

SESSION 1: THE PRINTING PROCESS

Prepared & presented by

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Print Spooler

- Print commands start print jobs picked up by the print spooler
- Manages all print jobs and acts as the primary component in the Windows printing architecture
- Spooling means processed



Print Driver





• Print driver helps applications talk to your printer

• Ensure you have the correct driver installed

• Keep your print drivers up-to-date.

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Print Queue

- If your printer isn't ready because it's turned off, printing other jobs, or out of ink, the spooler holds the job in a print queue
- First-come, first-serve list of local print jobs temporarily stored on the harddrive



Print Queue





• Once your printer is ready, the spooler sends out the job and your report is printed





- Place your printer on a clean, flat surface near your computer and a power outlet
- Newer devices are easy to set up because of their plugand-play capabilities (when you connect your printer to your computer using a USB, Windows automatically tries to install the right drivers so you can print right away)
- If plug-and-play fails, you should manually install the right print driver.



Printer Location



Print a Test Page

- Once you have your printer set up and configured in Windows, print a test page to verify that it's working
- If it fails, you have a connection problem or a print driver problem that you'll need to figure out



Color Printer Test Page PRINTERTESTING

1. Color Intensities Graph

2. Ascending Text Block Sizes



Text Size 10 Text Size 28 Text Size 12 Text Size 14 Text Size 24 Text Size 16 Text Size 20 Text Size 18 Text Size 18 Text Size 20 Text Size 16 Text Size 24 Text Size 14 Text Size 12 Text Size 28 Text Size 10

3. Text Block

ABCDEFGHIJKLM NOPQRSTUVWXYZ abcdefghIjklmno pqrstuvwxyz

4. Rainbow Bars

5. Radial Color Gradients

6. Alignment Wheels







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Windows Printer Test Page

You have correctly installed your EPSON NX620 Series on DESKTOP-CRPBSA0.

PRINTER PROPERTIES

Submitted Time: Date: User Name: Computer Name Printer Name: Printer Model Color Support Port Name(s): Data Format: Printer Share Name: Printer Location: Print Processor: OS Environment:

10:11:53 PM 12/16/2019 DESKTOP-CRPBSA0\Norman DESKTOP-CRPBSA0 EPSON6BAC9D (Epson Stylus NX620) EPSON NX620 Series WSD-7254e6a6-dda0-4d92-acab-790a1facaaeb RAW http://192.168.1.245:80/WSD/DEVICE winprint Windows x64

PRINT DRIVER PROPERTIES

Driver Name: Driver Type: Driver Version: **EPSON NX620 Series** Type 3 - User Mode 6.75.0.0

ADDITIONAL PRINT DRIVER FILES

C:\Windows\system32\spool\DRIVERS\x64\3\E_IDSPGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_IJBCGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_ICONGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_IAUDGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_IEPEGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_IREDGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_GATO46.EXE C:\Windows\system32\spool\DRIVERS\x64\3\E_IUIRGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_IUI1GAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_IUIXGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_FUIXGAA.XMI C:\Windows\system32\spool\DRIVERS\x64\3\E_FCF0GAA.CFG C:\Windows\system32\spool\DRIVERS\x64\3\E_FCF0GAA.DEV C:\Windows\system32\spool\DRIVERS\x64\3\E_IGRCGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_IPRUGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_IPREGAA.EXE C:\Windows\system32\spool\DRIVERS\x64\3\E_FPI1GAA.DAT C:\Windows\system32\spool\DRIVERS\x64\3\E_ILMWGAA.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_ILC1GAA.LMC C:\Windows\system32\spool\DRIVERS\x64\3\E_ILC2GAA.LMC C:\Windows\system32\spool\DRIVERS\x64\3\EPSET32.DLL C:\Windows\system32\spool\DRIVERS\x64\3\EPSET64.DLL C:\Windows\system32\spool\DRIVERS\x64\3\E_IHM0GAA.DLL





Quiz: Printing Process

- Which of the following are printer languages?
- a. PrintDef
- b. Capture
- c. PCL
- d. PostScript

2. Which term refers to the portion of the hard drive where print jobs are stored before going to the print device?

- a. Printer port
- b. Print driver
- c. Print device
- d. Print queue

3. When an application (such as Microsoft Word) sends a print job to the printer, which of the following manages the printing process?

- a. Printer port
- b. Print driver
- c. Print queue
- d. Print spooler





SESSION 2: PRINTER TYPES

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Impact Printers

- Introduced in the 1970s and 1980s
- Still in active production with new models being released
- Work by physically striking the printhead to the print surface much like your oldfashioned typewriter
- Inked ribbon is placed between the printhead and the surface and an inked impression is left behind







Dot Matrix Printer

- Best-known impact printer
- Became popular as they are inexpensive and can print text and limited graphics



- Dots are printed with a hammer strikes the matrix printhead with the pin grid
- Different characters and symbols can be printed using various pin combinations and printing on grid-row at a time
- Electric impulses define which pin to strike
- Can have 9 to 48 pins for a print quality ranging from 100 to 400 dots per inch





Thermal Printers

- Sales receipts from the grocery store
- Might be seen in a business or industrial environment as a PC Technician
- Very quiet and easy to maintain.







