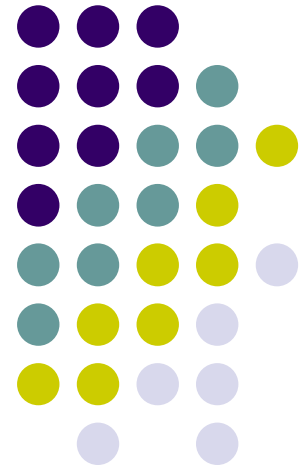
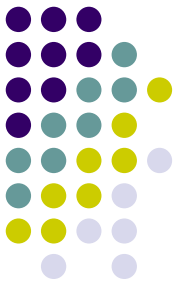


Network Cabling

Making connections with Cat5

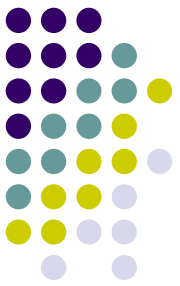
Way cool!





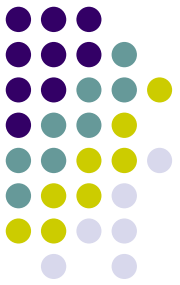
Overview

- 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

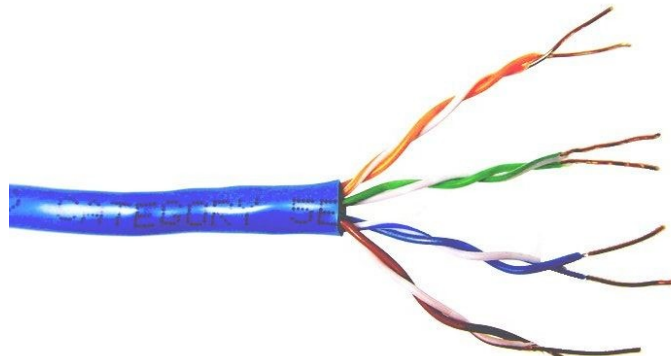


Common network cable types

- Coaxial cable

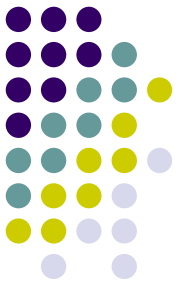


- Unshielded twisted pair



- Fiber optic

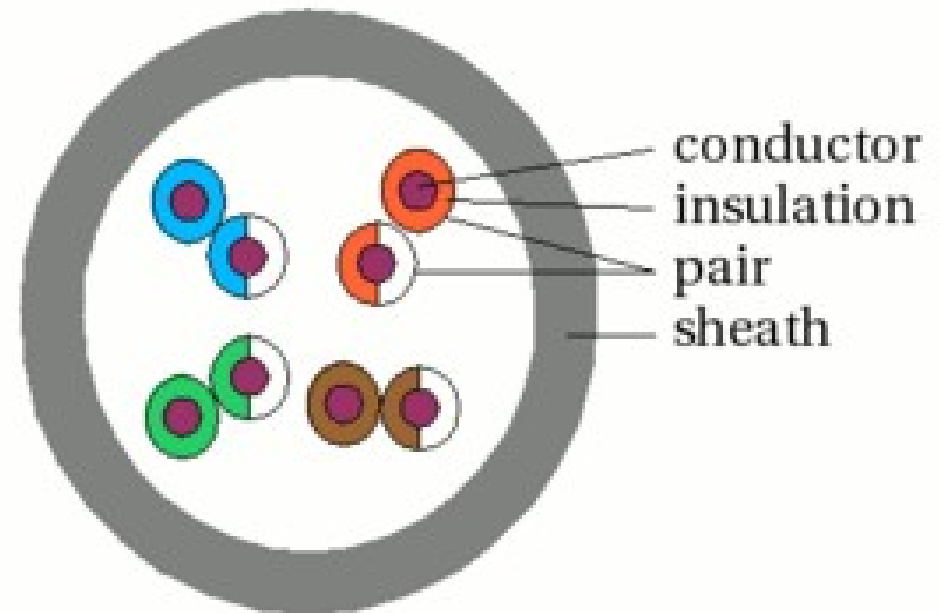


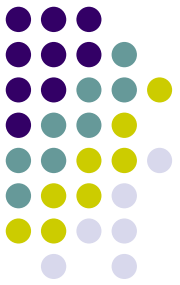


UTP characteristics

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

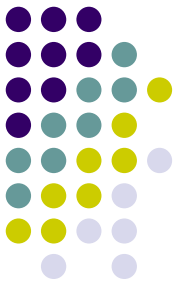
UTP





UTP categories

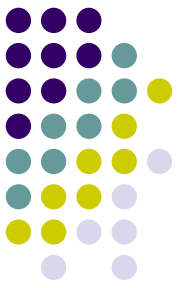
| | |
|-------------|-------------------------------------|
| Category 1 | Voice only (Telephone) |
| Category 2 | Data to 4 Mbps (Localtalk) |
| Category 3 | Data to 10Mbps (Ethernet) |
| Category 4 | Data to 20Mbps (Token ring) |
| Category 5 | Data to 100Mbps (Fast Ethernet) |
| Category 5e | Data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

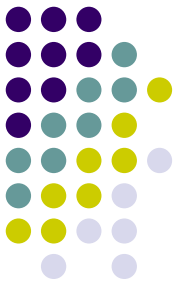


Cat5e cable

- 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

RJ45 connector

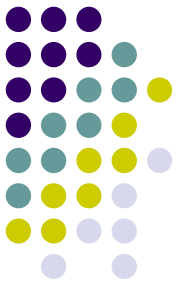




Making connections - Tools

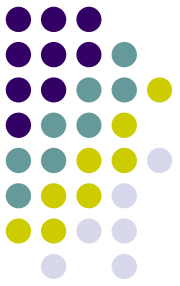
- Cat5e cable
- RJ45 connectors
- Cable stripper
- Scissors
- Crimping tool





