LAN Cabling

Making connections with CAT5e

Overview

- What cable types are available?
- How do cables work?
- How are cables used in networking?
- How are connections made?

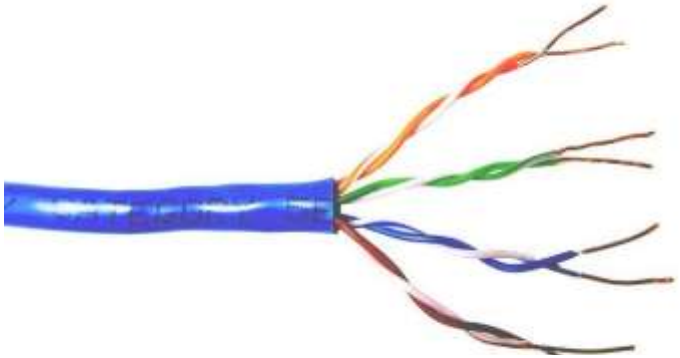
Learning Objectives

- List common cable types used in networking
- Describe how UTP cables are made
- Explain how UTP cables are used in Ethernet networks
- Demonstrate the ability to make a working patch cable
- Name the two wiring standards used for wired Ethernet networks and their uses

Common network cable types

- Coaxial cable

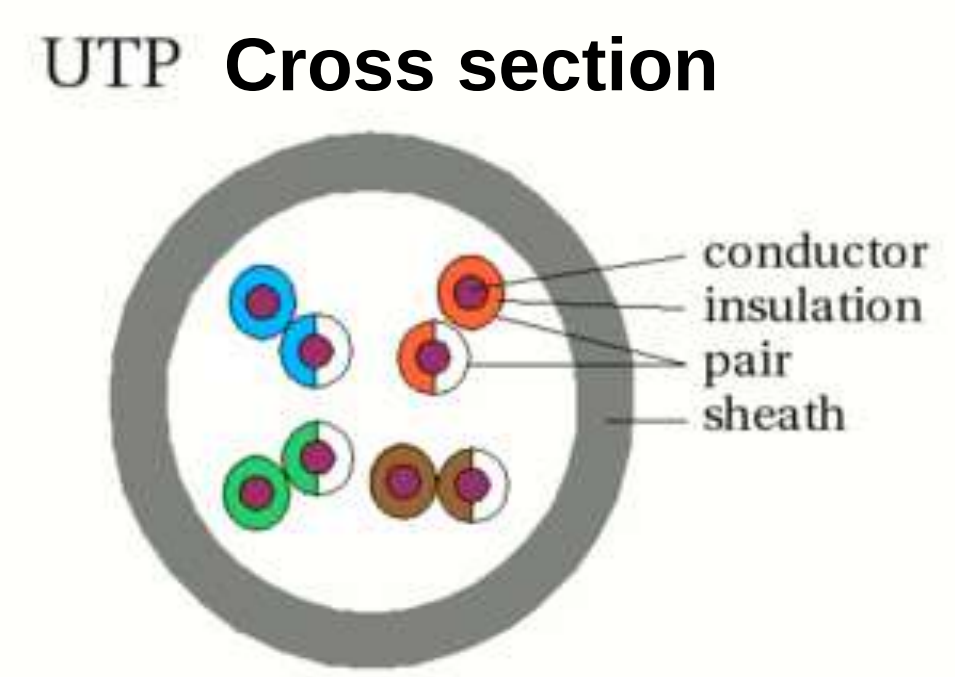
- Unshielded twisted pair



- Fiber optic

UTP characteristics

- Unshielded
- Twisted (why?) pairs of insulated conductors
- Covered by insulating sheath



UTP categories

Category 1	Voice only (Telephone)
Category 2	Data to 4 Mbps (Localtalk)
Category 3	Data to 10Mbps (Ethernet)
Category 4	Data to 20Mbps (Token ring)
Category 5	Data to 100Mbps (Fast Ethernet)
Category 5e	Data to 1000Mbps (Gigabit Ethernet)
Category 6	Data to 2500Mbps (Gigabit Ethernet)

Cat 6 cable

- 1000Mbps data capacity
- For runs of up to 90 meters
- Solid core cable ideal for structural installations (PVC or Plenum)
- Stranded cable ideal for patch cables
- Terminated with RJ-45 connectors

