PRINTERS

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Outline

- Printer
- Multi-Function Device
- Laser Printer
  - Components
  - Process
- Ink Jet Printer
  - Components
  - Process
- Thermal Printer
- Impact Printer
- Printer Media

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Outline

- Printer Installation
- Windows 7 Add Printer
- Windows XP Add Printer
- Printer Sharing
- Printer Configuration
- Printer Maintenance

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Printer

- A computer peripheral that produces text and images on a physical medium (commonly paper) from electronic files and images on a computer
- Some printers can print from memory cards or digital cameras

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Multi-Function Device

- A computer peripheral that can perform a number of functions including:
  - Printing
  - Scanning documents
  - Operating as a fax machine
  - Copier
- AKA All in One
- Can be small (SOHO use) or large (enterprise use)

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Laser Printer

- Uses a laser beam to form images and text, then transfers toner to a physical medium
- Printing speed is generally faster than other printing technologies
- Images and text are usually clear, crisp, and high quality

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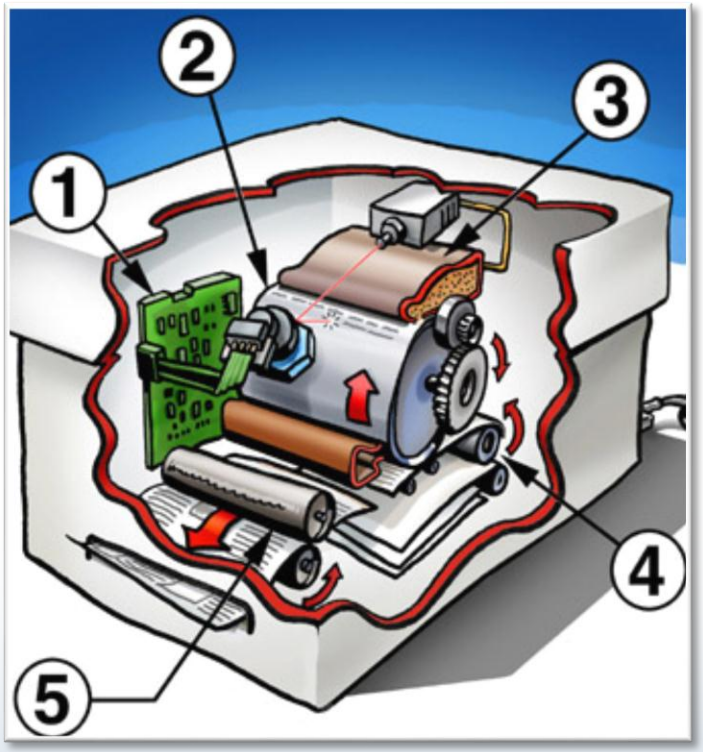
Laser Printer Components

- Toner cartridge – replaceable unit that contains toner
- Laser scanner
- High voltage power supply
- Paper transport mechanisms – pickup roller, transfer roller, transfer belt



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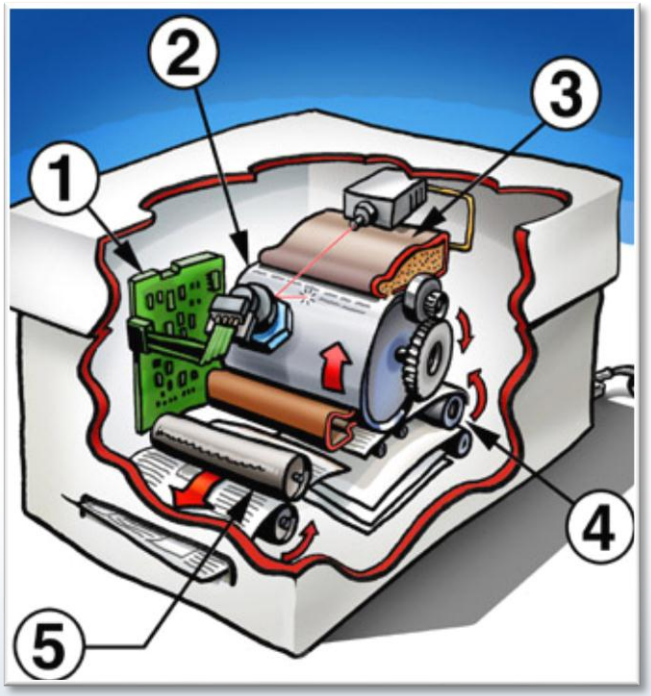
Laser Printer Components