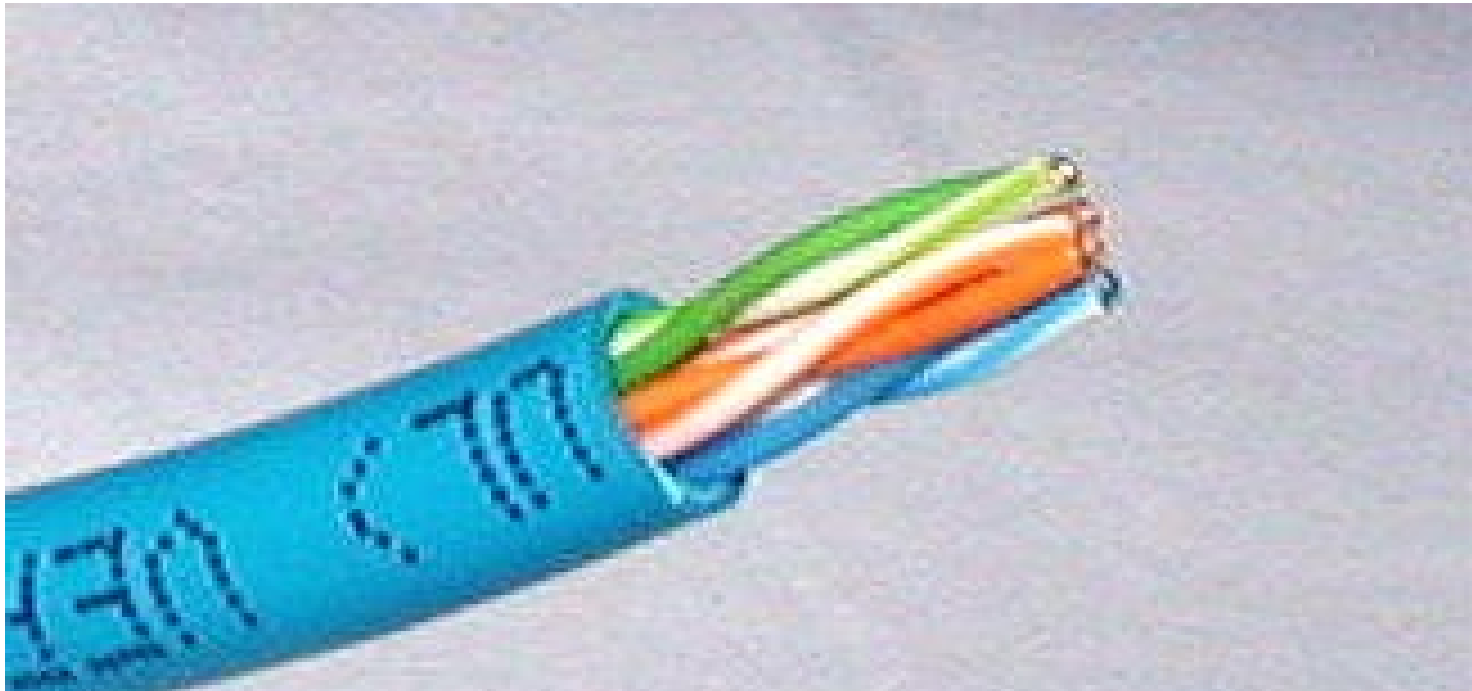
Making connections - Steps

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



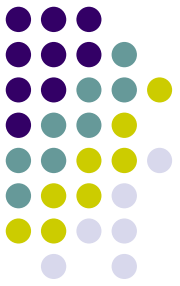
