How are bridge data-forwarding decisions limited?

- Although bridges use tables to determine whether or not to forward data to other segments of the network, the types of comparisons and decisions they make are relatively low level, simple ones

What types of network traffic problems is a bridge incapable of solving?

- Bridges work best where traffic from one segment of a network to other segments is not too great.
- However, when traffic between network segments becomes too heavy, the bridge can become a bottleneck and actually slow down communication.

How many addressing schemes are there in networking?

- You have already learned what one of these addressing schemes is. It is the MAC address.
- The second addressing scheme in networking makes use of what is called the IP address.

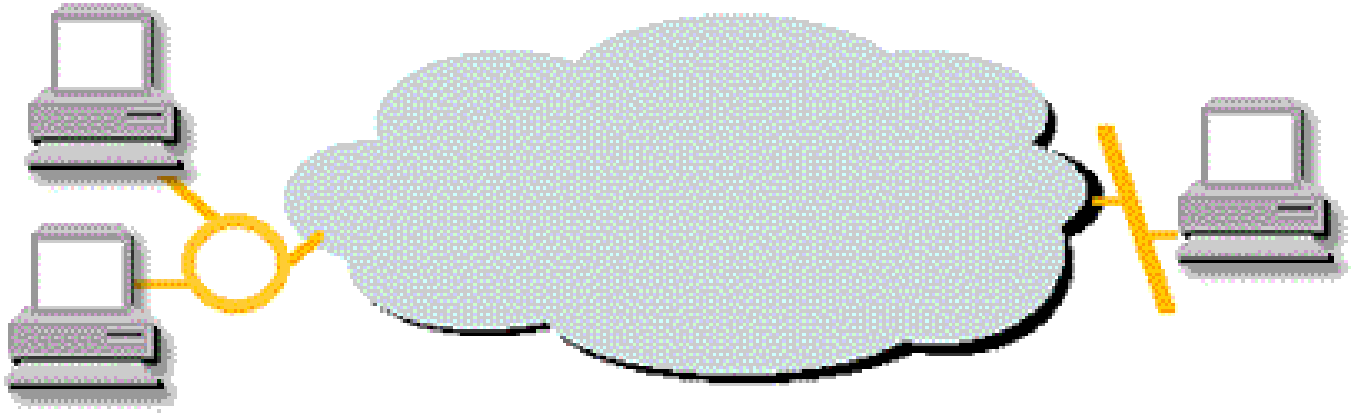
How do IP addresses differ from MAC addresses?

- Like MAC addresses, every IP address is unique. No two IP addresses are ever alike.
- However, while MAC addresses are physical addresses that are actually hard-coded into the NIC card and occur at the data link layer
- IP addresses are implemented in software and occur at the network layer of the OSI model.

What are routers?

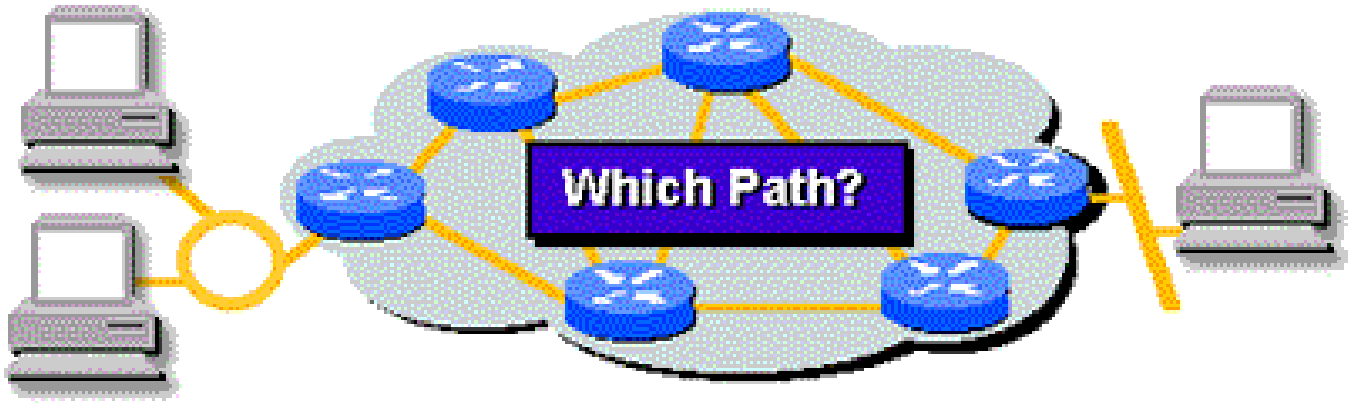
- Routers are another type of internetworking device.
- These devices pass data packets between networks based on network protocol or layer 3 information.
- Routers have the ability to make intelligent decisions as to the best path for delivery of data on the network.

