Guide*.

Host node name: _____

BARR/NJE node name: _____

JTNUM = _____ (Number of SYSIN transmitters)

JRNUM = _____ (Number of SYSIN receivers)

STNUM = _____ (Number of SYSOUT transmitters)

SRNUM = _____ (Number of SYSOUT receivers)

JES3/BDT host configuration

Ask the host programmer to add a Barr node name and provide the host node name. The host node name is the NJE node name in SYS1.PARMLIB(JES3IN00) that is implied by the **HOME=YES** parameter. For more information, see the *Configuring JES3* Help topic or the *BARR/NJE Host Definition Guide*.

Host node name: _____

BARR/NJE node name: _____

POWER host configuration

Ask the host programmer to add a Barr node name and provide the host node name. The host node name is the NJE node name in the **pnet** settings that is implied by the **LOCAL=YES** parameter. The host programmer must also provide the number of streams. These values must match the active streams on POWER's NJE node. For more information, see the *Configuring POWER* Help topic or the *BARR/NJE Host Definition Guide*.

Host node name: _____

BARR/NJE node name: _____

JOB receivers = _____ (Number of SYSIN transmitters)

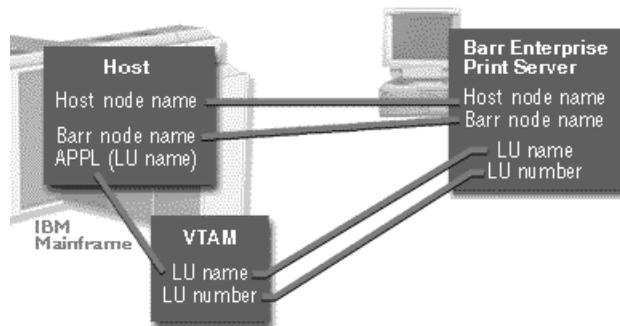
JOB transmitters = _____ (Number of SYSIN receivers)

OUT receivers = _____ (Number of SYSOUT transmitters)

OUT transmitters = _____ (Number of SYSOUT receivers)

5.2 Configure Barr SNA connections

The Barr SNA connection type provides an easy way to manage your printing using BARR/NJE. With Barr SNA, you do not need an SNA gateway to interpret between the host spooler and the Barr software. The communication links, 802.2 LLC2, HPR/IP, and SDLC, enable direct communication with your mainframe system, thereby simplifying the configuration process. You must configure the host spooler (JES2, JES3, or POWER), configure VTAM, configure TCP/IP and a VTAM major node (HPR/IP connections only), install the DLC protocol (802.2 LLC2 connections only), and configure BARR/NJE by defining the connections between Barr nodes and adjacent host nodes. For JES2, you can also configure auto-start parameters for the host. To transfer jobs using a Barr SNA connection, the parameters displayed in the following image must match.



Parameters used when configuring BARR/NJE for a Barr SNA connection.
Use the same information in all phases for configuring BARR/NJE.

The following steps must be completed in order.

1. Configure the NJE auto-start feature using NetView (optional for JES2 only)
2. Configure the connection
 - 802.2 LLC2
 - HPR/IP (Enterprise Extender)
 - SDLC
3. Configure the Barr SNA node
4. Configure the NJE node
5. Start the Barr SNA node

Configure the NJE auto-start feature using NetView (optional for JES2 only)

The NJE auto-start feature using NetView is an optional feature for Barr SNA connections only. When the VTAM PU is activated, the NJE node establishes an SSCP (System Services Control Point) session with VTAM. Barr SNA passes to VTAM a Network Management Vector Transport (NMVT) frame that contains an alert message. NetView's automation facility can be configured to monitor for the alert and automatically start the NJE node when the alert is detected.

Complete the following steps to configure NetView to monitor for the alert and start the NJE node when the alert is detected.

1. In your local NetView DSIPARM data set, add a new Automation Table by creating a member (BARRALRT) with the statement shown below. Replace **'BAR6JES2'** with the host node name (OWNNODE) of the JES2 system to which Barr is connecting.

```
*BEGIN;
IF MSUSEG (0000.92 5) = HEX('01B004') &
MSUSEG (0000.93 3) = HEX('20B3') &
MSUSEG (0000.10.11.06 3) = 'BARR/SNA' &
MSUSEG (0000.95.82 6) = 'BAR6JES2' THEN
EXEC (CMD ('BARR$SN'));
*END;
```

2. Include this new table in your default automation table (DSITBL01) by inserting a **%INCLUDE BARRALRT** statement. Alternatively, you can activate this table using the **AUTOTBL MEMBER=BARRALRT** command. To make sure the table is always active, add that command to your NetView startup procedures.
3. In the BARRALRT automation table (above), the **EXEC (CMD ('BARR\$SN'))** statement refers to a clist to which NetView will pass control when the alert is detected. In your local NetView CLIST PDS (CNMCLST), create a member (BARR\$SN) that contains the following instructions to be executed when the alert message is detected.

```
/* REXX clist to issue jes $sn command */          00010000
if msuseg('0000.94.82',6,8) = '' then do          00011002
luname = msuseg('0000.94.82',6,8)                00012002
'MVS $SN,A=' luname                               00020002
end                                                 00021002
ELSE "MVS $DM,'NO LUNAME FOUND'"                 00022002
exit                                              00030000
```

- After you start BARR/NJE, Barr SNA sends an alert to VTAM. NetView detects the alert, calls the list, and starts the NJE node. You can use the NetView NPDA application to view details of the alert. The alert display will look similar to the following:

```

N E T V I E W      SESSION DOMAIN: CNM01      OPER1      08/14/02 14:41:22
NPDA-44C          * HEXADECEMIAL DISPLAY OF DATA RECORD *      PAGE 1 OF 1

CNM01            ISTEPUS      NB6ET004      WKCPU
+-----+          +-----+
DOMAIN          | COMC      |----LINE----| CTRL      |
+-----+          +-----+
DATE/TIME: 07/28 13:01

NMVT - 41038D 0000000000
MAJOR VECTOR 0000 - 0060 0000
SUBVECTOR 10
2110001E 110C0804 F0F0F0F0 F0F00A06 C2C1D9D9 61E2D5C1 0908F0F0 F0F0F0F0
F0
SUBVECTOR 92
0B920000 01B004F8 1909CA
SUBVECTOR 93049320B3
SUBVECTOR 94
19940401 71A10D82 008411D2 C5D5F1D5 D1C5F106 81140714 A4
SUBVECTOR 95
13950401 80B30D82 00DD11C2 C1D9F6D1 C5E2F2

```

Configure the 802.2 LLC2 connection

If you are using an 802.2 LLC2 connection, you must install the DLC protocol, and then use the NJE Configuration Utility to define and configure the 802.2 LLC2 connection for communicating with the host. The procedures outlined in this section are required. Your host programmer can help configure the link settings. Complete the following steps to install the DCL protocol and configure the connection.



The BARR/NJE software with the 802.2 communications link emulates an IBM 3777 PU type 2 device and strictly follows the IBM SNA protocol using IEEE 802.2 DLC. You must provide a network connection that appears to the BARR/NJE device as if it is connected by the mainframe communications device to a local or adjacent token ring (FEP, 3172/3174, OSA, SNA gateway, or host-attached router).

To install the DLC protocol

The DLC protocol must be installed before you can configure the 802.2 LLC2 communication link. Complete the following steps to install the DLC protocol. Your host programmer can help configure the link settings.



If you are connecting to a 3174 cluster controller that assigns a locally administered address (LAA), you may need to edit the registry when installing the DLC protocol. Contact Barr Systems Technical Support for information on this procedure.



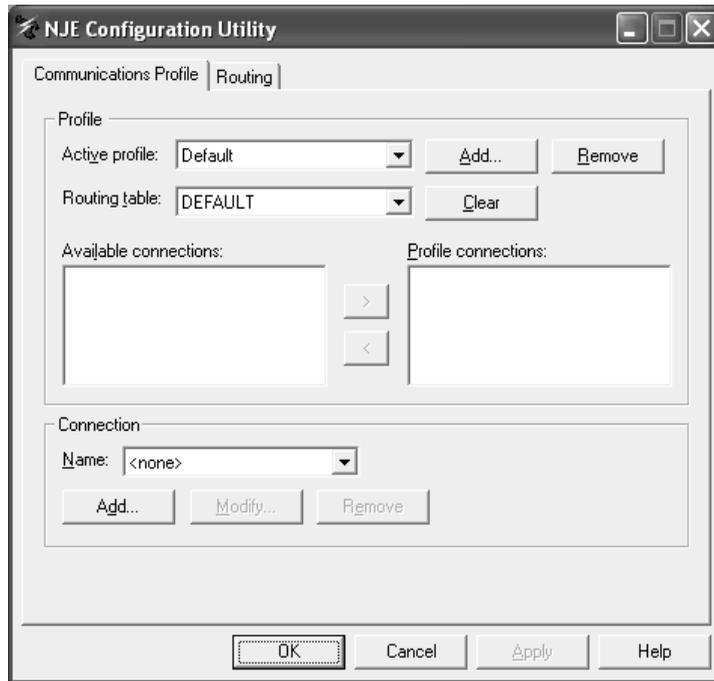
Windows XP users must first download and install the DLC protocol from <http://www.microsoft.com/downloads/release.asp?ReleaseID=34428&area=search&ordinal=1> before completing the following steps.

1. Open the Windows Network utility.
2. Right-click the connection to which you want to add a network component, and then select **Properties**.
3. Click **Install**.
4. In the **Select Network Component Type** dialog box, click **Protocol**, and then click **Add**.
5. From the **Network Protocol** list, select **DLC Protocol** and click **OK**.
6. Click **Close**.

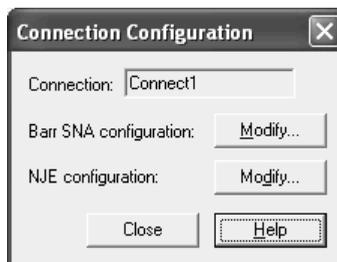
To configure the connection

Complete the following steps to configure an 802.2 LLC2 connection.

1. Open the NJE Configuration Utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR NJE | **NJE Configuration Utility**.)
2. Select the **Communications Profile** tab.



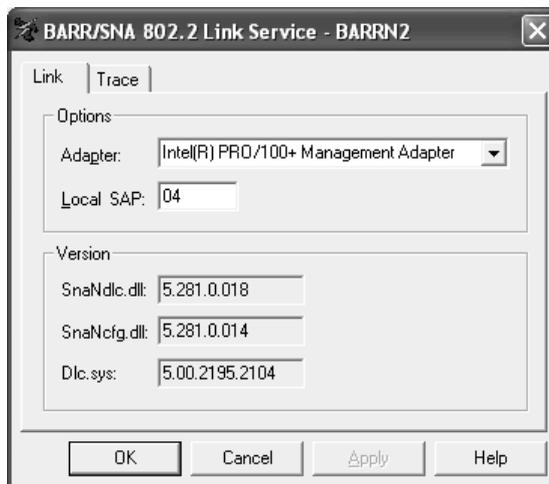
3. Under **Connection**, click **Add**. The **Add Connection** dialog box displays.
4. Type the connection **Name**.
5. In the **Type** drop-down list, select **Barr SNA**. Click **OK**. The **Connection Configuration** dialog box displays.



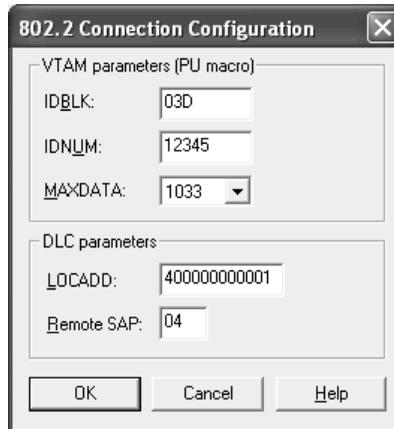
- Next to **Barr SNA configuration**, click **Modify**. The **Barr SNA Configuration** dialog box displays.



- Under **Link service**, an 802.2 LLC2 link has been created by default. To update the default link, select **BARRN1** and click **Modify**. The BARR/SNA 802.2 Link Service configuration utility's **Link** tab displays. Complete the following steps to configure the link.



- a. Select the **Adapter** to use with the link service.
 - b. In the **Local SAP** box, specify the local (NJE computer) service access point (SAP) hexadecimal value used to communicate with the host computer. The default value is 04. Other choices are multiples of 04 up to the maximum of EC.
 - c. Click **OK** to return to the **Barr SNA Configuration** dialog box. The link will be automatically named BARRN#.
8. Under **Connection**, click **Configure**. The **802.2 Connection Configuration** dialog box displays. Complete the following steps to configure the connection.

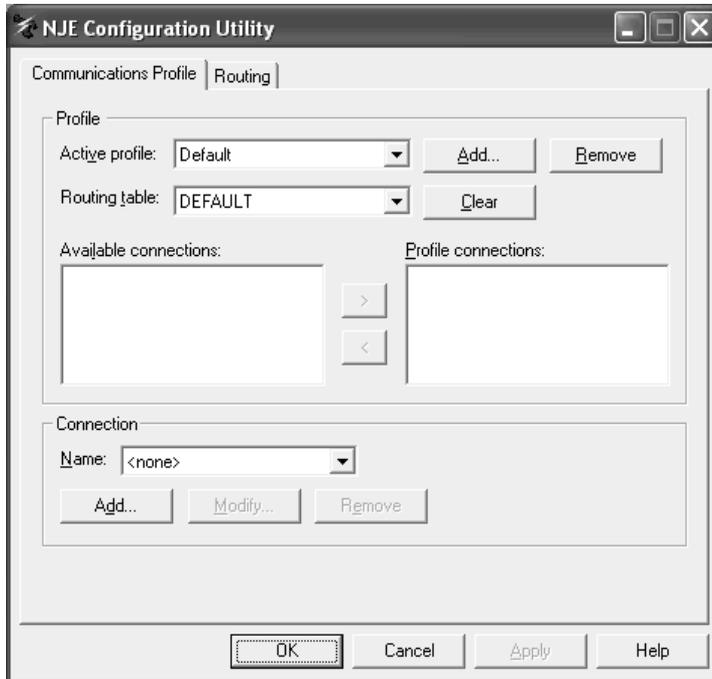


- a. In the **IDBLK** box, type the appropriate hexadecimal value. This parameter will be used by the host to identify the remote PU definition. The default value is 03D.
- b. In the **IDNUM** box, type the appropriate value. This parameter will be used by the host to identify the remote PU definition. The default value is 12345.
- c. In the **MAXDATA** box, select the maximum amount of data you can send on the PU in one frame. This value includes nine bytes of header information plus the data length. The default value is 1033.
- d. In the **LOCADD** box, type the MAC address of the network card for the host to which you are trying to reach. The value must be a 12-digit hexadecimal value. The default value is 400000000001.
- e. In the **Remote SAP** box, specify the remote (host) SAP hexadecimal value used to communicate with the host computer. The default value is 04. Other choices are multiples of 04 up to the maximum of EC.
- f. Click **OK**. You are now ready to configure the Barr SNA node.

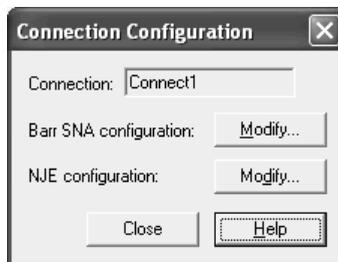
Configure the HPR/IP (Enterprise Extender) connection

Complete the following steps to configure an HPR/IP connection.

1. Open the NJE Configuration Utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR NJE | **NJE Configuration Utility**.)
2. Select the **Communications Profile** tab.



3. Under **Connection**, click **Add**. The **Add Connection** dialog box displays.
4. Type the connection **Name**.
5. In the **Type** drop-down list, select **Barr SNA**. Click **OK**. The **Connection Configuration** dialog box displays.



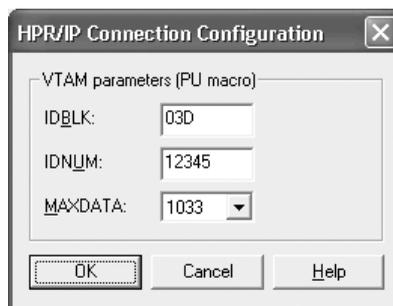
- Next to **Barr SNA configuration**, click **Modify**. The **Barr SNA Configuration** dialog box displays.



- Under **Link service**, an HPR/IP link has been created by default. To update the default link, select **BARRIP1** and click **Modify**. The BARR/SNA HPR/IP Link Service configuration utility's **Link** tab displays. Complete the following steps to configure the link.



- a. Enter the **Host name or IP address** of the Network Node Server. This must match the value provided by the host programmer in Section 5.1.
 - b. Enter the **NETID** (network name) for the HPR/IP link service. This must match the name provided by the host programmer in Section 5.1. The value must be text with a maximum of eight characters.
 - c. Enter the **CPNAME** (control point name) for the HPR/IP link service. If you are not using Autogen, this must match the name provided by the host programmer in Section 5.1. The value must be text with a maximum of eight characters.
 - d. Click **OK** to return to the **Barr SNA Configuration** dialog box. The link will be automatically named BARRIP#.
8. Under **Connection**, click **Configure**. The **HPR/IP Connection Configuration** dialog box displays. Complete the following steps to configure the connection.

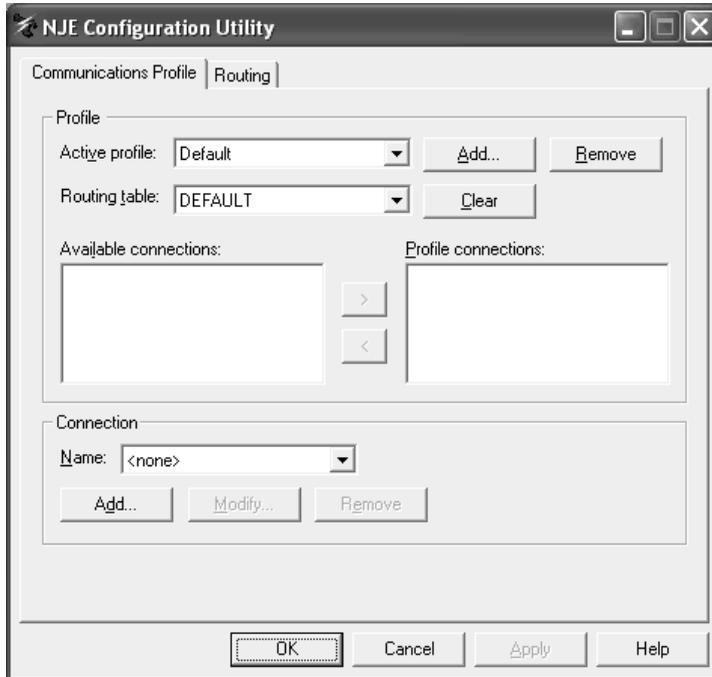


- a. In the **IDBLK** box, type the appropriate hexadecimal value. This parameter will be used by the host to identify the remote PU definition. The default value is 03D.
- b. In the **IDNUM** box, type the appropriate value. This parameter will be used by the host to identify the remote PU definition. The default value is 12345.
- c. In the **MAXDATA** box, select the maximum amount of data you can send on the PU in one frame. This value includes nine bytes of header information plus the data length. The default value is 1033.
- d. Click **OK**. You are now ready to configure the Barr SNA node.

Configure the SDLC connection

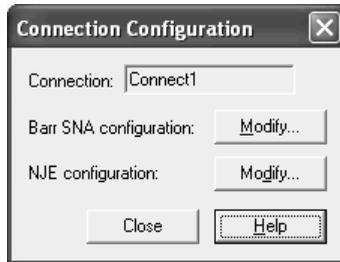
Use the NJE Configuration Utility to define and configure SDLC connections for communicating with the host. The procedures outlined in this section are required. Your host programmer can help configure the link settings. Complete the following steps to configure the connection.

1. Open the NJE Configuration Utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR NJE | **NJE Configuration Utility**.)
2. Select the **Communications Profile** tab.



3. Under **Connection**, click **Add**. The **Add Connection** dialog box displays.
4. Type the connection **Name**.

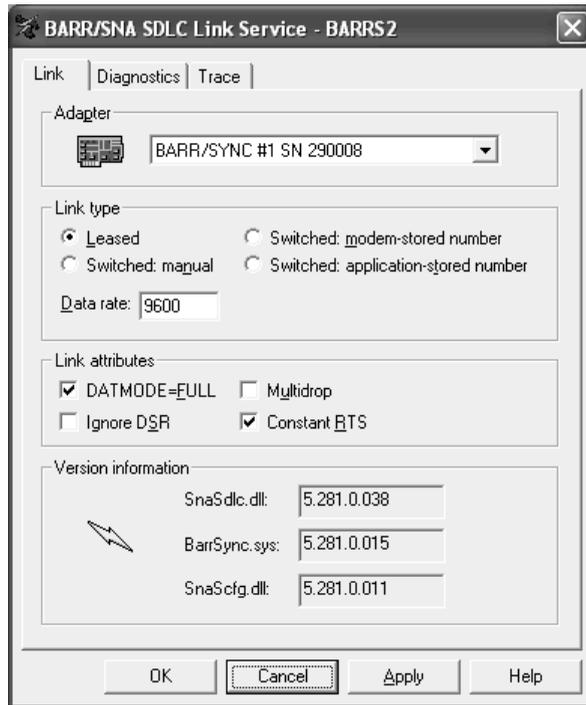
5. In the **Type** drop-down list, select **Barr SNA**. Click **OK**. The **Connection Configuration** dialog box displays.



6. Next to **Barr SNA configuration**, click **Modify**. The **Barr SNA Configuration** dialog box displays.



7. Under **Link service**, an SDLC has been created by default. To update the default link, select **BARRS1** and click **Modify**. The BARR/SNA SDLC Link Service configuration utility's **Link** tab displays. Complete the following steps to configure the link.



- a. Select the **Adapter** to use with the link service.
- b. Select the **Link type** based on your communications link, either leased or switched. The default link type is Leased.
 - **Leased** – Use when the communications line is a dedicated or leased line that maintains a constant connection to the host.
 - **Switched: manual** – Use when the communications line is a standard telephone line and the number will be dialed manually by the operator.
 - **Switched: modem-stored number** – Use when the communications line is a standard telephone line and the modem is configured to dial the number when it raises DTR (Data Terminal Ready).
 - **Switched: application-stored number** – Use when the communications line is a standard telephone line and the SNA gateway stores the telephone number and dials for you.
- c. Specify the **Data rate** for communications if necessary. This value can be changed only when the **Leased** link type is selected. All other link types will use the default setting, 9600, to issue modem commands.

- d. Select the link attributes as necessary. You can choose from the following options:
- **DATMODE=FULL** – Full duplex is simultaneous, two-way transmission. You can send and receive data simultaneously, which results in twice the throughput. You can even improve one-way throughput because you can receive acknowledgments while you send data. This option is selected by default.
 - **Multidrop** – If your host connection is provided through a multidrop or line sharing configuration, use this setting to ensure all devices on the line will be able to function. This setting is only relevant if **DATMODE=FULL** is also selected.
 - **Ignore DSR** – Selects whether the BARR/NJE software will ignore the modem Data-Set-Ready (DSR) signal. By default this option is not selected, causing communication to begin only if the DSR line is active. If this option is selected, the DSR line will be ignored and communication will begin if DSR is active or inactive. You can use this option to diagnose communications problems. An inactive DSR could indicate a problem with the communications interface, communications cable, or the device generating the DSR signal.
 - **Constant RTS** – Option for modems that provide a constant Request To Send (RTS) signal. In most cases, selecting **Constant RTS** will provide higher throughput. You must use **Constant RTS** for some full-duplex modems. Do not select **Constant RTS** if you use a multidrop connection. This option is selected by default.
- e. Click **OK** to return to the **Barr SNA Configuration** dialog box. Once the link service has been configured, the link will be automatically named BARRS*n*.

8. Under **Connection**, click **Configure**. The **SDLC Connection Configuration** dialog box displays. Complete the following steps to configure the connection.

The screenshot shows the 'SDLC Connection Configuration' dialog box. It contains the following fields and options:

- NCP parameter:** Radio buttons for **NRZ** and **NRZI** (selected).
- VTAM parameters (PU macro):**
 - ADDR:** Text box containing 'C1'.
 - IDBLK:** Text box containing '03D'.
 - IDNUM:** Text box containing '12345'.
 - MAXDATA:** Dropdown menu showing '1033'.
 - MAXOUT:** Text box containing '7'.
- Modem type:** Radio buttons for **Not autodial** (selected) and **AT**.
 - Phone number:** Text box containing 'DT9,12345551234'.
 - Initialization string:** Text box containing 'AT&F&M1'.

Buttons at the bottom: **OK**, **Cancel**, and **Help**.

- Under **NCP parameter**, select either **NRZ** or **NRZI** as the type of coding used on your host systems. The default is NRZI.
- In the **ADDR** box, type the 8-bit address used by SDLC. The default value is C1.
- In the **IDBLK** box, type the appropriate hexadecimal value. This parameter will be used by the host to identify the remote PU definition. The default value is 03D.
- In the **IDNUM** box, type the appropriate value. This parameter will be used by the host to identify the remote PU definition. The default value is 12345.
- In the **MAXDATA** box, select the maximum amount of data you can send on the PU in one frame. This value includes nine bytes of header information plus the data length. For JES2 and JES3, the default value of 1033. For POWER, the default value is 265.
- In the **MAXOUT** box, type the maximum number of frames to send before pausing for a response. The default value of 7 results in the highest throughput.
- Select the modem type, either **Not autodial** or **AT**.
 - Not autodial** – Select this option if you use an external modem other than an AT or Dataphone 2224B modem. This option is selected by default.
 - AT** – Select this option if you have an external AT modem that supports the standard AT command set (Hayes compatible) and can automatically dial a phone number entered in the software. You can only have one modem configuration.

- h. If you select **AT**, enter the **Phone number** for the autodial connection. You can also specify the **Initialization string**. The default initialization string value is AT&F&M1.
- i. Click **OK**. You are now ready to configure the Barr SNA node.

Configure the Barr SNA node

You must configure the Barr SNA node using the parameters provided to you by your host programmer. Complete the following steps to configure the Barr SNA node.

1. From the **Barr SNA Configuration** dialog box, under **NJE logical unit**, in the **Name** box, type the SNA LU name. This must match the NJE LU name provided by the VTAM and host programmers in Section 5.1.
2. In the **Number** box, type the LU number as a decimal. This must match the NJE LU number provided by the VTAM programmer (the **LOCADDR** parameter) in Section 5.1.
3. Click **OK**.

Configure the NJE node

You must configure the NJE node using the parameters provided to you by your host programmer. Complete the following steps to configure the NJE node.

1. From the **Connection Configuration** dialog box, next to **NJE configuration**, click **Modify**. The **NJE Configuration** dialog box displays.

2. Under **BARR node**, enter the Barr node **Name**. This must match the BARR/NJE node name provided by the host programmer in Section 5.1. The **Location** is currently unavailable.
3. Under **Host node**, enter the host node **Name**. This must match the host node name provided by the host programmer in Section 5.1.
4. Select the host node **Type**. If you are using JES2 or JES3, select MVS/JES2. If you are using POWER, select VSE/POWER.

5. Click **Advanced**. The **Advanced Node Settings** dialog box displays.

The screenshot shows the 'Advanced Node Settings' dialog box. It has a title bar with the text 'Advanced Node Settings' and a close button (X). The dialog is divided into two main sections: 'Passwords' and 'Streams'.
The 'Passwords' section contains two text input fields: 'Send password:' and 'Receive password:'.
The 'Streams' section contains four spinners: 'SYSIN transmitters: (Host's JRNUM)', 'SYSOUT transmitters: (Host's SRNUM)', 'SYSIN receivers: (Host's JTNUM)', and 'SYSOUT receivers: (Host's STNUM)'. All spinners are set to the value '1'.
At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Help'.

6. Under **Passwords**, specify a **Send password** and a **Receive password**, if desired. The send password is the password sent to the host to authenticate the Barr node. The receive password is the password the Barr node expects to receive from the host to authenticate the host node. By default, the passwords are blank.



The **Features** check boxes are set for optimal performance and are compatible with host systems.

7. Under **Streams**, configure the number of streams. This must match the number of streams provided by the host programmer in Section 5.1. If you are using JES3, skip this step.



The host's receivers correspond to Barr's transmitters, and the host's transmitters correspond to Barr's receivers. For example, if the host is configured for 5 **SYSIN transmitters**, the **SYSIN receivers** field must be **5**. The values for the host's streams were set during JES2 or POWER configuration.

8. Click **OK** twice, and then click **Close**.
9. When you click **OK** to close the NJE Configuration Utility, a message displays asking if you want to restart the BARR NJE service. Click **Yes**.

Start the Barr SNA node

Complete the following steps to start the Barr SNA node after the BARR NJE service has restarted.

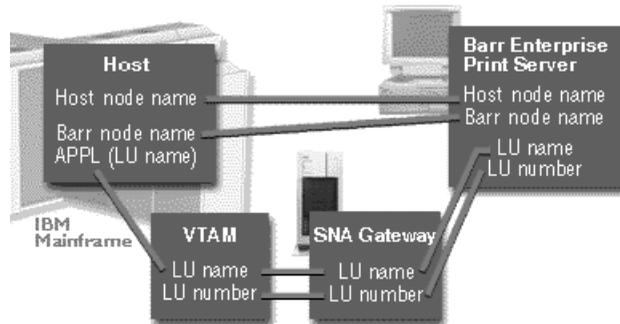
1. Verify that the NJE LU is activated.
2. Issue the appropriate start networking command at the host console.

Host	Command	Description
JES2	<code>\$SN,A=applid</code>	Where <i>applid</i> is the NJE LU name set during VTAM and JES2 configuration.
JES3	<code>+S SNA,NODE=nodename</code>	Where <i>nodename</i> is the BARR/NJE node name set during JES3 configuration.
POWER	<code>pstart pnet,nodename</code>	Where <i>nodename</i> is the BARR/NJE node name set during POWER configuration.

3. A message will display on the host console indicating that the node is active. If this message does not appear, use the Operator Console to diagnose the problem. You can now proceed to Section 5.5 for procedures on communicating with the host.

5.3 Configure SNA connections

The SNA connection type provides an easy way to manage your printing using BARR/NJE. With SNA, you must configure an SNA gateway to interpret between the host spooler and the Barr software. You must also configure the host spooler (JES2, JES3, or POWER), configure VTAM, and configure BARR/NJE by defining the connections between Barr nodes and adjacent host nodes. To transfer jobs using an SNA connection, the parameters displayed in the following image must match.



Parameters used when configuring BARR/NJE for an SNA connection.
Use the same information in all phases of configuring BARR/NJE.

