Barr Host Communications Suite

Solutions for Enterprise Output Management

BARR®

Documentation Edition 1.3

Software Version 7.1.49.4 or later

Barr Systems, LLC
6241 NW 23 Street, Suite 401
Gainesville, FL 32653-1599

Phone: 800-BARR-SYS
800-227-7797
352-491-3100

Fax: 352-491-3141

Internet: support@barrsystems.com
Web site: www.barrsystems.com
FTP site: ftp.barrsystems.com

May 1, 2018

Preface

This manual

Follow the instructions in this manual to install the Barr Host Communications Suite hardware and software. The manual provides basic information to help get you started and print a test file.

HTML Help

The Help gives you comprehensive step-by-step configuration and operation instructions for Barr Host Communications Suite and any additional modules you have purchased. The Help also describes how to configure Windows printers and manage Spool services.

For the Barr Host Communications Suite optional modules, the Help also provides detailed information on capturing an SNA communications trace, and setting up the SNA gateway and the mainframe to communicate with the Barr Host Communications Suite.

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.

- **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 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 *Getting help* 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

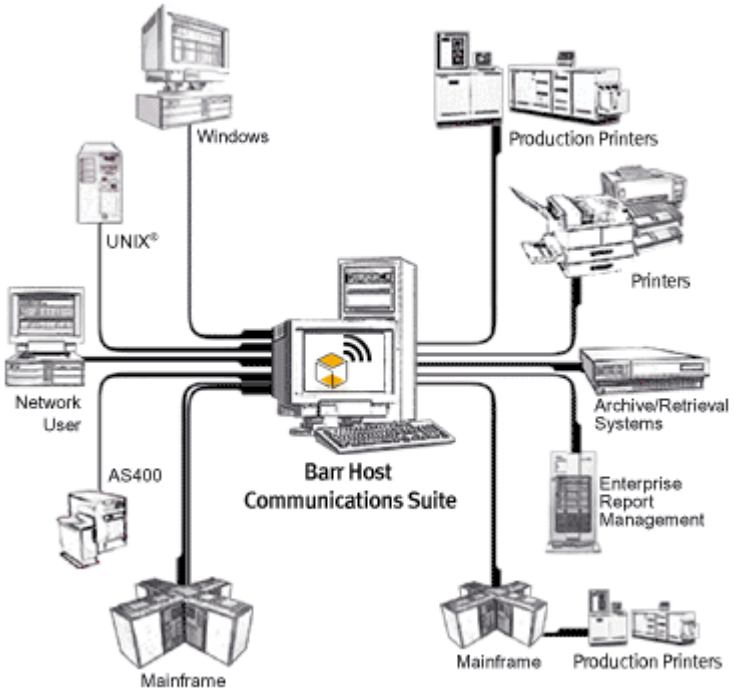
Once Barr Host Communications Suite has been installed, from the taskbar, click the **Spool Window** desktop icon. Select Help | **About**. The software version number displays in this window.

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. Select the program file name, right-click, and then select **Properties**. Select the **Version** tab and note the **File version** number.

Table of Contents

Introduction

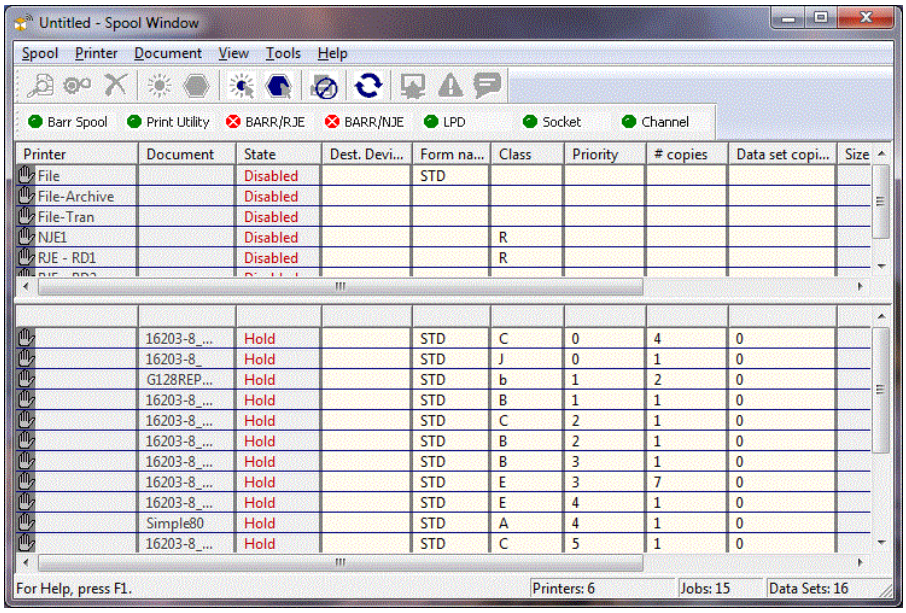
Barr Host Communications Suite (BHCS) gives you complete control of printing and routing network documents. You can direct files from the LAN, Windows programs, or host computers to a variety of destinations, including printers and other hosts.



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, folders on a network drive, other print servers or applications, or just about anywhere you want to route print output.

The main user interface for controlling the Barr Host Communications Suite 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 RJE and 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 Host Communications Suite in the background, even when programs are closed.
- Log on or off the computer where Barr Host Communications Suite 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 Host Communications Suite features, see the product or module feature descriptions.

With NJE, RJE, and TCP/IP options, you can receive documents from many different types of hosts on your enterprise network. NJE, RJE, and TCP/IP must be purchased separately as modules of the Barr Host Communications Suite.

1.1 Features

Barr Host Communications Suite 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 Host Communications Suite comes with many standard features. You can also purchase software options that provide additional functionality.

Standard features

Barr Host Communications Suite 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
- Centronics and older line printers
- Another Barr Host Communications Suite system
- Local computer or network

Print files with unlimited file sizes

Barr Host Communications Suite supports printing files with unlimited file sizes.

Set document and printer attributes

BHCS 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

BHCS 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

The Barr Host Communications Suite 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 Host Communications Suite 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 Host Communications Suite supports printer forms.

- **Vertical Forms Control** – On channel-attached printers, Barr Host Communications Suite 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 Host Communications Suite 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 BHCS 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 Host Communications Suite 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 Host Communications Suite modules that provide the following features.

Send and receive mainframe jobs

With 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 NJE with BHCS gives you most of the features of the JES SPOOL, including features for naming, priority, copies, routing, and reprinting.

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

Both NJE and 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 TCP/IP module. The TCP/IP module emulates an LPD, which is the standard print server emulation used in TCP/IP environments. The TCP/IP module 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 TCP/IP module supports any number of simultaneous print requests on multiple queues or ports from any number of hosts.

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

With the 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

The transform options allow 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 Host Communications Suite Accounting features.

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

Depending on your requirements and configuration, the transform options can convert 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 the print splitter can 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.

1.2 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. BARR/PRINT CHANNEL *7-Plus* meets the Section 508 software accessibility standards.

1.3 System requirements

Install Barr Host Communications Suite on a computer server or workstation that meets the following requirements.

You can install the Barr Host Communications Suite on a computer server or workstation that meets the following requirements.

Processor	• Minimum: 1 GHz (x86 processor) or 1.4 GHz (x64 processor) • Recommended: 2 GHz or faster with multiple cores
Memory	• Minimum: 512 MB RAM • Recommended: 2 GB RAM or greater
Available Disk Space	• Recommended: 40 GB or greater
Operating System	• Microsoft Windows Server 2008 STD /R2/2012 or Windows 7/8. 32 or 64 bit. .NET 3.5 Note: For Windows Server 2008 R2 the Application, File, and Print roles need to be enabled.

NJE or RJE software requirements

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

Installing/Upgrading/Removing

Follow the instructions below to install Barr Host Communications Suite (BHCS) software on your computer. The setup program copies files from the Barr Host Communications Suite CD to your computer. Before you run the setup program, exit all Windows programs.

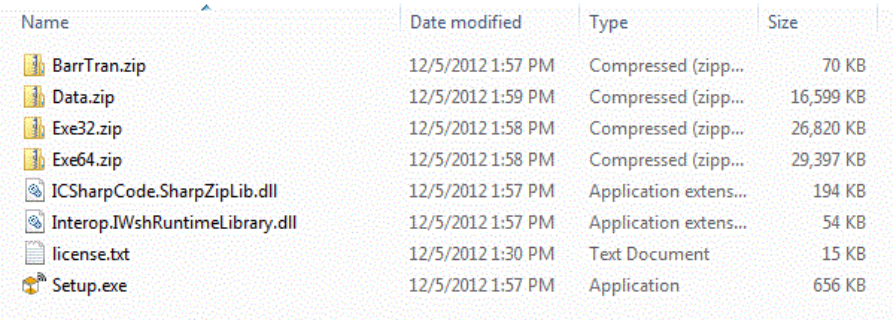
You must be a member of the Local Administrator group on the computer where you install the Barr Host Communications Suite.

You must have .NET 3.5 installed for the setup program to execute.

With Windows Server 2008, the Application, File, and Print roles need to be enabled.

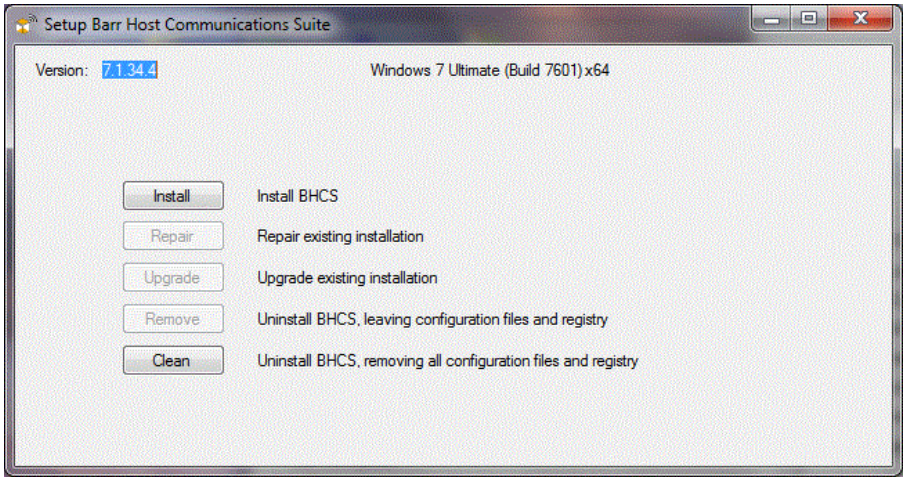
2.1 Start the setup program

Open Windows Explorer, and navigate to the folder containing the Barr Host Communications Suite installation files.



Name	Date modified	Type	Size
BarrTran.zip	12/5/2012 1:57 PM	Compressed (zipp...	70 KB
Data.zip	12/5/2012 1:59 PM	Compressed (zipp...	16,599 KB
Exe32.zip	12/5/2012 1:58 PM	Compressed (zipp...	26,820 KB
Exe64.zip	12/5/2012 1:58 PM	Compressed (zipp...	29,397 KB
ICSharpCode.SharpZipLib.dll	12/5/2012 1:57 PM	Application extens...	194 KB
Interop.IWshRuntimeLibrary.dll	12/5/2012 1:57 PM	Application extens...	54 KB
license.txt	12/5/2012 1:30 PM	Text Document	15 KB
Setup.exe	12/5/2012 1:57 PM	Application	656 KB

Double click on Setup.exe.

