
Lab 2-1 Hands On Cable Media Lab

In this lab activity you are going to examine several types of cables and describe their physical characteristics.

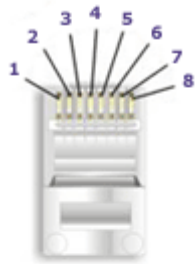
Building a Network Cable

1. Check out from me:

- A crimper
- Wire cutter
- Two RJ-45 heads
- A length of network cable
- A cable tester

1. Go to your computer and take a look at the network cable. Find the standards TIA/EIA568A and B. Which standard is used in this lab? TIA/EIA568A or TIA/EIA568B? _____

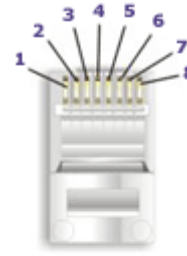
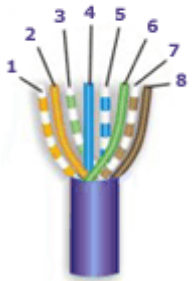
How To Make A Category 5 / Cat 5E Patch Cable



568-B Wiring

Pair #	Wire	Pin #
1-White/Blue	White/Blue	5
	Blue/White	4
2-Wht./Orange	White/Orange	1
	Orange White	2
3-White/Green	White/Green	3
	Green/White	6
4-White/Brown	White/Brown	7
	Brown/White	8

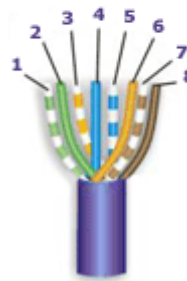
< 568-B Diagram



568-A Wiring

Pair #	Wire	Pin #
1-White/Blue	White/Blue	5
	Blue/White	4
2-White/Green	White/Green	1
	Green/White	2
3-White/Orange	White/Orange	3
	Orange/White	6
4-White/Brown	White/Brown	7
	Brown/White	8

< 568-A Diagram



Notes For Wiring Diagrams Above:

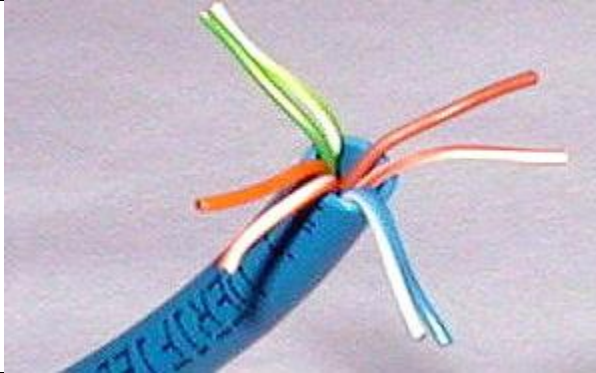
1. For patch cables, 568-B wiring is by far, the most common method.
2. There is no difference in connectivity between 568B and 568A cables. Either wiring should work fine on any system*. (*see notes below)
3. For a straight through cable, wire both ends identical.
4. For a crossover cable, wire one end 568A and the other end 568B.
5. Do not confuse pair numbers with pin numbers. A pair number is used for reference only (eg: 10BaseT Ethernet uses pairs 2 & 3). The pin numbers indicate actual physical locations on the plug and jack.



Cut the cable to the length that you will need.
If you are planning to use boots, this would be a good time to slip them on.
Place each boot facing "out" on the cable.



Skin the cable using the stripper (sheather) about half an inch down. Don't squeeze! You don't need to squeeze. Just fit the cable in and twirl.



Untwist each pair of cables, being sure NOT to untwist them down into the sheath.

If you're using Cat6 there is a spine that needs to be removed. Cut down as close to the cable ends as possible.



Spread out the cables so they're easier to work with.

Put them into the proper order, depending on if you're doing 568a or 568b. See wiring diagram above.

The photo shows 568-B the most commonly used.



Right!!!



WRONG!!