- Imaging drum – carries electrical charge that attracts the toner
- Transfer corona assembly – charges paper and drum
- Fuser assembly – applies pressure and heat to attach toner to the paper
- Duplexer – allows images to be printed on both sides of the paper



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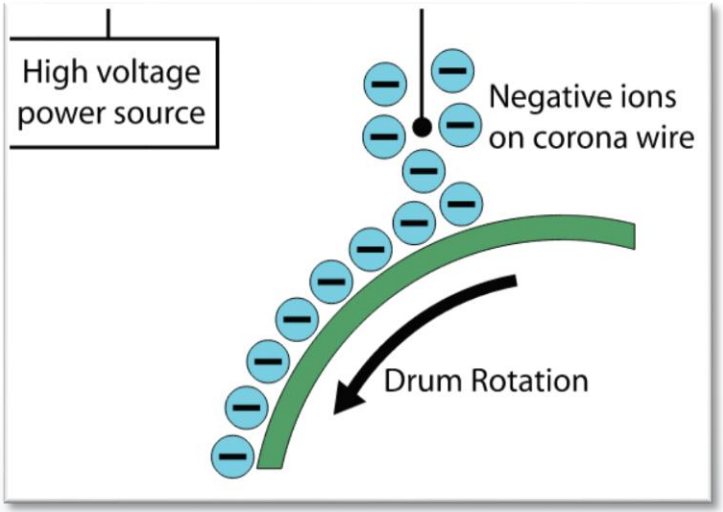
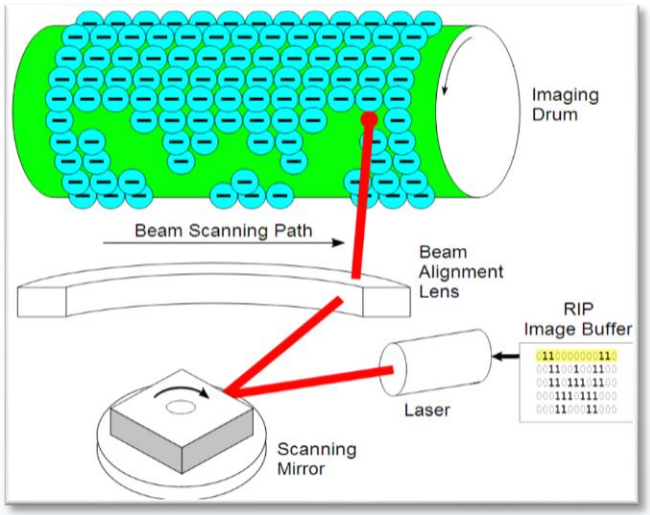
- Cleaning/Erasing – Image drum is cleared of toner and charges
- Charging – Corona wire or charge roller apply a negative charge to the image drum (600 V)
- Exposing – Laser writes to the image drum making portions of the drum less negatively charged





- Developing – Toner is attracted to areas of the image drum hit by the laser
- Transferring – Pickup rollers feed positively charged paper towards the drum attracting the negatively charged toner onto the paper
- Fusing – Fusing rollers use heat and pressure to affix toner to paper