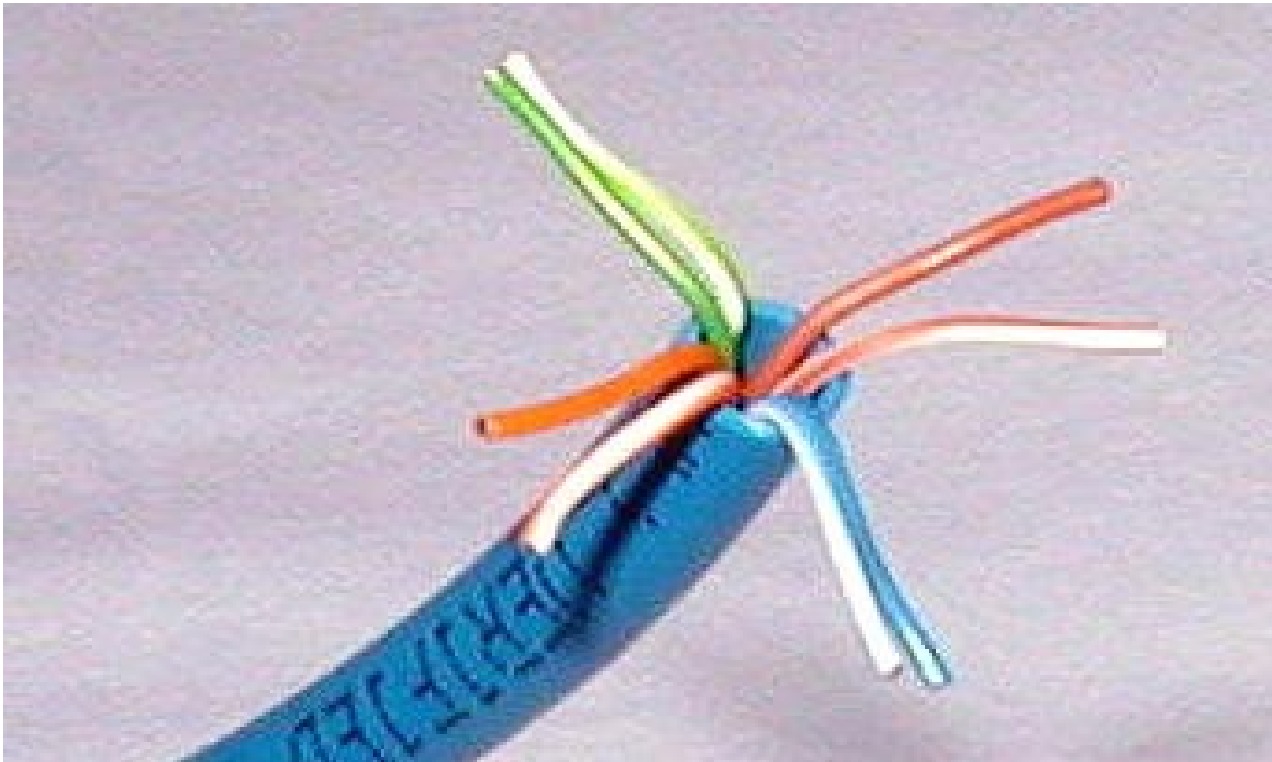
Step 1 – Strip cable end

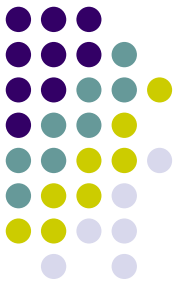
- Strip 1 – 1½” of insulating sheath
- Avoid cutting into conductor insulation



