

BARR/PRINT CHANNEL *for IPDS*

Solutions for Connecting Your Mainframe to Your
IP-attached Printer



Documentation Edition 5
Software Version 2.0.15 or later

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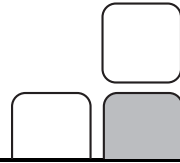
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March 27, 2008

Preface



BARR/PRINT CHANNEL *for IPDS* comes with both a printed manual with getting started information and extensive online documentation.

This manual

Follow the instructions in this manual to install the BARR/PRINT CHANNEL *for IPDS* hardware and software. The manual provides basic information to help get you started. Refer to the Help for detailed instructions on configuring and operating BARR/PRINT CHANNEL *for IPDS*. Chapter 7 explains how to launch and use the Help.

HTML Help

The Help gives you comprehensive step-by-step configuration and operation instructions for BARR/PRINT CHANNEL *for IPDS*. You can view up-to-date Help files for the current software release by visiting the support page of the Barr Systems Web site (www.barrcentral.com).

Barr Technical Support

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

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



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

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

Barr Messages

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

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

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

Software version number

Once BARR/PRINT CHANNEL *for IPDS* has been installed, from the taskbar, click Start | Programs | Barr Print Channel for IPDS | **Print Channel for IPDS**. From the BARR/PRINT CHANNEL *for IPDS* menu bar, select Help | **About BARR/PRINT CHANNEL for IPDS**. The software version number and the hardware key serial number display in this window.

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

Hardware serial numbers

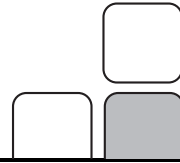
You can obtain the hardware key serial number from the blue sticker on the hardware key. Once BARR/PRINT CHANNEL *for IPDS* has been installed, click Start | Programs | Barr Print Channel for IPDS | **Print Channel for IPDS**. From the BARR/PRINT CHANNEL *for IPDS* menu bar, select Help | **About BARR/PRINT CHANNEL for IPDS**. The software version number and the hardware key serial number display in this window.

You can also obtain the adapter serial number from any of the following places.

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

Notes:

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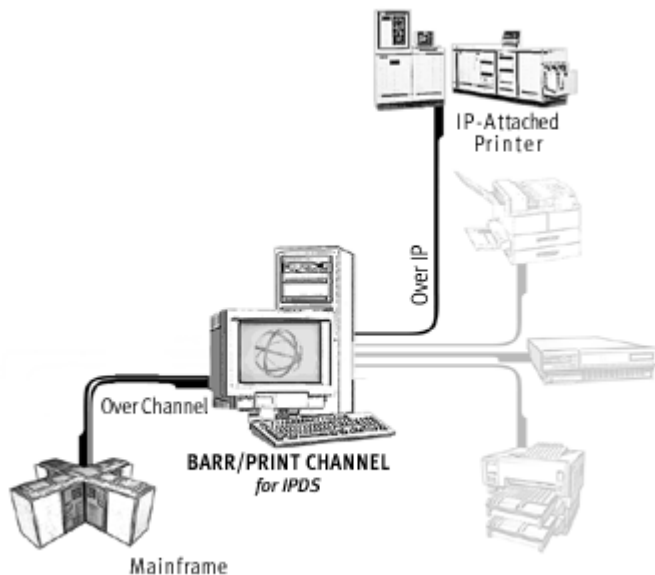
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Introduction

chapter

1

BARR/PRINT CHANNEL *for IPDS* provides an easy way to switch from channel-attached IPDS (Intelligent Printer Data Stream) printers to network-attached IPDS printers without changing your host configuration. This program enables your mainframe to communicate with your IP-attached printers. By simulating a channel-attached printer, BARR/PRINT CHANNEL *for IPDS* acts as an intermediary step. Your mainframe connects to BARR/PRINT CHANNEL *for IPDS* with a Bus & Tag or ESCON cable. BARR/PRINT CHANNEL *for IPDS* then communicates with your IP-attached printers using TCP/IP.



There are two options to connect the mainframe to the BARR/PRINT CHANNEL *for IPDS* computer.

- **BARR/PRINT CHANNEL *for IPDS with ESCON*** connects to the mainframe through the Barr channel adapter. A thin, flexible, fiber-optic cable connects the adapter to the mainframe. You can also connect the cable to an ESCON director, which is connected to the mainframe. With an ESCON director, you can attach multiple ESCON adapters to the mainframe.
- **BARR/PRINT CHANNEL *for IPDS with Bus & Tag*** connects to the mainframe through the Barr channel adapter. Bus & Tag cables connect the adapter to the mainframe and to any other downstream channel-attached devices.

1.1 Features

BARR/PRINT CHANNEL *for IPDS* includes the following features and benefits.

- Converts Channel IPDS to IPDS over TCP/IP without having to change your host's configuration (use your existing channel-attached IPDS printer definitions)
- Replaces expensive channel extension equipment used to support remote channel-attached IPDS printers (requires BARR/PRINT390 *for IPDS over IP*)
- Expands your circle of host printing options to include network-attached IPDS printers
- Supports IP-attached IPDS printers, such as:
 - IBM – IP70, IP2000, IP2085, IP2105, IP3000, IP4000, IP4100, 3900, 3130, 3160
 - OCE – 750, PageStream 155, 250M, 530, A-twin (when used with BARR/PRINT390 *for IPDS*)
 - Konica – Force75 (with an IPDS interface)
- Keeps control of the printer with PSF on the mainframe, keeping all commands for restarting and reprinting in one place
- Shares the Barr channel adapter with other applications such as the Barr Enterprise Print Server
- Supports up to four Barr channel adapters

1.2 System requirements

Install BARR/PRINT CHANNEL *for IPDS* on a computer server or workstation that meets the following requirements.

Software requirements

For BARR/PRINT CHANNEL *for IPDS*, you need the following software installed.

- Microsoft Windows XP Professional, Microsoft Windows 2000, or Microsoft Windows 2003 Server
Because of the differences in the operating systems, some procedures will vary. When completing a procedure, follow the steps appropriate for your operating system. For Windows Server 2003, follow the steps for Windows XP.
- Microsoft Internet Explorer version 5.5 or later
- When used in conjunction with Barr Enterprise Print Server, the Barr Enterprise Print Server must be version 5.0 or later
- When used in conjunction with BARR/PRINT CHANNEL, the BARR/PRINT CHANNEL must be version 2.0.26 or later

Hardware requirements

The computer where you install BARR/PRINT CHANNEL *for IPDS* must meet the minimum hardware requirements.

Minimum:

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

Recommended:

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



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

1.3 Section 508 – Software accessibility

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

Barr Systems believes that Section 508 compliance is important for industry, government, and essential for people with disabilities. We proactively design accessible products and document how our products meet the Section 508 Standards. BARR/PRINT CHANNEL *for IPDS* meets the Section 508 software accessibility standards.

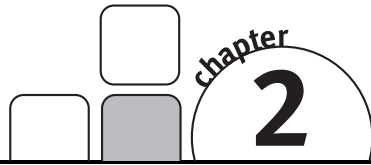
1.4 Package contents

Your BARR/PRINT CHANNEL *for IPDS* package includes these items:

- CD-ROM containing the BARR/PRINT CHANNEL *for IPDS* software and HTML Help
- Hardware key used for software copy protection
- BARR/PRINT CHANNEL *for IPDS* manual (this manual)

See the corresponding hardware manual for a list of the hardware package contents for the channel hardware.

Configure the Host



You must configure the host if you are adding printer definitions to the mainframe for the first time.



If you are replacing an existing channel-attached IPDS printer, you do not need to change your host definitions and can proceed to Chapter 3.

The following sections must be completed to configure the host.