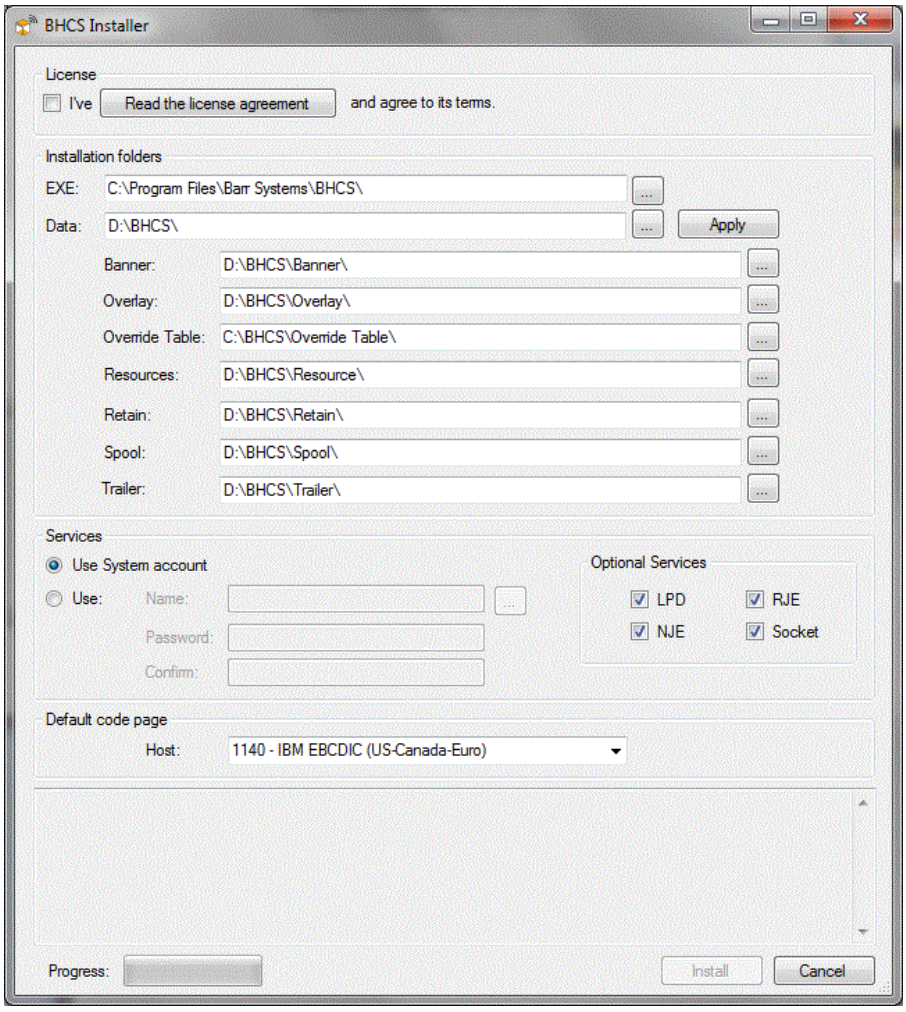


Select the desired option:

- Install - Installs the Barr Host Communications Suite software. After installation, the License Manager will be launched automatically, so you can install and activate a license.
- Repair - Enabled when launched from the Setup folder in the BHCS EXE folder, will repair an existing installation
- Upgrade - Enabled when launched from a new folder, will upgrade an existing installation. The existing software is removed, and reinstalled. After installation, the License Manager will be launched automatically so you can activate the new version.
- Remove - Removes (Un-installs) the Barr Host Communications Suite software
- Clean - Removes (Un-installs) the Barr Host Communications Suite software, data files, and configuration.

2.2 Install

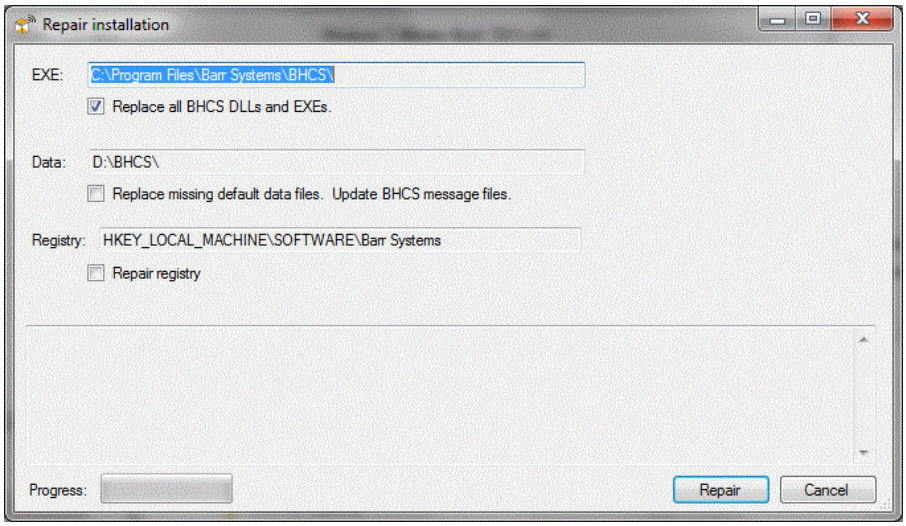
This option will install the Barr Host Communications Suite software. After installation, the License Manager will be launched automatically, so you can install and activate a license. Pressing the Install button will bring up the following screen.



The install button is enabled when you agree to the license terms. Before pressing Install, check your installation folders, and make any needed changes. Select the service account, and which services you wish to install. Select the proper Host Code Page. Then, press the Install button.

2.3 Repair

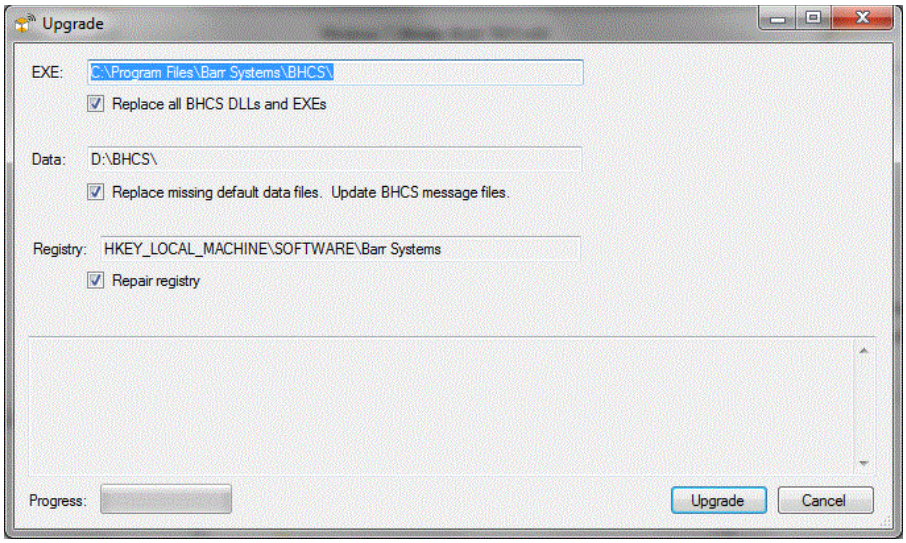
The Repair option is enabled when the setup program is launched from the Setup folder in the BHCS EXE folder. It will repair an existing installation.



Normally, you'll only want to replace the DLLs and EXEs. You can also update missing data files, and/or repair the Registry.

2.4 Upgrade

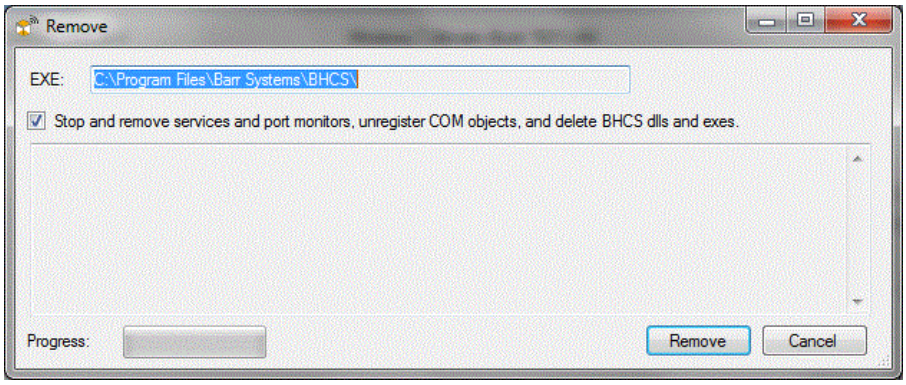
The Upgrade option is enabled when the setup program is launched from a new folder. This option will upgrade an existing installation. The existing software is removed, and and the new version is installed. After installation, the License Manager will be launched automatically so you can activate the new version.



Normally, you'll want to upgrade everything.

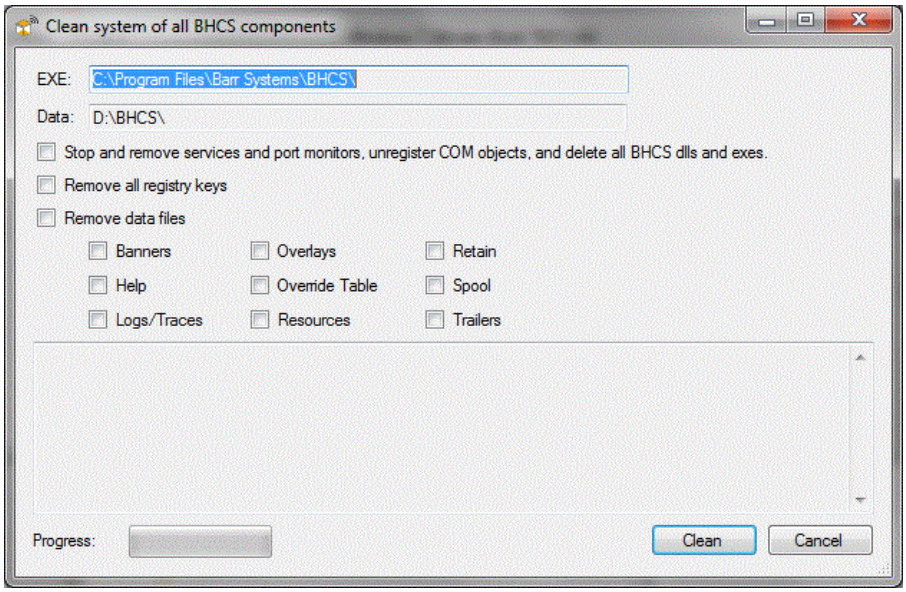
2.5 Remove

Use the Remove option to uninstall the software, leaving data files and configuration intact.



2.6 Clean

Use the clean option when you also want to remove data and configuration files.



2.7 License Manager

The License Manager is automatically launched after a successful install or upgrade of the Barr Host Communications Software. It can also be launched from the Spool Window's Tools menu. It shows the currently licensed modules. The license controls which product features are available.

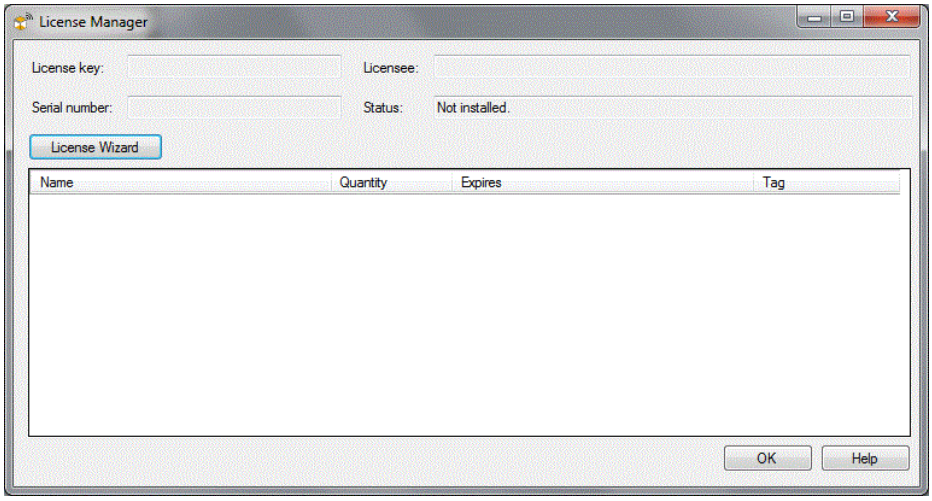


Figure 1 - Initial License Manager with no license installed.

Demonstration and temporary licenses can be created by Barr Systems' Sales department.

The License Wizard is used to install new licenses and to activate licenses. If an Internet connection is available, installing and activating a license is a very easy process. If an Internet connection is not available, there is a manual process available.

When moving the Barr Host Communications Suite software from one computer to another, the license should be deactivated on the old machine, before being installed and activated on the new machine. If for some reason this is not possible, contact Barr System's Support department.

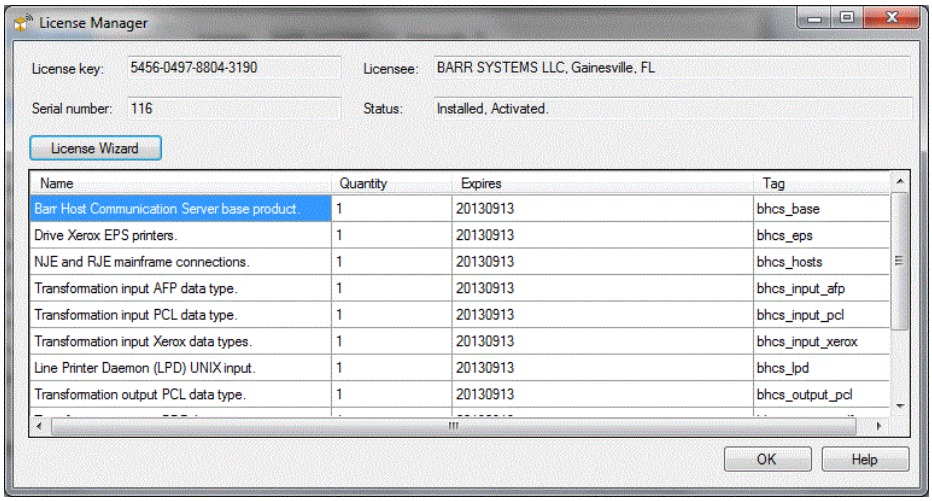


Figure 2 - License Manager with installed and activated license

2.8 License Wizard

Pressing the License Wizard button will bring up a menu. The menu options will vary depending on the current state of the license.

