



How to wire Ethernet Cables

Tools Required

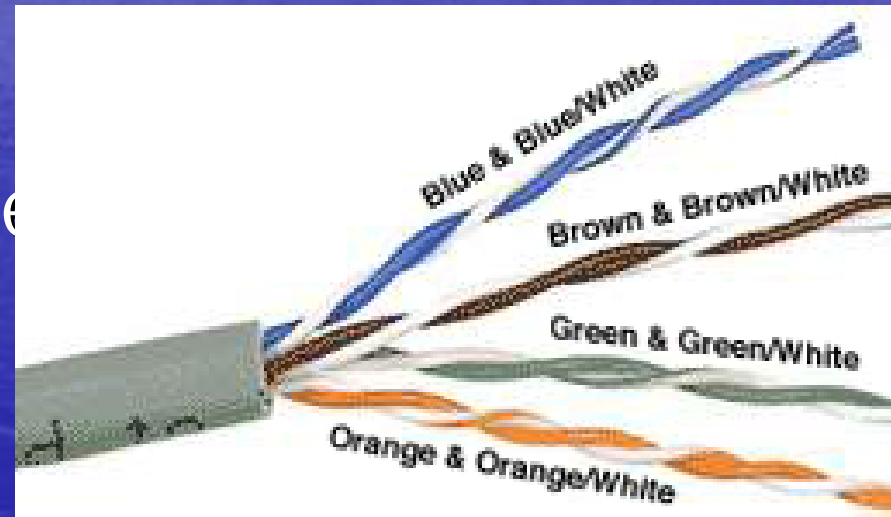
- CAT 5 Cable - bulk Category 5, cable
- RJ45 Ends
- Crimper for RJ45
- Wire Cutters - to cut and strip the cable if necessary
- Cable Tester

What is an Ethernet cable?

- Inside the cable, there are 8 color coded wires.
- Wires are twisted into 4 pairs of wires, each pair has a common color theme. One wire in the pair being a solid or primarily solid colored wire and the other being a primarily white wire with a colored stripe.

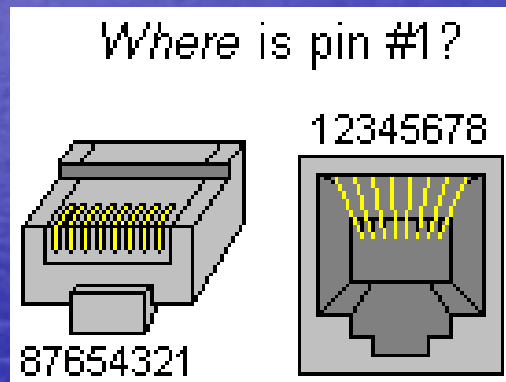
Internal Cable Structure and Color Coding

- Orange / Orange-white
- Green / Green-white
- Blue / Blue-white
- Brown / Brown-white



About the RJ45 Ends:

- The RJ45 end is a 8-position modular connector



RJ45 Jack and Plug Pinout

Ethernet Cable Pin outs:

- **A straight through cable**
 - used to connect to a hub or switch, and
- **A cross over cable**
 - used to operate in a peer-to-peer fashion without a hub/switch.

Standard, Straight-Through Wiring (both ends are the same):

RJ45 Pin #	Wire Color	Wire Diagram	10Base-T Signal 100Base-TX Signal	1000Base-T Signal
1	White/Green		Transmit+	BI_DA+
2	Green		Transmit-	BI_DA-
3	White/Orange		Receive+	BI_DB+
4	Blue		Unused	BI_DC+
5	White/Blue		Unused	BI_DC-
6	Orange		Receive-	BI_DB-
7	White/Brown		Unused	BI_DD+
8	Brown		Unused	BI_DD-

Cross Over Cable

RJ45 Pin # (End 1)	Wire Color	Wire Diagram	RJ45 Pin# (End 2)	Wire Color	Wire Diagram
1	White/Orang		1	White/Green	
2	Orange		2	Green	
3	White/Green		3	White/Orang	
4	Blue		4	White/Brown	
5	White/Blue		5	Brown	
6	Green		6	Orange	
7	White/Brown		7	Blue	
8	Brown		8	White/Blue	

How to wire Ethernet Cables:

1. Strip off about 2 inches of the cable sheath.
2. Untwist the pairs - don't untwist them beyond what you have exposed
3. Align the colored wires according to the diagrams above.
4. Trim all the wires to the same length, about 1/2" to 3/4" left exposed from the sheath.

How to wire Ethernet Cables:

5. Insert the wires into the RJ45 end - make sure each wire is fully inserted to the front of the RJ45 end and in the correct order.
6. Verify the wires ended up the right order and that the wires extend to the front of the RJ45 end and make good contact with the metal contacts in the RJ45 end.
7. Crimp the RJ45 end with the crimper tool

How to wire Ethernet Cables:

8. Cut the cable to length - make sure it is more than long enough for your needs
9. Repeat the above steps for the second RJ45 end.
10. Use a cable tester to verify the proper connectivity of the cable.

The background is a vertical gradient of blue, transitioning from a lighter, hazy blue at the top to a deeper, more saturated blue at the bottom. A thin, bright white line representing a horizon is visible in the upper third of the image. Above the horizon, there are faint, wispy white clouds. The overall effect is a calm, serene sky over a vast body of water.

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