

Be Your Own Private Eye

How to solve even the most inscrutable printing mysteries

By Lynn Powers

WHAT DO YOU DO WHEN YOU CAN'T PRINT—OR WHEN YOUR document doesn't print correctly? Facing a printing problem can feel like stumbling into a crime scene in a mystery novel. Like a nervous witness, you may be tempted to flee the scene, hoping a forensic expert can figure out who perpetrated the evil deed.

But printing problems really aren't that scary, and you don't need to be a brilliant detective (or even a computer engineer) to figure them out. By remaining calm, knowing a thing or two about how your computer prints, and using a systematic troubleshooting method, you can solve most printing problems yourself.

This article will tell you how to use the troubleshooting system that Adobe Technical Support uses to solve printing problems both in Windows and on the Macintosh. The basic concepts are simple: you'll determine the exact symptoms of the printing problem, isolate when the symptoms occur, and then eliminate possible causes until you've identified the real culprit.

Keep an eye on the usual suspects

When printing trouble hits, you might not need to launch a full-scale investigation to solve the problem. There are certain things that cause many, if not most, printing problems—so start by finding out what's happening with the usual suspects. (Keeping an eye on the following can *prevent* printing problems, too.)

Check for bad connections. To receive and print a document, your printer must be connected to your computer or network and ready to print (turned on). That may be obvious, but it's easy to forget to check for loose cables or faulty connections. Secure loose cables by unplugging and replugging them. If there are any other devices that your print job needs to travel through (like a switchbox), check their connections, too.

Problems caused by severed connections have unambiguous symptoms: your printer won't receive any data, so it won't do anything—none of its readouts will blink, and it certainly won't



Illustrations by James O'Brien

print anything. But when you have a loose connection, the symptoms of your problems might be more ambiguous: small jobs might print OK but larger jobs won't, and on a Mac, the printer in your Chooser might appear and disappear intermittently.

Make sure you're not low on hard-disk space or RAM. You need plenty of free hard-disk space to print, especially when printing large documents. And for the most reliable, efficient printing possible, you should have lots of free, *unfragmented* disk space, especially on the disk your system uses to create temporary files, which is usually the disk that contains your operating system. Create more free space on this disk by deleting or archiving files you no longer need. And, if you use Windows 3.1, exit Windows and delete old temporary (*.TMP) files. If you use Windows you should also run CHKDSK or, better yet, SCANDISK to ensure that lost file allocation units aren't taking up hard-drive space unnecessarily. On the Macintosh, rebuild the Desktop file often so that the Finder has an accurate and concise index of what is where on your hard drive (check your System software's documentation for more information).

Run defragmenting/optimizing hard-disk utilities to move application- and document-file fragments next to each other on the hard disk, making the available space on your hard drive contiguous. Such utilities include Norton Utilities' "Speed Disk" (available for both Windows and the Macintosh) and Windows 95's "Disk Defragmenter."

Also, remember that applications and non-PostScript printer drivers need plenty of RAM to print. How much depends on what you're printing—the bigger and more complex the files, the more RAM you need.

Select the right PPD. If you use a printer driver or application (such as PageMaker 5.0x) that relies on PPD files to obtain information about your printer, make sure you're using the PPD created specifically for your printer, and use the most current version of that PPD. If you've downloaded fonts or added memory or a hard disk to the printer, update or customize your PPD file so your printer driver and application can take advantage of these changes. (Some applications, like PageMaker 6.0 for the Mac, will let you query your printer for this information instead—to use this option in PageMaker 6.0, select "Query printer for . . ." in the "Options" print dialog box.)

Check your print settings. If you're using PageMaker for Windows, be sure to select your final output printer as the "Compose to printer" choice in PageMaker for Windows' "Page setup" dialog box.

Gather clues

If checking these common causes hasn't turned up a solution to your problem, it's time to put on your detective hat and start troubleshooting. Your objective at this stage is to come up with a complete description of the problem's symptoms.

