Random-access Memory

At the end of this episode, I will be able to:

1. Identify common random-access memory attributes and standards.

Exam Objective: 3.2 - Given a scenario, install the appropriate RAM.

Description: In this episode, we will discuss random-access memory or RAM as well as considerations for installing RAM, specifications and standards.

- What is **RAM**?
  - Volatile, temporary workspace for data.
  - The more data you want to be actively working on, the more RAM you will need.
  - Modules are made up of a PCB and RAM chips
  - Standardization allows us to know that electrical capabilities and the physical shape.
  - Each standard provides a unique set of features
    - Perform enhancements
    - Lower power consumption

- Best practice - install the same type and speed of memory in a system.
- A lower speed module will cause all modules to operate at the lowest common speed.
- **Multichannel** architecture
  - Single
  - Double
  - Triple
  - Quad
- **Form factors**
  - Dual inline memory modules (**DIMM**)
  - Small Outline DIMM (**SODIMM**)
- **Standards**
  - **SDR** SDRAM
    - 168 pins DIMMs
  - **DDR** SDRAM
    - 184 pin DIMMs
    - 200 pin SODIMMs
    - PC-1600,PC-2100, PC-2700, PC-3200
  - **DDR2** SDRAM
    - 240 pin DIMMs
    - 200 pin SODIMMs
    - PC2-3200, PC2-4266, PC2-5333, PC2-6400 and 8533
  - **DDR3** SDRAM
    - 240 pin DIMMs
    - 204 pin SODIMMs

        - PC3-6400, PC3-8500, PC3-10600, PC3-12800, PC3-14900
        - 16 GBs per DIMM
    - **DDR4** SDRAM
        - 288 pin DIMMs
        - 260 pins SODIMMs
        - 64 GB per DIMM
        - PC4-12800, PC4-14900, PC4-17000, PC4-19200, PC4-23466, PC4-25600
    - **DDR5**
        - 288 pins
- Error Correcting Code (**ECC**)
    - Allows memory to locate and fix errors in data
- **Virtual RAM**
    - Page file
    - Treat the local drive as a portion of memory
    - 1.5 times the size of the installed RAM