

# Print Drivers for UNIX & LINUX Systems

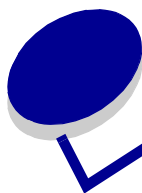
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User's Guide



May 2003

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**Edition: May 2003**

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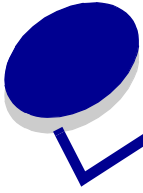
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# 1

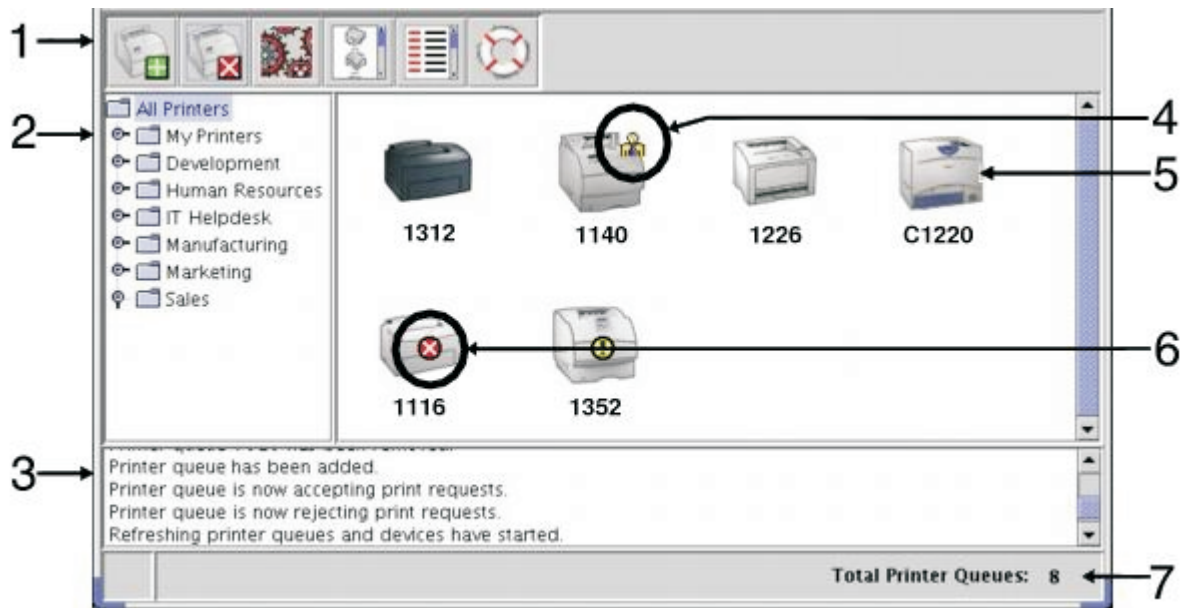
## Introduction to Print Drivers for UNIX & LINUX Systems

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Print Drivers for UNIX & LINUX Systems provide many features that help ease the task of the system administrator and help users to be more productive. The following is an overview of several of those features.

- Printer queue and device wizards: Administrators can use wizards to help set up virtual devices and printer queues.
- Network printer search: The search function makes finding printers in an IP Subnet or Range easier.
- UNIX Print subsystem integration: IBM Print Drivers integrate with the native UNIX print subsystem to work with existing printer queues and software.
- Frequently used options: System administrators can create queues with the most frequently used options as the default, such as duplex or no banner page, so users do not need to specify those options.
- Printer options support: Users have the ability to access several printer specific options such as Multipage Printing, Print and Hold, Duplex, Paper Size, and so on.
- Job submission graphical interface (ibmlp): Users can use the command “ibmlp” in place of “lp” to access a graphic interface to override per-queue options at print time.
- Job command line options: Users can override per-queue defaults by specifying options on the lp or lpr command line.
- Individual user settings: Users can save their own printer queue settings to their home account.
- Bypass the native UNIX Print subsystem: You can bypass the native UNIX Print subsystem and send data directly to the printer by using our transport utilities.
- Printer groups (My Printers): Users have the ability to group printer queues.
- Printer classes (System V Print subsystems): Administrators have the ability to manage the standard printer classes from a graphical interface.
- Enhanced security: Lets users with a designated UNIX group ID set up queues.

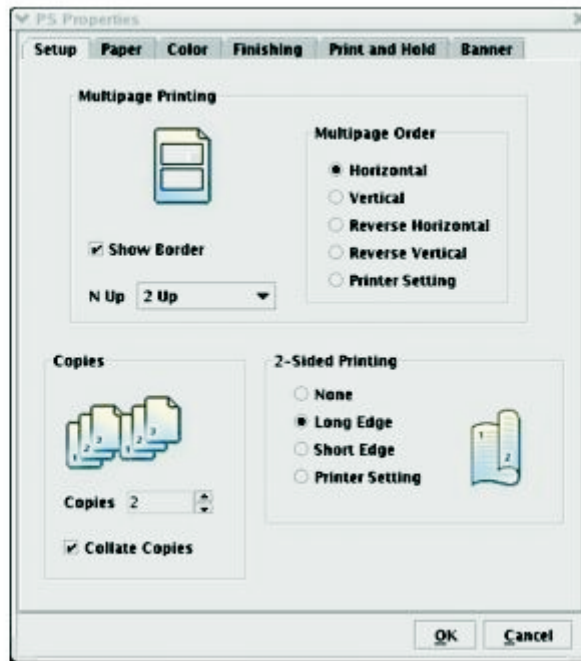
## IBM Print Drivers user interface



	Feature	Description
1	Toolbar	Provides quick access to frequently used functions.
2	Printer groups	Lets administrators and end users organize queues into folders.
3	Status window	Displays the status of the current task.
4	Personal settings	A special icon that indicates that your personal properties settings are the current properties for the queue. Personal settings are saved in your home directory after making changes to a queue's properties, and are available when using IBM Print Drivers in user mode.
5	Printer icons	Representative images of the printing product that provide quick access to printer queue settings.
6	Queue status	A visual representation of the current queue state. An "X" indicates that the queue is rejecting print jobs, and an "!" indicates that the printer queue is disabled.
7	Total queues	The total number of queues existing on the server or workstation.

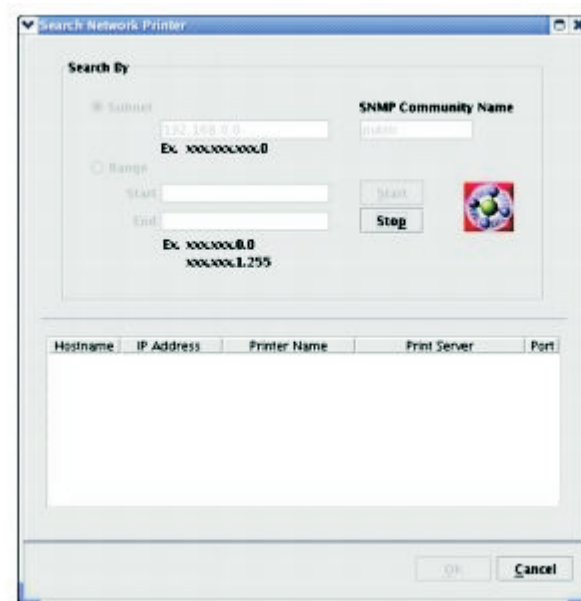
## Printer Properties

The Printer Properties let the user select the print settings for a particular job. Settings include a variety of supported print features, ranging from paper type to the number of page images printed on a single page.



### ***Search network printer***

The Search Network Printer feature lets you discover printers on a local or remote subnet. Enter the subnet IP address, or enter the IP address range, and then click **Start** to begin searching for a specific printer.



# 2

## Installing

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### *Before installing*

Do the following before you install IBM Print Drivers:

- 1 Make sure you are logged on with root user authority.
- 2 Make sure you have enough disk space available for a complete installation. See **UNIX system requirements** and **Find space to install IBM Print Drivers**.
- 3 Set up an administrative user group.