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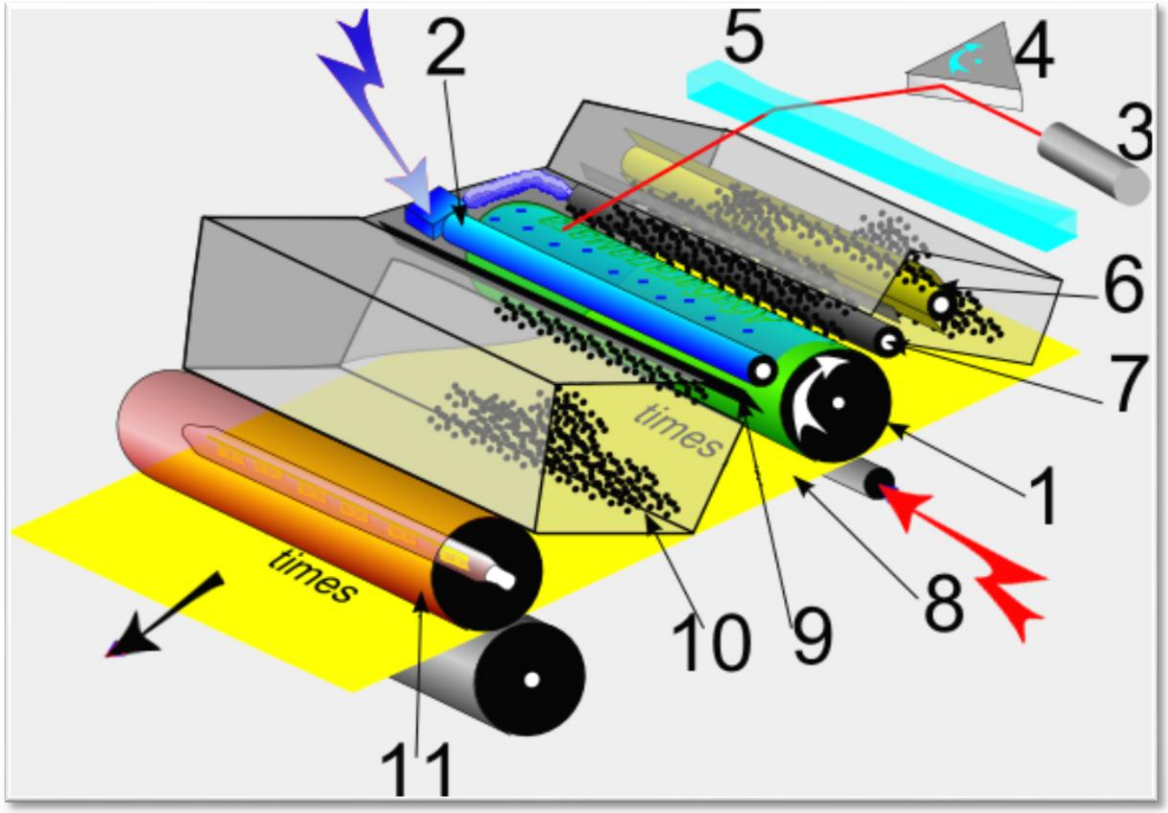
Laser Printer Process



Laser Printer Process

- 1) Image drum photoconductor, with an electrically chargeable coating.
- 2) Charge roller with high negative charge. Transfers the load evenly over the image drum.
- 3) Laser diode with a focusing lens. The laser beam neutralizes the charge on the photoconductive drum.
- 4) A rotating polygon mirror that directs the laser beam line by line over the image drum unit.
- 5) Irregular geforme lens. Linearity correction of the laser movement.
- 6) Mixing plant in the container with the toner. Spreads the toner evenly on the drum.

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- 7) Negatively charged drum. The toner moves from here to the discharged areas of the drum.
- 8) Toner transfer paper. The positively charged transfer roller attracts the negatively charged toner.
- 9) Scraper. Wipes excess toner from the drum and neutralizes the charge remaining.
- 10) Waste toner container.
- 11) Fuser. Hot rollers melt the toner and press it onto the paper.

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Ink Jet Printer Components

- Ink cartridge – black or colored
- Print head – portion of cartridge that ejects ink
- Roller – moves paper
- Duplex assembly – allows printing on both sides of paper

Ink cartridge- black and colored

Ink jet printer head (black)

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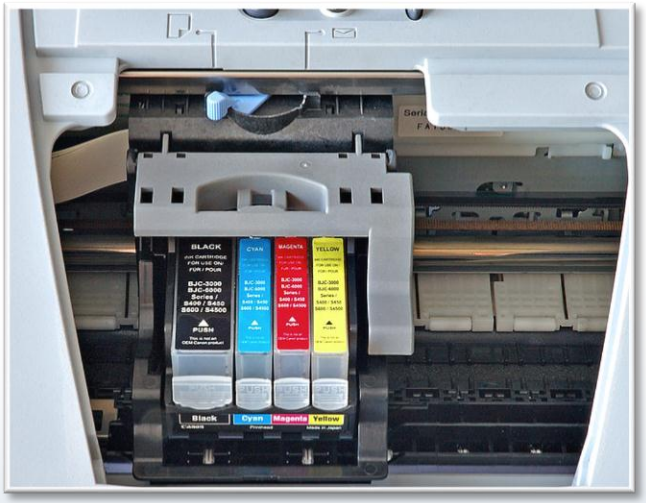
Ink Jet Printer

- Forms images by spraying ink from a cartridge onto paper
- Inexpensive
- Can print on a variety of paper types: inexpensive, bright, photo, transparencies, labels, card stock, envelopes
- Black/white and color models
- Duplexing
- Speed is generally slower than laser



