

# COMPUTER NETWORK

## PLANNING & CABLING a NETWORK

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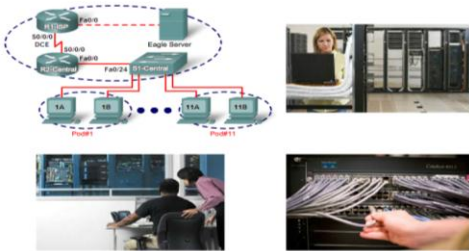
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# COMPUTER NETWORK

Planning & Cabling a Network



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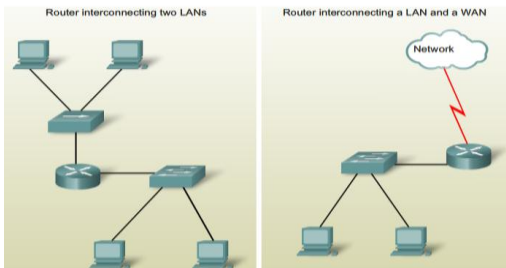
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# COMPUTER NETWORK

Internetwork Connections with a Router



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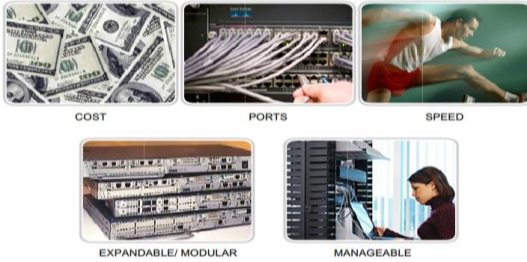
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# COMPUTER NETWORK

Factors to Consider in Choosing a Device



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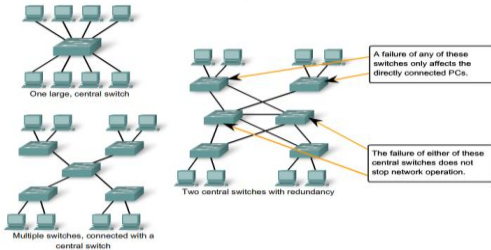
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# COMPUTER NETWORK

## • COST

Factors Determining LAN Switch Selection



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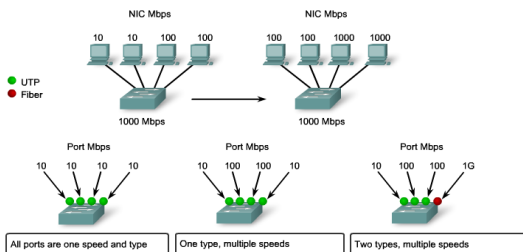
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# COMPUTER NETWORK

## • PORT SPEED, TYPES & EXPANDABILITY



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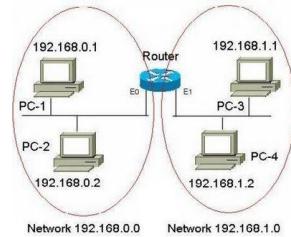
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## COMPUTER NETWORK

### • EXPANDABILITY

#### ROUTER Expand Network

**router is a device that forwards data packets between computer networks**



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## COMPUTER NETWORK

Types of Device Interconnection

- Bandwidth
- Length
- Mobility
- Cost



Fiber



UTP



Wireless

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Ethernet Type	Bandwidth	Cable Type	Maximum Distance
10Base-T	10Mbps	Cat3/Cat5 UTP	100m
100Base-TX	100Mbps	Cat5 UTP	100m
100Base-TX	200Mbps	Cat5 UTP	100m
100Base-FX	100Mbps	Multi-Mode Fiber	400m
100Base-FX	200Mbps	Multi-Mode Fiber	2Km
1000Base-T	1Gbps	Cat5e UTP	100m
1000Base-TX	1Gbps	Cat6 UTP	100m
1000Base-SX	1Gbps	Multi-Mode Fiber	550m
1000Base-LX	1Gbps	Single Mode Fiber	2Km
10GBASE-T	10Gbps	Cat6a/Cat7 UTP	100m
10GBASE-LX4	10Gbps	Multi-Mode Fiber	100m
10GBASE-LX4	10Gbps	Single Mode Fiber	10Km