During the installation of IBM Print Drivers, you will be asked if you want to change the administrative user group for IBM Print Drivers. The default administrative group on all systems except AIX is bin. The default administrative group on AIX is printq.

If you have an administrative group on your host, you might want to use that group as the IBM Print Drivers administrative group. Non-administrative users cannot add or remove printer queues. See **Change an administrative group name** for more information.

- 4 Decide where to install the IBM Print Drivers package.

The IBM Print Drivers package can be installed in various arrangements. You can install IBM Print Drivers on:

- Each workstation you want to run IBM Print Drivers.
- One host, while other workstations can NFS mount the IBM Print Drivers package files. For help, see **NFS mount Print Drivers**.

**Note:** If you are using print clients and print servers on Solaris 7, install IBM Print Drivers on the print server to access the IBM Print Drivers management features.

### *Supported operating systems*

Make sure you are running a version of UNIX listed below with the latest available patches.

- HP-UX
- IBM AIX
- Sun Solaris SPARC
- Linux Systems
  - RedHat Linux



- SuSE

For specific supported operating system versions, refer to the Web site or the file /usr/ibmprint/docs/Supported\_Platforms.txt after installation.

## **UNIX system requirements**

IBM has minimum installation space requirements.

<b>System</b>	<b>Installation space</b>
IBM AIX	55MB in /usr/lpp
HP-UX	130MB in /opt
Sun Solaris SPARC	75MB in /opt 75MB in /tmp or /var/tmp during installation
Linux	70MB in /usr/local

### **Installing on HP-UX**

- 1 Read **Before installing** first.
- 2 Make sure you have enough disk space in /opt to install IBM Print Drivers. If you need more space, see **Find space to install IBM Print Drivers**.
- 3 Download the IBM Print Drivers package from the IBM Web site at <http://www.ibm.com/printers>: ibm-print-drivers-hpux11.pkg.gz
- 4 Save the downloaded package into the /tmp directory and uncompress the package file:  
# /usr/contrib/bin/gunzip /tmp/ibm-print-drivers-hpux11.pkg.gz
- 5 Start the Software Depot Install Dialog by typing:  
# /usr/sbin/swinstall
- 6 Make sure the Source Depot type is **Network Directory/CDROM** and the hostname of the computer you are installing on appears in the Source Host Name text box. If either of these fields are incorrect, enter the correct value, or select it from the list.
- 7 In the Source Depot Path field, type the following to specify the full path to the HP-UX package file:  
/tmp/ibm-print-drivers-hpux11.pkg
- 8 Select the bundles you want to install:
  - a Click the IbmPrtDrvs bundle.
  - b Click **Actions > Install**.

- 9 Click **OK** to start the installation.

**Note:** If the HOME variable was not set for root when you started SAM, an error message appears. Ignore the message and click **OK**.

- 10 During installation, select **Logfile** to view the installation log.

**Warning:** Make sure that there are no errors or warnings during installation.

**Note:** If there is not enough disk space in /opt/ibm to install, see **Find space to install IBM Print Drivers**.

- 11 When installation is finished, click **Done** and exit SAM.
- 12 Run the following setup script to complete the installation:

```
# /opt/ibm/setup.ibmprint
```

## ***Installing on IBM AIX***

- 1 Read **Before installing** first.
- 2 Make sure you have enough disk space in /usr/lpp to install IBM Print Drivers. If you need more space, see **Find space to install IBM Print Drivers**.
- 3 Download the IBM Print Drivers package from the IBM Web site at <http://www.ibm.com/printers>: ibm-print-drivers-aix5-sysv.pkg.Z
- 4 Save the downloaded package in the /tmp directory, and uncompress the package file:  

```
# uncompress /tmp/ibm-print-drivers-aix5-sysv.pkg.Z
```
- 5 Type the following on the command line, and then press **Enter**:  

```
# smit install_latest
```
- 6 When prompted to type the input device directory for software, type the following:  

```
/tmp/ibm-print-drivers-aix5-sysv.pkg
```
- 7 Select the packages you want to install. All packages are installed by default.
  - a On the SOFTWARE to install option, select **List**.
  - b Select the packages you want to install.
  - c Select **OK**.
- 8 Specify any other install options, such as COMMIT.
- 9 Select **OK** to begin installing IBM Print Drivers. You receive a message when the installation is complete.

- 10 Run the following setup script to complete the installation:

```
# /usr/lpp/ibmprint/setup.ibmprint
```

This file creates required symbolic links and prompts you for information you must provide after installation.

## ***Installing on RedHat Linux or SuSE Linux***

You can install from the Internet or from a CD.

### ***Installing from the Internet***

- 1 Read **Before installing**.
- 2 Download the IBM Print Drivers package from the IBM Web site at <http://www.ibm.com/printers>: `ibm-print-drivers-linux-glibc2-x86.rpm.gz`
- 3 Save the downloaded package in the /tmp directory.
- 4 Uncompress the package file:

```
# gunzip /tmp/ibm-print-drivers-linux-glibc2-x86.rpm.gz
```
- 5 Install the package file:

```
# rpm -ivh /tmp/ibm-print-drivers-linux-glibc2-x86.rpm
```
- 6 Run the following setup script to complete the installation:

```
# /usr/local/ibm/setup.ibmprint
```

### ***Installing from a CD***

- 1 Read **Before installing**.
- 2 Mount the CD.
- 3 Change your directory to the package file directory. If you mounted your CD-ROM to /mnt/cdrom:

```
# cd /mnt/cdrom/unix/packages
```
- 4 Install the package file:

```
# rpm -ivh ibm-print-drivers-linux-glibc2-x86.rpm
```
- 5 Run the following setup script to complete the installation:

```
# /usr/local/ibm/setup.ibmprint
```

## ***Installing on Sun Solaris SPARC***

You can install from the Internet or from a CD.

### ***Installing from the Internet***

- 1** Read **Before installing**.
- 2** Set the NONABI\_SCRIPTS environment variable to **TRUE**.
- 3** Make sure you set the OPENWINHOME environment variable by typing the following on the command line:

```
# env | grep OPENWINHOME
```

If you do not get a response, you must set the OPENWINHOME environment variable to the **openwin** directory.

- 4** Install the package file.
  - a** Download the IBM Print Driver package from the IBM Web site at <http://www.ibm.com/printers>: `ibm-print-drivers-solaris2-sparc.pkg.Z`
  - b** Save the downloaded package in the /tmp directory and uncompress the package file:

```
# uncompress /tmp/ibm-print-drivers-solaris2-sparc.pkg.Z
```
  - c** Start the package installation program by typing:

```
# pkgadd -d /tmp/ibm-print-drivers-solaris2-sparc.pkg
```
- 5** A list of available packages appears:
  - To install all the packages, type **a11**, and then press **Enter**.
  - To install individual packages, type each package number separated by a comma, and then press **Enter**. For example: **1,2,3**.

**Note:** You must install all the packages in the same location.

- 6** Follow the prompts and answer any questions that appear on the screen:
  - a** To accept the defaults, press **Enter**.
  - b** To answer yes/no questions, type **y**, **n**, or **?**, and then press **Enter**.
  - c** When a message appears telling you the installation was successful, type **q** to quit.

If you want other hosts to NFS mount IBM Print Drivers, see NFS mount Print Drivers. Otherwise, continue with creating printer queues.

## Installing from a CD

- 1 Read **Before installing**.
- 2 Set the NONABI\_SCRIPTS environment variable to **TRUE**.
- 3 Make sure you set the OPENWINHOME environment variable by typing the following on the command line:

```
# env | grep OPENWINHOME
```

If you do not get a response, you must set the OPENWINHOME environment variable to the **openwin** directory.