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Ink Jet Printer Process

- Preparation – move paper into the printing area and move the print head across the paper
- Ink dispersion/deposit – heat or vibration forces ink from cartridge to paper, the print head moves back and forth across the paper
- Paper advance – paper is advanced by roller to allow printing on the next section

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Ink Jet Printer Process

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Thermal Printer

- Use a heating element to create images
- Thermal dye transfer – uses heat to diffuse ink onto special paper, producing high quality colors
- Thermal wax transfer – melts wax ink onto paper
- Direct thermal printer – heated pin to form image on special thermal paper (cash register, fax machine), does not run out of ink

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Impact Printer

- Strike directly against an ink ribbon to form alpha numeric characters or dots
- Dot Matrix – uses pins to create various combinations of dots that form alpha numeric characters or images
- Formed Character/Daisy Wheel – formed alpha numeric characters arranged in a ball
- Line printer – prints a full line of text at a time

Impact Printer for regular Use

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Printer Media

- Paper
- Toner
- Ink Jet Cartridge
- Ink ribbon

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Printer Installation

- Printer memory – may need to upgrade
- Printer driver – obtained from manufacturer or supplied by the operating system
- Printer firmware – obtained from the manufacturer and use specialized software to install
- Printer connections –
  - Wired: parallel, USB, RJ-45/Twisted Pair
  - Wireless: Wifi, USB, IR

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- Obtain/download printer driver/software
- Power on and connect printer
  - Wired: to specific connection
  - Wireless/network: connect to wireless network/device
- Install printer driver/software

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Windows 7 Add Printer

- Start → Control Panel → Hardware and Sound → View Devices and Printers → Add a printer
- Select “local”
  - Choose proper port
- Select “network, wireless, Bluetooth”
  - Allow search to find printers or enter printer name/location/IP address
  - Select proper driver

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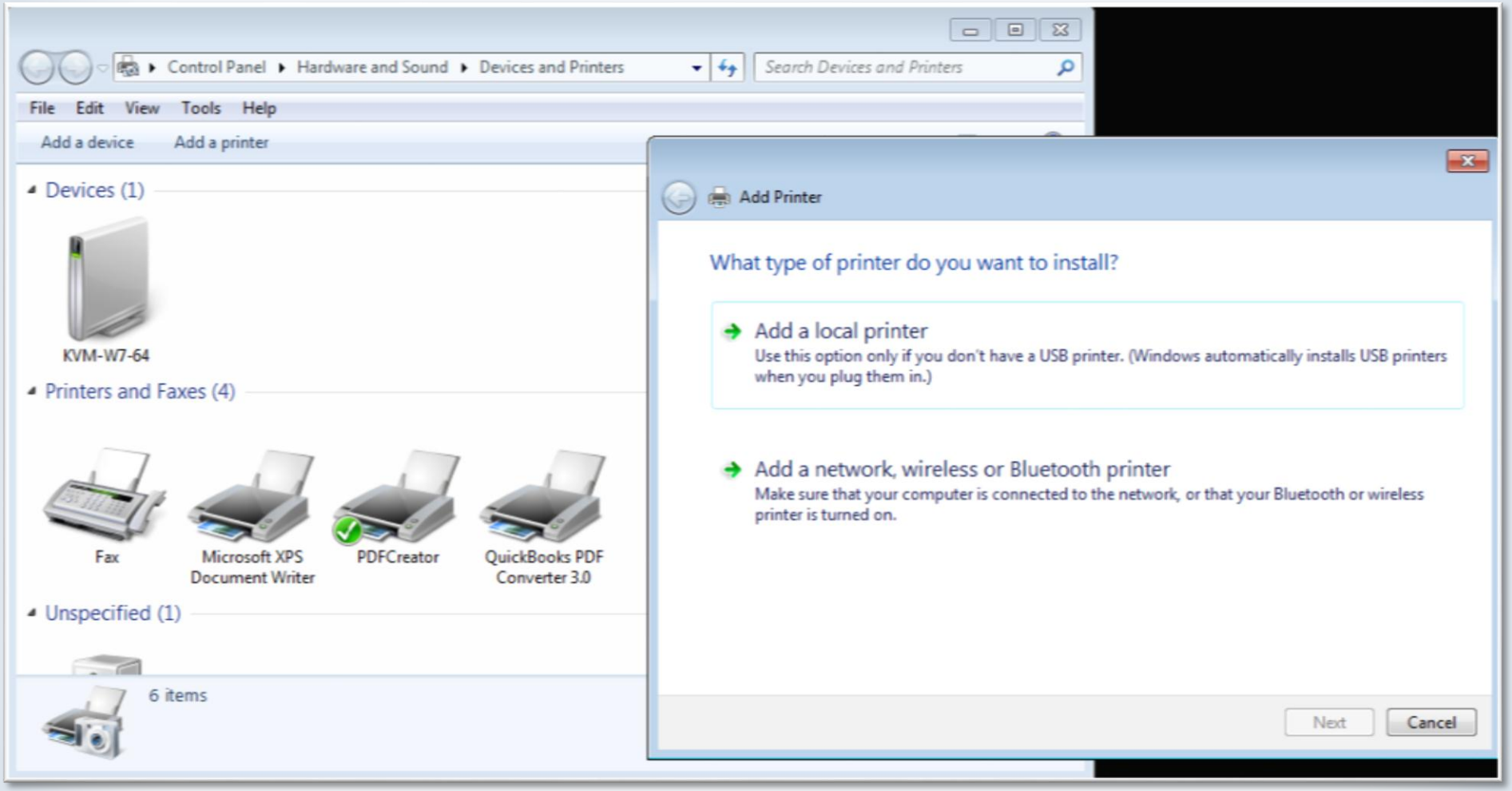
Windows 7 Add Printer