Tools for patch cable

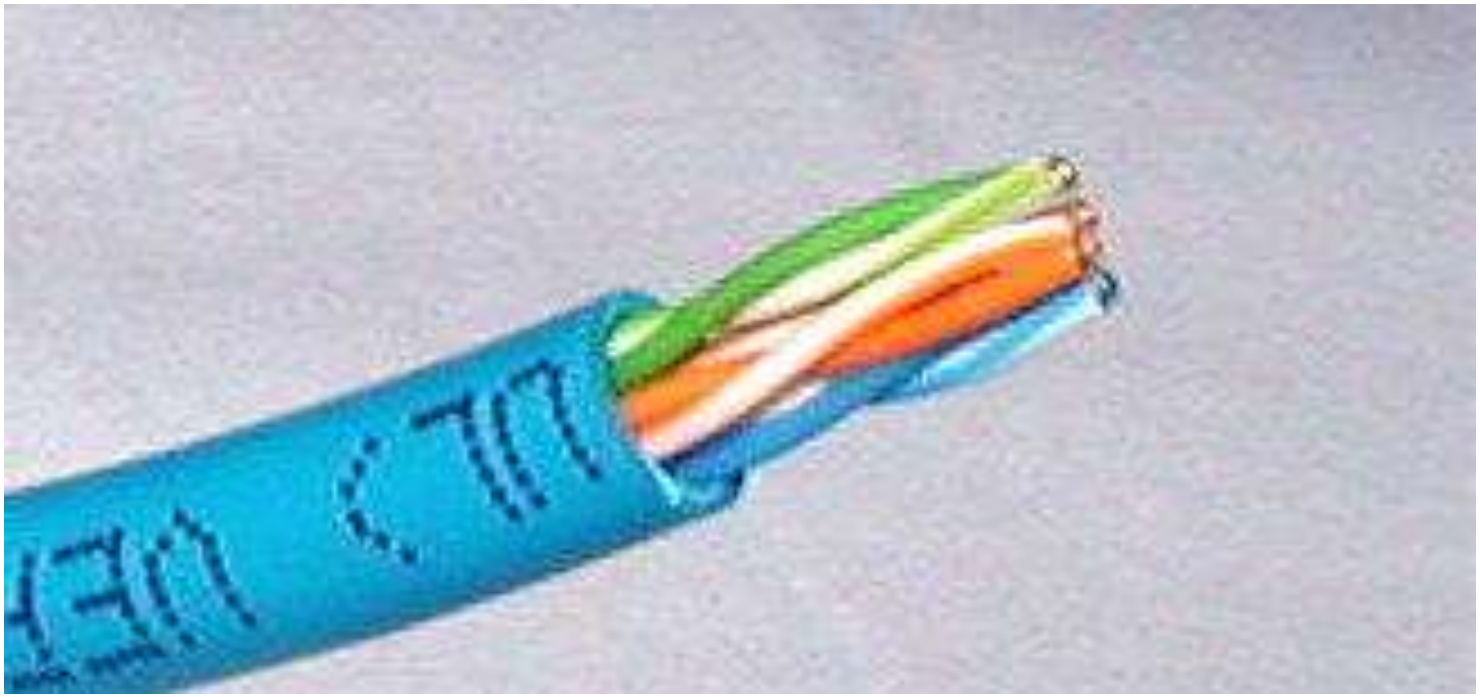
1. UTP Cable Stripper
2. RJ45 plug.
3. Serrated Snips. (optional)
4. Cable Crimper
5. Ethernet Cable Tester
6. Scissors

Making connections - Steps

1. Strip cable end
2. Untwist wire ends
3. Arrange wires
4. Trim wires to size
5. Attach connector
6. Check
7. Crimp
8. Test