Network Layer: Path Determination



Next

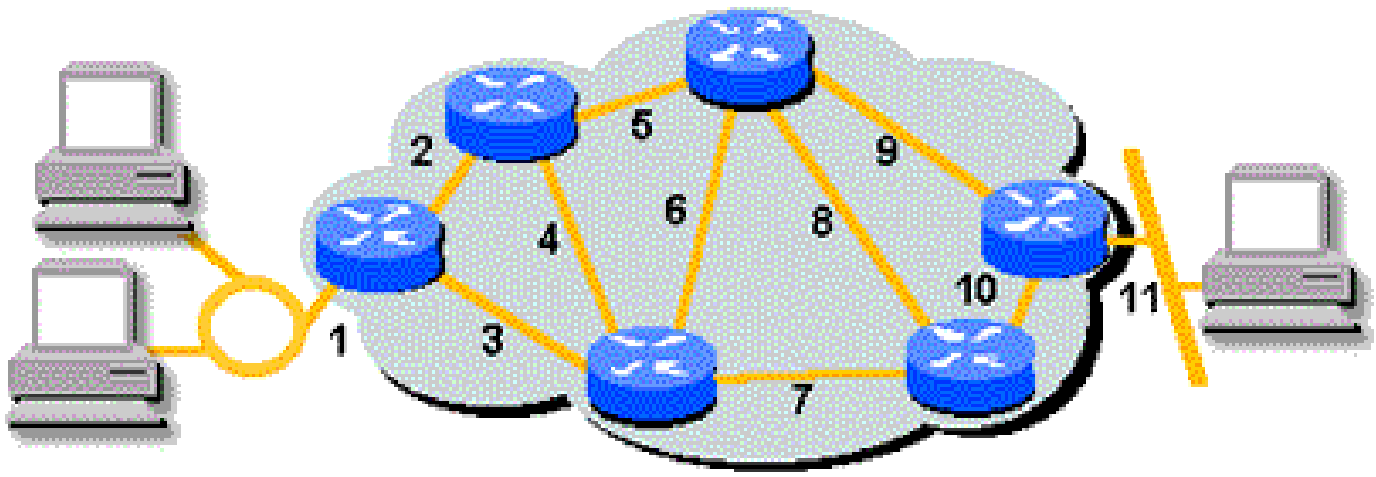
Network Layer: Path Determination



- Layer 3 functions to find the best path through the internetwork

Next

Network Layer: Communicate Path

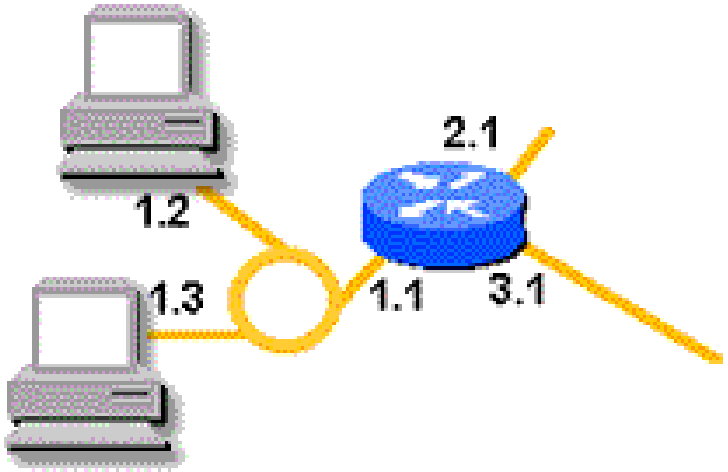


- Addresses represent the path of media connections
- Routing helps contain broadcasts