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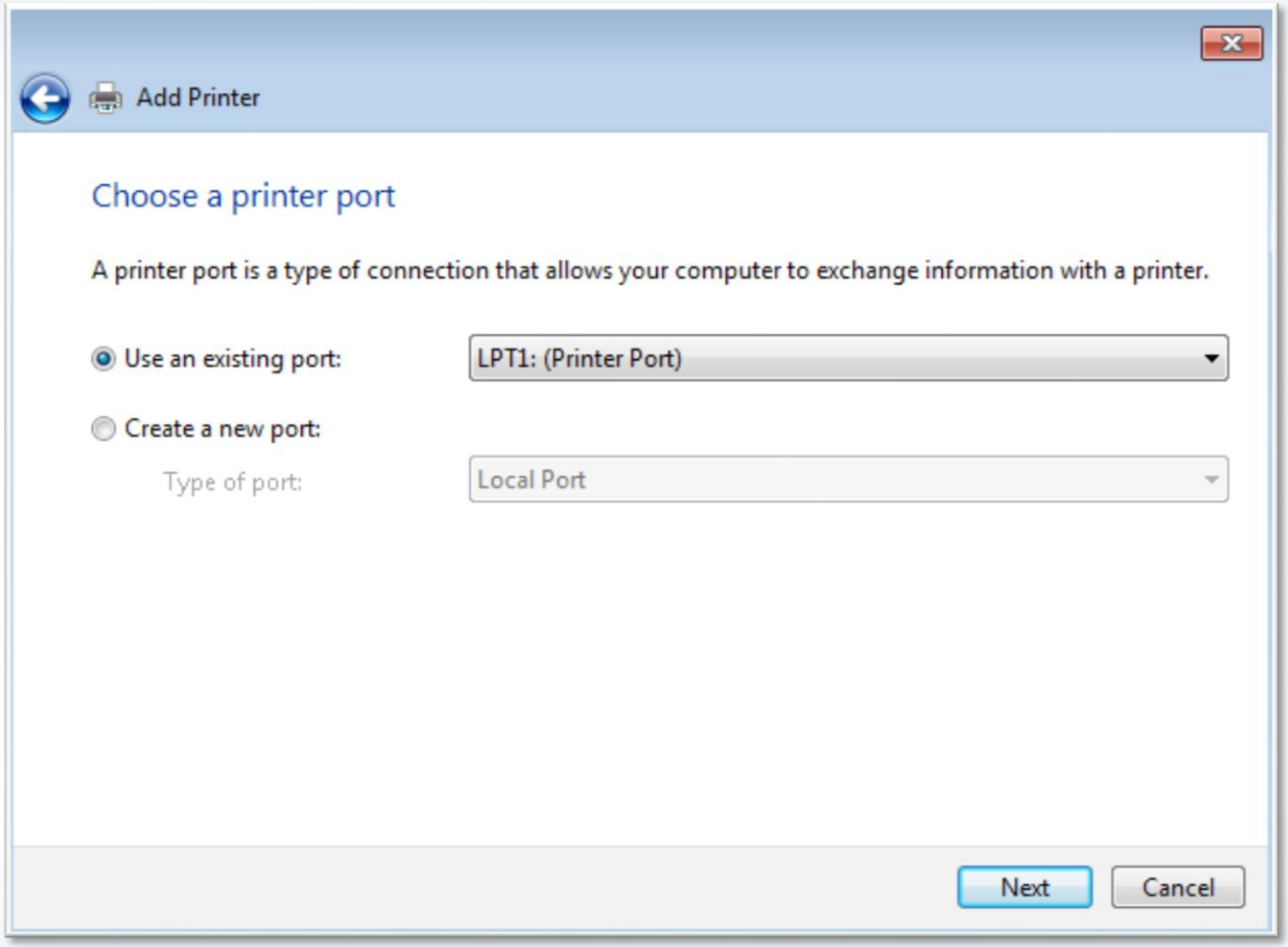
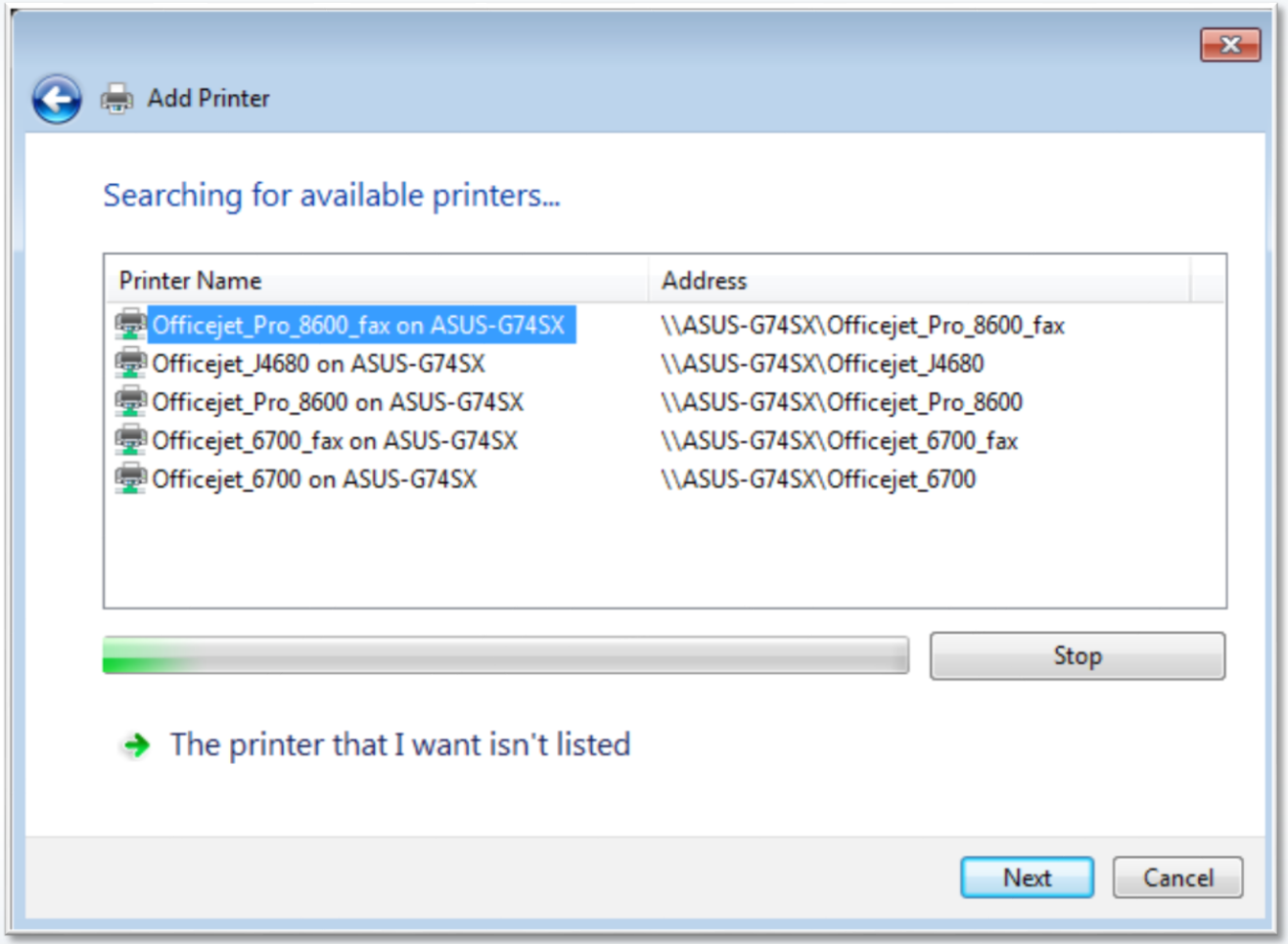