- 4 Install the package file.
  - a Check to see if you are running Volume Manager by typing the following on the command line, and then pressing **Enter**:

```
# ps -ef | grep vold
```

If you get a response, the vold process is running, and therefore the Volume Manager is running. The CD automatically mounts. Start the package installation program by typing:

```
# pkgadd -d /cdrom/cdrom0/unix/packages/  
ibm-print-drivers-solaris2-sparc.pkg
```

If there is not a response, Volume Manager is not running.

- Make sure that the /cdrom directory exists.
- Mount the CD. For example, if the path to the CD-ROM drive is /dev/dsk/c0t6d0s2, the command is:

```
# mount -F hsfs -o ro /dev/dsk/c0t6d0s2 /cdrom
```

- Start the package installation program by typing:

```
# pkgadd -d /cdrom/unix/packages ibm-print-drivers-solaris2-sparc.pkg
```

- b Continue with the instructions on the screen.
- 5 A list of available packages appears:
    - To install all the packages, type **a11**, and then press **Enter**.
    - To install individual packages, type each package number separated by a comma, and then press **Enter**. For example: **1,2,3**.

**Note:** You must install all the packages in the same location.

- 6 Follow the prompts and answer any questions that appear on the screen:
  - a To accept the defaults, press **Enter**.
  - b To answer yes/no questions, type **y**, **n**, or **?** , and then press **Enter**.
  - c When a message appears telling you the installation was successful, type **q** to quit.

If you want other hosts to NFS mount IBM Print Drivers, see NFS mount Print Drivers. Otherwise, continue with creating printer queues.

## ***Removing IBM Print Drivers***

A system administrator removes IBM Print Drivers using the utilities listed in this table.

Depending on your operating system, you mark the IBM Print Drivers packages for removal after you start the program, or you type the names of the IBM Print Drivers package names you want to remove on the command line. Refer to your operating system documentation for more information.

<b>Operating system</b>	<b>Package removal tool</b>
HP-UX	sam
IBM AIX	smit
RedHat Linux, SuSE Linux, and TurboLinux	rpm -e
Sun Solaris SPARC	pkgrm

Run the uninstall script to remove symbolic links created during installation.

## ***Removing remaining directories***

Package removal utilities usually do not remove directories shared by more than one package. After removing all of the IBM Print Drivers packages, some directories may need to be removed manually.

To see if any directories remain after removing all the IBM packages, check the directory where you installed IBM Print Drivers. By default, IBM Print Drivers installs in either of the following locations:

- /opt/ibm/unix\_prt\_drivers
- /usr/local/ibm/unix\_prt\_drivers

# 3

## How do I?

---

### ***Access Print Drivers***

IBM Print Drivers are available from a Windows Menu Item, or from the command line by typing `ibmprint`.

The application has two modes: User and Administrative. If a IBM Print Drivers administrator starts the program, it opens in administrative mode by default. However, if an administrator wants to start the program in user mode, they can type `ibmprint -n`. This lets administrators start a session with their own personal settings.

**Note:** User mode is not supported when running the application as a “root” user.

### ***Change an administrative group name***

IBM Print Drivers use UNIX groups to separate those who have permission to add and remove queues from those who do not.

When you install IBM Print Drivers, you are prompted to provide an administrative group name. The default administrative group on all systems except AIX is bin. The default administrative group on AIX is printq.

To change the administrative group name, run the following script.

```
# /opt/ibm/setup.ibmprint  
or  
# /usr/local/ibm/setup.ibmprint
```

### ***Add or remove a user from the administrative group***

Users who are part of the administrative group can open IBM Print Drivers with permissions and perform administrative tasks. Users who are not part of this group can only change their personal settings and maintain their printer groups. User settings are stored in the user’s home directory.

Add users to the administrative group by adding the user's name to the Administrative group located in the `/etc/group` file. To change the Administrative UNIX group name, see [Change an administrative group name](#).

Remove the user from the administrative group by removing the user name from the UNIX group.

## ***Create virtual device***

Begin by gathering the following information:

- The connection method for the virtual device
- For network printers, the hostname or IP address and the SNMP community name
- For local printers, the connection type (parallel, serial, or USB) and the physical device file name

## ***Create virtual devices through the Virtual Device Manager***

- 1** Click **Virtual Device Manager**.
- 2** Click **Add**.
- 3** Click **Network Attached Printer** or **Locally Attached Printer**.
- 4** If your printer is locally attached, follow these instructions. If it is a network attached printer, follow the instructions in step 5.
  - a** Select **Parallel**, **Serial**, or **USB**.

If you are using a parallel connection, specify if the virtual device is a BPP Device.

If you are using a serial connection, specify exact **Serial Port Options**.

**Note:** Not all options may be available for your system.
  - b** Type the device name and description.
  - c** Select a physical device from the list of known devices, or select **Other** and then type the path to the physical device file.

**Note:** If you do not know the path, click **Browse** to look for the path in the file system.
  - d** Click **Finish**.
- 5** If your printer is a network attached printer:
  - a** Type the device name and description.
  - b** Type the IP Address/Host Name, or click **Search** to locate the IP address.

If you entered an IP Address/Host Name, go to step **h**. If you clicked **Search** to locate an address, proceed with step **c**.
  - c** From the Search Network Printer dialog box, search by Subnet or Range.
  - d** Type the appropriate IP Address or Subnet.
  - e** Click **Search**.
  - f** Select the device from the list.



- g** Click **OK**.
- h** Make any changes necessary to the available options.
- i** Click **Next**.
- j** If you entered an external print server IP Address or Host Name, select the appropriate port number for your printer.
- k** Verify the information that appears.
- l** Click **Finish**.

## ***Create virtual devices through the command line***

- 1** Select a recognizable, but unique, virtual device name.
- 2** To create a virtual device type:

For Physical Devices:

```
# mkdevice -d name -f device -t type
```

For Network Devices:

```
# mkdevice -d name -i host [-c name] [-p port]
```

**Note:** Enter `mkdevice -h` from the command line for more details regarding this command.

## ***Create a printer queue***

There are two ways to create a printer queue:

### ***Create printer queues with the Add Printer Queue Wizard***

- 1** From IBM Print Drivers, click **Add Printer Queue Wizard**.
- 2** Select a device from the list of Available Devices, or click **Add Device** to create a new device. For help adding a device, see **Create virtual device**.
- 3** Click **Next**.
- 4** Type the printer name and description.
- 5** Select the printer type.
- 6** Click **Next**.
- 7** Select the printer languages the queue will accept.

- 8 Click **Properties** to change the settings for the printer queue if data will be sent to the printer. For help, see [Change the printer queue properties](#).
- 9 Click **Next**.
- 10 Finish creating the printer queue:
  - If you are using Solaris SPARC, HP-UX, or IBM AIX, select **Enable Printer Classes** to put this queue in a class. For help with Printer Classes, see [Work with printer classes](#).
  - If you are using Linux, select **Enable Printer Aliases** to create aliases for this queue. For help with Printer Aliases, see [Work with Printer Aliases](#).
- 11 Click **Finish**.

## ***Create printer queues from the command line***

- 1 Before you can create the queue, you must gather the following pieces of information: a valid device name, the printer type, the printer language, and the default printer queue settings options.
  - a The device name that will be associated with the printer queue must exist before creating the queue.
    - You can list the defined virtual devices by running the `$ lsdevice -l` command.
    - If the device does not exist, you can create one by running the `mkdevice` command. For help adding a device, see [Create virtual device](#).
  - b The supported printer types and languages are listed in the file:  
`/usr/ibmprint/etc/printers/printer.list`.
  - c Printer settings options that can be used can be found by running the `lsqueue_opts` command.

- 2 Type:

```
# mkqueue -d device_name -q queue_name -p printer_type -l printer_language  
-o printer_options
```

**Note:** For more information on the `mkqueue` command, run the command line program  
`# mkqueue -h`.

## ***Change the printer queue status***

There are four printer queue states:

- **Enabled:** The normal state of operation. Jobs in the queue are actively processed.
- **Disabled:** Print job processing stops. New jobs can be submitted, but are not processed.
- **Accepting:** Print jobs may be submitted to the queue.
- **Rejecting:** No print jobs may be submitted to the queue.