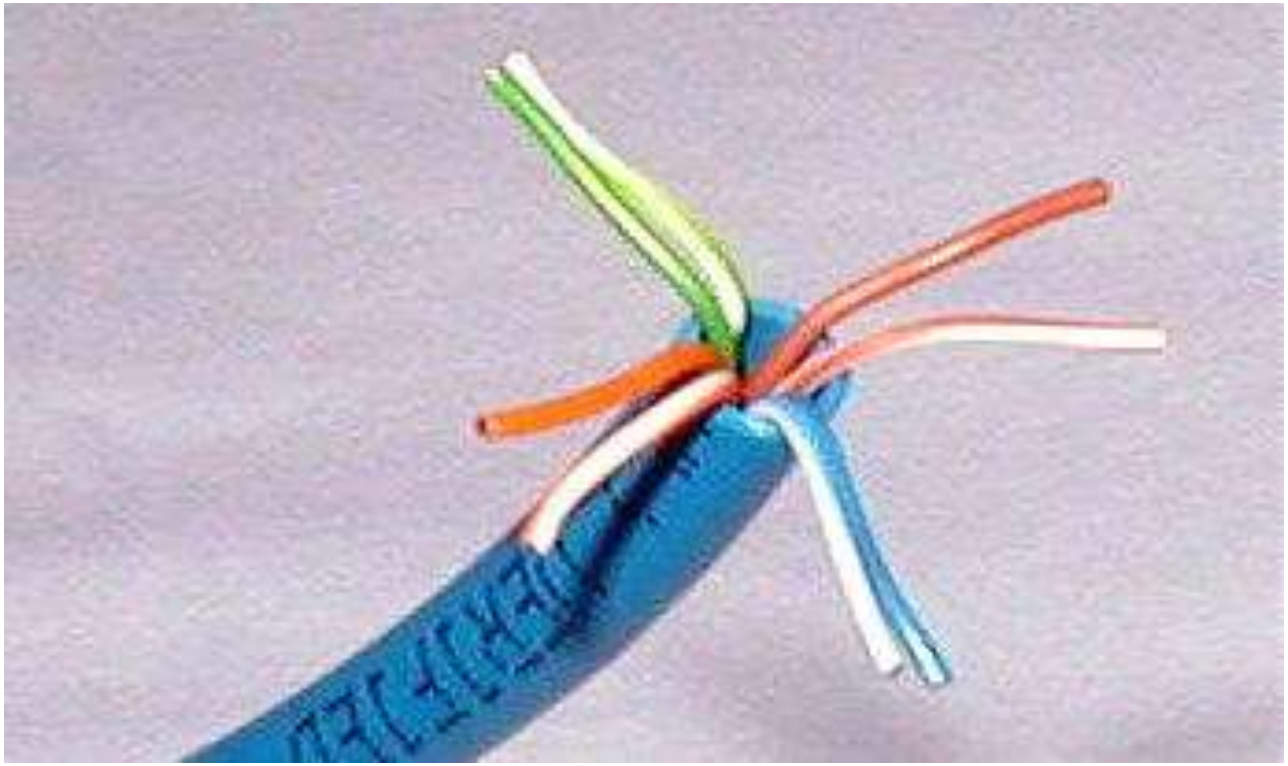
Step 1 – Strip cable end

- Strip 1 – 1½” of insulating sheath
- Avoid cutting into conductor insulation



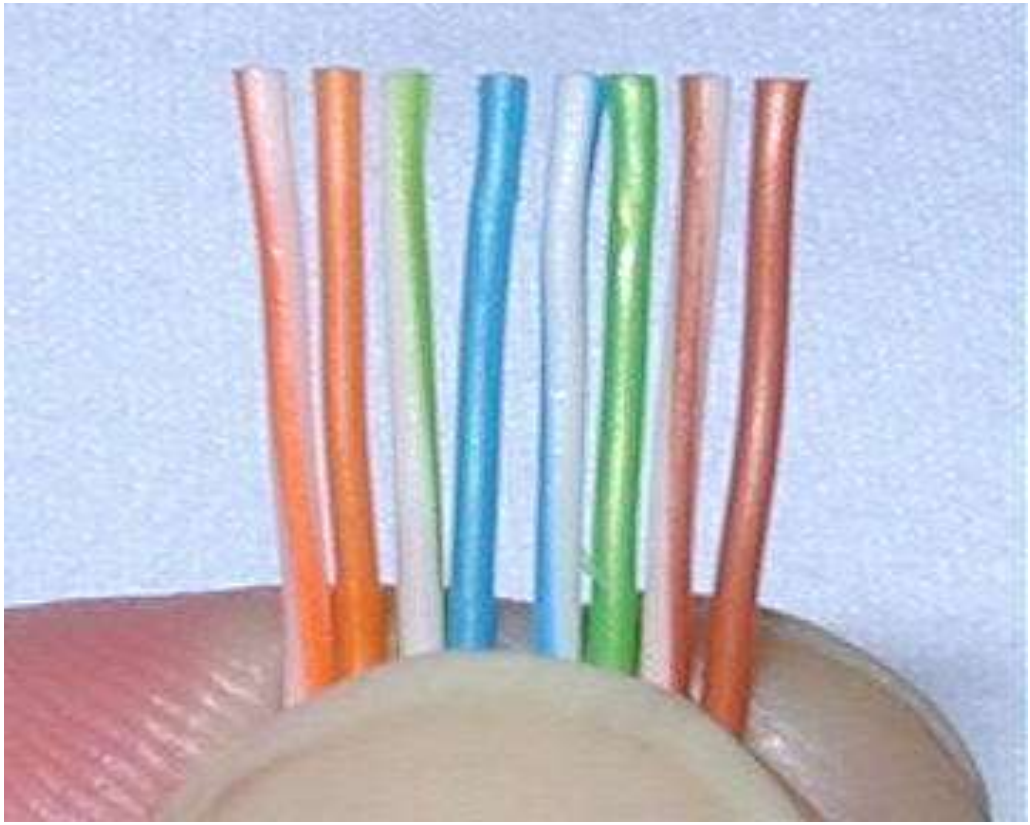
Step 2 – Untwist wire ends

- Sort wires by insulation colors



