



# Connecting to the Internet Through an ISP



## Networking for Home and Small Businesses

Cisco | Networking Academy®  
Mind Wide Open™

# Objectives

- Identify the different types of cables and connectors for connecting the devices in a Network Operations Center.
- Construct and terminate twisted pair cables and determine type of cable needed

# The Internet and How We Connect to It Using an ISP

- Explain what the Internet is





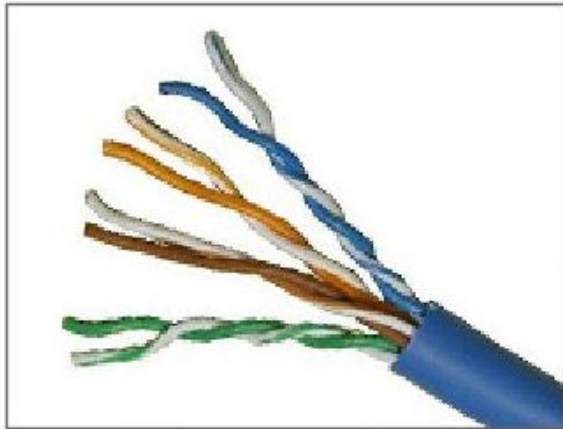
# Components of an ISP Network Operations Center

- Physical requirements of a home network versus an ISP



# Types of Cables and Connectors Used in Networking

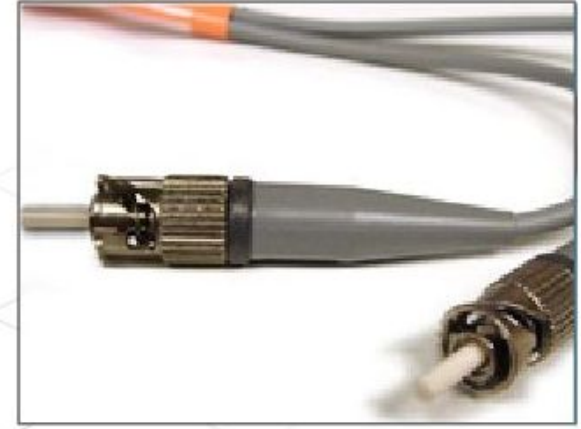
- Identify and describe common types of cables



**Twisted Pair**



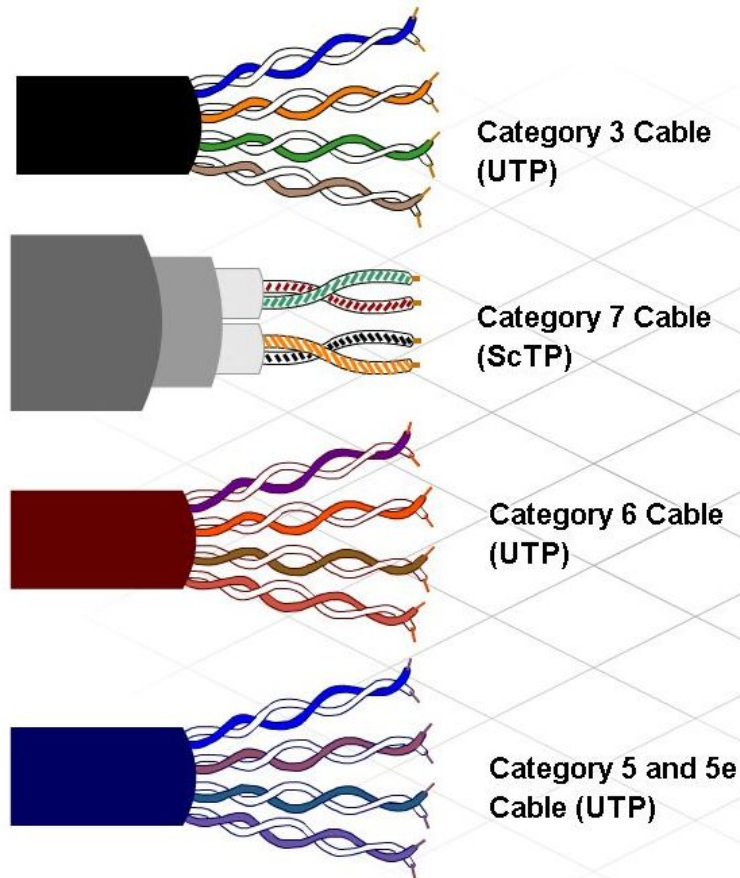
**Coaxial Cable**



**Fiber Optic**

# Types of Cables and Connectors Used in Networking

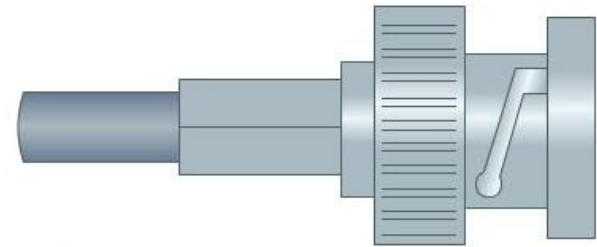
- Describe twisted pair cables, common terminations, and when they are used





