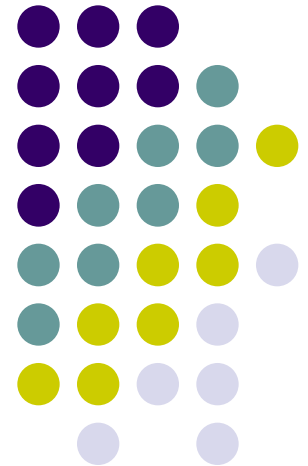


Network Cabling

Making connections with Cat5

Way cool!





Overview

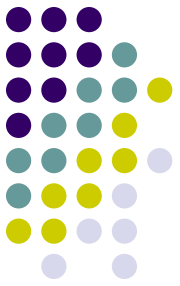
- What cable types are available?
- How do cables work?
- How are cables used in networking?
- How are connections made?



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

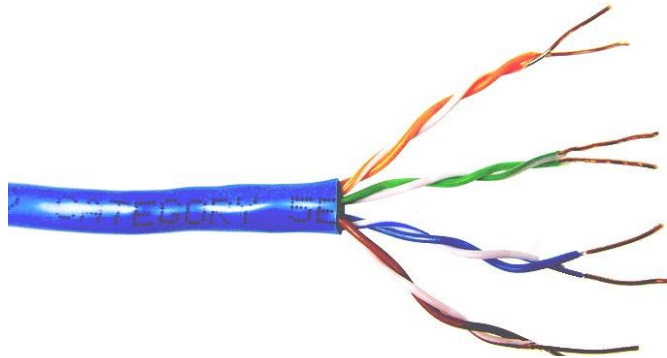
Common network cable types



- Coaxial cable



- Unshielded twisted pair



- Fiber optic

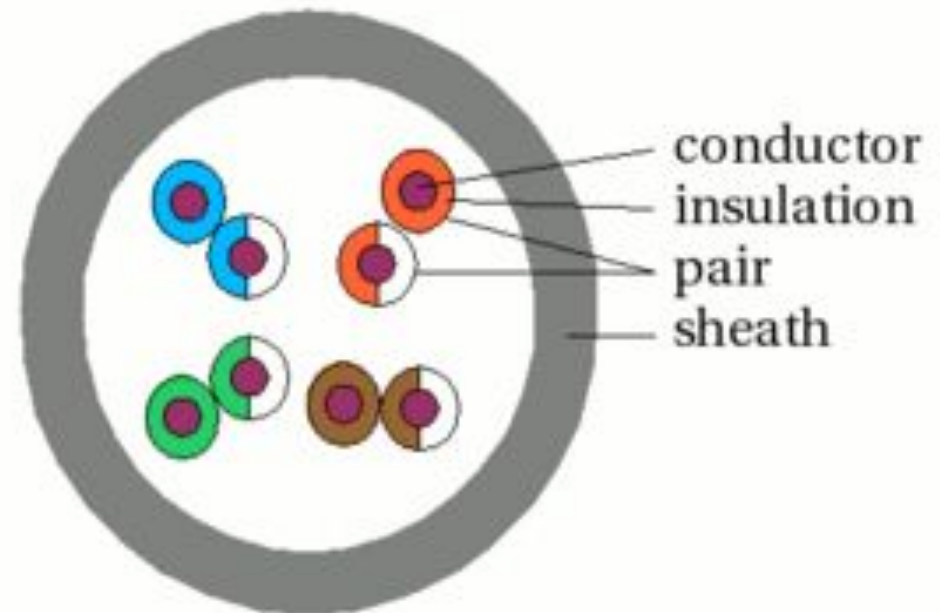


UTP characteristics



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

UTP





UTP categories

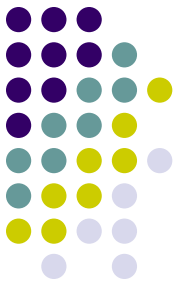
| | |
|-------------|-------------------------------------|
| Category 1 | Voice only (Telephone) |
| Category 2 | Data to 4 Mbps (Localtalk) |
| Category 3 | Data to 10Mbps (Ethernet) |
| Category 4 | Data to 20Mbps (Token ring) |
| Category 5 | Data to 100Mbps (Fast Ethernet) |
| Category 5e | Data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



