Essential Peripherals

Chapter 10


Episode: USB Standards
Objective(s):
Core 1: 1.3 Given a scenario, set up and configure accessories and ports of mobile devices.
Core 1: 3.1 Explain basic cable types and their connectors, features, and purposes.

Episode Description

The Universal Serial Bus (USB) interface is the main peripheral interface these days. Make sure you're aware of different USB standards as well as the different types of USB connectors.

Key Terms

- 0:09 - Objective term - Universal Serial Bus (USB)
- 0:54 - USB 1.1 (1.5 Mbps/12 Mbps)
- 1:24 - Objective term - USB 2.0 (480 Mbps)
- 1:44 - Objective term - USB 3.0 (5 Gbps)
- 2:13 - Objective term - USB 3.1 Gen 1 (5 Gbps)
- 2:16 - Objective term - USB 3.1 Gen 2 (10 Gbps)

Key Terms

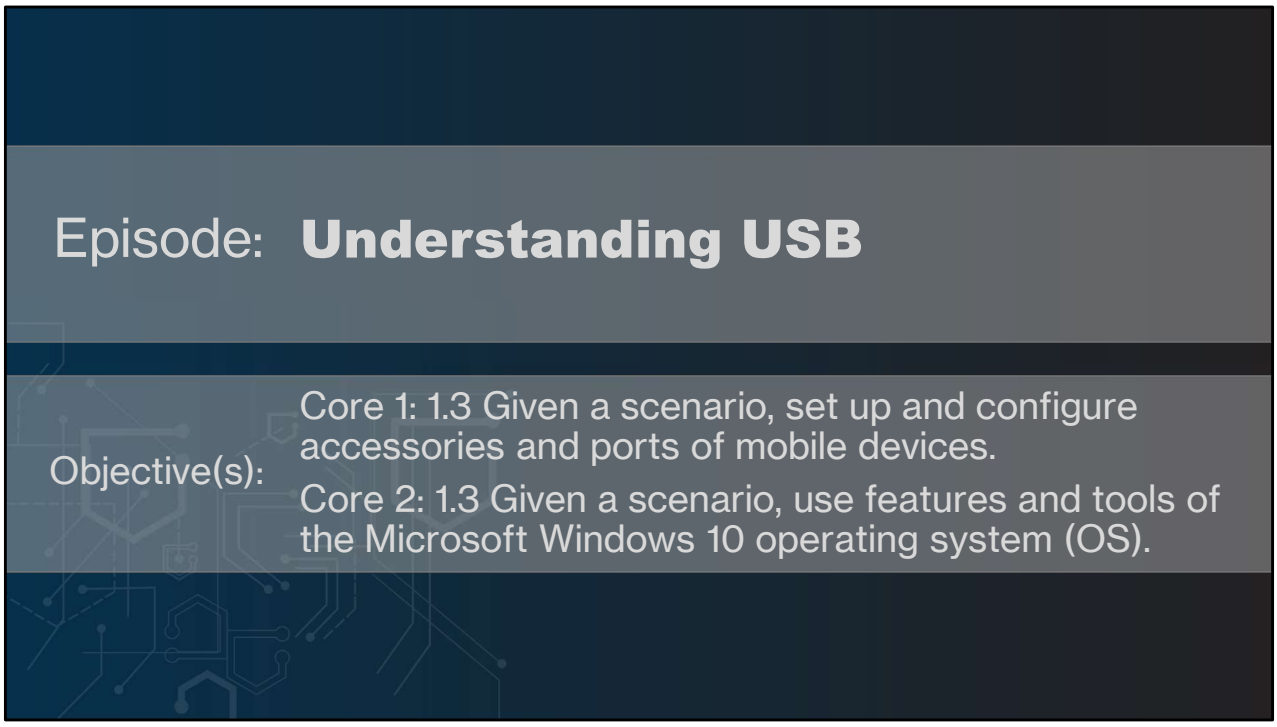
- 3:44 - USB Type-A connector
- 3:58 - USB Type-B connector
- 4:37 - Objective term - USB mini-B
- 4:54 - Objective term - USB micro-B
- 5:17 - Objective term - USB 3.0 micro-B
- 6:15 - Objective term - USB Type-C
- 9:08 - Objective term - USB is backward-compatible