The following steps must be completed in order.

1. Configure the SNA gateway
2. Configure BARR/NJE
3. Start the SNA node
4. Test the SNA connection

Configure the SNA gateway

Your SNA administrator must configure an SNA gateway connection for the BARR/NJE PU defined to VTAM. Your SNA gateway can be Microsoft SNA Server, Microsoft SNA Workstation, or Microsoft Host Integration Server (HIS). After this is complete, follow these steps to activate the PU and define the programs to the appropriate SNA gateway. These steps assume that your SNA gateway is already connected to the host with a valid PU definition. If you need instructions on defining a PU, refer to the Help for your Microsoft SNA gateway. The SNA gateway must be installed before you can connect to the host using the MS/LUA link.



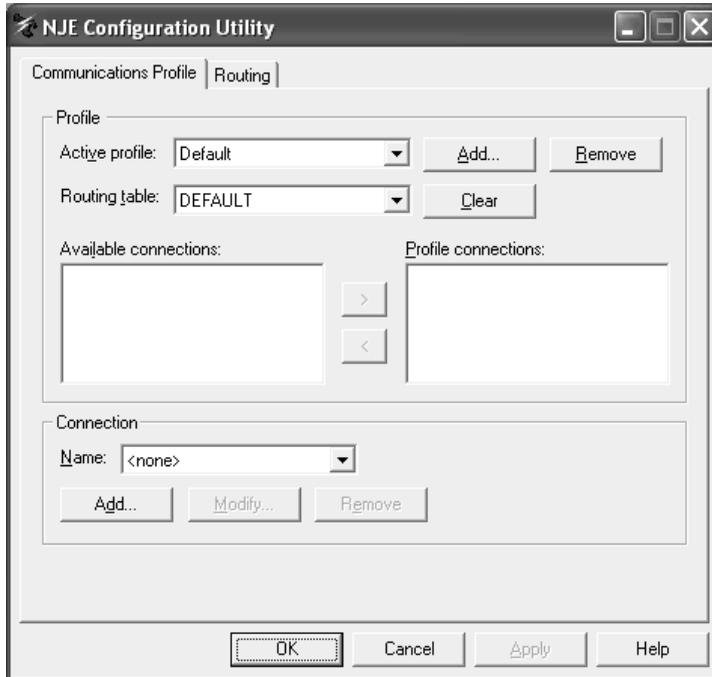
Make sure your SNA gateway connection has **XID=3** so that independent LU sessions are enabled.

1. Open Microsoft SNA Manager.
2. From the list on the left side of the window, select the connection you want to configure.
 - **SNA Server or SNA Workstation** – On the menu bar, select **Insert | 3270 | Application LU (LUA)**.
 - **HIS** – Right-click the connection and select **Application LU (LUA)**.
3. In the **LU Name** box, enter the LU name provided by the VTAM programmer in Section 5.1.
4. In the **LU Number** box, enter the LU number provided by the VTAM programmer (**LOCADDR** parameter) in Section 5.1.

Configure BARR/NJE

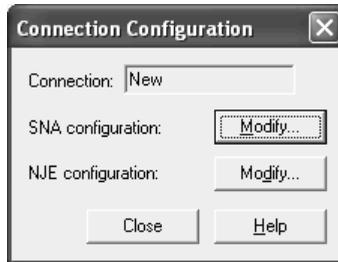
In the NJE Configuration utility, you need to define the connections between Barr nodes and adjacent host nodes, configure an SNA node and NJE node, and start the SNA node. Complete the following steps to configure BARR/NJE. Your host programmer can help configure the link settings.

1. Open the NJE Configuration Utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR NJE | **NJE Configuration Utility**.)
2. Select the **Communications Profile** tab.

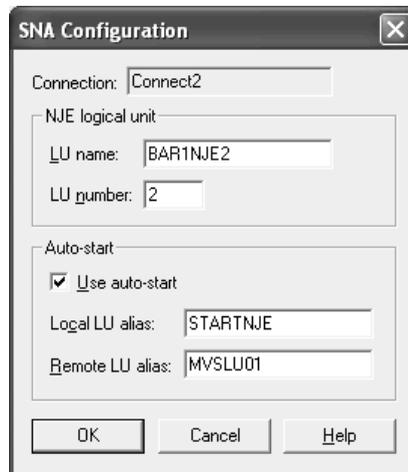


3. Under **Connection**, click **Add**. The **Add Connection** dialog box displays.
4. Type the connection **Name**.

5. In the **Type** drop-down list, select **SNA (SNA SERVER/HIS)**. Click **OK**. The **Connection Configuration** dialog box displays.

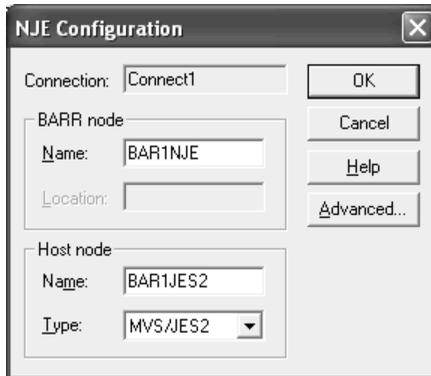


6. Next to **SNA configuration**, click **Modify**. The **SNA Configuration** dialog box displays. Complete the following steps to configure the SNA node.



- a. Under **NJE logical unit**, enter the SNA **LU name**. This must match the NJE LU name provided by the VTAM and host programmers in Section 5.1.
- b. Type the **LU number** as a decimal. This must match the NJE LU number provided by the VTAM programmer (the **LOCADDR** parameter) in Section 5.1.
- c. If you are using JES2, you have the option of enabling the auto-start feature. Select **Use auto-start**, and then enter the APPC auto-start **Local LU alias**. This must match the APPC auto-start LU name provided by the VTAM programmer in Section 5.1. You will also need to enter the APPC auto-start **Remote LU alias**. On JES2, this value can be found by issuing the **D APPC, LU ALL** command and scanning the output for the LU definition with **BASE=YES**. This value will also be used when configuring NJE auto-start by editing the BARR\$SN1 job. (See the *Using BARR job for the NJE auto-start configuration* Help topic for more information.)
- d. Click **OK** to return to the **Connection Configuration** dialog box.

7. Next to **NJE configuration**, click **Modify**. The **NJE Configuration** dialog box displays. Complete the following steps to configure the NJE node.

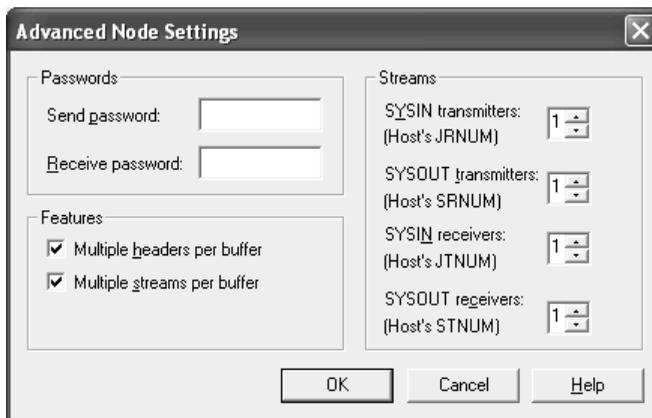


The **NJE Configuration** dialog box is shown. It has a title bar with a close button (X). The main area is divided into several sections:

- Connection:** A text box containing "Connect1" and an **OK** button.
- BARR node:** A group box containing:
 - Name:** A text box containing "BAR1NJE".
 - Location:** An empty text box.
- Host node:** A group box containing:
 - Name:** A text box containing "BAR1JES2".
 - Type:** A dropdown menu showing "MVS/JES2".

On the right side of the dialog, there are four buttons: **Cancel**, **Help**, and **Advanced...**.

- Under **BARR node**, enter the Barr node **Name**. This must match the BARR/NJE node name provided by the host programmer in Section 5.1. The **Location** is currently unavailable.
- Under **Host node**, enter the host node **Name**. This must match the host node name provided by the host programmer in Section 5.1.
- Select the host node **Type**. If you are using JES2 or JES3, select MVS/JES2. If you are using POWER, select VSE/POWER.
- Click **Advanced**. The **Advanced Node Settings** dialog box displays.



The **Advanced Node Settings** dialog box is shown. It has a title bar with a close button (X). The main area is divided into two columns:

- Passwords:** A group box containing:
 - Send password:** An empty text box.
 - Receive password:** An empty text box.
- Streams:** A group box containing four spinners:
 - SY\$IN transmitters:** (Host's JRNUM) with a value of 1.
 - SY\$OUT transmitters:** (Host's SRNUM) with a value of 1.
 - SY\$IN receivers:** (Host's JTNUM) with a value of 1.
 - SY\$OUT receivers:** (Host's STNUM) with a value of 1.

At the bottom, there are three buttons: **OK**, **Cancel**, and **Help**.

- e. Under **Passwords**, specify a **Send password** and a **Receive password**, if desired. The send password is the password sent to the host to authenticate the Barr node. The receive password is the password the Barr node expects to receive from the host to authenticate the host node. By default, the passwords are blank.



The **Features** check boxes are set for optimal performance and are compatible with host systems.

- f. Under **Streams**, configure the number of streams. This must match the number of streams provided by the host programmer in Section 5.1. If you are using JES3, skip this step.



The host's receivers correspond to Barr's transmitters, and the host's transmitters correspond to Barr's receivers. For example, if the host is configured for 5 SYSIN transmitters, the **SYSIN receivers** field must be **5**. The values for the host's streams were set during JES2 or POWER configuration.

- g. Click **OK** twice, and then click **Close**.
8. When you click **OK** to close the NJE Configuration Utility, a message displays asking if you want to restart the BARR NJE service. Click **Yes**.

Start the SNA node

Complete the following steps to start the SNA node after the BARR NJE service has restarted.

1. Verify that the NJE LU is activated.
2. Issue the appropriate start networking command at the host console.

Host	Command	Description
JES2	<code>\$SN,A=applid</code>	Where <i>applid</i> is the NJE LU name set during VTAM and JES2 configuration.
JES3	<code>+S SNA,NODE=nodename</code>	Where <i>nodename</i> is the BARR/NJE node name set during JES3 configuration.
POWER	<code>pstart pnet,nodename</code>	Where <i>nodename</i> is the BARR/NJE node name set during POWER configuration.

3. A message will display on the host console indicating that the node is active. If this message does not appear, use the Operator Console to diagnose the problem.

Test the SNA connection

The final step is to make sure the NJE LU has been configured correctly for your SNA gateway. Use the following procedures to activate the SNA gateway PU and check the status of the NJE LU.

To activate the SNA gateway PU

1. Open Microsoft SNA Manager.
2. Right-click the connection's SNA service and select **Start**.
3. After the server is active, right-click the connection and select **Start**.
4. Once the connection's state displays **Active**, the VTAM PU will be active. If the connection's state does not display **Active**, check your host's console for messages.

To check the status of the NJE LU

1. Select the connection where the NJE LU is defined.
2. On the right side, the NJE LU will appear in an **SSCP** state. If the LU does not appear in an **SSCP** state, check to make sure that both the VTAM PU and the connection have been activated. The following table displays the states that can appear in the Microsoft SNA Manager window.

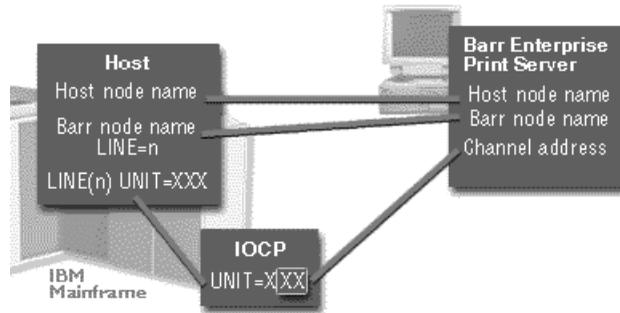
State	Solution
<blank>	If the state column does not contain a description, it is <blank>. The SNA service has not been started. There is a configuration problem with the connection, or a communications problem between the SNA gateway and the host.
Inactive	There is no physical connection active between the SNA gateway and the host. Verify that the PU has been activated.
Available	The LU is active, but the BARR NJE service is not connected. Try restarting the BARR NJE service. Check your LU name and number in the BARR/NJE configuration.
SSCP	A physical connection between the SNA gateway and the host is active, and the Barr Enterprise Print Server software has requested that the NJE session be started. The start networking command must be issued on the mainframe to start the session. See the previous section "Start the SNA node" for specific commands.
In Session	Your NJE node is fully connected. The NJE session is active between the Barr Enterprise Print Server software and the host.



If you are unable to diagnose the problem, you can also use the Operator Console to troubleshoot BARR/NJE.

5.4 Configure CTC

The Channel-to-Channel (CTC) connection type provides an easy way to manage your printing using BARR/NJE. With CTC, you must configure the CTC device to interpret between the host spooler and the Barr software. You must also configure the host spooler (JES2, JES3, or POWER) and BARR/NJE by defining the connections between Barr nodes and adjacent host nodes. To transfer jobs using a CTC connection, the parameters displayed in the following image must match.



Parameters used when configuring BARR/NJE for a CTC connection.
Use the same information in all phases for configuring BARR/NJE.

Complete the following steps to configure CTC. The steps must be completed in order.

1. Install the CTC hardware
2. Configure BARR/NJE
3. Start the CTC node

Install the CTC hardware

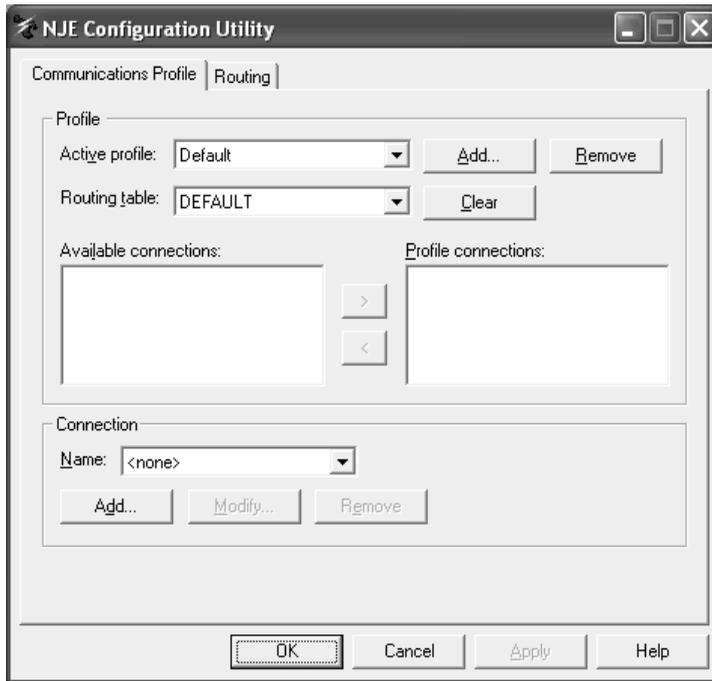
If you use a CTC connection, you must configure the CTC device on the remote computer. To configure the CTC device, you must install the hardware and use the Device Manager to install and configure the device driver and run diagnostic testing. Refer to the *Installing the CTC hardware* Help topic for step-by-step instructions.

Configure BARR/NJE

In the NJE Configuration utility, you need to define the connections between Barr nodes and adjacent host nodes, configure a CTC node and NJE node, and start the CTC node.

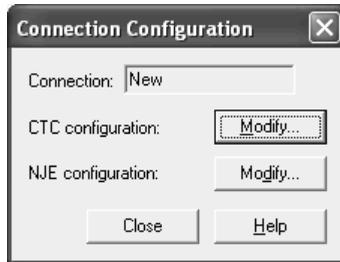
Complete the following steps to configure BARR/NJE. Your host programmer can help configure the link settings.

1. Open the NJE Configuration Utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR NJE | **NJE Configuration Utility**.)
2. Select the **Communications Profile** tab.

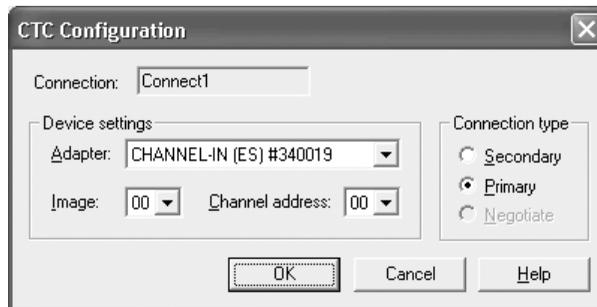


3. Under **Connection**, click **Add**. The **Add Connection** dialog box displays.
4. Type the connection **Name**.

5. In the **Type** drop-down list, select **CTC**. Click **OK**. The **Connection Configuration** dialog box displays.



6. Next to **CTC configuration**, click **Modify**. The **CTC Configuration** dialog box displays. Complete the following steps to configure the CTC node.



- a. Select the **Adapter** that connects to the host's channel. The CHANNEL adapters that are currently installed appear in the list.
- b. If you are using an ESCON connection, from the **Image** list, select a control unit image number. Each image can have 256 subchannel addresses.
- c. Select the **Channel address**. Each CTC NJE node must have a unique channel address (except for differing images) that must match the subchannel address at the host. You can enter an address ranging from 00 to FF.
- d. Under **Connection type**, specify how the node connection to the mainframe will be made. There is no wrong value for this setting, which may or may not be used. It is simply used to expedite the session initiation.
- e. Click **OK** to return to the **Connection Configuration** dialog box.

7. Next to **NJE configuration**, click **Modify**. The **NJE Configuration** dialog box displays. Complete the following steps to configure the NJE node.

- a. Under **BARR node**, enter the Barr node **Name**. This must match the BARR/NJE node name provided by the host programmer in Section 5.1. The **Location** is currently unavailable.
- b. Under **Host node**, enter the host node **Name**. This must match the host node name provided by the host programmer in Section 5.1.
- c. Select the host node **Type**. If you are using JES2 or JES3, select MVS/JES2. If you are using POWER, select VSE/POWER.
- d. Click **Advanced**. The **Advanced Node Settings** dialog box displays.

- e. Under **Passwords**, specify a **Send password** and a **Receive password**, if desired. The send password is the password sent to the host to authenticate the Barr node. The receive password is the password the Barr node expects to receive from the host to authenticate the host node. By default, the passwords are blank.



The **Features** check boxes are set for optimal performance and are compatible with host systems.

- f. Under **Streams**, configure the number of streams. This must match the number of streams provided by the host programmer in Section 5.1. If you are using JES3, skip this step.



The host's receivers correspond to Barr's transmitters, and the host's transmitters correspond to Barr's receivers. For example, if the host is configured for 5 SYSIN transmitters, the **SYSIN receivers** field must be **5**. The values for the host's streams were set during JES2 or POWER configuration.

- g. Click **OK** twice, and then click **Close**.
8. When you click **OK** to close the NJE Configuration Utility, a message displays asking if you want to restart the BARR NJE service. Click **Yes**.

Start the CTC node

Complete the following steps to start the CTC node after the BARR NJE service has restarted.

For JES2:

1. At the host console, vary the CTC device online using the command:
vary devnumber,online
where **devnumber** is the CTC device number used to define lines and streams for the node.
2. At the host console, issue the JES2 start line command:
\$SLN#
where **#** is the line number used to define lines and streams for the node.
3. A message will display on the host console indicating that the node is active. If this message does not appear, use Operator Console to diagnose the problem.

For JES3:

1. At the host console, vary the CTC device online using the command:
vary devnumber,online
where **devnumber** is the CTC device number used to define lines and streams for the node.
2. Verify that the NJE LU is activated.
3. At the host console, issue the JES3 start networking command:
+S SNA,NODE=nodename
where **nodename** is the BARR/NJE node name set during JES3 configuration.
4. A message will display on the host console indicating that the node is active. If this message does not appear, use the Operator Console to diagnose the problem.

For POWER:

1. At the host console, vary the CTC device online using the command:
online devnumber
where **devnumber** is the CTC device number defined in the *Configuring a CTC device* Help topic.
2. As the host console, issue the POWER start line command:
PSTART PNET , NODENAME , , DEVNUMBER
3. A message will display on the host console indicating that the node is active. If this message does not appear, use Operator Console to diagnose the problem.

5.5 Communicate with the host

The following sections explain the different methods for communicating with the host computer.

- Send a test print job from the host to Barr
- Send commands to the host
- Send files (JCL SYSIN) to the host

Send a test print job from the host to Barr

No additional configuration is needed for receiving print jobs. Once the NJE connection is operational and the node has been started at the host, jobs will automatically be received into the spool. From BARR/SPOOL, you can reroute jobs to various destinations using header fields.

To send a test print job, request that the job be submitted from the host to BARR/NJE and use the Barr node name as the destination. Anyone on the host can route their job to an NJE node using the **DEST=** parameter in their Job Control Language (JCL). For example, you could specify **DEST=barrnode** in your JCL where **barrnode** is the BARR/NJE node name provided by the host programmer in Section 5.1.

```
//SYSOUT DD SYSOUT=A,DEST=barrnode
```

You can also route the job to a specific printer in the Barr spooler by adding the printer name to your destination parameter. Enter the Barr node name, followed by a comma, and then the printer name. Because the **DEST=** parameter contains two parameters, you must use parentheses as shown here.

```
//SYSOUT DD SYSOUT=A,DEST=(barrnode,HPLASER)
```

Send commands to the host

This section lists the procedures for sending commands and messages to the destination node. Follow the steps for the type of command or message you will be sending.

1. Start the BARR NJE service.
2. Open NJE Console. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR NJE | **NJE Console**.)
3. On the menu bar, select Session | **Connect**.
4. On the menu bar, select Session | **Set Destination**. The **Set Destination Node** dialog box displays.
5. Select or enter a **Destination Node**. The nodes displayed in the list are defined in the active routing table from the NJE Configuration Utility. If you enter a node that is not defined in a routing table, you must clear the **Use routing table** box and select the routing node from the **Routing Node** list.

The name of the current destination node appears in the status bar. All commands and messages entered in the console will be sent to the destination node.



If a node from the active routing table does not appear in the list, check Operator Console for possible BARR/NJE connection errors.

6. Set the **Member Number** by typing the number in the box or selecting it with the up and down arrows. If you don't know the member number, leave it set to zero.
7. Click **OK**.

To send a host command or message

1. On the NJE Console menu bar, select View | **Host Command**, if it is not already selected. A checkmark appears next to the item when it is selected.
2. From the host command view, select **Host command** or **Message**. If you are sending a host message, you must also select a priority from the drop-down list.



When sending a message, the selected priority will be assigned to the message when it is transmitted to the destination node. Many systems ignore the message priority and use it for informational purposes only. NJE Console uses this priority on incoming messages, and it can provide audible notification to the local console operator, configured on the **Preferences** tab.

3. Enter a host command or message in the box and press ENTER. This will send the host command to the selected destination node or the host message to the operator console on the destination node. You can ensure that the message was sent correctly by verifying that the text you entered displays on the destination node's operator console.

To send a global command



If you are communicating with the host using a POWER connection, global commands are not supported.

1. On the menu bar, select View | **Global Command**, if it is not already selected. A checkmark appears next to the item when it is selected.
2. From the **Global Command** drop-down list, select one of the commands.
3. Enter the **Job name** for the job on the destination node.
4. Select **Job description** to further identify the job on the destination node. If you select this option, you can also specify the **Job ID** and **Originating node**.
5. Click **Send**. This will send the global command to the selected destination node.

Send files (JCL SYSIN) to the host

To send files to the host, you must first define a routing table to establish a connection between Barr nodes and host nodes. Next, you must create a folder (either on your hard drive or on your network) where the SYSIN files will be placed. You will then configure Print Utility to automatically take the files from the folder, assign the files with the appropriate header field values, and send the files to BARR/SPOOL. Finally, you will configure a spool printer for sending the jobs to the host and assign the printer with the appropriate header field values. Once the configuration steps are complete, SYSIN files that are placed in the specified folder will automatically be sent by Print Utility to the Spool Window and then BARR/SPOOL will automatically route the files to the spool printer with the matching fields.

If your files require special processing (such as files with long records, binary data, or files that require BARR/TRAN processing), refer to the *Sending JCL files with an embedded command* Help topic. Using embedded commands adds flexibility to the existing BARR/NJE functionality. BARR/TRAN provides extended file transfer capabilities, including longer record length, variable length records, and so on.



JES3 and POWER do not support sending jobs to the host.

Complete the following steps to send jobs to the host.

1. Define a routing table
2. Configure Print Utility to automatically send jobs to the spool
3. Define a printer to send jobs to the host
4. Configure the Spool Window to release jobs to the host

Define a routing table

Complete the following steps to define a routing table and establish a connection between Barr nodes and host nodes.

1. Open the NJE Configuration Utility.
2. Select the **Routing** tab.
3. Under **Routing table**, click **Add**. The **Add Routing Table** dialog box displays.
4. Enter the routing table **Name**. Click **OK**.
5. Select a Barr node. Once you have imported or created a new routing table, you must define the logical connections that will exist between the Barr nodes and host nodes on your NJE network. Before adding a new host node to your routing table, you must select a Barr node to associate with any host nodes you plan to add to the routing table. For a particular routing table, each host node can be mapped to only one Barr node.
6. To select a Barr node, under **Routing table definition**, select the **Connection** in the **Barr node** list. An arrow will appear next to the selected connection and Barr node pair. For a particular routing table, each host node can be mapped to only one Barr node.
7. Connect a host node. After a Barr node has been selected in the **Barr node** list, you must add any host node names to the **Route to host node** list that you want to connect to this Barr node.
 - a. Under **Routing table definition**, click **Add**. The **Add Host Node** dialog box displays.
 - b. Enter the name of the host node you want to add to the **Route to host node** list. You can get the host node name from your network or systems administrator. The host node must be reachable from the Barr node that you are connecting to or associating with.
 - c. Click **OK** to return to the **Routing** tab. The new host node appears in the **Host node** table with a check mark to show that it has been assigned to the selected Barr node. If a Barr node was not previously selected, you can select a Barr node, and then select the host node.
8. Repeat steps 5 and 6 to add additional host nodes.
9. In the **Default host node** drop-down list, select a default host node.
10. When you click **OK** to close the NJE Configuration Utility. Click **Yes** to restart the BARR NJE service. Changes will not take effect until the service has been restarted.

Configure Print Utility to automatically send jobs to the spool

To send JCL (SYSIN) jobs to the host, we recommend that you set up Print Utility to automatically search a specified folder for SYSIN jobs. To set up the spool to automatically add files, you need to create folders and specify the spooling interval. You can automatically add local and LAN files.



You can also send jobs to the spool directly from a program. For more information, refer to the *Receiving NJE or RJE jobs into BARR/SPOOL* Help topic.

1. If you are adding local files, skip to step 2. If you are adding files from a network, configure the BARR Print Utility service to log on as a user rather than a system account. See the *Managing services* Help topic for more information.
2. If a folder for the SYSIN jobs doesn't already exist, use Windows Explorer to create one. This folder will be used by Print Utility for automatic spooling.
3. Open Print Utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Print Utility**.)
4. From the **Automatic Spooling** tab, click **Add**.
5. Navigate to the folder you just created and click **OK**. The Input Conversion Utility displays.
6. From the **Format** tab, select **SYSIN data (JCL)** as the file type.
7. If you are sending a raw data file, under **JCL files** select the beginning and ending JCL files, the send mode, and length (if necessary). If your file is a JCL file, you can leave these fields blank.
 - **Begin** – The beginning JCL file that is sent immediately before each data file. The file must be in a separate directory from the data file. Click the folder button to select the file, or enter the path and file name in the text box.
 - **End** – The ending JCL file that is sent immediately after each data file. The end file must be in a separate directory from the data file. Click the folder button to select the file, or enter the path and file name in the text box.
 - **Mode** – Determines the format of the data. See the *Format tab* Help topic for a description of each option.
 - **Length** – The record length that can be specified in the following send modes: A, TF, TDF, and TBF. The default value is 80.
8. On the **Options** tab, select an output statement and configure headers from data if necessary. We do not recommend using the **Output statement** and **Headers from data** options together. If you want to use both of these options, select your settings carefully.
9. If needed, click **Code Pages** and choose an ASCII or EBCDIC code page from the **Select Code Pages** dialog box.
10. Click **OK**. The **Spooling Properties** dialog box displays.
11. Under **Folder**, verify the correct folder **Name** is displayed.
12. Enter a folder **Description** that will display on the **Automatic Spooling** tab.

13. To specify the spooling interval, enter a value next to **Check every** and select **Seconds** or **Minutes**.
14. Select **Check subfolders** to check the subfolders for automatic spooling.
15. Select the disposition for the **Original file**. You can leave the file, delete the file, or move the file to another folder.
16. Select the disposition for the **Printed file**. You can retain the file or delete the file.
17. Specify the document attributes. Print Utility sets these fields to specified values before sending a copy of each file to the spool.
 - a. Under **Document attributes**, click **Add**. The **Select Field** dialog box displays.
 - b. From the **Section** drop-down list, select **Data Set Header General Section**.
 - c. Select **NDHGNODE – Dest. Node**, and set the field **Value** equal to the value for the destination node.
 - d. From the **Section** drop-down list, select **Job Header General Section**.
 - e. Select **NJHGORG – Org. node**, and set the field **Value** equal to the value for the originating node.
 - f. Select **NJHGXEQN – Exe. Node**, and set the field **Value** equal to the value for the execution node.
 - g. Click **OK** twice to return to the **Spooling Controls** tab.
18. If it is not already selected, set the automatic spooling **Status** to **Enabled**. This option is available only when the BARR Print Utility service is started.

Define a printer to send jobs to the host

To send jobs to the host, you need to define a printer to route jobs from the spool to the host. You will need to create a Windows printer and a spool printer. Complete the following steps to send jobs to the host.



To add a Windows printer, you must be a member of the **Administrators** group. If you are using Windows 2000, you can also be a member of the **Printer Operators** or **Server Operators** group or a **Power User** on a workstation.

To define a Windows printer

To define a Windows printer, you must select the port and then select the device driver. Complete the following steps to define a Windows printer.

1. Open Windows Add Printer Wizard.
2. Select to define a local printer. Click **Next**.
3. Create a new port selecting the **Barr NJE Port**.
4. Enter the **Port name**. Click **OK**, and then click **Next**.



Include the connection name in the port name so you can easily identify the port later. We recommend you name the port *Connection name* – Send to Host.

5. In the **Manufacturers** list, select **Barr**. In the **Printers** list, select **Barr Jobs to Mainframe – Printer Driver**. Click **Next**.

6. Select **Keep existing driver**. Click **Next**.
7. Enter the **Printer name** as you want it to appear in the Windows Printers folder. Select **No** to indicate that this printer will not be used as the default Windows-based printer. Click **Next**.
8. Choose whether or not this printer will be shared with other network users. If this printer will be shared, you will need to type a share name. Click **Next**.