# Types of Cables and Connectors Used in Networking

- Describe Coax cable, common terminations, and when they are used

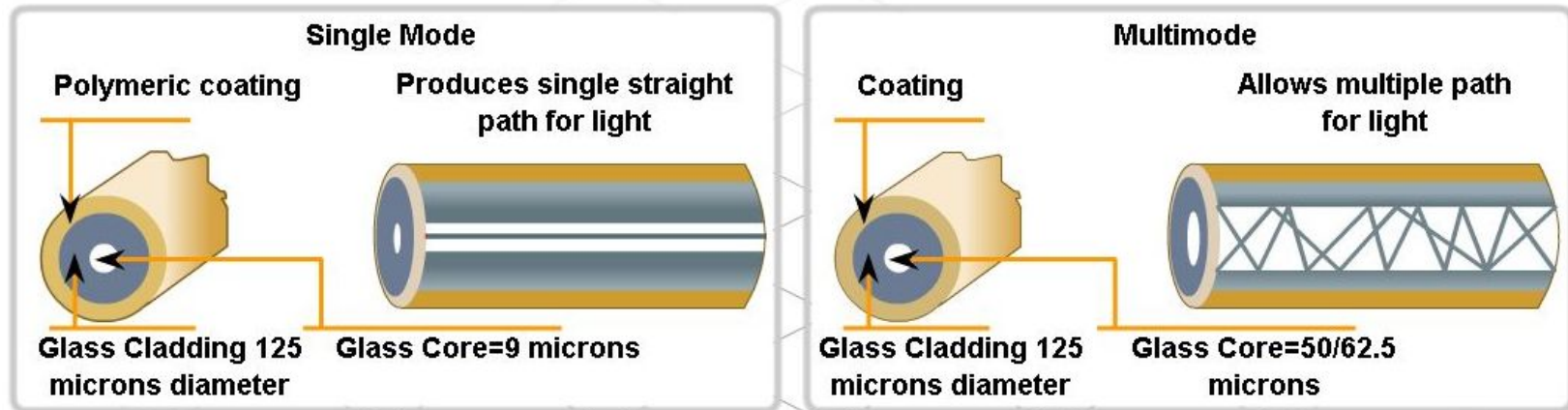


## Termination:

- Coax is normally terminated with a BNC or F-series connector
- BNC is a crimped down connector and is typically considered a stronger connection
- F-series connector is a screw-on connector