Step 2 – Untwist wire ends

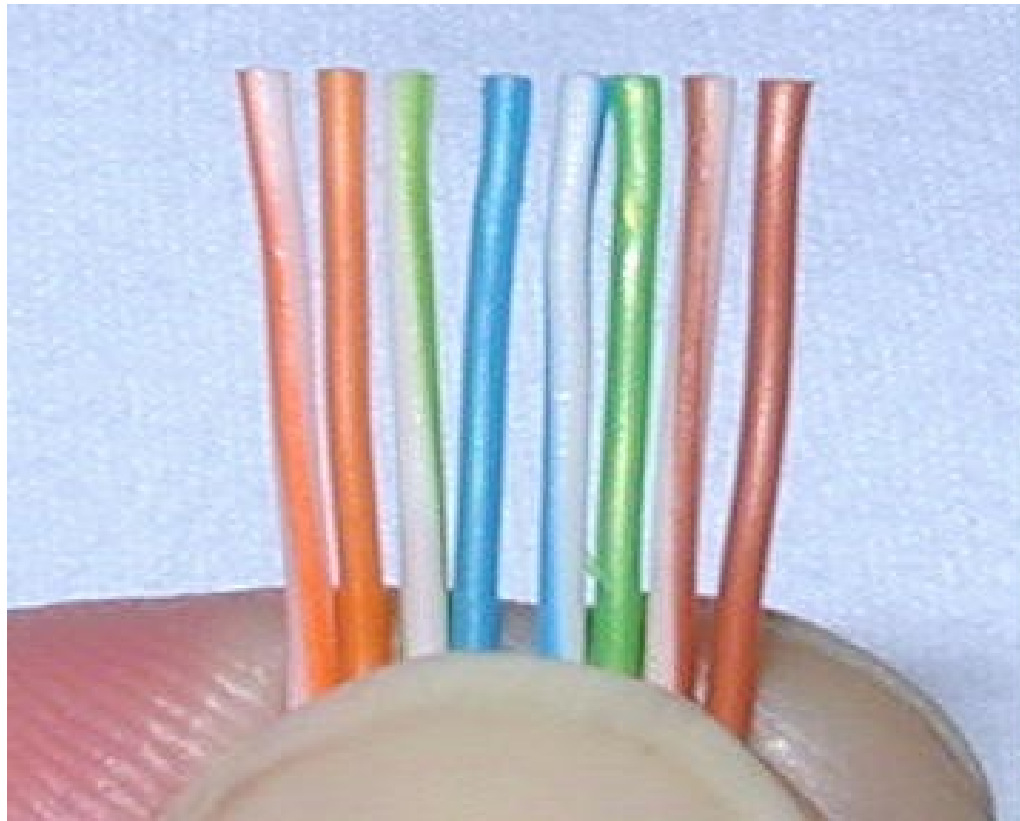
- Sort wires by insulation colors

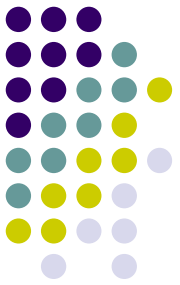




Step 3 – Arrange wires

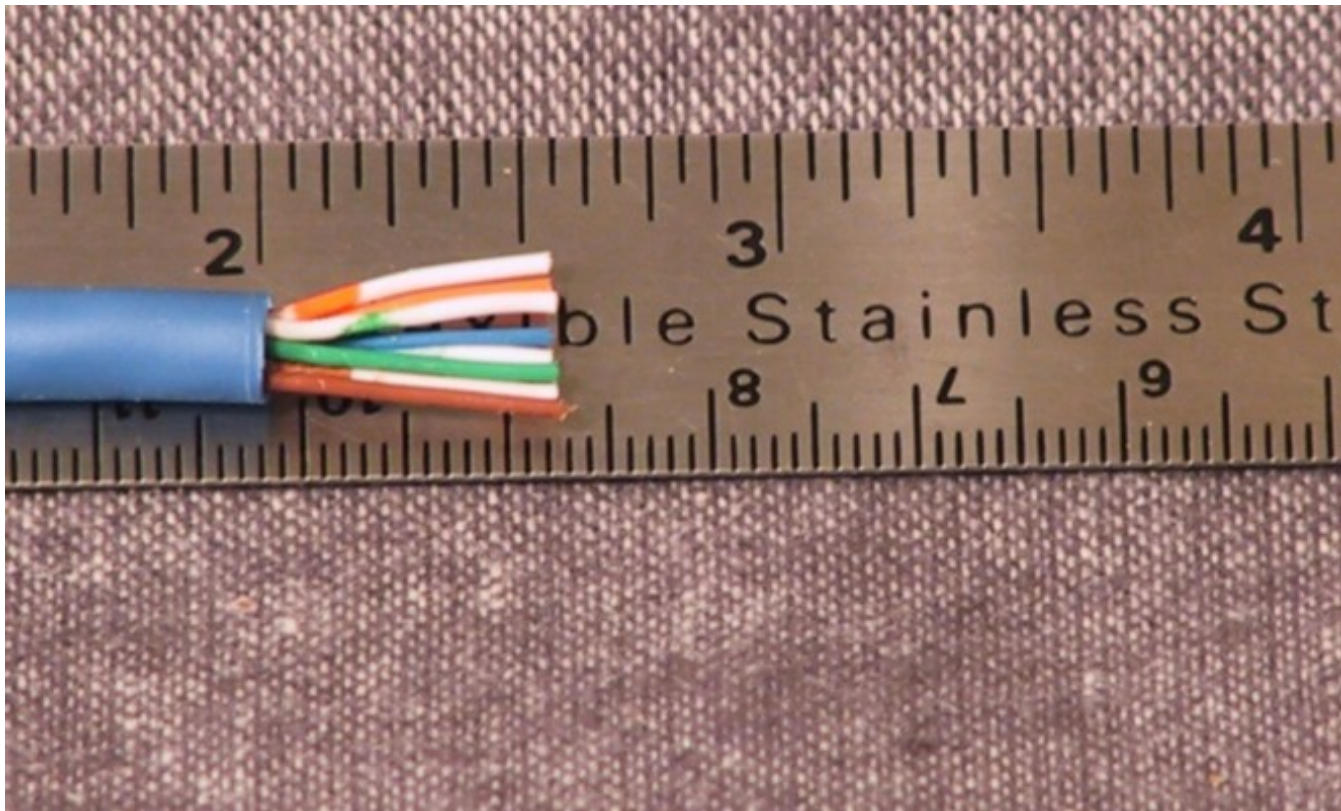
- TIA/EIA 568A: GW-G OW-BI BIW-O BrW-Br
- TIA/EIA 568B: OW-O GW-BI BIW-G BrW-Br





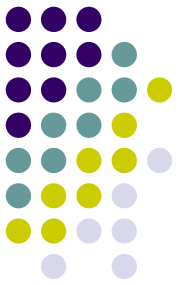
Step 4 – Trim wires to size