To set up a printer for sharing, users who will access the printer must be in the same domain as the printer, and you must assign corresponding printer permissions from the **Security** tab of the shared printer's **Properties** dialog box.

9. Choose **No** to skip printing a test page. Click **Next**, and then click **Finish**. Windows installs the drivers and displays the new printer in the Windows Printers folder.
10. Enable the Windows **Print directly to the printer** setting.
 - a. From the Windows Printers folder, right-click the printer you just defined and select **Properties**.
 - b. From the **Advanced** tab, select **Print directly to the printer**. Click **OK**.

To define a spool printer

Complete the following steps to define a spool printer for your Windows printer. Spool documents will be routed to this physical device. The options you specify will affect all documents you send to it.

1. Open the Configuration Utility.
2. From the **Spool Printers** tab, click **Add**. The **Printer Properties** dialog box displays.
3. Enter the printer **Name**. The printer name cannot contain a backslash (\). This name displays in the Spool Window's printer list and is called the spool printer.
4. Under **Physical printer**, select **Existing**. From the drop-down list, select the printer you just defined.
5. Under **Options**, click **Advanced** to set advanced printer options. The **Advanced Printer Options** dialog box displays. Review the following table to select the desired options.

Options	Required	Optional	Don't Use
Printer initialization files			X
Page layout			X
Code page			X
If FCB is not found, use default FCB named 'STD'			Ignored
Printer in Disabled state at startup		X	
Printer can be hidden		X	

Options	Required	Optional	Don't Use
Printer does not check jobs for valid data type		X	
Bypass the Windows spooler	X		
Special: Pass data to printer without conversion			X
Special: Pass the archive format to LPR port			X
Special: Printer uses transform			X

6. Close the Configuration Utility.

Configure the Spool Window to release jobs to the host

Once you have configured Print Utility and the spool printer, you are now ready to configure the Spool Window to send jobs to the host.

Complete the following steps to send a job to the host from the Spool Window.

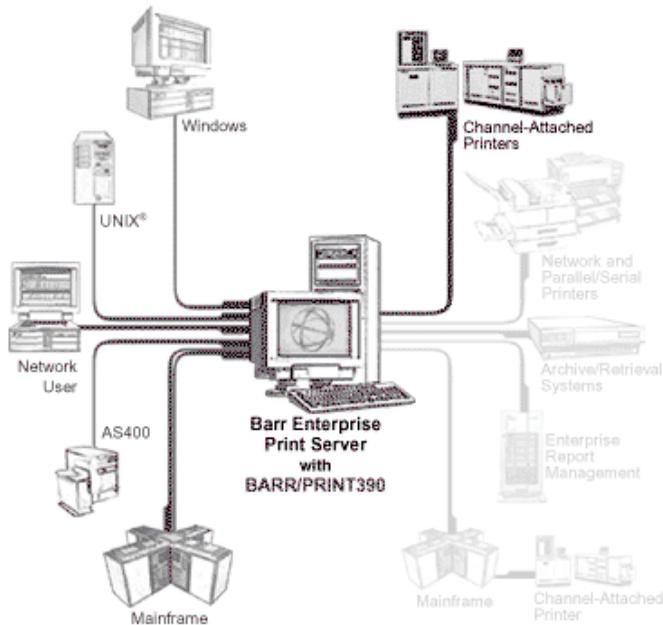
1. Open the Spool Window. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Spool Window**.)
2. If the **Dest. Node** column is not displayed, add it to the Spool Window.
 - a. On the Spool Window menu bar, select View | **Format Columns**. The **Format Columns** dialog box displays.
 - b. From the **Available sections** list, select **Data Set Header General Section**. The fields for the section displays in the **Available columns** list.
 - c. In the **Available columns** list, select **NDHGNO** and click the right arrow (>) to add it to the **Visible columns** list. You can also add fields by double-clicking entries under **Available columns** list. Click **OK** to return to the Spool Window.
3. On the Spool Window, right-click the printer and select **Disable**.
4. Click the **Dest. Node** column for your printer, enter your host's NJE node, and click **OK**. This value is entered as the host node when you define a routing table.
5. To print the document, match the document and printer criteria in the Spool Window, and change their states to **Ready**. After printing, the job will disappear. Check your host's output queues for the job.

BARR/PRINT390

chapter 6

Getting Started

BARR/PRINT390 is an optional software and hardware module of the Barr Enterprise Print Server. It connects channel-attached production printers to a Windows-based personal computer. It drives up to eight printers per adapter and can use up to four adapters per print server.



BARR/PRINT390 integrates easily into the Windows print architecture. The module is implemented with two components: a Barr PRINT390 printer driver and a Barr PRINT390 port monitor. The Barr PRINT390 printer driver prepares data for a channel printer by generating EBCDIC data with S/390 machine carriage control. The Barr PRINT390 port monitor is used to communicate with the CHANNEL-OUT adapter.

BARR/PRINT390 includes the following features and benefits.

- Preserves investment in channel-attached printers
- Provides an inexpensive alternative to channel extenders
- Connects to multiple hosts at the same time
- Supports 3211 line and Xerox Metacode and LCDS printing
- Supports interlock transfer modes: SingleTag and HST
- Supports data streaming transfer modes, 3.0 and 4.5 Mbps
- Initializes and resets each printer independently
- Displays real-time status for each printer on the spool screen
- Drives up to eight daisy-chained S/390 channel-attached printers per adapter
- Prints up to 700 pages per minute with transfer rates varying based on the record size and processor speed
- 3800 printers support Table Reference Characters (TRC), allowing multiple fonts to be used on one page
- Shares the BARR/CHANNEL-OUT adapter with BARR/PRINT390 *for IPDS* to support IPDS printers

Supported Printers

Line printers and plotters

- IBM 3203, 3211, 4245, 4248, and 6262 printers
- IBM 3203 or 3211 type plotters
- STK 5000

Laser and non-impact printers

- Compaq 6890, 6900
- Nipson Series 3000
- Océ 2050-300, 2075-2, 2090-2, 2140-2, 2140-3, 2200-2, 2200-3, 2240-2, 2240-3, 2300-2
- STK 6100-19, 6100-26
- Xerox 4050, 4075, 4090, 4135, 4635, 4650, 4850, 4890, 8790, 9790
- IBM 3800 in compatibility mode

Computer output microfiche devices

- Anacom DatagraphiX, XFP 2000
- Kodak Komstar, Optistar
- Micrographics Technology COM 6831

Complete the following steps to get started with BARR/PRINT390.

1. Install the hardware
2. Run hardware diagnostics
3. Connect the printer
4. Find device addresses
5. Define a printer

6.1 Install the hardware

The Barr setup program installs the BARR/PRINT390 software files. To complete installation of the BARR/PRINT390 module, you need to install the hardware and use the Device Manager to install and configure the device driver. Complete one of the following methods to install BARR/PRINT390.

Windows 2000 or Windows XP will automatically detect the hardware and install the device driver for you. Although you can manually configure device properties and settings, you should let Windows do it. When you manually configure properties and settings, the settings become fixed, which means Windows cannot modify them if a problem arises or there is a conflict with another device. After you have installed the software complete the following steps for your operating system.



If Windows 2000 or Windows XP does not detect the CHANNEL-OUT device, you may have to use the Add/Remove Hardware wizard in the Control Panel to tell Windows what type of device you are installing. See the Microsoft Help for additional information.

Windows 2000

1. After you've installed the CHANNEL-OUT hardware, turn on your computer.
2. The **Found New Hardware** dialog box displays. When the dialog box closes, installation is complete.

Windows XP



Windows Server 2003 users – Because of a change in default behavior in Windows Server 2003, users must explicitly enable the ability to add kernel-level drivers required to access to Barr printer drivers. See the *Support for Windows Server 2003* Help topic for more information.

1. After you've installed the CHANNEL-OUT hardware, turn on your computer. Windows displays a message that the Device Manager is scanning for Plug and Play compliant hardware, and then the **Found New Hardware Wizard** opens.
2. Select **Install the software automatically** and click **Next**. Windows will search for the software and then install the appropriate device driver. Once Windows has successfully located and installed the appropriate device driver, a dialog box will display confirming that the Found New Hardware Wizard has finished installing the software.
3. Click **Finish** to close the wizard.

6.2 Run hardware diagnostics

Run the hardware diagnostics immediately after you install the hardware to verify that you correctly installed the CHANNEL-OUT adapter and cable and that they function properly. Thereafter, you can perform the diagnostics whenever you want to confirm that the hardware functions properly.

The test transfers data to and from the adapter and compares the data to make sure the adapter is working. When you install the test plugs, the diagnostics test raises signals and expects the signals to be looped back.

Complete the following steps to verify that you correctly installed the CHANNEL-OUT adapter and cable and that they function properly.



You can only perform diagnostics on an adapter when no other program is using the adapter.

1. Test the adapter
2. Test the cable
3. Test the entire printer chain

Phase 1: Test the adapter

Phase 1 confirms that all connections are valid, the adapter drivers are valid, and the adapter and its components are working. The software locates the adapter and performs an internal adapter test. Complete the following steps to test the adapter.

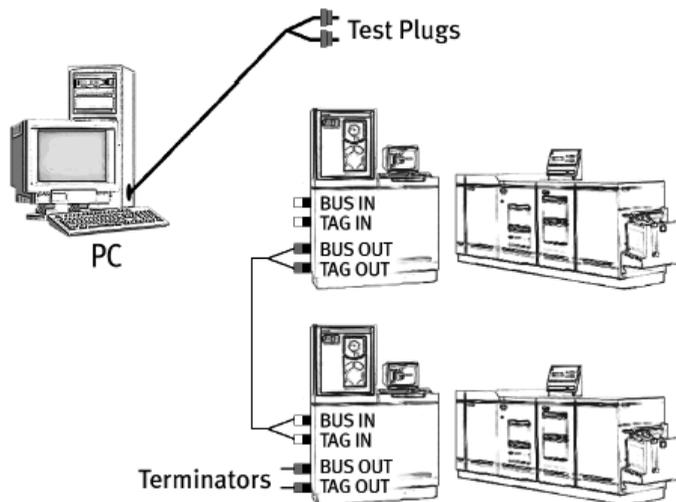
1. Stop the Windows Spooler service.
2. Stop all programs or services using the CHANNEL-OUT device driver.

3. Connect the adapter test plug to the adapter. Adapter test plugs can only be used with Revision 3 or later adapters.
4. Open the BARR/CHANNEL-OUT utility.
5. From the **Diagnostics** tab, select the device to test and then click **Start**.
6. As the test runs, diagnostic status messages display. Review the status messages.
7. Start the Windows Spooler service.

Phase 2: Test the cable

Phase 2 confirms that the cable is working. The software verifies correct functioning of the cable by sending a data string through the adapter in a rotating pattern. The adapter test plug returns the data through the receive-side of the adapter. The test verifies that the returned data matches the sent data. Complete the following steps to test the cable.

1. Stop the Windows Spooler service.
2. Stop all programs or services using the CHANNEL-OUT device driver.
3. Connect the adapter cable to the adapter.
4. Attach the test plugs to the other end of the cable.



Connect one end of the cable to the adapter and the other end to the test plugs.

5. Open the BARR/CHANNEL-OUT utility.
6. From the **Diagnostics** tab, select the device to test and then click **Start**.
7. As the test runs, diagnostic status messages display. Review the status messages.
8. Start the Windows Spooler service.



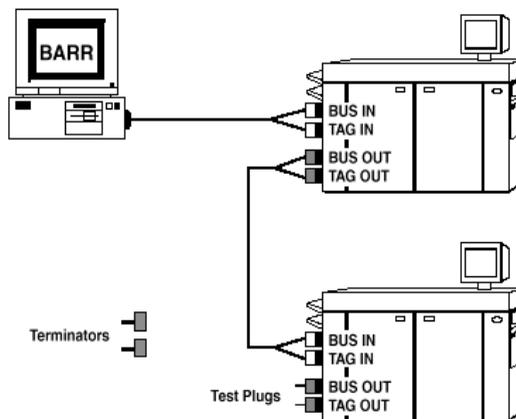
If this test passes but you still suspect a malfunction in the printer chain, perform the Phase 3 test of the entire printer chain.

Phase 3: Test the entire printer chain

Perform this test if the adapter and CHANNEL-OUT cable test passes but you still suspect a malfunction in the printer chain. This test is the same as the adapter and CHANNEL-OUT cable test, except that you install the test plugs on printers or daisy-chain cables instead of on the CHANNEL-OUT cable.

First, test the entire printer chain. If the test reports an error, you can systematically rule out problems with each cable or printer by running the test several more times, each time with the test plugs attached to the next cable or printer in the chain. Complete the following steps to test the printer connectors and daisy-chain cables. The following diagram shows how to connect the cables and test plugs.

1. Stop the Windows Spooler service.
2. Stop all programs or services using the CHANNEL-OUT device driver.
3. Power off all printers. The test is not accurate if the printers are turned on.
4. Cut the test plugs from the end of the CHANNEL-OUT cable. Be careful not to misplace the test plugs because you might need them later. You might want to re-attach the test plugs to the cable when you finish testing.
5. Re-attach the CHANNEL-OUT cable to the first printer's Bus In and Tag In connectors.
6. Remove the terminator plugs from the last printer and install the test plugs on the last printer's Bus Out and Tag Out connectors.



Remove the terminators and install the test plugs.

7. Open the BARR/CHANNEL-OUT utility.
8. From the **Diagnostics** tab, select a device to test, and then click **Start**.
9. As the test runs, diagnostic status messages display. Review the status messages.
10. Start the Windows Spooler service.



If the test passes, all of the hardware components are functioning properly. If the test fails, refer to the *Isolating the error* Help topic.

Connect the printer

After installing the adapter as described in your *CHANNEL-OUT (BT)* manual, complete the following steps to connect the printers to be used with the BARR/PRINT390 module.

1. Connect the adapter to the first printer
2. Attach multiple printers
3. Attach terminator plugs



For some printers, the printer service representative must connect the cables. See your printer manual to determine whether you need to schedule this service.

Connect the adapter to the first printer

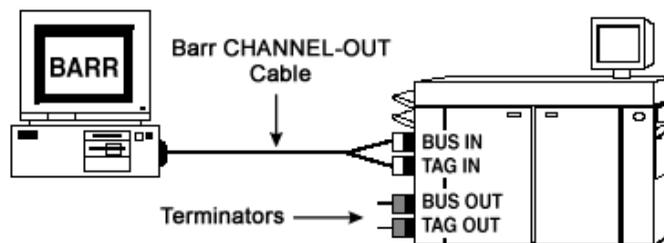
Complete the following steps to connect the CHANNEL-OUT (BT) adapter to the first S/390 channel printer using the supplied CHANNEL-OUT cable.

1. Insert the cable plug into the connector on the adapter. The cable plug is the end of the CHANNEL-OUT cable with a single plug. The other end of the CHANNEL-OUT cable has separate Bus & Tag plugs that connect to the Bus In and Tag In connectors on the printer.



If you are also connecting to an SNA host using BARR PRINT/CHANNEL and the CHANNEL-IN adapter, confirm you have correctly connected the adapters and cables. Connect the CHANNEL-IN cable to the adapter labeled **IN**. Connect the CHANNEL-OUT cable to the adapter labeled **OUT**. The **IN** and **OUT** adapter labels are visible from the rear of the computer.

2. Attach the Bus plug to the Bus In printer connector.
3. Attach the Tag plug to the Tag In printer connector.
4. Tighten the screws that secure each connector using a screwdriver.
5. If you are only connecting one printer, you can attach terminator plugs to the printer.



Attach the printer to the computer. If you have only one printer, also attach terminator plugs.

Plug into printer →

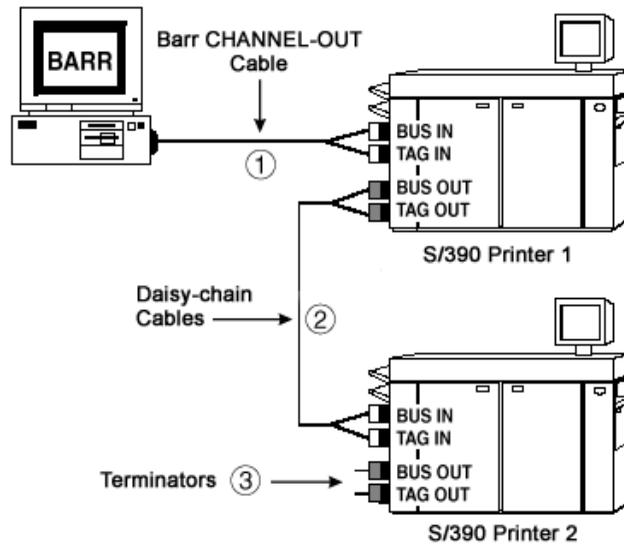


← Plug into adapter

CHANNEL-OUT cable

Attach multiple printers

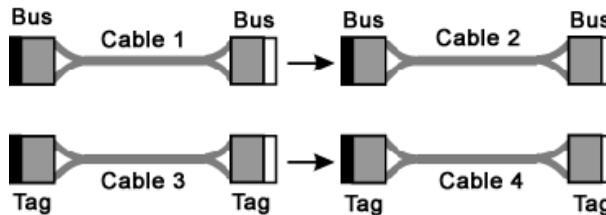
You can attach multiple S/390 printers by daisy chaining one printer to another with pairs of Bus & Tag cables, as shown in the following graphic. Daisy-chain cables are available from your printer vendor.



Daisy chain printers using Bus & Tag cables.

To connect two daisy-chain cables

If your Bus & Tag cables are not long enough to span the distance between two printers, you can extend the cable length by connecting two pairs of Bus & Tag cables. However, you must correctly connect the cables to each other. Plugs at opposite ends of the cable have different colored edges. Usually the cable has plugs with black edges at one end and plugs with white or gray edges at the other end. Attach plugs of opposite colors, as shown in the following graphic.



Attach Cable 1's white Bus plug to Cable 2's black Bus plug.
Attach Cable 3's white Tag plug to Cable 4's black Tag plug.

To connect two printers

Bus cables have a Bus connector at each end and tag cables have a Tag connector at each end. The connectors are distinguished by color-coded edges. Each cable has one connector with a black edge and one connector with a white or gray edge. When you connect Bus & Tag cables to printers, be sure to attach connectors of opposite colors.

Complete the following steps to connect the printers.



Performance tuning: To maximize performance, put the fastest printers at the end of the chain. For example, put slower impact printers nearest to the adapter, and put faster laser printers farthest from the adapter.

1. Connect the Bus Out connector on Printer 1 to the Bus In connector on Printer 2.
 - a. Attach the bus cable's black plug to Printer 1's white Bus Out connector.
 - b. Attach the bus cable's white plug to Printer 2's black Bus In connector.
2. Connect the Tag Out connector on Printer 1 to the Tag In connector on Printer 2.
 - a. Attach the tag cable's black plug to Printer 1's white Tag Out connector.
 - b. Attach the bus cable's white plug Printer 2's black Tag In connector.



Maximum cable distance: When you daisy chain printers, the total distance from the computer to the last printer must not exceed 60 meters (200 feet). This distance includes the lengths of the cables and the printers.

Attach terminator plugs

After connecting the adapter to the printer and connecting the printers, you will need to connect the Bus & Tag terminator plugs to the printer. If you connect multiple printers, attach the terminators to the last printer in the chain. Complete the following steps to connect the terminators.

1. Attach the Bus Terminator to the printer's Bus Out connector.
2. Attach the Tag Terminator to the printer's Tag Out connector.
3. Tighten the terminator screws by hand.

Find device addresses

Use the following method to determine the device addresses of your channel devices. You need to enter the channel device address when you define a printer.

1. Stop the BARR SpoolCore and Windows spooler services.
2. Connect your channel devices to the CHANNEL-OUT cable. If you have more than one device of the same type (for example, 3211 printers), connect only one of the devices at a time, so you can tell which address corresponds to which device.
3. Open the BARR/CHANNEL-OUT utility.
4. From the **Find Devices** tab, select the **Adapter** to which the devices in question are attached.
5. Make sure that the device is online and ready to receive data, and then click **Find**.
6. View the results in the **Devices** group box. If a device is found, its address will be reported along with the device type. In some cases, a printer might not accurately report its device type.



If you receive a sense code message, check your channel device documentation to determine the meaning of the sense code.

Define a printer

Complete the following steps to define printers for printing to a channel-attached printer.



To add a Windows printer, you must be a member of the **Administrators** group. If you are using Windows 2000, you can also be a member of the **Printer Operators** or **Server Operators** group or a **Power User** on a workstation.

1. Open the Configuration Utility.
2. From the **Spool Printers** tab, click **Add**. The **Printer Properties** dialog box displays.
3. Enter the printer **Name**. The printer name cannot contain a backslash (\). This name displays in the Spool Window's printer list and is called the spool printer.

4. Under **Physical printer**, select **New**. From the drop-down list, select **Print to a channel printer** and click **OK**.
5. Before using the printer, you must configure the port. Click **Modify Port** to display the **Port Configuration** dialog box.
 - a. In the **Adapter** list, select the CHANNEL-OUT adapter for the device. If you add the Barr PRINT390 port without installing the adapter, the adapter box will be blank. You must make sure the printer is connected to the adapter before you can complete the installation process.
 - b. In the **Channel address** list, select the channel printer's device address. The range is from 00 to FF. The device channel address can be found on the **Find Devices** tab of the BARR/CHANNEL-OUT utility. The address must match the printer's actual address.
 - c. In the **Sense code** list, select the sense code to be used as an IBM 3211 or IBM 3800 printer. This must match the physical printer type you select on the printer's **Device Settings** tab. If you select to use an IBM 3800 printer, the printer's device settings page displays after you finish configuring the port. Select **IBM 3800-Mod 1** under **Physical Printer Type**.
 - d. When you finish configuring the port, click **OK**. This adds the printer and returns you to the **Printer Properties** dialog box so you can configure the spool printer.
6. Click **Banners** to select the header and trailer files and how they will be applied to print jobs (optional). The **Banner Options** dialog box displays.
7. Click **Overlays** to setup overlays and configure how they will be applied to print jobs (optional). If you are printing to an IBM 3800 printer in compatibility mode, you must select the doc.tnj overlay file. By default, the file is located in the \\Program Files\Barr\Spooler\Overlay folder, unless an alternate location was specified during installation. The **Overlay Options** dialog box displays.
8. Click **Advanced** to specify advanced printer options. The **Advanced Printer Options** dialog box displays. Review the following table to select the desired options. Click **OK** to save your changes.

Options	Required	Optional	Don't Use
Printer initialization files		X	
Page layout			X
Code page		X	
If FCB is not found, use default FCB named 'STD'		X	
Printer in Disabled state at startup		X	
Printer can be hidden		X	
Printer does not check jobs for valid data type		X	
Bypass the Windows spooler	X		

Options	Required	Optional	Don't Use
Special: Pass data to printer without conversion			X
Special: Pass the archive format to LPR port			X
Special: Printer uses transform			X

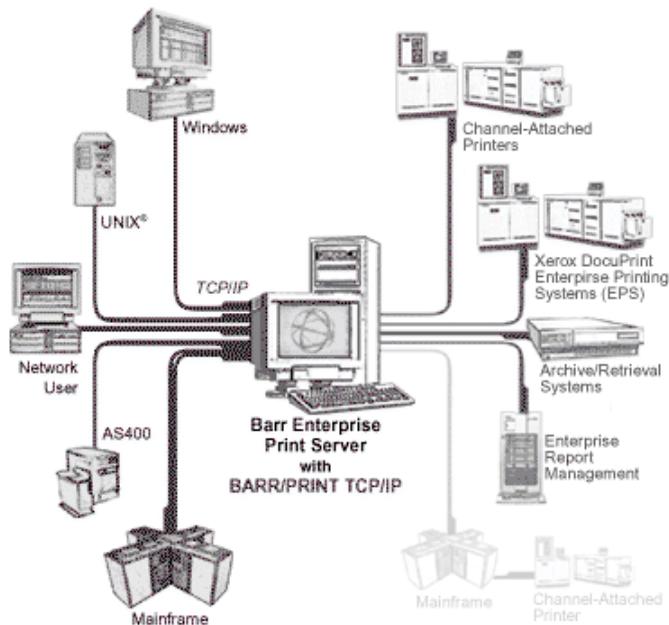
9. Close the Configuration Utility.

BARR/PRINT TCP/IP

chapter 7

Getting Started

BARR/PRINT TCP/IP is a software module of the Barr Enterprise Print Server that allows you to receive data from any TCP/IP-based host (mainframes, UNIX computers, AS/400s, and so on) with LPD/LPR or direct socket connections.



The Barr Enterprise Print Server with BARR/PRINT TCP/IP appears as a remote 4.3 BSD printer to the UNIX host. It implements the LPD to service LPRs from BSD 4.3 and System V hosts, or any type of system that provides LPR emulation. BARR/PRINT TCP/IP also provides a direct socket connection, which might be more appropriate depending on your needs.



If you are unsure if your host has been configured to provide LPR emulation, consult your system administrator, the command reference manual, or the online manual pages for more information.

BARR/PRINT TCP/IP includes the following features.

- Routes print (using BARR/SPOOL) to parallel, serial, network, and S/390 channel-attached printers (using the BARR/PRINT390 module)
- Receives files from multiple hosts such as IBM mainframes, UNIX machines, AS/400s, and Windows Servers and clients
- Supports unspecified file lengths
- Receives data in ASCII (PCL and PostScript), Barr S/370 channel, binary, or VBM (for Xerox Metacode)
- Supports file transfers across a TCP/IP socket
- Automatically routes a single job to multiple locations without duplication
- Supports an unlimited number of LPD queues and the maximum number of socket ports allowed on the computer
- Receives data from any TCP/IP-based host, including mainframes equipped with packages such as IBM's IP Printway and Levi Ray and Shoup's VPS/LCDS

LPD-specific features

- Supports line print queue (LPQ) and line print remove (LPRM)
- Uses RFC variables in the TCP/IP control file, including LPD queue name, job name, and user name, as criteria to route the job to any final destination
- Handles multiple data files with one control file
- Supports multiple control files in a single transmission
- Handles and preserves all control file information
- Customizes banner with control file information
- Supports RFC1179

Follow these procedures to get started with the BARR/PRINT TCP/IP module.

LPD	TCP/IP Socket
7.1 Install and configure the Microsoft TCP/IP Protocol	7.1 Install and configure the Microsoft TCP/IP Protocol
7.2 Add an LPD print queue	7.3 Add a TCP/IP port

7.1 Install and configure the Microsoft TCP/IP Protocol

Complete the following steps to install and configure the TCP/IP Protocol on your Windows workstation. Contact your network administrator to find out if there is a Dynamic Host Configuration Protocol (DHCP) server on your network.



To configure TCP/IP, you must be logged on as a member of the local **Administrators** group on the local computer.

1. Open the Windows Network utility.
2. Right-click the connection to which you want to add a network component, and then select **Properties**.
3. If **Internet Protocol (TCP/IP)** is listed, skip to Step 6. If it is not listed, click **Install**.
4. In the **Select Network Component Type** dialog box, click **Protocol**, and then click **Add**.
5. From the **Network Protocol** list, select **TCP/IP Protocol** and click **OK**.
6. From the **General** tab (for local area connections) or the **Networking** tab (for all other connections), select **Internet Protocol (TCP/IP)**, and then click **Properties**.
7. Configure TCP/IP either automatically or manually.



Contact your network administrator to find out if there is a DHCP server installed on your network.

- **Automatically** – You can automatically configure TCP/IP services if you have a DHCP server on your network. This automatic process ensures easy and accurate installation of TCP/IP because your local computer is configured with the correct IP address, subnet mask, and default gateway.

To configure automatically, select **Obtain an IP address automatically**, and then click **OK**.

- **Manually** – You must configure TCP/IP manually if you do not have a DHCP server on your network, or if you are configuring a Windows server to be a DHCP server. In this case, you must manually enter valid addressing information after the TCP/IP protocol software is installed on your computer. To avoid duplicate addresses, be sure to use the values for IP addresses and subnet masks that are supplied by your network administrator.

To configure manually, select **Use the following IP address**, specify the necessary parameters, and then click **OK**. See your Microsoft Help for more information.

7.2 Add an LPD print queue

The functions of the LPD protocol are centered around the manipulation of a print queue on a local or remote host. You can assign default LPD properties, as well as LPD properties for specific print queues.

1. Open the BARR/PRINT TCP/IP Configuration utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR PRINT TCPIP | **TCPIP Configuration**.)
2. From the **LPD** tab, click Add | **Queue**.
3. Type the queue **Name**, and then click **OK**. The **File Properties** dialog box displays with the <Default> LPR control file command selected. By default, each queue contains a <Default> command and it must be configured before adding any additional commands. This command can be modified, but not removed. Use the following steps to configure the default command.



We recommend you create a different queue for each type of file you will be receiving. For example, to add an ASCII with ASA queue, you would name the queue **ASA**, and then modify the <Default> LPR control file to receive files as **ASCII with ASA carriage control**.

Field	Description	Value
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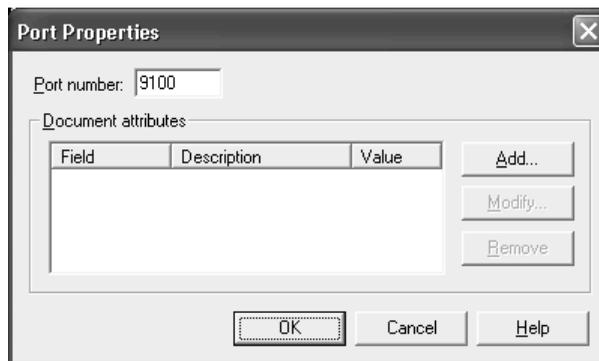
- a. Under **LPR commands**, specify if you want to **Ignore** the control file. BARR/PRINT TCP/IP (DOS) supported printing banner pages based on information in the control file. For the Barr Enterprise Print Server, you can achieve this functionality by using the Make Banner utility. See the *Working with banners* Help topic for more information.
- b. Specify the document attributes. LPD sets these fields to specified values before they are sent to the spool. Click **Add** or select a field and click **Modify** to configure attributes on the **Select Field** dialog box. Select a field and click **Remove** to delete the attribute.