# Types of Cables and Connectors Used in Networking

- Describe optical fiber cables, common terminations, and when they are used



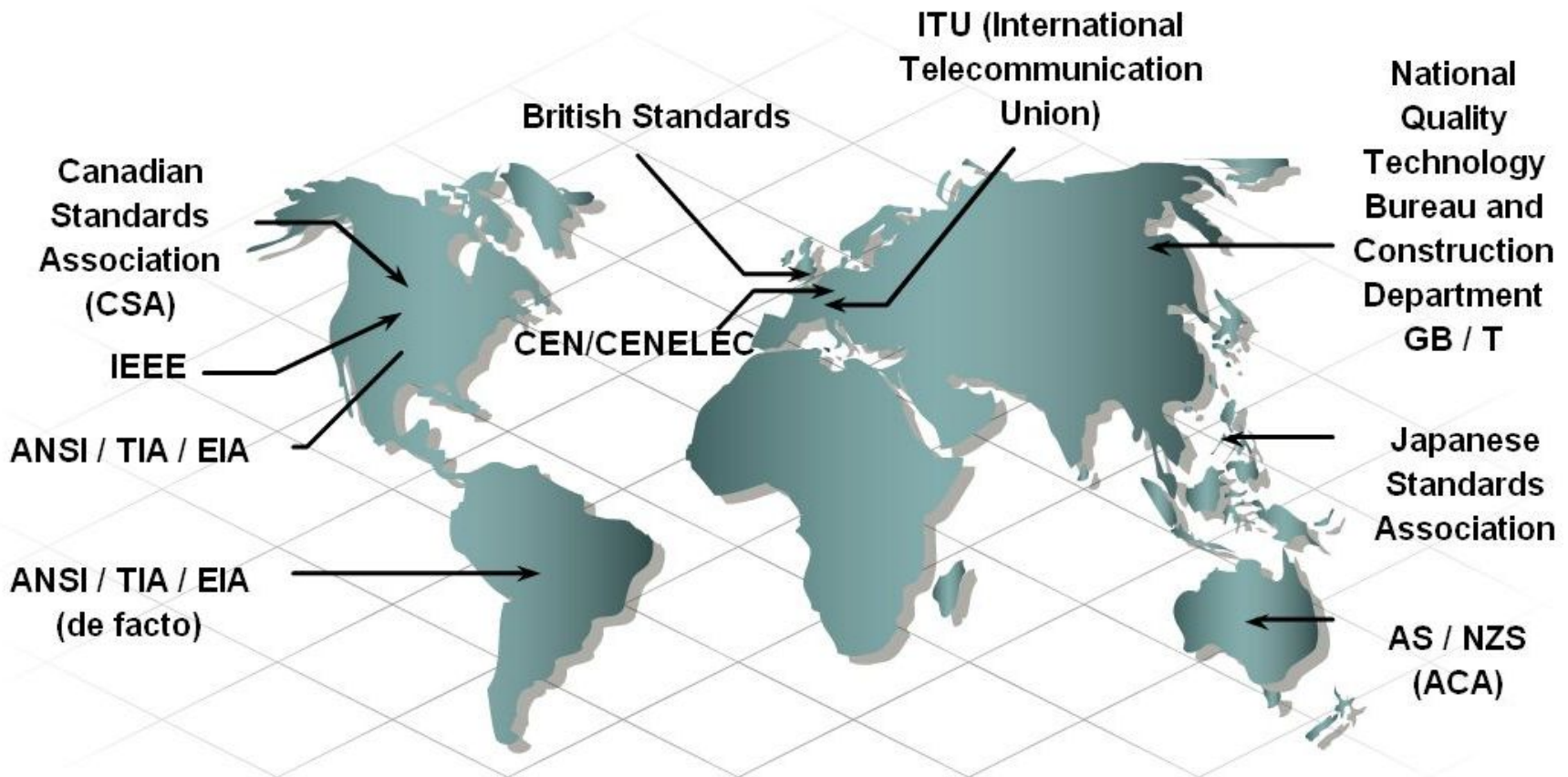
- Small Core
- Less Dispersion
- Suited for long distance applications
- Uses lasers as the light source
- Commonly used with campus backbones for distances of several thousand meters

- Larger core than single mode cable
- Allows greater dispersion and therefore, loss of signal
- Suited for long distance applications, but shorter than single mode
- Uses LEDs as the light source
- Commonly used with LANs or distances of a couple hundred meters within a campus network



# Construct and Terminate Twisted Pair Cables

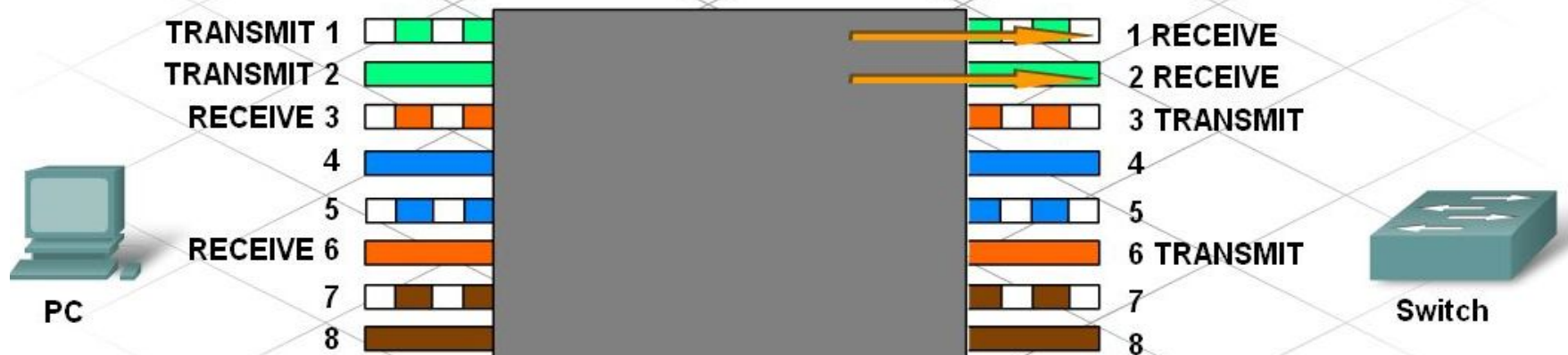
- Define cable standards and state their purpose