Often just going through this process will make a light go on, and you'll realize your problem might be related to something you recently changed, or to a specific element you're trying to print (an element that could be damaged or too complex). If this process doesn't lead you to an answer, it should at least give you an idea what category of problem you're dealing with—in other words, something going wrong at the system level (including your hardware), application level, document level, or element level. That'll help you move into more advanced troubleshooting (covered in "Eliminate possible causes to find the real culprit" below). Start by asking yourself the following questions.

What exactly is going wrong? If you find yourself answering, "It won't print," that's *not* a good enough description of the problem. Does your printer not do anything, as though it isn't even receiving data—is there no blinking, no noise, nothing? If that's the case, your printer might be off or might have a paper jam; there might be a connection or network problem; or perhaps you've selected the wrong printer in your application (if you're in Windows) or the Chooser (if you're on the Mac).

Does your printer seem to try to process your print job, but not print anything? Does it take a long time to do that, or does it "give up" quickly? Does part of your job print? Does part of your job print incorrectly or not as you expected?

PostScript errors—the ultimate clue

If you can get your PostScript printer to give you a PostScript error when you're having a problem, you may be in luck—some PostScript errors will point you right to the cause of the problem, or will at least get you looking in the right direction. If you're not already getting a PostScript error readout, you can coax one from your printer in any of these ways:

In Windows 3.1, select the "Print PostScript Error Information" option in your PostScript driver's "Advanced Options" dialog box. In Windows 95, this option is located in the "PostScript" properties for each PostScript device. On the Macintosh, select either "Summarize on Screen" or "Print Detailed Report" in the "PostScript Errors" pop-up menu in the Apple LaserWriter 8.x or Adobe PSpriinter 8.x's "Print Options" dialog box. If you're still not getting an error, disable software such as print spoolers or Background Printing that may be preventing you from receiving the error.

In Windows or on the Mac, you can also use error handlers supplied by your application when available (for example, Adobe PageMaker offers the "Include PostScript Error Handler" option in the "Options" print dialog box).

PostScript errors include a PostScript error type, which is one of a relatively limited number of different types, and an offending command, which can be any combination of ASCII characters. PostScript errors usually look like: `%%[Error: <type>; OffendingCommand: <offending command>]%%`. For example, the PostScript error `%%[Error: dictfull; OffendingCommand: def]%%` contains the PostScript error type "dictfull" and the offending command "def." The error indicates what kind of problem the PostScript interpreter had; the offending command is the last command it tried to process (and is sometimes, but not always, the command that caused the problem).

To begin troubleshooting, use the "PostScript error types" chart on page 62, which lists common error types under a general cause, and the "PostScript offending commands" chart on page 63, which lists offending commands under what most likely caused the error. For example, to use these charts when receiving the PostScript error `%%[Error: limitcheck; OffendingCommand: image]%%`, locate the "limitcheck" type and "image" offending command in the charts. The "PostScript error types" chart lists "limitcheck" under "Exceeds printer's memory or PostScript language limit." The "PostScript offending commands" chart lists the "image" offending command under "bitmap element."

By putting these two together, you have a probable cause—a bitmap graphic exceeds the printer's available memory (or other PostScript language limit). In such a case you'd probably need to simplify the bitmap graphic by resampling or rescanning it at a lower resolution, or by printing to a printer with more memory.

Are you receiving any error messages? If you're receiving an error message—either on your computer monitor or your printer's panel (if it has one)—you may be able to pinpoint the problem's cause quickly.

If you use a PostScript printer, you may be able to identify your problem's cause by looking at the PostScript error. Whenever a PostScript device can't interpret a PostScript file, it generates a PostScript error (unless the error is so severe it causes the PostScript interpreter to crash and reinitialize). The trick to taking advantage of PostScript errors is to make sure you're seeing them. On the Mac, they often display on screen, but under some circumstances they don't—sometimes you'll just get the system error “-8133” instead. And because the Windows 3.x environment largely doesn't support two-way communication with printers, a PostScript printer can't “talk back” to Windows 3.x to let it display a PostScript error on screen. Under these circumstances, you'll need to make your PostScript printer print its PostScript errors. See the sidebar on the facing page to find out how.