- c. Click **OK**. The Input Conversion Utility displays.
 - d. On the **Format** tab, select the file type you will be receiving and select options as necessary. The options that are available vary depending on the selected file type. See the *Format tab* Help topic for descriptions of each option.
 - e. On the **Options** tab, select an output statement and configure headers from data if necessary. We do not recommend using these options together. If you want to use both of these options, select your settings carefully. See the *Output statements* Help topic for more information. You can also select a code page and specify the number of records to remove if necessary. See the *Options tab* Help topic for descriptions of each option.
 - f. Click **OK**.
4. To define additional LPR commands for the queue, click Add | **LPR Command**. The **File Properties** dialog box displays.
 5. Under **LPR commands**, select the commands contained in the LPR control file.
 6. Follow steps a – f to complete the configuration. Repeat the steps as needed to add additional LPR commands to the queue.
 7. Click **OK** to close the utility. Closing the **LPD** tab by clicking **OK** will automatically save all updated LPD information and refresh the BARR LPD service. All connections to LPD after that point will use the updated information.
 8. Use the LPR command line to send a test document to BARR/PRINT TCP/IP. This will ensure the software is receiving documents. See the *Using the LPR command line approach* Help topic for more information.

7.3 Add a TCP/IP port

You can assign attributes and properties to TCP/IP ports. Complete the following steps to add a TCP/IP port.

1. Open the BARR/PRINT TCP/IP Configuration utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR PRINT TCP/IP | **TCPIP Configuration**.)
2. From the **Socket** tab, click **Add**. The **Port Properties** dialog box displays.



3. Enter the **Port number**. By default, the first port number is 9100 and all subsequent port numbers will increment by 1.
4. If necessary, under **Document attributes**, assign attribute values to the file when it is added to the spool.
 - a. Click **Add**. The **Select Field** dialog box displays.
 - b. Select the section that contains the field from the drop-down list.
 - c. Select the field.
 - d. Enter the **Field value**. This can be entered in decimal or hexadecimal format.
5. Click **OK**. The Input Conversion Utility displays.
 - a. On the **Format** tab, select the file type you will be receiving and select options as necessary. The options that are available vary depending on the selected file type. See the *Format tab* Help topic for descriptions of each option.
 - b. On the **Options** tab, select an output statement and configure headers from data if necessary. We do not recommend using these options together. If you want to use both of these options, select your settings carefully. See the *Output statements* Help topic for more information. You can also select a code page and specify the number of records to remove if necessary. See the *Options tab* Help topic for descriptions of each option.
 - c. Click **OK**.
6. Click **OK** to close the utility.

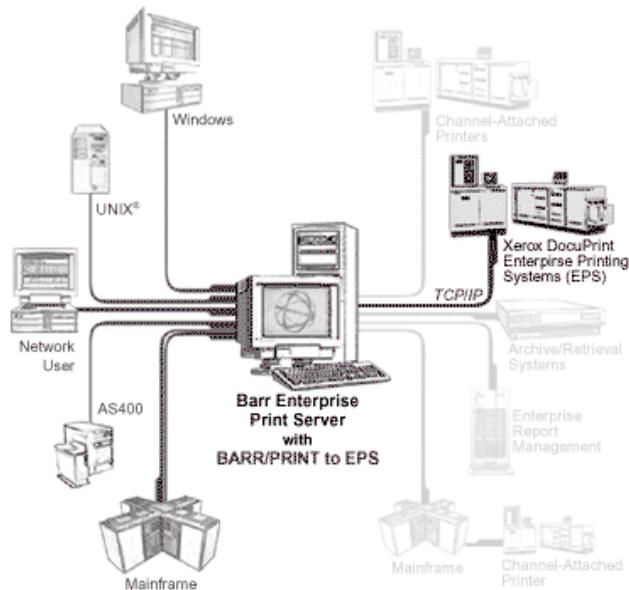
BARR/PRINT to EPS

chapter

8

Getting Started

BARR/PRINT to EPS is a software module of the Barr Enterprise Print Server. BARR/PRINT to EPS transfers LCDS and Metacode files to Xerox DocuPrint Enterprise Printing Systems (EPS) and DocuTech 2000 Series Production Publishers using TCP/IP. With BARR/PRINT to EPS and the Barr Enterprise Print Server, you can connect to virtually any source that produces Xerox print files and automatically route them to your network-attached EPS printer.



BARR/PRINT to EPS includes the following features and benefits.

- Enables you to upgrade to Xerox's new DocuPrint 180 EPS or the DocuTech 2000 Series Production Publishers without making any changes to your host
- Ensures accurate delivery of LCDS and Metacode data
- Supports conversion of ASA character control to machine carriage control to ensure document integrity
- Accomplishes remote LCDS and Metacode printing without the need for SNA hardware

To send LCDS or Metacode data to the Xerox printer, you must define a printer to route the data. You must also configure the Spool Window for routing documents to the spool printer. This is done by adding the Dest. Device column to the Spool Window, specifying the destination device for the spool printer, and setting the destination device for incoming documents.

Complete the following steps to get started with BARR/PRINT to EPS.

1. Define a printer
2. Configure the Spool Window

8.1 Define a printer

To print data to Xerox DocuPrint Enterprise Printing Systems (EPS) or DocuTech 2000 Series Production Publishers, you need to route jobs into the spool from other programs and define a Windows printer and spool printer for sending the jobs to the Xerox printer. Complete the following steps to print to a Xerox printer.



To add a Windows printer, you must be a member of the **Administrators** group. If you are using Windows 2000, you can also be a member of the **Printer Operators** or **Server Operators** group or a **Power User** on a workstation.

When printing, there is no way for the destination device to know whether it has received a complete file. Unless it receives a partial record, the destination device might not detect an error in transmission.

1. Open the Configuration Utility.
2. From the **Spool Printers** tab, click **Add**. The **Printer Properties** dialog box displays.
3. Enter a printer **Name**. The printer name cannot contain a backslash (\). This name displays in the Spool Window's printer list and is called the spool printer.
4. Under **Physical printer**, select **New**. From the drop-down list, select **Print to a Xerox EPS** and click **OK**. A message box will display when the printer has been successfully created.
5. Before using the printer, you must configure the port. Click **Modify Port** to display the **IP Port Configuration** tab pages.
 - a. From the **IP Configuration** tab, specify the **IP address** and **Port number** to write the file to. The port number is 9100 by default.
 - b. From the **File Format** tab, and select the **Xerox File Transfer (EPS)** format to send LCDS or Metacode data.
 - c. When you finish configuring the port, click **OK**. This adds the printer and returns you to the **Printer Properties** dialog box so you can configure the spool printer.

- Under **Options**, click **Advanced** to specify advanced printer options. The **Advanced Printer Options** dialog box displays. Review the following table to select the required and desired options. Click **OK** to save your changes.



When printing to a Xerox EPS, verify EBCDIC code page **37 – English (U.S./Canada)** is selected.

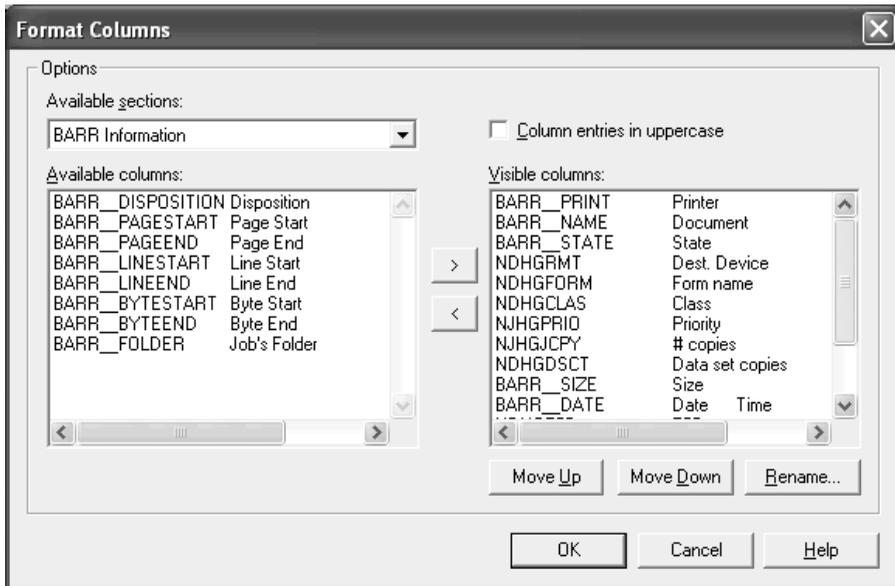
Options	Required	Optional	Don't Use
Printer initialization files			X
Page layout			X
Code page	X		
If FCB is not found, use default FCB named 'STD'		X	
Printer in Disabled state at startup		X	
Printer can be hidden		X	
Printer does not check jobs for valid data type		X	
Bypass the Windows spooler	X		
Special: Pass data to printer without conversion			X
Special: Pass the archive format to LPR port			X
Special: Printer uses transform		X	

- Close the Configuration Utility.

8.2 Configure the Spool Window

To send data to a Xerox printer, you must use the header's NDHGRMT Dest. Device field as part of the routing criteria. This is done by adding the Dest. Device column to the Spool Window and setting the destination device for printers and documents. The Dest. Device field must be populated with the queue name used on the Xerox printer. If the field remains blank, it will be set to QUEUE when data is sent.

1. Open the Spool Window. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Spool Window**.)
2. On the menu bar, select View | **Format Columns**. The **Format Columns** dialog box displays.



3. From the **Available sections** list, select **Data Set Header General Section**.
4. From the **Available columns** list, select **NDHGRMT Dest. Device**.
5. Click the right arrow (>) to add the field to the **Visible columns** list.
6. Arrange the column order by selecting a field in the **Visible columns** list and clicking **Move Up** and **Move Down**. The first column in the list displays as the leftmost column on the Spool Window. You can also rename the column heading by clicking **Rename**.
7. When you have finished selecting and arranging columns, click **OK**.
8. On the Spool Window, right-click the printer and select **Disable**. Click the **Dest. Device** column for your printer, enter the name of the queue defined on the Xerox printer, and then click **OK**.

9. Use one of the following methods to set the document's Dest. Device to the name of the queue defined on the Xerox printer.
 - For documents received with BARR/PRINT CHANNEL, BARR/RJE, BARR/FTP, BARR/NJE, or TCP/IP socket, set the field manually on the Spool Window. To do this, click the **Dest. Device** column for your document, enter the name of the queue defined on the Xerox printer, and then click **OK**.



You can also create an override table to populate the NDHGRMT job header field automatically. See the *Using an override table to auto-assign header fields* Help topic for more information.

- For documents received with LPD, you can match the queue name specified on the TCP/IP host to the queue name specified on the Xerox printer.
 - For documents sent with Print Utility, you can assign the value when you send the files to the spool. See the *Adding files to the spool* Help topic for more information.
10. Right-click the printer and select **Ready**.
 11. Right-click the document and select **Ready**.



You can save your Spool Window column settings to a file by selecting View | **Save Settings As** on the menu bar.

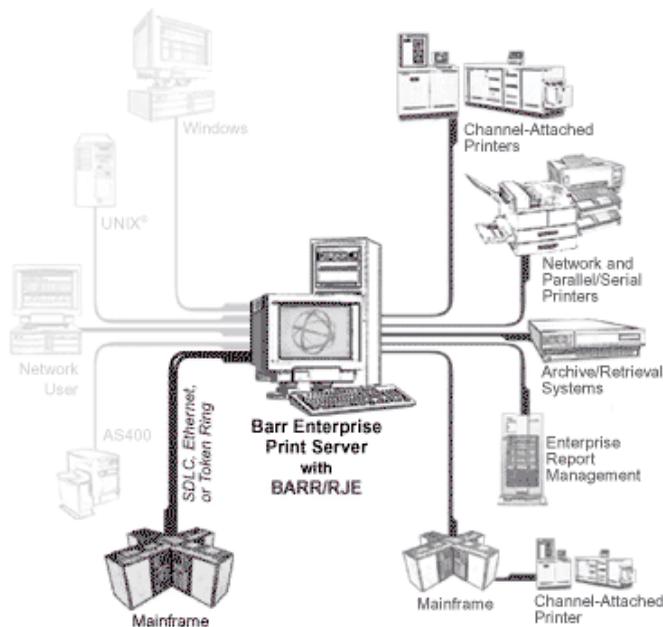
Notes:

BARR/RJE

chapter 9

Getting Started

BARR/RJE is a software module of the Barr Enterprise Print Server that allows you to send and receive files to and from multiple IBM mainframes via IP or SNA. Applications for BARR/RJE include integration of mainframe and open systems networks and enterprise-wide print and output management. BARR/RJE communicates with the mainframe by emulating an IBM 3770, a device that provides batch transmissions via IP or SNA connections to mainframe job entry systems.



BARR/RJE connects in multiple ways:

- IP via the Enterprise Extender (HPR/IP) link
- DLSw via connections to your mainframe through special routers that encapsulate SNA protocols within a TCP/IP packet
- 802.2 LLC2 across token ring or Ethernet to host

- SDLC connections (at up to 2.048 Mbps) with V.35, X.21, RS530, RS449, or V.24/RS232 cable
- SNA gateways such as Microsoft HIS, Microsoft SNA Server, or Microsoft SNA Workstation. The SNA gateway connects to the mainframe through DLC, SDLC, or CHANNEL (Bus & Tag or ESCON). BARR/NJE connects to the SNA gateway via TCP/IP, IPX/SPX, or NetBEUI protocols.

BARR/RJE supports the following features and benefits.

- Sends print to an unlimited number of network-attached printers without any additional host software
- Eliminates SNA traffic on your LAN/WAN when used with the Enterprise Extender (HPR/IP) link
- Includes built-in remote console to host-based job entry systems
- Enables unattended operation with auto-dial, auto-logon, and auto-restart
- Includes built-in communications scope and status line for monitoring and diagnostics

For new users, setting up BARR/RJE requires configuring the host and the computer. If you are upgrading from DOS-based BARR/RJE, you must import the DOS configuration file and verify the conversion settings. The extent to which you configure the host and the computer depends on the complexity of your RJE network. The following sections were developed to provide minimal interruption to your host system and must be followed in order.

New Users	Upgrade Users
9.1 Before you begin	9.1 Before you begin
9.2 Configure for new users	9.3 Upgrade from DOS
9.4 Configure the communication link	9.4 Configure the communication link
9.5 Connect to the host	9.5 Connect to the host
9.6 Communicate with the host	9.6 Communicate with the host

9.1 Before you begin

Following these steps before you begin enables you to install and configure BARR/RJE easier. It is important that you follow these steps in order.

1. Obtain necessary access rights
2. Install communications software (MS/LUA and 802.2 LLC2 only)
3. Install the hardware and software
4. Enable the retain feature

Obtain necessary access rights

To install and configure the BARR/RJE software, you must be a member of the local **Administrators** group on the computer where you install the Barr Enterprise Print Server. If you are assigned the **Configure - RJE** user access right on the computer to which you are trying to connect, but are not a member of the **Administrators** group, the RJE Configuration Utility will operate in read-only mode. To access RJE Console, you must be assigned the **RJE Console** user access right.

Install communications software (MS/LUA and 802.2 LLC2 only)

You must install any necessary communications software that will be used to communicate with the host.

MS/LUA connections

The SNA gateway (Microsoft SNA Server or Microsoft HIS) must be installed before you can connect to the host using the MS/LUA link.

802.2 LLC2 connections

The DLC protocol must be installed before you can configure the 802.2 LLC2 communication link. Complete the following steps to install the DLC protocol.



To install the DLC protocol, you may need to edit the registry if you are connecting to a 3174 cluster controller that assigns a locally administered address (LAA). Contact Barr Systems Technical Support for information on this procedure.



Windows XP users must first download and install the DLC protocol from <http://www.microsoft.com/downloads/release.asp?ReleaseID=34428&area=search&ordinal=1> before completing the following steps.

1. Open the Windows Network utility.
2. Right-click the connection to which you want to add a network component, and then select **Properties**.
3. Click **Install**.
4. In the **Select Network Component Type** dialog box, click **Protocol**, and then click **Add**.
5. From the **Network Protocol** list, select **DLC Protocol** and click **OK**.
6. Click **Close**.

Install the hardware and software

Be sure you install the software and hardware key included with your package (see Chapter 2). If you are adding the BARR/RJE module to a previous installation of the Barr Enterprise Print Server software, then you must follow the steps in the *Using Key Client* Help topic to upgrade your hardware key. The software will operate in keyless demonstration mode unless it detects the hardware key on one of your computer's parallel ports or USB port.

Enable the retain feature

You can configure the Barr Enterprise Print Server to automatically save or retain copies of printed or deleted spool documents. If you need to print a retained document, you can restore it from the Retain Window to the Spool Window.

You might want to enable the retain feature so you can have backup copies of documents after they print. The retain feature is also helpful while you are learning to use the Barr Enterprise Print Server because you can reuse your test files or recover from operator errors.

Complete the following steps to enable the retain feature.

1. Open the Configuration Utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Configuration Utility**.)
2. Select the **Spool and Retain** tab and specify the **Retain period**.
3. Click **OK** to save your changes and close the utility.

9.2 Configure for new users

This section describes the steps necessary for new users. If you are upgrading from the BARR/RJE DOS product, please skip to Section 9.3. For new users, setting up BARR/RJE requires configuring the host and the computer.

Complete the following procedures to configure BARR/RJE. These steps were developed to provide minimal interruption to your host and must be followed in order.

1. Configure the host
2. Define a connection
3. Enter the RJE description
4. Add the communication link

Configure the host

For BARR/RJE to communicate with your host, your host programmer must define BARR/RJE to your host as one or more RJE remotes. Each RJE remote requires a separate host definition.

The following sections explain VTAM, JES2, JES3, and POWER host configuration. All users must configure VTAM. If you are using an HPR/IP (Enterprise Extender) connection, you must also configure TCP/IP and a VTAM major node definition. Depending on your host system, JES2, JES3, or POWER host configuration is also required.



Send the pink *BARR/RJE Host Definition Information* form inserted in this manual to the host programmer to fill out. The host programmer will return it with the completed parameters. You must enter some of these parameters in the BARR/RJE software. Keep the form for your records.

VTAM host configuration

For each Barr remote, your host programmer must enter the PU and LU definitions in VTAM. To ensure the correct parameters are used, sample VTAM definitions are provided when you configure the 802.2, HPR/IP, and SDLC communication links. You can view the sample definitions by clicking **NCP** and **Physical Unit** on the RJE Configuration Utility's **Communication Link** tab. The definitions will vary depending on the link and connection properties. For more information, see the *Communication link parameters* Help topic. Sample VTAM definitions are not available for MS/LUA connections. See your Microsoft SNA Server or Microsoft HIS Help for more information.



See the *Configuring VTAM* Help topic for more information.

Add LUs

You must add the appropriate number of additional LUs for each printer, punch, and reader, as well as 2 LUs for the RJE Console ($\#PR + \#PU + \#RD + 2$). For example, if your remote is configured for 2 printers, 1 punch, and 1 reader in BARR/RJE, you will add 6 LUs to the PU definition ($2PR + 1PU + 1RD + 2$).

Activate the PU

If you do not have the **ISTATUS=ACTIVE** parameter in your VTAM definition, then enter the following commands at your host console.

```
v net,inact,id=VTAMMEMBER
v net,act,id=VTAMMEMBER
```

Where **VTAMMEMBER** is the library member that contains the PU definition.

TCP/IP and VTAM major node configuration (HPR/IP only)

To support HPR/IP (Enterprise Extender) connections, your host programmer must make one time configuration changes to your TCP/IP profile, VTAM startup, and XCA major node. See the *Configuring TCP/IP and VTAM major node definition* Help topic for more information.

JES2, JES3, or POWER host configuration

Define the RJE remote to your host system. Depending on your host system type, use one of the following methods.

- For JES2, add another remote in SYS1.PARMLIB (JES2PARM).
- For JES3, add another remote in SYS1.PARMLIB(JES3IN00).
- For POWER, enter the POWER Generation Macros.

Your host system programmer must enter the JES2, JES3, or POWER RJE definition statements for each remote. For more advanced macros and parameters, contact IBM. You can access the recommended JES2, JES3, or POWER remote definition by clicking **Remote Definition** on the RJE Configuration Utility's **RJE Description** tab. The parameters that appear in the dialog box vary depending on the settings selected on the **RJE Description** tab.



See the *Configuring JES2*, *Configuring JES3*, or *Configuring POWER* Help topics for more information.

Define a connection

Use the RJE Configuration Utility to define and configure connections for communicating with the host. The procedures outlined in this section are required. Refer to the *Configuring BARR/RJE optional settings* Help topic to configure more advanced BARR/RJE settings.



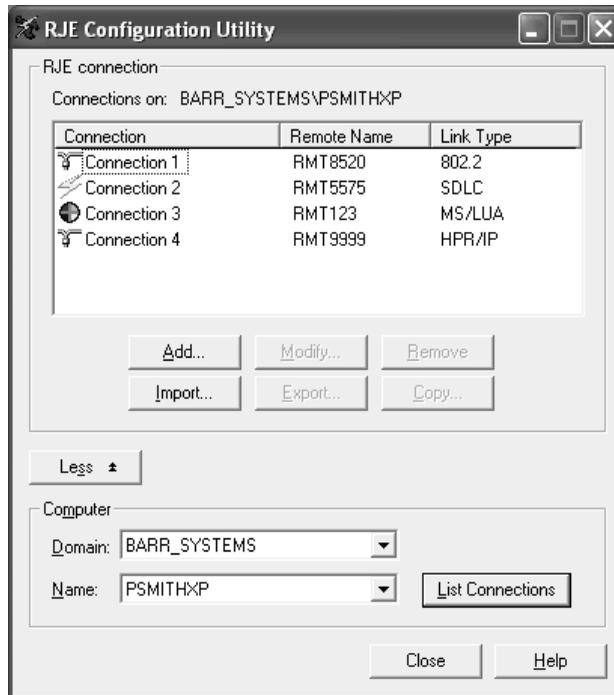
To configure BARR/RJE, you must be a member of the local **Administrators** group on the computer you are trying to connect to. If you have been assigned the **Configure - RJE** user access right but are not a member of the **Administrators** group, the RJE Configuration Utility will operate in read-only mode.

Complete the following steps to define a BARR/RJE connection.

1. Open the RJE Configuration Utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR RJE | **RJE Configuration**.)



If you are working with connections located on a different computer, click **More** on the RJE Configuration Utility. Under **Computer**, select the appropriate **Domain** and computer **Name** from the drop-down lists. Then click **List Connections** to display the connections on the selected computer.



2. Click **Add**. The **Add Connection** dialog box displays.
3. Type a connection name and click **OK**. The connection name cannot contain the following characters: \ / : * ? " < > |. The **Connection Properties** tab pages display.

Enter the RJE description

Complete the following steps to configure the RJE settings and print sample host definitions. Your host programmer should have provided these parameters on the pink *BARR/RJE Host Definition Information* form inserted in this manual.

1. Select the **RJE Description** tab.

The screenshot shows a dialog box titled "Connection Properties - Host A on PSMITHXP". It has three tabs: "Forms", "Commands", and "Connection Control". The "Forms" tab is selected, and within it, the "RJE Description" sub-tab is active. The "Settings" section contains the following fields:

- RJE system: JES2 (dropdown)
- Remote name: RMT9999 (text box)
- Password: (empty text box)
- APPLID: JES2 (text box)
- LOGMODE: BATCH (text box)
- Logon type: Formatted (dropdown)
- Logon data: (empty text box)

The "Connection Control" section contains three dropdown menus:

- Printers: 1
- Punches: 1
- Readers: 1

At the bottom of the dialog, there are four buttons: "OK", "Cancel", "Apply", and "Help".

2. Select the **RJE system**. You can select **JES2**, **JES3**, or **POWER**.
3. Enter the **Remote name** and **Password** that the host programmer assigned to the BARR/RJE system. These values must match the values entered when configuring JES2, JES3, or POWER.
4. In the **APPLID** box, enter the application name of your host RJE system used for running the host spooler.
5. In the **LOGMODE** box, enter the name of the associated logmode entry in the host's logmode table. For JES2 and JES3, the IBM default value is BATCH and will not need to be changed for most users. For POWER, the default value is RJE3790B.
6. Select the **Logon type**. You can select a **Formatted**, **Formatted Override**, **Character Coded**, or **Host Initiated** logon type. The default type is Formatted.
7. If you selected a **Formatted Override** or **Character Coded** logon type, you can enter logon text in the **Logon data** box.

8. Select the number of **Printers, Punches, and Readers**. The numbers you specify must match the **NUMPRT, NUMPUN, and NUMRDR** parameters defined in the remote definition statement when configuring JES2, JES3, or POWER. For POWER, there can only be three printers, one punch, and one reader.
9. The host programmer must set certain host parameters for BARR/RJE to operate. You will save time and effort getting your system running if you adhere to the recommended host definition. Click **Remote Definition** and **Logmode Table Entry** to view sample statements the host programmer needs to enter in the system parameter libraries. The parameters that display vary depending on the settings configured on the **RJE Description** tab. The parameters that change are displayed in blue text on the dialog box.

Add the communication link

You must configure your communication link for the appropriate link type: 802.2 LLC2, HPR/IP (Enterprise Extender), SDLC, or MS/LUA. Follow the procedures in Section 9.4 to configure your communication link.

9.3 Upgrade from DOS

This section describes the steps necessary to upgrade from the BARR/RJE DOS product. If you are configuring a new remote, or if you are not upgrading from the DOS product, please refer to Section 9.2.

If you are upgrading from the BARR/RJE DOS product, you must import the DOS configuration file, verify the conversion settings, and configure the communication link. The extent to which you configure the host and the computer depends on the complexity of your RJE network.

Conversion is supported for the following computer connections.

- SDLC connections for switched and non-switched lines
- 802.2 connections for 3725, 3745, OSA/3172, local 3174 (channel-attached), or remote 3174 (SDLC-attached) cluster controllers



If you are connecting to a local 3174 or remote 3174 cluster controller, you may need to modify the host configuration with the MAC address of the new system, unless the new system can be assigned the same locally administered MAC address as the old system. For systems to simultaneously connect to the same network, each system on the network must have a unique MAC address.

Complete the following steps to convert from the DOS-based BARR/RJE to Windows-based BARR/RJE.

1. Import the DOS configuration file
2. Verify the conversion

Import the DOS configuration file

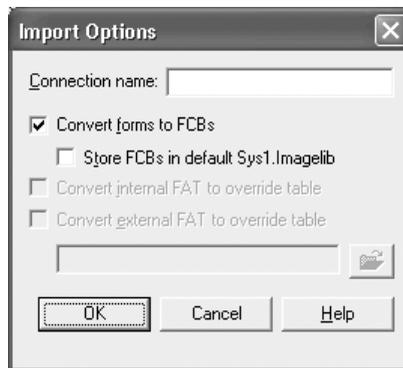
The import feature supports configuration files for BARR/RJE DOS version 94A17 or later. The following parameters will be extracted: RJE Description, Communication Link, Print Spool Description, Printer Forms settings, function keys, Printer Control Data, Spool header from data, File Attribute Tables, and device-specific parameters.



Use the Operator Console while importing the DOS configuration file to display warning messages that indicate potential conversion errors. To display messages specific to the conversion process, on the **Options** dialog box select the **RJE Configuration** module and set the priority level to **Technical Trace**. See the *Using the Operator Console* Help topic for more information on creating a trace file.

Complete the following steps to import your BARR/RJE configuration file.

1. Place your BARR/RJE (DOS) configuration file in a location where it is accessible to the computer running Barr Enterprise Printer Server.
2. Open the RJE Configuration Utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR RJE | **RJE Configuration**.)
3. Click **Import**. The **Import Configuration** dialog box displays.
4. Select the file to import and click **Open**. Connections defined using the BARR/RJE DOS product will typically have a .cfg extension. The **Import Options** dialog box displays.



5. Enter a **Connection name**. The connection name cannot contain the following characters: \ / : * ? " < > | .
6. Choose if you want to **Convert forms to FCBs**. The converted forms are stored in the path specified for the **Resource** folder on the Configuration Utility's **Resource Folders** tab. The forms will be stored in a subfolder based on the remote name specified in the BARR/RJE DOS configuration file. The FCB name will be based on the form name from the BARR/RJE DOS configuration file. For example, the form name could be FCB2STD1, where STD1 is the name of the DOS form. If you receive a duplicate form name from the same remote, .DUP will be added to the end of the file name.

If you are upgrading from the DOS software and are only going to use one connection, we recommend selecting **Store FCBs in default Sys1.Imagelib**. This will place the FCBs in the same directory, but use the \\Default\Sys1.Imagelib folder.

7. Choose if you want to **Convert internal FAT to override table** or **Convert external FAT to override table**. If you are importing an external FAT, click the folder button and browse to select the file containing the FAT. The override tables will be stored in the folder specified on the Configuration Utility's **Resource Folders** tab. The connection name will be used as the override table name. You must set the override table as the **Active override table** on the **Override Table** tab. See the *Working with override tables* Help topic for more information.



If you have FATs specified that were not converted during the import, you can use the DOS FAT Conversion Utility to convert the files. See the *DOS FAT Conversion Utility* Help topic for more information.

8. Click **OK**.

Verify the conversion

Once you have imported the BARR/RJE DOS configuration file, you can check the log file for conversion errors. Also, it is important that you compare the settings on the **RJE Description** and **Communication Link** tabs in the RJE Configuration Utility to the settings in your original BARR/RJE DOS configuration.

1. Review the log file for conversion problems. Use Windows Explorer to browse to \\Program Files\Common Files\Barr\Log. The log file is named RJE_import_*Configurationfilename*.log.
2. Review the parameters on each tab to verify that parameters were imported correctly and to correct the parameters listed in the log file.
 - **RJE Description tab** – Specifies RJE system parameters for the BARR/RJE software and the host RJE system. It is important that you verify all of these parameters with your host programmer. These values must match the values entered on the host.



You are not required to change the statements on the host; however, it is suggested that you use the sample remote definition and logmode table entry statements, which have been optimized for performance.

- **Communication Link tab** – Specifies the BARR/RJE communication protocol and physical attachment between the host system and remote computer. Produces sample communication link parameter statements (NCP and Physical Unit) for the host programmers. These values must match the values entered on the host.



You are not required to change the statements on the host; however, it is suggested that you use the sample NCP and Physical Unit statements, which have been optimized for performance. Refer to the *Communication link parameters* Help topic for more information.

- **Device Control tab** – Specifies features that affect output files received on the source devices.
 - **Forms tab** – Specifies a form for an RJE print stream (PR1 to PR7). Forms enable files received on the print stream to print in the correct format.
 - **Commands tab** – Assigns frequently-used commands from the Barr software to specific command buttons. In Windows-based BARR/RJE, the command button labels are limited to 15 characters. Verify the labels are meaningful.
 - **Connection Control tab** – Specifies startup and restart options. Verify **Auto-connect** options and **Restart actions**.
3. If **Convert forms to FCBs** was selected during the import, use the Make FCB utility to verify that the DOS forms were correctly converted. The converted forms are stored in the path specified for the **Resource** folder on the Configuration Utility's **Resource Folders** tab. The forms will be stored in a subfolder based on the remote name specified in the BARR/RJE DOS configuration file.
- If **Store FCBs in default Sys1.Imagelib** was selected, the converted forms will be in the same directory, but in the \\Default\Sys1.Imagelib folder.
4. The import process converts overlay resource files for use with BARR/SPOOL. The converted resource files are stored in the path specified for the **Forms overlay** folder on the Configuration Utility's **Resource Folders** tab. Once you have added printers, you can set up the forms overlay options from the Configuration Utility's **Overlay Options** dialog box. See the *Working with overlays* Help topic for more information.