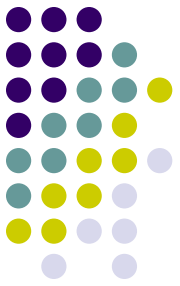
Making connections - Tools



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

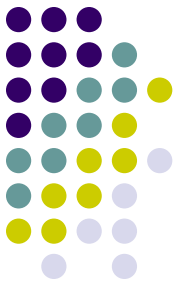


Making connections - Steps

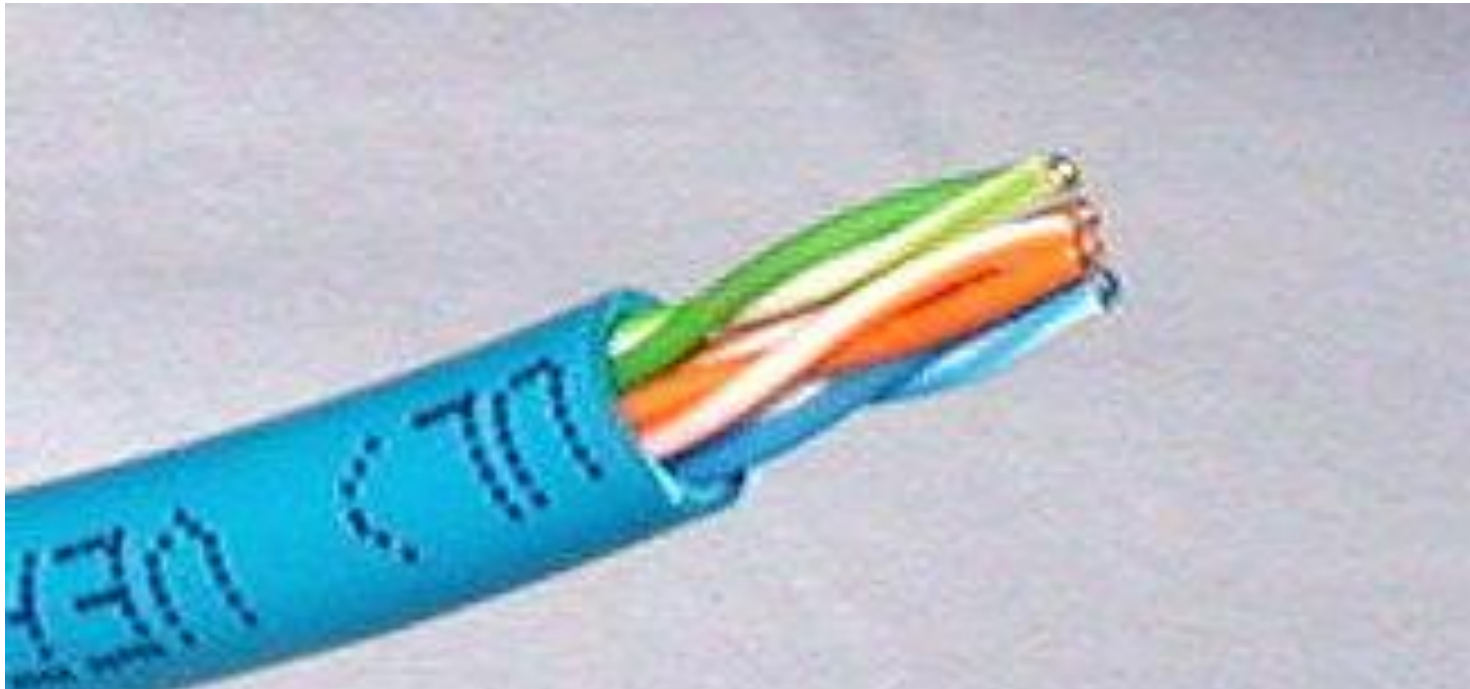


1. Strip cable end
2. Untwist wire ends
3. Arrange wires
4. Trim wires to size
5. Attach connector
6. Check
7. Crimp
8. Test