1. Configure PSF
2. Configure JES2
3. Configure the host device

2.1 Configure PSF

PSF procedures describe the type of printer attachment (in this case, remote) and set up the different resource libraries needed for IPDS printing. The host programmer must define a separate procedure in the SYS1.PROCLIB for each IPDS printer. A sample definition follows.

```

//psfproc PROC LIB='JES2.....'
//***** THE PSF SNA WRITER PROCEDURE *****
//STEP01 EXEC PGM=APSPPIEP,REGION=1750K
//STEPLIB DD DSN=&LIB,DISP=SHR
//SYSUDUMP DD SYSOUT=A
//JOBHDR OUTPUT PAGEDEF=V06483, /* JOB SEPARATOR PAGEDEF */
// FORMDEF=010110,CHARS=GT12 /* JOB SEPARATOR FORMDEF @H3C */
//JOBTLR OUTPUT PAGEDEF=V06483, /* JOB SEPARATOR PAGEDEF */
// FORMDEF=010110,CHARS=GT12 /* JOB SEPARATOR FORMDEF @H3C */
//DSHDR OUTPUT PAGEDEF=V06483, /* DS SEPARATOR PAGEDEF */
// FORMDEF=010110,CHARS=GT12 /* DS SEPARATOR FORMDEF @H3C */
//MSGDS OUTPUT PAGEDEF=V06483, /* MESSAGE DATASET PAGEDEF */
// FORMDEF=010110,CHARS=GT12 /* MESSAGE DATASET FORMDEF @H3C */
//*
//FONT01 DD DSN=SYS1.FONT3820,DISP=SHR /* SYSTEM FONTS */
// DD DSN=MVS.PSF.FONTLIB,DISP=SHR /* EXTRA FONTS */
//PSEG01 DD DSN=SYS1.PSEGLIB,DISP=SHR /* SYSTEM PAGE SEG */
// DD DSN=MVS.PSF.PSEGLIB,DISP=SHR /* EXTRA PAGE SEGMENTS */
//OLAY01 DD DSN=SYS1.OVERLIB,DISP=SHR /* SYSTEM OVERLAYS */
// DD DSN=MVS.PSF.OVERLIB,DISP=SHR /* EXTRA OVERLAYS */
//PDEF01 DD DSN=SYS1.PDEFLIB,DISP=SHR /* SYSTEM PAGEDEFS */
// DD DSN=MVS.PSF.PDEFLIB,DISP=SHR /* EXTRA PAGEDEFS */
//FDEF01 DD DSN=SYS1.FDEFLIB,DISP=SHR /* SYSTEM FORMDEFS */
// DD DSN=MVS.PSF.FDEFLIB,DISP=SHR /* EXTRA FORMDEFS */
//*
//PRTxx CNTL
//PRTxx PRINTDEV FONTDD=*.FONT01. /* FONT LIBRARY DD */
// OVLYDD=*.OLAY01, /* OVERLAY LIBRARY DD */
// PSEGDD=*.PSEG01, /* SEGMENT LIBRARY DD */
// PDEFDD=*.PDEF01, /* PAGEDEF LIBRARY DD */
// FDEFDD=*.FDEF01, /* FORMDEF LIBRARY DD */
// JOBHDR=*.JOBHDR, /* JOB HEADER SEPARATOR OUTPUT */
// JOBTLR=*.JOBTLR, /* JOB TRAILER SEPARATOR OUTPUT */
// DSHDR=*.DSHDR, /* DATA SET HEADER SEPARATOR */
// MESSAGE=*.MSGDS, /* MESSAGE DATA SET OUTPUT */
// PAGEDEF=V06483, /* DEVICE PAGEDEF DEFAULT */
// CHARS=(GT12), /* DEFAULT FONT SET */
// FORMDEF=010110, /* DEVICE FORMDEF DEFAULT */
// PIMSG=YES, /* ACCUMULATE DATA SET MESSAGES */
// DATAACK=BLOCK /* DO NOT NOTIFY PSF OF DATA ERRORS */
// PRTxx ENDCNTL

```

2.2 Configure JES2

The following example shows the printer definition portion of the JES2 remote definition. Define IPDS printers according to the example.

```
PRTxx   CKPTPAGE=100,  
        CLASS=ACFJT,  
        COPYMARK=JOB,  
        DRAIN,  
        FSS=fssname,  
        MARK,  
        MODE=FSS,  
        PRESELCT=NO,  
        PRMODE=(LINE,PAGE),  
        ROUTECD=Uxx,  
        UNIT=xxx,  
        WS=(W,R,Q,PMD,LIM,F/P)  
DESTID  NAME=hostprn,DEST=Uxx  
FSSDEF  FSSNAME=fssname,PROC=psfproc
```

Parameter	Description
PRTxx	Replace the xx with the printer number on the mainframe. This number is also used in PSF host configuration.
FSS=fssname and FSSNAME=fssname	Enter the PSF procedure that describes the printer attributes. This can be found in the PSF host configuration.
ROUTECD=Uxx	Replace xx with the routing label for the printer. This will typically match the DEST=Uxx parameter.
UNIT=xxx	Replace the xxx with the image number followed by the channel address (for example, 01E). For Bus & Tag connections, the image number is always 0.
DEST=Uxx	Replace xx with the routing label for the printer. This will typically match the ROUTECD=Uxx parameter.

2.3 Configure the host device

You must configure the host for your ESCON or Bus & Tag device. The following host definitions match the default BARR/PRINT CHANNEL *for IPDS* printer configuration settings. If you change your configuration settings, you must also change the host definition.



The **CNTLUNIT** parameter on the host definition varies depending on your device.

ESCON

Use the following host definitions for an ESCON device. For ESCON connections, set your host control unit type to **NOCHECK**.

CHPID	PATH=((00)), TYPE=CNC	
CNTLUNIT	CUNUMBR=001E, PATH=(00), UNITADD=((1E, 001)), SHARED=N, UNIT=NOCHECK	*
IODEVICE	ADDRESS=(01E, 001), CUNUMBR=(001E), TIMEOUT=Y, STADET=N, UNIT=3835	*

Bus & Tag

Use the following host definitions for a Bus & Tag device.

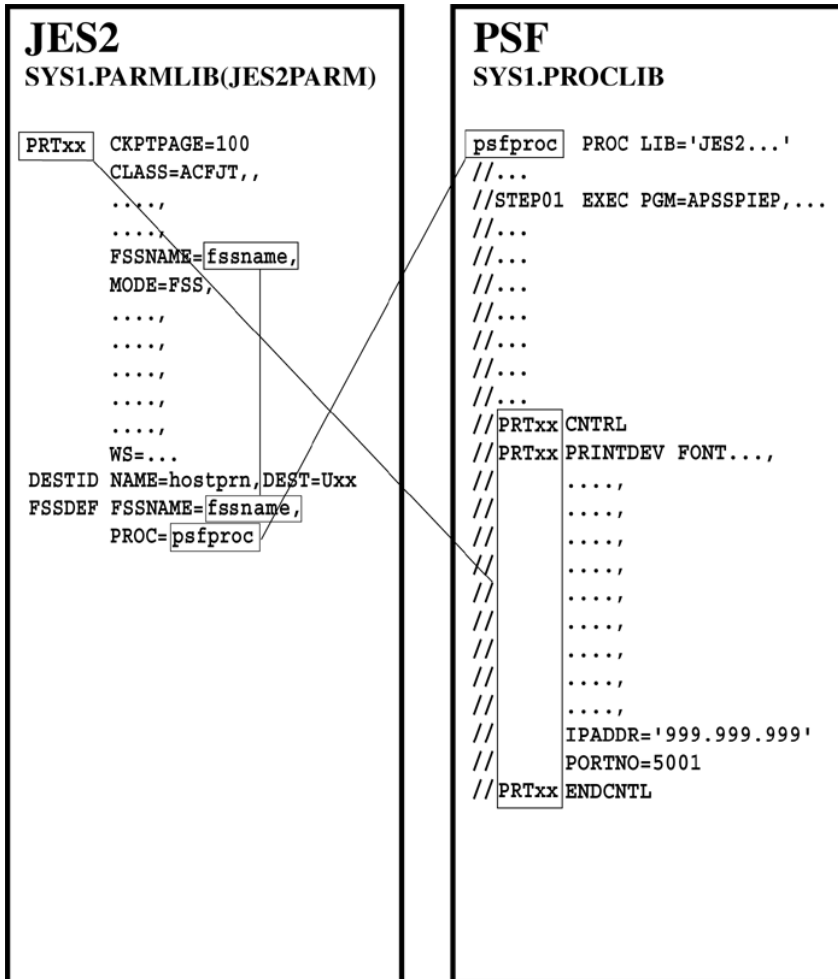


Some hosts do not support **PROTOCL=S4** (data streaming 4.5 MB). If your host does not support this data streaming rate, use **PROTOCL=S** (data streaming 3.0 MB). This parameter must match the **Channel transfer mode** specified on BARR/CHANNEL-IN's **Adapter Properties** dialog box.