9.4 Configure the communication link

This section describes how to configure the communication link for the appropriate link type. The section has been divided into four subsections based on the link type. Follow the steps in the appropriate section.

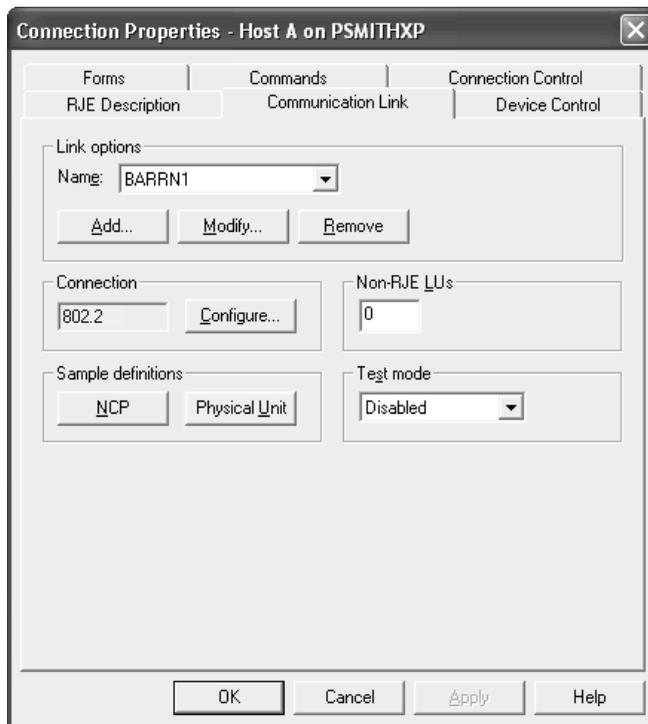
- 802.2 LLC2
- HPR/IP (Enterprise Extender)
- SDLC
- MS/LUA

802.2 LLC2

The BARR/RJE software with the 802.2 communications link emulates an IBM 3777 PU type 2 device and strictly follows the IBM SNA protocol using IEEE 802.2 DLC. You must provide a network connection that appears to the BARR/RJE device as if it is connected by the mainframe communications device to a local or adjacent token ring (FEP, 3172/3174, OSA, SNA gateway, or host-attached router).

Complete the following steps to add an 802.2 LLC2 communication link and configure the link properties. Use the information provided by your host programmer on the pink *BARR/RJE Host Definition Information* form to configure the link settings. You must install the DLC protocol before you can use an 802.2 LLC2 communication link (see Section 9.1).

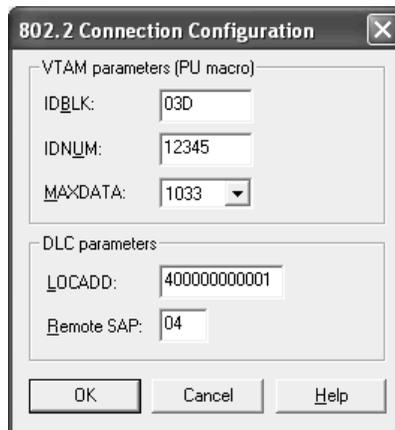
1. Select the RJE Configuration Utility's **Communication Link** tab.



2. Under **Link options**, an 802.2 LLC2 link has been created by default. To update the default link, select **BARRN1** and click **Modify**. The BARR/SNA 802.2 Link Service configuration utility's **Link** tab displays. Complete the following steps to configure the link.



- a. Select the **Adapter** from the drop-down list.
 - b. In the **Local SAP** box, enter the local (RJE computer) service access point (SAP) hexadecimal value used to communicate with the host computer. The default value is 04. Other choices are multiples of 04 up to the maximum of EC.
 - c. Click **OK** to return to the **Communication Link** tab. The link will be automatically named **BARRN n** .
3. Under **Connection**, click **Configure**. The **802.2 Connection Configuration** dialog box displays. Complete the following steps to configure the connection.

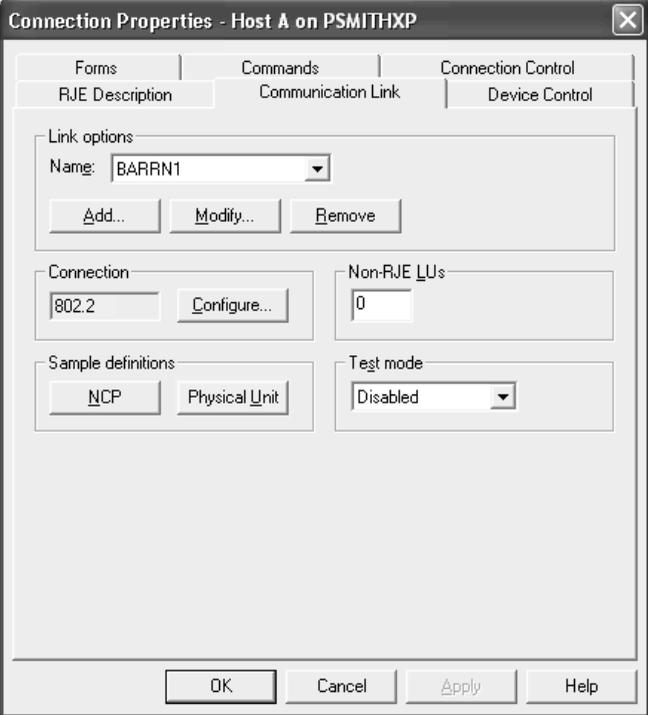


- a. In the **IDBLK** box, enter the appropriate hexadecimal value. This parameter will be used by the host to identify the remote PU definition. The default value is 03D.
 - b. In the **IDNUM** box, enter the appropriate value. This parameter will be used by the host to identify the remote PU definition. The default value is 12345.
 - c. In the **MAXDATA** box, select the maximum amount of data you can send on the PU in one frame. This value includes nine bytes of header information plus the data length. For JES2 and JES3, the default value is 1033. For POWER, the default value is 265.
 - d. In the **LOCADD** box, specify the MAC address of the network card for the host computer you are trying to reach. The value must be a 12-digit hexadecimal value. The default value is 400000000001.
 - e. In the **Remote SAP** box, specify the remote (host) SAP hexadecimal value used to communicate with the host computer. The default value is 04. Other choices are multiples of 04 up to the maximum of EC.
 - f. Click **OK** to return to the **Communication Link** tab.
4. Specify the number of **Non-RJE LUs**. This sets the starting LU number, allowing you to skip any non-RJE LUs defined in the RJE remote definition. This skips any 3270 or IPDS/AFP LUs. The default value is 0.
 5. Click **NCP** and **Physical Unit** to view sample definitions for the selected link. The definitions will vary depending on the link and connection properties. The parameters affected by the settings you changed are displayed in blue text. For more information, see the *Communication link parameters* Help topic.
 6. Select whether to use the software in **Test mode**. In test mode, you can use all the BARR/RJE functions, but the software does not connect to the host computer. Test mode is useful when learning about the software or testing software features.
 7. Use the other tab pages to configure additional settings if necessary. See the *Configuring BARR/RJE optional settings* Help topic for more information.
 8. When you are finished configuring the connection, click **OK**. If you created a reader on the **RJE Description** tab, a dialog displays asking if you would like the RJE Configuration Utility to automatically create the RJE readers needed for communicating with the host. We recommend selecting **Yes** and allowing BARR/RJE to create the following necessary devices. You must change the state of all printers in the Spool Window to Disabled before BARR/RJE creates the devices. Once the readers have been created, you must restart the BARR SpoolCore service for your changes to take effect. If you select **No**, you will need to manually configure the RJE readers.
 - To route files from a program to the Spool Window, the printer *Connection name* - Send to Host is created. This allows you to print directly from a program by selecting File | **Print** on the menu bar.
 - To route files from the Spool Window to the host, a spool printer is created for each reader specified. These printers appear in the Spool Window with the name *Connection name* - RD*n*. To view the newly created printers, you must restart the BARR SpoolCore service.

HPR/IP (Enterprise Extender)

Complete the following steps to add an HPR/IP communication link and configure the link properties. Use the information provided by your host programmer on the pink *BARR/RJE Host Definition Information* form to configure the link settings.

1. Select the RJE Configuration Utility's **Communication Link** tab.



The screenshot shows a dialog box titled "Connection Properties - Host A on PSMITHXP". The dialog has three tabs: "Forms", "Commands", and "Connection Control". The "Communication Link" sub-tab is selected under "Connection Control". The "RJE Description" sub-tab is also visible. The dialog contains the following fields and controls:

- Link options:** A dropdown menu for "Name" is set to "BARRN1". Below it are buttons for "Add...", "Modify...", and "Remove".
- Connection:** A text field contains "802.2" with a "Configure..." button next to it.
- Non-RJE LUs:** A text field contains "0".
- Sample definitions:** Two buttons labeled "NCP" and "Physical Unit".
- Test mode:** A dropdown menu is set to "Disabled".

At the bottom of the dialog are buttons for "OK", "Cancel", "Apply", and "Help".

2. Under **Link options**, an HPR/IP link has been created by default. To update the default link, select **BARRIP1** and click **Modify**. The BARR/SNA HPR/IP Link Service configuration utility's **Link** tab displays. Complete the following steps to configure the link.

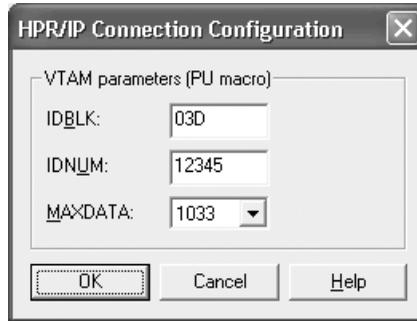
The screenshot shows a dialog box titled "BARR/SNA HPR/IP Link Service - BARRIP2" with a close button (X) in the top right corner. The dialog has two tabs: "Link" (selected) and "Trace". The "Link" tab contains three sections:

- Network node server:** A text box labeled "Host name or IP address:".
- Parameters:** Two text boxes labeled "NETID:" and "CPNAME:".
- Version:** Two text boxes labeled "SnaHprlp.dll:" (with value "5.48.0.010") and "SnaPcfg.dll:" (with value "8, 88, 8, 888").

At the bottom of the dialog are four buttons: "OK", "Cancel", "Apply", and "Help".

- a. Enter the **Host name or IP address** of the Network Node Server. This must match the name specified during TCP/IP configuration.
- b. Enter the **NETID** (network name) for the HPR/IP link service. This must match the name specified for the **NETID** parameter in VTAM. The value must be text with a maximum of eight characters.
- c. Enter the **CPNAME** (control point name) for the HPR/IP link service. If you are not using Autogen, this must match the name specified for the **CPNAME** parameter in VTAM. The value must be text with a maximum of eight characters.
- d. Click **OK** to return to the **Communication Link** tab. The link will be automatically named **BARRIPn**.

- Under **Connection**, click **Configure**. The **HPR/IP Connection Configuration** dialog box displays. Complete the following steps to configure the connection.



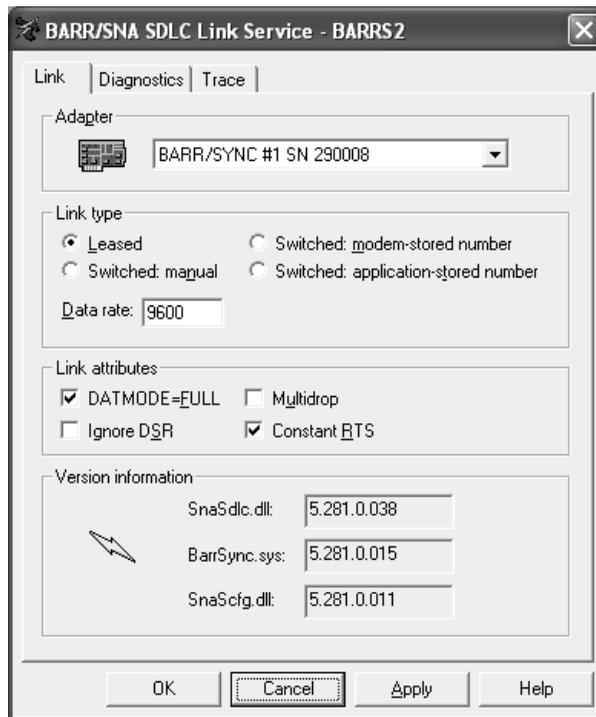
- In the **IDBLK** box, enter the appropriate hexadecimal value. This parameter will be used by the host to identify the remote PU definition. The default value is 03D.
 - In the **IDNUM** box, enter the appropriate value. This parameter will be used by the host to identify the remote PU definition. The default value is 12345.
 - In the **MAXDATA** box, select the maximum amount of data you can send on the PU in one frame. This value includes nine bytes of header information plus the data length. For JES2 and JES3, the default value is 1033. For POWER, the default value is 265.
 - Click **OK** to return to the **Communication Link** tab.
- Specify the number of **Non-RJE LUs**. This sets the starting LU number, allowing you to skip any non-RJE LUs defined in the RJE remote definition. This skips any 3270 or IPDS/AFP LUs. The default value is 0.
 - Click **Physical Unit** to view a sample definition for the selected link. The definition will vary depending on the link and connection properties. The parameters affected by the settings you changed are displayed in blue text. For more information, see the *Communication link parameters* Help topic.
 - Select whether to use the software in **Test mode**. In test mode, you can use all the BARR/RJE functions, but the software does not connect to the host computer. Test mode is useful when learning about the software or testing software features.
 - Use the other tab pages to configure additional settings if necessary. See the *Configuring BARR/RJE optional settings* Help topic for more information.

8. When you are finished configuring the connection, click **OK**. If you created a reader on the **RJE Description** tab, a dialog displays asking if you would like the RJE Configuration Utility to automatically create the RJE readers needed for communicating with the host. We recommend selecting **Yes** and allowing BARR/RJE to create the following necessary devices. You must change the state of all printers in the Spool Window to Disabled before BARR/RJE creates the devices. Once the readers have been created, you must restart the BARR SpoolCore service for your changes to take effect. If you select **No**, you will need to manually configure the RJE readers.
 - To route files from a program to the Spool Window, the printer *Connection name* - Send to Host is created. This allows you to print directly from a program by selecting File | **Print** on the menu bar.
 - To route files from the Spool Window to the host, a spool printer is created for each reader specified. These printers appear in the Spool Window with the name *Connection name* - RD*n*. To view the newly created printers, you must restart the BARR SpoolCore service.

SDLC

Complete the following steps to add an SDLC communication link and configure the link properties. Use the information provided by your host programmer on the pink *BARR/RJE Host Definition Information* form to configure the link settings.

1. Select the RJE Configuration Utility's **Communication Link** tab.
2. Under **Link options**, an SDLC link has been created by default. To update the default link, select **BARRS1** and click **Modify**. The BARR/SNA SDLC Link Service configuration utility's **Link** tab displays. Complete the following steps to configure the link.



- a. From the **Link** tab, select the **Adapter** to use with the link service.
- b. Select the **Link type** based on your communications link, either leased or switched. The default link type is Leased.
 - **Leased** – Use when the communications line is a dedicated or leased line that maintains a constant connection to the host.
 - **Switched: manual** – Use when the communications line is a standard telephone line and the number will be dialed manually by the operator.

- **Switched: modem-stored number** – Use when the communications line is a standard telephone line and the modem is configured to dial the number when it raises DTR (Data Terminal Ready).
 - **Switched: application-stored number** – Use when the communications line is a standard telephone line and the SNA gateway stores the telephone number and dials for you.
- c. Specify the **Data rate** for communications, if necessary. This value can be changed only when the **Leased** link type is selected. All other link types will use the default setting, 9600, to issue modem commands.
- d. Select the link attributes as necessary. Choose from the following options:
- **DATMODE=FULL** – Full duplex is simultaneous, two-way transmission. You can send and receive data simultaneously, which results in twice the throughput. You can even improve one-way throughput because you can receive acknowledgments while you send data. This option is selected by default.
 - **Multidrop** – If your host connection is provided through a multidrop or line sharing configuration, use this setting to ensure all devices on the line will be able to function. This setting is only relevant if **DATMODE=FULL** is also selected.
 - **Ignore DSR** – Selects whether the BARR/RJE software will ignore the modem Data-Set-Ready (DSR) signal. By default this option is not selected, causing communication to begin only if the DSR line is active. If this option is selected, the DSR line will be ignored and communication will begin if DSR is active or inactive. You can use this option to diagnose communications problems. An inactive DSR could indicate a problem with the communications interface, communications cable, or the device generating the DSR signal.
 - **Constant RTS** – Provides a constant Request To Send (RTS) signal for modems. In most cases, selecting this option will provide higher throughput. You must use it for some full-duplex modems. Do not select this option if you use a multidrop connection. This option is selected by default.
- e. Click **OK** to return to the **Communication Link** tab. Once the link service has been configured, the link will be automatically named **BARRSn**.

3. Under **Connection**, click **Configure**. The **SDLC Connection Configuration** dialog box displays. Complete the following steps to configure the connection.

The screenshot shows the 'SDLC Connection Configuration' dialog box. It contains the following fields and options:

- NCP parameter:** Radio buttons for **NRZ** and **NRZI** (selected).
- VTAM parameters (PU macro):**
 - ADDR:** Text box containing 'C1'.
 - IDBLK:** Text box containing '03D'.
 - IDNUM:** Text box containing '12345'.
 - MAXDATA:** Dropdown menu showing '1033'.
 - MAXOUT:** Text box containing '7'.
- Modem type:** Radio buttons for **Not autodial** (selected) and **AT**.
 - Phone number:** Text box containing 'DT9,12345551234'.
 - Initialization string:** Text box containing 'AT&F&M1'.

Buttons at the bottom: **OK**, **Cancel**, and **Help**.

- a. Under **NCP parameter**, select either **NRZ** or **NRZI** as the type of coding used on your host system. The default is NRZI.
- b. In the **ADDR** box, enter the 8-bit address used by SDLC. The default value is C1.
- c. In the **IDBLK** box, enter the appropriate hexadecimal value. This parameter will be used by the host to identify the remote PU definition. The default value is 03D.
- d. In the **IDNUM** box, enter the appropriate value. This parameter will be used by the host to identify the remote PU definition. The default value is 12345.
- e. In the **MAXDATA** box, select the maximum amount of data you can send to the PU in one frame. This value includes nine bytes of header information plus the data length. For JES2 and JES3, the default value is 1033. For POWER, the default value is 265.
- f. In the **MAXOUT** box, specify the maximum number of frames to send before pausing for a response. The default value of 7 results in the highest throughput.
- g. Select the modem type, either **Not autodial** or **AT**.
 - **Not autodial** – Select this option if you use an external modem other than an AT or Dataphone 2224B modem. This option is selected by default.
 - **AT** – Select this option if you have an external AT modem that supports the standard AT command set (Hayes compatible) and can automatically dial a phone number entered in the software. You can only have one modem configuration.

- h. If you select **AT**, enter the **Phone number** for the autodial connection. You can also specify the **Initialization string**. The default initialization string value is AT&F&M1.
 - i. Click **OK** to return to the **Communication Link** tab.
 4. Specify the number of **Non-RJE LUs**. This sets the starting LU number, allowing you to skip any non-RJE LUs defined in the RJE remote definition. This skips any 3270 or IPDS/AFP LUs. The default value is 0.
 5. Click **NCP** and **Physical Unit** to view sample definitions for the selected link. The definitions will vary depending on the link and connection properties. The parameters affected by the settings you changed are displayed in blue text. Physical unit (VTAM) definitions are only available for SDLC switched connections. For more information, see the *Communication link parameters* Help topic.
 6. Select whether to use the software in **Test mode**. In test mode, you can use all the BARR/RJE functions, but the software does not connect to the host computer. Test mode is useful when learning about the software or testing software features.
 7. Use the other tab pages to configure additional settings if necessary. See the *Configuring BARR/RJE optional settings* Help topic for more information.
 8. When you are finished configuring the connection, click **OK**. If you created a reader on the **RJE Description** tab, a dialog displays asking if you would like the RJE Configuration Utility to automatically create the RJE readers needed for communicating with the host. We recommend selecting **Yes** and allowing BARR/RJE to create the following necessary devices. Change the state of all printers in the Spool Window to Disabled before BARR/RJE creates the devices. Once the readers have been created, you must restart the BARR SpoolCore service for your changes to take effect. If you select **No**, you will need to manually configure the RJE readers.
 - To route files from a program to the Spool Window, the printer *Connection name* - Send to Host is created. This allows you to print directly from a program by selecting File | **Print** on the menu bar.
 - To route files from the Spool Window to the host, a spool printer is created for each reader specified. These printers appear in the Spool Window with the name *Connection name* - RD*n*. To view the newly created printers, you must restart the BARR SpoolCore service.

MS/LUA

Complete the following steps to add an MS/LUA communication link and configure the link properties. Your SNA gateway administrator or host programmer can help configure the link settings.



BARR/RJE supports communicating with the host through Microsoft SNA Server, SNA Workstation, and Host Integration Server. Follow the instructions for your SNA gateway to install and configure the gateway or client software. You must configure and test the SNA gateway before you can configure an MS/LUA link. Refer to the *Configuring and testing the SNA gateway* Help topic for more information.

1. Select the RJE Configuration Utility's **Communication Link** tab.
2. Under **Link options**, an MS/LUA link has been created by default. To update the default link, select **MS/LUA (RJEPOOL)** and click **Modify**. The **MS/LUA Configuration** dialog box displays.
3. Specify the number of **Non-RJE LUs**. This sets the starting LU number, allowing you to skip any non-RJE LUs defined in the RJE remote definition. This skips any 3270 or IPDS/AFP LUs. The default value is 0.
4. Select whether to use the software in **Test mode**. In test mode, you can use all the BARR/RJE functions, but the software does not connect to the host computer. Test mode is useful when learning about the software or testing software features.
5. Use the other tab pages to configure additional settings if necessary. See the *Configuring BARR/RJE optional settings* Help topic for more information.
6. When you are finished configuring the connection, click **OK**. If you created a reader on the **RJE Description** tab, a dialog displays asking if you would like the RJE Configuration Utility to automatically create the RJE readers needed for communicating with the host. We recommend selecting **Yes** and allowing BARR/RJE to create the following necessary devices. Change the state of all printers in the Spool Window to Disabled before BARR/RJE creates the devices. Once the readers have been created, you must restart the BARR SpoolCore service for your changes to take effect. If you select **No**, you will need to manually configure the RJE readers.
 - To route files from a program to the Spool Window, the printer *Connection name* - Send to Host is created. This allows you to print directly from a program by selecting File | **Print** on the menu bar.
 - To route files from the Spool Window to the host, a spool printer is created for each reader specified. These printers appear in the Spool Window with the name *Connection name* - RD*n*. To view the newly created printers, you must restart the BARR SpoolCore service.

9.5 Connect to the host

This section describes how you connect the RJE remote to the host using RJE Console. RJE Console allows you to connect to the host manually or automatically.

Before you can connect to the host, you must follow the steps in the preceding sections to configure RJE. If you encounter a problem during initial connection, we recommend starting the RJE Diagnostics utility before starting the connection from RJE Console.



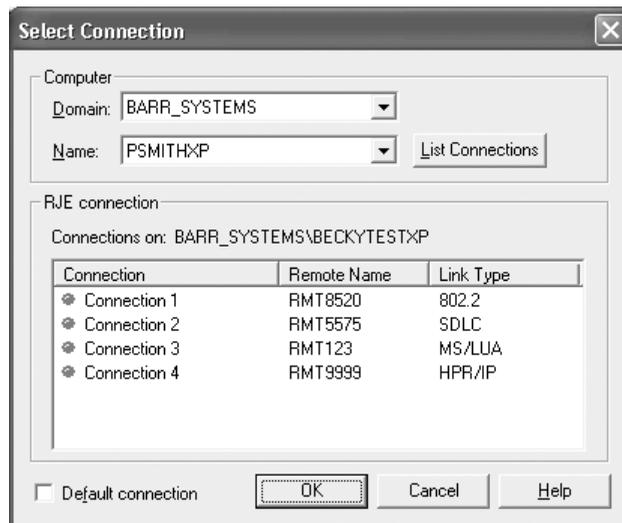
For alternative ways of connecting to the host, see the *Connecting to the host* Help topic.

Complete the following steps to connect to the host.



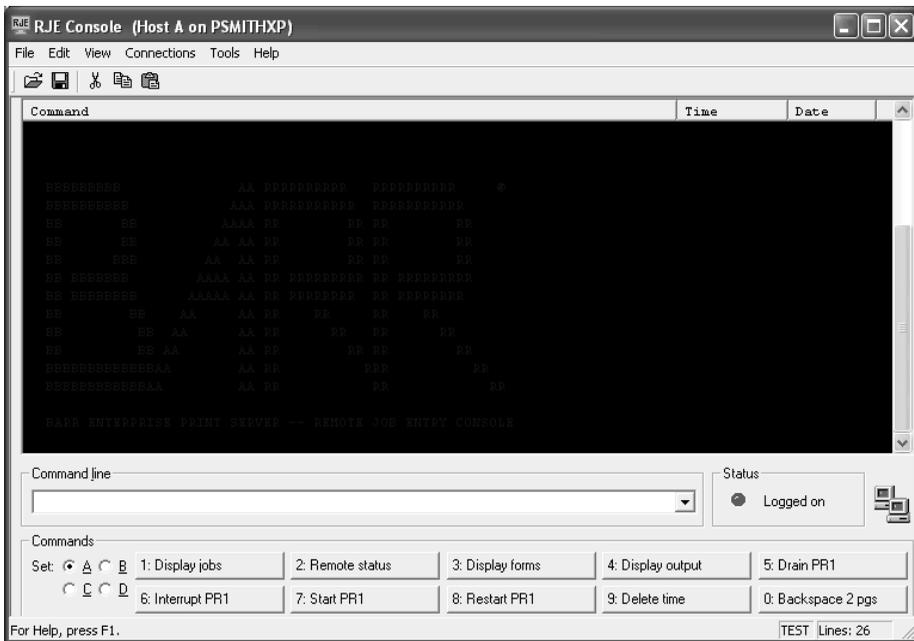
BARR/RJE operators must be assigned the **RJE Console** user access right.

1. Open RJE Console. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR RJE | **RJE Console**.) The **Select Connection** dialog box displays.



2. Under **Computer**, select the **Domain** and **Name** from the drop-down lists, and then click **List Connections**. A list of connections available on the selected computer displays.
3. Select the connection you want to use. If you want to use this connection as the default, select the **Default connection** check box.

4. Click **OK**. The RJE Console utility displays.



If the logon attempt was successful, the BARR logo will appear in blue, block letters on the console window, and the status LED will display in green with the message **Logged on**. If the connection attempt is unsuccessful, then an error message will appear in red letters on the console window, and the status LED will display yellow or red with the message **Connecting** or **Disconnected**.



If a default connection is defined, this connection will automatically connect to the host when you start RJE Console. When you use a default connection, an RJE Console configuration file named default.brj is created and saved in the same folder as the RJEConsole.exe file. (The default folder is \\Program Files\\Barr\\Spooler\\Exe, unless you chose an alternate path during installation.)

9.6 Communicate with the host

The following sections explain the different methods for communicating with the host computer.



BARR/RJE operators must be assigned the **RJE Console** user access right. Before you can communicate with the host, you must follow the configuration steps in the preceding sections and be connected to the host.

- Send commands to the host
- Send files (JCL SYSIN) to the host
- Receive jobs from the host

Send commands to the host

You can send commands to the host from RJE Console using the **Command line** or by clicking command buttons.



JES3 commands: The ? is a standard character in JES3 commands. However, because the ? is used to prompt you for a parameter, JES3 commands that contain a ? must be entered as double question marks (??). Double question marks will be ignored during the Barr prompt replacement and will be sent to the host as single question marks. The software can then distinguish between the Barr ? prompt and the JES3 ? command character.

To send commands using the command line

You can use the RJE Console **Command line** to send operator commands to the host. To send a command from the **Command line**, use one of the following procedures.

- Type a command on the **Command line** and press ENTER.
- Use the drop-down list to select a previously issued command and press ENTER.
- Use the UP ARROW and DOWN ARROW to scroll through previously issued commands and press ENTER.
- Double-click a previous command displayed in the console view and press ENTER.



Separate multiple commands on the **Command line** with a vertical bar (|).

To send commands using the command buttons

You can send a command to the host computer by clicking a command button. When the command is sent, it displays on the console. A group of command buttons with predefined commands display at the bottom of RJE Console.

Four sets of commands are possible with 10 commands in each set, for a total of 40 customizable command buttons. To see additional predefined command descriptions, select **Set A, B, C, or D**. You can redefine the command buttons to suit your needs using the **Commands** tab in the RJE Configuration Utility.



Some JES2 commands require you to specify the remote number. In the default command definitions, the remote number is substituted with a ? prompt. When you click a command button defined with a ? prompt, the command displays in the **Command line** and pauses at each ? for you to enter a parameter. You can replace the ? in the command button definition with your remote number.

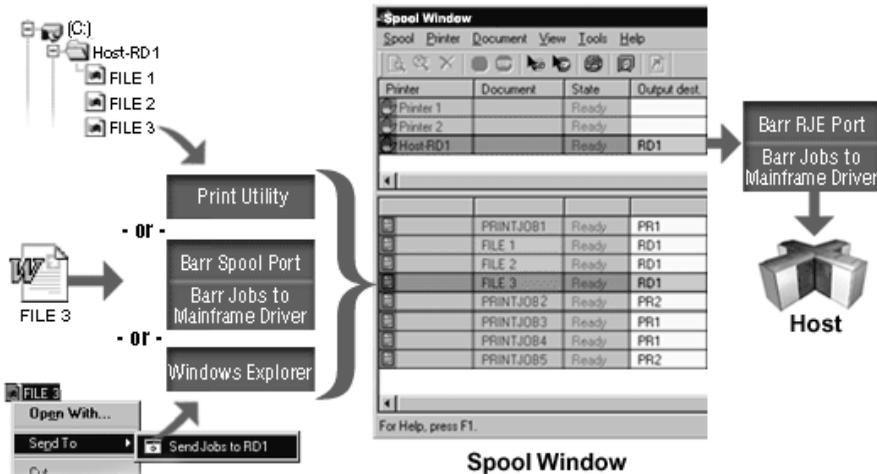
Send files (JCL SYSIN) to the host



If you have not already done so, follow the steps in the preceding sections to configure the host and software.

