

Curriculum Development  
Centers Program

Awardee of The Office of the National Coordinator for  
Health Information Technology

## Component 9 – Networking and Health Information Exchange

### Unit 2-2 Network Media and Hardware Communication Devices

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number 1U24CC000024.

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## Considerations When Selecting Media

- Throughput
- Cost
  - Installation
  - Maintenance
  - Lower transmission rate
- Distance
- Size/Scalability
- Noise immunity
- Security

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## Coaxial Cable

plastic jacket  
dielectric insulator  
metallic shield  
centre core

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## Bayonet Neill-Concelman (BNC) Connector



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## Twisted-Pair (TP) Cable



Unshielded Twisted-Pair (UTP)

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## Shielded Twisted-Pair (STP)



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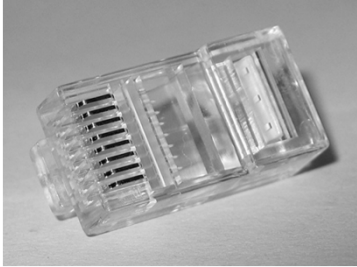
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## RJ-45



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## T568A & T568B Standards

Pin	T568A	T568B
1	White/Green	White/Orange
2	Green	Orange
3	White/Orange	White/Green
4	Blue	Blue
5	White/Blue	White/Blue
6	Orange	Green
7	White/Brown	White/Brown
8	Brown	Brown

For Twisted Pair Cabling

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## Type of Cables for Connecting Devices

### Straight-through

- Both ends the same, either T568A or T568B
- Connect dissimilar devices

### Cross-over

- One end T568A and other end T568B
- Connect similar devices

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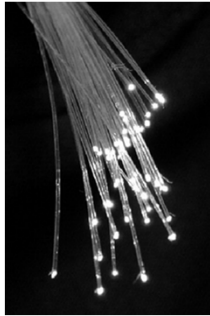
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## Fiber Optic Cable



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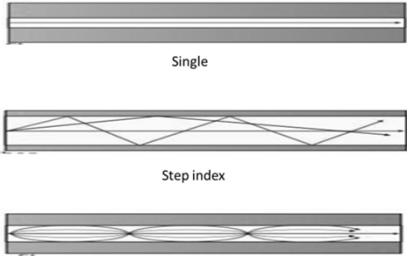
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## Single mode vs. Multimode



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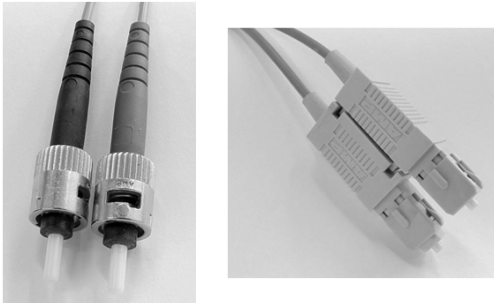
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## Fiber Connectors



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TIA/EIA Structured Cabling System

Six Subsystems of a Structured Cabling System

1. Building Entrance
2. Equipment Room
3. Backbone Cabling
4. Telecommunications Closet
5. Horizontal Cabling
6. Work Area

Source: <http://www.connsolutions.com/TIA.html>

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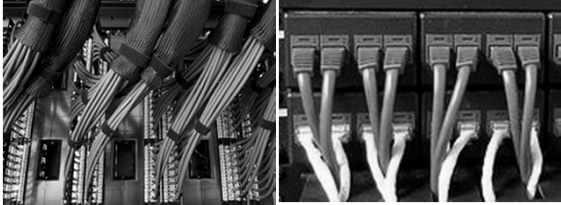
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Equipment Room



Punch-down block Patch panel with patch cables

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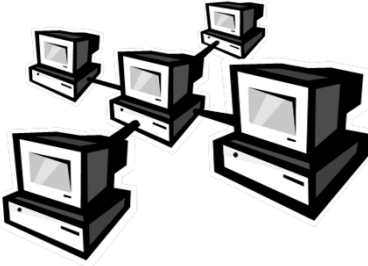
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Backbone Cabling



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## Horizontal Wiring



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## Work Area Outlet



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## Wireless

- Radio frequency (RF)
- Infrared transmission
  - Direct
  - Indirect

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# Wireless LAN (Wi-Fi)

## 802.11x standards

	802.11a	802.11b	802.11g	802.11n
Frequency	5 GHz	2.4 GHz		2.5/5 GHz
Bandwidth	54 Mbps	11 Mbps	54 Mbps	up to 600 Mbps

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