CHPID	PATH=((00)), TYPE=BL	
CNTLUNIT	CUNUMBR=001E, PATH=(00), UNITADD=((1E, 001)), SHARED=N, PROTOCL=S4, UNIT=3835	*
IODEVICE	ADDRESS=(01E, 001), CUNUMBR=(001E), TIMEOUT=Y, STADET=N, UNIT=3835	*

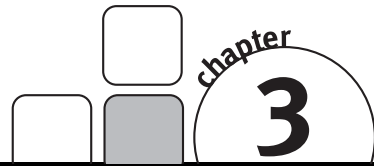
2.4 Configuration example

The following diagram shows how parameter values are shared in JES2 and PSF configurations.



Notes:

Install the Software and Hardware



Follow the instructions in this chapter to install the BARR/PRINT CHANNEL *for IPDS* software and hardware on your computer. When you finish the installation, refer to the subsequent chapters of this manual or the Help for configuration instructions. Complete the following steps to install BARR/PRINT CHANNEL *for IPDS*.

1. Install or reinstall the software
2. Install the hardware key
3. Install the CHANNEL-IN hardware
4. Install the device driver

3.1 Install or reinstall the software



You must be a member of the local **Administrators** group on the computer where you install BARR/PRINT CHANNEL *for IPDS*.

Follow these steps to install the BARR/PRINT CHANNEL *for IPDS* software. The setup program copies files from the BARR/PRINT CHANNEL *for IPDS* CD to your computer.



If you are reinstalling BARR/PRINT CHANNEL *for IPDS* or installing a newer version, first perform the steps in the following section, “Remove BARR/PRINT CHANNEL *for IPDS*.”

Complete the following steps to install the software.

1. Before you run the setup program, exit all Windows programs.
2. Insert the BARR/PRINT CHANNEL *for IPDS* CD into the CD-ROM drive. The BARR/PRINT CHANNEL *for IPDS* Setup program automatically displays. If auto run is disabled on your system or if the setup program 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. Read the information on the **Welcome** dialog box, and then click **Next**.
4. Review the license agreement, and then click **Yes**. (To install the software, you must accept the terms of the license agreement.)
5. On the **User Information** dialog box, enter your name and your company name, and then click **Next**. This information is required.

6. On the **Select Program Folder** dialog box, select the folder for storing BARR/PRINT CHANNEL *for IPDS* program icons, and then click **Next**. As files are installed, installation progress displays on your screen.
7. On the **Setup Complete** dialog box, choose whether or not to launch BARR/PRINT CHANNEL *for IPDS* or the online Help.
8. Click **Finish**. You may be prompted to restart your computer.

Remove BARR/PRINT CHANNEL *for IPDS*

Use the Windows Add or Remove Programs utility to remove BARR/PRINT CHANNEL *for IPDS* from your computer. Before reinstalling the program, you must remove the existing software. Complete the following steps.

1. Stop all BARR/PRINT CHANNEL *for IPDS* connections, if they are not already stopped.
 - a. Open BARR/PRINT CHANNEL *for IPDS*. (From the taskbar, click Start | Programs | Barr Print Channel for IPDS | **Print Channel for IPDS**.)
 - b. Right-click each connection, and click **Stop**.
2. Close BARR/PRINT CHANNEL *for IPDS*. (From the menu bar, select File | **Exit**.)
3. Open the Windows Add or Remove Programs utility.
 - For Windows 2000, from the taskbar, select Start | Settings | Control Panel | **Add or Remove Programs**.
 - For Windows XP, from the taskbar, select Start | Control Panel | **Add or Remove Programs**.
4. Select **BARR/PRINT CHANNEL for IPDS**, and then click **Remove**.
5. A confirmation message box displays. Click **Yes** to remove the software. Click **No** to return to the Windows Add or Remove Programs utility.
6. A message box displays asking if you want to remove your configuration data. If you are permanently removing the software, click **Yes** to remove the BARR/PRINT CHANNEL *for IPDS* configuration data. If you are upgrading, click **No** to leave the configuration data.
7. When removing the software, the **Remove Shared File** dialog box may display. If you choose **Yes** and other Barr programs use the file, those programs may not function properly. Because leaving the file will not harm your system, we recommend choosing **No**.
8. A message will display once the software is removed. Click **OK**.
9. To reinstall the software, follow the steps in the preceding section. If you are permanently removing the software, remove the hardware key from the parallel or USB port.

3.2 Install the hardware key

After you install the Barr software, you must install the hardware key on a parallel port (LPT1, LPT2, or LPT3) or a USB port on your computer. Hardware keys that attach to parallel ports act as a pass-through to the printer or other peripherals so it does not prevent the port from being used for other purposes. If more than one device requires a parallel port, daisy chain the hardware keys together from the same port. For example, plug the hardware key into the parallel port, and then plug the printer into the hardware key. Hardware keys that attach to the USB port can be attached to a hub to allow other connections to the USB port. You may be required to restart your computer before the BARR/PRINT CHANNEL *for IPDS* software can be installed.

After you install the Barr software and the hardware key, you can display the hardware key serial number by selecting Help | **About BARR/PRINT CHANNEL for IPDS** on the BARR/PRINT CHANNEL *for IPDS* menu bar.

3.3 Install the CHANNEL-IN hardware

Your BARR/PRINT CHANNEL *for IPDS* package comes with a separate manual for your CHANNEL-IN hardware. Follow the instructions in the CHANNEL-IN manual to install the hardware.

For ESCON connections, install the CHANNEL-IN (ES) adapter, ESCON coupler (if needed), and fiber-optic cable. For Bus & Tag connections, install the CHANNEL INTELLIGENCE or CHANNEL-IN (BT) adapter. With the CHANNEL INTELLIGENCE adapter, you will install the CHANNEL INTELLIGENCE cable. With the CHANNEL-IN (BT) adapter, you will install a Bus & Tag cable and CAB.

3.4 Install the device driver

The BARR/PRINT CHANNEL *for IPDS* setup program installs the BARR/PRINT CHANNEL *for IPDS* software files. To complete installation, you need to install the device driver. Use the Device Manager in Windows 2000 or Windows XP to install and configure the device driver.

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



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

Windows 2000

Complete the following steps if you are using Windows 2000.

1. After you've installed the CHANNEL-IN hardware, turn on your computer.
2. Once Windows successfully locates and begins installing the appropriate device driver, the **Found New Hardware** dialog box displays. When this dialog closes, the hardware installation is complete.
3. If you are installing a Bus & Tag adapter, complete the following steps to set the channel transfer mode.
 - a. Open Device Manager. (From the taskbar, click Start | Control Panel | System. The **System Properties** dialog box displays. On the **Hardware** tab click **Device Manager**.)
 - b. Under **Barr adapters**, right-click the appropriate adapter and select **Properties**.
 - c. On the **Properties** tab, select the **Channel transfer mode** and click **OK**. Consult your mainframe systems programmer to determine which protocol to use. The transfer mode must match the host definition's **CNTLUNIT** statement. You can configure up to four adapters.

Windows XP

Complete the following steps if you are using Windows XP.

1. After you've installed the CHANNEL-IN hardware, turn on your computer.
2. Windows displays a message that the Device Manager is scanning for Plug and Play compliant hardware, then the Found New Hardware Wizard opens.