To send SYSIN files to the host, files must be routed into BARR/SPOOL. This can be done by printing from a program, configuring Print Utility to automatically route files from a specified folder, or manually adding files to the spool with the Windows **Send To** option.

There are two methods for configuring BARR/SPOOL to route files to the host. This can be done automatically for you when you finish configuring your RJE connection, or you can do this manually by configuring printers, Print Utility, and the Spool Window. A spool printer must be created to send the files from BARR/SPOOL to the host. To send the jobs, the routing criteria (Output dest. field) for both the job and the printer must match. The following diagram illustrates these processes.



This section focuses on the procedures for routing files into BARR/SPOOL using Print Utility. For steps on how to print from a program or use the Windows **Send To** option, see the *Sending files (JCL SYSIN) to the RJE host* Help topic.

To send SYSIN data or JCL files to the host, you must first configure a spool printer for sending the jobs to the host. Next, create a folder, either on your hard drive or on your network, where the SYSIN files will be placed. You will then configure Print Utility to automatically take the files from that folder, assign the files with an Output dest. field of RD1, and send the files to BARR/SPOOL. Finally, you will assign the printer an Output dest. field of RD1. Once the configuration steps are complete, SYSIN files that are placed in the specified folder will automatically be sent by Print Utility to the Spool Window and then BARR/SPOOL will automatically route the files to the spool printer with the matching Output dest. field.

If your files require special processing (such as files with long records, binary data, or files that require BARR/TRAN processing), refer to the *Sending JCL files with an embedded command* Help topic. Using embedded commands adds flexibility to the existing BARR/RJE functionality. BARR/TRAN provides extended file transfer capabilities, including longer record length, variable length records, and so on.

Complete the following steps to send jobs to the host.

1. Define a printer to send jobs to the host
2. Configure Print Utility to automatically send jobs to the spool
3. Configure the Spool Window to route jobs to the host

Define a printer to send jobs to the host

When you finish configuring your BARR/RJE connections, you can choose to create the necessary printers automatically. If you do not create the printers automatically, complete the following steps to create the printers manually. You will need to create a Windows printer and a spool printer.



To add a Windows printer, you must be a member of the **Administrators** group. If you are using Windows 2000, you can also be a member of the **Printer Operators** or **Server Operators** group or a **Power User** on a workstation.

To define a Windows printer

To define a Windows printer, you must first select the port, and then select the device driver. Complete the following steps to define a Windows printer.

1. Open Windows Add Printer Wizard.
2. Select to define a local printer. Click **Next**.
3. Create a new port selecting the **Barr RJE Port**.
4. Enter the **Port name**. We recommend including the connection name and reader number in the port name so you can easily associate the reader with the connection (for example, *Connection Name* – RD1). Click **OK**. The **RJE Port Configuration** dialog box displays showing the local computer and the first connection defined.
5. If the connection name is correct, click **OK**. Otherwise, click **Modify** to select a new connection from the **Select Connection** dialog box. When you finish configuring the port, click **OK** to return to the Add Printer Wizard.



If there are no connections defined on the selected computer, the RJE connection box will display the following message: **No connections defined**. If no local or remote connections are defined, you cannot configure the port.

6. In the **Manufacturers** list, select **Barr**. In the **Printers** list, select **Barr Jobs to Mainframe - Printer Driver**. Click **Next**.
7. Select **Keep existing driver**. Click **Next**.
8. Enter the **Printer name** as you want it to appear in the Windows Printers folder. Select **No** to indicate that this printer will not be used as the default Windows-based printer. Click **Next**.
9. Choose whether or not this printer will be shared with other network users. If this printer will be shared, type a share name. Click **Next**.



To set up a printer for sharing, the printer and users who will access it must be in the same domain. You must assign corresponding printer permissions from the **Security** tab of the shared printer's **Properties** dialog box.

10. Choose **No** to skip printing a test page (it is not necessary to print a test page to the Barr RJE printer). Click **Next**, and then click **Finish**. Windows installs the drivers and displays the new printer in the Windows Printers folder.

11. Enable the Windows **Print directly to the printer** setting.
 - a. From the Windows Printers folder, right-click the printer you just defined and select **Properties**.
 - b. From the **Advanced** tab, select **Print directly to the printer**. Click **OK**.

To define a spool printer

Complete the following steps to define a spool printer for your Windows printer. Spool documents will be routed to this physical device. The options you specify will affect all documents you send to it. You must define a unique spool printer for each BARR/RJE reader. These spool printers can use the same Windows printer.

1. Open the Configuration Utility.
2. From the **Spool Printers** tab, click **Add**. The **Printer Properties** dialog box displays.
3. Enter a printer **Name**. The printer name cannot contain a backslash (\). This name displays in the Spool Window's printer list and is called the spool printer.
4. Under **Physical printer**, select **Existing**. From the drop-down list, select the printer you just defined.
5. Under **Options**, click **Advanced** to specify advanced printer options. The **Advanced Printer Options** dialog box displays. Select the desired options as shown in the following table. Click **OK** to save your changes.

Options	Required	Optional	Don't Use
Printer initialization files			X
Page layout			X
Code page			X
If FCB is not found, use default FCB named 'STD'			Ignored
Printer in Disabled state at startup		X	
Printer can be hidden		X	
Printer does not check jobs for valid data type		X	
Bypass the Windows spooler	X		
Special: Pass data to printer without conversion			X
Special: Pass the archive format to LPR port			X
Special: Printer uses transform			X

6. Close the Configuration Utility.

Configure Print Utility to automatically send jobs to the spool

To send SYSIN (JCL) files to the host, we recommend that you set up Print Utility to automatically search a specified folder for SYSIN jobs. To automatically add files to the spool, you need to create folders, and specify the spooling interval. You can automatically add local and LAN files.

If you have installed BARR/RJE, Print Utility is automatically configured for RJE printing by setting the folder to \\Program Files\Barr\Spooler\RJE Reader1, the file type to SYSIN data (JCL), and the NJHGPRTR field to RD1. Use the following procedure to configure additional Print Utility settings, such as selecting a code page and setting the spooling interval.



You can also manually add files to the spool with Print Utility. See the *Adding a file to the spool* Help topic for more information.

1. If you are adding local files, skip to step 2. If you are adding files from a network, configure the BARR Print Utility service to log on as a user rather than a system account. Refer to the *Managing services* Help topic for more information.
2. If it doesn't already exist, use Windows Explorer to create a folder for the SYSIN jobs. Print Utility will use this folder for automatic spooling. We recommend creating \\Program Files\Barr\Spooler\RJE Reader1, if it doesn't already exist. This is the folder that Print Utility is configured to monitor by default. Copy the necessary SYSIN jobs into the folder.
3. Open Print Utility. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Print Utility**.)
4. From the **Automatic Spooling** tab, click **Add**.
5. Navigate to the folder you just created. Click **OK**. The Input Data Conversion Utility displays.
6. On the **Format** tab, select **SYSIN data (JCL)** as the file type.
7. If you are sending a raw data file, under **JCL files** select the beginning and ending JCL files, the send mode, and length (if necessary). If your file is a JCL file, you can leave these fields blank.
 - **Begin** – The beginning JCL file that is sent immediately before each data file. The file must be in a separate directory from the data file. Click the folder button to select the file, or enter the path and file name in the text box.
 - **End** – The ending JCL file that is sent immediately after each data file. The end file must be in a separate directory from the data file. Click the folder button to select the file, or enter the path and file name in the text box.
 - **Mode** – Determines the format of the data. See the *Format tab* Help topic for a description of each option.
 - **Length** – The record length that can be specified in the following send modes: A, TF, TDF, and TBF. The default value is 80.

8. On the **Options** tab, select an output statement and configure headers from data if necessary. We do not recommend using the **Output statement** and **Headers from data** options together. If you want to use both of these options, select your settings carefully. See the *Output statements* Help topic for more information.
9. If needed, click **Code Pages** and choose an ASCII or EBCDIC code page from the **Select Code Pages** dialog box.
10. Click **OK**. The **Spooling Properties** dialog box displays.
11. Under **Folder**, verify the correct folder **Name** is displayed.
12. Enter a folder **Description** that will display on the **Automatic Spooling** tab.
13. To specify the spooling interval, enter a value next to **Check every** and select **Seconds** or **Minutes**.
14. Select **Check subfolders** to check the subfolders for automatic spooling.
15. Select the disposition for the **Original file**. You can select to leave the file, delete the file, or move the file to another folder.
16. Select the disposition for the **Printed file**. You can either retain or delete the file.
17. Specify the document attributes. Print Utility sets these fields to specified values before sending a copy of each file to the spool. If you are using the default RJE.ctr file, this has been configured automatically.
 - a. Click **Add**. The **Select Field** dialog box displays.
 - b. From the **Section** drop-down list, select the **Job Header General Section** and select the **NJHGPRTR** field. Set the field value equal to **RD1**. This will set the job's destination device to be RD1 in the Spool Window.
 - c. Click **OK** twice.
18. If it is not already selected, set the automatic spooling **Status** to **Enabled**. This option is available only when the BARR Print Utility service is started.

Configure the Spool Window to route jobs to the host

Once you have defined a spool printer and configured Print Utility, you are now ready to configure the Spool Window to send jobs to the host.

When BARR/RJE is installed, the default configuration file for the Spool Window is RJE.bsp. This file automatically configures the Spool Window for RJE printing by adding the Output dest. column to the Spool Window.

Complete the following steps to send jobs to the host from the Spool Window.

1. Open the Spool Window. (From the taskbar, click Start | Programs | Barr Enterprise Print Server | BARR SPOOL | **Spool Window**.)
2. If the Output dest. column is not displayed, add the NJHGPRTR (Output dest.) attribute column to the Spool Window.
 - a. On the Spool Window menu bar, select View | **Format Columns**. The **Format Columns** dialog box displays.
 - b. From the **Available sections** list, select **Job Header General Section**.

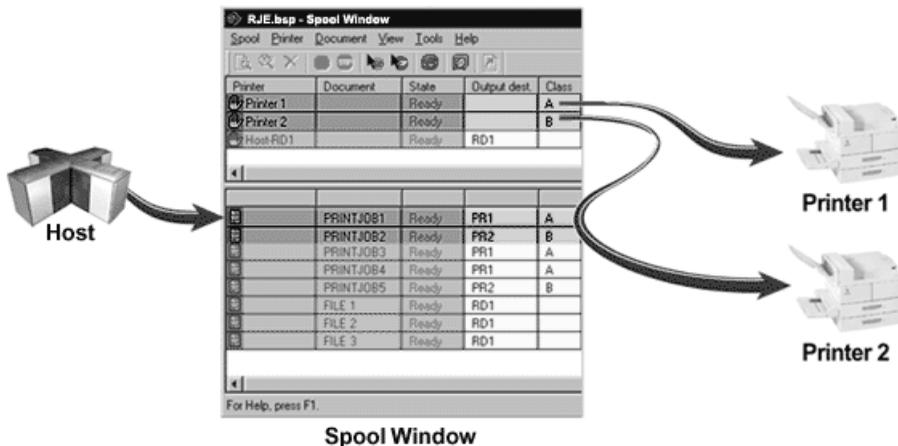
- c. In the **Available columns** list, select **NJHGPRTTR (Output dest.)** and click the right arrow (>) to add it to the **Visible columns** list.
- d. Click **OK** to return to the Spool Window.
3. On the Spool Window, right-click the printer you just created and select **Disabled**.
4. Click the printer's **Output dest.** column for your printer, type **RD1**, and then click **OK**. This is the value specified when you configure the document attributes in Print Utility. BARR/SPOOL will send the data to the Reader1 device on the host.
5. To automatically route SYSIN jobs to the printer, set the document and printer criteria to match and change both states to Ready. Jobs display a Printing state while they are being sent to the host. After printing, the jobs will disappear. Check your host's output queues for the jobs.



When SYSIN jobs are added to the Spool Window, they appear shaded in blue.

Receive jobs from the host

If you have followed the configuration steps in this chapter, you have already configured the host and the software to receive jobs from the host to BARR/RJE. Jobs sent from the host will automatically appear in the document list of the Spool Window. When you configured BARR/RJE, each source device was assigned a class on the **Device Properties** dialog box. This value will appear in the Class column of the Spool Window for each job received from the host.



As seen in the diagram, jobs from the host are released from the host and appear in the Spool Window. Once the jobs appear in the Spool Window, you can manually or automatically route them to their desired destination. If you haven't already done so, follow the steps in the *Getting started with printers* Help topic to configure a print device (for example, writing to disk or printing to a Windows printer). To route jobs automatically, you must configure the class of each print device to match the class of each source device. To edit the Class field for the print device, click the **Class** column in the Spool Window and change the value to match the source device. When the jobs appear in the Spool Window, the jobs will be automatically routed to the desired destination.

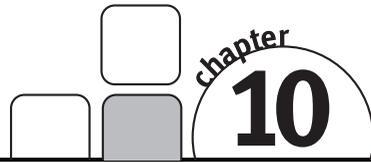


When receiving RJE jobs, the NJHGXEQN – Exe. node field will be populated with the RJE **Remote name** specified on the **RJE Description** tab. This field can be added to the Spool Window.

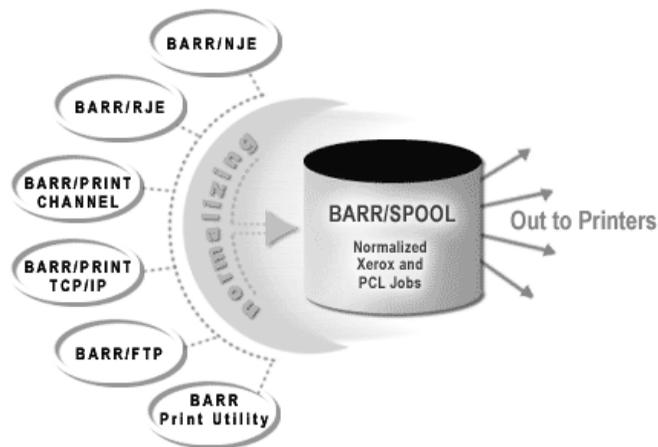
If you have problems receiving jobs, refer to the *Troubleshooting: Receiving jobs from the host* Help topic.

Notes:

BARR/TOOLS (ADEPT Suite)



BARR/TOOLS (ADEPT Suite) is an optional module of the Barr Enterprise Print Server that allows you to view and reprint PCL, Xerox Line Data (DJDE), or Metacode files. It provides accurate page count data to the Barr Enterprise Print Server Accounting Features tool.



BARR/TOOLS includes the following features.

- View your production print files before sending them to the printer
- View PCL, LCDS or Metacode with true WYSIWYG
- Split a large print job between two or more printers using the BARR/PRINT SPLITTER
- Reprinting
 - Set page ranges and restart printing from anywhere in the job
 - Reprint a single page instead of reprinting the entire job
 - Reprint without concern for lost DJDE commands, or DJDE sequencing problems

- Improve LCDS and Metacode performance through print stream normalization
 - Transform line data into Xerox Metacode, and convert all relative Metacode position commands to absolute (drive your Xerox printers at the fastest rated speed)
 - Each resulting page contains its own DJDE packet (facilitates any print range)
- Includes default font mapping that maps common Xerox fonts to standard PDF fonts. This reduces the PDF file size and increases performance.

Complete the following steps to get started with BARR/TOOLS.



You can use the optional BARR/TRANSFORM module to convert the data to PCL, PostScript, or PDF for printing, archiving, or viewing on the Internet. See Chapter 11 for more information.

1. Install the transformation software
2. Configure the software
3. Copy the resources to your computer
 - Xerox
 - PCL
 - AFP (only if used with the BARR/TRANSFORM (ADEPT Suite) module)
4. Normalize the jobs (optional, not for AFP format)
5. View or print the jobs

10.1 Install the transformation software

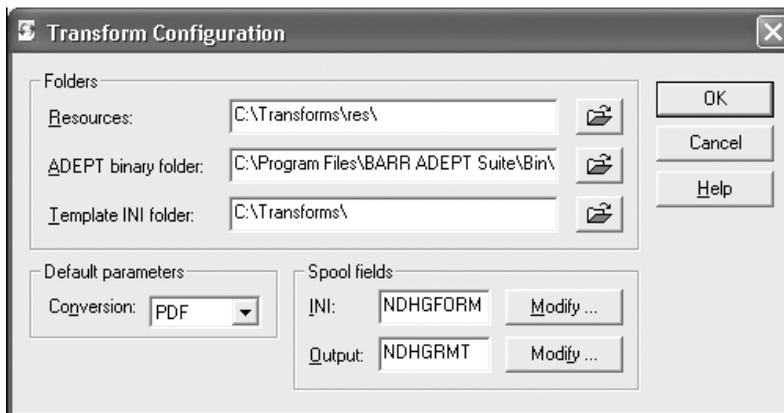
Complete the following steps to install the transformation software.

1. Before you run the setup program, exit all Windows programs and make sure the hardware key is installed.
2. Insert the ADEPT Suite CD into the CD-ROM drive. The installation screen automatically displays. If auto run is disabled on your system or if the installation screen does not automatically display, right-click **Start** on the taskbar and select **Explore**. Navigate to the CD-ROM drive and double-click **setup.exe**.
3. Follow the instructions on the screen to install the software.

10.2 Configure the software

The Transform Configuration utility is used to configure the initial settings and the default values for interpreting jobs. Use the utility after the transform software has been installed, but before copying the resources to your computer.

1. Open Windows Explorer.
2. Navigate to the folder where the Barr software is installed. The default folder is \\Program Files\\Barr\\Spooler\\Exe, unless an alternate path was specified during installation.
3. Double-click **TransformationConfiguration.exe**. The Transformation Configuration utility displays.



4. Review the settings under **Folders**. In most cases, the default settings will apply.
5. Under **Spool fields**, specify which spool header fields will be used to set different settings on a job-specific basis. The **INI** spool field parameter indicates that the specified spool header field (Form name by default) can be used to select an INI file other than the DEFAULT.INI. When the Barr software interprets a job, it will first look for an INI file that matches the name in this field. If it does not find an INI file with that name, it will use the DEFAULT.INI file. The **Output** parameter applies only to the BARR/TRANSFORM (ADEPT Suite) module.
6. Click **OK**. The utility will create a DEFAULT.INI file used to specify the settings. The INI file and the resources will be stored in the C:\Transforms folder, unless an alternate location was specified during configuration.

10.3 Copy the resources to your computer

Refer to the appropriate section below for copying Xerox, PCL, or AFP resources. The section for copying AFP resources can only be used in conjunction with the BARR/TRANSFORM (ADEPT Suite) module (see Chapter 11).

Xerox resources

Any product that interprets or transforms Xerox legacy data streams (LCDS or Metacode) must use the same resources as the Xerox LPS printer. These resource files, which are typically stored on the Xerox printer, must be copied to the C:\Transforms\Res folder for use by the Barr software when interpreting Xerox jobs. The following resources are needed:

- **Job Source Libraries (.JSLs)** – The JSL contains the primary information that specifies how the Xerox printer will print specific jobs. Although there may be many JSLs on the printer, typically just a few are used regularly. Because a JSL may refer to information in other JSLs, it's important to make sure all JSLs are included. For example, it is common practice to code CME and PDE descriptions in separate, external JSLs rather than in the main JSL.
- **Forms, Fonts, Logos, and Images (.FRM, .FNT, LGO, .IMG)** – These are specific resources called by the JSL and the JDEs. Forms also can include references to the other resources. Because it can be difficult to determine which resources are used by a specific job, it is more efficient to gather all the resources from the printer rather than determining which ones are needed.

You can copy the resources from the Xerox printer to disks using system commands from the Ready prompt on the Xerox controller. If the disks are not formatted for the Xerox operating system, use the **FLOPPY INITIALIZE** command to correctly format the disks. To copy the resources to a disk, use the following commands:

```
FLOPPY SAVE *.JSL
FLOPPY SAVE *.FRM
FLOPPY SAVE *.FNT
FLOPPY SAVE *.LGO
FLOPPY SAVE *.IMG
```

When one disk is full, the system will prompt you to insert another disk.

PCL resources

A standard collection of PCL fonts is provided with the Adept Suite.

Additional specialized fonts can be added to the standard folder, or the folder path can be reconfigured by the following INI entry:

```
[PCL]
PCLFontLibDir=C:\Program Files\BARR ADEPT Suite\PCL_Fonts\
```

AFP resources (only used with BARR/TRANSFORM)

For fully composed AFP data sets, additional resources are not typically needed. For mixed-mode AFP, a resource bundle and/or a formdef can be specified.

```
[AFP]
Formdef=F1abbb
;ResGroupFile=C:\Transforms\afpResources\bbb.res
ExtractAfpRes=Yes
DelExtractedAfpRes=No
UseFormdef=No
```

10.4 Normalize the jobs

The normalizing utility reformats the jobs into page-oriented with basic page indexing. This reformatting enables all the other features, such as printing selective page ranges, splitting the job, or gathering accurate accounting information.

Normalizing can occur manually or automatically. You can manually normalize the job by right-clicking the job in the Spool Window and selecting **Normalize**. Manually normalizing jobs works best when you occasionally need to reprint jobs, but in most cases, you want the Barr software to send the data to the printers.

If you intend to use accounting information or want to use the BARR/PRINT SPLITTER, then you need to automate the normalizing process. You can configure each input type in the Barr Enterprise Print Server to normalize jobs as they arrive in the Spool Window.

Normalizing can be enabled for specific input data streams by setting a single option for the specific input type. The following table shows where to set the normalizing option for each type of input.

Input Type	Set Normalizing Option
BARR/RJE or BARR/NJE	By override tables
BARR/PRINT TCP/IP (LPD)	By queue
BARR/PRINT TCP/IP (Socket)	By socket
BARR/PRINT CHANNEL	By channel address
Print Utility (input from disk)	By folder

Once you have determined which input you are using, modify the settings for that input to add a new document attribute from the **Data Set Header Internal Custom** section. The attribute is NDHBNORM – Normalize the data set, and its value should be set to **-1**.

10.5 View or print the jobs

The viewing utility allows you to preview selected pages of the input data stream. By viewing the data before you print, you can verify that the job configuration settings are correct. To view the document, double-click the Document column of the document you want to view. You can also right-click the document and choose one of the following options.

- Select View | **LCDS/Metacode, PCL, or AFP** from the menu to view the data WYSIWYG.
- Select View | **Text** from the menu to view the data with the standard Barr text/binary Viewer utility.

To print the document, set the document and printer routing criteria to match, and change their states to Ready.



You can also configure a reprint range using the Viewer's **Restrict Output Page Range** options.

BARR/TRANSFORM is an optional module of the Barr Enterprise Print Server that processes and transforms many different data streams. Two editions are available, BARR/TRANSFORM (ADEPT Suite) and BARR/TRANSFORM (DocBridge). These editions cannot be installed together, they must be installed independently. Both software packages operate in a similar fashion, but they also have some unique features. For example, BARR/TRANSFORM (ADEPT Suite) offers Xerox input and output and supports job splitting. BARR/TRANSFORM (DocBridge) offers IPDS output, but does not support Xerox input at present. Both packages offer PCL, Postscript, and PDF inputs and outputs. Both packages also install and configure differently.

BARR/TRANSFORM (ADEPT Suite) (see Section 11.1)

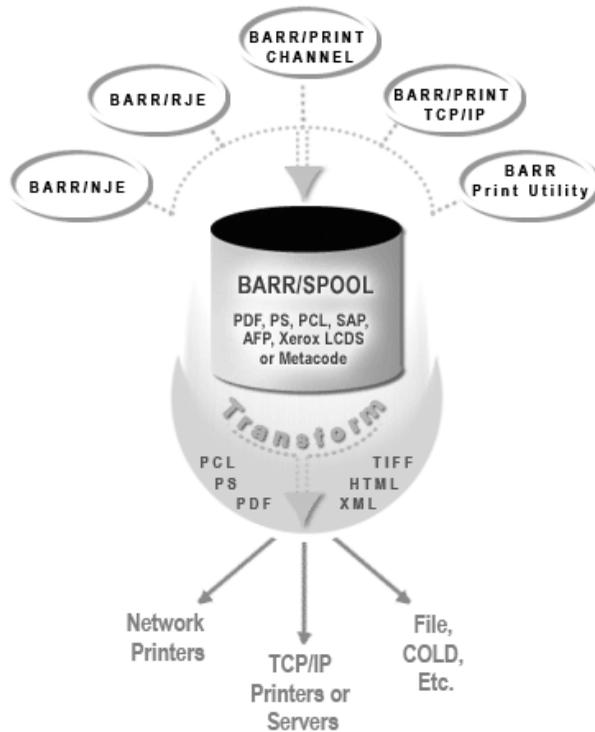
- Supports AFP, PCL, PDF, and Xerox inputs
- Supports text, PCL, Postscript, PDF, TIFF, and Xerox outputs
- Includes BARR/TOOLS (ADEPT Suite)

BARR/TRANSFORM (DocBridge) (see Section 11.2)

- Supports AFP, PCL, PDF, and SAP GOF inputs
- Support PCL, Postscript, PDF, and IPDS outputs

Product licensing for BARR/TRANSFORM is based on the inputs and outputs required for your work flow.

BARR/TRANSFORM for Xerox Data



BARR/TRANSFORM includes the following features.

- Preserves your investment in legacy applications
- Extracts fields into index and XML files
- Splits print data streams into multiple documents
- Converts print data streams into their electronic equivalents
- Splits large print jobs between two or more printers using the BARR/PRINT SPLITTER
- Includes the BARR/TOOLS module

11.1 Install and configure BARR/TRANSFORM (ADEPT Suite)

Install and configure the software

The steps for installing and configuring the BARR/TRANSFORM (ADEPT Suite) software are the same as the steps in Chapter 10 for BARR/TOOLS (ADEPT Suite). Refer to Chapter 10 to complete the installation and configuration procedures, and then proceed to Section 11.2 to configure the transformation.

1. Install the transformation software (Section 10.1)
2. Configure the software (Section 10.2)
3. Copy the resources to your computer (Section 10.3)
4. Normalize the jobs (optional, not for AFP format) (Section 10.4)
5. View or print the jobs (Section 10.5)

Configure the transformation

When the document is printed from the Spool Window, a combination of settings in the document and on the destination printer automatically trigger the transformation of data to other formats. To initiate the transformation process, the document and the printer must be configured as follows.

To configure the document

The data type of the document is dependent on the data stream. If the document has been normalized, the data type will have automatically been changed during the normalization process (see Section 10.4). Otherwise, change the data type by setting the document attributes on the input module or with an override table.

To verify the file format, add the Data Set Header Internal Custom Section, **NDHBDTYP - Data type** field to the Spool Window. To change the data type manually, just click in the **Data Type** column and type the correct format.

Input formats

Data Stream	Data Type	NDHBDTYP
AFP	Binary raw AFP	.afp .anj
PCL	Binary raw	.pcl .pcn (normalized)
Xerox	S/370 VBM	.lnj .lnj .xnj (normalized)

Input methods

Input Type	Set Data Type
BARR/RJE or BARR/NJE	By override tables
BARR/PRINT TCP/IP (LPD)	By queue
BARR/PRINT TCP/IP (Socket)	By socket
BARR/PRINT CHANNEL	By override tables
Print Utility	By folder

To configure the printer

Before you configure a printer, you must first define one of the following types of output destinations. See the online Help for more information.

- Writing to disk
- Connecting to a network printer
- Printing to a TCP/IP print queue
- Writing to a TCP/IP socket

Once the printer is created, use one of the following methods to configure the printer.

- If you are connecting to a network printer, set the **Pass data to printer without conversion** option. This option is found on the **Advanced Printer Options** dialog box in the Configuration Utility.
- If you are writing to an IP socket or to disk, set the file format to **Binary** on the **File Format** tab.

11.2 Install and configure BARR/TRANSFORM (DocBridge)

Install the software

The setup program copies files from the DocBridge CD to your computer.

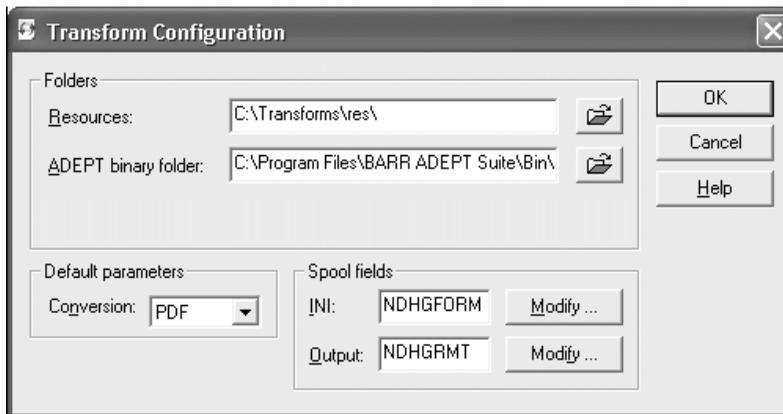
1. Before you run the setup program, exit all Windows programs and make sure the hardware key is installed.
2. Insert the DocBridge CD into the CD-ROM drive. Right-click **Start** on the taskbar and select **Explore**. Navigate to the CD-ROM drive.
3. Copy the **Exe** folder contents to the \\Program Files\\Barr\\Spooler\\Exe folder, unless an alternate path was specified during installation.
4. Copy the **Licenses** folder contents to the \\Program Files\\Barr\\Spooler\\Exe folder, unless an alternate path was specified during installation.

5. Copy the **Profiles** folder to the C:\Transforms\Profiles folder.
6. Copy the **Doc** folder to the C:\Transforms\Doc folder.
7. If you will be using AFP mixed mode data, copy the **AfpRes** folder contents to the C:\Transforms\AfpRes folder. Edit the cpln2afp.txt file in the C:\Transforms\Profiles\STD folder as necessary.
8. Install the Doc Mill Viewer by double-clicking **DocBridge View.msi**.

Configure the software

The Transform Configuration utility is used to configure the initial settings and the default values for interpreting Xerox jobs. Use the utility after the transform software has been installed, but before copying the Xerox resources to your computer.

1. Open Windows Explorer.
2. Navigate to the folder where the Barr software is installed. The default folder is \\Program Files\Barr\Spooler\Exe, unless an alternate path was specified during installation.
3. Double-click **TransformationConfiguration.exe**. The Transformation Configuration dialog box displays.



4. Review the settings under **Folders**. In most cases, the default settings will apply.
5. Click **OK**.
6. Restart the BARR SpoolCore service.

Configure the transformation

When the document is printed from the Spool Window, a combination of settings in the document and on the destination printer automatically trigger the transformation of data to other formats. To initiate the transformation process, the document and the printer must be configured as follows.