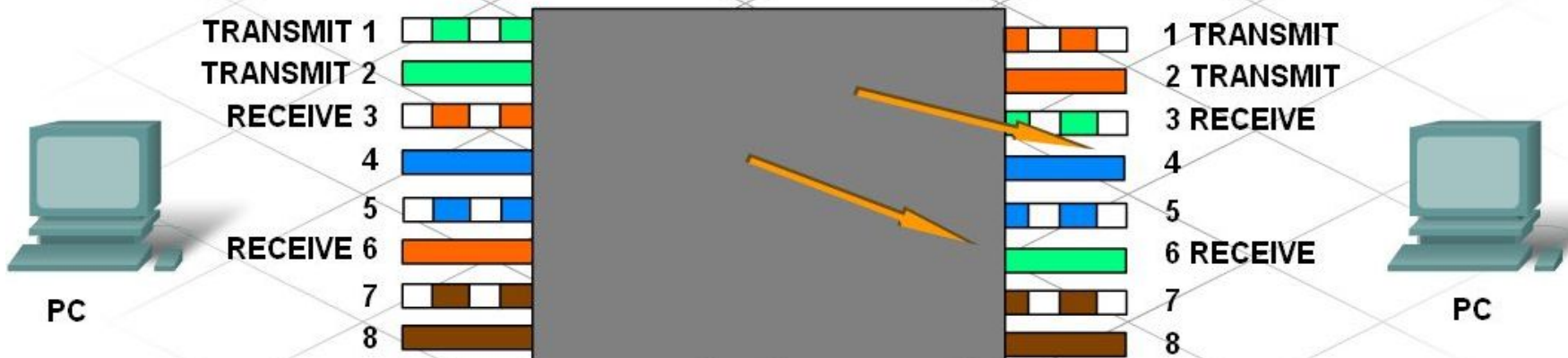
# Construct and Terminate Twisted Pair Cables

- Identify and describe the cross-over and straight through cable pinouts and color codes

### TIA/EIA 568A Straight-Through Wiring

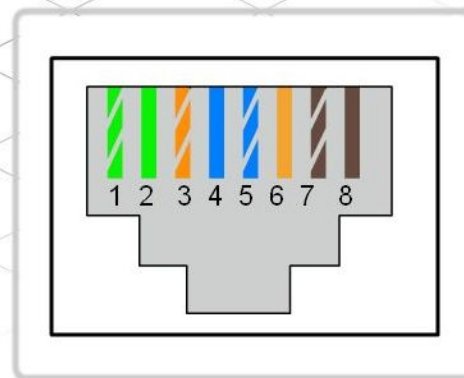


### TIA/EIA 568A Crossed Wiring



# Construct and Terminate Twisted Pair Cables

- Describe how to terminate UTP cables





# Construct and Terminate Twisted Pair Cables

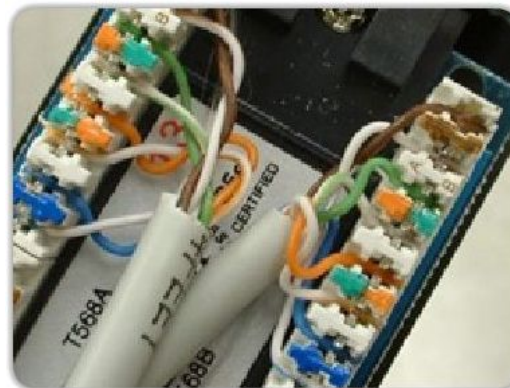
- Describe how to punch down wires to patch panel and wall jacks.



Front of Patch Panel



Rear of Patch Panel



Close Up of Back of Patch Panel



Punchdown Tool

# Construct and Terminate Twisted Pair Cables

- Describe how to test cable termination and functionality (Cable testing).