USB Standards and Speeds

Standard	Maximum Speed
USB 1.0	1.5 Mbps
USB 1.1	12 Mbps
USB 2.0	480 Mbps
USB 3.0	5 Gbps
USB 3.1 Gen 1	5 Gbps
USB 3.1 Gen 2	10 Gbps

Quick Review

- Universal Serial Bus (USB) 1.1 comes in 1.5 Mbps and 12 Mbps; USB 2.0 runs at 480 Mbps
- USB 3.0 and 3.1 Gen 1 run at 5 Gbps; USB 3.1 Gen 2 runs at 10 Gbps
- USB connectors and ports often use colors to show version
- USB connectors come in many types: Type-A, Type-B, Type-C, standard, mini, and micro


Episode: Understanding USB
Objective(s):
Core 1: 1.3 Given a scenario, set up and configure accessories and ports of mobile devices.
Core 2: 1.3 Given a scenario, use features and tools of the Microsoft Windows 10 operating system (OS).

Episode Description

Why are there USB Type-A and USB Type-B connectors? Why do modern systems still provide older USB connectors when the latest USB perfectly supports older devices? It takes a good understanding of the USB standards to see how and why.

Key Terms

- 0:36 - USB controller
- 2:28 - Type-B connector
- 4:45 - Objective term - USB 3.0 micro-B
- 5:09 - USB 3.1 Type-B
- 6:15 - Yay USB-C!

Quick Review

- All USB devices connect to built-in USB controllers, which are in charge of all connected USB devices
- USB Type-A is generally a downstream connection; USB Type-B is generally an upstream connection
- USB Type-C automatically configures the upstream and downstream connections

Episode: **Configuring USB**

Objective(s): Core 1: 1.3 Given a scenario, set up and configure accessories and ports of mobile devices.

Episode Description

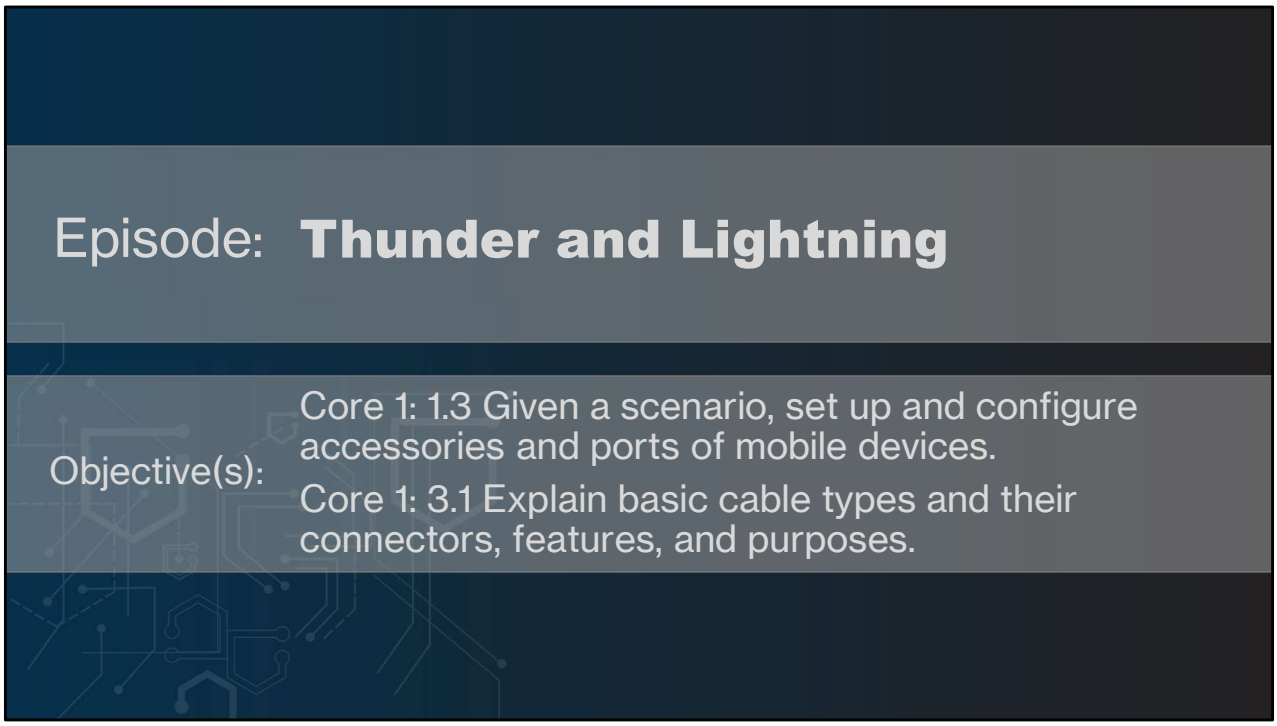
Most USB devices work well fresh out-of-the-box. For those that don't, it's important to have a proper USB configuration process to make sure a USB device and all of its features work properly.