To configure the document

The data type of the document is dependent on the data stream. You can change the data type by setting the document attributes in Print Utility or with an override table.

To verify the file format, add the Data Set Header Internal Custom Section, **NDHBDTYP - Data type** field to the Spool Window. To change the data type manually, just click in the **Data Type** column and type the correct format.

Input types

NDHBDTYP	Print Utility	Profile	Print Stream
.afp	Binary	MFFAFP	AFP
.anj	AFP	MFFAFP	AFP
.lnj	VBM	MFFLCD	LCDS
.mmd	Text	Cpln2afp.txt	AFP mixed mode
.pcl	Binary	MFFPCL	PCL
.pdf	Binary	MFFPDF	PDF
.ps	Binary	MFFPOS	Postscript
.xnj	VBM	MFFXRX	Metacode

For AFP mixed mode data, you also need to set the pagedef (NDHBPDEF) and formdef (NDHBFDEF) header fields. If using Table Reference Characters (TRC), set NDHBTRC to Y, and set the fonts using NDHBFNTS. Files with a type of .mmd are converted internally to .afp, and treated as .afp by the Spool Window.

To configure the printer

Before you configure a printer, you must first define one of the following types of output destinations. On the **Advanced Printer Options** dialog box, make sure you select the Special | **Printer users transforms** option. If you are printing to BARR/PRINT390 *for IPDS*, use a null port printer. BARR/PRINT390 *for IPDS* is a separate product and must be purchased separately. See the online Help for more information.

- Writing to disk
- Connecting to a network printer

- Printing to a TCP/IP print queue
- Printing to a TCP/IP printer
- Writing to a TCP/IP socket
- Printing to a Novell print queue
- Printing to a Windows printer
- Printing to a Xerox printer

Output types

NDHBDTYP	Profile	Print Stream
IPDS printer	MFFIPD	IPDS
PCL	MFFPCL	PCL
PDF	MFFPDF	PDF
PS	MFFPOS	Postscript
XRX	MFFXRX	Metacode

View jobs

The viewing utility allows you to preview selected pages of the input data stream. By viewing the data before you print, you can verify that the job configuration settings are correct.

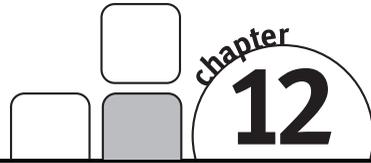
Use one of the following methods to view the data WYSIWYG.

- Double-click in the Document column of the document you want to view.
- Right-click the document you want to view and select View | **AFP, PCL, PDF, PS, or SAP GOF**. The available options may vary depending on your software licensing.

To view the data with the standard Barr text/binary Viewer utility, right-click the document and select View | **Text**.

To print the document, set the document and printer routing criteria to match, and change their states to **Ready**.

Notes:



HTML Help covers every module of the Barr Enterprise Print Server, providing information on installing, configuring, and operating the software. In HTML Help, the familiar WinHelp window has been refashioned into an HTML Help viewer – a combination of the standard Help window with the added functionality of an Internet browser. HTML Help incorporates an easy-to-use table of contents, a comprehensive index and glossary, and a full text search with advanced search capabilities. HTML Help can be accessed at any time by pressing F1, selecting Help | **Contents and Index** on the menu bar, or by clicking a **Help** button. You can also access new Help topics by visiting our Web site.

12.1 Launch the Help

Use any of these methods to open the Barr Enterprise Print Server Help.

From any Barr software window

You can launch the HTML Help from any Barr software window by selecting Help | **Contents and Index** on the menu bar. Alternatively, press F1 to launch HTML Help and display information about the software window.

From Barr software tab pages or dialog boxes

From any Barr software tab page or dialog box, click **Help** to launch HTML Help and open the topic relating to the tab page or dialog box. Alternatively, press F1.

From the Barr Enterprise Print Server program menu

After you install the software, you can launch HTML Help from the program menu, even when the software is not running. From the taskbar, click Start | Programs | Barr Enterprise Print Server | **Help**.

12.2 Navigate within the Help

You can browse through Help topics or use the **Contents**, **Index**, **Search**, or **Favorites** tabs to locate the topic of your choice.

Browse through Help topics

It is often helpful to browse through Help topics when looking for information.

Use the **Back** button to move backward in the sequence of topics you have viewed.
Use the **Forward** button to move forward in the sequence of topics you have viewed.

Use the Contents tab

The table of contents is a tree outline that displays topics in an expandable/collapsible hierarchy. The Barr Enterprise Print Server Help table of contents is organized according to the various software modules.

Complete the following steps to find a topic in the table of contents.

1. Select the **Contents** tab.
2. Open or close books by clicking them. A closed book has a plus sign (+) next to it, and an open book has a minus sign (-).
3. Click the topic you wish to view.

Use the Index tab

The index provides a multilevel list of keywords that are found in the Help. The index is hierarchical, like the kind you find at the back of a book, and can include multiple levels.

Complete the following steps to find a topic using the index.

1. Select the **Index** tab.
2. Type a word or scroll through the list of index entries.
3. To see any topics associated with a keyword, double-click it or select it from the list and click **Display**.
4. If there is more than one topic associated with a keyword, select a topic from the **Topics Found** dialog box.



Topics are often indexed under more than one entry.

Use the Search tab

The **Search** tab allows you to perform a full-text search. With full-text searching, you can search through every word in the Help system. A basic search consists of the word or phrase you want to find. Advanced searches can incorporate Boolean operators, wildcard expressions, nested expressions, similar word matches, a previous results list, or topic titles to further define a search.

The following are the basic rules for formulating search queries.

- Searches are not case-sensitive, so you can type your search in uppercase or lowercase characters.
- You may search for any combination of letters (a-z) and numbers (0-9).
- Punctuation marks such as the period, colon, semicolon, comma, and hyphen are ignored during a search.
- Group the elements of your search using double quotes or parentheses to set apart each element. You cannot search for quotation marks.

The following are the available advanced search features. For more information on advanced search features, refer to the *Searching the Help* Help topic.

- **Boolean operators:** You can include Boolean operators in your search. To insert a Boolean operator in your search, click the arrow next to the search text box and select **AND**, **OR**, **NOT**, or **NEAR**.
- **Advanced search:** Use the check boxes at the bottom of the **Search** tab to select advanced search options **Search previous results**, **Match similar words**, and **Search titles only**.



When searching for words in Help topics, you can have each occurrence of the word or phrase highlighted in the topics that are found. To highlight all instances of a search word or phrase, on the Help toolbar, select Options | **Search Highlight On**.

Complete the following steps to run a search.

1. Select the **Search** tab.
2. Type the word or phrase you want to find.
3. Press ENTER or click **List topics**.
4. To view a found topic, double-click it or select the topic and click **Display**.

Use the Favorites tab

It may be helpful to maintain a list of favorite Help topics that you reference frequently. Complete the following steps to add topics to a list, return to a favorite topic, rename a topic, or remove a topic.

- **To add a topic** – Locate the Help topic you want to make a favorite topic, select the **Favorites** tab, and click **Add**.
- **To return to a topic** – Click the **Favorites** tab, select the topic, and double-click the topic or click **Display**.
- **To rename a topic** – Click the **Favorites** tab, right-click the topic and select **Rename**, and type a new name and then press ENTER.
- **To remove a topic** – Click the **Favorites** tab, select the topic, and click **Remove**.

Use the Glossary tab

The glossary provides an alphabetized list of terms and definitions related to the Barr software. Complete the following steps to use the glossary.

1. Select the **Glossary** tab.
2. Scroll through the list of glossary entries or type the first letter of the word you are looking for. The **Term** window will focus on words beginning with that letter.
3. Select a term from the list and view the definition in the lower portion of the **Glossary** tab.

12.3 Get more out of HTML Help

Here are some tips on how to find more information when using HTML Help.

- To link to another topic, a Web page, a list of other topics, or a program, click the colored, underlined words.
- To view topics that contain related information, use the “See also:” and “What do you want to do?” topic links.
- To see if a word or phrase contained in a topic is in the index, select the word, and then press F1.
- If you use a particular Help topic often, you can add it to your favorites list.
- Right-click in the **Contents** tab or **Topic** pane for shortcut menu commands.

12.4 Copy or print a Help topic

When HTML Help is displayed, you can copy or print Help topics.

Copy a Help topic

You can copy Help topics to the Clipboard with one of these methods. You can paste the topic text into a text editor, such as Microsoft Word, or into an e-mail message.

1. In the topic pane, right-click anywhere in the topic you want to copy, and choose **Select All**.
2. Right-click again, and then select **Copy**. This copies the topic to the Clipboard. If you only want to copy part of a topic, select the text you want to copy, right-click, and then select **Copy**.
3. Open the document you want to copy the topic to.
4. Place the pointer where you want the information to appear.
5. On the menu bar, select Edit | **Paste**.

Print a Help topic

There are three ways to print a Help topic.

- To print the currently displayed topic, click **Print** on the Help toolbar.
- In the topic pane, right-click anywhere in the topic you want to print, and select **Print**.
- From the **Contents** tab, right-click a topic, and then select **Print**. You will be given the option of printing only the current topic, or the current heading and all subtopics.



When printing an HTML Help topic, you can control the margins and headers and footers. On the Microsoft Internet Explorer's menu bar, select File | **Page Setup** to access these features. Changes made in Internet Explorer affect printing from the Help view. Use the ? on the **Page Setup** dialog box to learn more about the features.

12.5 Customize your Help

See the following options for ways to easily change the size and position of the help viewer and the panes in the viewer.

Show or hide the navigation pane

Use one of the following methods to show or hide the navigation pane.

- Click **Hide** to close the navigation pane from view.
- Click **Show** to display the navigation pane.

Resize the navigation or topic pane

Complete the following steps to change the size of the navigation pane or the topic pane.

1. Point to the divider between the two panes.
2. When the pointer changes to a double-headed arrow, drag the divider right or left.

Resize the Help viewer

Complete the following steps to change the size of the Help viewer.

1. Point to any corner of the Help viewer so the pointer changes to a double-headed arrow.
2. Press the left mouse button and drag up, down, left, or right. The viewer is resized after you release the mouse button.

To reposition the help viewer on your screen

Click the title bar and drag the viewer to a new position.

Change colors, fonts, and accessibility options

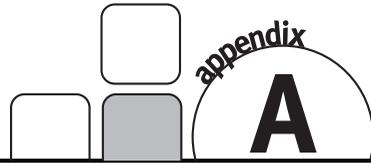
Complete the following steps to change the colors, fonts, or accessibility options of your viewer.



Changing these settings will also change your settings for Internet Explorer.

1. On the Help toolbar, select Options | **Internet Options**.
2. On the **General** tab, click **Colors, Fonts, or Accessibility**.
3. Select the options you want, and then click **OK**.
4. To apply the new settings, in the **Internet Options** dialog box, click **OK**.

NJE Operator Commands



Operator commands are a valuable management device. You can use commands to oversee job status and selectively release jobs for execution.

With BARR/NJE, the operator can send commands to the host job entry system from the computer keyboard. Command responses display on the NJE Console.

The mainframe job entry system (JES2 or JES3) views the Barr computer as another NJE node. For more information about these commands, see your IBM manual. For specific syntax and examples, refer to the following sections.

A.1 JES2 commands

JES2 operator commands allow remote terminal operators to communicate with the JES2 system. This section lists the most commonly used JES2 remote commands, command types, command format, and job control.

JES2 command categories

There are two categories of JES2 commands.

- Commands used to display information about the system, devices, or jobs in the system.
- Commands used to control the JES2 system and operations for the jobs and devices under the operator's jurisdiction.

JES2 command format

Enter JES2 commands from a console as follows.

```
$verb operand1 , operand2
```

Where **\$** is the JES2 command identification character; **verb** is a single-character verb that identifies the action to take; **operand** modifies the verb or command or identifies the job or system facility to act on. Use commas to separate operands when you specify more than one operand.

You can insert blanks anywhere in the command after the initial \$, but they are usually not necessary.

When you enter JES2 commands on data lines, you must begin them with /* as follows.

```
/*$verb operand1,operand2
```

JES2 job control

JES2 commands limit job or device manipulation to the remote operator's jurisdiction. A job is under the operator's jurisdiction if the job's output is routed to that node or if the job was submitted from that node. If a job submitted to JES2 has not been routed by a /*ROUTE statement or a DEST parameter, the job output automatically routes back to the same facility that submitted it.

Operator command restrictions prevent outside manipulation or loss of a job and ensure the system's integrity.

JES2 command types

JES2 operator commands allow remote terminal operators to communicate with the JES2 system. This section lists the most commonly used JES2 remote commands.

Command	Controls or Displays
\$A release	job
\$C cancel	job
\$D display	job, queue
\$H hold	job
\$P purge	job
\$R route	job, queue

\$A release

The **\$A** command releases a job under the operator's jurisdiction from hold. The job resumes normal processing. The operator can specify a job name or number with the **\$A** command.

Format

\$A 'jobname'

Where **jobname** is the name of the job to be released from hold.

\$A Jnnnn

Where **nnnn** is a single job number to release that job or a range of job numbers to release a series of jobs from hold.

Examples

\$A 'DATA'

Releases the job named DATA.

\$A J245

Releases job 245.

\$A J2-70

Releases all jobs with numbers ranging from 2 to 70.

\$A J245 , J747

Releases only jobs 245 and 747.

\$C cancel

Operators can use the **\$C** command to cancel a job or device under their jurisdiction. The **\$C** command cancels a job on the printer, punch, or reader, or a job awaiting execution.

When operators use the **\$C** command on an output device, the command cancels only the active SYSOUT group on that device, it does not cancel other SYSOUT data sets for that job. To cancel a job on the output queue, use the **\$P** command.



If the **\$c** command does not cancel the job, the operator must reenter the command.

Operators can specify a job number or device with the **\$C** command.

Format

\$C Jnnnn

Where **nnnn** is the number of a job to cancel.

Example

\$C J545

 Cancels job 545.

\$D display

The **\$D** command displays information about the system, a job, a device, or a set of devices. The **\$D** command format depends on the type of information the operator requests.

Format

\$D Jnnnn

Displays information about a job or a range of jobs under the operator's jurisdiction. If **nnnn** is a single number, only job **nnnn** displays. If **nnnn** is a range of numbers, all jobs in that range display. For example, an operator can type **\$D J1-32767** and receive a list of all jobs in the system under that operator's jurisdiction. If a job is not printing, make sure the job's criteria (for example, form or class) matches the printer's criteria with the **\$LJnnnn** command.

\$D MRx, 'message'

Sends a message to the remote specified by **x**. The message can contain up to 53 characters. If **x=0**, the message goes to the host computer console.

\$D N, Q=y

Displays the queued jobs, where **y** describes the type of jobs to display. For **y**, substitute one of these parameters:

- **XEQ** – Displays only jobs awaiting execution.
- **XEQc** – Displays only jobs awaiting execution that have the job class specified by **c**.
- **PPU** – Displays only jobs waiting for the printer or punch.
- **HOLD** – Displays jobs on hold.
- **OUT** – Displays jobs awaiting output processing. Job information and the percentage of spool use display.

\$D Q, Q=y

Identical to **\$D N** except that only the number of jobs displays rather than the job names and other information.

\$D 'jobname'

Displays a list of all jobs in the system with that job name, including jobs not under the operator's jurisdiction.

Examples

\$D J244

Displays job 244.

\$D J234 , J534

Displays jobs 234 and 534.

\$D J1-99999

Displays all jobs in the system under the operator's jurisdiction.

\$D MR0 , 'yes'

Sends a yes message to the host computer operator.

\$D U , LGN

Displays the VTAM APPLID for JES2.

\$D 'DATA'

Displays information about the jobs named DATA.

\$H hold

The **\$H** command puts a job under the operator's jurisdiction on hold. If a job is queued and on hold, the job remains queued and the system takes no action on the job. If the job is active, the job finishes its current activity and then requeues. If a job is awaiting print, punch, or execution, it remains in that state until it is released. If a job is being read, it finishes being read and then enters the execution queue on hold. A job currently executing finishes execution and enters the print queue on hold.

The operator can specify a job name or number with the **\$H** command.

Format

\$H 'jobname'

Where **jobname** is the name of the job to place on hold.

\$H Jnnnn

Where **nnnn** can be a single job number to place that job on hold or a range of job numbers to place a series of jobs on hold.

Examples

\$H 'MYJOB'

Places the job named MYJOB on hold.

\$H J357

Places job 357 on hold.

\$H J240-500

Places all jobs ranging from 240 to 500 on hold.

\$H J250 , J630

Places only jobs 250 and 630 on hold.

\$P purge

The **\$P** command stops job activity after the job completes the current activity.

If the operator specifies a job, the software flags it for purging. If the job is inactive, the software purges it. If the job is active, it completes its current activity and then the software purges it.

Operators must use the **\$P** command to cancel a job on the output queue because **\$C** will not work. Operators can specify a job number to purge or device to drain with the **\$P** command.

Format

\$P Jnnnn

Where **nnnn** is the number of the job to purge.

Example

\$P J333

Purges job 333.

\$R route

The **\$R** command routes a job's output the same way a **/*ROUTE** statement in JCL does. Operators can route the print or punch output of a job under their jurisdiction to another remote or to the host computer.

The operator can route jobs of a certain type or all jobs with the **\$R** command.

Format

\$R type, J=Jnnnn, D=Ryy

Where **type** is the type of output to route, **nnnn** is the number of the job to route, and **yy** is the destination of the routed output.

For the operand **type**, substitute one of these values:

- **PRT** to route print output.
- **PUN** to route punch output.
- **ALL** to route both print and punch output.

For the operand **Ryy**, substitute one of these values:

- **LOCAL** to route the output to the host computer.
- **Rnnnn** to route the output to another remote specified by **nnnn**.

\$R ALL , R=*Rx* , D=*Ry*

Allows jobs routed to remote ***Rx*** to print at either ***Rx*** or ***Ry***, whichever is available first. The two remotes share a common print queue if the operator at remote ***Ry*** types the following command:

\$R PRT , R=*Ry* , D=*Rx*

The operator can negate this command by typing the following command:

\$R type , R=*Rx* , D=*Rx*

This command only affects jobs currently in the queue.

Examples

\$R PUN , J=J234 , D=LOCAL

Routes the punch output of job 234 to the host computer.

\$R ALL , J=J345 , D=R3

Routes all of job 345's output to remote 3.

\$R PRT , J=J345 , D=LOCAL

Routes job 345's print output to the host computer.

\$R ALL , R=R2 , D=R4

Allows jobs routed to remote 2 to print at remote 2 or remote 4.

\$R All , R=R2 , D=R2

Cancels the alternate option.

\$R PRT , R=R1 , D=R4

Routes all jobs originally routed to remote 1 to remote 4, including jobs awaiting execution.

A.2 JES3 commands

JES3 operator commands allow remote terminal operators to communicate with the JES3 system. This section lists the most commonly used JES3 remote commands. See the IBM *JES3 Commands* manual (GC28-1798) for more information about JES3 commands.

JES3 command format

Enter JES3 commands from a console as follows:

*<i>command operand1 , operand2</i>
--

Option	Description
*	Identifies the JES3 command. Ask your host programmer when to use the JES3 command identifier.
<i>command</i>	A single-word or single-character verb that identifies the action to take. Do not insert spaces between the * and the command. You can enter the command in uppercase or lowercase letters.
<i>operand</i>	Modifies the command. Use a comma or single blank space to separate operands. Use apostrophes when they appear with an operand.

JES3 command types

JES3 operator commands allow remote terminal operators to communicate with the JES3 system. This section lists the most commonly used JES3 remote commands.

Command	Controls or Displays
*F modify	job
*I inquiry	job, queue

*F modify

The **F** command dynamically alters the status of jobs.

Format

***F** *x*, *x*

***MODIFY** *x*, *x*

Examples

***F** *J=nnnn*, **R**

Releases a job on operator hold.

***F** *J=nnnn*, **C**

Cancels a job unless the job is on hold.

***F** *J=nnnn*, **H**

Holds a job in the output queue.

*I inquiry

The **I** command displays status information about jobs or queues.

Format

***I x, x**

***INQUIRY x, x**

Examples

***I J=nnnn**

Displays the status of job J.

***I Q**

Displays the first 10 jobs (**N=10** is the default) submitted from your node, waiting for action in the queue.

***I Q, N=All**

Displays a list of all jobs waiting in the queue.

A.3 POWER commands

Operators can enter the following VSE/POWER commands from the NJE Console. Commands operators enter from the host console are slightly different. In VSE/POWER commands, **LST** is a printer device and **PUN** is a punch device.



Global commands are not supported by POWER.

POWER command format

Enter POWER commands from a console as follows:

command operand1, operand2

Parameter	Description
<i>command</i>	A single-word or single-character verb that identifies the action to take.
<i>operand</i>	Modifies the command. Use a comma or single blank space to separate operands. Use apostrophes when they appear with an operand.

POWER command types

POWER operator commands allow remote terminal operators to communicate with the POWER system. This section lists the most commonly used POWER remote commands.

Command	Controls or Displays
A alter	job, queue
C cancel	job
D display	job, queue
H hold	job, queue
I delete	job, queue
P stop	connections
R release	job, queue
S start	connections

A alter

The **A** command changes job characteristics.

Format

A *queue, options*

Where *queue* is **LST** (list queue), **PUN** (punch), **RDR** (reader), or **XMT** (transmission queue), and *options* are **CLASS**, **DISPOSITION**, or **PRIORITY**.

Example

```
A LST1,CLASS=A
```

Sets queue 1 to class A.

C cancel

The **C** command cancels a job.

Format

C *jobname, jobid*

Where *jobname* is the job name and *jobid* is the job number.

Example

C DATA

Cancels the job named DATA.

D display

The **D** command displays job characteristics.

Format

D *queue, jobname, jobid*

Where *queue* is **LST** (list queue), **PUN** (punch), **RDR** (reader), or **XMT** (transmission queue), *jobname* is the job name, and *jobid* is the job number.

Example

D LST1

Displays all jobs in queue 1.

H hold

The **H** command places jobs on hold.

Format

H *queue, jobname, jobid*

Where *queue* is **LST** (list queue), **PUN** (punch), **RDR** (reader), or **XMT** (transmission queue), *jobname* is the job name, and *jobid* is the job number.

Example

H LST1

Holds all jobs in queue 1.

L delete

The **L** command deletes jobs.

Format

L *queue, jobname, jobid*

Where *queue* is **LST** (list queue), **PUN** (punch), **RDR** (reader), or **XMT** (transmission queue), *jobname* is the job name, and *jobid* is the job number.

Example

D LST1

Deletes all jobs in queue 1.

P stop

The **P** command stops a CTC or VTAM connection.

Format

P PNET, node

Where **node** is the Barr NJE node name.

Example

P PNET, node

Stops a CTC or VTAM connection, where **node** is the Barr NJE node name.

R release

The **R** command moves devices from the Hold state to the Ready state.

Format

R queue, jobname, jobid

Where **queue** is **LST** (list queue), **PUN** (punch), **RDR** (reader), or **XMT** (transmission queue), **jobname** is the job name, and **jobid** is the job number.

Example

R LST1

Releases printer 1 from the Hold state.

S start

The **S** command starts a CTC or VTAM connection.

Format

S PNET, node, , ddd

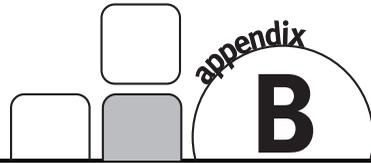
Where **node** is the Barr NJE node name and **ddd** is the device address of the CTC connection.

Example

S PNET, node

Starts a CTC or VTAM connection, where **node** is the Barr NJE node name.

RJE Operator Commands



Operator commands are a valuable management device. You can use commands to oversee job status and selectively release jobs for execution.

With the RJE Console, the operator can send commands to the host JES from the personal computer keyboard by typing in the **Command line**. Command responses display on the RJE Console. From the RJE Configuration Utility's **Commands** tab, operator commands can be defined and assigned to the command buttons on the RJE Console.

JES2 and JES3 view the Barr computer as another RJE remote. For more information about these commands, see your IBM manual or consult the host programmer. For specific syntax and examples, refer to the following sections.

B.1 JES2 commands

The mainframe job entry system (JES2) views the BARR/RJE as a remote device. This section provides a quick reference to the most-used JES2 remote commands. For more information about these commands, see your IBM manual or consult the host programmer.

JES2 command categories

There are two categories of JES2 commands.

- Commands used to display information about the system, devices, or jobs in the system.
- Commands used to control the JES2 system and operations for the jobs and devices under the operator's jurisdiction.

JES2 command format

Enter JES2 commands from the RJE console as follows.

```
$verb operand1, operand2
```

Where **\$** is the JES2 command identification character; **verb** is a single-character verb that identifies the action to take; **operand** modifies the verb or command or identifies the job or system facility to act on. Use commas to separate operands when you specify more than one operand.

You can insert blanks anywhere in the command after the initial **\$**, but they are usually not necessary.

When you enter JES2 commands embedded in JCL, you must begin them with **/*** as follows.

`/*$verb operand1,operand2`

JES2 device names

RJE devices (readers, printers, and punches) are operands in many of the commands. Device names consist of two parts: device type and device number. For example, **PR1** is printer 1, **PU1** is punch 1, and **RD1** is reader 1.

Because many remote terminals have only one reader, one punch (if any), and one printer, most examples in this section use **PR1**, **PU1**, or **RD1**. You can specify up to 4 readers, 4 punches, or 7 printers, depending on the number and type of devices supported at your remote.

JES2 job control

JES2 commands limit job or device manipulation to the remote operator's jurisdiction. A job is under the operator's jurisdiction if the job's output is routed to that node or if the job was submitted from that node. If a job submitted to JES2 has not been routed by a **/*ROUTE** statement or a **DEST** parameter, the job output automatically routes back to the same facility that submitted it.

Operator command restrictions prevent outside manipulation or loss of a job and ensure the system's integrity.

JES2 command types

JES2 operator commands allow remote terminal operators to communicate with the JES2 system. This section lists the most commonly used JES2 remote commands.

Command	Controls or Displays
\$A release	job
\$B backspace	printer, punch
\$C cancel	job, printer, punch, reader
\$D display	job, queue

Command	Controls or Displays
\$E restart	printer, punch
\$F space forward	printer, punch
\$H hold	job
\$I interrupt	printer, punch
\$L list	job
\$N repeat	printer, punch
\$O release	job
\$P purge	job, printer, punch, reader
\$R route	job, queue
\$S start	printer, punch, reader
\$T set device options	printer, punch
\$Z halt	printer, punch

\$A release

The **\$A** command releases a job under the operator's jurisdiction from hold. The job resumes normal processing. The operator can specify a job name or number with the **\$A** command.

Format

\$A 'jobname'

Where **jobname** is the name of the job to be released from hold.

\$A Jnnnn

Where **nnnn** is a single job number to release that job or a range of job numbers to release a series of jobs from hold.

Examples

\$A 'DATA'

Releases the job named DATA.

\$A J245

Releases job 245.

\$A J2-70

Releases all jobs with numbers ranging from 2 to 70.

\$A J245 ,J747

Releases only jobs 245 and 747.

\$B backspace

The **\$B** command backspaces the job currently printing or punching. Operators can use this command when printer or punch malfunctions produce distorted output. They can reprint or repunch part of the output without restarting the entire job.

The **\$B** command has two operands. The first operand identifies the printer or punch to backspace. The second operand gives the number of pages or lines to reprint or repunch or it tells the device to backspace to the beginning of the current data set.

When the operator backspaces printed output, the **\$B** command counts page ejects (that is, skips to channel 1), not physical pages. If no pages eject, **\$B** backspaces to the beginning of the data set.

Format

\$B dev ,y

Where **dev** is a printer (**PR1**) or punch (**PU1**) and **y** is the number of cards to repunch, the number of pages to reprint, or the letter **D**, which indicates a backspace to the beginning of the data set. The number of cards or pages can range from 1 to 9999. If you do not specify a number, the system backspaces the printer one page or one line.

Examples

\$B PR1

Backspaces printer 1 one page (to the last page eject).

\$B PR2 ,5

Backspaces printer 2 five pages.

\$B PR1 ,D

Backspaces printer 2 to the beginning of the data set.

\$B PU1 ,5

Backspaces punch 1 five cards.

\$C cancel

Operators can use the **\$C** command to cancel a job or device under their jurisdiction. The **\$C** command cancels a job on the printer, punch, or reader or a job awaiting execution.

When operators use the **\$C** command on an output device, the command cancels only the active SYSOUT group on that device, it does not cancel other SYSOUT data sets for that job. To cancel a job on the output queue, use the **\$P** command.



If the **\$C** command does not cancel the job, the operator must reenter the command.

Operators can specify a job number or device with the **\$C** command.

Format

\$C Jnnnn

Where **nnnn** is the number of a job to cancel.

\$C dev

Where **dev** identifies the device to cancel. For **dev**, substitute one of the following:

- **RDn** – To cancel reader **n**.
- **PRn** – To cancel printer **n**.
- **Pun** – To cancel punch **n**.

Examples

\$C J545

Cancels job 545.

\$C PR1

Cancels the output currently printing on printer 1 and deletes other SYSOUT data sets for the job that matches the current setup for the printer.

\$C RD1

Cancels the job on reader 1.

\$D display

The **\$D** command displays information about the system, a job, a device, or a set of devices.

The **\$D** command format depends on the type of information the operator requests.



The *Troubleshooting: Receiving jobs from the host* Help topic provides examples of common uses for some of the **\$D** commands.

Format

\$D F

Displays the number of special forms jobs (and their job classes) waiting to print at the operator's remote.

\$D Jnnnn

Displays information about a job or a range of jobs under the operator's jurisdiction. If **nnnn** is a single number, only job **nnnn** displays. If **nnnn** is a range of numbers, all jobs in that range display. For example, an operator can type **\$D J1-32767** and receive a list of all jobs in the system under that operator's jurisdiction. If a job is not printing, make sure the job's criteria (such as form or class) matches the printer's criteria with the **\$LJnnnn** command.

\$D MRx, 'message'

Sends a message to the remote specified by **x**. The message can contain up to 53 characters. If **x=0**, the message goes to the host computer console.

\$D N, Q=y

Displays the queued jobs, where **y** describes the type of jobs to display. For **y**, substitute one of these parameters:

- **XEQ** – Displays only jobs awaiting execution.
- **XEQc** – Displays only jobs awaiting execution that have the job class specified by **c**.
- **PPU** – Displays only jobs waiting for the printer or punch.
- **HOLD** – Displays jobs on hold.
- **OUT** – Displays jobs waiting output processing. Job information and the percentage of spool use display.

\$D Q, Q=y

Identical to **\$D N** except that only the number of jobs displays rather than the job names and other information.