Insert the wires into the head:

1. Hold the connector so the clip is pointed away from you and the opening is towards the floor.
2. Hold onto the jacket tight so your cables don't jingle up.
3. Slide the cables slowly into the head working them all the way to the end.
4. Look at the side of the connector facing you and check that the cables are in the proper color order.
5. Check one more time.
6. Have a friend check.
7. Look at the end and make sure you can see the copper circles pushed ALL the way to the end.
8. Make sure the jacket is INSIDE the RJ45 connector.
9. If something is messed up, pull it out and start again. If the jacket doesn't fit into the connector, pull it out and trim down your cables a little

Slide the head into the crimper and make sure it's all the way in.

Crimp down HARD.

Pull it out. If the head falls off, you didn't crimp enough.

Each head can only be crimped one time so be extra sure you're ready to crimp!

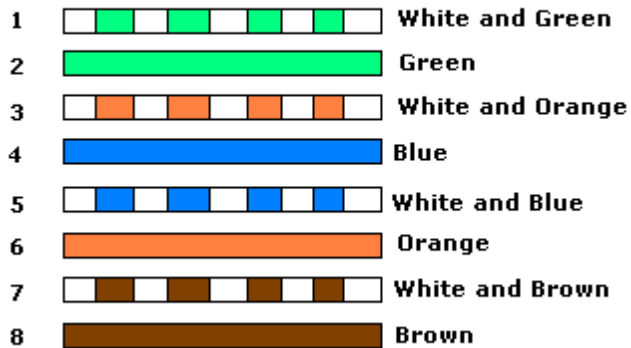


Test your cable with the cable tester.

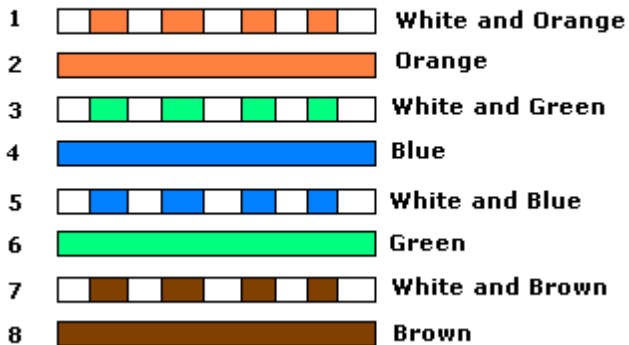
1. Insert both ends into the tester.

2. Hit test.
3. For a straight through you should see a straight wire map.
4. Bring to me and have me test it to make sure it works.

TIA/EIA 568A Wiring



TIA/EIA 568B Wiring



Crossover Cable:

1. One head is 568-A
2. One head is 568-B
3. The “swapped” cables ensure that when you pair like devices (switch to switch, computer to computer) they will transmit and receive on the proper pins.

Cut off one head (keep the best one)

Wire that head 568-B if the other is 568-A.

Notice in the diagram one end is B (the left) and the other is A.

Label the cable below based on YOUR cable you just created. You'll need this for the next step.

Pin #	Color	Pair #	Function
1			
2			
3			
4			
5			
6			
7			
8			

Station Three—Create a Crossover Cable

In a crossover cable, the send and receive pairs are switched. Why? If you are connecting a like piece of equipment to a like piece of equipment, you need something to switch that signal. You'd use a crossover cable to connect computer to computer, hub to hub, router to router, etc.

1. Get two more RJ 45 heads from me. You are going to create a crossover cable so you can connect one computer to another.
2. Using the information from above and the picture on page 121, create a crossover cable.
3. Connect your cable to two computers. Try to ping from one computer to the other. Now ping back. Does it work?
4. Save your cables you created.

Station Four—Let's go Shopping!

You are going to go online and use catalogs to compare the prices of the types of materials you just used. Find the prices for the following:

Item Description	Catalog/URL	Company	Price
100 feet Category 6 UTP Cable (PVC, not plenum rated)			
100 feet Cat6 STP Cable			
1 RJ-45 Connector			
1 BNC T-Connector			
1 BNC Terminator			
1 foot fiber optic cable (multi-mode 50 micron cable)			