Chapter 10

Essential Peripherals

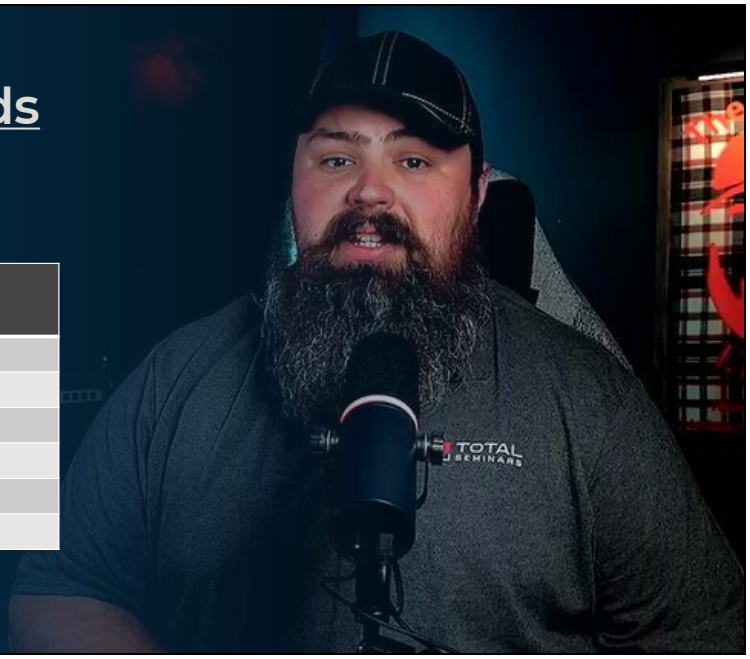
Episode 10.01

Episode title: **USB Standards**

Objective: N/A

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



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Episode 10.02

Episode title: **Understanding USB**

Objective: N/A

Episode 10.03

Episode title: **Configuring USB**

Objective: N/A

Episode 10.04

Episode title: **Thunder and Lightning**

Objective: N/A

Episode 10.05

Episode title: **Optical Media**

Objective: 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.

Lower 3rds

OBJ - Optical d

Optical drives use a laser diode to read and write data onto an optical disc

An optical drive has five major components: a disc tray, the laser diode, a lens, a spindle motor, and the controlling electronics

Optical drives uses pits and lands to encode its data

Rives

disc tray

Constant Angular Velocity (CAV)

laser diode - laser beam that senses data

Lens

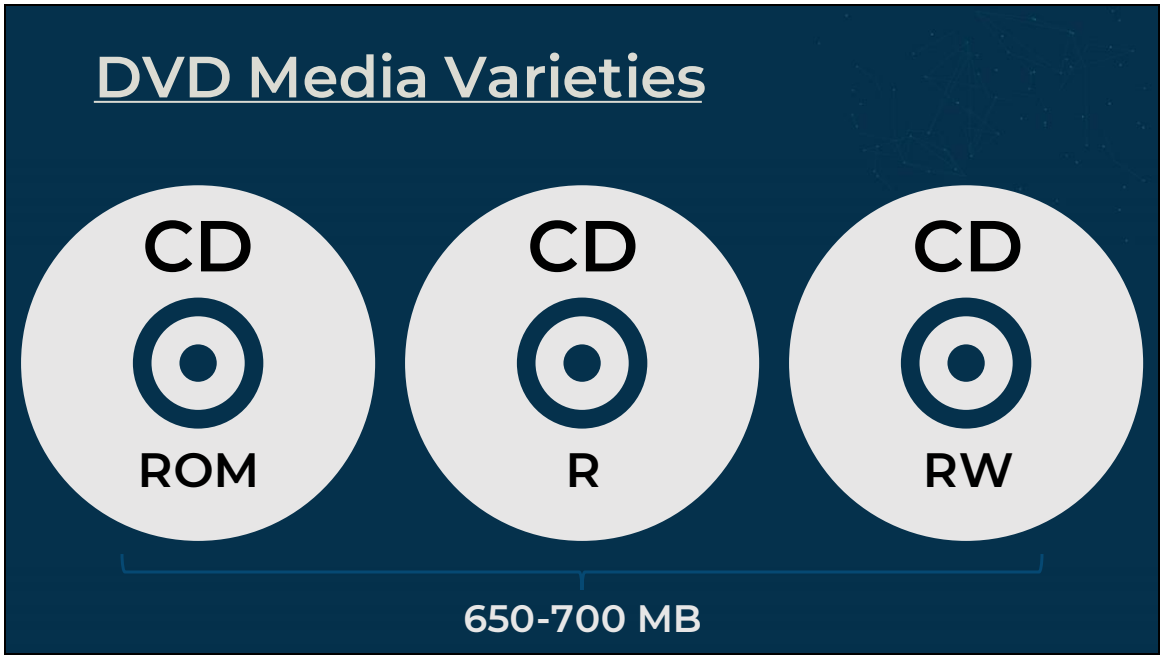
controlling electronics manages the data transfer