3. Select **Install the software automatically** and click **Next**. Windows will search for the software and then install the appropriate device driver.
4. Once Windows has successfully located and installed the appropriate device driver, a dialog box will confirm that the Found New Hardware Wizard has finished installing the software.
5. Click **Finish** to close the wizard.
6. If you are installing a Bus & Tag adapter, complete the following steps to set the channel transfer mode.
 - a. Open Device Manager. (From the taskbar, click Start | Control Panel | **System**. The **System Properties** dialog box displays. On the **Hardware** tab click **Device Manager**.)
 - b. Under **Barr adapters**, right-click the appropriate adapter and select **Properties**.
 - c. On the **Properties** tab, select the **Channel transfer mode** and click **OK**. Consult your mainframe systems programmer to determine which protocol to use. The transfer mode must match the host definition's **CNTLUNIT** statement. You can configure up to four adapters.

Notes:

Run Hardware Diagnostics



Run hardware diagnostics immediately after you install the hardware. Use BARR/CHANNEL-IN to run hardware diagnostics to verify that you have installed the channel adapter and hardware correctly and that they function properly. The steps for running hardware diagnostics vary depending on the type of hardware you are using. Complete the following steps, depending on your CHANNEL-IN hardware type.



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

- CHANNEL-IN (ES)
- CHANNEL INTELLIGENCE
- CHANNEL-IN (BT)



Windows 2000 and Windows XP users can also use Windows Device Manager to run hardware diagnostics.

4.1 Run hardware diagnostics for CHANNEL-IN (ES)

Use BARR/CHANNEL-IN to run hardware diagnostics to verify that you have installed the CHANNEL-IN (ES) adapter and fiber-optic cable correctly and that they function properly. To perform the self-test, you need the ESCON fiber-optic cable, ESCON coupler, and the ESCON loop plug.

Adapter diagnostics consist of a single self-test. Usually, you test the adapter and cable together. If the combined test fails, you can test the adapter separately by running the self-test again with the loop plug installed on the adapter, so you can isolate any errors.

If the self-test detects an error, it immediately stops and posts an error message. Correct the error, and then repeat the test to confirm that there are no additional errors.

Phase 1: Adapter and cable test

Phase 1 confirms that all connections are valid, the adapter drivers are valid, the adapter and its components are working, and the cable is working. Phase 1 proceeds as follows.

- The software locates the adapter and performs an internal adapter test. The test verifies correct operation of IRQ and bus-master logic.
- The software verifies correct functioning of the cable by sending a data string through the adapter in a rotating pattern. The adapter test plug returns the data through the receive-side of the adapter. The test verifies that the returned data matches the sent data.
- The software tests the mainframe fiber-optic cable, if the mainframe cable is included in the loop.

Complete the following steps to test the adapter and cable.



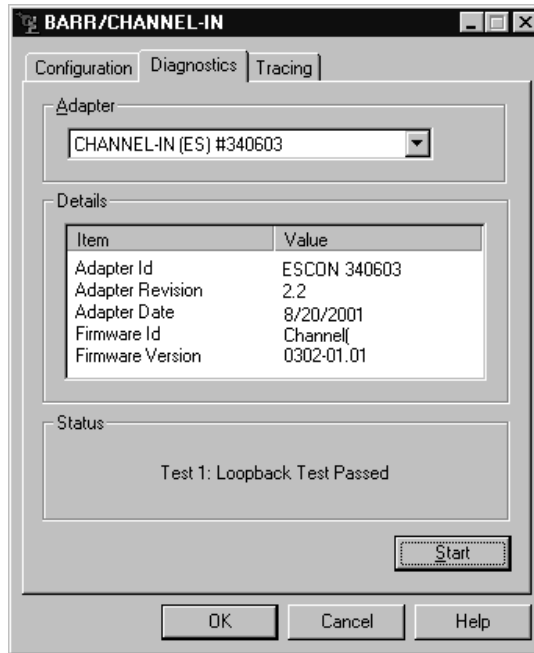
If the CHANNEL-IN (ES) adapter is already connected to your mainframe or an ESCON director, follow your mainframe procedures for disconnecting ESCON devices before you attempt this test.

1. Stop all programs or services using the CHANNEL-IN device driver.
2. Connect the CHANNEL-IN (ES) fiber-optic cable to the adapter, attach the coupler to the cable, and then attach the loop plug to the coupler.
3. Open the BARR/CHANNEL-IN utility. (From the taskbar, click Start | Programs | Barr Hardware | **Channel In.**)

4. From the **Diagnostics** tab, select the adapter to test, and then click **Start**.



As the self-test runs, diagnostic status messages display. If Phase 1 reports an error, see the *Adapter installation and settings errors* Help topic for possible resolutions.



Phase 2: Isolated adapter test

If Phase 1 (adapter and cable test) fails, run Phase 2 to isolate the error. Phase 2 tests only the adapter. If Phase 2 fails, the adapter is faulty. If Phase 2 passes after Phase 1 fails, the cable is faulty.

Complete the following steps to test the adapter.



If the CHANNEL-IN (ES) adapter is already connected to your mainframe or an ESCON director, follow your mainframe procedures for disconnecting ESCON devices before you attempt this test.

1. Disconnect the ESCON fiber-optic cable from the adapter.
2. Attach the ESCON loop plug to the adapter.
3. Open the BARR/CHANNEL-IN utility.
4. From the **Diagnostics** tab, click **Start** to begin the test.



As the self-test runs, diagnostic status messages display. If you encounter an error during this phase, contact Barr Systems Technical Support.

4.2 Run hardware diagnostics for CHANNEL INTELLIGENCE

Use BARR/CHANNEL-IN to run hardware diagnostics to verify that you have installed the CHANNEL INTELLIGENCE adapter and cable correctly and that they function properly. To perform the self-test, you need the test plugs, terminator plugs, and the CHANNEL INTELLIGENCE cable.

Running diagnostics will check the connections from the adapter to the CHANNEL INTELLIGENCE cable through the Bus & Tag lines. The CHANNEL INTELLIGENCE diagnostic testing confirms that all connections are valid, the adapter drivers are valid, the adapter and its components are working, and the cable is working. You can also test the mainframe channel cable, if the mainframe cable is included in the loop and no other channel devices are attached.

Phase 1: Adapter test

In Phase 1, the software locates the adapter and performs an internal adapter test. The test verifies correct operation of IRQ and bus-master logic.

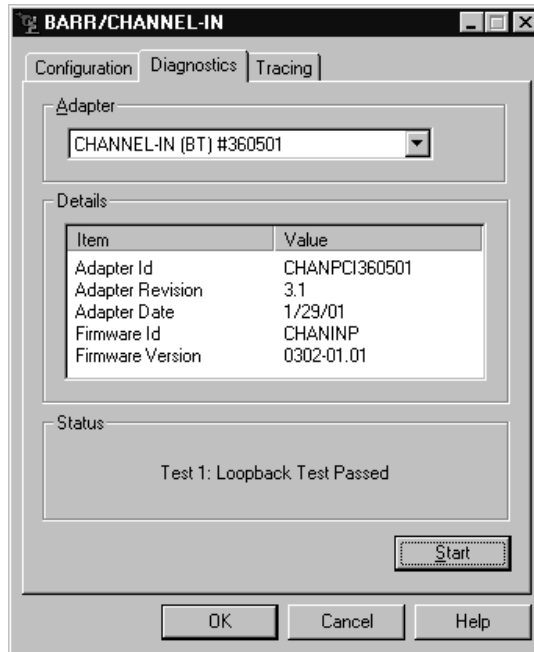
Complete the following steps to test the adapter.

1. Stop all programs or services using the CHANNEL-IN device driver.
2. Connect the adapter test plug to the adapter.
3. Open the BARR/CHANNEL-IN utility. (From the taskbar, click Start | Programs | Barr Hardware | **Channel In.**)

4. From the **Diagnostics** tab, select the adapter to test, and then click **Start** to begin the test.



As the self-test runs, diagnostic status messages display. If Phase 1 reports an error, see the *Adapter installation and settings errors* Help topic for possible resolutions.



Phase 2: Cable test

In Phase 2, the software tests the CHANNEL INTELLIGENCE cable and the Bus & Tag lines. Data received through Bus In is routed back through Bus Out by the bus test plug, and data received through Tag In is routed back through Tag Out by the tag test plug. The test verifies that the returned data matches the sent data.