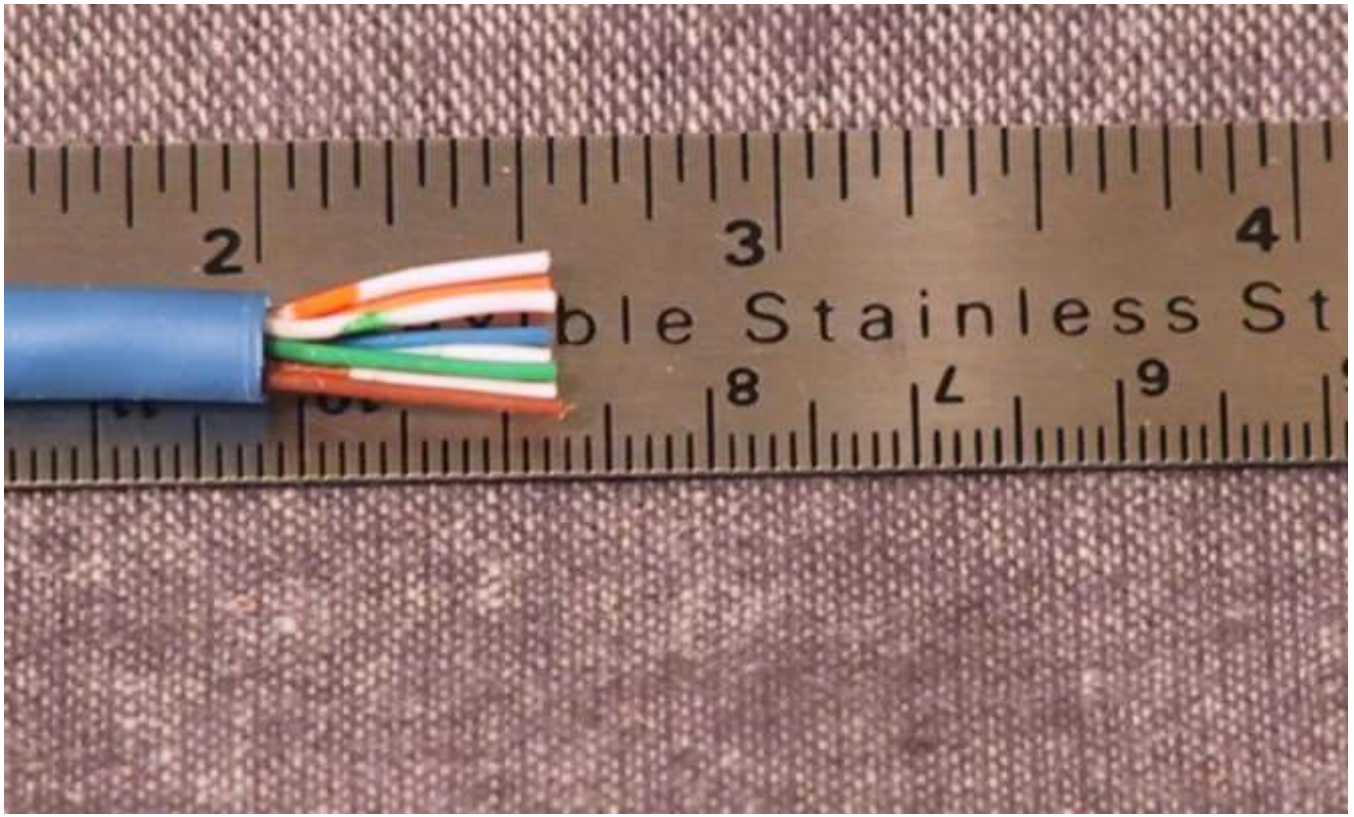
Step 3 – Arrange wires

- TIA/EIA 568A: GW-G OW-Bl BlW-O BrW-Br
- TIA/EIA 568B: OW-O GW-Bl BlW-G BrW-Br



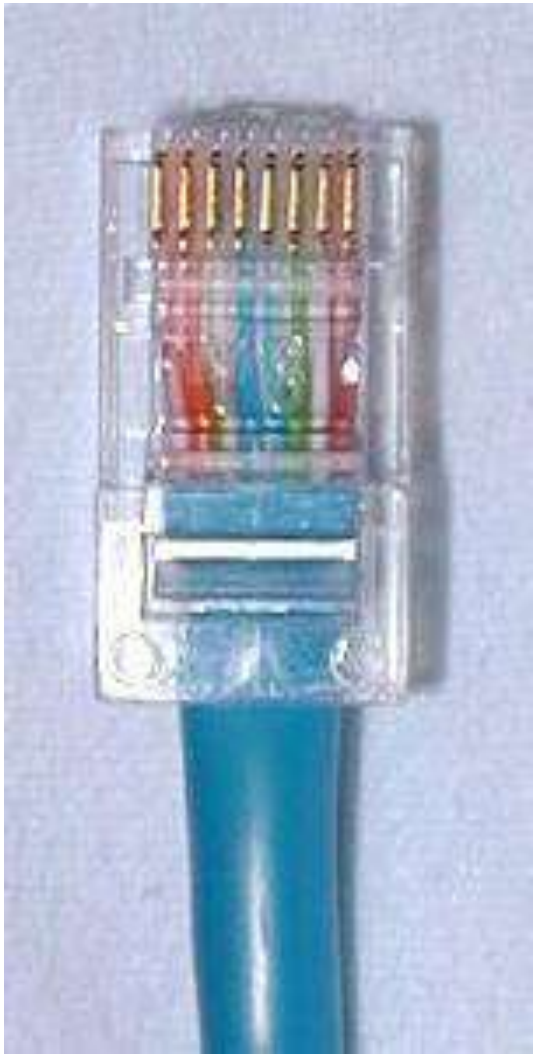
Step 4 – Trim wires to size

- Trim all wires evenly