These states are not all mutually exclusive. For example, an enabled queue may reject jobs.

IBM Print Drivers shows these states by placing an icon on the printer queue within the Icon View, and by changing the color of the text in Detail View.

If you see a red "X" on a printer queue, the printer queue is rejecting print jobs.

If you see a yellow "!" on a printer queue, the printer queue is disabled.

To change the status of a printer queue:

- 1 Right-click the printer queue.
- 2 Select **check/uncheck the appropriate enabled/accepting boxes**.

## ***Work with Printer Aliases***

Use Printer Aliases when you are creating a queue in Linux to provide alternative names for a printer queue. For example, the real name for the printer queue could be Bldg\_4\_Room1, but the alias describes it as duplex. Then users can use either Bldg\_4\_Room1 or duplex as the printer queue name when printing.

**Note:** Printer aliases are only supported on Linux platforms.

### ***To create a printer queue with an alias***

- 1 Access the Printer Aliases screen of the Add Printer Queue Wizard.
- 2 Select **Enable Printer Aliases**.
- 3 Enter the name of the alias in the Alias Name field.

### ***To display a printer queue's aliases***

Right-click the printer queue and select **Printer Aliases**.

## ***Work with printer classes***

Printer classes help you to group several printers into one class. Once a printer class is set up, you can print to a class rather than a specific printer. Because printing resources are pooled within a class, the first available printer completes your job, providing faster turnaround.

**Note:** Use of printer classes are optional and should only be used if they are considered beneficial to users.

Printer classes are only available when you are creating a queue on Solaris SPARC, HP-UX, or IBM AIX.

You can access printer classes in two ways: the last screen of the Add Printer Queue Wizard, or by right-clicking a printer queue and then selecting **Printer Classes**.

To add this printer to a class, select **Enable Printer Classes**. You have three options:

- Create a New Class
- Select Existing Class
- Remove Existing Class

You cannot remove a queue from a class at the time you create the queue.

### ***Create a class***

To add a queue to a new class:

- 1 Access **Printer Classes**.
- 2 Select **Create a New Class**.
- 3 Type the name of the new class.

### ***Add to a class***

To add a queue to a class:

- 1 Access **Printer Classes**.
- 2 Select the check box next to the existing class to associate the queue with that class.

### ***To remove a queue from a class:***

- 1 Access **Printer Classes**.
- 2 Clear the check box next to the class that you want to remove the queue from.

**Note:** A class exists as long as it contains queues.

### ***Change the printer queue properties***

- 1 Open **IBM Print Drivers**.
- 2 Right-click the printer queue icon.
- 3 Select the appropriate properties menu item.
- 4 Change the settings.
- 5 Click **OK**.

How you change the properties determines what print jobs are affected.

- If you open IBM Print Drivers as a normal user, your changes are saved in your home directory and apply to all print jobs that you send to the printer queue. A special icon appears on the printer icon to indicate that the properties are your personal printer queue properties.

To delete your personalized settings and go back to the system settings, right-click the printer queue and select **Default Settings**.

- If you open IBM Print Drivers as an administrator, your changes apply to every user who has not saved personal printer queue properties for that printer queue.
- If you change the settings through Print File or ibmlp, your changes affect the properties for that specific print job. The changes do not affect any other jobs sent to that printer queue.

**Note:** Application settings override any properties you set up for the printer queue.

The settings shown in the Properties dialog box include all possible properties options for that specific printer type. However, your printer may not have all of the available options installed. If you select an option that the printer does not support, the printer ignores the unsupported settings.

For example, the Printer Type may support an optional duplex unit. However, if a duplex unit is not connected to the printer, your print job prints on one side of the paper.

## ***Print from the command line***

There are different ways to print from the command line.

- Print without making changes in the printer queue properties screen.

**1** Type:

```
# lp -d queue_name file_name
```

Linux users type:

```
# lpr -P queue_name file_name
```

- Print with overrides to the printer queue properties that you select from the properties screen.

**1** Type:

```
# ibmlp -d queue_name file_name
```

Linux users type:

```
# ibmlp -P queue_name file_name
```

**2** Change the appropriate settings.

**3** Click **OK**.

- Print with overrides to the properties that you enter from the command line.

- 1 Access a list of the current properties by typing:

```
# lsqueue_opts -d queue_name
```

Linux users type:

```
# lsqueue_opts -P queue_name
```

- 2 Find the name of the property you want to change and the value it can be changed to.

- 3 Type the command to change the properties.

- 4 If you are printing from Solaris, HP-AIX, or IBM AIX, use the following command to change properties:

```
# lp -d queue_name -o property_name=property_value file_name
```

If you are printing from Linux, use the following command to change properties:

```
# lpr -P queue_name -C "lexopts:property_name=property_value" file_name
```

For example, if you have a printer queue (lab\_printer) that is currently set to print only single-sided pages, and you need to print a two-sided report, you can specify the change on the command line.

- 1 Determine if the printer queue supports the feature(s) you want to use (in this case, two-sided or *duplex* printing), and enter the appropriate command. For this example, you would type:

```
# lsqueue_opts -P lab_printer
```

The screen would then read:

```
duplex  none (default)
        short_edge
        long_edge
        current
```

- 2 Find the property name and value that controls duplexing:

```
duplex=long_edge
```

- 3 Type:

```
# lp -d lab_printer -o duplex=long_edge my_report.ps
```

Linux users type:

```
# lpr -P lab_printer -C "lexopts:duplex=long_edge" my_report.ps
```

## ***Manage printer groups***

Printer groups help you select a small group of printer queues from the available printer queues on a UNIX system. You can use the Group Manager tool to add or remove printer queues in groups.

### ***Add a printer queue to My Printers or another printer group***

You can add a printer queue to My Printers or another printer group by either dragging a printer from the main window onto a printer group, or by using the Group Manager tool.

To add a printer queue to My Printers or any other group using the Group Manager tool:

- 1** Right-click a group name and select **Group Manager**.
- 2** From the All column, select the print queues that you want to add to the group.
- 3** Click the right arrow button (>) to add the print queues to the group.

**Note:** Remove a printer queue from a printer group by selecting the printer queue from the groups list, and then clicking the left arrow (<).

### ***Removing a printer group***

- To delete a specific group, right-click the group name, and then click **Delete**.
- To delete multiple groups, right-click **All Printers**, and then select **Delete Group**. Select the groups to be deleted, and then click **Remove**.

**Note:** You cannot remove the My Printers or All Printers groups.

### ***Create a printer group***

You can create a printer group using the Group Manager tool. You can access the new group manager dialog box by right-clicking **All Printers** and selecting **New Group**.

To enter a new group:

- 1** Enter the group name in the Group Name field.
- 2** Select the printer queues that you want to add to the group from the Available Print Queues column.
- 3** Click the right arrow button (>) to add the print queues to the selected print queues column. Use the double arrow button (>>) to move all queues to the selected print queues column.
- 4** Click **OK**.

**Note:** To remove a print queue from the selected print queue column, select the print queues to be removed, and then click the left arrow (<).

## ***Print a file from IBM Print Drivers***

You can select a file to print to a queue from within IBM Print Drivers.

- 1 Right-click the queue, and select **Print File** from the menu.
- 2 Select your file from the browser box.
- 3 If you want to change the printing preferences for this specific job only, select the **Preferences** button.

**Note:** Unless you have an ImageQuick™ card (or SIMM) or WebSIMM; only PostScript, PCL, and ASCII text files can be printed in this manner.

- 4 Click **Print**.

## ***Print a test page***

Printing a test page sends a job through the printer queue to verify that the queue is working correctly. The test page includes information such as queue name, device name, printer type, and so on.