Complete the following steps to test the cable.

1. Stop all programs or services using the CHANNEL-IN device driver and stop the CHANNEL-IN device driver.
2. If the CHANNEL INTELLIGENCE adapter is online with the mainframe, remove it from service. The channel must be isolated from the mainframe in accordance with the host's requirements. Typically this is performed by turning off a channel switch or varying offline each channel device. These procedures vary from data center to data center. Follow the procedures required by the data center where the mainframe resides.

3. If necessary, disconnect the Bus & Tag cables from the CHANNEL INTELLIGENCE cable.
4. Attach the Bus terminator and Tag terminator plugs to the white or gray BUS OUT and TAG OUT cable plugs. Attach the Bus & Tag test plugs to the black BUS IN and TAG IN cable plugs.



The test will fail if you install the test plugs incorrectly.



CHANNEL INTELLIGENCE cable with the terminator and test plugs installed correctly.

5. Verify that the CHANNEL INTELLIGENCE cable is securely fastened to the adapter.
6. Open the BARR/CHANNEL-IN utility.
7. From the **Diagnostics** tab, select the adapter to test, and then click **Start** to begin the test.

4.3 Run hardware diagnostics for CHANNEL-IN (BT)

Use BARR/CHANNEL-IN to run hardware diagnostics to verify that you have installed the CHANNEL-IN (BT) adapter and CAB correctly and that they function properly. To perform the self-test, you need the adapter test plug and the CAB terminator and test plugs.

Adapter and CAB diagnostics consist of a single self-test. To test both pieces of hardware, you must run the self-test twice – each time with test plugs installed at a different location – so you can isolate any errors.



Always perform Phase 1 before you attempt Phase 2 or 3. If the problem is with the adapter, you can avoid running Phase 3, which requires you to disconnect the CAB from the mainframe channel.

If the self-test detects an error, the test immediately stops and posts an error message. Correct the error, and then repeat the test to confirm that there are no additional errors.

Phase 1: Adapter test

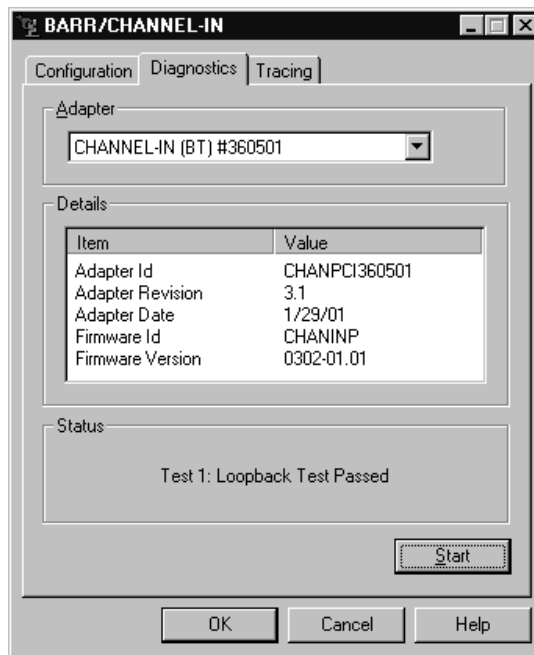
Phase 1 confirms that all connections are valid, the adapter drivers are valid, and the adapter and its components are working. The software locates the adapter and performs an internal adapter test. The test verifies correct operation of DMA, IRQ, and bus-master logic.

Complete the following steps to test the adapter.

1. Stop all programs or services that are using the CHANNEL-IN device driver.
2. Connect the adapter test plug to the adapter.
3. Open the BARR/CHANNEL-IN utility. (From the taskbar, click Start | Programs | Barr Hardware | **Channel In**.)
4. From the **Diagnostics** tab, select the adapter to test, and then click **Start** to begin the test.



As the self-test runs, diagnostic status messages display. If Phase 1 reports an error, see the *Adapter installation and settings errors* Help topic for possible resolutions.



Phase 2: Cable test

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

Complete the following steps to test the cable.

1. If you have not already done so, stop all programs or services using the CHANNEL-IN device driver.
2. Connect the CHANNEL-IN (BT) cable to the adapter and attach the test plug to the other end of the cable.
3. Open the BARR/CHANNEL-IN utility.
4. From the **Diagnostics** tab, select the adapter to test, and then click **Start** to begin the test.

Phase 3: CAB installation and connections

Phase 3 verifies the connections from the adapter to the CAB through the Bus & Tag lines. Phase 3 confirms that all connections are valid, the adapter drivers are valid, the adapter and its components are working, the cable is working, and the CAB is working. This phase also can be used to test the mainframe channel cable if the mainframe cable is included in the loop and no other channel devices are attached. Phase 3 proceeds as follows.

- The software performs the internal adapter test as described in Phase 1.
- The software tests the cable and CAB. Because the adapter test plug is not installed, the sent data also travels through the Bus & Tag lines. Data received through Bus In is routed back through Bus Out by the bus test plug, and data received through Tag In is routed back through Tag Out by the tag test plug. The test verifies that the returned data matches the sent data.

Complete the following steps to test the CAB installation and connections.



Always perform Phase 1 and 2 before you attempt Phase 3. If the problem is with the adapter, you can avoid running Phase 3, which requires you to disconnect the CAB from the mainframe channel.

1. If the CAB is online with the mainframe, remove it from service. Typically, you need to isolate the mainframe by turning off a channel switch or varying offline each channel device. These procedures vary from data center to data center. Follow the procedures required by the data center where the mainframe resides.
-



Phase 3 proceeds only if the self-test determines that the CAB is isolated from the channel.

2. Verify that the CAB power supply is connected to an electrical outlet and that the ENABLE/DISABLE switch is set to **ENABLE**. The test will not pass unless the CAB has power and is enabled.
3. Disconnect the Bus & Tag cables from the CAB. Then attach the terminator plugs and test plugs.



The test will fail if you install the test plugs incorrectly.

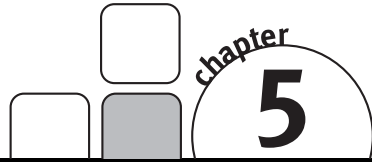
4. Verify that the adapter is connected to the CAB. In Phase 2, you connected the test plug to the cable. For Phase 3, you need to remove the test plug and reattach the CHANNEL-IN (BT) cable to the CAB.
5. Open the BARR/CHANNEL-IN utility.
6. From the **Diagnostics** tab, click **Start** to begin the test.



As the self-test runs, diagnostic status messages display. If Phase 3 reports an error, contact Barr Systems Technical Support.

Notes:

Configure and Use the Software



You must be a member of the local **Administrators** group to configure and start connections.

Once you have completed the steps in the preceding chapters, you are ready to set up and manage your connections. Use the BARR/PRINT CHANNEL *for IPDS* window to set up communication between your IPDS printers and the mainframe. Define your IP-attached printers, and then use BARR/PRINT CHANNEL *for IPDS* to start or stop the printer connections. Control of the printer remains with PSF on the mainframe. Complete the following steps to configure and use the software.



If you are adding a new printer definition to the mainframe, you must configure the host before you use BARR/PRINT CHANNEL *for IPDS*. Follow the steps in Chapter 2 to configure the host. If you are replacing an existing channel-attached printer, you do not need to configure the host.

1. Add connections
2. Start and stop connections
3. Interpret connection status

5.1 Add connections

Complete the following steps to add an IPDS connection.



You must be a member of the local **Administrators** group to add, modify, and remove connections.

1. Open BARR/PRINT CHANNEL *for IPDS*. (From the taskbar, click Start | Programs | Barr Print Channel for IPDS | **Print Channel for IPDS**.)
2. On the menu bar, select Connection | **Add**. The **Connection Configuration** dialog box displays.

The screenshot shows the 'Connection Configuration' dialog box with the following fields and options:

- Connection properties:**
 - Name: [Empty text box]
 - Startup: Manual Automatic
- Channel properties:**
 - Adapter: Channel In Adapter [ES] -- 340019 (dropdown menu)
 - Image number: 0 (text box)
 - Channel address: 1E (text box)
- Network properties:**
 - IP address: [Empty text box]
 - IP port number: 5001 (text box)
 - Advanced... (button)

Buttons at the bottom: OK, Cancel, Help.