- Leave about ½” of wires exposed



Step 5 – Attach connector

- Maintain wire order, left-to-right, with RJ45 tab facing downward

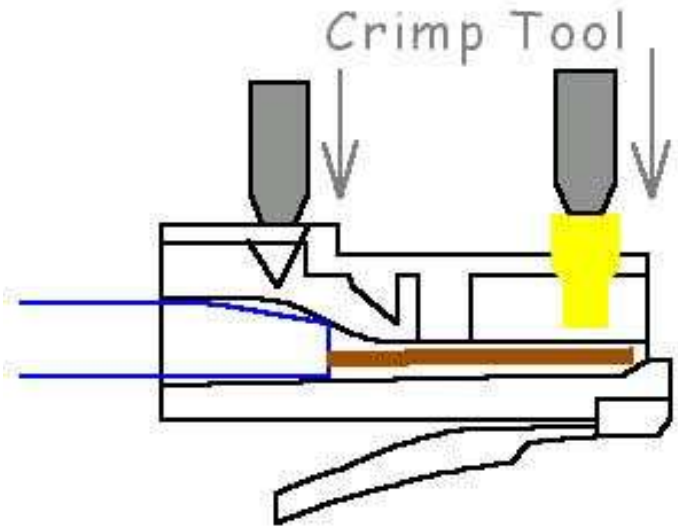


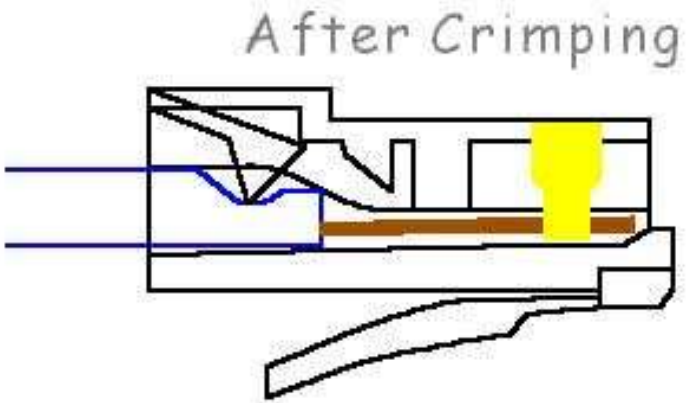
Step 6 - Check

- Do all wires extend to end?