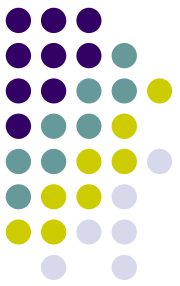
- Trim all wires evenly
- Leave about 1/2" of wires exposed



Step 5 – Attach connector

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

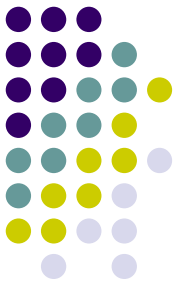




Step 6 - Check

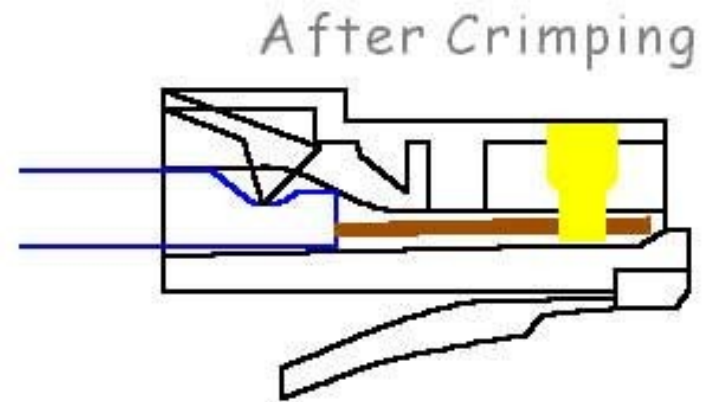
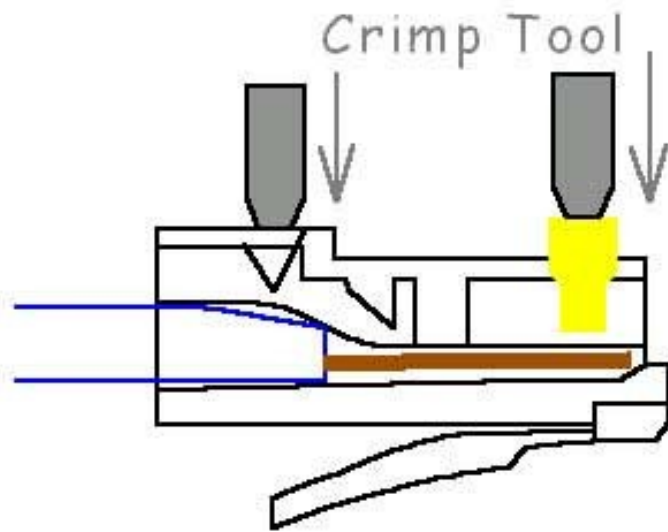
- Do all wires extend to end?
- Is sheath well inside connector?

