

Networking Devices



DCS201- Computer Science

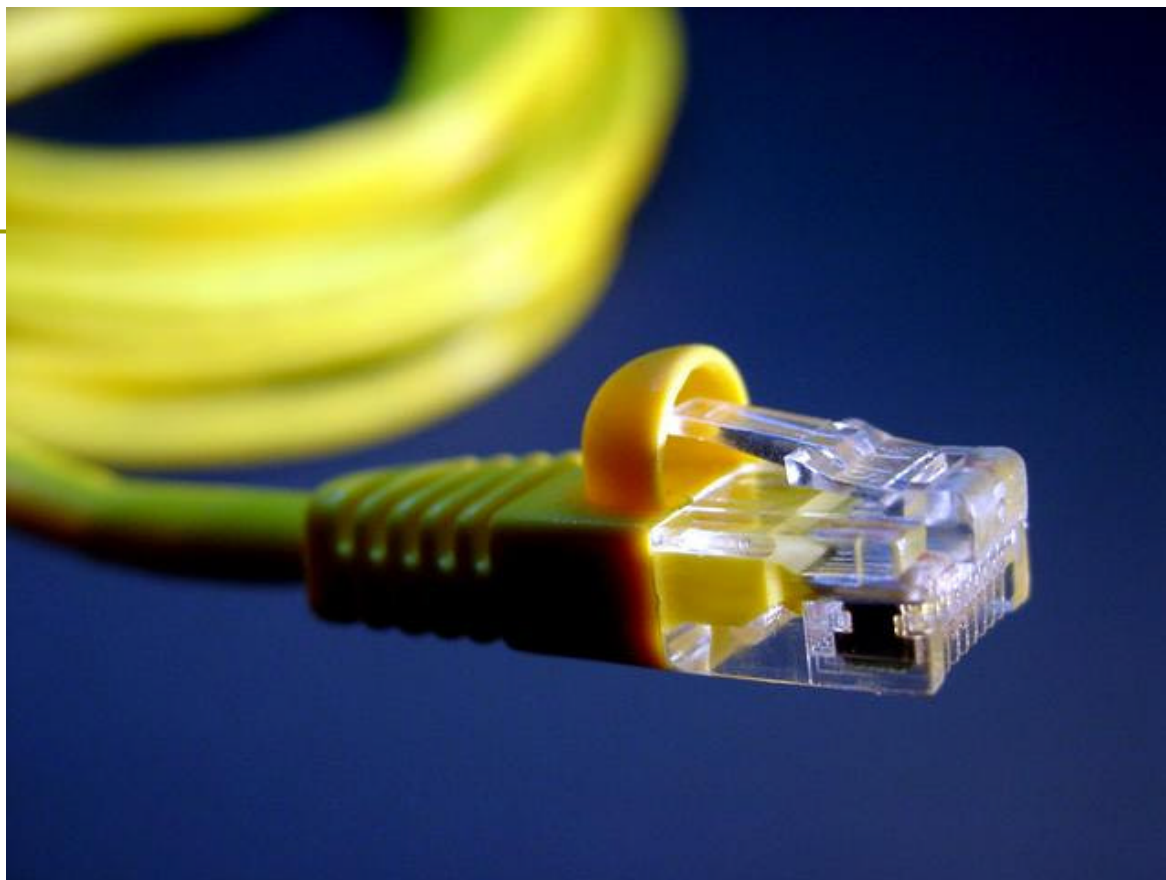
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Outline

- LAN equipments
 - Network cards
 - Repeaters
 - Hub
 - Bridges
 - Switch
- WAN equipments
 - Routers