To print a test page:

- 1 Right-click the printer queue icon.
- 2 Select **Print Test Page**.

## ***Print a job on both sides of the paper***

Duplex printing is printing on both sides of the paper. If you have installed an optional duplex unit, your printer can print on both sides of the paper. Check the documentation that came with your printer to determine if this option is supported.

### ***Installed optional duplex unit***

If you have an optional duplex unit installed on your printer, you can specify duplex printing by indicating the binding edge you want to use from the Duplex options.

If you select Long-edge, the pages of your document turn like the pages of a magazine. If you select Short-edge, the pages turn like the pages of a legal pad.

**Note:** The Duplex options are available only if your printer supports these options.



## ***Print a multipage document***

The multipage printing option lets you print images of multiple pages on one form. You can specify the direction the multiple images fit on the page and whether images are separated by a border. When you make a selection, the graphic to the right of the option changes to show how the printed page will look.

### ***To print multiple pages on the same sheet of paper:***

- 1** From the Properties dialog box, click **Setup**.
- 2** Choose the number of page images you want to print on the same sheet of paper.
- 3** Click **OK**.

**Note:** Not all printers support the multipage feature. Refer to your printer's documentation to see if your printer supports this feature.

## ***Print multiple copies of a job***

Use the Copies option to print more than one copy of your document at a time. The Copies box on the Setup tab is independent of a Copies option that may be available in the Print dialog box of your program. Your program settings usually override the settings on the Setup tab.

Specifying the number of copies on the Setup tab usually prints uncollated copies faster. Specifying a multiple number of copies on both the Setup tab and in a program Print dialog box may produce unpredictable results.

To print multiple copies:

- 1** From the Properties dialog box, click **Setup**.
- 2** Enter the number of copies.
- 3** Click **OK**.

Collating copies:

By default, multiple copies of a document are not collated. The full number of copies for each page print in succession (all of the copies of page 1, followed by all of the copies of page 2, and so on). If you want to print collated copies, select the **Collate Copies** check box. This enables the printer to print copies in sequence (one copy of page 1, page 2, page 3, followed by another copy of page 1, page 2, and so on).

**Note:** If your printer does not have enough memory to collate a large document, it prints collated pages of part of the document, then it prints collated pages of the remainder of the document.

## ***Change the orientation of my print job***

You can specify the orientation that you want to use for printing your documents in the printer queue's properties dialog boxes.

- Select **Portrait** if you want your document taller than it is wide.
- Select **Landscape** if you want your document wider than it is tall.
- Select **Reverse Landscape** or **Reverse Portrait** to rotate the document 180 degrees. This rotates the document "upside down."
- Select **Printer Setting** to let the printer determine orientation.

**Note:** These settings are only supported by PCL printer language.

## ***Change my Lines Per Page setting***

Some applications do not have page settings or print settings capability, or do not let you change the number of printed lines on a sheet of paper. You can adjust the number of printed lines on a single page, or the number of printed lines in an inch from the PCL Properties of a printer queue.

- 1** Access the printer queue properties of the printer queue. For help, see **Change the printer queue properties**.
- 2** Click **Page Layout**.
- 3** Change the number of Lines Per Page.
- 4** Change the number of Lines Per Inch.
- 5** Click **OK**.

### **Notes:**

- This feature is only supported by the PCL language.
- The lines per page and lines per inch numbers work together. If you are printing on letter size paper with the default as 60 lines per page and 6 lines per inch, you will fill 10 inches of the paper and have a half inch margin at the top and bottom of the paper. However, if you print on legal size paper, you must increase the lines per page setting to 78 so that you do not have a 3.5 inch margin at the bottom of the paper.
- You can select 66 Lines Per Page, which deactivates the Lines Per Page and Lines Per Inch settings and prints 66 lines on a letter size piece of paper.

## ***Define the printable area when printing text files***

To define the printable area for a printer queue:

- 1 Open **Print Drivers**.
- 2 Click **Page Layout**.
- 3 In the Page Layout dialog box, click the arrows (>) next to the text boxes to select (in lines) your margin size, indentation, and page width.
- 4 Select **Text Wrap** if you want lines to wrap when they reach the printing area margins.
- 5 Select **Auto CR** if you want carriage returns when a line feed is encountered. This is commonly used by UNIX users to fix ASCII text printing issues.
- 6 Select the orientation that you want the job to be printed.
- 7 Click **OK**.

**Note:** These settings are only available for Automatic or PCL print queues.

## ***Send a fax through the printer***

- If your printer has a print server with fax capability, PostScript queues can be set up to send a fax.
- If you want to send many faxes to the same number, you can set up a queue with faxing enabled and the fax number already entered.
- If you send faxes infrequently or to different numbers, use `ibmlp` to set up the fax at the time you send the job.

To send a print job as a fax using `ibmlp`:

- 1 Type `ibmlp -d queue_name file_name`.
- 2 Click **Print and Hold**.
- 3 In Fax Page, select **On**.
- 4 Enter the fax number.
- 5 Click **OK**.

To send a fax from the command line of a Solaris, HP-UX, or IBM AIX system, type:

```
# lp -d queue_name -o fax_page=on -o fax_no=number file_name
```

To send a print job from the command line of a Linux system, type:

```
# lpr -P queue_name -C "ibmopts:fax_page=on fax_no=number" file_name
```

## *Use the Print and Hold setting*

When sending a job to the printer, you can hold a job in the printer memory using IBM Print Drivers. When you are ready to print the job, access the printer operator panel menus to select the held job you want to print.

To print and hold a job:

- 1 Access your printer queue properties. For help, see [Change the printer queue properties](#).
- 2 Click **Print and Hold**.
- 3 Select the type of print and hold setting you want to apply:
  - Select **Off** if you do not want to hold your print jobs.
  - Select **Confidential** if you want to hold your jobs in the buffer of the printer until a personal identification number (PIN) is entered from the operator panel. There is a default PIN for the driver; it appears in the Job Information to the right of the Print and Hold Options. The PIN must be four digits, using the numbers 1 through 6. This ensures that the job does not print until you are ready to retrieve it, and ensures that no one else using the printer can print the job.
  - Select **Verify** to print one copy and hold all remaining copies in the printer memory. For example, you may want to make sure the first copy is satisfactory before printing the remaining copies. After you print all of the copies, the Verify job is deleted from printer memory.
  - Select **Repeat** to print the originally requested copies of the print job, and then store it in memory so you can print additional copies later. You can print additional copies as long as the job remains stored in memory.
  - Select **Reserve** if you do not want to print the job immediately, but want to store the job in memory so you can print it later. The job is held in memory until you delete it from the Held Jobs menu.

**Note:** Reserve and Repeat print jobs may be deleted if the printer requires extra memory to process additional held jobs.

- 4 Click **OK**.

To use the confidential Print and Hold function from the command line of a Solaris, HP-UX, or IBM AIX system, type:

```
# lp -d queue_name -o print_hold=confidential -o pin_no=pin file_name
```

To use the confidential Print and Hold function from the command line of a Linux system, type:

```
# lpr -P queue_name -C "ibmopts:print_hold=confidential pin_no=pin" file_name
```

**Note:** Not all printers support the Print and Hold feature. See your printer's documentation to see if your printer supports this feature.

## ***Create custom banner pages***

You can write a program that generates customized banner pages from your printer queues. Creating custom banner pages does not automate any printer administration, but it can make it easier to find your print jobs at the printer.

### ***Write a banner program***

You can create custom banner pages for your queues by writing a program that takes six positional arguments and prints the banner page on the standard out (stdout). The six banner program arguments are:

- file
- user
- host
- queue
- message
- paper

All the arguments are strings, and should be enclosed in double quotes (") if they contain spaces.

The data output by your banner program should be readable by the selected printer emulation. For example, PCL banner programs should create valid PCL data.