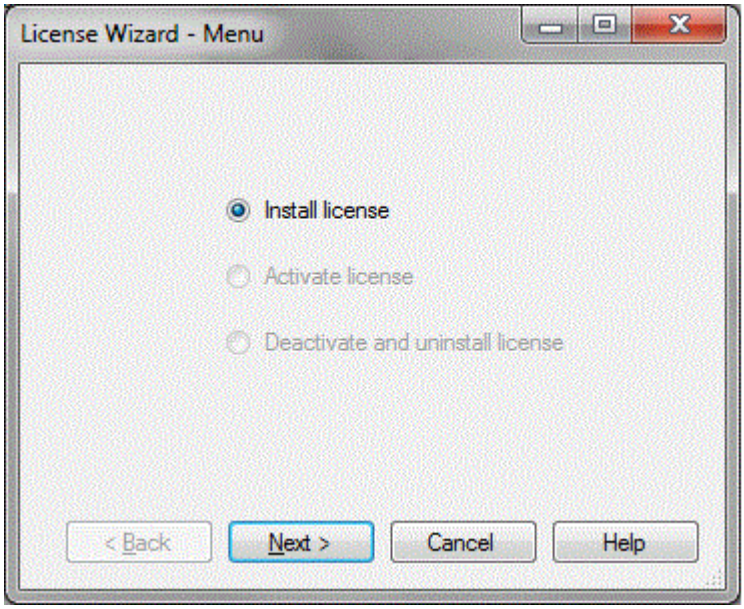


Figure 3 - License Wizard menu

Installing a license

Press Next to choose the installation method.

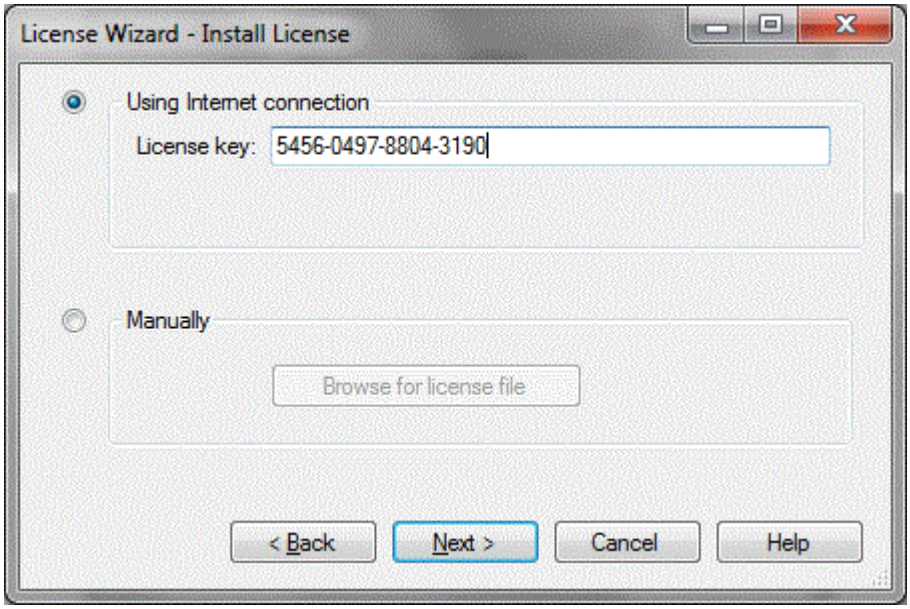


Figure 4 Install license

To install a license via the Internet, enter your license key, then, press Next. Your license key should have been provided by an email from the Sales department when your system was ordered. If that email is no longer available, contact the Support department.

To manually install a license, you'll need a license file. Select the Manually option, and browse to the license file. If you don't have a license file you will need to go to WWW.BARRCENTRAL.COM then choose DOWNLOADS, then choose Barr BHCS License File. You will be prompted to log into Barr Central if you are not logged in. If you do not have a login User Name / password, then follow the New user / Forgot Password? Selections to request a login User name and password. Enter the License key (see above paragraph regarding where you get the license key from) then press the Get License button. A Windows Explorer dialog will then open allowing you to select where to save the license file to. Since it's assumed you are running this from a different server than where BHCS is being installed, you'll need to copy the license file to a location that can be accessed by the BHCS Server. You can then select the Browse for license file (Figure 4 – Manually) and select the license file you downloaded.

Once the license has been installed, a confirmation screen is shown.

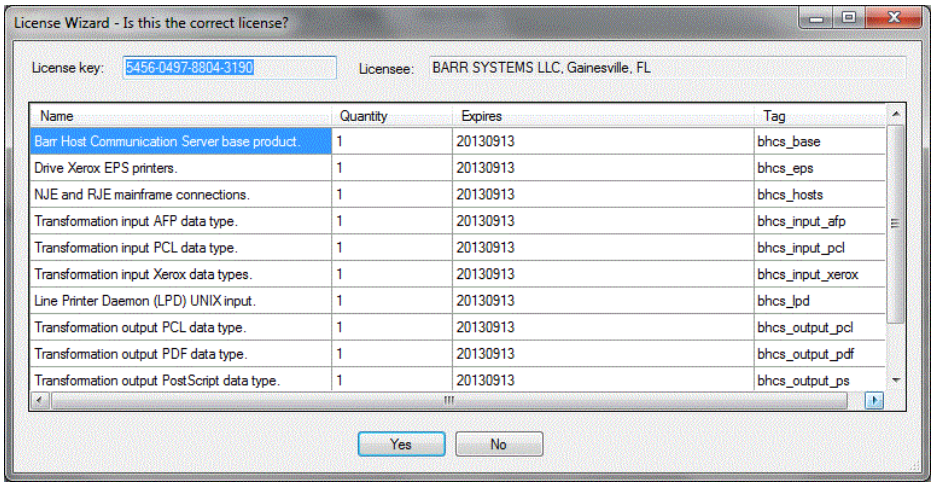


Figure 5 Confirm the license

Press Yes if it is the correct license.

Activation

Activation of the license allows the license to be used beyond a 10 day grace period.

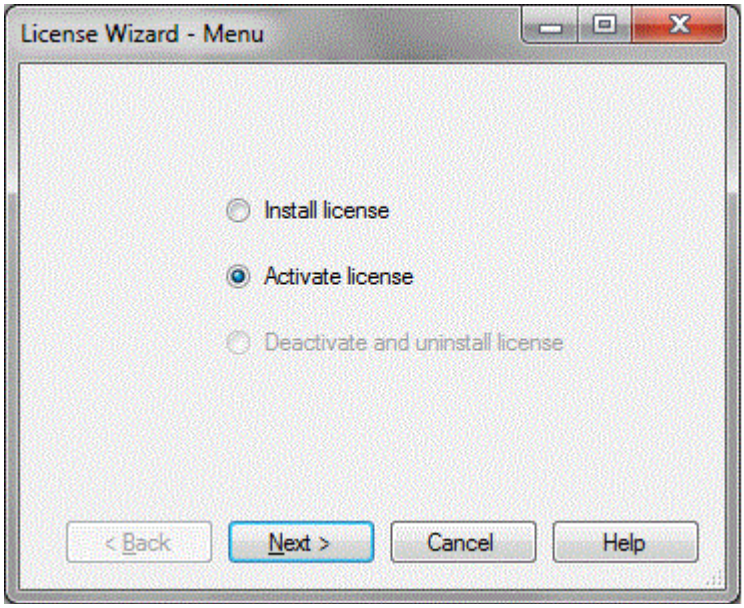


Figure 6 - Activate license

The activation menu is available once a license has been installed. Press Next to start the process.

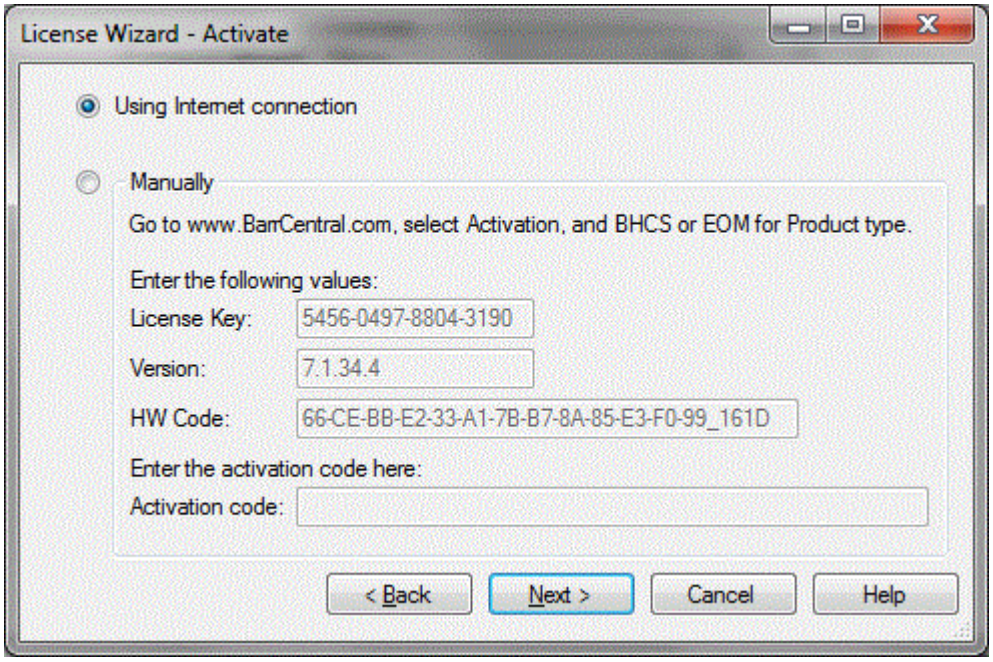


Figure 7 Activation

Press Next to activate via the Internet, or follow the instructions to manually activate. After the activation process has been completed, you'll be prompted to restart services.

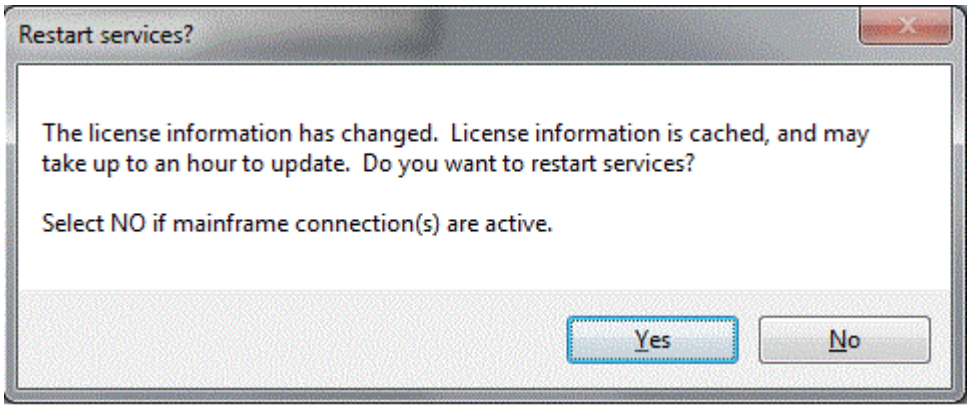


Figure 8 - Restart Services

If you choose to activate manually, you will need to access the www.BarrCentral.com website then choose Activation. Once you've

selected BHCS from the Product Type you will be redirected to this page:

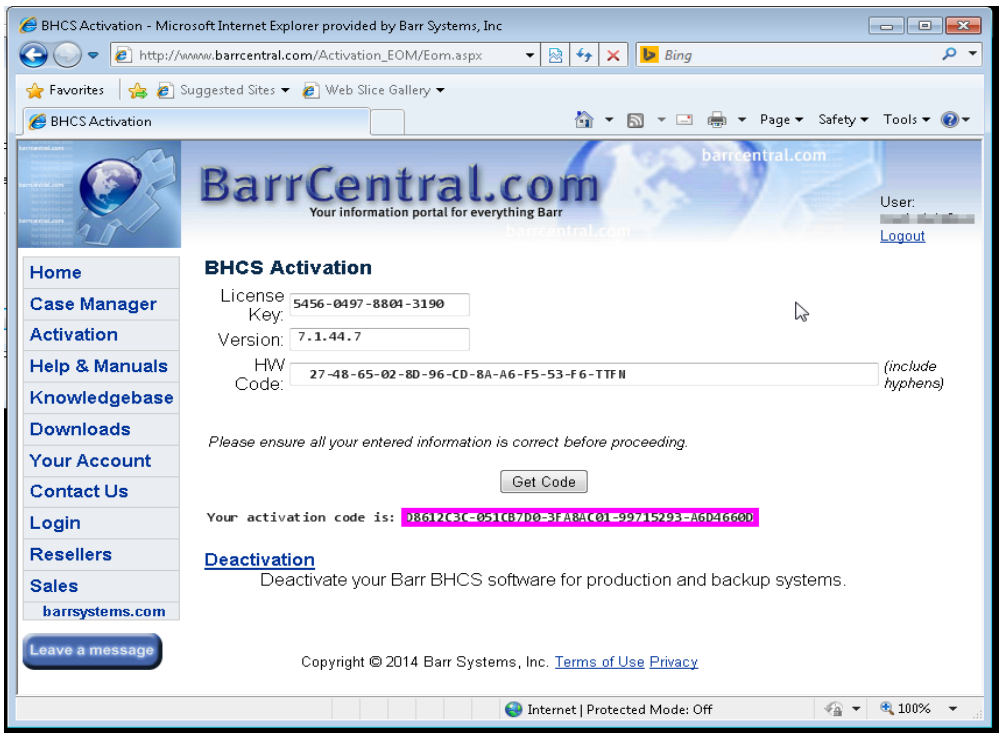


Figure 9 Manual Activation with Barr Central

After entering the License Key, Version and HW Code (see fig 7), press the Get Code button. The activation is returned and can be cut /pasted into a file, then inserted into the activation code section (see fig 7).