When exactly did the problem begin? At 10:00 this morning? Last Friday? If you don't remember exactly when it “broke,” ask yourself when you last remember being able to print correctly. If the problem started happening gradually and continued getting worse, it may be that your problem is related to decreasing disk space, a worsening connection problem, or something else that can change gradually.

Where exactly does the problem occur? Can you print from other applications on your system? If your printing problem occurs in a variety of applications, it may be caused by the printer, your connections, your system software, or low hard-disk space. If your problem is happening only in one application, there may be a problem with that application or its print settings—but before you assume that's the case, figure out if you can get *any* files, such as a new file containing a simple element (for instance, a rectangle or text in a printer-resident font) to print from that application. If you're having problems with just one file, it may be that your file is damaged or contains something that is damaged or too complex to print.

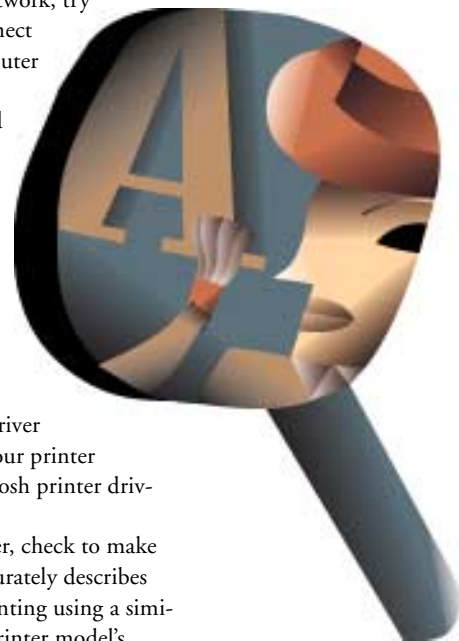
Eliminate possible causes to find the real culprit

If, after gathering clues about your problem, you haven't stumbled upon its cause but have an idea what type of problem it is, follow the tips below to isolate the culprit. Doing so will allow you to solve most printing problems—but if it doesn't, you'll need expert help from the technical support department of the manufacturer or developer of your printer, operating system, or application. Going through this process and taking careful notes about what you've tried will help you and a support technician get to the root of the problem as quickly as possible.

System-level problems. If you're having printing

problems in more than one application (perhaps intermittently or only with large, complex files), you'll have some investigating to do—these are often the hardest problems to solve. Chances are your problem is being caused by something at the system level—perhaps a bad connection, a hardware failure, an operating-system problem, a printer-driver problem, or a damaged or incorrectly written font. Here are some suggestions on how to test system components to find out where the cause is.

1. If you're printing through a spooler such as Windows' Print Manager, the Macintosh's Background Printing (Print Monitor), or a product like SuperLaserSpool, try disabling it and see if that enables you to print. If it does, your spooler might not be compatible with something else you're running, it might be damaged, or you might be low on hard-disk space. Check hard-disk space, check your spooler's documentation to see if it might conflict with something else you're running, and try reinstalling your spooler.
2. Next, if you're printing over a network, try bypassing it—you'll need to connect the printer directly to your computer or, when printing to a PostScript device, print your file to disk and use a downloading utility (for example, “LaserWriter Utility” or “Adobe Font Downloader”) to send the PostScript file to your printer. If this allows you to print, ask your network administrator to help you troubleshoot the network problem.
3. Make sure you have the recommended or most recent printer driver available. Then try reinstalling your printer driver and, for the newer Macintosh printer drivers, its defaults file as well.
4. If you're using a PostScript printer, check to make sure you're using a PPD that accurately describes your printer. You can also try printing using a similar or general PPD; using your printer model's standard PPD without a custom printer file (if you're using a custom printer file); or by having your application query the printer at print time instead of relying on the selected PPD (to do this, you must have an application, like PageMaker 6.0 for the Mac, that can query PostScript printers).
5. Try printing from another computer. If you can print there, your problem might be caused by a problem with your operating system. Begin troubleshooting by running without other applications taking up memory (to do so, quit those programs). Next, rule out other software loaded with your operating system. If you use Windows 3.1, try booting from a clean system disk. In Windows 95, restart with your F8 key held down, then select



