

## **LAB 12 - Physical Networking & Ethernet Cables, Termination, Cabling, Patch Panels, Wall Jacks, Ethernet Keystone, Naming Conventions**

Every computer network has an underlying physical configuration. Physical networking involves the actual devices and cables that make up the network itself. The most common type of network cables today are ethernet cables. It's important to understand what an ethernet cable is and how to run and terminate ethernet cabling.

In this remote format we cannot have the hands on experience of working with the physical aspects of the network hands on, so several videos have been selected that give an adequate understanding of what you need to know.

### **Prerequisites**

The ability to read, watch video and answer questions.

### **Ethernet Cables**

Watch the Following Video to understand types of ethernet cables:

<https://www.youtube.com/watch?v=NX99ad2FUA&t=343s> (7:06)

### **Patch Cables**

A patch panel is an ethernet cable with jack on each end:

<https://www.youtube.com/watch?v=lullzS740wI> (12:08)

### **Patch Panel**

The ethernet cable is usually terminated to a patch panel in a networking closet. Here is a demonstration of how to punch down a patch panel:

<https://www.youtube.com/watch?v=TgvmM6R8rQc> (7:20)

### **Ethernet Wall Jack**

The ethernet cable usually ends at a wall jack near where you the user wants to connect their computer:

<https://www.youtube.com/watch?v=chsZZh-dZRw> (9:28)

### **Ethernet Keystone**

The other side of an ethernet cable is usually terminated to an Ethernet Keystone:

<https://www.youtube.com/watch?v=0gxNZoPcnP4> (5:47)

### **Cable Management**

When many cables are stuffed into a small area with no planning a tangled mess is guaranteed to occur. Properly managing so many cables takes thought and planning. In the following CBT Nuggets Video the instructor goes over a lot of the thought and planning needed when professionally cabling a server rack:

<https://youtu.be/CV3-is8Yd8U?t=70> (21:21)

### **Naming Schemes**

When designing the physical aspects of a network the idea of a naming scheme to help keep track of the physical equipment is helpful:

<https://www.youtube.com/watch?v=NPkLaVRPFIE> (11:19)

### **Questions:**

1. Which category of twisted pair cabling is only capable of 10 Mbps?
2. What shielded twisted pair cabling is capable of 10 Gbps?

3. How many pairs of twisted wires are in a Shielded Twisted Pair Cable?
4. What type of connector connects to the end of an ethernet cable?
5. What are the order of wires in the TIA 568B Standard?
6. What are the order of wires in the TIA 568A Standard?
7. There are two possible ways to terminate the ends of a straight-through cable, what are they?
8. Why is there only one possible way to terminate the ends of a crossover cable?
9. What type of cable is used when connecting two laptops directly together?
10. What type of cable is used when connecting a laptop to a switch?
11. Which Category of Twisted Pair Cable is limited to only 30 meters of length?
12. Why do you use the pull string to pull the jacket of the ethernet cable back when terminating the ends?
13. How many conductors are on each port of a patch panel?
14. Which cables should you start punching down when connecting a cable to a patch panel.
15. What type of blade do you use with a punch down tool?
16. The majority of keystone jacks are wired with which TIA 568 Standard?
17. The noise made by electricity interfering with other wires is called what?
18. What gauge wire is in Cat 5E?
19. What gauge wire is in Cat 6?
20. Why are the wires twisted in Ethernet Cabling?
21. Neat cabling typically translates to \_\_\_\_\_.
22. What are the two Primary Categories/Options for Cable management in a server rack?
23. Should you prefer zip ties or velcro strips to help bundle cables?
24. What functional difference does the name of a device make?

25. What is a potential weakness of using the “themed” naming convention?
26. What would be a useful name for a Router located in California, in Eureka, at an office on 5th Street, on the 2nd floor in the 3rd rack of the networking closet?
27. What are 4 possible dangers to watch out for when installing a wall jack?

**Deliverables:**

Create a .pdf document answering each of the preceding questions.

**Submit the .pdf document to the LAB 12 Upload on Canvas.**