Deactivation

You'll need to deactivate your license to replace the current license with a new one, or to move the Barr Systems Communication Suite software to another computer. You will also need to deactivate and uninstall your license then install and activate your license after annual license renewal.

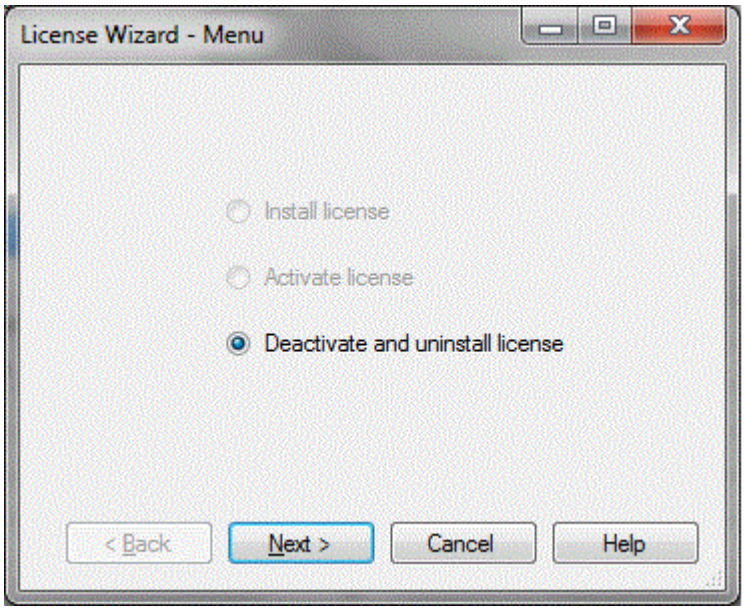


Figure 10 - Deactivation menu

Press Next to start the process. Then, select the desired method.

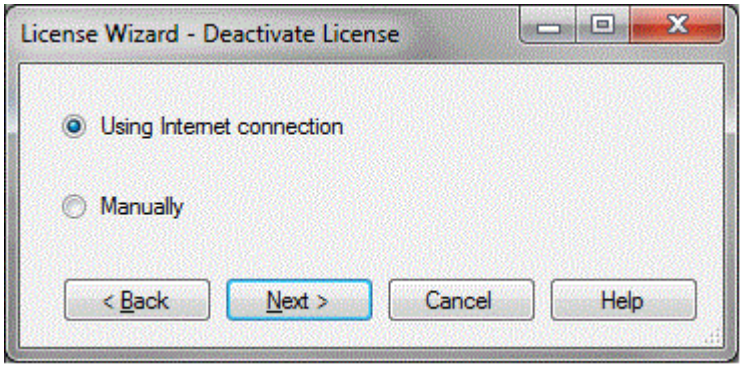


Figure 11 - Select deactivation method

Press Next to deactivate via the Internet, or Manually to manually deactivate. You'll need to enter the License Key and Hardware code on BarrCentral.com in order to get your Confirmation code. Enter that code on the following screen, and press OK to finish the process.

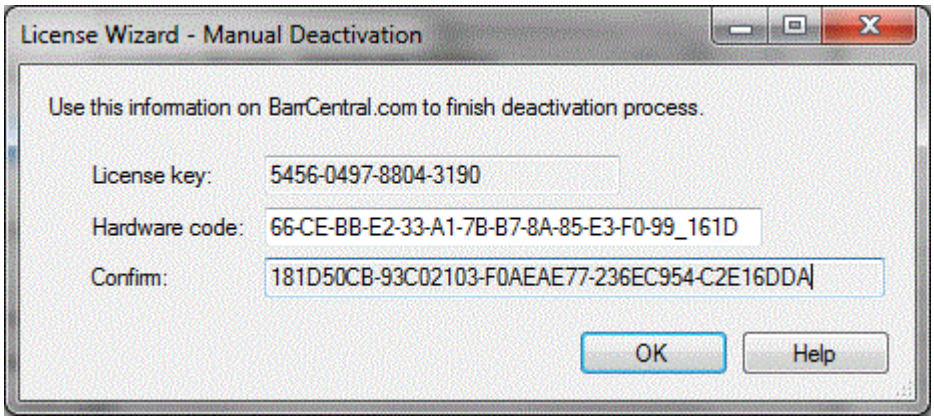


Figure 12 Manual deactivation

Notes:

The Spooler

Getting Started

The Spooler is the core module of the Windows-based Barr Host Communications Suite (BHCS). The Spooler 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.

A fully customizable Spool Window allows you to set job priorities, and rearrange and resort jobs to suit your changing needs. The Spooler supports a variety of output destinations and an unrestricted number of printers and print jobs. You can also personalize settings for different operators.

The Spooler 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
- 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 BHCS 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 BHCS, 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 BHCS 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 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 Spool Core service automatically starts, if it is not already started. When the Spool Core service is started, BHCS can receive and route spool documents.

3.3 Define printers

To add a Windows printer, you must be a member of the **Administrators** group.

You need to define Windows printers to use with BHCS. 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 BHCS, 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
- Define a printer (automatically)
  - For printing to a TCP/IP print queue
  - For printing to a Xerox EPS
  - For routing to another BHCS
  - 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 BHCS 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 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, for Barr ports use the Generic Text printer driver.
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

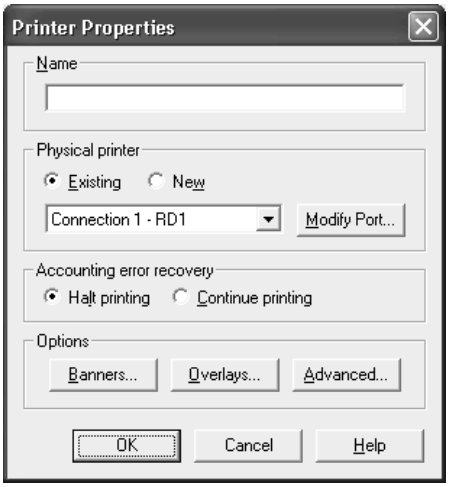
When you use a Barr port to define a Windows printer, you must enable the Windows **Print directly to the printer** setting. This setting ensures that BHCS can recover from any errors that might occur while jobs are being routed from the Barr spool queue to their final physical destination. This setting 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 Host Communications Suite 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 BHCS, 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.

4. 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.

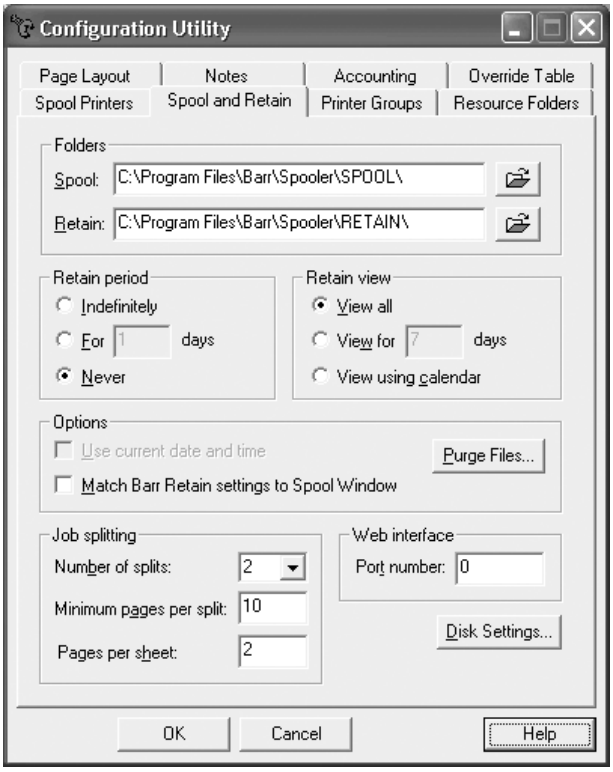
Option	Port	Printer Driver
Print to a TCP/IP print queue	Barr LPR Port	Generic/Text Only
Print to a Xerox EPS	Barr IP Port	Generic/Text Only
Route to another BARR/SPOOL	Barr LPR Port	Generic/Text Only
Write to an IP socket	Barr IP Port	Generic/Text Only
Write to disk	Barr File Port	Generic/Text Only

5. Click **OK**. A message box will display when the printer has been successfully created.
6. 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.
7. 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.
8. 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.
9. Click **Overlays** to setup overlays and configure how they will be applied to print jobs (optional). The **Overlay Options** dialog box displays.
10. 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.
11. Click **OK**.

3.4 Enable the retain feature

While you are learning to use BHCS, 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.)

BHCS examines a document's age only when the Spool Core 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 Spool Core 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.

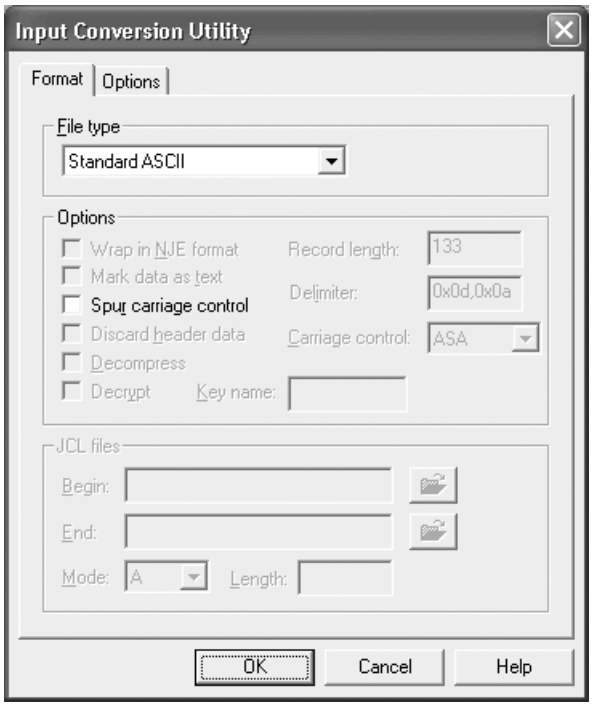
1. Set the spool printer to Disabled by right-clicking the printer row and selecting **Disabled**.
2. Set the spool printer class to A by clicking the printer's **Class** column and typing **A**.
3. Set the spool printer to Ready by right-clicking the printer row and selecting **Ready**.
4. Set the SIMPLE 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 BHCS 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.
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.



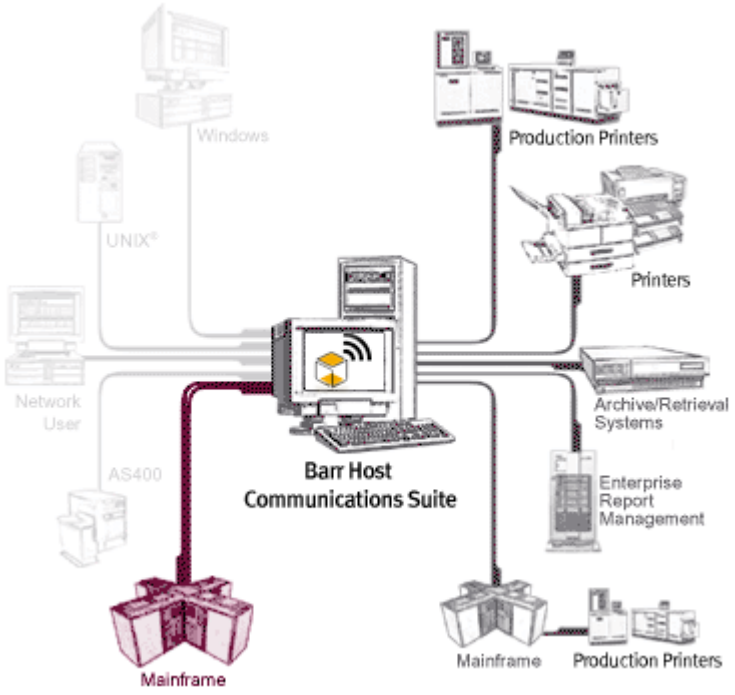
6. From the **Format** tab, select **Standard ASCII** and click **OK**. The selected file briefly displays in the **Manual Spooling** tab's **Files currently spooling** list. It disappears quickly, so you might not see it display. The spooled document displays in the Spool Window's document list.

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**.

Network Job Entry (NJE)

Getting Started

NJE is a communications protocol that provides a powerful way to exchange print and job data sets between IBM mainframes and the Barr Host Communications Suite (BHCS) 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 Host Communications Suite and NJE provides most of the features of the MVS/JES and VSE/POWER spool. The software is capable of exchanging print and job data sets with other NJE nodes. The Barr Host Communications Suite manages the NJE print and job data sets, and maintains them in the spool folder.

You can define multiple NJE nodes on the Barr Host Communications Suite 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.

