Chapter 26

Printers and Multifunction Devices

CompTIA A+ (220-110x)
Mike Meyers and Steve Nicholson

Episode: **Laser Printers**

Objective(s): Core 1: 3.7 Given a scenario, install and replace printer consumables.

Episode Description

Laser printers provide excellent print output on paper in both black and white and full color. Laser printers use a fairly complicated printing process that techs should understand. This episode details the processes and components for techs to maintain and service in all sorts of laser printers.

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Key Terms

- 0:30 - Objective term - Laser printer
- 0:45 - Objective term - Toner cartridge
- 0:54 - Objective term - Photosensitive imaging drum
- 6:09 - Objective term - 1. Processing
- 6:19 - Objective term - 2. Charging
- 6:24 - Objective term - 3. Exposing
- 6:36 - Objective term - 4. Developing
- 6:51 - Objective term - 5. Transferring

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Key Terms

- 7:06 - Objective term - 6. Fusing
- 7:13 - Objective term - 7. Cleaning
- 7:50 - CMYK (Cyan, Yellow, Magenta, K for Black)
- 8:59 - Objective term - Replace toner
- 9:35 - Objective term - Cleaning
- 10:05 - Objective term - Maintenance kits
- 11:50 - Objective term - Calibration

Quick Review

- A laser hits the photosensitive drum to create an image
- Memorize the laser printing process
- Laser printer maintenance means replacing the toner cartridge and applying maintenance kits

Episode: **Inkjet Printers**

Objective(s): Core 1: 3.7 Given a scenario, install and replace printer consumables.

Episode Description

Inkjet printers offer relatively inexpensive color printing for everyone. Techs need to understand how inkjets work for maintenance and troubleshooting. This episode covers all the components and processes involved.

Key Terms

- 0:11 - Objective term - Inkjet printer
- 0:51 - Objective term - Ink cartridge
- 1:29 - Objective term - Print head
- 2:00 - Objective term - Carriage belt
- 2:28 - Objective term - Feeder
- 3:26 - Objective term - Ink cartridge
- 4:03 - Objective term - Multifunction device

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Key Terms

- 4:10 - Objective term - Scanner
- 4:18 - Fax
- 5:23 - Objective term - 1. Clean heads
- 5:54 - Objective term - 2. Calibration
- 6:29 - Objective term - 3. Replace cartridges
- 7:04 - Objective term - 4. Clear jams

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Quick Review

- Inkjet printers use heat or mechanical processes to push ink through the print heads to the media
- Multifunction devices (MFDs) include printers, scanners, copiers, and fax machines
- Inkjet maintenance means running cleaning routines for the nozzles, plus some form of calibration

Episode: **Impact Printers**

Objective(s): Core 1: 3.7 Given a scenario, install and replace printer consumables.

Episode Description

Impact (or dot matrix) printers use a mechanical print head with print wires that strike a ribbon to print on paper. Impact printers are still around, and techs need to know how they work for maintenance and service. Mike describes the pieces and processes involved in taking care of impact printers.

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Key Terms

- 0:09 - Objective term - Dot matrix (impact) printer
- 0:30 - Objective term - Print head
- 0:42 - Objective term - Ink ribbon
- 1:10 - Platen
- 1:43 - Objective term - Replace print head
- 2:10 - Objective term - Tractor feed paper
- 2:37 - Objective term - Impact paper

Quick Review

- Impact printers strike an ink ribbon to write to paper
- Impact printers are very useful for printing on multipart forms
- Maintenance for an impact printer includes replacing the ribbon and keeping it clean

Episode: Thermal Printers

Objective(s): Core 1: 3.7 Given a scenario, install and replace printer consumables.

Episode Description

Thermal printers use heat to mark text on special thermal paper. They're used in many point-of-sale systems and kiosks. Mike describes the features of thermal printers and what techs need to know to maintain and service the machines.

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Key Terms

- 0:06 - Objective term - Thermal printer
- 0:35 - Objective term - Feed assembly Heating element
- 1:03 - Objective term - Special thermal paper
- 1:12 - Objective term - Thermal paper is very sensitive to heat
- 2:03 - Objective term - Replace paper
- 2:22 - Objective term - Clean heating element
- 2:45 - Objective term - Remove debris

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Quick Review

- Thermal printers heat special paper to create a printout
- Thermal printers can print to multipart (thermal) forms
- Maintenance with thermal printers includes frequent paper changes and keeping the heating element clean

Episode: **Installing a Local Printer**

Objective(s):
Core 1: 3.1 Explain basic cable types and their connectors, features, and purposes.
Core 1: 3.6 Given a scenario, deploy and configure multifunction devices/printers and settings.
Core 1: 5.6 Given a scenario, troubleshoot and resolve printer issues.
Core 2: 1.4 Given a scenario, use the appropriate Microsoft Windows 10 Control Panel utility.

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Episode Description

Installing a printer attached to a computer (a local printer) is a bread-and-butter task for techs. This episode describes the installation process using the Devices & Printers section of the Settings app in Windows.

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Key Terms

- 0:15 - Local printer setup
- 0:29 - Objective term - Network printer setup via Ethernet cable or wireless
- 1:00 - Objective term - USB
- 1:23 - Objective term - Serial
- 2:06 - Objective term - Be careful when unboxing any device

Key Terms

- 2:53 - Objective term - Most operating systems will automatically install the correct printer drivers (or you can find them on the printer's website)
- 3:42 - Firmware updates
- 5:03 - Spooler
- 8:14 - Objective term - Most printers have options for print quality, size, color mode, tray settings, orientation, etc.