3. In the **Name** box, type the name you want to display in the BARR/PRINT CHANNEL *for IPDS* window.
4. Next to **Startup**, select how you want to start the connection.



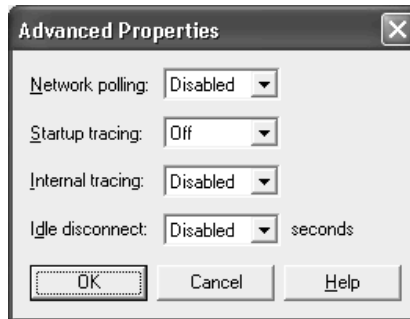
You must be a member of the local **Administrators** group to start connections. If the operator is not a member of the local **Administrators** group, select **Automatic** so the connection will start automatically with Windows startup.

- **Manual** – Requires you to start the connection manually from the BARR/PRINT CHANNEL *for IPDS* window.
 - **Automatic** – The connection will start automatically with Windows startup.
5. From the **Adapter** drop-down list, select the adapter to use for this printer.
 6. If you use an ESCON cable to connect to the mainframe, type a hexadecimal value (0-F) in the **Image number** box.



You must select an adapter before you can specify the image number. If you use a Bus & Tag adapter, you do not need to enter an image number.

7. In the **Channel address** box, type the channel address of the printer you are adding. You can get this hexadecimal number from your host systems programmer.
8. In the **IP address** box, type the unique IP address of the physical printer. This can also be a string that a DNS server can resolve into an IP address.
9. In the **IP port number** box, type the IP port number of the physical printer. The default value is 5001, which is the default for most physical printers.
10. If you want to set advanced connection properties such as polling and tracing, click **Advanced**. The **Advanced Properties** dialog box displays.



11. Next to **Network polling**, select whether or not you want to enable polling. If the mainframe and printer connections are lost, the network polling automatically attempts to reconnect. This option is disabled by default.



The **Network polling** option is intended for customers who use BARR/PRINT CHANNEL for IPDS in conjunction with BARR/PRINT390 for IPDS. Only use the **Network polling** option if your host supports connection polling. If the host does not support connection polling, this option will cause connection problems when enabled.

12. Next to **Startup tracing**, select whether or not you want to automatically start tracing the network and the channel adapter when a connection is started. Off is selected by default.



Tracing may cause performance degradation and should only be used for troubleshooting purposes.

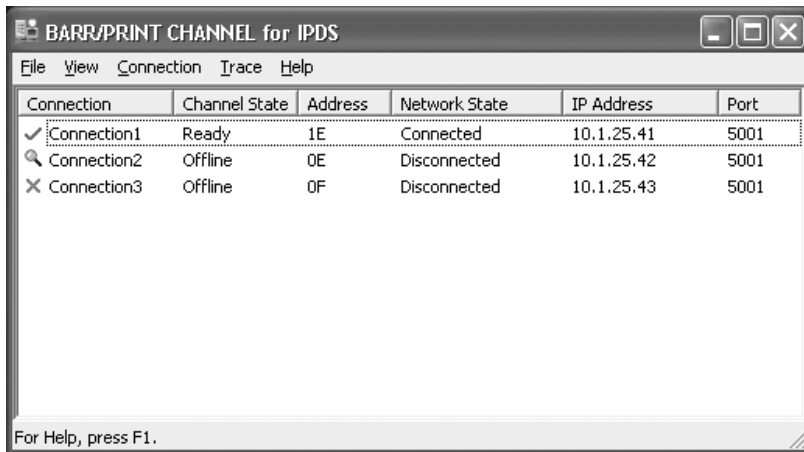
- **Off** – Disables tracing at connection startup.
- **Short** – Automatically starts a short network and channel trace when the connection is started. This trace provides general information.
- **Long** – Automatically starts a long network and channel trace when the connection is started. This trace provides detailed information.

13. Next to **Internal tracing**, select whether or not you want to capture internal printer trace information in a trace file. This option is disabled by default.



Tracing may cause performance degradation and should only be enabled if a Barr Systems support analyst advises you to do so.

14. Next to **Idle disconnect**, specify the number of idle seconds to wait before the connection begins the disconnect process. When the disconnect process is complete, the channel state changes to Sharing and the physical printer is available for use by another host. The channel will remain in the Sharing state until the host submits another job and the connection to the physical printer is reestablished. This option is disabled by default.
15. Click **OK** twice. The BARR/PRINT CHANNEL *for IPDS* window now displays the connection you just added. The connection will remain disconnected until you start it.



5.2 Start and stop connections

The connection you created must be started in order to use BARR/PRINT CHANNEL *for IPDS*. Refer to the following sections for information on starting, stopping, and restarting connections.



You must be a member of the local **Administrators** group to start and stop connections.

To start connections

1. Open BARR/PRINT CHANNEL *for IPDS*.
2. Use one of the following methods to start the connection.
 - Select the connection, and then on the menu bar, select Connection | **Start**.
 - Right-click the connection and select **Start**.



Once the connection is started, BARR/PRINT CHANNEL *for IPDS* is ready to receive jobs from the host. Control of the printer remains with PSF on the mainframe.

To stop connections



Stopping the connection will stop the data stream.

1. Open BARR/PRINT CHANNEL *for IPDS*.
2. Use one of the following methods to stop the connection.
 - Select the connection, and then on the menu bar, select Connection | **Stop**.
 - Right-click the connection and select **Stop**.

To restart connections






1. Open BARR/PRINT CHANNEL *for IPDS*.
2. Use one of the following methods to restart the connection.
 - Select the connection, and then on the menu bar, select Connection | **Restart**.
 - Right-click the connection and select **Restart**.

5.3 Interpret connection status

Use the following table to review common connection states. The table corresponds directly to the status columns in the BARR/PRINT CHANNEL *for IPDS* window.

Connection	Channel State	Address	Network State	IP Address	Port
------------	---------------	---------	---------------	------------	------

Connection	Channel State	Network State	Description
	Disconnected	Disconnected	The connection is not started.
	Ready	Connected	The connection is ready and waiting for data from the host.
	Ready, Printing, Waiting*	Connected	Data from the host is printing.
	Not Ready	Connected	There is a problem with the physical printer. For example, the printer could be out of paper, or there could be a paper jam.
	Not Ready	Disconnected	There is a problem with the network.
	Waiting	Connected	There is a problem with the physical printer; it is not responding.

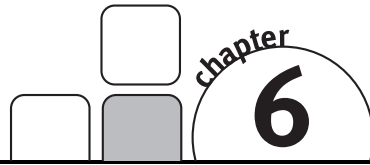
Connection	Channel State	Network State	Description
	Sharing	Disconnected	The physical printer is available for use by another host. The channel will remain in this state until the host submits another job and the connection to the physical printer is reestablished.
	Offline	Disconnected	An incorrect IP address or IP port number may have been specified. Verify that the values are correct on the Connection Configuration dialog box. Also, verify that the physical printer is ready.
	Offline	Pending	The physical printer may not be ready, or it may be connected to another host. Verify that the physical printer is ready. Also, verify that it is not in use by another host.
	Offline or Not Ready	Connected, Disconnected, Pending*	Network polling has been inadvertently enabled. Disable the Network polling option on the Advanced Properties dialog box. This option should only be used by customers who use BARR/PRINT CHANNEL <i>for IPDS</i> in conjunction with BARR/PRINT390 <i>for IPDS</i> . The option must also be enabled in the BARR/PRINT390 <i>for IPDS</i> software.
	Waiting	Connected	The connection is waiting for a response from the printer. If there is a problem and a printer response is not received, the connection will wait indefinitely. First, verify that there is not a problem with the physical printer (for example, a paper jam). If there is not a problem with the physical printer and it is ready, then restart the connection to resume printing. If this does not reset the printer, cancel the Functional Sub-System (FSS) associated with this printer on the host. (Contact your host programmer for more information.)