BHCS connects in multiple ways:

- IP via the Enterprise Extender (HPR/IP) link
- 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). BHCS connects to the SNA gateway via TCP/IP, IPX/SPX, or NetBEUI protocols

BHCS 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, and TCP/IP-attached
- 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

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, NJE can connect through an SNA gateway (Microsoft SNA Server or Microsoft Host Integration Server [HIS]). The Barr SNA link services and the SNA gateway emulate a 3174 Cluster Controller, a PU type 2.

When you configure NJE, there are two available connection types: Barr SNA and SNA.

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.

- **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 BHCS. If you use JES2 as your host spooler, you can also configure auto-start parameters for the host.

For all connection types, setting up 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 BHCS software, you must be a member of the local **Administrators** group on the computer where you install the Barr Host Communications Suite. 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)
3. Communicate with the host (5.5)

4.1 Gather host parameters

For BHCS to communicate with your host, your host programmer must define 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 or SNA) 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 *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): _____

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 *NJE Host Definition Guide*.

Host node name: _____

BHCS 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 *NJE Host Definition Guide*.

Host node name: _____

BHCS 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 *NJE Host Definition Guide*.

Host node name: _____

BHC node name: _____

JOB receivers = _____ (Number of SYSIN transmitters)

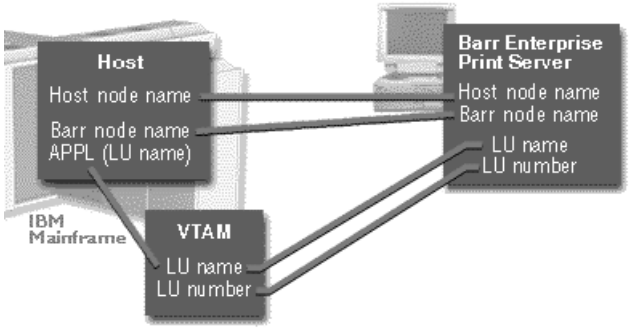
JOB transmitters = _____ (Number of SYSIN receivers)

OUT receivers = _____ (Number of SYSOUT transmitters)

OUT transmitters = _____ (Number of SYSOUT receivers)

4.2 Configure Barr SNA connections

The Barr SNA connection type provides an easy way to manage your printing using NJE. With Barr SNA, you do not need an SNA gateway to interpret between the host spooler and the Barr software. The HPR/IP communication link enables 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), and configure 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 NJE for a Barr SNA connection.
Use the same information in all phases for configuring 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
   - HPR/IP (Enterprise Extender)
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
```

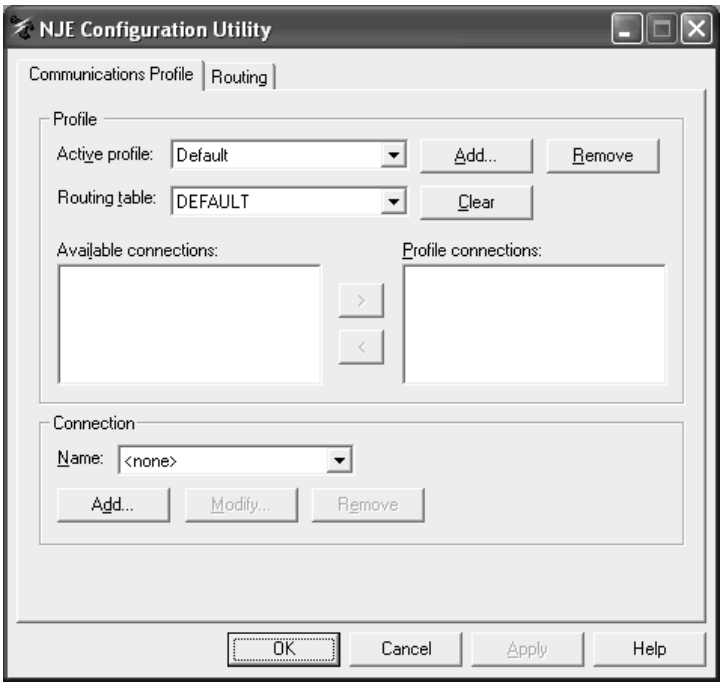
4. After you start NJE, Barr SNA sends an alert to VTAM. NetView detects the alert, calls the list, and starts the NJE node. You can use the NetView NPDA application to view details of the alert. The alert display will look similar to the following:

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

CNM01       ISTPUS     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
```

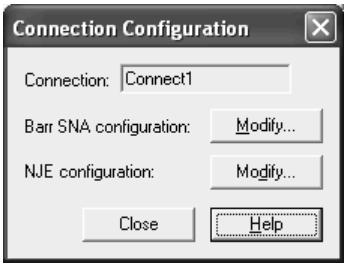
Configure the HPR/IP (Enterprise Extender) connection

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

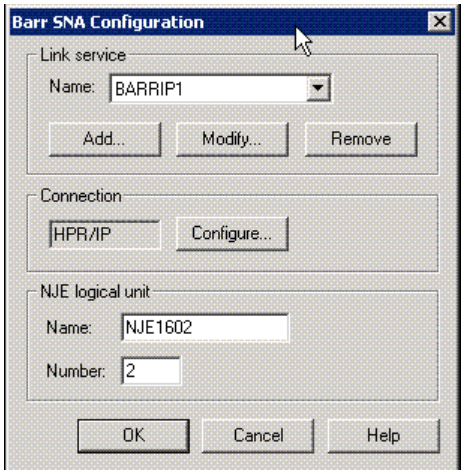
1. Open the NJE Configuration Utility.
2. Select the **Communications Profile** tab.



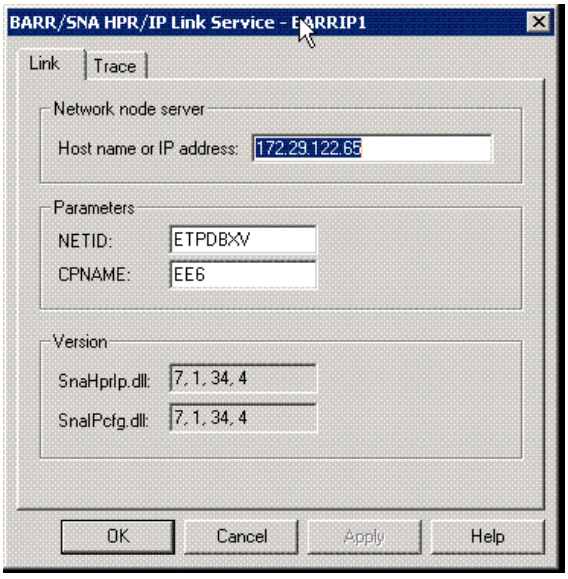
3. Under **Connection**, click **Add**. The **Add Connection** dialog box displays.
4. Type the connection **Name**.
5. In the **Type** drop-down list, select **Barr SNA**. Click **OK**. The **Connection Configuration** dialog box displays.



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



7. Under **Link service**, an 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.

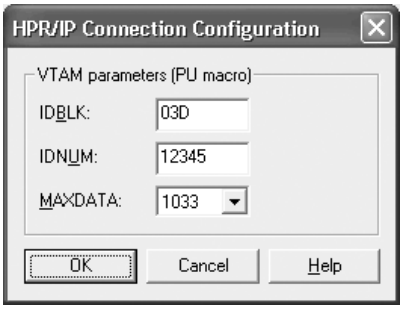


   a. Enter the **Host name or IP address** of the Network Node Server. This must match the value provided by the host programmer in Section 5.1.
   b. Enter the **NETID** (network name) for the HPR/IP link service. This must match the name provided by the host programmer in Section 5.1. The value must 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*n*.

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.

a. 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.

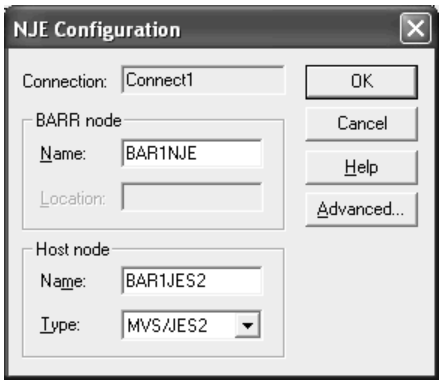
b. In the **MAXDATA** box, select the maximum amount of data you can send on the PU in one frame. This value includes nine bytes of header information plus the data length. The default value is 1033.

c. Click **OK**. You are now ready to configure the Barr SNA node.

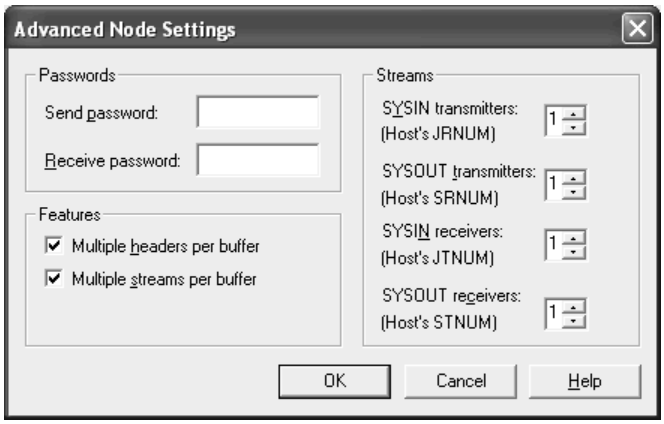
4.3 Configure the NJE node

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 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.



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 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.

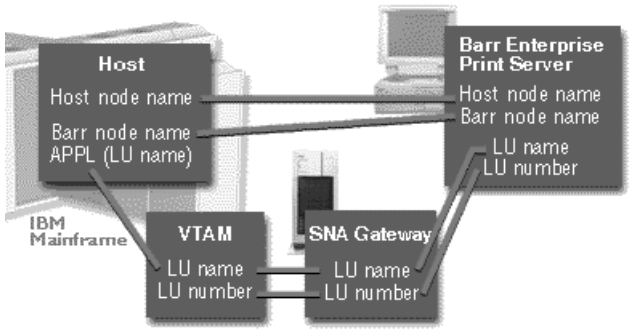
Host	Command	Description
JES2	**$SN,A=*applid***	Where ***applid*** is the NJE LU name set during VTAM and JES2 configuration.
JES3	**+S SNA,NODE=*nodename***	Where ***nodename*** is the BHCS node name set during JES3 configuration.
POWER	**pstart pnet,*nodename***	Where ***nodename*** is the BHCS node 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.

4.4 Configure SNA connections

The SNA connection type provides an easy way to manage your printing using 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 BHCS 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 BHCS for an SNA connection. Use the same information in all phases of configuring NJE.

The following steps must be completed in order.

1. Configure the SNA gateway
2. Configure 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 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.

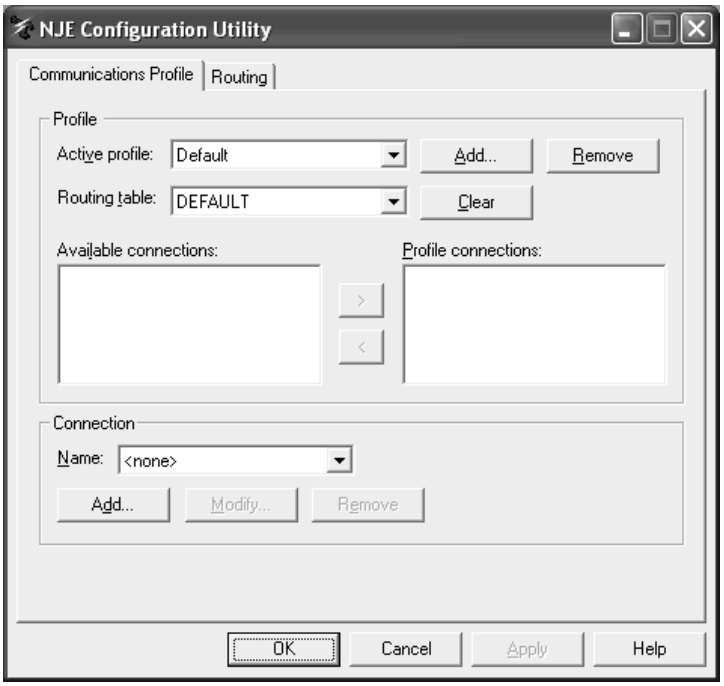
1. Open Microsoft SNA Manager.
2. From the list on the left side of the window, select the connection you want to configure.
   - **SNA Server or SNA Workstation** – On the menu bar, select Insert | 3270 | **Application LU (LUA)**.
   - **HIS** – Right-click the connection and select **Application LU (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 NJE

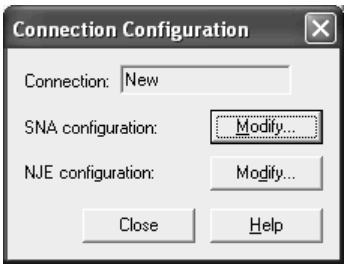
In the NJE Configuration utility, you need to define the connections between Barr nodes and adjacent host nodes, configure an SNA node and NJE node, and start the SNA node. Complete the following steps to configure NJE. Your host programmer can help configure the link settings.