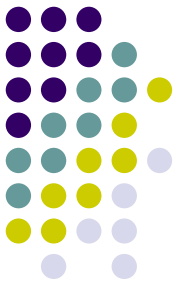




Step 7 - Crimp

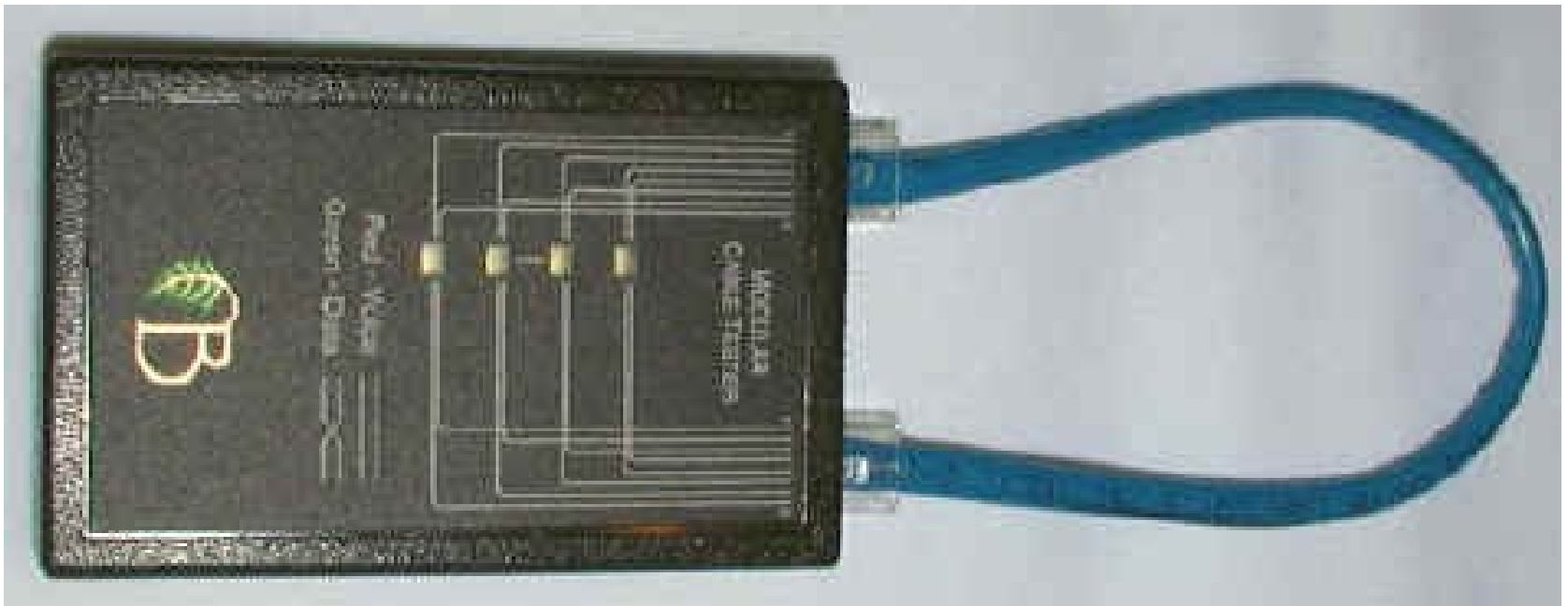
- Squeeze firmly to crimp connector onto cable end (8P)





Step 8 – Test

- Does the cable work?



Let's go to work!