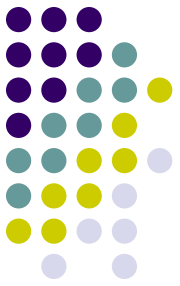
Step 1 – Strip cable end



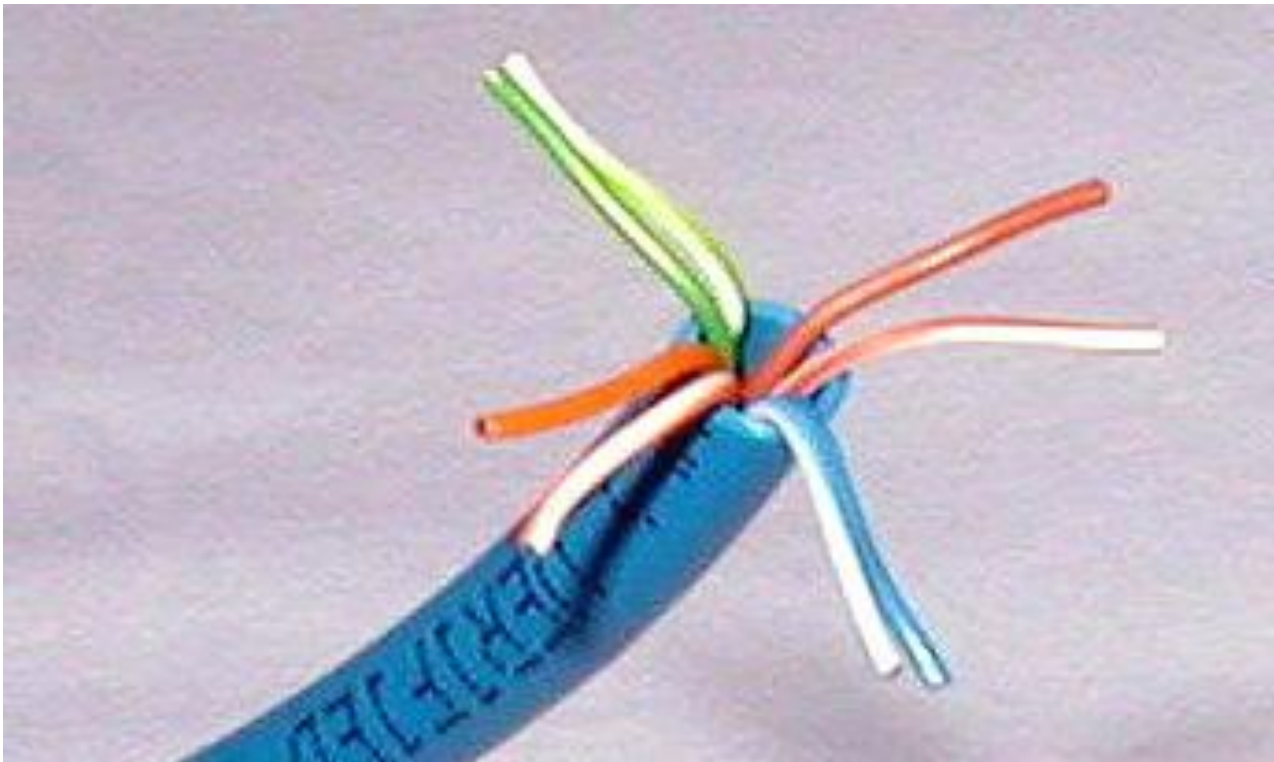
- Strip 1 – 1½” of insulating sheath
- Avoid cutting into conductor insulation