### ***Use your banner program***

Once you have written your custom banner program, configure your printer queue to use it.

- 1** Access your printer queue properties. For help, see [Change the printer queue properties](#).
- 2** Click **Banner**.
- 3** Clear the Default Banner check box.
- 4** Type the name of the banner program, or click **Browse** to search for the file name.
- 5** Make any additional changes to the banner page options, such as Paper Size, Paper Source, or Paper Type.
- 6** Click **OK**.

## ***Find space to install IBM Print Drivers***

Some operating systems require you to install IBM Print Drivers in a particular directory. If the file system containing that directory is full, you can create a symbolic link that points to the real directory

in another file system which has more free space. The operating system sees the symbolic link as a real directory, but the files are actually installed on another drive.

- 1 Create a directory where you want the packages to actually be installed. For example, to install in the /disk2 file system, type:

```
# mkdir /disk2/ibm
```

- 2 Create a symbolic link that points to the directory you just created from the directory where the operating system wants the files. For example, if the operating system wants the files in /opt/ibm, type:

```
# ln -s /disk2/ibm /opt/ibm
```

- 3 Continue with the installation of the IBM Print Driver files in the folder /disk2/ibm.

## ***NFS mount Print Drivers***

You can install IBM Print Drivers on one host and export the file system to other hosts for mounting. Using NFS (Network File System) eliminates the need to perform individual installations at each workstation and conserves disk space.

**Note:** The NFS server and client workstations must use the same operating system.

- 1 Configure the server.
  - a Make sure you are logged on with root user authority.
  - b Install IBM Print Drivers. Follow the directions for the operating system you are using.
  - c Export the directory where you installed the IBM Print Drivers (for example, /opt/ibm or /usr/local/ibm). If you need help, refer to your operating system documentation.

- 2 Configure IBM Print Drivers on the local workstation.

- a Make sure you are logged on with root user authority.
- b NFS mount the IBM Print Drivers directory from the server. Refer to your operating system documentation for mounting instructions.
- c Run the install script in the mounted directory. The script creates a symbolic link /usr/ibmprint to this directory. The following example uses /mnt as the mount point.

```
# cd /mnt/drivers  
# ./IbmPrtDrvs.link
```

## ***Uninstall and unmount Print Drivers***

- 1** Run the uninstall script, which removes the symbolic links to the mounted directory, from  

```
# cd /mnt/drivers  
# ./IbmPrtDrvs.unlink
```
- 2** Unmount the mounted directory. Refer to your operating system documentation for unmounting instructions.

# 4

## Frequently asked questions

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### Command line

- **How can I find the command line options for a printer queue?**

The command line program `lsqueue_opts` provides a list of options available for this queue. For help, see [Print from the command line](#).

- **Can I create a printer queue from the command line?**

You can create and remove both virtual devices and queues from the command line. For help, see [Create virtual device](#) and [Create a printer queue](#).

- **What is the command-line submission GUI (ibmlp), and how does it work?**

The command-line submission GUI is accessed by typing `ibmlp` instead of the `lp` command when you print from the command line. If you use `ibmlp`, the Printer Queue Properties dialog box appears. From this dialog box you can customize the print properties for this particular print job before the job prints. For help, see [Print from the command line](#).

**Note:** You can also use `ibmlp` in applications such as Mozilla. Just replace the existing `lp` command with the `ibmlp` command.

### Printer queue management

- **I see special icons on the printer queues in the Icon view. What do the icons mean?**

Three different icons may appear on the printer queues:

- An "X" means the printer queue is rejecting print jobs. The Detail view shows the queue in red.
- A "!" means the printer queue is disabled. A disabled queue continues to accept print requests. Print jobs do not print, however; they are stored in the queue. The Detail view shows the queue in yellow.

**Note:** An enabled queue might reject print jobs, just as a disabled queue might accept them.

- A graphic of a person means the user has personalized settings. The Details view shows a check mark in the Printer Settings column.



- **A printer queue that I used to print to disappeared. What happened?**

The printer queue was probably removed by an administrator. Try printing to a different queue, or contact your administrator.

- **Why can't I add or remove printer queues?**

You probably only have normal user permissions. Only administrators have the ability to add or remove queues.

- **How do I get the permission to add or remove printer queues?**

You need to become an administrator. Only a system administrator can make a normal user a IBM Print Driver administrator.

- **Do I need the root password to add or remove a printer queue?**

No, but you must open IBM Print Drivers as an administrator.

- **How can I enable or disable a printer queue?**

**a** Open **IBM Print Drivers** as an administrator.

**b** Right-click the printer queue icon in the main window.

**c** Select the **Enabled** check box.

## ***Normal user or administrator***

- **Why are some toolbar icons unavailable and some options missing when I start IBM Print Drivers?**

IBM Print Drivers has two levels of access: user mode and admin mode. The unavailable and missing icons represent administrative options that regular users cannot access. This protects the print subsystem, while still providing users their own printer queue settings. If you need admin permission, see your administrator.

- **What are user and system settings, and how do they work?**

When you access IBM Print Drivers as a normal user and you change the settings of a particular queue, you are creating new settings for that queue. Those settings are stored in your home directory as your user settings. If a user logs in as an administrator and makes changes to a particular queue, the settings are changed for everyone. The only settings that are not affected are those user settings that were created before the administrator changed the system's settings. IBM Print Drivers always checks to see if you have user settings in place before following the system settings.

- **How can I become an administrator?**

Contact your system administrator to become a IBM Print Drivers administrator.

- **How do I make a normal user an administrator?**

The system administrator adds the user to the administrative group. For more information, see [Add or remove a user from the administrative group](#).

## ***Default settings for the program or queue***

- **I am a normal user and do not have permissions to add or remove queues. Can I change the settings of the queue (like Duplex, input trays, and so on)?**

Yes, you can change the settings for a particular printer queue and those settings will be saved to your home account. You can also change the settings for a particular print job.

- **I changed the settings on the queue, but when my colleague prints to the same queue on the same host, the settings are different than mine. What is wrong?**

You have created user settings for that printer queue, but if your colleague has not, the system settings are still in effect. Your colleague must open IBM Print Drivers and change his or her user settings.

- **Can I make My Printers my default group?**

No.

## ***Related topics***

- **What are the requirements to use IBM Print Drivers for UNIX systems?**

You need free space in /var/tmp equal to about one and a half (1.5) times the size of the driver package file. You also need the same amount of free space in the partition where you direct your system's install tool to place the installed files (/opt/ibm by default on most systems). For help, see [UNIX system requirements](#).

- **What are the network options in the virtual device, and how do they work?**

When you add a network device, the following options can be set: Administrator User ID, Logfile Name, Printer Intervention Information for User, and Printer Intervention Information for Administrator.

The Administrator User ID is the ID of the system administrator who receives printer intervention information.

The Logfile Name is the field where you can specify the location and name of the logfile.

The Printer Intervention Information for User and Administrator are the fields where you select how the driver communicates important information to the current user (whoever is sending the job when the error state is reached) and Administrator (the person listed in the Administrator User ID field).

- **What are Printer Classes, and how do they work?**

Printer Classes are only available when you are creating a queue on Solaris SPARC, HP-UX, or IBM AIX. Enabling classes for a printer and then adding it to a class means that if another printer in that class has a print job in process when another job comes in, the new job can get printed on another printer in that class. For more information, see [Work with printer classes](#).

- **What are printer groups?**

Printer groups are ways of organizing printer queues to make them manageable for a user. There are two default printer groups in IBM Print Drivers: All Printers and My Printers. My Printers is a subset of All Printers that the user selects to organize the volume of printers that are available on a system connected to a large network.

- **What is the difference between All Printers and My Printers in the tree on the left pane?**

All Printers is a list of all printer queues available on the system. My Printers is a subset of All Printers, and is determined by the user.