Windows 7 Add Printer



Windows XP Add Printer

- Start → Control Panel → Printers and Faxes → Add a printer
- Select “Local printer attached to this computer”
  - Choose proper port
- Select “A network printer, or a printer attached to another computer”
  - Browse to find printers or enter printer name/location/IP address
  - Select proper driver

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Windows XP Add Printer

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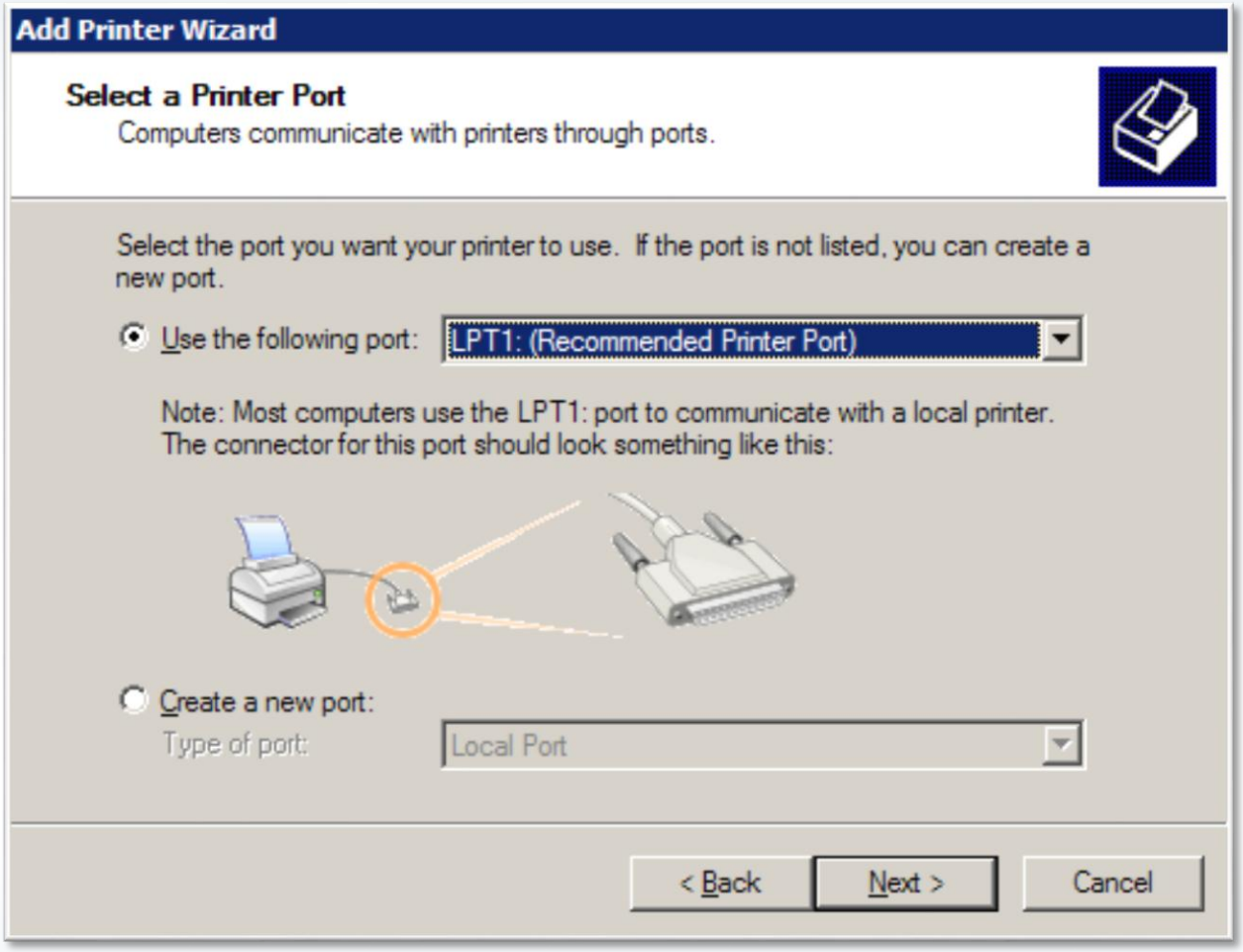
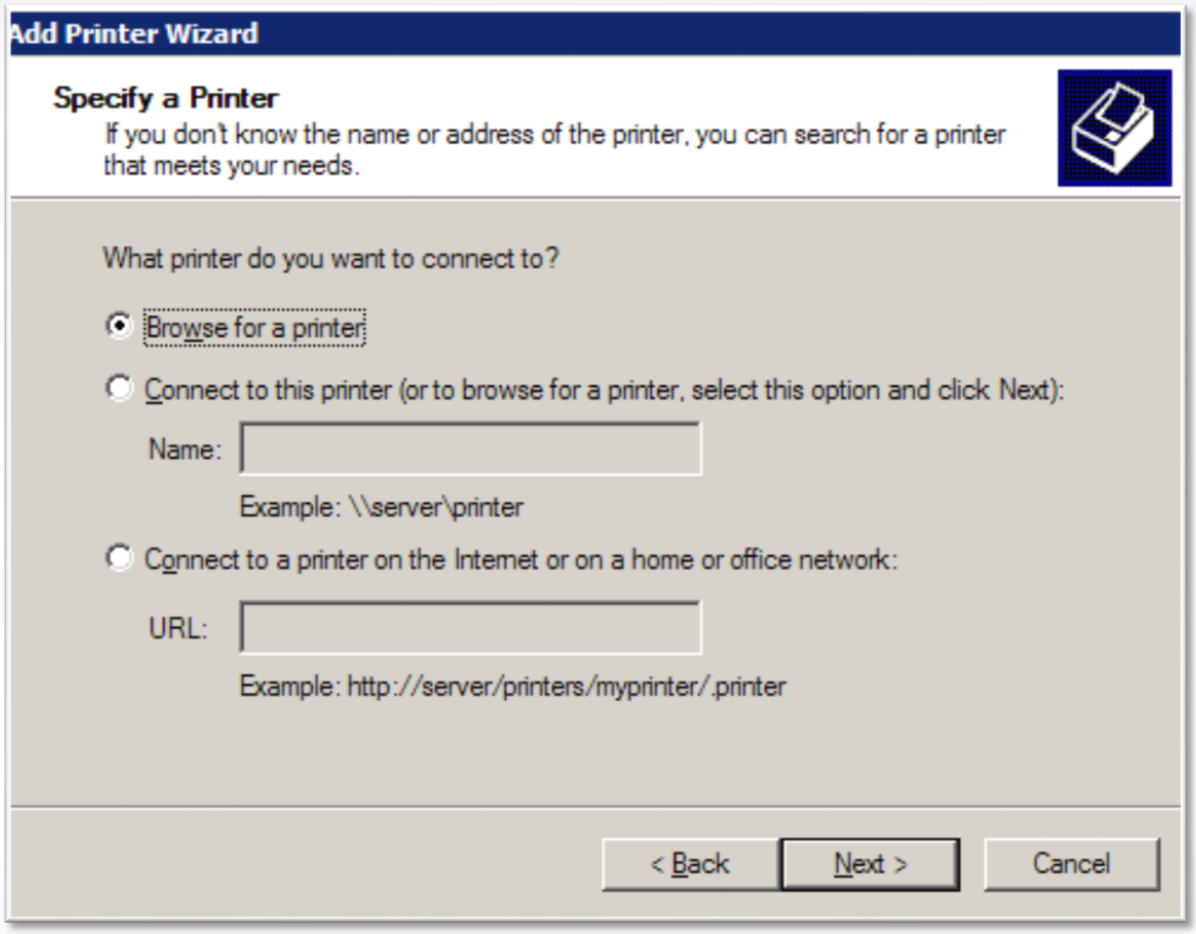
Windows XP Add Printer



Windows XP Add Printer



Printer Sharing

- Wired
- Wireless – Wifi, Bluetooth, IR
- Print Server
- Shared Network

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Printer Configuration

- Calibration
- Tray Assignment
- Tray switching
- Print spool settings
- Availability
- Color
- Ports

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Printer Maintenance

- Inkjet – use often, run cleaning, run nozzle test
- Impact – clean paper path, replace print head ribbon as needed, avoid overheating
- Laser – replace toner cartridge, clean excess toner, keep well ventilated (ozone)
- Thermal – replace paper, clean heating element, remove debris from printer

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