MODULE IN (COURSE)

Credits : 3 units' lecture (2 hours/week), 1-unit laboratory (3 hours/week)
Pre-Requisite :

Lesson Title: Creating Straight through and Cross Over cable

Lesson Objective:
At the end of the module, the learners will be able to:

1. Students learn what are the most common types of twisted pair cables
2. Students must know on how and where to used straight through cables.
3. Students must know on how and where to used Cross Over cables.
4. Students can create Straight Through & Cross Over Cables.

References:

How To Make An Ethernet Cable - Simple Instructions. (2014). GroundControl. https://www.groundcontrol.com/galileo/ch5-ethernet.htm

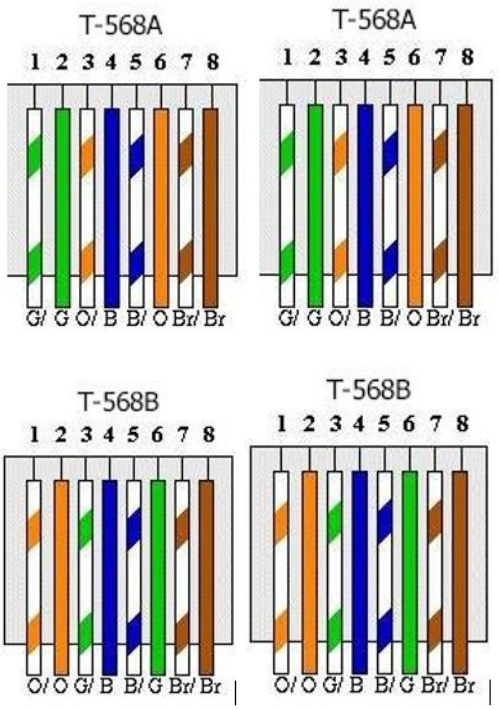
Quine, A. (2018, August 16). *The Difference Between Straight Through, Crossover, And Rollover Cables* –. ITPRC. https://www.itprc.com/difference-straight-through-cross-over-rollover-cables/

Lectures and Annotations:

Common types of twisted pair cable
The most common types of twisted pair cables that are used in LAN are:

1. Straight Through
2. Cross Over

Straight Through
Straight-through cables get their name from how they are made. Out of the 8 pins that exist on both ends of an Ethernet cable, each pin connects to the same pin on the opposite side. Review the diagram below for a visual example:



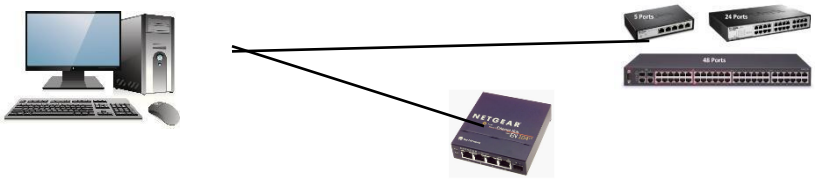
Notice how each wire corresponds to the same pin. This kind of wiring diagram is part of the 568A standard. The 568B standard achieves the same thing, but through different wiring. It is generally accepted to use the 568A standard as pictured, since it allows compatibility with certain telephone hardware- while 568B doesn't. Straight-through cables are primarily used for connecting unlike devices. A straight-through cable is typically used in the following situations:

Use a straight-through cable when:

1. Connecting router to hub

2. Connecting a computer to a switch

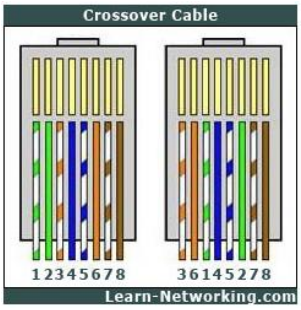
3. Connecting a LAN port to a switch, hub, or computer



Note that some devices such as routers will have advanced circuitry, which enables them to use both crossover and straight-through cables. In general, however, straight-through cables will not connect a computer and router because they are not “unlike devices.”

Crossover Cables

Crossover cables are very similar to straight-through cables, except that they have pairs of wires that crisscross. This allows for two devices to communicate at the same time. Unlike straight-through cables, we use crossover cables to connect like devices. A visual example can be seen below:



Notice how all we did was switch the orange-white and green-white wires, and then the orange and green wires. This will enable like devices to communicate. Crossover cables are typically used in the following situations:

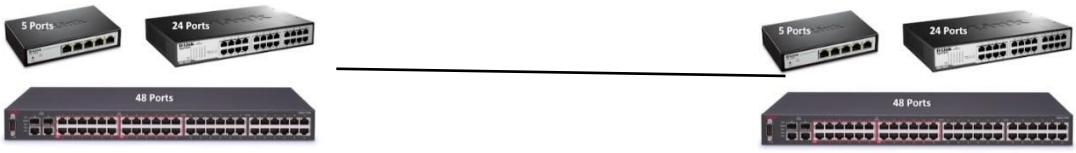
Use a crossover cable when:

1. Connecting a computer to a router

2. Connecting a computer to a computer

3. Connecting a router to a router

4. Connecting a switch to a switch



5. Connecting a hub to a hub

How to make Ethernet Cable?

Purchasing Ethernet cables can be quite expensive and pre-made lengths are not always the length you need. Making Ethernet cables is easy with a box of bulk Category 5e Ethernet cable and RJ-45 connectors that are attached to the cut ends of your preferred cable length.