- **When I right-click the printer queue icon, I see the Print Server Web page for some printers. Why does it not appear for others?**

The page is only available for network connected printers. It would not be available for printers connected by parallel, serial, or USB cables.

# 5

## Troubleshooting

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### *The printer queue is empty but my document did not print*

Make sure you are sending the proper data to the printer. If you send PCL or text data to a queue that only accepts PostScript data, the job leaves the queue but does not print. Try printing to another queue, or see a IBM Print Driver administrator for other printing options.

The print job is probably in the buffer of the print server or printer. As soon as the printer is available, the job prints.

- 1 Make sure you are sending print jobs to the correct printer virtual device.
- 2 Verify the properties of the virtual device to make sure the printer job is going to the correct printer.
- 3 Make sure the printer is working properly.

### *Jobs appear in the printer queue for an extended time*

The printer is probably busy receiving other jobs. If you are using a print server, you may receive a Check the Printer message when this situation occurs.

- 1 Check the printer queue status. Make sure the queue is enabled.
- 2 Check the printer connection:

If you are connected to the printer over a network:

- Verify the proper device is selected in the virtual device.
- See **IBM Print Driver is unable to find the network printer**.
- Try using the IBM Print utilities to print directly to the printer.

Example: `send_network -f /etc/hosts hostname`

Replace hostname with the appropriate hostname of the printer. If this prints, recreate the virtual device and print queue.

- Restart the lpsched or lpd process.
- Refer to your system documentation.

If you are connected to the printer locally:

- Verify the proper device is selected in the virtual device.

- Make sure the parallel, serial, or USB cable is working and securely connected at both ends.
- If you are printing over a serial cable, verify the serial setting in the virtual device matches the printer.

If you are using a Sun system:

- Check to see if the parallel device is a bpp type, if it is, make sure bpp device is selected. If it is not, make sure bpp type is not selected.
- Try using the IBM Print utilities to print directly to the printer.

Example: `send_parallel -f /etc/hosts /dev/lp0`

Replace /dev/lp0 with the appropriate device file name. If this prints correctly, try recreating the virtual device and print queue.

- Try printing directly to the device to see if the problem is with the communication of the server to the printer or the print queue.

Example: `cat /etc/hosts >> /dev/lp0`

Replace /dev/lp0 with the appropriate device file name. If the printer does not print, then the problem must be with either the device, cable, or printer. If this prints correctly, try recreating the virtual device and print queue.

- Restart the lpsched or lpd process.
- Refer to your system documentation.

## ***The printer queue does not receive print jobs***

The queue is in a rejecting state. When the queue is in this state, you cannot submit a print job to the printer queue. To make the queue accept jobs again, right-click the queue icon and select **Accepting**.

Also try to:

- Re-create the printer queue.
- Re-start lpsched or lpd.

## ***The printer queue is disabled or down***

If your printer is connected locally (by way of a parallel, serial, or USB cable), check your printer cable.

If your printer is connected to a network, check the print server:

- If you are using an internal print server:
  - Make sure the print server is properly installed and enabled. To check this, print a setup page for the printer. The print server appears in the list of attachments on the setup page.
  - If a network-related message appears on the operator panel, see **Additional problems**.

- Make sure TCP/IP is activated on the print server. The protocol must be active for the print server and IBM Print Drivers to work. You can do this from the printer operator panel. Refer to your print server documentation for instructions.
- If you are using an external print server:
  - Check the print server lights. Refer to your print server documentation for instructions.
  - Print a setup page from the print server. Refer to your print server documentation for instructions.

If your printer is connected to a network, PING the print server.

- If PING works, check the IP address, netmask, and gateway to make sure they are correct. Turn the printer off and PING again to check for duplicate IP addresses.
- If PING does not work, check the setup page you printed to be sure IP is enabled.
- If TCP/IP is enabled, check the IP address, netmask, and gateway to be sure they are correct.
- Make sure bridges and routers are functioning correctly.
- Make sure all the physical connections between the print server, the printer, and the network are working.

If your printer is connected to a network, compare the IP address of the print server to the address stored for the network printer in the name server or /etc/hosts file. If the addresses do not match, edit the /etc/hosts file, or update the name server to correct the address.

Print a setup page from the print server. For instructions on printing a setup page, refer to your print server documentation.

- If the page prints, then the connection between the print server and the printer is working correctly.
- If the page does not print, check all the physical connections.
- Make sure the printer queue is Enabled and Accepting jobs after you correct the problem.
- Re-enable the queue with IBM Print Drivers.
- Remove all print jobs from the queue and re-enable the queue.
- Verify the virtual device selection in the queue.
- Create a new virtual device and change the queue to point to the newly configured virtual device.
- Restart the lpsched or lpd.

## ***The file I sent to the printer queue came out as garbage***

You can create PCL, PostScript, Automatic, PPDS, Forms, and raw data queues. Automatic queues support both PCL and PS data. PostScript queues can print PostScript data. PCL queues can print PCL and ASCII data. Raw data queues pass the print data directly through to the printer without adding any additional printer-related commands.

If you want to print HTML, graphics, or PDFs, you need to print them through an application that converts these data files into PCL or PostScript.

If you would like to print HTML, GIFS, BMPS, PDFs, TIFFS, and other similar file types directly to the printer, you must have an optional ImageQuick card (or SIMM) installed.

**Note:** Not all printers can support an ImageQuick Card (or SIMM).

For help, see [Print a file from IBM Print Drivers](#).

## ***The printer queue printed my job instead of sending a fax***

If you do not have a fax card installed, the printer will, by default, print the job.

Check with your administrator to see if you have a multifunctional printer with the fax-capable print server installed.

If you need fax functionality and do not have a multifunctional printer that supports fax, contact your printer retailer, for more information.

Check the PS Property for that queue. Make sure that under Fax Page, On is selected.

## ***The hostname does not resolve***

- If a DNS hostname does not resolve, your system may not be configured to search for a hostname without a domain name. Try using the full DNS domain name.
- Check your name server (DNS server). Add the hostname to either NIS, DNS or /etc/hosts file.
- Refer to your system documentation or contact the system administrator for more information.

## ***IBM Print Driver is unable to find the network printer***

- Make sure the printer is on and ready.
- Make sure the LAN cable is plugged into both the print server and into the LAN, and is working properly.

**Note:** If you have an internal print server, your LAN cable will be plugged into the printer directly.

- If you are using an internal print server:
  - Make sure the print server is properly installed and enabled. To check, print a setup page for the printer. Refer to your print server documentation for instructions. The print server should appear in the list of attachments on the setup page.
  - If a network-related message appears on the operator panel, see [Additional problems](#).
  - Make sure TCP/IP is activated on the print server. The protocol must be active for the print server and IBM Print Drivers to work. You can do this from the printer operator panel.
- If you are using an external print server:
  - Check the print server lights. Refer to your print server documentation for instructions.

*The printer queue printed my job instead of sending a fax*

- Print a setup page from the print server. Refer to your print server documentation for instructions.
- Make sure all the physical connections between the print server, the printer, and the network are working.
- Turn the printer and print server off and back on. You should turn the printer back on first.
- Make sure the SNMP community name you supplied to IBM Print Drivers is the same as the one set in the print server.
- PING the print server:
  - If PING works, turn the printer off and PING again to check for duplicate IP addresses.
  - If PING does not work, check the IP address, netmask, and gateway to make sure they are set up correctly for your environment.
- Make sure bridges and routers are functioning correctly.

## ***Additional problems***

Before you call customer support make sure you read through the symptoms covered in this troubleshooting section to help you diagnose the problem.

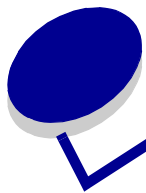
Before calling technical support, gather the following information:

- What version of IBM Print Drivers is being used
- What operating system and version is being used
- What printers are involved
- How the printer is attached to the system
- How the queue is configured
- What applications, if any, are involved

If this is a network printer, and the problem is sending the data to the printer, you need to determine the print server firmware level. Type the following on the command line, and then press **Enter**:

```
# finger info@hostname
```





# Glossary

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## A

accepting

The state of a printer queue when it allows the submission of new print jobs.