**Cable Tester**



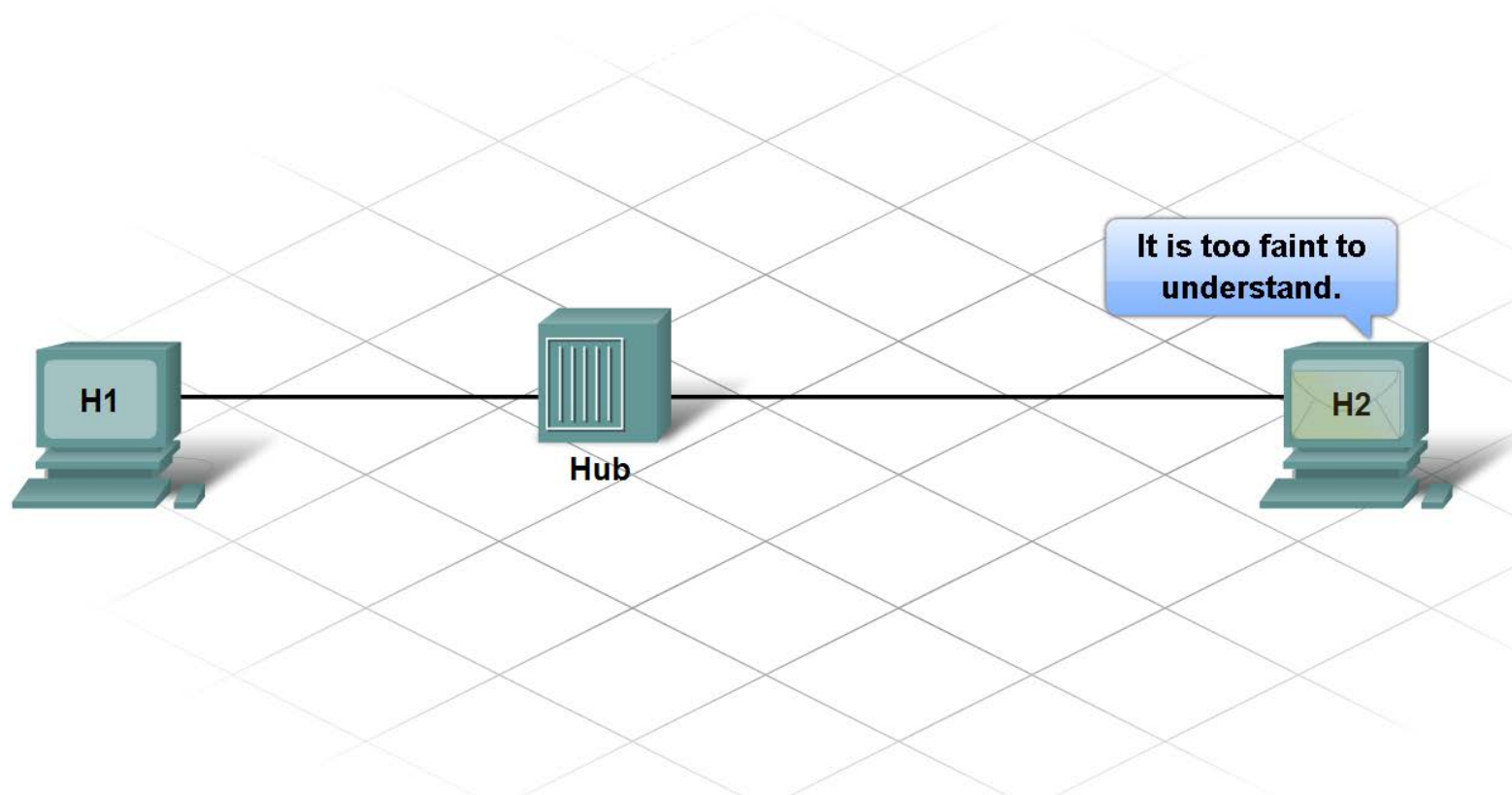
**Cable Certifier**



**Multimeter**

# Construct and Terminate Twisted Pair Cables

- Define Attenuation
- Define Crosstalk





# Construct and Terminate Twisted Pair Cables

- Describe cabling best practices



# Summary

- The Internet is a worldwide collection of computer networks, accessed through ISPs.
- Internet Protocol (IP) controls the structure and addressing of data packets for transport through the Internet cloud.
- ISP Network Operations Centers (NOCs) utilize high-end, high-speed devices with redundancy.
- Home networks feature multi-function devices which perform switching and routing.
- Networks use physical cabling media which must conform to standards in construction and termination.
- Cabling best practices are designed to reduce attenuation and crosstalk.