Network cards

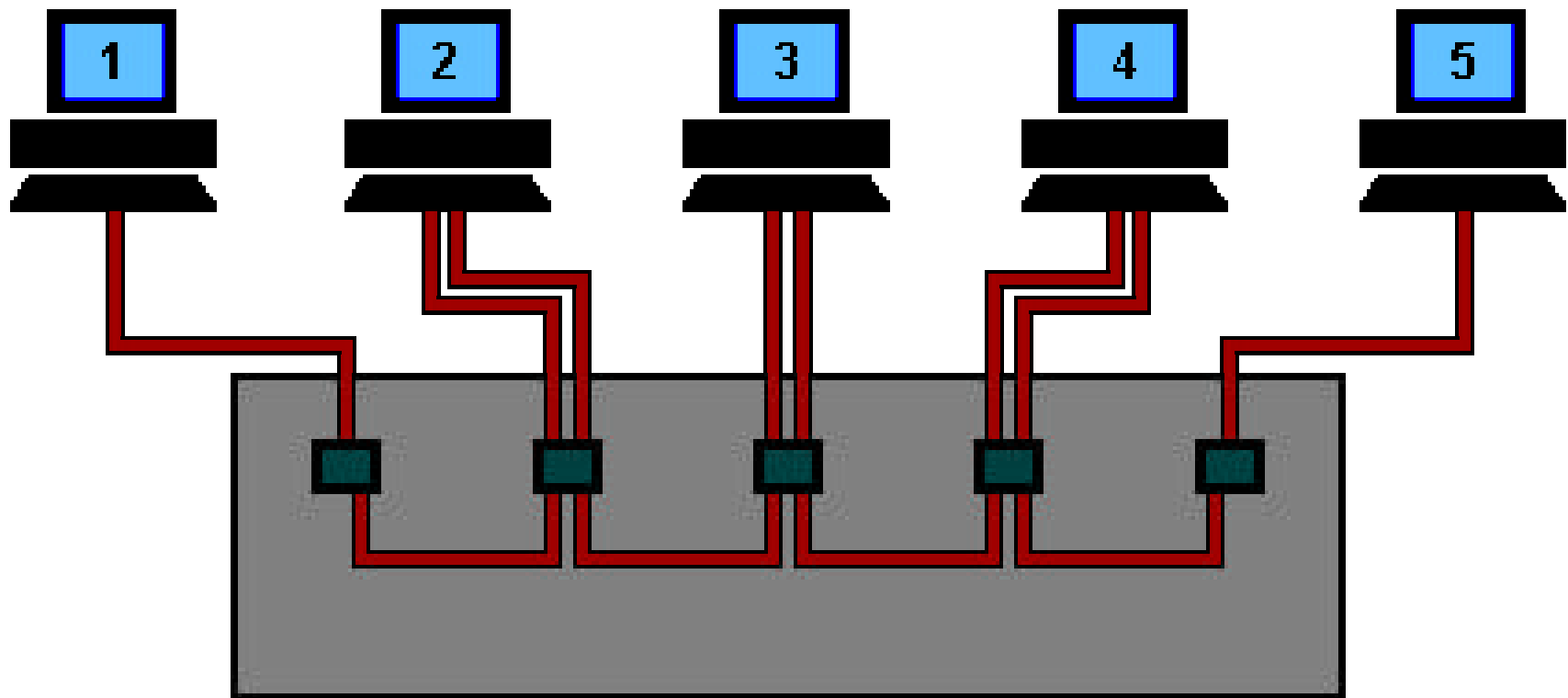
- ❑ Are the devices attached to the computer
- ❑ Provides the interface between the computer & the network
- ❑ Belongs to the physical & data link layer
- ❑ Ethernet uses
 - Thin & Thick Ethernet – Coaxial with BNC connectors
 - 10/100/1000 Ethernet - UTP Cat5 with RJ45 connectors