PostScript error types

Errors that indicate something exceeds the printer's memory or a PostScript-language limit

dictfull	limitcheck
fatal system error at [varies]	VMerror

Errors that indicate communication problems

interrupt	ioerror*	timeout
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Errors that indicate unintelligible PostScript code

dictstackoverflow	invalidfont	typecheck
dictstackunderflow	invalidrestore	undefined
execstackoverflow	nocurrentpoint	undefinedfilename
handleerror	rangecheck	undefinedresult
invalidaccess	stackoverflow	unmatchedmark
invalidexit	stackunderflow	unregistered
invalidfileaccess	syntaxerror	

* May also be caused by a disk problem, such as a bad sector, on the printer's hard disk.

either "Safe mode" or "Safe mode with network support." On the Mac, turn off nonessential extensions by restarting with your Shift key held down. If this allows you to print, you'll need to narrow the cause down to one driver, TSR (terminate-and-stay-resident program), or extension.

6. If booting from a clean system disk or with the Mac's Shift key held down doesn't allow you to print, try running a hard-disk diagnostic program on your computer to make sure there's nothing wrong at the disk level.
7. Try printing to another printer. If your document prints to a different printer, your printer driver or system software may be damaged or incompatible, your printer may not support printing an object in your document, or it may need its hardware (memory, ROM, or PostScript version) updated.
8. Another thing that can cause problems in a variety of applications is an incorrectly written or damaged font. Try a different font to see whether this might be your problem.

Application-specific problems. If your problem only occurs in one application, then your application, one of its components, or its defaults file might be damaged. (To confirm that your problem is application-specific, try to print from it a new document containing a simple element like a rectangle, or text formatted with a printer-resident font or font included with your system software.) Such problems can also be caused by an incompatibility between your application and your printer driver or PPD file, or perhaps a damaged or incorrectly written font.

1. Begin troubleshooting by renaming or moving that application's defaults file while your application is closed (check your product's documentation to find out what that defaults file is named and where it's located). Open your application and try printing. If that lets you print, great—if it doesn't, you may want to restore your old set of defaults by renaming

your old defaults file to its original name and putting it back in its original location.

2. Try reinstalling your application. To make sure the application's installer rewrites all application files to your hard disk, you may need to delete those application files before reinstalling (some installers will save time by not rewriting a file that's already on the hard drive).

Document-specific problems. Some printing problems occur only in one document. In such cases, the document might be damaged, or might contain an element that's damaged or is unable to print for another reason. If you suspect your problem is document-specific, you need to figure out whether the problem is caused by a single element or a font in the document, and not the document itself (see the method discussed in the next section, "Element-specific problems").

If you determine that your problem is document-specific, the most likely cause of the problem is an incorrect print setting in the document or a damaged document file. First, check all your print settings to see if anything looks unusual or incorrect (you might want to compare the settings to those from a document that does print).

If your print settings seem correct, your document file might be damaged and you'll need to try troubleshooting it. Here are some techniques that might repair your file.

1. Try deleting any elements you don't need to print (such as elements that lie off the page or are "hidden" by other elements in front of them).
2. Next, try saving your document with the "Save

Don't be a victim

The best way to fix a printing problem is not to have it in the first place. Here are some of our favorite ways to prevent printing problems.

- When creating documents that will be color-separated, use standard graphic formats such as EPS, DCS, or TIFF. Make sure your document prints as separations to a low-resolution PostScript printer before printing as separations to a high-resolution printer.
- Make sure graphics can print from the application in which they were created (in their native format or in the format in which they were exported); if they can't, it's unlikely they'll print when they're imported into another application.
- Use your application's or printer's features (e.g., flatness, automatic splitting of complex paths) to reduce the amount of PostScript printer memory required by your document.
- Select the final output printer as the "Compose to printer" in Windows PageMaker's "Page setup" dialog box.
- When your final document will be printed to a PostScript printer, use PostScript fonts to compose it.