\$D U, RMTnnnn

Displays information about the devices attached to the operator's remote, where **nnnn** is the operator's remote number. Information includes the **STATUS** (active, inactive, or drained), the current settings for **FORMS** and **QUEUE**, and **WS** (work selection criteria).

\$D 'jobname'

Displays a list of all jobs in the system with that job name, including jobs not under the operator's jurisdiction.

Examples

\$D F

Displays the forms queue for the remote.

\$D J244

Displays job 244.

\$D J234 , J534

Displays jobs 234 and 534.

\$D J1-32767

Displays all jobs in the system under the operator's jurisdiction.

\$D MR0 , ' yes'

Sends a yes message to the host computer operator.

\$D N , Q=PPU

Displays the jobs waiting to print or punch at the operator's remote terminal.

\$D Q , Q=PPU

Displays the number of jobs waiting to print or punch.

\$D U , LGN

Displays the VTAM APPLID for JES2.

\$D U , RMT4

Displays the status of devices at remote 4.

\$D ' DATA'

Displays information about the jobs named DATA.

\$E restart

The **\$E** command restarts the job currently printing or punching. The operator can restart job output when print or punch output becomes damaged.

The **\$E** command's single operand is the device to restart.

Format**\$E dev**

Where **dev** is the device. This command terminates current printing or punching and re-queues the print or punch output.

Examples**\$E PR1**

Stops the current job printing on printer 1 and re-queues the entire print output.

\$E PU1

Stops the current job on punch 1 and re-queues the entire punch output.

\$F space forward

The **\$F** command advances the job currently printing or punching. Operators can advance the job a specified number of pages or cards or to the end of the current data set. For example, they can forward space over a long program listing to print only the program's output data set.

The **\$F** command has two operands. The first operand identifies the device. The second operand gives the number of pages or cards to forward space or tells the device to forward space to the end of the current data set.

When the operator forward spaces printed output, the **\$F** command counts page ejects (that is, skips to channel 1), not physical pages. If no pages eject in the data set being printed, **\$F** forward spaces to the end of the data set.

Format

\$F dev, y

Where **dev** is the output device and **y** is either a number indicating the number of pages or cards to skip or the letter **D** to forward space to the end of the data set. If the device encounters the end of a data set during a forward space, printing or punching resumes at the beginning of the next data set. If the operator does not specify a **y** operand, a 1 is assumed.

Examples

\$F PR1

Forward spaces the output 1 page on printer 1.

\$F PR1, 5

Forward spaces the output 5 pages on printer 1.

\$F PR2, D

Forward spaces the output to the end of the data set on printer 2.

\$F PU1, 6

Forward spaces the output 6 cards on punch 1.

\$H hold

The **\$H** command puts a job under the operator's jurisdiction on hold. If a job is queued and on hold, the job remains queued and the system takes no action on the job. If the job is active, the job finishes its current activity and then re-queues. If a job is awaiting print, punch, or execution, it remains in that state until it is released. If a job is being read, it finishes being read and then enters the execution queue on hold. A job currently executing finishes execution and enters the print queue on hold.

The operator can specify a job name or number with the **\$H** command.

Format

\$H 'jobname'

Where **jobname** is the name of the job to place on hold.

\$H Jnnnn

Where **nnnn** can be a single job number to place that job on hold or a range of job numbers to place a series of jobs on hold.

Examples

\$H 'MYJOB'

Places the job named MYJOB on hold.

\$H J357

Places job 357 on hold.

\$H J240-500

Places all jobs ranging from 240 to 500 on hold.

\$H J250, J630

Places only jobs 250 and 630 on hold.

\$I interrupt

The **\$I** command interrupts the job currently printing or punching and queues the remaining portion for later printing or punching. The job resumes output according to job priority. The output automatically backspaces one page or card to prevent data loss.

The **\$I** command allows the operator to interrupt a large job and print smaller jobs of higher priority. When the small jobs complete, the operator can resume printing the large job.

Format

\$I dev

Where **dev** is the device to interrupt.

Example

\$I PR1

Interrupts the job currently printing on printer 1 and requeues the rest of the job for later printing.

To print a short job with a priority lower than or equal to the job currently printing, follow these steps.

1. Hold the job currently printing.
2. Interrupt the printer.
3. Start the short job, and then release the job on hold.

\$L list

The **\$L** command displays output attributes for a job, including form name, FCB name, and class. Operators can use this command to print applications requiring special forms.



This command is particularly useful for determining why jobs are not printing. Typically, printing problems occur when the job criteria (form and class) do not match the printer criteria. Issue the **\$DJ1-32767** command to access the job name, then issue the **\$L** command to view the job criteria.

Format

\$L Jnnnn,ALL

Where **Jnnnn** is the job name. Operators can only specify one job name with this command. The **ALL** operand displays all attributes.

Examples

\$D J1-32767

Displays a list of queued jobs so the operator can obtain the job number (see **\$D**).

\$L J1845,ALL

Displays the attributes for job 1845.

\$N repeat

The **\$N** command requests another copy of the output currently printing or punching. It does not terminate the activity in progress. If another output device is available, the copy begins printing or punching concurrently. If only one device is available, the copy prints or punches after the current activity completes.

Only the SYSOUT data sets that match the current output setup (class, forms, and so forth) will be duplicated. Operators can use this command to make copies of special forms output (for example, mailing labels) without duplicating all the job output or rerunning the job.

Format

\$N dev

Where **dev** is the device.

Examples

\$N PR1

Places a copy of the output currently printing on printer 1 in the print queue to create duplicate output.

\$N PU2

Places a copy of the output currently being punched on punch 2 into the punch queue to create a duplicate deck.

\$O release

The **\$O** command releases the output of a job under the operator's jurisdiction from hold.

Operators can specify a job name or number with the **\$O** command.

Format

\$O 'jobname'

Where **jobname** is the name of the job output to release from hold.

\$O Jnnnn

Where **nnnn** can be a single job number to release that job's output or a range of job numbers to release a series of jobs' output from hold.

Examples

\$O 'MYJOB'

Releases the output of the job named MYJOB from hold.

\$O J357

Releases the output of job 357 from hold.

\$P purge

The **\$P** command stops device or job activity after the device or job completes the current activity.

If the operator specifies a job, the software flags it for purging. If the job is inactive, the software purges it. If the job is active, it completes its current activity, and then the software purges it.

If the operator specifies a device, the software drains the device if it is inactive. If the device is active, the software sets it to drain. Then the device completes its current activity and drains. A device in the drained state will not start until the operator starts it.

Operators must use the **\$P** command to cancel a job on the output queue because **\$C** will not work. Operators can specify a job number to purge or device to drain with the **\$P** command.

Format

\$P Jnnnn

Where **nnnn** is the number of the job to purge.

\$P dev

Where **dev** is the device (for example, **PR1**, **PU1**, or **RD1**) to drain.

Examples

\$P J333

Purges job 333.

\$P PR2

Drains printer 2.

\$P RD1

Drains reader 1.

\$R route

The **\$R** command routes a job's output the same way a **/*ROUTE** statement in JCL does. Operators can route the print or punch output of a job under their jurisdiction to another remote or to the host computer.

The operator can route jobs of a certain type or all jobs with the **\$R** command.

Format

\$R type, J=Jnnnn, D=Ryy

Where **type** is the type of output to route, **nnnn** is the number of the job to route, and **yy** is the destination of the routed output.

For the operand **type**, substitute one of these values:

- **PRT** – To route print output.
- **PUN** – To route punch output.
- **ALL** – To route both print and punch output.

For the operand **Ryy**, substitute one of these values:

- **LOCAL** – To route the output to the host computer.
- **Rnnnn** – To route the output to another remote specified by **nnnn**.

\$R ALL, R=R_x, D=R_y

Allows jobs routed to remote **R_x** to print at either **R_x** or **R_y**, whichever is available first. If the operator at remote **R_y** types this command:

\$R PRT, R=R_y, D=R_x

The two remotes share a common print queue. The operator can negate this command by typing the following command:

\$R type, R=R_x, D=R_x

This command only affects jobs currently in the queue.

Examples

\$R PUN, J=J234, D=LOCAL

Routes the punch output of job 234 to the host computer.

\$R ALL, J=J345, D=R3

Routes all of job 345's output to remote 3.

\$R PRT , J=J345 , D=LOCAL

Routes job 345's print output to the host computer.

\$R ALL , R=R2 , D=R4

Allows jobs routed to remote 2 to print at remote 2 or remote 4.

\$R A11 , R=R2 , D=R2

Cancels the alternate option.

\$R PRT , R=R1 , D=R4

Routes all jobs originally routed to remote 1 to remote 4, including jobs awaiting execution.

\$S start

The **\$S** command starts the specified device. This command negates a **\$P** command for devices. If a job is awaiting processing, it becomes active.

Format

\$S dev

Where **dev** identifies the device. Substitute one of these values:

- **RDn** – To start reader *n*.
- **PRn** – To start printer *n*.
- **PU n** – To start punch *n*.

Examples

\$S RD1

Starts reader 1.

\$S PR1

Starts printer 1.

\$T set device option

The **\$T** command sets the device's attributes. The **\$T** command has several operands and uses.

Format

\$T dev , K=1

Causes the job currently printing on **dev** to single space after each print line to the end of the data set and ignore carriage control information supplied by the program. Operators can prevent a job from skipping lines between data lines because of a programming error. It single spaces to the end of the data set currently printing and can be negated by the **\$T dev , K=R** command.

\$T dev,F=ffffff

Sets the printer to the special form specified by **ffffff**, an 8-character special form name. The printer then only prints jobs with that special form name. **STD** indicates the printer should print only standard or regular forms (no special form was specified in the job).

The printer must be inactive for this command to work. Drain the printer first with the **\$P** command and wait until the printer drains before issuing the **\$T** command. After each change of forms from the **\$T** command, the system displays a **LOAD FORMS** message on the console when the next job starts on the printer. Reply with the **\$S** command.

\$T dev,S=ddd

Tells the system whether to print or punch separator (banner and trailer) pages or lines at the beginning and end of each job. The operand **ddd** is either **YES** or **NO**. Operators can use this option to write output to a computer disk.

\$T dev,Q (class)

Where **class** lists from 1 to 8 SYSOUT classes to be processed by this device. The default class is **A** for printers and **B** for punches.

\$T dev,WS=(criteria)

Specifies the work selection criteria to determine which jobs will be allowed to print on a device and in what order. You can put one slash before or after a selection criterion. A minus sign before the criterion removes that criterion from the list. These criteria are commonly used:

- **W** – Before the slash, the writer name for the output group must match the device's writer name. After the slash, matching is preferred but not necessary.
- **Q (class)** – Unless you specify output classes, JES will search all output classes for work; therefore, always use the **Q** criterion. Before the slash, JES searches output classes in the order specified. After the slash, JES does not prioritize classes.
- **R (destination/route)** – Before the slash, the output group's destination must match the device's route code (**R=**). If you specify multiple route codes, JES considers them to be in priority order and prefers a match with the first route code. After the slash, the output group's destination must match the device's route code, but if you specify multiple route codes, JES does not prioritize them.
- **PRM (process mode)** – Before the slash, the output group's process mode must match the device's process mode (**PRMODE=**). If you specify multiple process modes, JES considers them to be in priority order. After the slash, the output group's process mode must match the device's process mode, but if you specify more than one mode, JES does not prioritize them.

- **LIM (limit)** – Before the slash, the amount of output generated by an output group must be within the limits set for the device. JES checks page limits if the data set is in page mode and record limits if the data set is in line mode. After the slash, the limit is preferred but not necessary.
- **F (forms)** – Before the slash, the forms specification of the output group and output device must match. After the slash, matching is preferred but not necessary. If the two do not match, a setup message (**\$HASP190**) will be sent.
- **FCB** – Before the slash, the output group's FCB must match the output device's FCB. After the slash, a setup message (**\$HASP190**) will be sent if there are differences in both the FCB and FORMS specifications.
- **UCS/** – The output group's UCS must match the device's UCS (**UCS=**).

Examples

\$T PR2 , F=2031

Sets printer 2 to form 2031.

\$T PR1 , F=STD

Sets printer 1 to the standard form.

\$T PR3 , R=XYZ

Sets printer 3 to route code XYZ.

\$T PR2 , Q=ACDJS

Sets printer 2 to classes A, C, D, J, and S.

\$T PR2 , F=STD , Q=AC

Sets printer 2 to the standard form and print classes A and C.

\$T PR1 , S=N

Deletes header and trailer pages from each job on printer 1.

\$T PR2 , S=Y

Causes header and trailer pages to print for each job on printer 2.

\$T PR1 , X=N

Suppresses JES2 translation of lowercase characters and control characters.

\$T PR2 , S=Y

Causes header and trailer pages to print for each job on printer 2.

\$T PR1 , WS= (-F)

Removes forms from printer 1's work selection, which means all forms can print.

\$T PR1 , WS= (F)

Adds forms to printer 1's work selection, and the form on the output group and output device must match (before the slash).

\$T PR1 , WS= (/F)

Adds forms to printer 1's work selection (after the slash).

\$Z halt

The **\$Z** command immediately stops a printer or punch. After the device stops, the operator can restart it one of these ways:

- The **\$E** command starts reprinting or repunching the job from the beginning.
- The **\$S** command causes the job to resume where the operator stops it.

The operator can use **\$Z** to check items like form alignment and paper feed without affecting the printed output.

Format

\$Z dev

Where **dev** is the device to stop.

Example

\$Z PR2

Stops printer 2 immediately.

B.2 JES3 commands

MVS/JES3 operator commands allow remote terminal operators to communicate with the JES3 system. This section lists the most-used JES3 remote commands. See the IBM JES3 Commands manual (SC23-0045) for more information about JES3 commands.

JES3 command format

Enter JES3 commands from a console as follows:

<i>*command operand1, operand2</i>

Parameter	Description
*	The JES3 command identifier. Check with your host programmer about when to use the JES3 command identifier.
<i>command</i>	A single-word or single-character verb that identifies the action to take. Do not insert blanks between the * and the command. You can enter the command in uppercase or lowercase letters.
<i>operand</i>	Modifies the command. Use a comma or single blank space to separate operands. Use apostrophes when they appear with an operand.



The ? is a standard character in JES3 commands. However, because the Barr software uses the ? to prompt you for a parameter, JES3 commands that contain a ? must be entered as double question marks (??). Double question marks will be ignored during the Barr prompt replacement and will be sent to the host as single question marks. The software can then distinguish between the Barr ? prompt and the JES3 ? command character.

JES3 command types

JES3 operator commands allow remote terminal operators to communicate with the JES3 system. This section lists the most commonly used JES3 remote commands.

Command	Controls or Displays
*F modify	job
*I inquiry	job, device, queue, message
*R restart	job, device, line
*S start	DSP, device, ABEND, job
*X call	DSP

*F modify

The **F** command dynamically alters the status of jobs, system parameters, or JES3 resources.

Format

***F x, x**

***MODIFY x, x**

Examples

***F J=nnnn, R**

Releases a job on operator hold.

***F J=nnnn, C**

Cancels a job unless the job is on hold.

***F J=nnnn, H**

Holds a job in the output queue.

***F U J=nnnn, NH=Y**

Changes a job's hold status to on hold (**NH=Y**).

***F U J=nnnn, NH=N**

Changes a job's hold status to released from hold (**NH=N**).

*I inquiry

The **I** command displays status information about jobs, devices, queues, or messages.

Format

***I x, x**

***INQUIRY x, x**

Examples

***I Q**

Displays the first 10 jobs (N=10 is the default) submitted from your node, waiting for action in the queue.

***I Q, N=ALL**

Displays a list of all jobs waiting in the queue.

***I U J=nnnn F=nnnn N=ALL**

Displays the names of all jobs (**N=ALL**) in the output service queue. Specify the job name or job number in the **J=nnnn** parameter and the form number in the **F=nnnn** parameter.

***I U J=nnnn REQ=ALL**

Displays the processing requirements (**REQ=ALL**) for the first 10 jobs in the output service queue. Specify the job name or job number in the **J=nnnn** parameter.

***I U J=nnnn REQ=ALL DD=SYSUDUMP N=ALL**

Displays the processing requirements (**REQ=ALL**) and a summary of the output for the **SYSUDUMP DDNAME** for all jobs (**N=ALL**) in the output service queue. Specify the job name or job number in the **J=nnnn** parameter.

***I U J=nnnn REQ=ALL DD=ddn N=ALL**

Displays the processing requirements (**REQ=ALL**) and a summary of the output for the specified **DDNAME (DD=ddn)** for all jobs (**N=ALL**) in the output service queue. Specify the job name or job number in the **J=nnnn** parameter.

*R restart

The **R** command restarts jobs, devices, or lines.

Format

***R x x**

***RESTART x x**

Examples

***R PR1 J**

Restarts the current job on printer 1.

***R PR2 H=Y B=Y**

Adds headers and breakers.

***R PR2 H=N B=N**

Removes headers and breakers.

***R PR2 J**

Restarts the current job on printer 2.

***S start**

The **S** command starts a DSP, device, ABEND, or job.

Format

***S x x**

***START x x**

Examples

***S PR1 WC=2**

Starts output class 2 on printer 1.

***S PR2 WC=A**

Starts output class A on printer 2.

***S PR2 R=-*nnn*P**

Starts printer 2 and backspaces the printer *nnn* pages (**P**).

***S PR2 R=*nnn*P**

Starts printer 2 and forward spaces the printer *nnn* pages (**P**).

***X call**

The **X** command invokes a DSP for execution.

Format

***X x x**

***CALL x x**

Examples

X WTR OUT=PR1 WC=*class

Calls the hot writer to send the output in the specified class (**WC=*class***) to printer 1 (**OUT=PR1**).

***X WTR OUT=PR2 A NAV=C WC=A F=(*STD*,*H*) H=N B=N**

Calls the hot writer to send class A output (**WC=A**) on only the designated standard form [**F=(*STD*,*H*)**] to printer 2 (**OUT=PR2**). The writer will process output automatically as long as work is selected (**A**). If the device is not available, the writer will be terminated (**NAV=C**). No header pages (**H=N**) or trailer pages (**B=N**) will be included.

B.3 POWER commands

Operators can enter the following VSE/POWER commands from RJE Console. Commands that operators enter from the host console are slightly different. In POWER commands, **LST** is a printer device and **PUN** is a punch device.



Global commands are not supported by POWER.

POWER command format

Enter POWER commands from a console as follows:

command operand1, operand2

Parameter	Description
<i>command</i>	A single-word or single-character verb that identifies the action to take.
<i>operand</i>	Modifies the command. Use a comma or single blank space to separate operands. Use apostrophes when they appear with an operand.

POWER command types

POWER operator commands allow remote terminal operators to communicate with the POWER system. This section lists the most commonly used POWER remote commands.

Command	Description
A alter	Modifies the device.
D display	Displays the device characteristics.
I inquire	Displays the status of a device, line, or LU.
P stop task	Stops the task.
R release	Changes the device state from Hold to Ready.
S start device	Starts the device or task.

A alter

The **A** command changes job characteristics.

Format

A *device, options*

Where *device* is **LST** (list queue), **PUN** (punch), **RDR** (reader), or **XMT** (transmission queue), and *options* is **CLASS**, **DISPOSITION**, or **PRIORITY**.

Examples

A LST1, CLASS=A

This example command sets queue 1 to class A.

D display

The **D** command displays device characteristics.

Format

D *device*

Where *device* is **LST** (list queue), **PUN** (punch), **RDR** (reader), or **XMT** (transmission queue).

Examples

D LST1

This example command displays all jobs in queue 1.

I inquire

The **I** command displays the status of a line, device, or LU.

Format

I *options*

Where *options* can be **ALL**, **DEV=name**, **luname**, or **lineaddr** (for bisynchronous lines).

Examples

I ALL

This command displays the status of all devices, LUs, and lines.

I DEV=PRT1

This example command displays the status of printer 1.

P stop task

The **P** command stops a running task.

Format

P task

Where the task runs on **LST n** (list queue) or **PUN** (punch).

Examples

P LST1,EOJ

This example command stops the task in queue 1 at the end of the job.

R release

The **R** command moves devices from the Hold state to the Ready state.

Format

R device, options

Where **device** is **LST** (list queue), **PUN** (punch), or **RDR** (reader), and **options** is **CLASS**, **DISPOSITION**, or **PRIORITY**.

Examples

R LST1

This example command releases printer 1 from the Hold state.

S start device

The **S** command starts a device or task.

Format

S device, options

Where **device** is **LST** (list queue), **PUN** (punch), or **RDR** (reader), and **options** is **CLASS**, **DISPOSITION**, **PRIORITY** or **DEST** (destination).

Examples

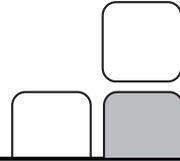
S LST1, CLASS=A

This example command starts **CLASS=A** tasks on printer 1.

S PUN, CLASS=A

This example command starts **CLASS=A** tasks on the punch device.

Glossary



adapter

Add-on equipment you can plug into a computer to allow the computer to connect to another device.

AFP

Acronym for Advanced Function Presentation. A type of document data stream that is portable. AFP is not a printer data stream, but you can view or print AFP documents. Historically, this was a mainframe data format. Files in AFP format can be generated by mainframe document composition tools and print utilities. It can also be generated by computer utilities.

APPC

Acronym for Advanced Program-to-Program Communication. The facility that characterizes the LU 6.2 architecture and its implementations in products.

ASCII

Acronym for American Standard Code for Information Interchange. A standard that specifies the correspondence between 128 graphic and control symbols to a 7-bit code. This standard is used by computers.

attributes

Parameters that describe files and printers.

banner page

Indicate the start and end of your job and tell the Barr software which banner page to use. Banner pages can contain a variety of job information such as the job name and number. Standard banner page sizes are 66 or 88 lines long for an 11-inch page with either 6 or 8 lines per inch and 80 or 132 columns wide.

BSD

Acronym for Berkeley Software Development.

buffer

An area of computer memory used to perform input or output operations. The software reads data into a buffer or writes data from a buffer.

Bus & Tag cables

Cables used to connect devices to mainframe channels. The bus cable transmits data and the tag cable controls information on the bus.

channel

(1) A path along which signals can be sent. (2) A functional unit that directs the flow of information between control units and main storage.

channel attached

Direct method of attaching printers to S/390 mainframes.

channel printer

A printer directly attached to a mainframe channel.

COM1, COM2, COM3, COM4

Asynchronous serial ports 1, 2, 3, and 4 on the computer.

communication link

The physical connection and link protocol between the remote workstation and the host computer.

communications protocol

A specification of data and control message formats and their meanings followed by sender and receiver in a communication link.

connector

An attachment at the end of a wire or set of wires that facilitates their connection to a device.

console

A control unit, such as a terminal, through which a user communicates with a computer.

data set

(1) A portion of a spool job. Jobs can contain one or more data sets.
(2) A unit of data storage and retrieval consisting of a collection of data in one of several prescribed arrangements and described by control information to which the system has access.

data streaming

The uninterrupted transfer of information over an interface to achieve high data transfer rates (for channel data streaming, 3 or 4.5 MBps). Data streaming is not adversely affected by signal delays introduced by long cable lengths.

diagnostics

A program to detect and isolate errors in programs and faults in equipment.

DJDE

Acronym for Dynamic Job Descriptor Entry. A set of instructions within the data stream that tells the printer what forms, fonts, and graphics to print for Xerox centralized printers.

DLC

Acronym for Data Link Control. An error-correction protocol in the SNA responsible for transmission of data between two nodes over a physical link. Supported by Microsoft Windows, DLC is designed to provide access to IBM mainframe computers and to Hewlett-Packard printers connected to the network.

document attributes

Attributes that control which jobs a spool printer can process. When a file's attributes match a printer's attributes, the file can print. Attributes include Barr information (Printer, File, State, Date Time, and Size) and the header fields.

domain

A collection of computers that share a common domain database and security policy. Each domain has a unique name.

driver

Software program that controls a specific device like a printer or a network connection. Drivers load into memory and stay active while you do other work.

EBCDIC

Acronym for Extended Binary-Coded Decimal Interchange Code. A coded character set of 256 eight-bit characters. EBCDIC is used by mainframes and mainframe peripheral devices such as printers. It was first used with the IBM System/360.

FCB

Acronym for Forms Control Buffer. A buffer that controls the vertical format of printed output. The FCB can include information about the number of lines per page, lines per inch, and channel stops.

FTP

Acronym for File Transfer Protocol. In TCP/IP, a program protocol used to transfer files to and from host computers. FTP requires a user ID and perhaps a password to allow access to files on a remote host system. FTP assumes that TCP is the underlying protocol.

hardware key

A small device used for software protection that plugs into the computer's input/output port. The software will not work correctly unless the hardware key is installed.

header

Data at the start of a file that describes the file and how the file is to be printed.

host computer

A large computer that controls the communications network, stores databases, and has a large computing and memory capacity. Other computers can connect to the host to share its resources.

host programmer

The person who installs and maintains host computer software.

IPDS

Acronym for Intelligent Printer Data Stream. A printer data stream generated from AFP documents and resources by the Print Services Facility (PSF).

JCL

Acronym for Job Control Language. A command language used in IBM OS/360 mainframe to launch programs. JCL specifies information on running time, program size, and the program files used for each program.

JDE

Acronym for Job Descriptor Entry. A specific job definition within the JSL.

JES

Acronym for Job Entry Subsystems of the IBM MVS Operating System. These subsystems are used for entering jobs into the MVS operating system and dispensing the output from the jobs. JES2, a replacement for the earlier HASP II program that was used for this same purpose, is smaller and simpler than JES3 and can handle 99% of most jobs that run on IBM's MVS operating system.

JSL

Acronym for Job Source Language. A JSL is a text file containing parameters and definitions defining the jobs that are printed on this printer. It contains definitions for global defaults and the JDEs for each type of job.

LAN

Acronym for Local Area Network. A high-speed communications network within a limited geographic area. LANs link several computers together within a single building or campus. (In contrast, a wide area network might span hundreds or thousands of miles.)

LCDS

Acronym for Line Condition Data Stream. An LCDS print job or print file is line data (text) with some text-based Xerox commands included, such as DJDE commands.

LPD

Acronym for Line Printer Daemon. The remote printer server that allows other hosts to print on a printer local to your host.

LPR

Acronym for Line Printer Request. The UNIX print command. This does not actually print files but rather copies them to a spool area from where a daemon copies them to the printer.

LPT1, LPT2, LPT3

Computer parallel printer ports 1, 2, and 3.

LU

Acronym for Logical Unit. In SNA communications, an independent stream of data that is multiplexed with other streams within a physical unit.

mainframe

Term used for a large central computer that offers a full set of computing services. The term originated in the days when the central processor, memory, and input/output channels were located in one central housing called the mainframe. Synonymous with Host Computer.

MB

Acronym for Megabyte. One million bytes (more accurately, 1,048,756 bytes).

Metacode

A Xerox-generated data stream that provides all-points addressability on Xerox centralized printers. Metacode is a block variable, print file format similar to the mainframe format RECFM=VBM. Metacode files are generated with host and computer programs.

MVS

Acronym for Multiple Virtual Storage operating system. A large IBM Operating System that operates on System/390, 3081, and 3091 processors.

NCP

Acronym for Network Control Protocol. The protocol responsible for negotiating network-layer details related to the transmission of TCP/IP packets over dial-up telephone connections, such as between a computer and the Internet.

network

An arrangement of nodes and connecting branches for information interchange.

NJE

Acronym for Network Job Entry. The peer-to-peer connection that mainframes use to exchange print and job data; more common than Remote Job Entry (RJE), which uses a mainframe-to-remote connection.

normalize

The reformatting of Xerox jobs into page-oriented Xerox Metacode with basic page indexing.

online

Activated and ready for operation; capable of communicating with or being controlled by a computer.

parameter

In programming, a value that is given to a variable, either at the beginning of an operation or before an expression is evaluated by a program.

port

An access point for data entry or exit. Also, a connector on a device to which cables for other devices, such as printers, are attached.

port monitor

Program that monitors Windows printer ports. Used when files are directed from the Windows spooler to a destination device.

program

Program that operates in tandem with a program window. When you start the program window, the program starts. When you exit the program window, the program stops. Contrasts with service.

PSF

Acronym for Print Services Facility. A set of processes that translate AFP data to Intelligent Printer Data Streams (IPDS).

PU

Acronym for Physical Unit. In SNA communications, an independent unit attached to an SDLC line. The component that manages and monitors the resources (such as attached and adjacent link stations) associated with a node as requested by an SSCP through an SSCP-PU session. An SSCP activates a session with a PU to indirectly manage resources of the node, such as attached links, through the PU. This term applies to type 2.0, type 4, and type 5 nodes only.

remote

A computer or other device located in another place (room, building, or city), but accessible through a cable or communications link.

RJE

Acronym for Remote Job Entry. A computing environment in which you can create programs and data on the computer, then transmit them to the mainframe, receive the printouts at high speed on disk or printers, and control the status of jobs by using remote operator commands.

S/390

IBM mainframe machine architecture. See also Channel Attached.

SAP

Acronym for Service Advertising Protocol. A service-providing node in a network (such as a file server or program server) uses this method to notify other nodes on the network that it is available for access.

SDLC

Acronym for Synchronous Data Link Control. A low-level communications protocol for synchronous communications. It is defined for both full-duplex and half-duplex operation. SNA uses SDLC as its low-level communications protocol.

service

Program that operates independently of a program window. You can start the program without opening the program window. You can exit the window without affecting program operation. Contrasts with application program.

SNA

Acronym for Systems Network Architecture. The description of logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of networks.

SPOOL

Acronym for Simultaneous Peripheral Operations On-Line. Spooling denotes a system that allows several independent flows of data to proceed concurrently. For example, files can be sent from disk to the host computer while other files are being printed.

SYSIN

A system input stream or an indicator used in data definition statements to read a data set. A job in the JES2 queue, still in JCL form, that has not been executed.

SYSOUT

A system output stream or an indicator used in data definition statements to tell the operating system to write a data set on a system output unit. The output generated by the execution of a job in the JES2 queue.

TCP/IP

Acronym for Transmission Control Protocol/Internet Protocol. A suite of protocols designed to allow communication between networks regardless of the technologies implemented in each network.

UNIX

An operating system for workstations developed by Bell Laboratories that features multiprogramming in a multi-user environment. It was originally developed for minicomputers but can now be used on mainframes and microcomputers.

VTAM

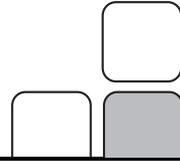
Acronym for Virtual Telecommunications Access Method. An IBM operating systems program that resides on the mainframe controlling SNA communications between the mainframe programs software and the remote terminals.

Xid

The mainframe sends an exchange ID request (Xid) as the first message to a dial-up remote to identify the remote's physical unit (PU). The host responds with an Exchange ID response (Xidr).

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