Key Terms

- 5:08 - Human Interface Device (HID)
- 6:19 - Disable USB ports
- 6:35 - USB lock

Quick Review

- USB devices must have a device driver
- Operating systems come with thousands of built-in device drivers
- In some cases, you may need to download the correct driver for a USB device from the Internet


Episode: Thunder and Lightning
Objective(s):
Core 1: 1.3 Given a scenario, set up and configure accessories and ports of mobile devices.
Core 1: 3.1 Explain basic cable types and their connectors, features, and purposes.

Episode Description

Thunderbolt and Lightning connectors are high-speed alternatives to USB. A good tech recognizes when these technologies are used, their unique connectors, and the benefits/weaknesses they have compared to USB.

Key Terms

- 0:23 - Objective term - Thunderbolt
- 0:46 - Objective term - Thunderbolt 1 - 10 Gbps (x2 channels = 20 Gbps total)
- 0:55 - Objective term - Thunderbolt 2 - 20 Gbps
- 1:00 - Objective term - Thunderbolt 3 - 40 Gbps
- 1:13 - Thunderbolt version 1 and 2 next line: (uses the same connector as Mini DisplayPort)

Key Terms

- 1:45 - Thunderbolt 3 (uses USB-C)
- 2:52 - Lightning
- 3:26 - macOS products generally use Thunderbolt; iOS generally uses Lightning (though recent versions of iPhone have changed to USB-C)

Quick Review

- Thunderbolt is a general-purpose port that runs at 10-40 Gbps
- Thunderbolt 1 and 2 use a Mini DisplayPort connector; Thunderbolt 3 uses a USB-C connector
- The Lightning standard is exclusive to Apple products but is slowly being replaced by USB-C

Episode: **Optical Media**

Objective(s): Core 1: 3.3 Given a scenario, select and install storage devices.

Episode Description

Shiny optical discs are an excellent media for transporting data and are still a very common tool for delivering drivers and configuration utilities for hardware. There's several different optical standards and it's critical to know that a certain optical drive supports a certain optical technology.

Key Terms

- 0:53 - Compact disc (CD)
- 1:31 - Compact disc read-only memory (CD-ROM)
- 2:00 - ISO 9960
- 2:03 - CD File System (CDFS)
- 2:24 - CD-R (Recordable)
- 2:40 - CD-RW (ReWriteable)
- 3:46 - Digital video/versatile disc (DVD)
- 4:13 - DVD read-only memory (DVD-ROM)

Key Terms

- 5:03 - Dual-layer format (DL)
- 5:09 - Double-sided format (DS)
- 5:51 - DVD+R
- 6:05 - DVD+RW, DVD-RW
- 6:30 - Blu-ray Disc
- 7:13 - Blu-ray Disc Recordable Erasable (BD-RE) DVD read-only memory (DVD-ROM)
- 7:41 - Objective term - Optical drives
- Physical media vs. downloadable (?)

