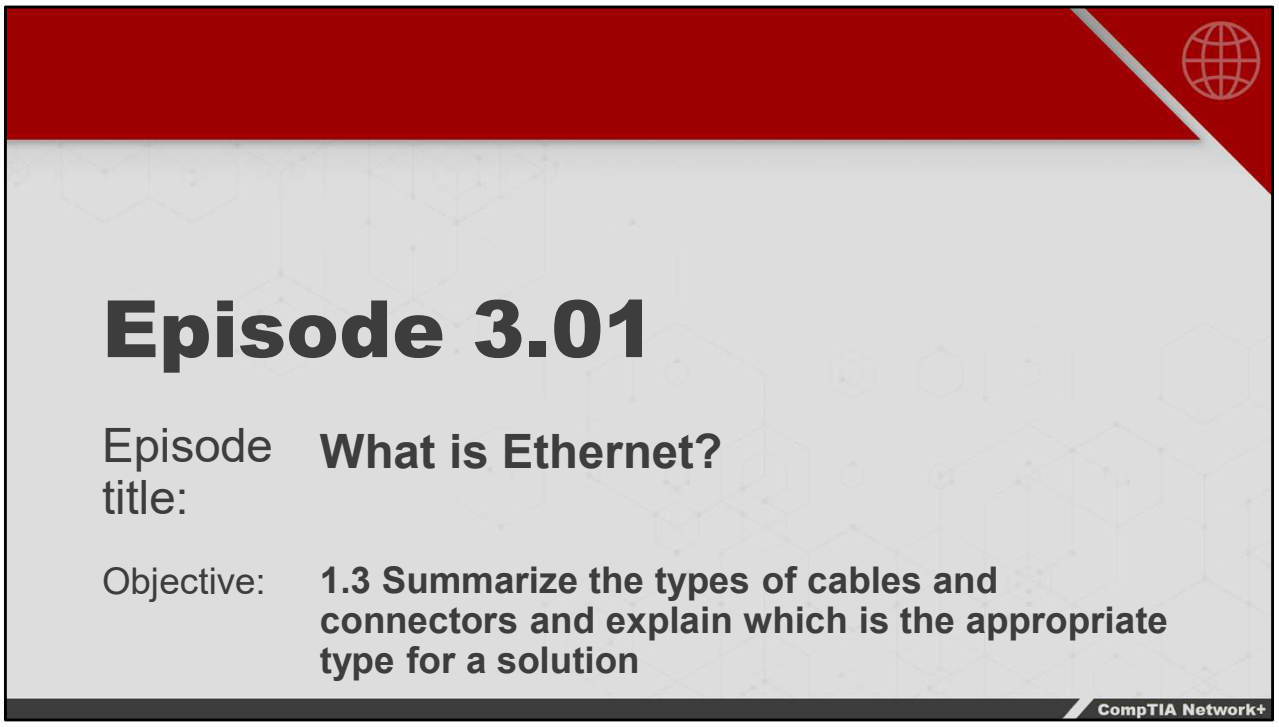
Chapter 3

Chapter 3


Episode 3.01
Episode title:
What is Ethernet?
Objective:
1.3 Summarize the types of cables and connectors and explain which is the appropriate type for a solution
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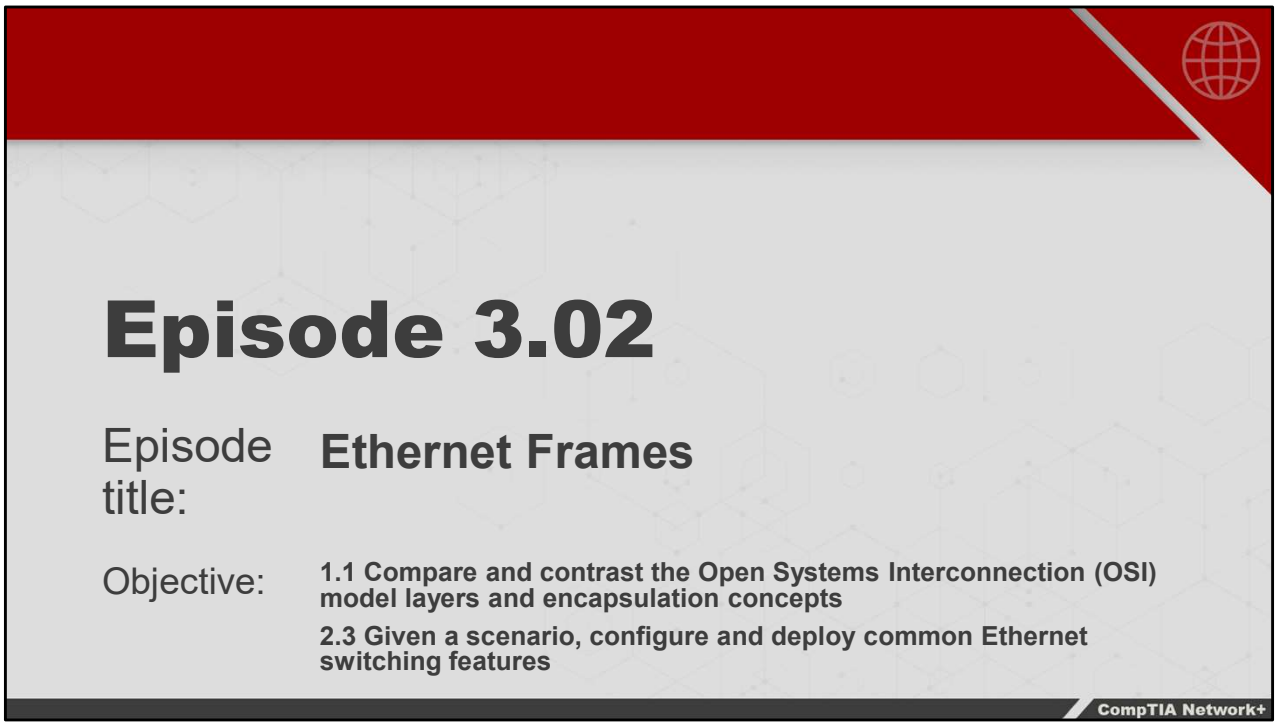
Key Terms

- 10Base5
- 100Base5
- 1000Base5
- 10Broad5
- 10BaseT

Quick Review

- Ethernet is defined by the IEEE 802.3 standard
- The IEEE has defined many version of Ethernet
- For the test, be able to recognize the Ethernet naming syntax


Episode 3.02
Episode title:
Ethernet Frames
Objective:
1.1 Compare and contrast the Open Systems Interconnection (OSI) model layers and encapsulation concepts
2.3 Given a scenario, configure and deploy common Ethernet switching features