 Stopped

 Started

* The state continuously changes.

Conduct a Trace



With BARR/PRINT CHANNEL *for IPDS*, you can capture a trace of the network or the channel adapter. Depending on the type of trace you need to do, complete the steps in the following sections.

1. Trace the problem
2. Gather and send the diagnostics file

6.1 Trace the problem

If you have communication problems, you can capture a trace of the IP network or channel adapter from the BARR/PRINT CHANNEL *for IPDS* window. When capturing a channel adapter trace, all connections using the selected adapter will be traced.



You must be a member of the local **Administrators** group to conduct a trace.

Tracing may cause performance degradation and should only be used for troubleshooting purposes.

Complete the following steps to capture a trace.

1. Open BARR/PRINT CHANNEL *for IPDS*. (From the taskbar, click Start | Programs | Barr Print Channel for IPDS | **Print Channel for IPDS**.)
2. Select the connection you want to trace.
3. Use one of the following methods to start the selected connection.
 - On the menu bar, select Connection | **Start**.
 - Right-click the connection and select **Start**.
4. Use one of the following methods to start the trace.
 - For a network trace, on the menu bar, select Trace | Network | **Long Format** or **Short Format**, depending on how detailed you want the trace to be. You can also right-click the connection and select Network Trace | **Long Format** or **Short Format**.
 - For a channel adapter trace, on the menu bar, select Trace | Channel | **Long Format** or **Short Format**, depending on how detailed you want the trace to be. You can also right-click the connection and select Channel Trace | **Long Format** or **Short Format**.

5. Recreate the problem. The trace file is saved in the \\Program Files\Common Files\Barr\Trace folder. The trace file name will be the name of the service, with an .ipt extension for network traces and a .cht extension for channel traces.
6. Use one of the following methods to stop the trace.
 - For a network trace, on the menu bar, select Trace | Network | **Off**. You can also right-click the connection and select Network Trace | **Off**.
 - For a channel adapter trace, on the menu bar, select Trace | Channel | **Off**. You can also right-click the connection and select Channel Trace | **Off**.
7. Follow the steps in Section 6.2 to gather and send the diagnostics file to Barr Systems Technical Support. The trace file will be included as part of the diagnostic file.



You can also configure tracing to occur at startup on the **Advanced Properties** dialog box.

Channel traces can also be captured from the BARR/CHANNEL-IN utility. See the *Capturing a channel trace* Help topic for more information.

6.2 Gather and send the diagnostics file

If you have trouble operating BARR/PRINT CHANNEL *for IPDS* and contact Barr Systems Technical Support, a support analyst may request that you capture a trace and use the Diagnostics Utility to send the resulting diagnostic file.

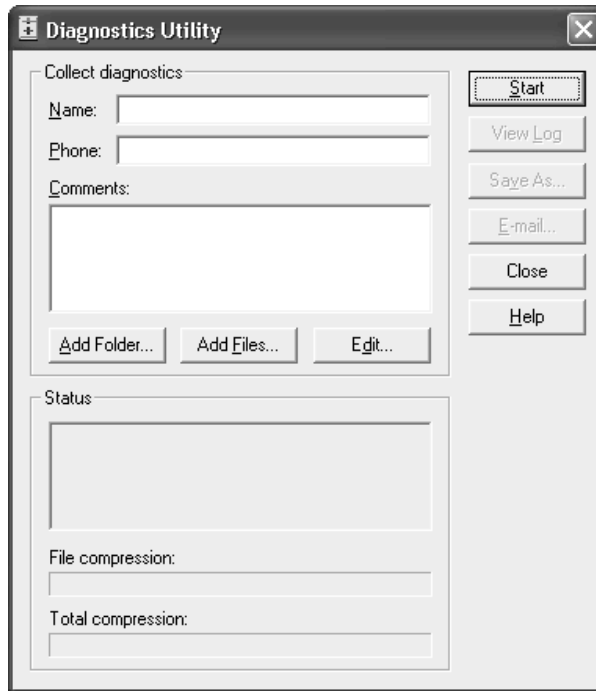
The Diagnostics Utility automatically gathers diagnostics information into a single compressed file that you can e-mail or mail to Barr Systems Technical Support. This file includes information such as: version, registry, general computer information, hardware serial numbers for adapters and the hardware key, message and error logs, and user comments.



When you capture diagnostics, all trace files located in the \\Program Files\Common Files\Barr\Trace folder will be included in the diagnostics. You can select additional folders or files to be included in the diagnostics file from the Diagnostics Utility.

Complete the following steps to gather and send the diagnostic files to Barr Systems Technical Support.

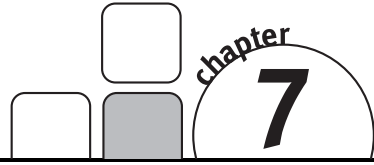
1. Open the Diagnostics Utility. (From the BARR/PRINT CHANNEL *for IPDS* menu bar, select Trace | **Send**.)



2. In the **Name** box, type the name of the contact person. This is a required field.
3. In the **Phone** box, type the phone number of the contact person. This is a required field.
4. In the **Comments** box, type your assigned problem tracking number and a brief description of the problem.
5. Click **Add Folder** to select a folder (and all of its subfolders and files) to be included with the diagnostics.
6. Click **Add Files** to select individual files to be included with the diagnostics. Barr software configuration files and all trace files located in the \\Program Files\Common Files\Barr\Trace folder will be included in the diagnostics. Once the files in the trace folder are included in the trace, they will be moved to the \\Program Files\Common Files\Barr\Old Trace folder. If a file with the same name exists in the Old Trace folder, the existing file is replaced with the new file.
7. Click **Start**. The status of the progress of the diagnostics being gathered will be indicated in the **Status** box. The name and location of the compressed .bct file will display, indicating that all diagnostics have been collected.

8. To view the details of the diagnostics, click **View Log**.
9. To save the BarrDiag.bct file to an alternate location, click **Save As**. This is useful because the BarrDiag.bct file is saved to a hidden folder by default.
10. Use one of the following methods to send the diagnostics file.
 - If you have Internet e-mail access, click **E-mail** to send files to Barr Systems Technical Support. The e-mail will be sent to support@barrsystems.com.
 - Use the FTP server at ftp.barrsystems.com. Contact Barr Systems Technical Support for more information.
 - Use a software disk. Send your disk to:
ATTN: Technical Support – BARR/PRINT CHANNEL for IPDS
Barr Systems, LLC
4500 NW 27 Avenue
Gainesville, FL 32606-7031

Use HTML Help



HTML Help provides information on installing, configuring, and operating the BARR/PRINT CHANNEL *for IPDS* 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, clicking a **Help** button, or by selecting Help | **Contents and Index** on the menu bar. You can also access new Help topics by visiting our Web site at www.barrsystems.com.

7.1 Launch the Help

Use any of these methods to open the BARR/PRINT CHANNEL *for IPDS* Help.

From the window

You can launch the HTML Help 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 dialog boxes

From any BARR/PRINT CHANNEL *for IPDS* dialog box, click **Help** to launch HTML Help and open the topic relating to the dialog box. Alternatively, press F1.

From the taskbar

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 Print Channel for IPDS | **Help**.

7.2 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 in an HTML Help system is a tree outline that displays topics in an expandable/collapsible hierarchy.

Follow these 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 want 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

With the **Search** tab you can 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 basic rules for formulating search queries are as follows.

- Searches are not case-sensitive, so you can type your search in uppercase or lowercase characters.
- You can 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.



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**.

To run a simple search

Follow these steps to run a simple 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**.

Advanced search features

The following are the available advanced search features.

- **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 options** – 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**.



For more information on advanced search features, refer to the *Using the Help* Help topic.

Use the Favorites tab

It might 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.

Add a topic

Follow these steps to add a topic to your list of favorites.

1. Locate the Help topic you want to make a favorite topic.
2. Select the **Favorites** tab and click **Add**.

Return to a favorite topic

Follow these steps to open a topic in your list of favorites.