1. Open the NJE Configuration Utility.
2. Select the **Communications Profile** tab.

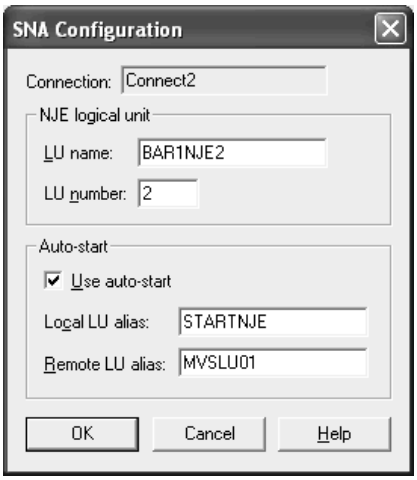


3. Under **Connection**, click **Add**. The **Add Connection** dialog box displays.
4. Type the connection **Name**.

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

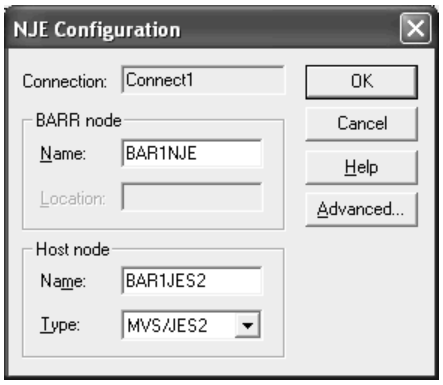


6. Next to **SNA configuration**, click **Modify**. The **SNA Configuration** dialog box displays. Complete the following steps to configure the SNA node.

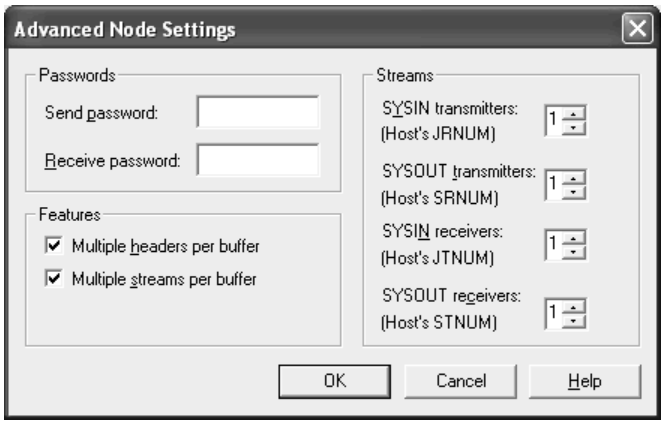


   a. Under **NJE logical unit**, enter the SNA **LU name**. This must match the NJE LU name provided by the VTAM and host programmers in Section 5.1.
   b. Type the **LU number** as a decimal. This must match the NJE LU number provided by the VTAM programmer (the **LOCADDR** parameter) in Section 5.1.
   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.



   a. Under **BARR node**, enter the Barr node **Name**. This must match the BHCS 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 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	**$SN,A=*applid***	Where ***applid*** is the NJE LU name set during VTAM and JES2 configuration.
JES3	**+S SNA,NODE=*nodename***	Where ***nodename*** is the BHCS node name set during JES3 configuration.
POWER	**pstart pnet,*nodename***	Where ***nodename*** is the BHCS 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 NJE configuration.
SSCP	A physical connection between the SNA gateway and the host is active, and the Barr Host Communications Suite 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 Host Communications Suite software and the host.

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

4.5 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 BHCS, 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 BHCS 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 BHCS 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.
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 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 BHCS. 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 BHCS 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 S*ending JCL files with an embedded command* Help topic. Using embedded commands adds flexibility to the existing 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 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 BHCS* Help topic.

1. If you are adding local files, skip to step 2. If you are adding files from a network, configure the 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 Service Config.
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 **NJHGORGN – 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 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.

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 **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. Select the Generic Text 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	
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.
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.

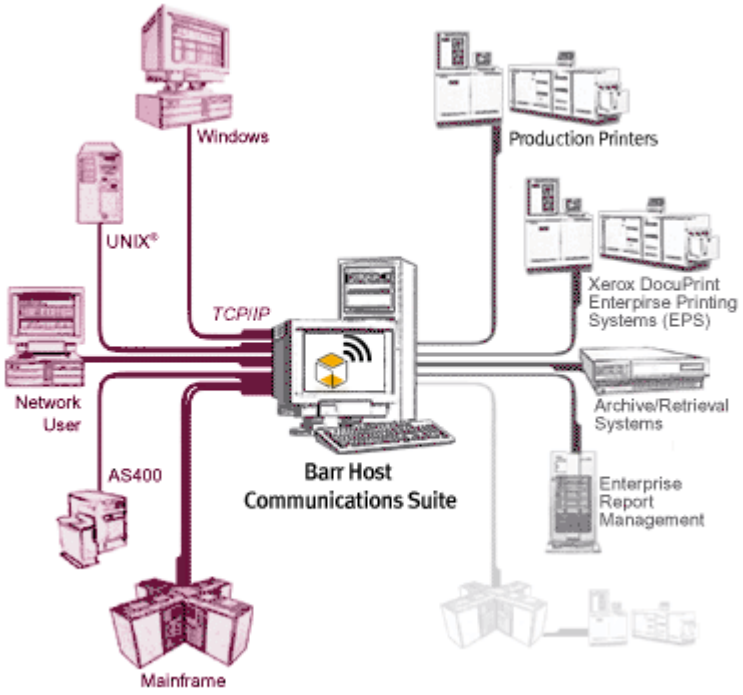
c. In the **Available columns** list, select **NDHGNODE** and click the right arrow (>) to add it to the **Visible columns** list. You can also add fields by double-clicking entries under **Available columns** list. Click **OK** to return to the Spool Window.

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.

TCP/IP

Getting Started

The TCP/IP module of the Barr Host Communications Suite (BHCS) 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 Host Communications Suite with 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. 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.

The TCP/IP module includes the following features.

- Routes print (using BHCS) to parallel, serial, and network printers
- 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), 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 TCP/IP module.

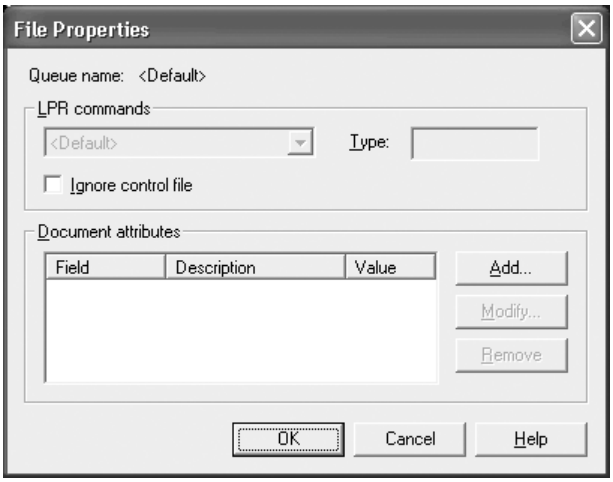
LPD	TCP/IP Socket
5.1 Add an LPD print queue	5.2 Add a TCP/IP port

5.1 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 PRINT TCP/IP Configuration utility.
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**.



a. Under **LPR commands**, specify if you want to **Ignore** the control file.
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.

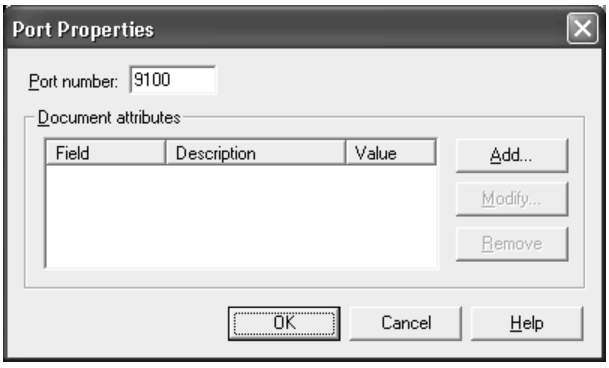
f. Click **OK**.

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.

5.2 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 Configuration utility.
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.

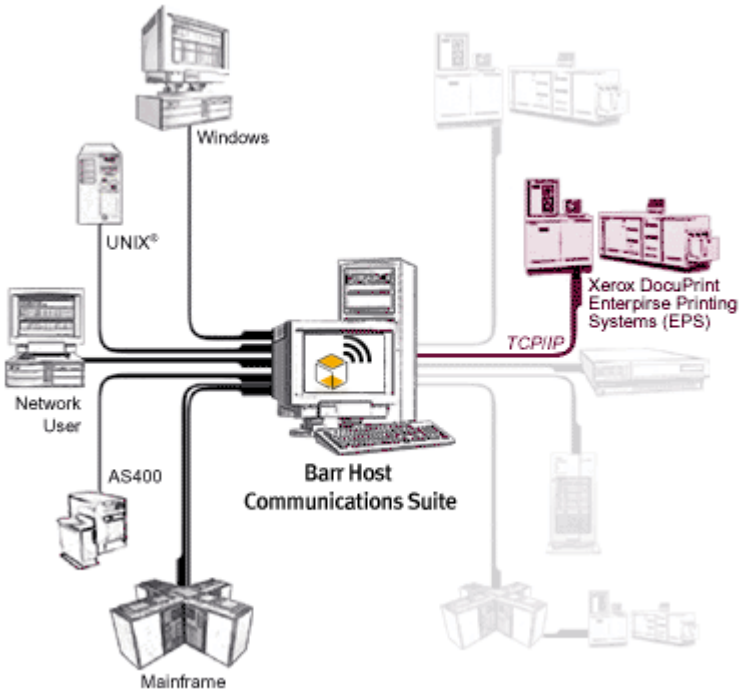
5. Click **OK**. The Input Conversion Utility displays.
   a. On the **Format** tab, select the file type you will be receiving and select options as necessary. The options that are available vary depending on the selected file type. See the *Format tab* Help topic for descriptions of each option.
   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.

Notes:

BARR/PRINT to EPS

Getting Started

BARR/PRINT to EPS is a software module of the Barr Host Communications Suite (BHCS). 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 Host Communications Suite, 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

6.1 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.

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.

6. 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.

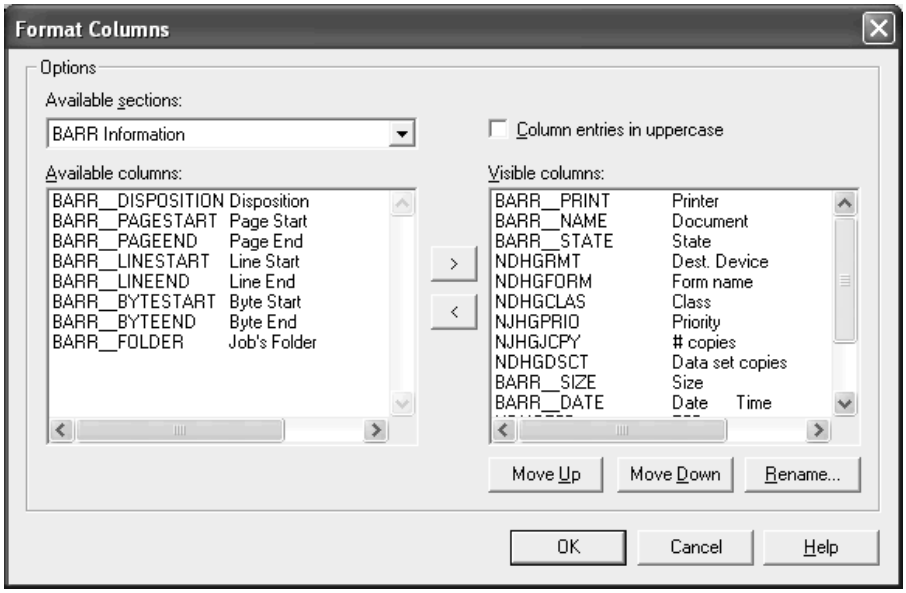
Options	Required	Optional	Don't Use
Printer initialization files			X
Page layout			X
Code page	X		
If FCB is not found, use default FCB named 'STD'		X	
Printer in Disabled state at startup		X	
Printer can be hidden		X	
Printer does not check jobs for valid data type		X	
Bypass the Windows spooler	X	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

7. Close the Configuration Utility.

6.2 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.
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 RJE, 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**.

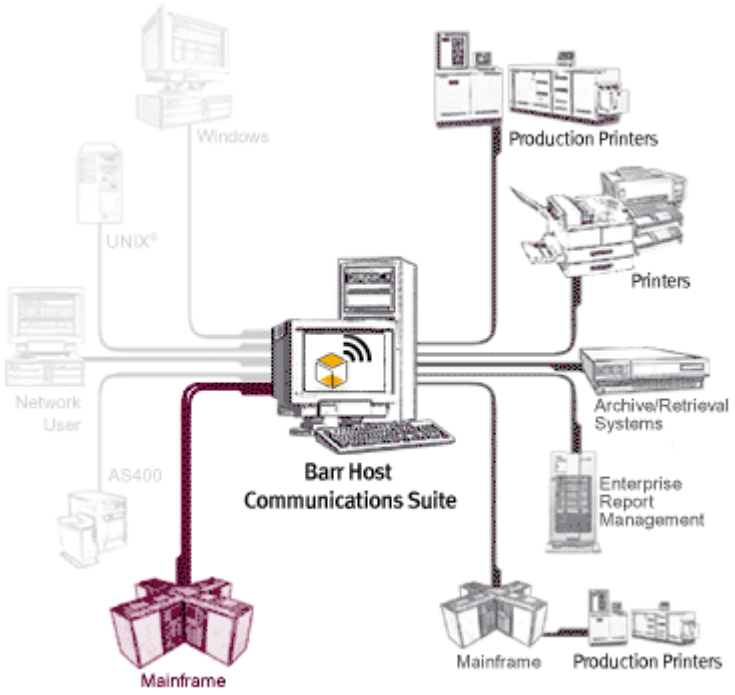
You can save your Spool Window column settings to a file by selecting View | **Save Settings As** on the menu bar.