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Key Terms

- Data type = Ether type
- Min – 64 bytes
- Max – 1522 bytes
- Jumbo frame
- Maximum transmission unit (MTU)
- Frame check sequence (FCS)

Quick Review

- Ethernet frame consist of a preamble, destination MAC, source MAC, data type, data, pad, and FCS
- A jumbo frame can carry 9000 bytes
- FCS is used for error detection


Episode 3.03
Episode title:
Terminating Twisted Pair
Objective:
1.3 Summarize the types of cables and connectors and explain which is the appropriate type for a solution
5.2 Given a scenario, troubleshoot common cable connectivity issues and select the appropriate tools
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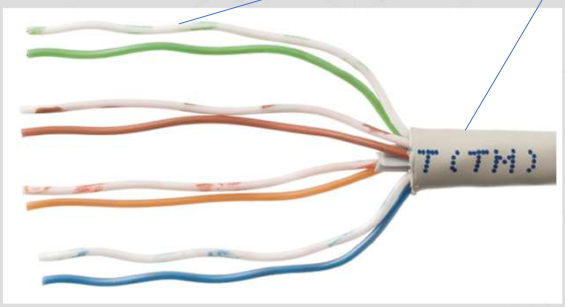
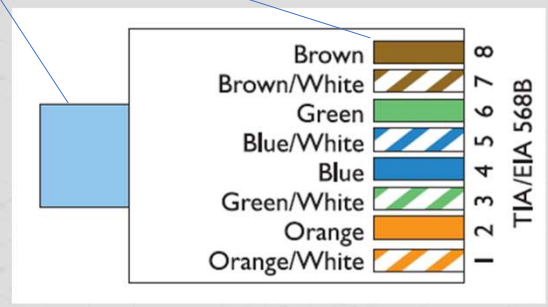
Key Terms