We need the following:

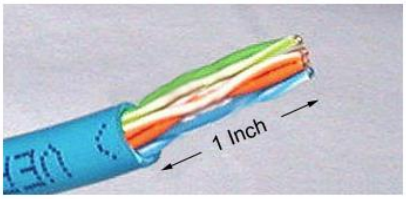
Bulk Ethernet Cable - Category 5e or CAT5e

(You may also use Category 6 or CAT6 cabling which has higher performance specifications and is about 20% more expensive than CAT5e.)

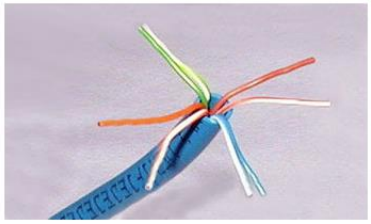
Bulk RJ45 Crimpable Connectors for CAT-5e
or
Bulk RJ45 Crimpable Connectors for CAT-6

RJ-45 Crimping tool

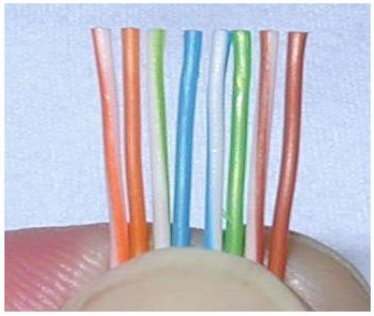
1. Cut into the plastic sheath about 1 inch (2.5 cm) from the end of the cut cable. The crimping tool has a razor blade that will do the trick with practice.



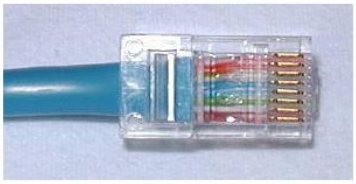
2. Unwind and pair the similar colors.



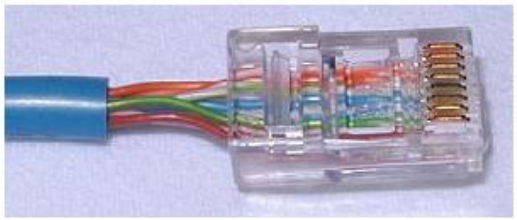
3. Pinch the wires between your fingers and straighten them out as shown. The color order is important to get correct. Use scissors to make a straight cut across the 8 wires to shorten them to 1/2 Inch (1.3 cm) from the cut sleeve to the end of the wires.



4. Carefully push all 8 unstripped colored wires into the connector. Note the position of the blue plastic sleeve. Also note how the wires go all the way to the end. A view from the top. All the wires are all the way in. There are no short wires.



*WRONG WAY - Note how the blue plastic sleeve is not inside the connector where it can be locked into place. The wires are too long. The wires should extend only 1/2 inch from the blue cut sleeve.

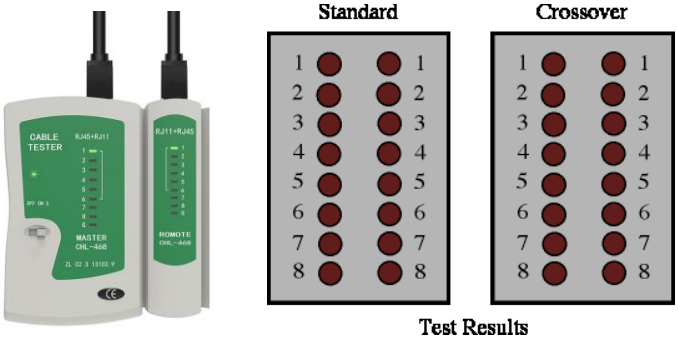


*WRONG WAY - Note how the wires do not go all the way to the end of the connector.

5. CRIMPING THE CABLE ... carefully place the connector into the Ethernet Crimper and cinch down on the handles tightly. The copper splicing tabs on the connector will pierce into each of the eight wires. There is also a locking tab that holds the blue plastic sleeve in place for a tight compression fit. When you remove the cable from the crimper, that end is ready to use.

6. For a standard "Straight Through" cable, repeat all steps and wire color order on the other end of cable. For a cross-over cable, the other end will have a different color order as shown by the crossover picture above.

7. Make sure to test the cables before installing them. An inexpensive Ethernet cable tester does this quite well.



cable tester gif - Google Search

I. Activities:

A. Academic

Quiz 1: (*Mode of Quiz via google forms)*

Activity: Create a video tutorial on how to create a straight through and crossover Cable.

B. Life Activity *(will be upload on gclasssroom)*

II. Assessment

Academic Activity:

Quiz 1	–	15pts
Video Presentation	-	15pts
Life Activity:	-	10pts

1. Quizzes shall be 20% of class standing.
2. Data Model to be graded based on the following criteria:

Understandable	-	40%
Presentation	-	10%
Explanation	-	30%
Total	-	100%

3. Life Activity to be graded based on the following criteria:

Presentation	-	20%
Lesson Applied	-	20%
Values/Skilled learned	-	50%
Punctuality	-	10%
Total	-	100%

References

How To Make An Ethernet Cable - Simple Instructions. (2014). GroundControl. https://www.groundcontrol.com/galileo/ch5-ethernet.htm

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