Direct Thermal Printing

- Uses heat to make a print (printhead doesn't move)
- Made of rows of tiny pins that are like miniature heating elements
- Characters are printed when different pins are turned on or off and touch the paper
- The feed assembly is a rubber roller or platen which grabs the paper and passes it through the printer
- The spring device applies pressure to the paper so that it always touches the printhead as it passes through
- These printers last a long time and require little maintenance as they have few moving parts





Direct Thermal Printers

- No ink, toner, or ribbon
- Thermal paper: Sensitive to heat Turns grey or black











- Seen most often for receipts in cash registers, ATMS, fax machines, and handheld calculators
- Work well for quick printouts of barcode tags, shipping labels, and



Thermal Transfer Printing

- 10 year or more durability
- Solid ink ribbon *Limited colours*
- Stock material Vinyl Polyester Nylon Flexible magnets







Archival quality
Extreme temperatures
UV exposure
Chemicals





Laser Printers

- Widely implemented
- Create high-quality prints, fast, and economical
- Fairly complex
- Use lasers in a process of melting and cooling plastic to produce a highquality images







Laser Printer Components

When we print something:

- 1. Electronic unit in the laser printer receives digital data from the computer and figures out how it should look on paper
- 2. Directs a laser beam (through a reflecting mirror) to scan across the drum unit while it rotates, building up a pattern of charges
- 3. Drum then picks up toner and presses the pattern onto the paper
- 4. Fuser unit bonds the toner to the paper by heating it up







Drum Assembly 👡

- Drum is given a total positive charge by the charge corona wire
- 2. The drum revolves & the printer shines a tiny laser beam across the surface to discharge certain points (the laser 'draws' the letters and images to be printed as a pattern of electrical charges)
- 3. After the pattern is set, the printer coats the drum with positively charged toner
- 4. Positive charge of the toner clings to the negative discharged areas of the drum, but not to the positively charged background
- 5. The drum rol;ls over a sheet of paper which is moving along the belt
- 6. Paper is given a negative charge by the transfer corona wire before it rolls under the drum
- 7. Paper then picks up the image pattern exactly.







Toner Hopper

- but not to the charged 'background'
- roller)
- it picks up the pattern exactly
- clinging to the drum



Contains positively charged toner (fine black powder)

Charged with the same type of charges as the drum surface & toner clings to discharged areas of the drum

As the drum rotates, it presses onto a sheet of paper which has been charged with the opposite types of charges (positive) by a transfer corona wire (or charged

Paper pulls the toner powder off the drum surface

Moving paper and revolving drum are synchronized and

Paper is discharged by the corona wire immediately after picking up the toner to keep the paper from





- Traditional laser scanning assembly includes a laser a movable mirror a lens.
- Laser's control unit receives the package data (tiny dots that make up the text and images) one horizontal line at a time
- As the laser beam scans across the drum, the laser turns on for every dot to be printed, and off for every for empty space
- Scanning is achieved by moving a mirror that reflects the laser beam
- A series of lenses is used to compensate for image distortion
- Laser assembly moves horizontally only
- After each scan, the printer moves the photoreceptor drum up a notch so the laser assembly can draw the next line
- A small print-engine computer synchronises everything perfectly.









Toner

- Has to be chargeable
- with the paper firmly
- of an inkjet printer

Plays the same role as ink in an inkjet printer

Two main ingredients: pigment and plastic

Pigment: provides colour that produces the letters and images on paper

Plastic: blends with pigment which melts when heated up by the fuser and binds the pigment

Laser printers can print on any kind of paper and text won't smudge or bleed easily like that



Fuser Unit 👡

- The printer passes the paper through the fuser, a pair of heated rollers, during which the loose toner powder melts and fuse with the fibres in the paper
- Fuser rolls paper to the output tray and the finished page is complete
- The fuser heats up the paper but the speed at which the paper passes through the rollers is so fast that the paper does not burn up









- a. Ink jet
- b. Dot Matrix
- c. Thermal printer
- d. Laser

Your company needs to print a lot of high-quality black-and-white text documents. 2. These documents need to be printed as quickly and inexpensively as possible. The printer must also have the capacity to perform duplex printing. Which of the following printers BEST meets your company's printing requirements?

- Laser a.
- Inkjet b.
- Dot Matrix C.
- Thermal d.

З. Which of the following is a type of printer that is considered very noisy because it hits the printhead on the paper?

- Dot Matrix a.
- Inkjet b.
- Laser C.
- Thermal d.



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