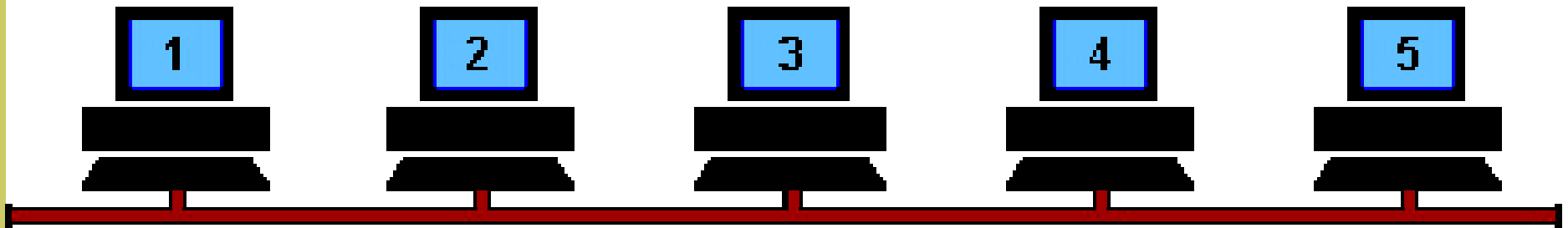
Repeaters/Hubs

- ❑ Works at the physical layer
- ❑ These devices just retransmit the packets that they receive
 - Amplifies the signal & increase the overall distance
 - Restores the amplitude of the signal
- ❑ Ethernet can be extended using repeaters
- ❑ Can be used for dissimilar media
- ❑ Different LANs cannot be converted