If a queue is in the accepting state, the user will be able to use the `lp` or `lpr` command to submit print requests.

AIX

IBM's version of the UNIX operating system.

alias

A part of the BSD printer subsystem, aliases let you create multiple names for the same printer queue.

Automatic Printer Language

A printer language option for printers that support both PostScript and PCL printer languages. This option gives users the ability to print PostScript, PCL, and ASCII text files to the same printer queue.

## B

baud rate

The transmission speed of the serial communication. The sending device speed must match the receiving port speed.

BPP device

A designation for Sun's bidirectional parallel port.

**Note:** This type of destination usually has a device name that looks like `/dev/bppxx`, replacing `xx` with the appropriate device number.

## C

community name

See SNMP community name.

## D

disabled

The state of a printer queue when print jobs are held in the printer queue.

DNS

See Domain Name System.

Domain Name System (DNS)

Resolves IP addresses to hostnames.

## E

enabled

The state of a printer queue when print jobs are sent from the printer queue to the printer.

## external print server

Hardware used to connect printers to a LAN using either a Token-Ring or Ethernet cable.

The external print server allows network connectivity of a parallel or serial printer.

## F

### firmware

Software that resides in the print server; also called microcode.

### firmware level

The version of the firmware.

## G

### gateway

The connection device between the LAN and other equipment, such as computers.

## H

### hostname

Name used to identify a network printer or computer.

## I

### internal print server

A card installed inside a printer to connect the printer to the network.

### Internet Protocol (IP)

A standard protocol that specifies how packets are passed through networks. It identifies the format of the packet and describes how it should be delivered in a seamless manner. Although it is a separate protocol from TCP, it is often referred to as TCP/IP because both TCP and IP protocols are often used together.

## IP Address

The unique physical address of the printer on a network using TCP/IP protocol.

## L

### LAN

See local area network.

### LAN segment

Any portion of a LAN that operates independently of, but is connected to, the network by bridges or routers.

### lines per inch

A function of the driver that lets the user specify the number of lines that will be printed on one inch of the paper. This number works with the lines per page setting to specify how much of the paper will be covered with text.

### lines per page

A function of the driver that lets the user specify the number of lines that will print on a page. This number works with the lines per inch setting to increase or decrease the font.

### Local Area Network (LAN)

A computer network located on a user's premises within a limited geographical area.

### lsqueue\_opts

A command line program that lists printer queue property options that are required when printing with command line options.

## M

### mkdevice

A command line program that creates a virtual device.

**mkqueue**  
A command line program that creates a printer queue.

**My Printers**  
A subgroup of printers set aside by a user to simplify printing options.

## **N**

**name server**  
A DNS server that resolves hostnames to addresses.

**netmask**  
A bit mask that specifies the local network portion of an IP address, letting you logically subdivide a network.

**network address**  
The logical location on the LAN where a device such as a printer is located, typically 12 characters long.

**Network File System (NFS)**  
A UNIX networking system that lets administrators export or share file systems for other workstations on the network to mount.

**Network Information System (NIS)**  
A UNIX service that lets administrators configure users, groups, hostnames, and other network information for a group of systems, rather than on each individual system.

**network print server**  
The print server card installed in the printer.

**network printer**  
A printer with either an internal print server or an external print server connecting it to the LAN.

**NFS**  
See Network File System.

**NIS**  
See Network Information System (NIS).

**NIS tables**  
Configuration tables. See Network Information System (NIS).

## **P**

**Packet Internet Groper (PING)**  
Software that tests whether an IP destination can be reached by sending it an ICMP echo request and waiting for a reply.

**parity**  
A type of error detection method used in serial communications; choices are Even, Odd, None, or Ignore. The sending device must match the receiving port.

**PING**  
See Packet Internet Groper.

**pkgadd**  
The System V software package add utility.

**pkginfo**  
The System V software package list utility.

**pkgrm**  
The System V software package removal utility.

**port**  
The physical connection on the computer or external print server into which the printer cable connects.

## Print and Hold

A function of the driver that lets you store a job in the buffer of the printer and print from the operator panel.

## print file

A method of selecting a specific file from within the IBM Print Drivers program to print.

## Print Queue Name

The name given by the administrator to the printer queue when it is created. It is used by the lp, lpr, and lexlp commands to direct print jobs.

## print server

Hardware or software (or a combination of hardware and software, such as network print servers) that takes information from a printer queue and sends it to a printer. See internal print server and external print server.

## print server's Web page

A page stored on the print server that contains information about that server.

## print test page

A page that is printed from within IBM Print Drivers to test the communication between the driver and the printer.

## printer class

A pool of printers containing similar characteristics and capabilities. When the first printer is busy, the job is then submitted to the next available printer.

## printer queue

A "staging area" used to store print jobs, to be fed to a predefined printer or pool of printers.

The place in the server where print jobs are stored for printing.

## Printer Type

The model name of the printer connected to that virtual device.

## printq group

An AIX group authority. Members typically have authority to perform functions such as setting up printers, making printer queues, and deleting printers.

## process\_printcmd

A command line program that generates command-line arguments for other transport agents, such as send\_network.

## process\_printjob

A command line program that formats print jobs for printing according to queue settings.

## protocol

A set of rules governing the communication and the transfer of data between two or more devices in a communication system.

## R

### Range

Specified boundaries of a subnet, used when searching for valid IP addresses.

### raw data

ASCII or plain text data that requires no interpretation by the printer queue. Raw data can contain coding that will be interpreted by the printer.

### rejecting

The state of a printer queue when the user will not be able to use the lp or lpr command to submit print requests.

## Red Hat Package Manager (rpm)

Linux packaging manager, which can be used to install, query, verify, and uninstall software packages.

## rmdevice

A command line program that removes virtual devices.

## S

### sam

The system administration utility on HP-UX systems.

### send\_network

A command line program that sends data to a TCP/IP network printer.

### send\_parallel

A command line program that sends data to a printer connected to a parallel port.

### send\_serial

A command line program that sends data to a printer connected to a serial port.

### send\_usb

A command line program that sends data to a printer connected to a USB port.

## SMIT

See System Management Interface Tool.

## SNMP community name

A SNMP community name is a plain-text password mechanism that is used to weekly authenticate queries to agents of managed network devices. In order to prevent others from using your network printer, change the community name for the printer from the standard word "public." This will break many tools that

are used to print and manage the printer and should only be done if absolutely required.

The SNMP community name selected in virtual device must match the community name that is selected in the print server.

## subnet

A segment of a network that is connected to a larger network. A local area network is sometimes referred to as a local subnet.

## System Management Interface Tool (SMIT)

The administration tool used on the AIX operating system.

## T

### tar

A UNIX program used for archiving files together. Often used with a compression program to distribute programs on the Internet.

## TCP/IP (Transmission Control Protocol/Internet Protocol)

A network protocol used to connect workstations and hosts, commonly used in UNIX environments.

## V

### virtual device

Virtual devices contain information about the printer the virtual device represents. Queues use the information from the virtual device to transport the data to the printer. Virtual devices, however, are not system devices located in the /dev directory, and other applications cannot send information to a printer using a virtual device.

## X

### X client

A program that runs using the X Window System.

### X server

A program that handles displaying graphical X client output on a display as well as distributing input from input devices to X clients.

### X Window System

The X Window System is a window system capable of displaying programs over a network. X Window System servers run on workstations connected to a monitor. The X server handles transferring input from keyboards and mouse devices to the X Window System program, called an X client. The X server also accepts output from X clients and displays the graphics on the monitor.

### XON/XOFF

A type of serial transmission signaling used in serial communications. The sending device must match the receiving port.