

MAC and choose... (Instructor Version)

Instructor Note: Red font color or Gray highlights indicate text that appears in the instructor copy only.

Objectives

Explain basic switching concepts.

Students will indicate their knowledge of Ethernet technology by successfully comparing legacy to current standards. They will also speculate on potential future Ethernet technology standards. Students will explain why MAC addresses and framing formats have stayed basically the same, in order to assist data transmission, during Ethernet's evolution.

Background /Scenario

Note: This activity is best completed in groups of 2-3 students.

Please view the video, The History of Ethernet, located at the following link:

<http://www.netevents.tv/video/bob-metcalfe-the-history-of-ethernet>

Topics discussed in the video include not only where we have come from in Ethernet development, but where we are going with Ethernet technology in the future!

After viewing the video and comparing its contents to Chapter 10, go to the web and search for information about Ethernet:

- How was Ethernet used when it was first developed?
- How has Ethernet stayed the same over the past 25 years or so? What changes are being made to make it more useful/applicable to today's data transmission methods?

Collect three pictures of old, current and possible future Ethernet physical media and devices. Focus your search on switches if possible. Share these pictures with the class and discuss:

- How have Ethernet physical media and intermediary devices changed?
- How have Ethernet physical media and intermediary devices stayed the same?
- How do you think the Ethernet will change in the future? What factors could influence these changes?

Instructor notes: This Modeling Activity is not intended to be a graded assignment. Its purpose is to encourage students to reflect on their perceptions of how Ethernet has developed to today's standards, including its use in LANs and WANs for the transmission of frames. Facilitation of the discussion should include student-to-student discussions of each other's work.

Required Resources

- Internet access to video, History of Ethernet, located at: <http://www.netevents.tv/video/bob-metcalfe-the-history-of-ethernet>
- Hard or soft-copy media for recording answers to questions and for in-class sharing.

Reflection

1. How was Ethernet used when it was first developed?
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Students may mention that Ethernet was first developed to be used with printers (video information).

2. How has Ethernet stayed the same over the past 25 years or so? What changes are being made to make it more useful/applicable to today's data transmission methods?

Ethernet still uses copper cabling and wireless transmission, while the speed and distance of the transmissions are being developed to meet current and future data transmission methods

3. How have Ethernet physical media and intermediary devices changed?

The speed and distance of data communications has increased exponentially - intermediary devices have been designed to use different cabling endpoint types to support this speed and distance increase.

4. How have Ethernet physical media and intermediary devices have stayed the same?

Switches still handle most Ethernet transmissions, whether Layer 2 and/or Layer 3, but the framing is basically the same with minor modifications to the frames' introductory sections indicating what type of frame is being transmitted, etc.

5. How do you think the Ethernet will change in the future? What factors could influence these changes?

Device connections and speed/distance developments will change how networks will access other networks, but the underlying technology of Ethernet and the framing of Ethernet transmissions will probably stay the same. Wireless is an example of this. It is legacy and current/futuristic.

Reality

Identify elements of the model that map to IT-related content:

- Ethernet is a technology-based idea with cabling, speed; methods of signaling are all involved in deciding which method of Ethernet to use in a network.
- Switches use Ethernet technology and at both the LAN and WAN sides of a network.
- Even though Ethernet is legacy in its inception, it is still fully current in application on today's networks, especially in framing formats with slight modifications.