Hub



Collision domain



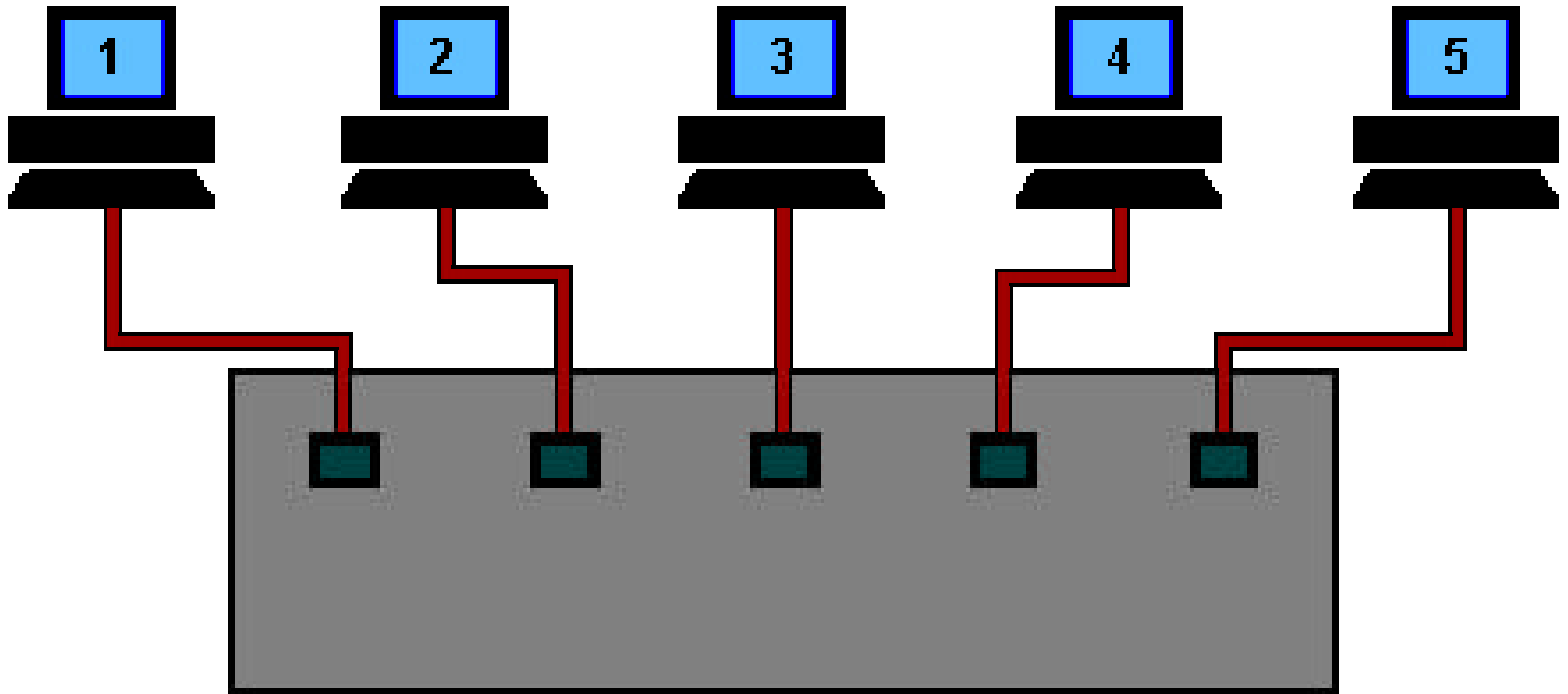
Bridges/Switches

- ❑ Operates at Data-link layer or MAC layer
- ❑ Multiple LANs can be connected
- ❑ Can connect similar LANs with dissimilar media
- ❑ Can link LANs of different speeds
- ❑ Management software could be used to manage the switches

Bridges/Switches cont...

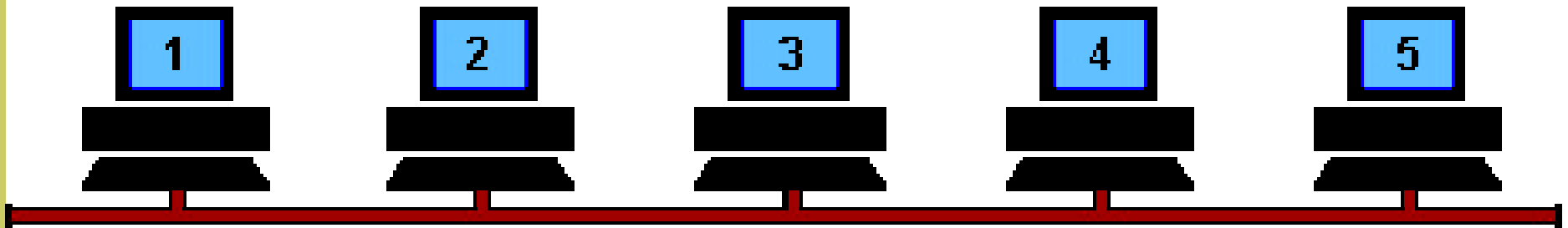
- ❑ Passes Packets to the other segment only if addressed is part of that segment
 - Builds an address data base dynamically (a table with port – address combinations) & use this to filter traffic
 - Hence collision domains are extended only if required

Switches cont...