Quick Review

- Compact discs (CDs) store 650-700 MB of data
- Digital video discs (DVDs) store from 4.37 to 15.9 GB
- Blu-rays store from 15.6 GB to 50 capacity
- All optical media comes in read-only memory (ROM), write once (R), and write many (RW) versions

Episode: **Readers and Scanners**

Objective(s): Core 1: 3.3 Given a scenario, select and install storage devices.

Episode Description

A broad cross-section of peripherals scan and read data. From flatbed scanners to barcode readers and card readers, these devices make our users' lives easier and more convenient.

Key Terms

- 0:38 - Objective term - Smart card
- 1:17 - Objective term - (This is known as a hard token)
- 1:28 - Objective term - Magnetic reader
- 1:54 - Objective term - Flash memory reader/drive
- 2:21 - Objective L3 - SD memory card
- 2:39 - Mini SD card

Key Terms

- 2:42 - Micro SD card
- 3:19 - Scanners
- 3:27 - Flatbed scanner
- 4:03 - Automatic document feeder (ADF)
- 5:04 - Barcode/QR code scanners

Quick Review

- Smart cards and magnetic readers are used to read cards
- Flash memory readers/drives read many types of flash memory
- SD cards are very popular flash memory
- Scanners read paper documents
- Barcode and QR code scanners read printed coded labels

Episode: **Common Peripherals**

Objective(s):

Core 1: 3.1 Explain basic cable types and their connectors, features, and purposes.

Core 1: 3.4 Given a scenario, install and configure motherboards, central processing units (CPUs), and add-on cards.

Episode Description

Peripherals allow us to expand our system to support new features such as printing, sound, and external storage. They also enable a wide array of input devices like mice and keyboards. Knowing how to identify each quickly is key to your success in the field and on the exam.

Key Terms

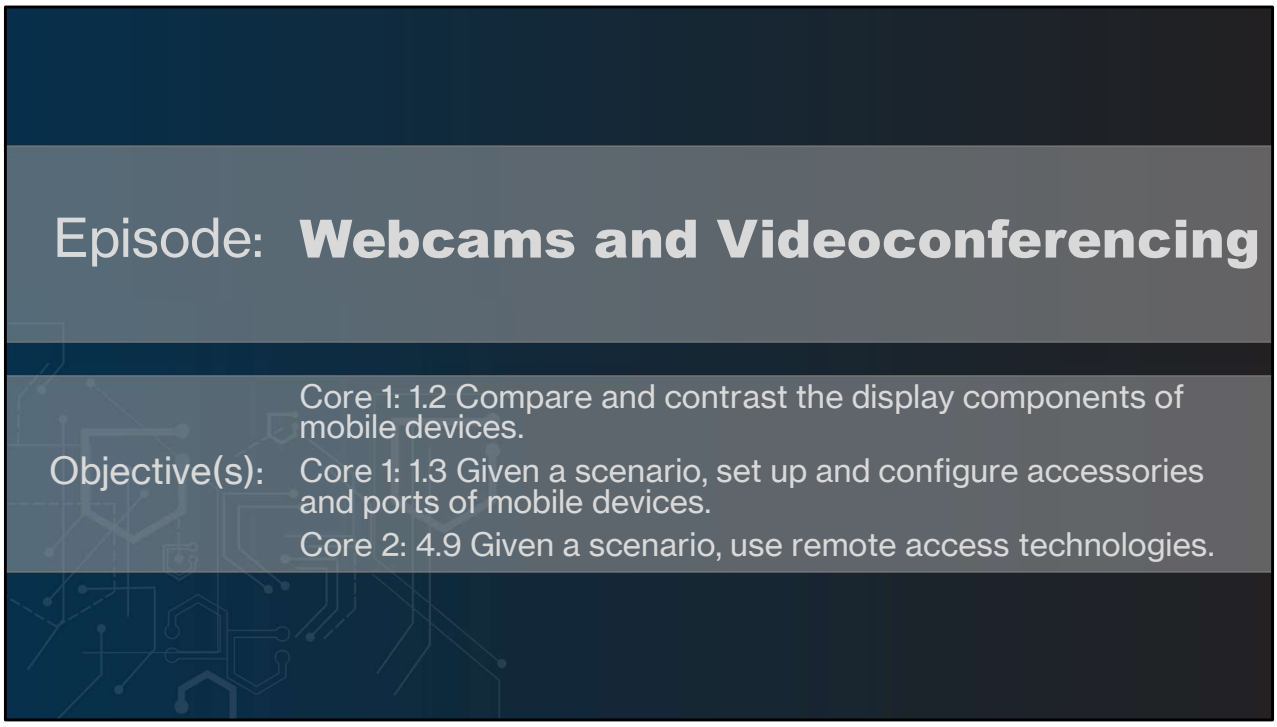
- 0:46 - Objective term - Keyboard
- 0:59 - Ten Keyless (TKL)
- 1:40 - USB game controller
- 1:55 - Objective term - Webcam
- 2:06 - Joysticks
- 2:18 - Objective term - External/hot-swappable drives