- Is sheath well inside connector?

Step 7 - Crimp

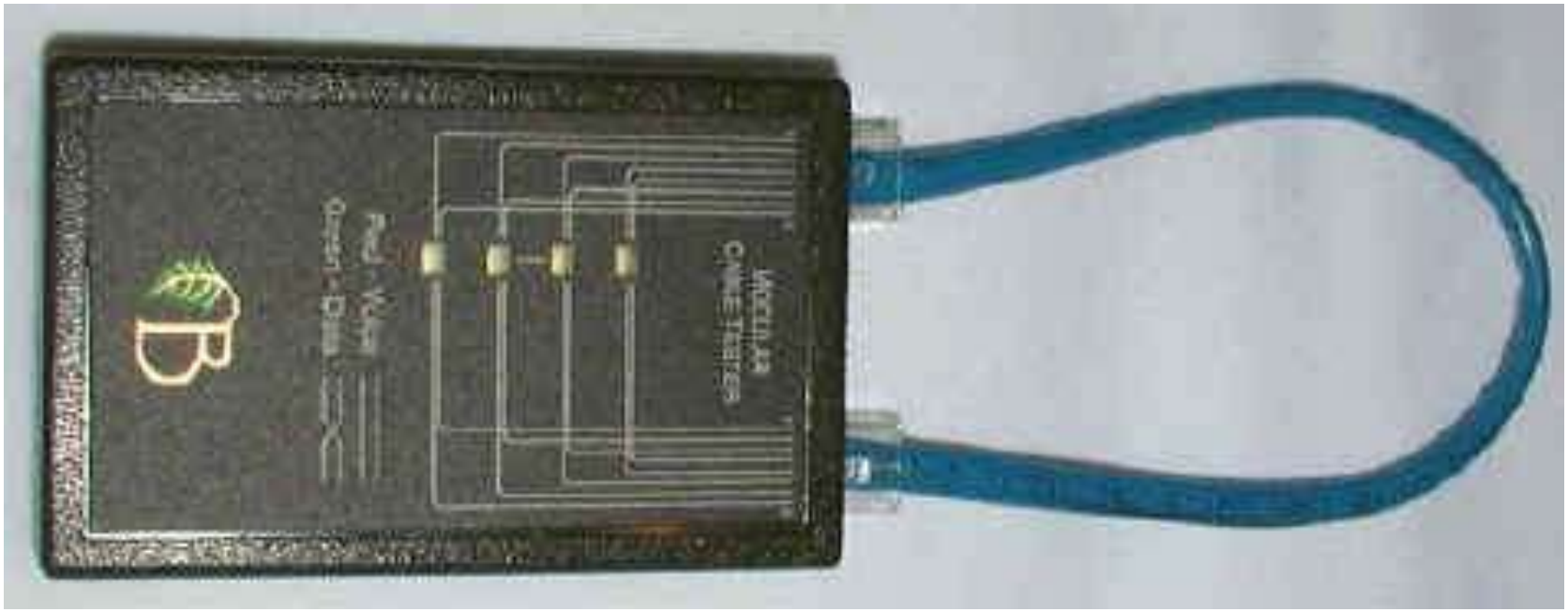
- Squeeze firmly to crimp connecter onto cable end (8P)





Step 8 – Test

- Does the cable work?



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