TROUBLESHOOTING PRINTERS IN A MacOS COMPUTER

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SUMMARY

Here is a step-by-step description for how you can troubleshoot printer problems for an Apple “Mac..” computer.
TOPICS

• Two Places To Make Changes To A Printer: Button Panel and Icon
• Initial Basic Troubleshooting of a Printer
• More Advanced Troubleshooting from MacOS's "System Preferences.."
TOPICS (continued)

• Use the Internet to Get Help for a Printer Problem
• Printing Process Analysis
TOPICS

- Initial Basic Troubleshooting of a Printer
- Printing Process Analysis: Determine the Point of Failure
TWO PLACES TO CHECK THE STATUS OF YOUR PRINTER

• Two places to make changes to a printer:
  ❑ Button panel on the printer
  ❑ Printer's icon in the "System Preferences.." of MacOS
TWO PLACES TO CHECK THE STATUS OF YOUR PRINTER (continued)

• The button panel on a printer works for testing and configuring a printer, regardless of whether your computer is powered on:
LaserJet Pro M402n
TWO PLACES TO CHECK THE STATUS OF YOUR PRINTER (continued)

• Read the printer manufacturer's documentation online in order to learn about the button panel of a specific printer. For most printers, you can use the button panel to print reports as part of the troubleshooting process.
A PRINTER'S ICON IN "SYSTEM PREFERENCES.."

• The printer's icon in "System Preferences.." of "MacOS" is the second place that gives you a quick look at the status of your printer:
A PRINTER'S ICON IN "SYSTEM PREFERENCES.." (continued)

• Click on the Apple icon in the upper-left corner of the "Desktop" of the Mac's monitor:
A PRINTER'S ICON IN "SYSTEM PREFERENCES.." (continued)

- A drop-down menu will be displayed:
A PRINTER'S ICON IN "SYSTEM PREFERENCES.." (continued)

• Click on "System Preferences..":

Finder  File  Edit

About This Mac

System Preferences...
A PRINTER'S ICON IN "SYSTEM PREFERENCES.." (continued)

• Locate and double-click on "Printers & Scanners":


A PRINTER'S ICON IN "SYSTEM PREFERENCES.." (continued)

- A "Printers & Scanners" window will be displayed:
A PRINTER'S ICON IN "SYSTEM PREFERENCES." (continued)

• Click on the icon of the printer that you wish to check the status in order to highlight it with a dark blue background:
A PRINTER'S ICON IN "SYSTEM PREFERENCES." (continued)

• When a printer is powered up and connected to your MacOS computer, there will be a green dot and the word "Idle" under the printer:
Printers

- HP Color LaserJet 26...
  - Idle

- HP LaserJet M402n (A...)
  - Idle, Last Used
• When a printer is not powered up or it is not connected to your MacOS computer, there will be a red dot and the word "Offline" under the printer:
Printers

HP Color LaserJet 26...
- Offline

HP LaserJet M402n (A...)
- Offline, Last Used
INITIAL BASIC TROUBLESHOOTING OF A PRINTER

• Electrical power for the printer? Make sure that the electrical power cord of the printer is pushed all the way in at both the printer end and the end that plugs into an electrical outlet. Make sure that the electrical outlet is live by plugging an electrical tester or a lamp or an electric shaver into the electrical outlet.
• Determine if there is an active data communications connection between the printer and your computer:
There are the five ways that a printer can be connected to your MacOS computer:
- USB cable,
- local network cable,
- Apple AirPrint,
- wireless Wi-Fi,
- or Bluetooth
INITIAL BASIC TROUBLESHOOTING OF A PRINTER (continued)

- (Determine if there is an active data communications connection between the printer and your computer, continued):
  Check the connections at both ends. When you suspect a bad wireless Wi-Fi connection or a bad Bluetooth connection, install a USB cable temporarily to see if the printer will work with a USB cable connection.
• Try re-starting the printer by powering it down and then powering it back up but if the printer is spitting out paper, press the printer's reset button to attempt stop any on-going paper output before powering down the printer AND..
• AND..
If pressing the printer's reset button
does not stop the spitting out of paper,
do not turn off the power to the printer
until the printer is done spitting out
paper to avoid a paper jam
• If all of the previous steps do not resolve your printer problem, you can sometimes fix a printer by running the printer management software program that is provided by the manufacturer of your printer such as
(continued from previous page:)

- "HP Print and Scan Doctor"
- Dell "<name of printer> Printer Driver"
- Epson "Driver and Utilities Combo Package"
- Brother "Full Driver and Software Package"
TROUBLESHOOTING IN "SYSTEM PREFERENCES.."