1. Select the **Favorites** tab and find the topic in your list.
2. Double-click the topic or click **Display**.

Rename a topic

Follow these steps to rename a topic in your list of favorites.

1. Select the **Favorites** tab.
2. Right-click the topic and select **Rename**.
3. Type a new name and press ENTER.

Remove a favorite topic

Follow these steps to remove a topic from your list of favorites.

1. Select the **Favorites** tab.
2. Select the topic and click **Remove**.

Use the Glossary tab

The glossary provides an alphabetized list of terms and definitions related to BARR/PRINT CHANNEL *for IPDS*. Complete the following steps to use the glossary.

1. Select the **Glossary** tab.
2. Scroll through the list of glossary entries.
3. Select a term from the list and view the definition in the lower portion of the **Glossary** tab.



You can also search for a glossary term by typing the first letter of the word you are looking for. The **Term** window will focus on words beginning with that letter.

7.3 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.

7.4 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 select **Select All**.
2. Right-click again, and then select **Copy**. This copies the topic to the Clipboard.



If you want to copy only 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

You can print a Help topic with one of these methods.

- To print the currently displayed topic, click Print on the Help toolbar.
- In the topic pane, right-click anywhere in the topic and select **Print**.
- From the **Contents** tab, right-click a topic, and then select **Print**. You will be given the option of printing 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.

7.5 Customize your Help

As with any window, you can easily change the size and location of the Help viewer. In addition, you can resize the navigation and topic panes and set color, font, and accessibility options.

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

Follow these 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

Follow these 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.

Change colors, fonts, and accessibility options

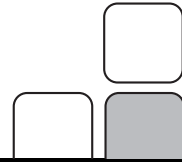
Follow these steps to change the colors, fonts, or accessibility options of your viewer.



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**.

Glossary



adapter

Add-on equipment you can plug into a computer to allow the computer to connect to another device.

attributes

Parameters that describe files and printers.

buffer

A region of memory reserved for use as an intermediate repository in which data is temporarily held while waiting to be transferred between two locations or devices. For instance, a buffer is used while transferring data from an application, such as a word processor, to an input/output device, such as a printer.

bus

A set of hardware lines (conductors) used for data transfer among the components of a computer system. A bus is essentially a shared highway that connects different parts of the system -- including the processor, disk-drive controller, memory, and input/output ports -- and enables them to transfer information. Most computers contain one or more expansion slots into which additional boards can be plugged to connect them to the bus.

Bus & Tag cables

Cables used to connect devices to mainframe channels. The bus cable transmits data and the tag cable controls information on the bus.

byte

Short for binary term. A unit of data, today almost always consisting of 8 bits. A byte can represent a single character, such as a letter, a digit, or a punctuation mark.

channel

(1) A path along which signals can be sent. (2) A functional unit that directs the flow of information between control units and main storage.

channel-attached

Direct method of attaching printers to S/390 mainframes.

command

An instruction to a computer program that, when issued by the user, causes an action to be carried out. Commands are usually either typed at the keyboard or chosen from a menu.

configuration

A specific combination of hardware that forms a system. When referring to IBM computers, the term configuration describes characteristics such as the type of video adapter, the number and description of printers, the amount of memory, and description of serial ports.

daisy chain

(1) A set of devices (such as printers) connected in series. In order to eliminate conflicting requests to use the channel (bus) to which all the devices are connected, each device is given a different priority. SCSI (Small Computer System Interface) and the newer USB (Universal Serial Bus) both support daisy-chained devices. (2) To connect a series of devices, one to another, like daisies in a chain of flowers.

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.

device

An input and output unit connected to the computer such as a printer, plotter, or monitor.

diagnostics

A program to detect and isolate errors in programs and faults in equipment.

disconnect

To break a communications link.

DMA

Acronym for Direct Memory Access. A technique for moving data directly between main storage and peripheral equipment without requiring the processing unit to process the data.

DNS server

Short for Domain Name System server, a computer that can answer Domain Name System (DNS) queries. The DNS server keeps a database of host computers and their corresponding IP addresses.

driver

A program that controls a device, such as a printer, disk drive, or keyboard. Every device has a driver program; many come with the operating system.

extension

In a file name, one to three characters that follow the period. Example: STUDY5.JOB.

fiber-optic cable

A form of cable used in networks that transmits signals optically, rather than electrically as do coaxial and twisted-pair cable. The light-conducting heart of a fiber-optic cable is a fine glass or plastic fiber called the core. Fiber-optic cable can transmit clean signals at speeds as high as 2 Gbps. Because it transmits light, not electricity, it is also immune to eavesdropping.

FTP

Acronym for File Transfer Protocol. In TCP/IP, an application 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.

GB

Abbreviation for gigabyte. One billion (technically 1,073,741,824) bytes.

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.

hexadecimal

Uses the digits 0 through 9 and the letters A through F (uppercase or lowercase) to represent the decimal numbers 0 through 15. One hexadecimal digit is equivalent to 4 bits, and 1 byte can be expressed by two hexadecimal digits. Also called hex.

host programmer

The person who installs and maintains host computer software.

interface

The connection between two elements so that they can work with each other or exchange information. The term is used for the connection between both software and hardware components.

IP address

Short for Internet Protocol address. A 32-bit (4-byte) binary number that uniquely identifies a host (computer) connected to the Internet to other Internet hosts, for the purposes of communication through the transfer of packets. An IP address is expressed in "dotted quad" format, consisting of the decimal values of its 4 bytes, separated with periods; for example, 127.0.0.1.

IPDS

Acronym for Intelligent Printer Data Stream. A printer data stream generated from AFP documents and resources by the Print Services Facility (PSF).

IRQ

Acronym for interrupt request. The hardware line over which the processor and adapter communicate. The IRQ carries signals to get the processor's attention when the adapter is ready to receive or send information.

JES2

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.

job

A specified amount of processing performed as a unit by a computer.

LPT1, LPT2, LPT3

Computer parallel printer ports 1, 2, and 3.

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

Abbreviation for megabyte. Usually 1,048,576 bytes; sometimes interpreted as 1 million bytes.

network

A group of computers and associated devices that are connected by communications facilities. A network can involve permanent connections, such as cables, or temporary connections made through telephone or other communication links. A network can be as small as a LAN (local area network) consisting of a few computers, printers, and other devices, or it can consist of many small and large computers distributed over a vast geographic area (WAN or wide area network).

offline

Logically (or physically) disconnected and unable to communicate with the host computer.

online

Activated and ready for operation; capable of communicating with or being controlled by a computer.

operating system

Software that controls the execution of computer programs and that might provide services such as resource allocation, scheduling, input/output control, and data management.

parameter

A value given to a variable, either at the beginning of an operation or before an expression is evaluated by a program.

polling

A technique that continually interrogates a peripheral device to see if it has data to transfer.

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 number

A number that enables IP packets to be sent to a particular process on a computer connected to the Internet. Some port numbers, called "well-known" port numbers, are permanently assigned; for example, e-mail data under SMTP goes to port number 25. A process such as a telnet session receives an "ephemeral" port number when it starts; data for that session goes to that port number, and the port number goes out of use when the session ends.

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.

program window

Window that is associated with an application program or service.

PSF

Acronym for Print Services Facility. A set of processes that translate AFP data to Intelligent Printer Data Streams (IPDS).

remote

A computer or other device located in another place (room, building, or city), but accessible through a cable or communications link.

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.

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.

terminator plug

A part that ends the cable path on a computer system. The terminator plug is attached to the last device in a series.

trace

A recording of the frames sent and received on a communication line useful for diagnosing communications problems.

window

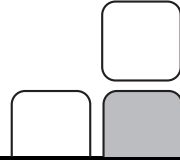
In programs and graphical interfaces, a portion of the screen that can contain its own document or message. In windows-based programs, the screen can be divided into several windows, each of which has its own boundaries and can contain a different document (or another view into the same document).

workstation

(1) A combination of input, output, and computing hardware that can be used for work by an individual. (2) A powerful stand-alone computer of the sort used in computer-aided design and other applications requiring a high-end, usually expensive, machine with considerable calculating or graphics capability. (3) A microcomputer or terminal connected to a network.

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