Notes:

Remote Job Entry (RJE)

Getting Started

The RJE software module of the Barr Host Communications Suite (BHCS) allows you to send and receive files to and from multiple IBM mainframes via IP or SNA. Applications for RJE include integration of mainframe and open systems networks and enterprise-wide print and output management. 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.



RJE connects in multiple ways:

- IP via the Enterprise Extender (HPR/IP) link

- 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). 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	
9.4 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

7.1 Before you begin

Following these steps before you begin enables you to install and configure 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 RJE, you must be a member of the local **Administrators** group on the computer where you install the Barr Host Communications Suite. 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)

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.

Enable the retain feature

You can configure the Barr Host Communications Suite 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 Host Communications Suite 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.
2. Select the **Spool and Retain** tab and specify the **Retain period**.
3. Click **OK** to save your changes and close the utility.

7.2 Configure for new users

This section describes the steps necessary for new users. Setting up RJE requires configuring the host and the computer.

Complete the following procedures to configure 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 RJE to communicate with your host, your host programmer must define BHCS 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 *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 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 HPR/IP 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 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.

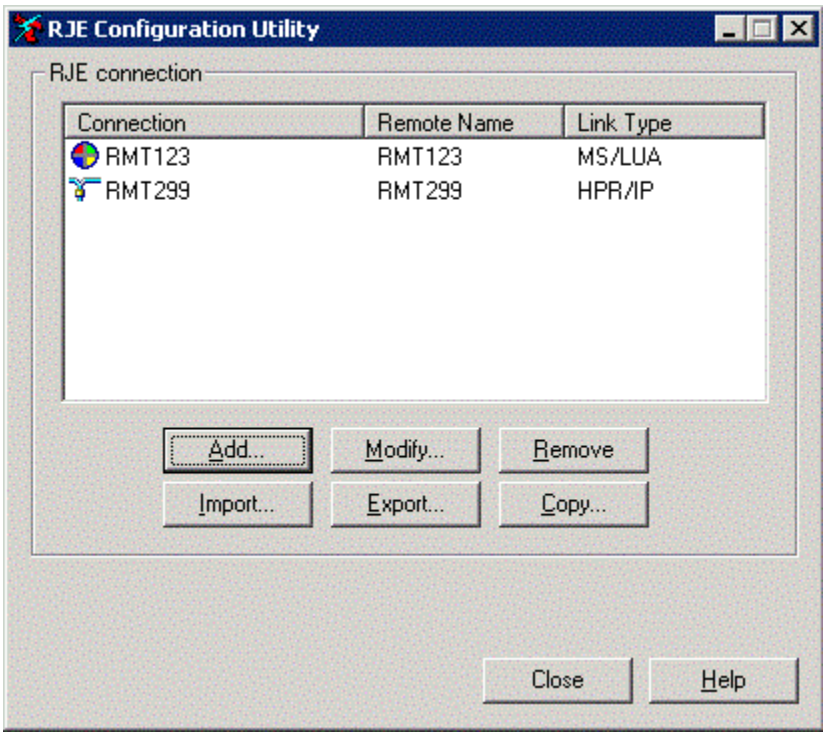
Define a connection

Use the RJE Configuration Utility to define and configure connections for communicating with the host. The procedures outlined in this section are required.

To configure BHCS, 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 RJE connection.

1. Open the RJE Configuration Utility.

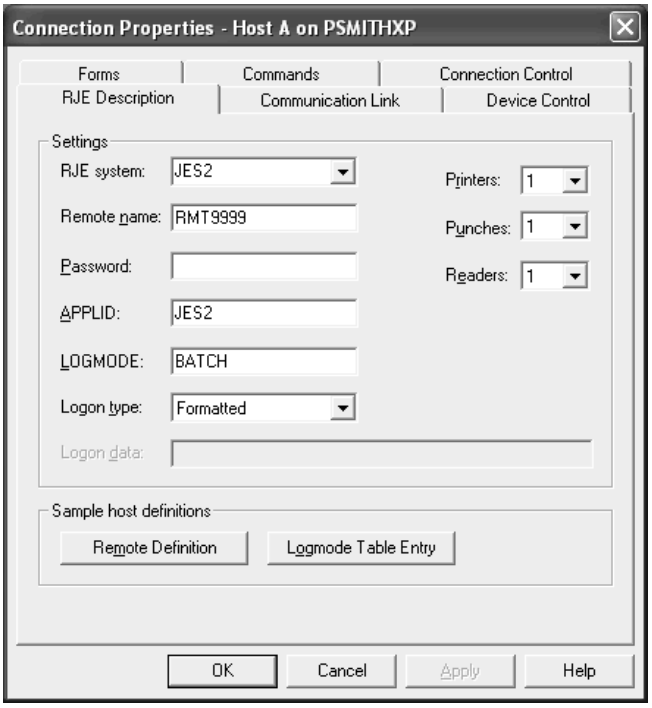


2. Click **Add**. The **Add Connection** dialog box displays.
3. Type a connection name and click **OK**. The connection name cannot contain the following characters: \ / : * ? " < > |. The **Connection Properties** tab pages display.

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 *RJE Host Definition Information* form inserted in this manual.

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



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 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 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: HPR/IP (Enterprise Extender) or MS/LUA. Follow the procedures in Section 9.4 to configure your communication link.

7.3 Configure the communication link

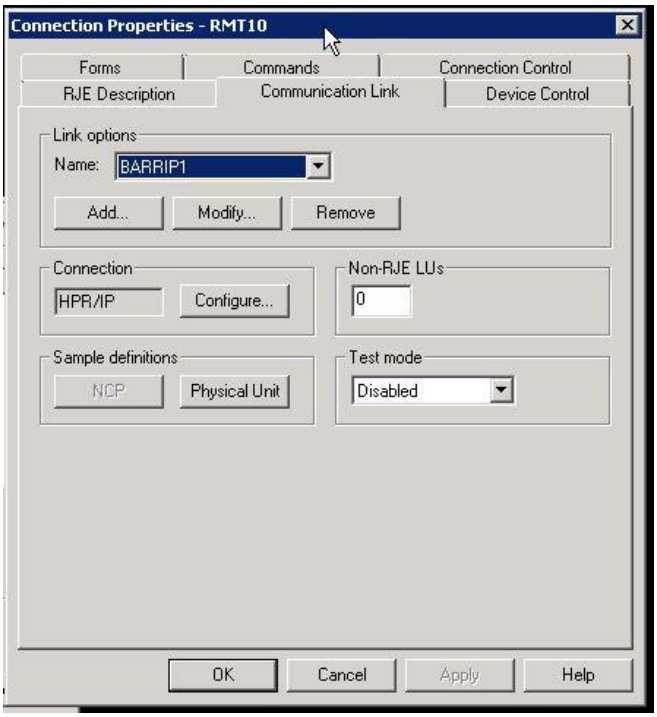
This section describes how to configure the communication link for the appropriate link type. The section has been divided into four subsections based on the link type. Follow the steps in the appropriate section.

- HPR/IP (Enterprise Extender)
- MS/LUA

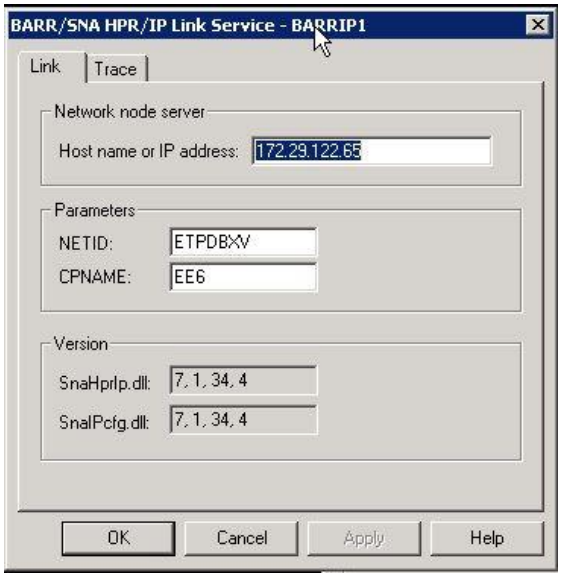
HPR/IP (Enterprise Extender)

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 *RJE Host Definition Information* form to configure the link settings.

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

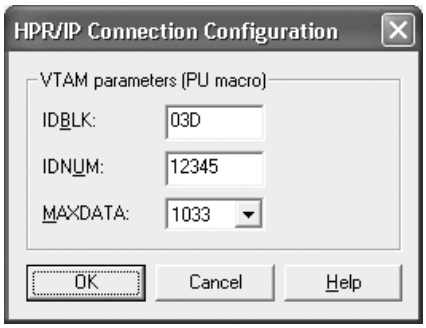

Connection Properties - RMT10
Forms
Commands
Connection Control
RJE Description
Communication Link
Device Control
Link options
Name:
BARRIP1
Add...
Modify...
Remove
Connection
HPR/IP
Configure...
Non-RJE LUs
0
Sample definitions
NCP
Physical Unit
Test mode
Disabled
OK
Cancel
Apply
Help

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.



   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 **BARRIP*n***.

3. 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, enter the appropriate hexadecimal value. This parameter will be used by the host to identify the remote PU definition. The default value is 03D.
   a. 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.
   b. 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.
   c. 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 **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.
6. Select whether to use the software in **Test mode**. In test mode, you can use all the 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 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 RJE to create the following necessary devices. You must change the state of all printers in the Spool Window to Disabled before RJE creates the devices. Once the readers have been created, you must restart the Spool Core 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 Spool Core service.
   - ervice.

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.

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 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 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 RJE to create the following necessary devices. Change the state of all printers in the Spool Window to Disabled before RJE creates the devices. Once the readers have been created, you must restart the Spool Core 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 Spool Core service.

7.4 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.

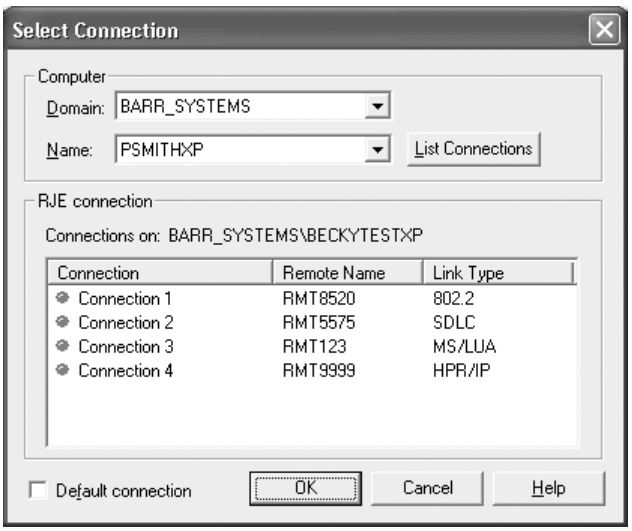
Before you can connect to the host, you must follow the steps in the preceding sections to configure RJE. If you encounter a problem during initial connection, we recommend starting the RJE Diagnostics utility before starting the connection from RJE Console.

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.

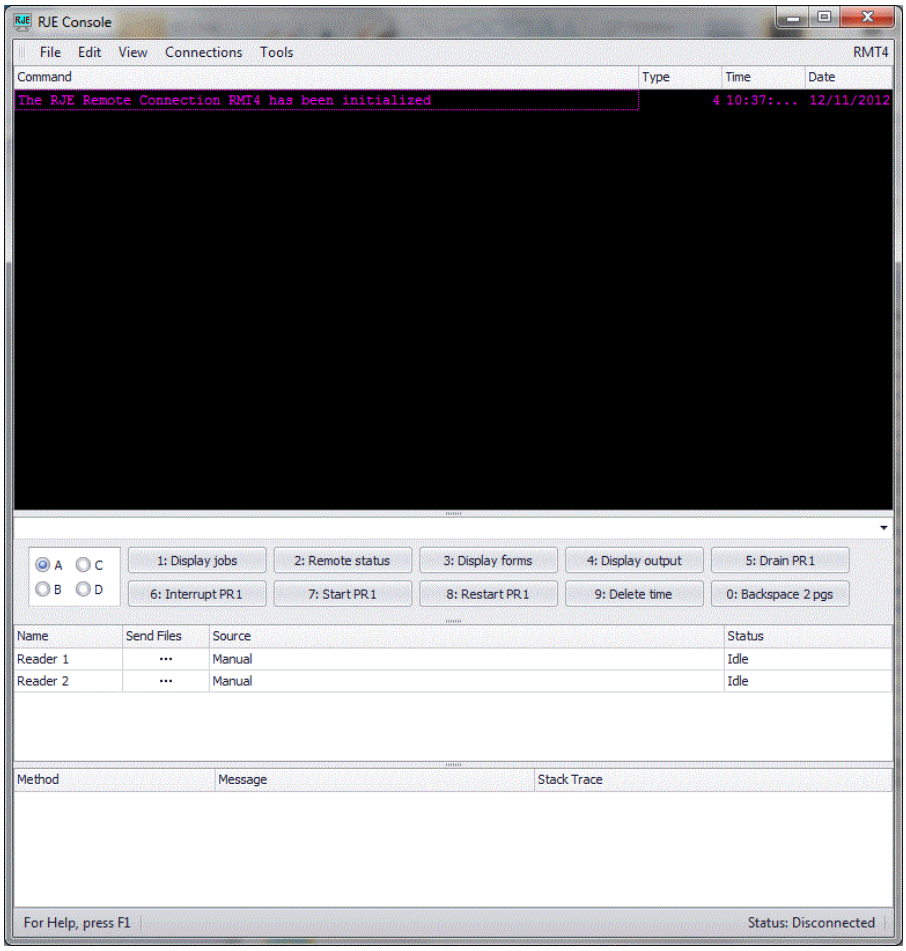
RJE operators must be assigned the **RJE Console** user access right.