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Key Terms

- 8:33 - Collate
- 8:44 - Objective term - Duplex
- 10:43 - Objective term - If multiple pages are stuck in the queue, you can cancel printing in the spooler
- 11:07 - Objective term - Changes to the spooler requires admin permissions
- 11:38 - Virtual printer
- 11:58 - Print to PDF, Print to XPS, Print to OneNote

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Quick Review

- Installing a local printer means connecting to a workstation via USB or (rarely) serial
- Device drivers enable the OS to work with the printer
- The print spooler enables multiple print jobs to queue

Episode: **Sharing Printers**

Objective(s): Core 1: 3.6 Given a scenario, deploy and configure multifunction devices/printers and settings.

Core 2: 1.6 Given a scenario, configure Microsoft Windows networking features on a client/desktop.

Episode Description

It rarely makes sense for every computer in an office or lab to have its own dedicated printer. This episode looks at printer sharing and security options in Windows, so techs can set up, maintain, and remove shared printers. Mike also covers how to access shared printers from other computers on a network.

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Key Terms

- 0:49 - Objective term - Share printer
- 1:12 - Objective term - Print server
- 1:32 - Objective term - Use appropriate drivers for a given OS
- 2:15 - Objective term - Shared printer security settings

Key Terms

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- 3:03 - Objective term - Printers shared on a domain have to be set up with the domain users
- 4:59 - Mapping a printer
- 7:10 - Data privacy
- 7:49 - Objective term - User authentication

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Quick Review

- Sharing a local printer over a network requires sharing to be enabled and a shared printer name
- Security options give local control over the print spooler
- To connect to a shared printer, add a printer, but select the shared printer rather than a local printer

Episode:	**Installing Wireless and Cloud Printers**
Objective(s):	Core 1: 3.6 Given a scenario, deploy and configure multifunction devices/printers and settings.

Episode Description

Many printers today come with wireless capabilities and can connect directly to an infrastructure or ad hoc 802.11 network. This episode looks at manual and automatic setup options, plus how to connect a printer for cloud-based printing.

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Key Terms

- 0:34 - Objective term - Wired (Ethernet) connection
- 1:10 - Mac – SLP, Windows – LLDP
- 4:53 - Ad hoc (wireless network)
- 5:20 - Bluetooth
- 6:19 - Zeroconf (Zero configuration) - Windows
- 6:23 - Bonjour – Mac

Key Terms

- 6:55 - AirPrint – wireless
- 8:28 - Objective term - Network scan services: Send to OneDrive, e-mail, cloud services, etc.
- 8:43 - Objective term - Cloud printing via Google Cloud Print

Quick Review

- A wired network printer has an Ethernet NIC and plugs in directly to the network
- A wireless network printer requires configuration to get on an 802.11 network
- Wireless print utilities can help troubleshoot any connectivity problems
- Network scan services enable printing to e-mail, cloud services, fax, etc.

Episode: **Troubleshooting Printers**

Objective(s): Core 1: 5.6 Given a scenario, troubleshoot and resolve printer issues.

Episode Description

Good techs understand the many general issues with printers misbehaving. This episode covers a lot of these issues, such as permissions, connectivity (physical/wireless and configuration errors), and mechanical issues.

Key Terms

- 0:21 - Unable to install a printer
- 1:02 - No connectivity
- 2:00 - Rollback device driver
- 2:08 - Access denied
- 2:47 - No image on printer display
- 3:13 - Objective term - Paper trouble! Paper not feeding, paper/staple jam, issues with hole punches, multipage misfeed, etc.

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Key Terms

- 3:48 - Low memory errors
- 4:35 - Error code
- 5:44 - Objective term - Garbled characters on paper
- 6:26 - Objective term - Vertical lines on page
- 7:04 - Objective term - Color prints in the wrong print color/incorrect color settings
- 7:34 - Printing blank pages

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Key Terms

- 8:02 - Objective term - Streaks/speckling on printed pages
- 8:30 - Objective term - Faded prints
- 9:03 - Objective term - Ghost images or double/echo images on the print
- 9:35 - Objective term - Toner not fused to printer
- 9:44 - Creased paper

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Quick Review

- Inability to install a printer can reflect an unshared or missing printer
- Lack of connectivity can refer to physical cables, print server disabled, device drivers lacking, wireless configuration problems and more
- Physical print problems can manifest as no display, paper jams, insufficient memory corrupted drivers, and more

Episode: **3D Printing**

Objective(s): Core 1: 3.7 Given a scenario, install and replace printer consumables.

Episode Description

3D printers use some material (such as plastic) to create a physical object from a 3D model file. This episode explores the concepts in 3D printing and provides examples of software for controlling the printer output.

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Key Terms

- 0:31 - Objective term - 3D printer
- 0:44 - Objective term - 3D printers extrude heated thermal plastic (resin or filament)
- 1:17 - Heating element
- 1:24 - Extruder
- 1:27 - Feed tube
- 1:32 - Objective term - Filament
- 5:00 - Objective term - Print bed

Free 3D Printing Software

- Ultimaker Cura
  - https://ultimaker.com/software/ultimaker-cura

Quick Review

- 3D printers melt some material (such as filament or resin) in a pattern to create a 3D shape
- Specialized software can be used to create a 3D image
- The printing process requires preheating the various print elements, pushing the filament through an extruder, and printing onto a print bed