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# COMPUTER NETWORK

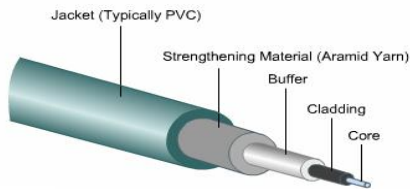
Wireless Fidelity		802.11b	802.11a	802.11g
Wireless Standard		802.11b	802.11a	802.11g
Popularity		Most adopted. Nearly exclusive everywhere.	New technology.	New technology with rapid growth expected.
Speed		Up to 11 Mbps (wireless network speeds typically average no more than 5-6 Mbps)	Up to 6 Mbps (2X greater than 802.11b)	Up to 54 Mbps (5X greater than 802.11b)
Relative Cost		Inexpensive.	Relatively more expensive.	Relatively inexpensive.
Frequency		2.4 GHz	5 GHz	2.4 GHz
Range		Good range. Typically up to 100-150 feet indoors, depending on construction, building materials, room layout.	Shorter range than 802.11b & 802.11g. Typically 20 to 75 feet indoors.	Good range. Typically up to 100-150 feet indoors, depending on construction, building materials, room layout.
Public Access		The number of public "hotspots" is growing rapidly, allowing wireless connectivity in many airports, hotels, college campuses, public areas, and restaurants.	None at this time.	Compatible with current 802.11b networks (at 11 Mbps). Also, it is expected that most 802.11g devices will quickly convert to 802.11g.
Compatibility		OK 802.11b	OK 802.11a	OK 802.11g
		Interoperates with 802.11b or 802.11a	Interoperates with 802.11b or 802.11a	Interoperates with 802.11b networks (at 11 Mbps). Incompatible with 802.11a.

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# COMPUTER NETWORK

## FIBER OPTIC CABLE

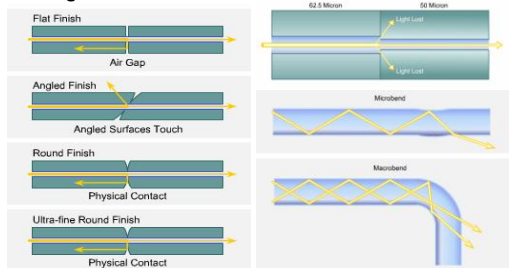


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# COMPUTER NETWORK

## FO leakage

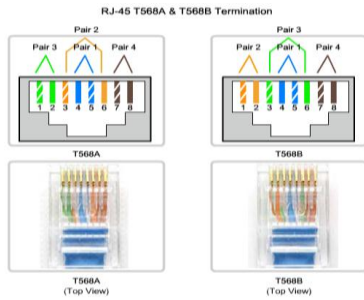


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# COMPUTER NETWORK

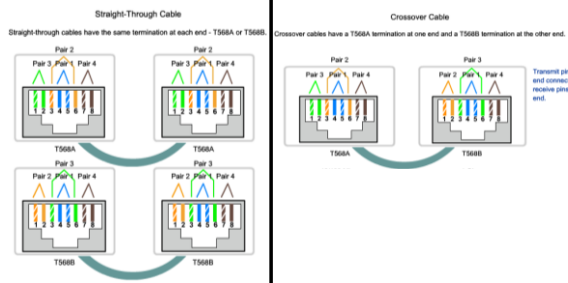
## UTP CABLING



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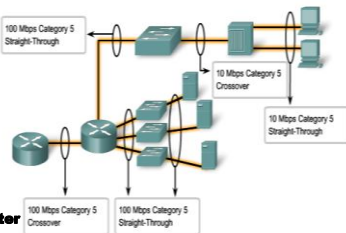
# COMPUTER NETWORK

## straight-through

- Switch to router
- Computer to switch
- Computer to hub

## crossover

- Switch to switch
- Switch to hub
- Hub to hub
- Router to router
- Computer to computer
- Computer to router



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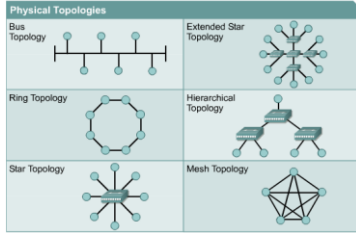
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# COMPUTER NETWORK

## Network Topology

### Considerations

- **Cost**
- **Length of cable needed**
- **Future Growth**
- **Cable type**



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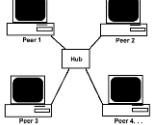
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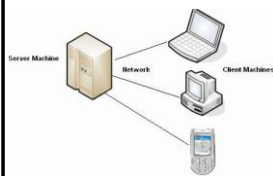
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# COMPUTER NETWORK

- **Ad Hoc**
- **Peer to Peer**



### Client Server



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