1. Open 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**.

7.5 Communicate with the host

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

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.

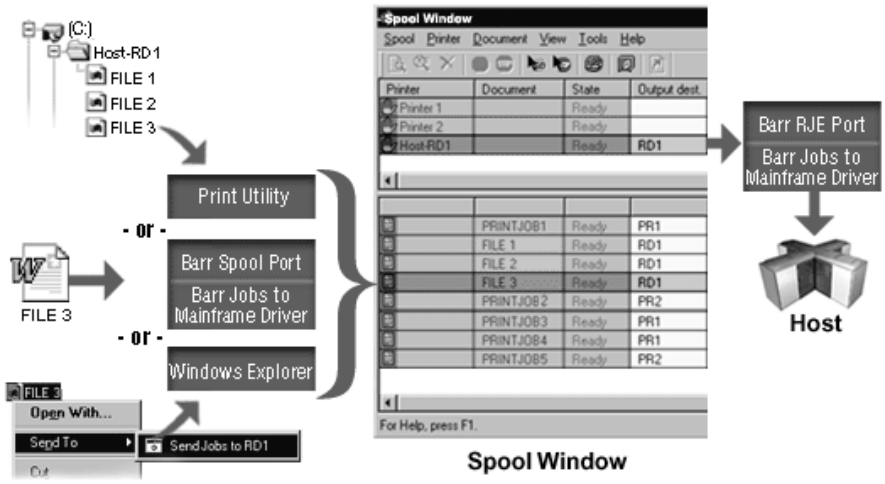
Some JES2 commands require you to specify the remote number. In the default command definitions, the remote number is substituted with a ? prompt. When you click a command button defined with a ? prompt, the command displays in the **Command line** and pauses at each ? for you to enter a parameter. You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



Spool Window

This section focuses on the procedures for routing files into BHCSusing 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 BHCS. 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 BHCS 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 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 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.

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 **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 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 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.
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 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.

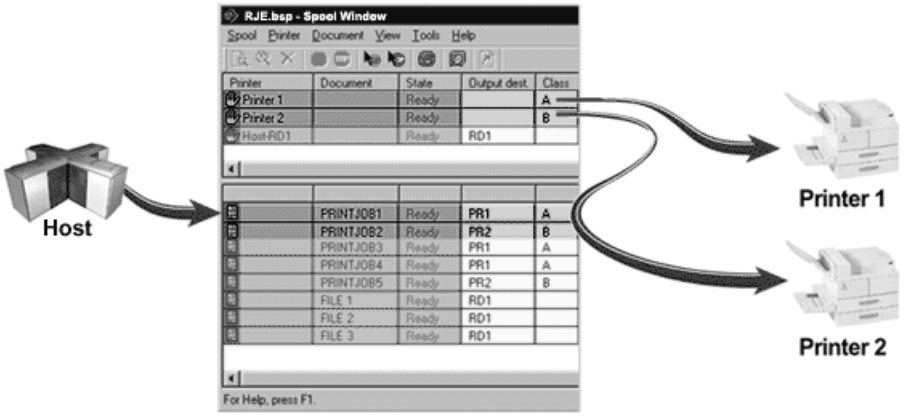
Complete the following steps to send jobs to the host from the Spool Window.

1. Open the Spool Window. 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 **NJHGPRTR (Output dest.)** and click the right arrow (**>**) to add it to the **Visible columns** list.
    d. Click **OK** to return to the Spool Window.
2. On the Spool Window, right-click the printer you just created and select **Disabled**.
3. 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. BHCSwill send the data to the Reader1 device on the host.
4. 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 RJE. Jobs sent from the host will automatically appear in the document list of the Spool Window. When you configured 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.



Spool Window

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.

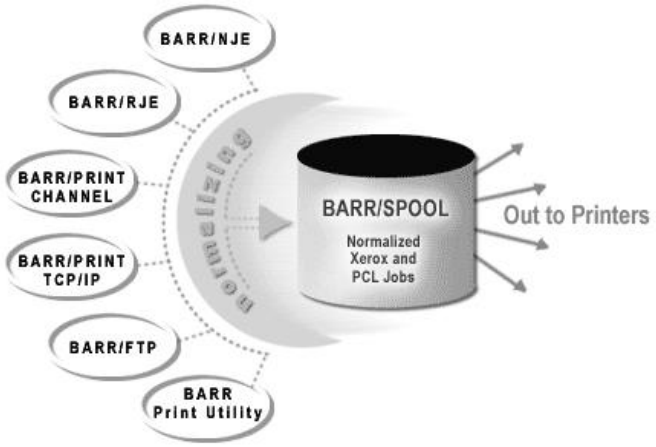
When receiving RJE jobs, the NJHGXEQN – Exe. node field will be populated with the RJE **Remote name** specified on the **RJE Description** tab. This field can be added to the Spool Window.

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

Notes:

ADEPT Suite

The ADEPT Suite is an optional module of the Barr Host Communications Suite (BHCS) that allows you to view and reprint PCL, Xerox Line Data (DJDE), or Metacode files. It provides accurate page count data to the Barr Host Communications Suite Accounting Features tool.



ADEPT SUITE 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 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 ADEPT SUITE.

You can use the optional 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 TRANSFORM (ADEPT Suite) module)
4. Normalize the jobs (optional, not for AFP format)
5. View or print the jobs

8.1 Install the transformation software

Complete the following steps to install the transformation software.

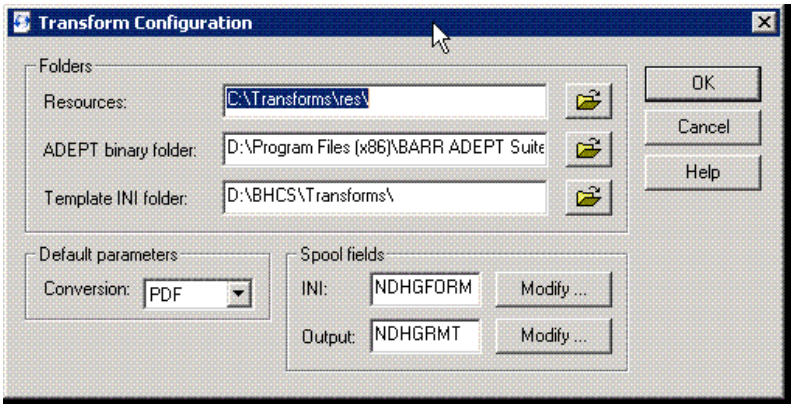
1. Before you run the setup program, exit all Windows programs and make sure the hardware key is installed.
2. Insert the ADEPT Suite CD into the CD-ROM drive. The installation screen automatically displays. If auto run is disabled on your system or if the installation screen does not automatically display, 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.

8.2 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.

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 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.

8.3 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 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 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
```

8.4 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 print splitter, then you need to automate the normalizing process. You can configure each input type in the Barr Host Communications Suite 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
RJE or NJE	By override tables
LPD	By queue
Socket	By socket
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**.

8.5 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.

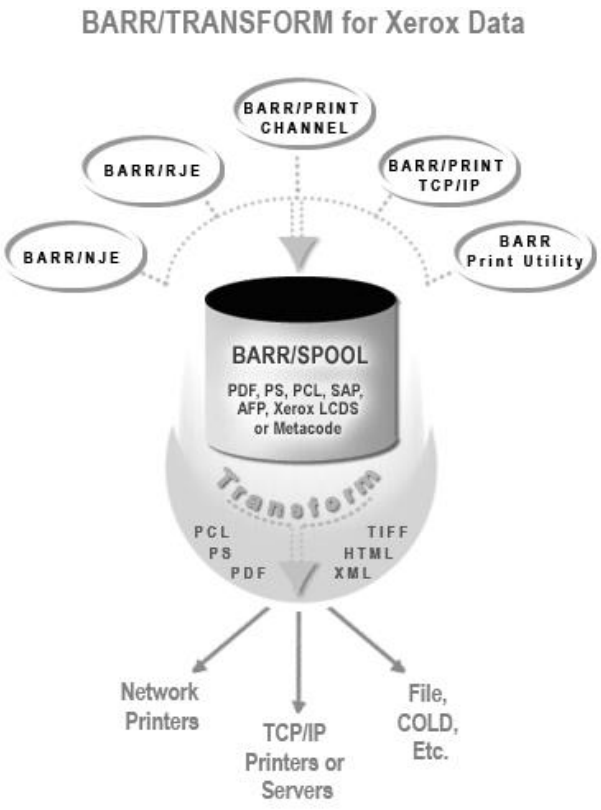
You can also configure a reprint range using the Viewer's **Restrict Output Page Range** options.

TRANSFORM

TRANSFORM is an optional module of the Barr Host Communications Suite (BHCS) that processes and transforms many different data streams. TRANSFORM (ADEPT Suite) offers Xerox input and output and supports job splitting.

TRANSFORM (ADEPT Suite) (see Section 11.1)

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



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 PRINT SPLITTER
- Includes the ADEPT SUITE module

9.1 Install and configure TRANSFORM (ADEPT Suite)

Install and configure the software

The steps for installing and configuring the TRANSFORM (ADEPT Suite) software are the same as the steps in Chapter 10 for ADEPT SUITE (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
RJE or NJE	By override tables
LPD	By queue
Socket	By socket
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.

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

NDHBDT**YP**	**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.

- 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

NDHBDT**YP**	**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

HTML Help covers every module of the Barr Host Communications Suite (BHCS), 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.

10.1 Launch the Help

Use any of these methods to open the Barr Host Communications Suite 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 Host Communications Suite 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 Host Communications Suite | **Help**.

10.2 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 Host Communications Suite 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.

10.3 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.

10.4 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.

10.5 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**.

Notes:

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 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 **$D J1-32767** and receive a list of all jobs in the system under that operator's jurisdiction. If a job is not printing, make sure the job's criteria (for example, form or class) matches the printer's criteria with the **$LJ*nnnn*** command.

$D MR*x*,'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.
- **XEQ*c*** – 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:

```
*command operand1,operand2
```

Option	Description
*	Identifies the JES3 command. Ask your host programmer when to use the JES3 command identifier.
command	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.
operand	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
command	A single-word or single-character verb that identifies the action to take.
operand	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
L 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 VTAM connection.

Format

P PNET,*node*

Where ***node*** is the Barr NJE node name.

Example

P PNET,*node*

Stops a 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 VTAM connection.

Format

S PNET,*node*,,*ddd*

Where ***node*** is the Barr NJE node name and ***ddd*** is the device address of the connection.

Example

S PNET,*node*

Starts a 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
$E restart	printer, punch

Command	Controls or Displays
$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 J*nnnn*

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:

- **RD*n*** – To cancel reader ***n***.
- **PR*n*** – To cancel printer ***n***.
- **Pu*n*** – 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 **$D J1-32767** and receive a list of all jobs in the system under that operator's jurisdiction. If a job is not printing, make sure the job's criteria (such as form or class) matches the printer's criteria with the **$LJ*nnnn*** command.

$D MR*x*,'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.
- **XEQ*c*** – 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,RMT*nnnn*

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 J*nnnn*

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=J*nnnn*,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.
- **R*nnnn*** – 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. If the operator at remote ***Ry*** types this command:

$R PRT,R=*Ry*,D=*Rx*

The two remotes share a common print queue. 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.

$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:

- **RD*n*** – To start reader ***n***.
- **PR*n*** – 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=*ffffffff*

Sets the printer to the special form specified by ***ffffffff***, 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:

```
*command operand1,operand2
```

Parameter	Description
*	The JES3 command identifier. Check with your host programmer about when to use the JES3 command identifier.
command	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.
operand	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
command	A single-word or single-character verb that identifies the action to take.
operand	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.

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).

Notes:

Index

D

E

F

G

H

I

J

L

M

N

O

P

Q

R

S

T

U

V

W

X