As...” command to a different name (if your application has a “Fast Save” option, turn it off). In most applications, using the “Save As” command totally rewrites the file and can sometimes clear up anomalies in the file-format structure (using the regular “Save” or “Fast Save” command in most applications doesn’t totally rewrite the file; it just appends the most recent changes). Give printing another go.

3. Try copying the file’s elements into a new file.
4. If you’re still having problems, try running any built-in diagnostic routines your application offers. In PageMaker, for instance, you can correct certain file problems by using its “Diagnostic Recompose” feature: deselect all elements, then choose “Hyphenation...” from the Type menu while you hold down the Ctrl + Shift keys (Windows) or Option + Shift keys (Macintosh).

Element-specific problems. Next, figure out if you can isolate the problem to a specific element. Make a copy of your file and try printing groups of pages and then one page at a time until you’ve narrowed the problem to a specific page or range of pages (if several pages don’t print, ask yourself what those pages have in common, such as a graphic or font).

If you do narrow the problem to a certain page or range of pages, start testing all the items there. There’s no great art to this—just remove an item, print, and repeat that process until you’ve pinpointed a specific graphic, font, or kind of font as the culprit. If a font is causing the problem, reinstall the font’s files or use a different kind of font. If a text or graphic element that you created in your application is preventing your document from printing, try deleting and recreating the object. If an imported graphic is the problem, try the following:

1. Open the graphic in the application in which it was created, simplify it, and resave it. Try printing it from that application and then from the application in which you’re having the problem.
2. Try printing your graphic to another printer. If you’re using a non-PostScript printer, try a PostScript printer. If you can print the graphic to a PostScript but not to a non-PostScript printer, the graphic may be too complex or incompatible with the non-PostScript device. If you’re using Windows and a non-PostScript printer, try the suggestions in the next section, “Problems specific to Windows non-PostScript printers.”
3. If you’re using a non-Adobe PostScript device, try printing to an Adobe PostScript device.

Problems specific to Windows non-PostScript printers. If you’re having a problem only when you print from a Windows application to a non-PostScript printer, check the following:

1. If you’re using a PCL printer (especially if your printing problem appears to be font-related), try changing the “Print TrueType as Graphics” setting

PostScript offending commands

Offending commands associated with specific text or font element

ashow	definefont	kshow	show
awidthshow	findfont	makefont	stringwidth
charpath	imagemask	selectfont	widthshow

Offending commands associated with specific masks (clipping paths)

clip	eoclip
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Offending commands associated with fills and lines, often in imported vector graphics (EPS files or PICTs, for instance)

arc	eofill	rcurveto	setlinejoin
arcto	fill	rlineto	stroke
currentpoint	lineto	setdash	
curveto	moveto	setlinewidth	

Offending commands associated with bitmap data

colorimage	image	imagemask*
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Offending commands associated with any element or file

array	get	packedarray	setgray
def	index	put	setpageparams
dict	itransform	restore	setscreen
exch	nostringval	save	[random characters]

* Associated with 1-bit image bitmap graphics and bitmap fonts.

- in the “Options” print dialog box.
2. If you’re still having problems printing a TrueType font, try a PostScript font instead.
3. If you’re having problems printing grayscale bitmap graphics to a PCL printer from PageMaker, try deselecting the “Allow PCL halftoning” option in the “Color” print dialog box.
4. If you’re having problems printing to any non-PostScript printer from Windows, especially if your problem involves graphics, try using a different video driver—standard VGA is a good one to test with. If you find that your problem is related to your video driver, call the manufacturer of your video card to see if they have an updated driver that might fix your problem.

Scream if you must, but don’t panic

Unfortunately, printing problems have a nasty habit of cropping up just when they can produce maximum despair. Sure, when the clock is ticking and you have a client waiting, the last thing you want to do is tinker with your system. But don’t let panic get the better of you, and never assume you don’t know enough about your computer to get yourself out of a jam. Scream if it’ll make you feel better, then take a deep breath, clear your head, and *think*. Using a systematic troubleshooting method like the one outlined here, you’ll probably solve the problem and impress both yourself and your clients. ▀

Lynn Powers is a technical writer/editor in Adobe’s Technical Support department.



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