Step 2 – Untwist wire ends



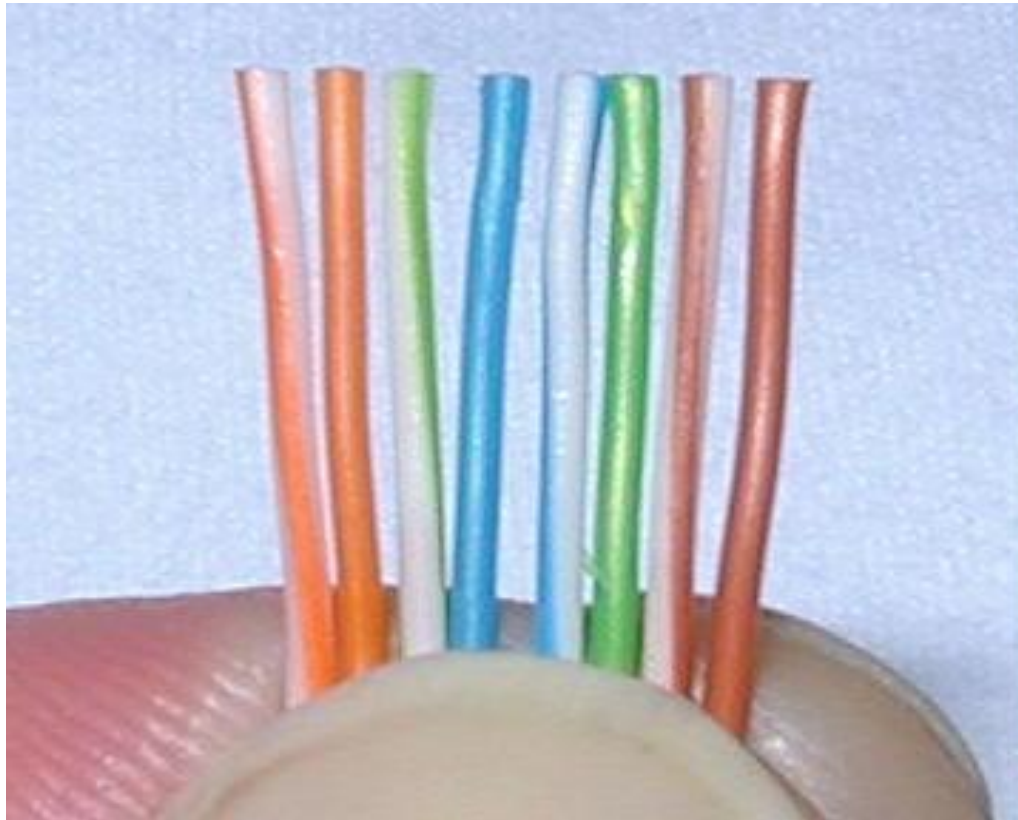
- Sort wires by insulation colors



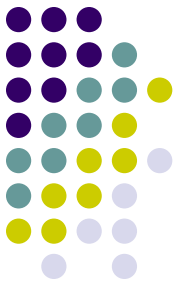
Step 3 – Arrange wires



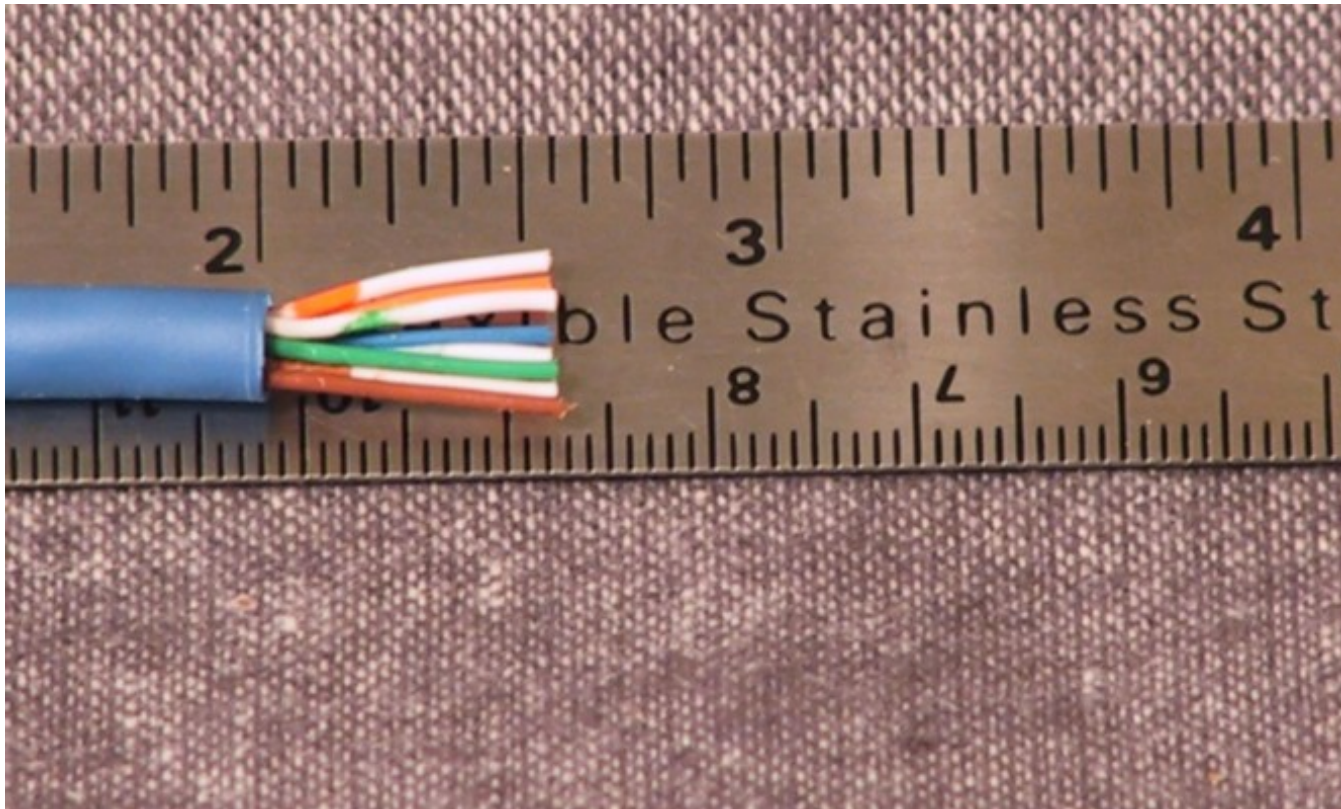
- TIA/EIA 568A: GW-G OW-BI BIW-O BrW-Br
- TIA/EIA 568B: OW-O GW-BI BIW-G BrW-Br