- Crimper
- RJ-45 connectors
- Cable tester
- TIA/EIA-568A and TIA/EIA-568B
- Straight-through cable
- Crossover cable
- RJ-45 cables are also known as 8P8C

TIA/EIA-568B Standard

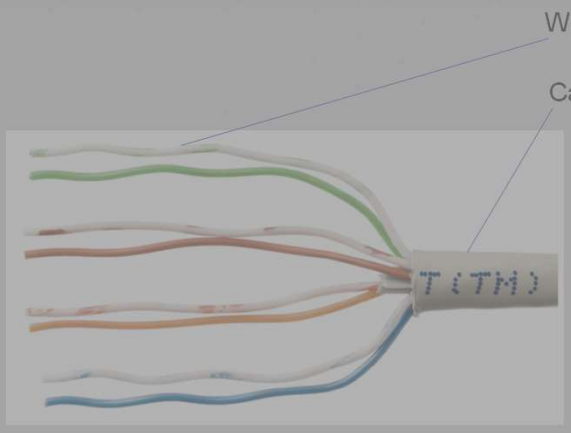


UTP cable showing color-coded pairs
(note the alternating solid and striped wires)

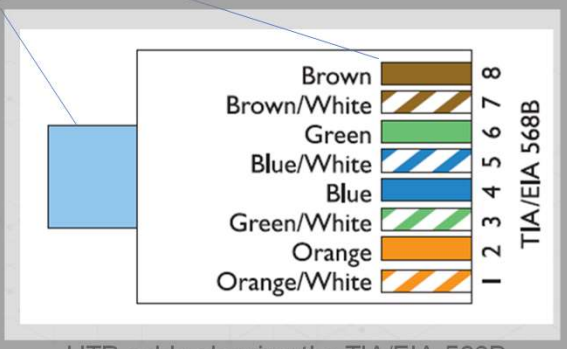


UTP cable showing the TIA/EIA-568B
standard for the order of the wires

TIA/EIA-568B Standard

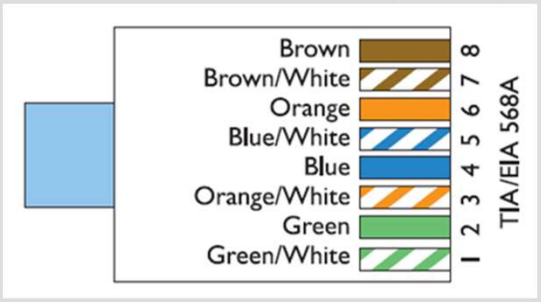


UTP cable showing color-coded pairs
(note the alternating solid and striped wires)