pits and lands

SATA

Disk – internal/encased storage

Disc – removable external storage


DVD Media Varieties
CD
ROM
CD
R
CD
RW
650-700 MB

DVD Version	Capacity
DVD-5 (12 cm, SS/SL)	4.37 GB, more than two hours of video
DVD-9 (12 cm, SS/DL)	7.95 GB, about four hours of video
DVD-10 (12 cm, DS/SL)	8.74 GB, about four and a half hours of video
DVD-18 (12 cm, DS/DL)	15.90 GB, more than eight hours of video

Type	Size	Capacity (single)	Capacity (dual layer)
Standard disc	12 cm	25 GB	50 GB
Mini disc	8 cm	7.8 GB	15.6 Gb


Optical Drive
Five major components:
• Disc tray
• Laser diode
• Lens
• Spindle motor
• Controlling electronics

Episode 10.06

Episode title: **Readers and Scanners**

Objective: N/A

Episode 10.07

Episode title: **Common Peripherals**

Objective: 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.

Lower 3rds

Universal Serial Bus – USB, USB-C, microUSB, miniUSB

USB 1.0/1.1 (USB Type A and B)

USB Type C

microUSB

miniUSB

Lightning

Lower 3rds

Near-field communication (NFC)
Bluetooth
Tethering/hotspot
Stylus
Headset
Speakers

Lower 3rds

Webcam
Trackpad
Drawing pad
Trackpoint
Docking station
Port replicator

USB Type A and B

Used on conversion cables with a different connection type on the opposite end

USB Type C

Common connections

- New smartphones
- Game controllers
- Microphones
- Mobile devices

Micro USB

Connection is both Type-A / Type-B micro versions

It is less expensive than USB-C.

Mini USB

Mini-me of a USB-B there are also Type-A versions

Mini USB connectors are not commonly used

Apple Lightning

Lightning

Apple's proprietary connector

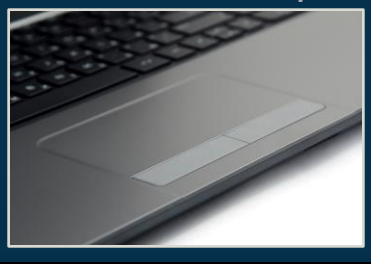
Like a USB-C, it is reversible

Similar in specifications to the USB 3.0 standard

Newer Apple devices all now use the USB-C connection

External Touch pad

Internal Touch pad



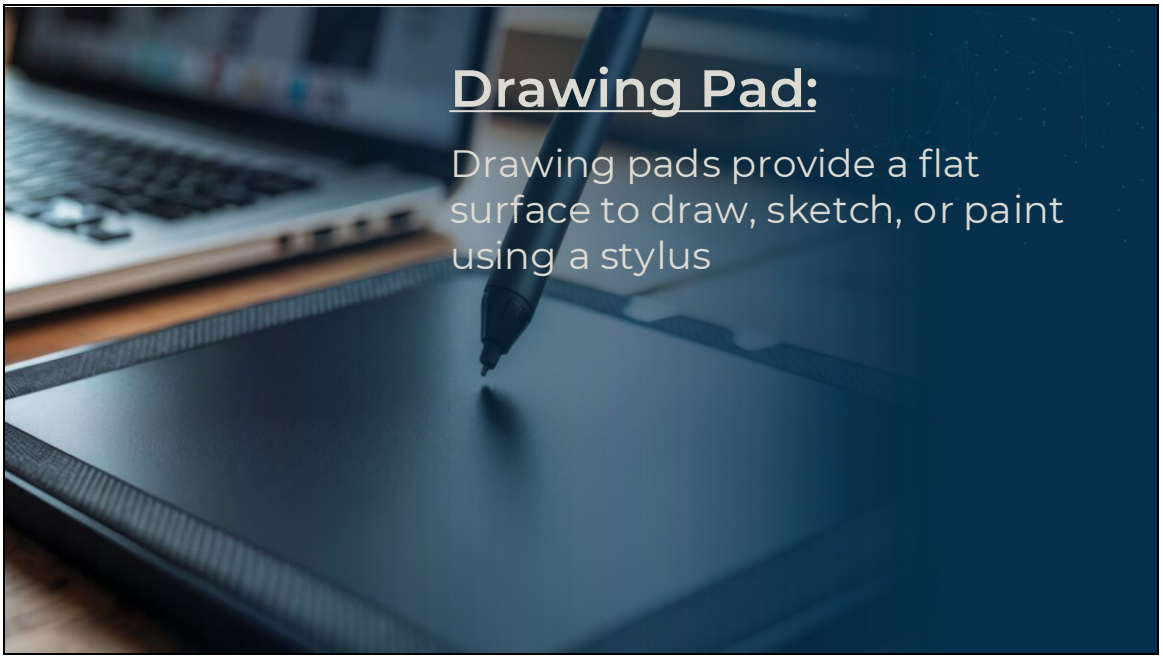
Trackpad

Other names

- Touchpad
- Glide pad

Used to do anything that could be done with a mouse

Can be embedded or a peripheral device



Drawing Pad:

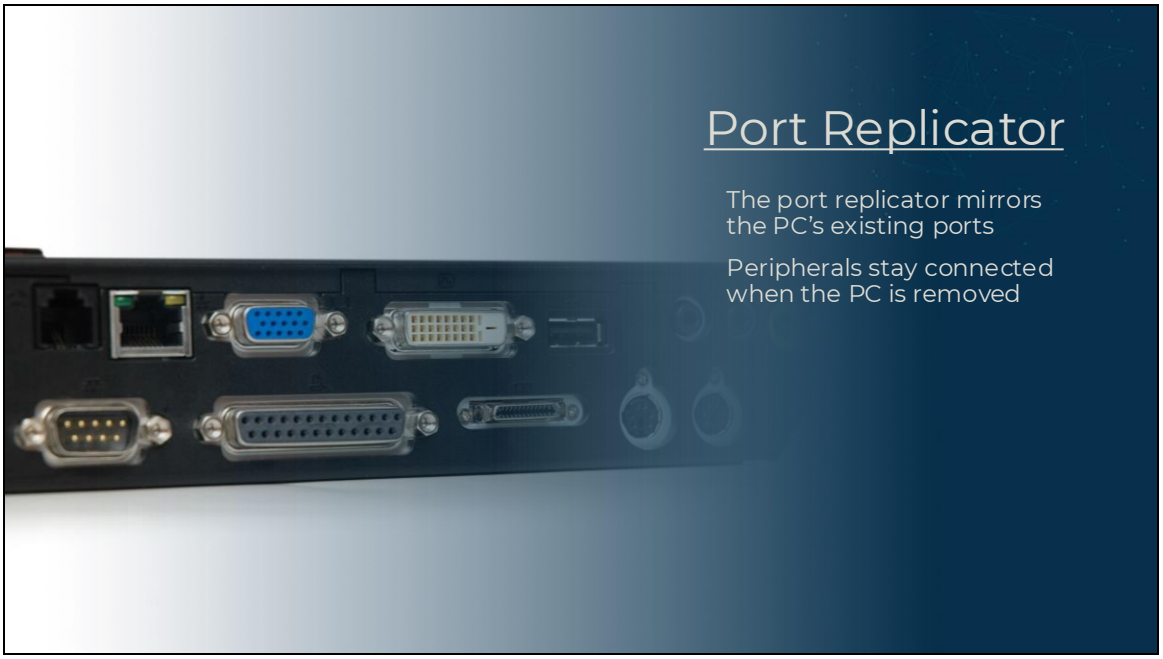
Drawing pads provide a flat surface to draw, sketch, or paint using a stylus

TrackPoint

A TrackPoint is a small rubber joystick typically located in the center of a keyboard

Docking Station

- Allows a mobile device to add ports it doesn't have
- Connects multiple peripherals through a single connection


Port Replicator
The port replicator mirrors the PC's existing ports
Peripherals stay connected when the PC is removed

Episode 10.08

Episode title: **Webcams and Videoconferencing**

Objective: 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.

Lower 3rds

Videoconferencing is a communication service for audio conferencing or audio/video conferencing.

Videoconferencing includes audio and data sharing support.

Videoconferencing services provide screen shares, messaging, recording, as well as integrated applications.

Lower 3rds

Screen sharing only software and services are available

A web cam can be added as a peripheral device to virtually any computer

External webcams are generally connected to the system through a USB port.

Video Conferencing

Video conferencing allows users to meet virtually over the internet

Internal Webcam

Can be an embedded device that is built into the framing around the display screen

External Webcam

External webcams are generally connected to the system through a USB port

Episode 10.09

Episode title: **Installing and Troubleshooting Expansion Cards**

Objective: 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.

Lower 3rds

Sound card

Video card

Capture card

Network interface card

Lower 3rds

PCI express is the updated standard for the PCI standard

A PCI express slot have: 1, 4, 8, 16, or 32 lanes

PCI express slots are used for sound cards, video capture cards, network interface cards or NICs, or even RAID cards

PCI express slots

Can be used for:

- Sound cards
- Video capture cards
- Network interface cards (NICs)
- RAID cards

PCI (Sound Card)