• Many printer problems can be resolved from inside "Printers & Scanners" inside "System Preferences..":
TROUBLESHOOTING IN "SYSTEM PREFERENCES." (continued)

- Click on the icon of the printer that you wish to check the status of in order to highlight it with a dark blue background:
TROUBLESHOOTING IN "SYSTEM PREFERENCES." (continued)

• Click on the "Open Print Queue..." button:
This is how the print queue window looks when there are no print jobs being processed:
• When the print queue window is the highlighted window with the "focus", the top menu bar of the Mac desktop shows you various controls that are specifically for the printer that the print queue window belongs to:

You can use the menu items in this pull-down menu to check the status of the printer:
To print a test page, click on Printer. Then click on "Print Test Page".
• This is how the print queue window looks when there are print jobs that are being processed:
printer-fix-win

Printing - Looking for printer.

printer-fix-mac

Ready to Print - 73 pages

Print-queue

Ready to Print - 62 pages
A single "hung up" or failed print job can make your printer appear to be "off line" or permanently "busy" but sometimes you can delete the problematic print job to "fix" your printer:
TROUBLESHOOTING IN "SYSTEM PREFERENCES." (continued)

• (A single "hung up" or failed print job, continued):
In MacOS, go to "Printers" inside "System Preferences..". Click on the printer. Then click on "Open Print Queue". Click on the "x" next to a print job that is "Not responding" or that is taking forever to complete.
• By default, the bottom-most print jobs were submitted first to the printer so you can assume that the lowest displayed job in the print queue is the one that is hanging up the printer:
TROUBLESHOOTING IN "SYSTEM PREFERENCES." (continued)

• If all of the previous steps do not resolve your printer problem, you can sometimes fix a printer by doing a remove and then re-install of your printer from inside "Printers" inside "System Preferences."
USE THE INTERNET TO GET HELP FOR A PRINTER PROBLEM

- https://www.fixyourownprinter.com/
Printer problems?

Search all printer issues

Search over 300,000 printer issues or add your own question!

Search by printer

Select Printer Brand...
Printer problems?

Search all printer issues

Search over 300,000 printer issues or add your own question!

Search by printer

Select Printer Brand...

Select Printer Series...

Select Printer Model...

Search
USE THE INTERNET TO GET HELP FOR A PRINTER PROBLEM

- For example, at https://www.fixyourownprinter.com/forums/laser/39806, you can find a simple fix for a Brother HL-5170 DN printer that refuses to print even when you have a full toner cartridge in it:
I'm using Brother HL-5170 DN and a TN-540 toner cartridge. The printer decided it was out of toner, even though the last page printed was fine. Rather than run out for a new toner cartridge, I used a small (0.5 x 0.5 in.) piece of black electrical tape to cover the sensor hole on the non-gear side of the cartridge. By covering the hole the printer is fooled into thinking the hopper is full of toner.
Am using Brother HL-5170 DN and a TN-540 toner cartridge. The printer decided it was out of toner, even though the last page printed was fine. Rather than run out for a new toner cartridge I used a small (.5 x .5 in.) piece of black electrical tape to cover the sensor hole on the non-gear side of the cartridge. By covering the hole the printer is fooled into thinking the hopper is full of toner.
USE THE INTERNET TO GET HELP FOR A PRINTER PROBLEM (continued)

o For example, if you Google on "hp inkjet will not print black and white unless all empty color cartridges are replaced" (without the quotation marks), you will end up at https://support.hp.com/us-en/document/c04331666 where it says
Even if you change the print settings to print with black ink only, the other ink cartridges must still have ink in them in order for the printer to print.

If you choose to print with black ink only, the printer still uses small amounts of ink from all the ink cartridges for occasional servicing tasks. HP recommends that you replace any low ink cartridges to avoid any interruptions in printing.
PRINTING PROCESS ANALYSIS

User uses third-party software application or Web browser to create a print job

→ Graphics Appkit creates PDF data
→ /var/spool/cups
→ Printing Subsystem
→ Print job contents
→ cupsd Scheduler
→ Internet Printing Protocol Module → CUPS Filter → CUPS Backend
→ Actual physical printer
MORE DETAILS:
User uses third-party software application or Web browser to create a print job
→ Graphics Appkit (= Carbon APIs, Cocoa APIs, or Quartz APIs) creates PDF data
PRINTING PROCESS ANALYSIS (continued)

MORE DETAILS (continued):
→ /var/spool/cups
→ Printing Subsystem
PRINTING PROCESS ANALYSIS (continued)

MORE DETAILS (continued):

→ Print job contents
   = print control file and data file
PRINTING PROCESS ANALYSIS
(continued)
MORE DETAILS (continued):
According to
When a user prints to a network printer, the print job contents are stored in the `/var/spool/cups` directory as they are printed. The two types of files stored in this directory are print control files and data files.
MORE DETAILS (continued):

<start of quote:>
The control files are named with a “c” followed by 5 digits that increment for each print job (c00001, c00002..). The control files are IPP files that contain metadata about each print job.
MORE DETAILS (continued):

The data files are named with a "d" followed by 5 digits that increment for each print job (d00001, d00002..)
The data files are the actual content of the print job that was submitted.
MORE DETAILS (continued):

The data files are the actual content of the print job that was submitted. The data files are typically deleted after printing, but the control files tend to stay.
PRINTING PROCESS ANALYSIS (continued)

MORE DETAILS (continued):

→ cupsd Scheduler
→ Internet Printing Protocol Module
→ CUPS Filter
→ CUPS Backend (part of printer driver)
→ Actual physical printer
PRINTING PROCESS ANALYSIS (continued)

• CUPS no longer stands for anything. It used to stand for "Common Unix Printing System"
PRINTING PROCESS ANALYSIS (continued)

• Reference for the previous diagram:
STRATEGY FOR TROUBLESHOOTING PRINTERS

Run tests on various components of the printing process, starting with the most common problems to the more complex problems.