Step 4 – Trim wires to size



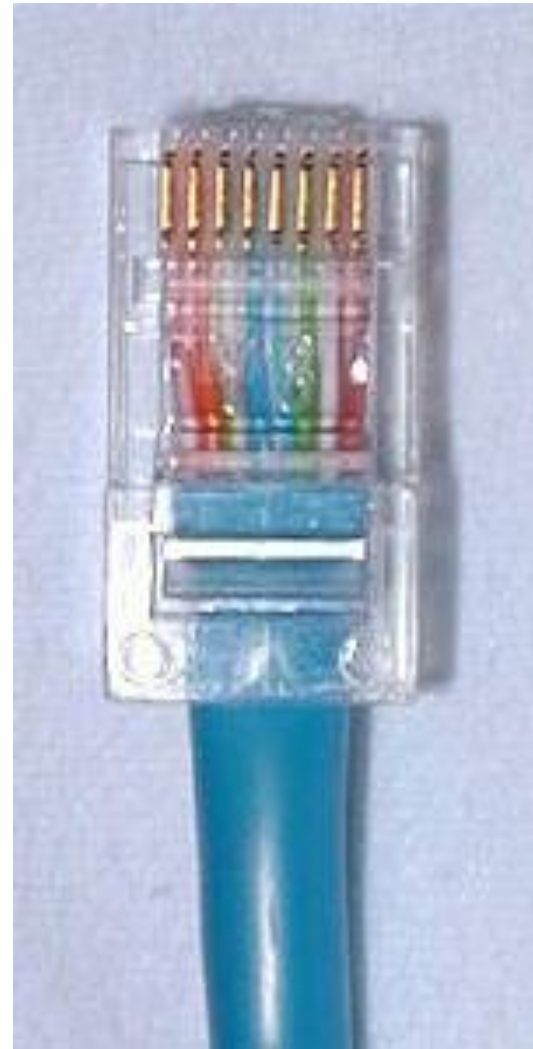
- Trim all wires evenly
- Leave about $\frac{1}{2}$ " of wires exposed



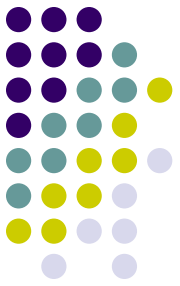
Step 5 – Attach connector



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



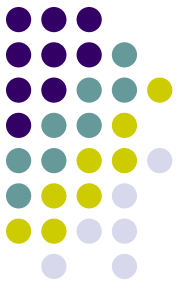
Step 6 - Check



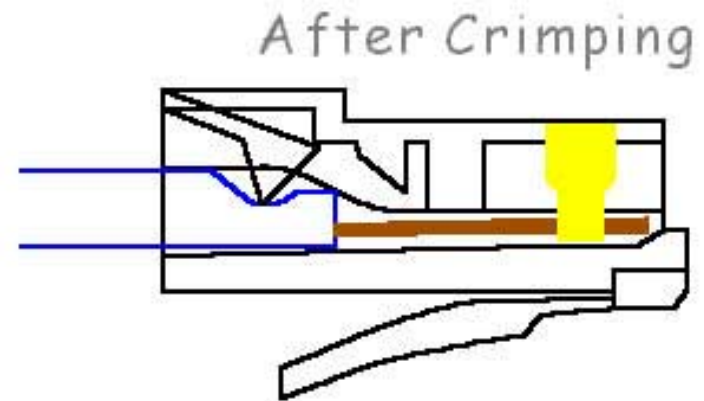
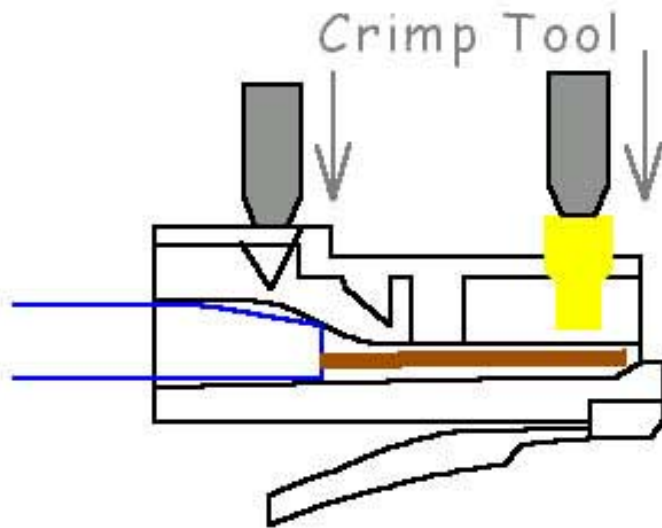
- Do all wires extend to end?
- Is sheath well inside connector?