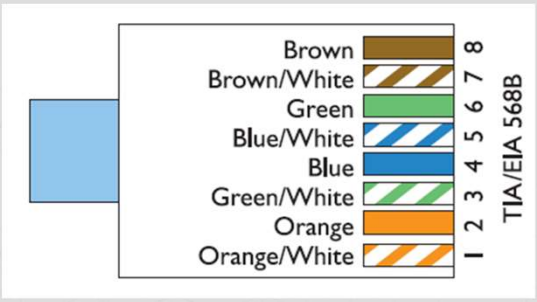


UTP cable showing the TIA/EIA-568B
standard for the order of the wires

568A vs. 568B

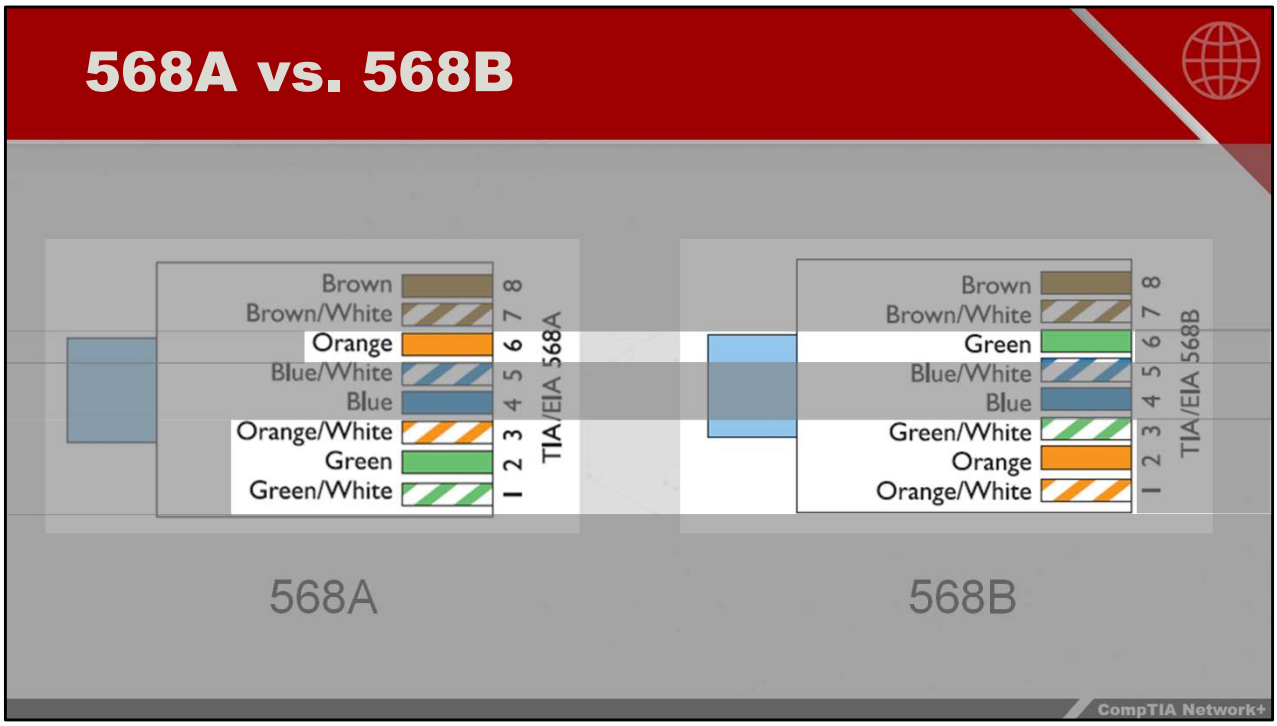


568A



568B

568A vs. 568B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Brown/White
Orange
Blue/White
Blue
Orange/White
Green
Green/White
1 2 3 4 5 6 7 8
TIA/EIA 568A
568A
Brown
Brown/White
Green
Blue/White
Blue
Green/White
Orange
Orange/White
1 2 3 4 5 6 7 8
TIA/EIA 568B
568B
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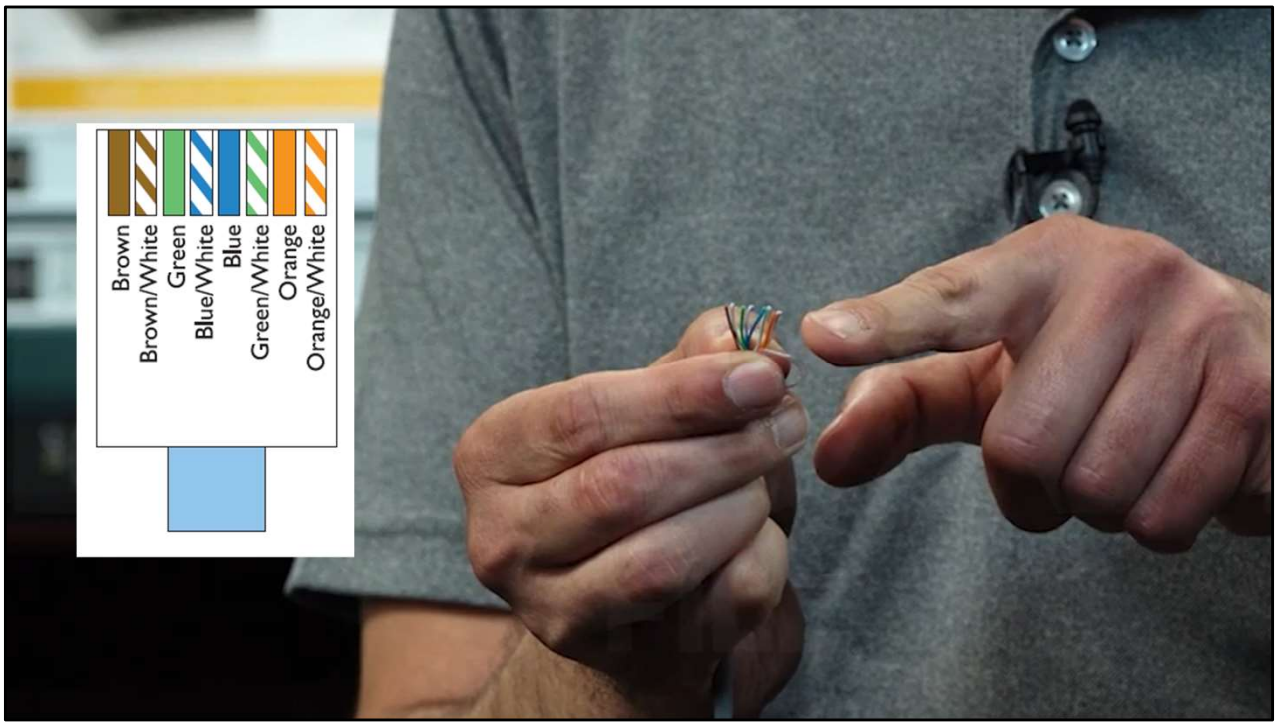
Brown
Brown/White
Green
Blue/White
Blue
Green/White
Orange
Orange/White

Quick Review

- An RJ-45 connector is used to connect to most network cards
- Pay attention when crimping to follow the TIA/EIA-568A or 568B standards
- Straight-through cables are the most commonly used cables in networks

Episode 3.04

Episode title: **Hubs vs. Switches**

Objective:

2.1 Compare and contrast various devices, their features, and their appropriate placement on the network

2.3 Given a scenario, configure and deploy common Ethernet switching features

5.5 Given a scenario, troubleshoot general networking issues

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Key Terms

- Hub – Multiport repeater
- Carrier sense multiple access/collision detection (CSMA/CD)
- Collision
- Collision domain
- Switches use MAC addresses
- Broadcast domain

Quick Review

- Switches forward frames based on MAC addresses
- Hubs us CSMA/CD to avoid collisions
- Switches create and use MAC address tables to map ports and host devices


Episode 3.05
Episode title:
Connecting Switches
Objective:
2.3 Given a scenario, configure and deploy common Ethernet switching features
5.5 Given a scenario, troubleshoot general networking issues
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Key Terms

- Uplink port
- Medium dependent interface crossover (MDI-X)
- Auto-sensing is built into modern switches
- Auto medium dependent interface crossover (Auto-MDI-X)
- Switching loop
- Bridge protocol data units (BPDUs)

Quick Review

- An uplink port enables two switches to be connected using a straight-through cable
- Auto-sensing ports allow the use of straight-through cables and are built into modern switches
- A switching loop occurs when multiple switches are connected in a circuit causing a loop