Key Terms

- 2:31 - Objective term - Microphones
- 2:38 - Objective term - Speakers
- 2:55 - Objective term - USB controller resource warning

Quick Review

- The most common modern peripherals are keyboards, mice, webcams, and external storage
- The term peripherals includes both input and output devices
- You can personalize your sound settings in Windows


Episode: Webcams and Videoconferencing
Objective(s):
Core 1: 1.2 Compare and contrast the display components of mobile devices.
Core 1: 1.3 Given a scenario, set up and configure accessories and ports of mobile devices.
Core 2: 4.9 Given a scenario, use remote access technologies.

Episode Description

Video conferencing software has changed the way we work, especially with more and more companies moving to remote and hybrid workplaces. This episode gives a quick demonstration of Microsoft Teams and its screensharing function.

Key Terms

- 0:12 - Objective term - Videoconferencing software

Quick Review

- Webcams enable us to meet remotely using videoconferencing software
- Two common videoconferencing tools are Zoom and Microsoft Teams
- Many videoconferencing software options also allow screensharing

Episode: **Installing and Troubleshooting Expansion Cards**

Objective(s):
Core 1: 3.3 Given a scenario, select and install storage devices.
Core 1: 3.4 Given a scenario, install and configure motherboards, central processing units (CPUs), and add-on cards.

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

Episode Description

Even though we live in a world of built-to-exact-specification systems, you will eventually need to install and possibly troubleshoot expansion cards. Let's look at the modern expansion card formats and then get hands-on and troubleshoot some common issues.

Key Terms

- 0:18 - Objective term - Expansion card
- 0:53 - Objective term - Peripheral Component Interconnect (PCI)
- 1:36 - Objective term - Peripheral Component Interconnect Express (PCIe)
- 2:02 - Objective term - Graphics processing units (GPUs/video cards)
- 2:02 - Objective term - Network interface cards (NICs)

Key Terms

- 2:02 - Objective term - Sound cards
- 2:02 - RAID cards
- 1:58 - PCIe lanes (x1, x4, x8, x16)
- 5:00 - You may need to disable on-board/integrated graphics in the BIOS when installing a GPU/video card

Quick Review

- PCI cards were the first internal plug and play (PnP) components
- PCIe enables devices to keep up with higher bandwidth hardware like the CPU and RAM
- Common PCIe formats include x1, x4, x8, and x16
- Most modern GPUs utilize the PCIe standard