Next

Addressing--Network and Node

Network	Node
1	1 2 3
2	1
3	1

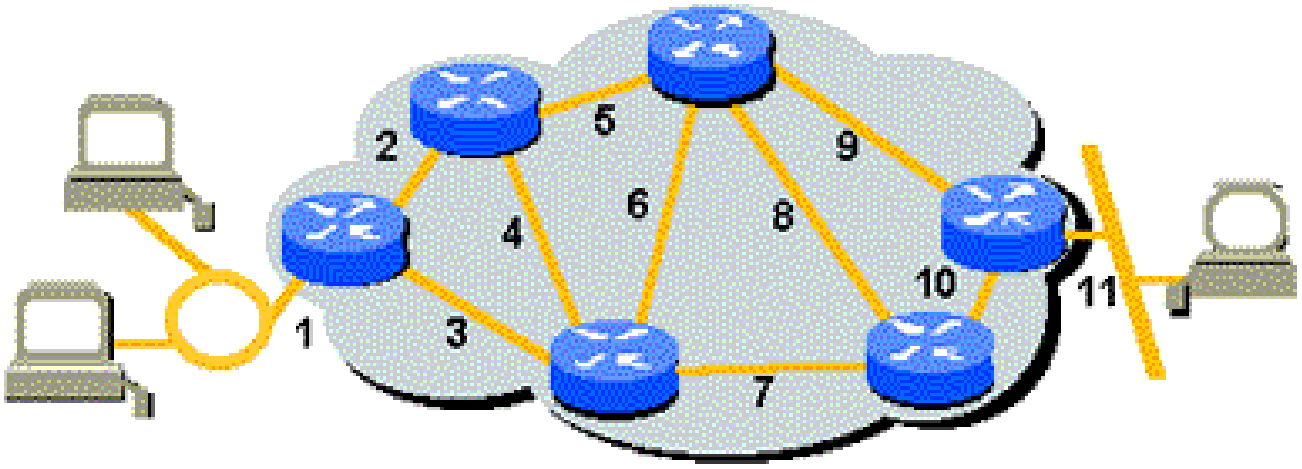


- Network address—Path part used by the router
- Node address—Specific port or device on the network

What network problems can routers help resolve?

- The problem of excessive broadcast traffic can be solved by using a router.
- Routers are able to do this, because they do not forward broadcast frames unless specifically told to do so

Network Layer: Communicate Path



- Addresses represent the path of media connections
- Routing helps contain broadcasts

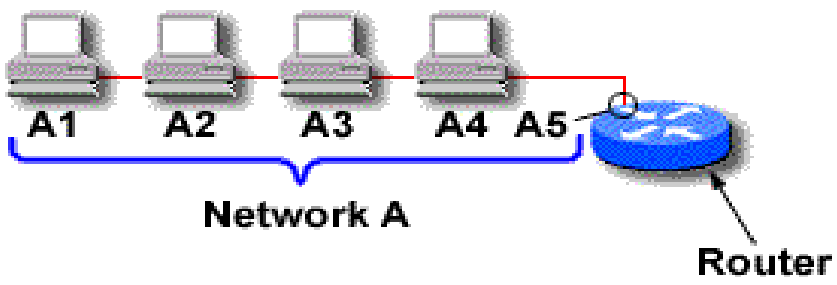
How do routers differ from bridges?

- Routers differ from bridges in several respects. First, bridging occurs at the data link layer or layer 2,while routing occurs at the network layer or layer 3 of the OSI model.
- Second, bridges use physical or MAC addresses to make data forwarding decisions. Routers use a different addressing scheme that occurs at layer three

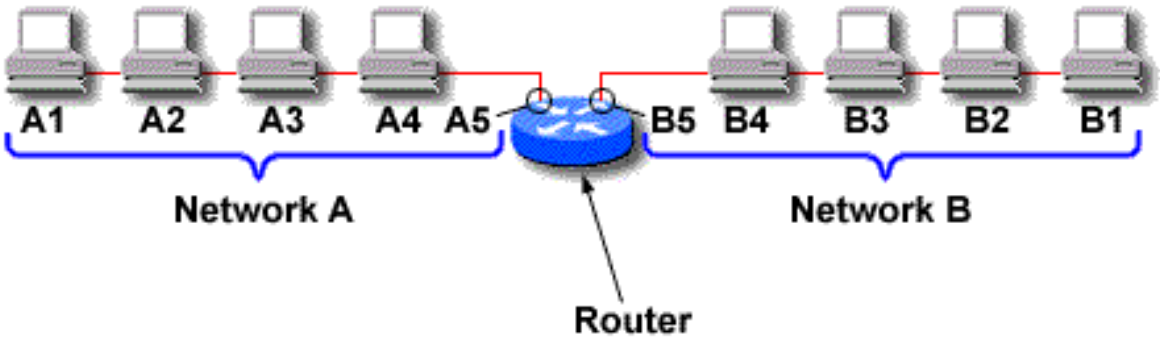
How do routers work?

- Routers are used to connect two or more networks. For routing to be successful, each network must have a unique network number

The port where a router connects to network A would have an IP address of A5.



The IP address of the router's second interface would be B5.



The router would determine to send the data from network A to network B out its port with the IP address B5.