Switches break collision domains

Broadcast domains



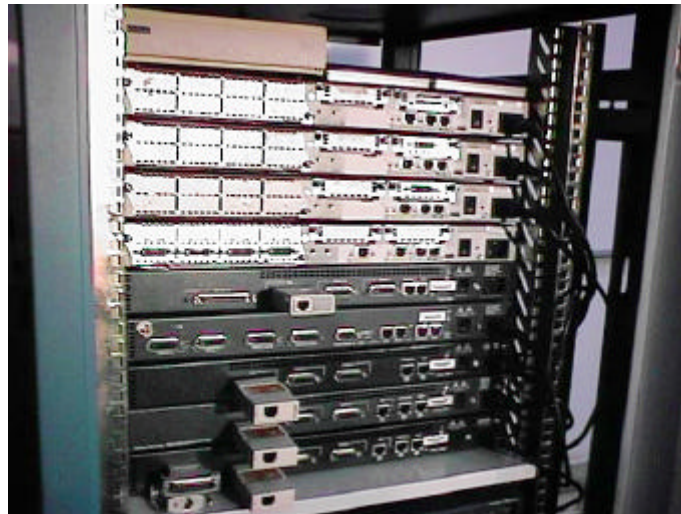
Routers

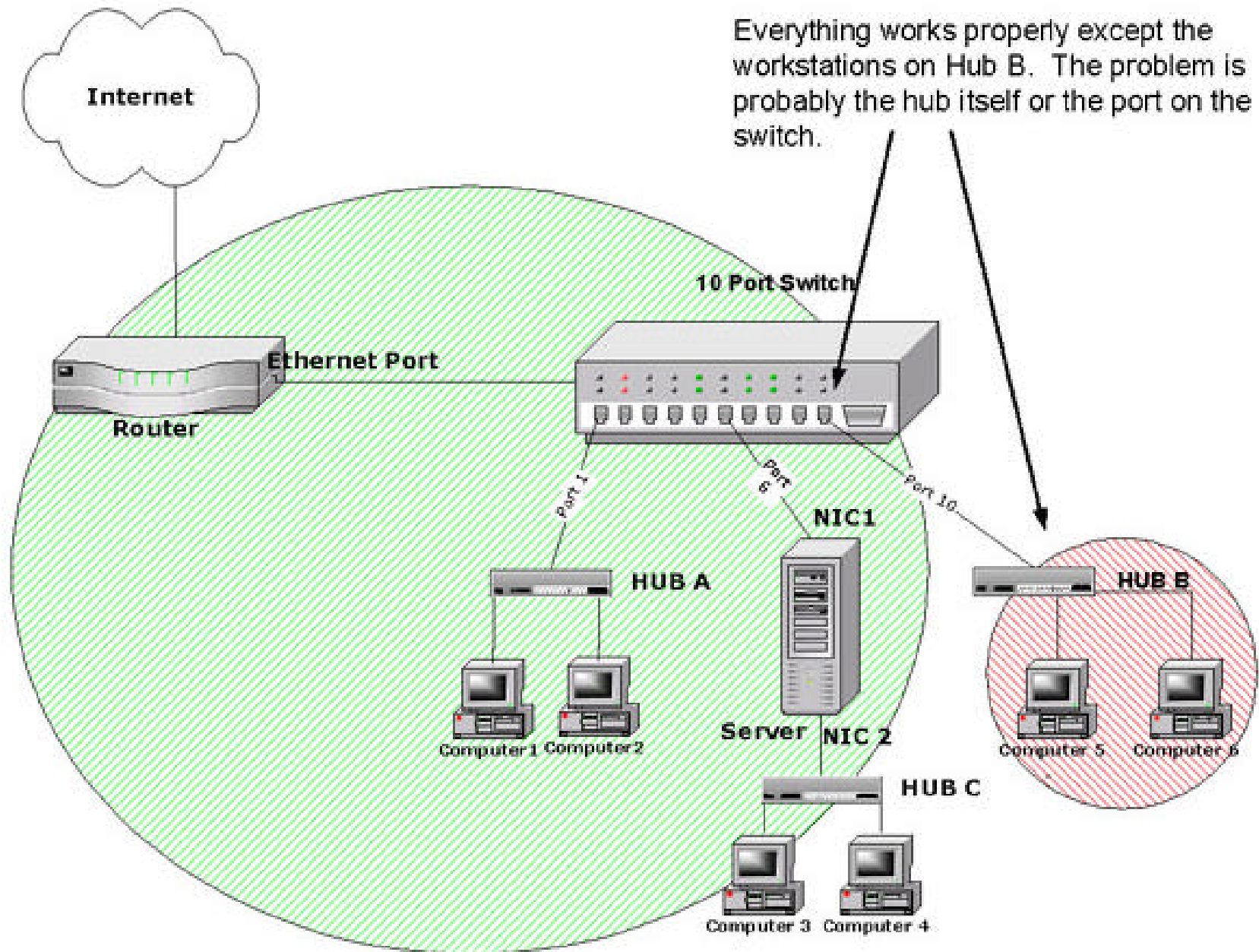


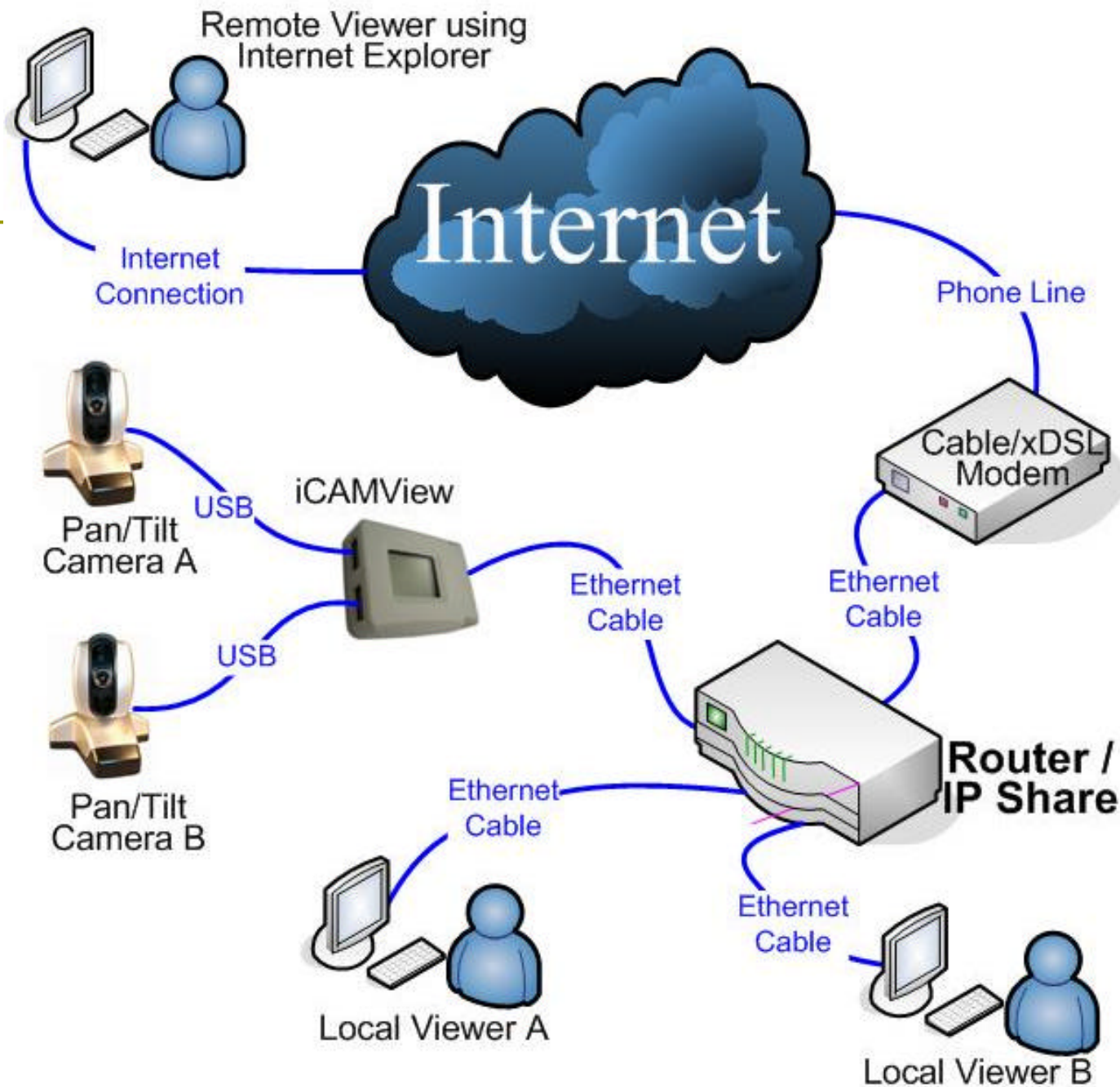
- ❑ Are Network layer devices
- ❑ Can connect dissimilar LANs on the same protocol
- ❑ Some routers have support for many protocols & protocol conversion
- ❑ Can build large complex networks with complex traffic routing
- ❑ Limits the flow of broadcasts
- ❑ Load sharing and balancing can be done

Gateway

- ❑ Connects multiple networks
- ❑ Passes packets from one to another
- ❑ When data packets needs to be send to another network (beyond the current LAN) they are send to the **default gateway**







IP Addressing



DNS