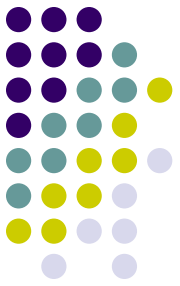
Step 7 - Crimp



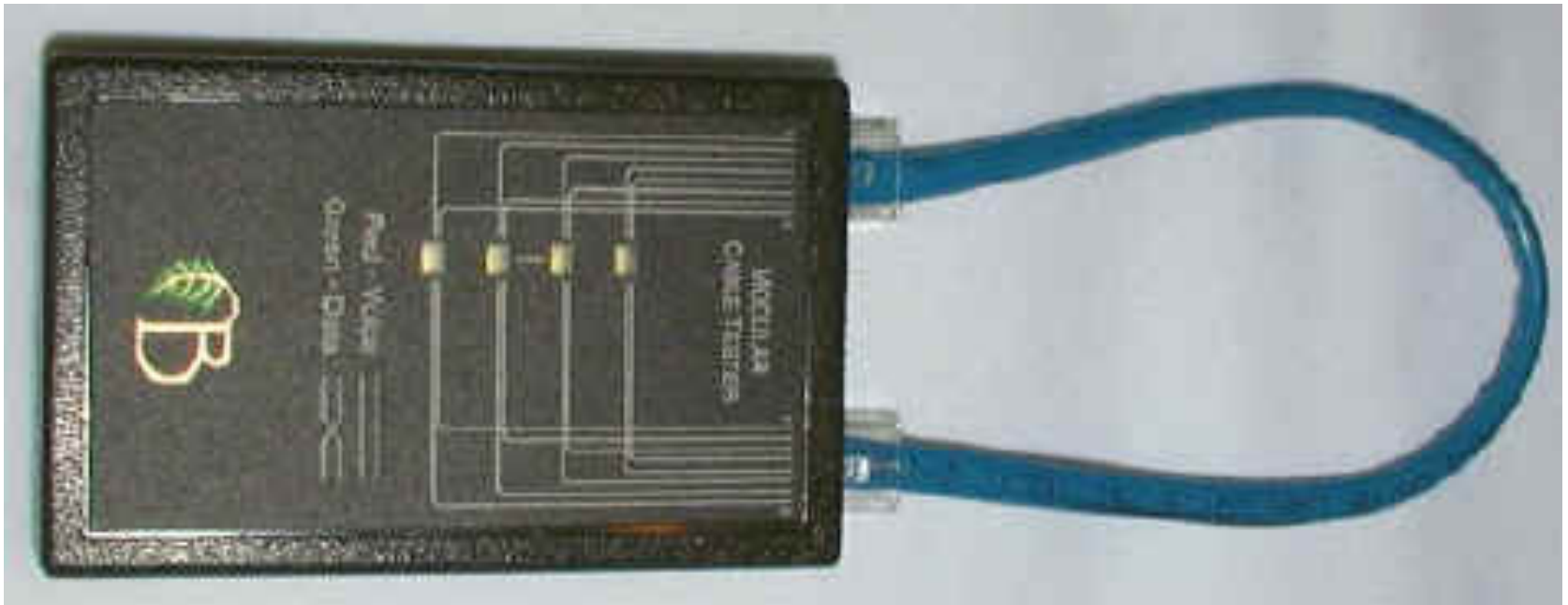
- Squeeze firmly to crimp connector onto cable end (8P)



Step 8 – Test



- Does the cable work?



Let's go to work!

