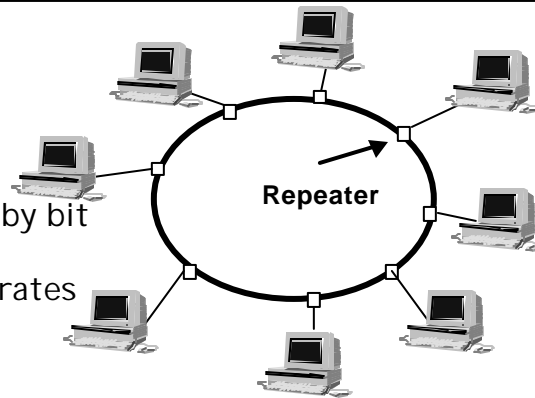


LAN Topologies (Contd.)

☞ Ring Topology

- » Point-to-point
- » Data transferred bit by bit
- » Each repeater regenerates and retransmits



1

LAN Topologies (Contd.)

☞ Three required Functions:

- » Data insertion (when & how)
- » Data reception
- » Data removal
 - By addressed repeater
 - By transmitting repeater after one trip around the loop
 - ☞ Permits automatic acknowledgment
 - ☞ Permits multicast addressing

2

LAN Topologies (Contd.)

✍ **Advantages:**

- » Point-to-point communication links
 - Greater distance is covered
 - Can accommodate optical fiber link (i.e. very high speed)
- » Fault isolation and recovery are simpler than bus/tree
 - Example: duplicate address
- » Potential throughput
- » Response time is fairly predictable

3

LAN Topologies (Contd.)

✍ **Drawbacks:**

- » The more the devices the longer the delay (sequential broadcast)
- » Under simple Ring implementation, the network could be completely disabled if one station failed
- » Perambulation
 - Locating the faulting node (pocket full of keys)

4

LAN Topologies (Contd.)

» Installation

- Requires the identification of two nearby topologically adjacent repeaters

» Size limitation

» Initialization and recovery

5

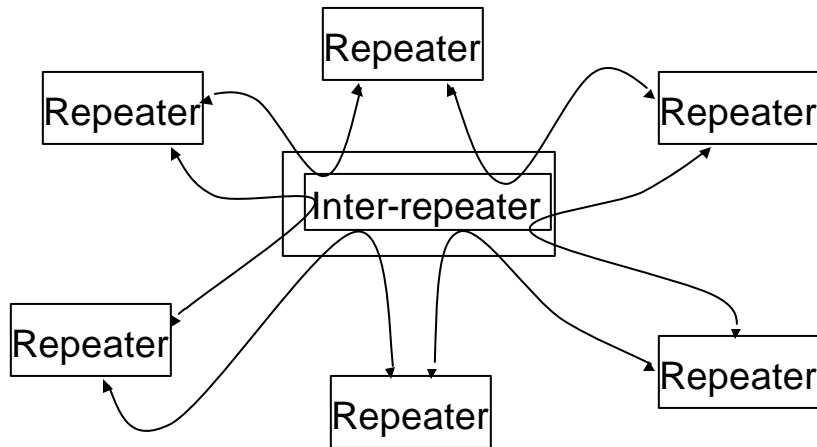
LAN Topologies (Contd.)

» Time jitter:

- the deviation of clock recovery because of the variations of propagation velocity with frequency
- Intersymbol interference
- Remedy:
 - ⚡ Including Phase-lock-loop (PLL) at each repeater
- Places limitation on # of repeaters (few hundred repeaters)

6

Star-Ring Architecture



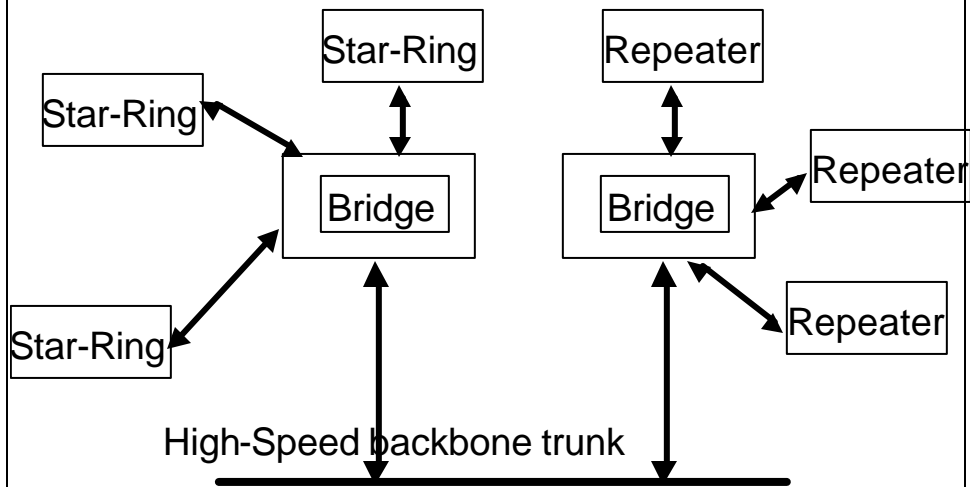
7

LAN Topologies (Contd.)

- ✎ Star-Ring Architecture:
 - » To solve the vulnerability problem of Ring topology
 - » Key design element is the "inter-repeater" that links all threads through a single site
 - » Solves the perambulation and installation problems

8

Ring-Bridge Architecture



9

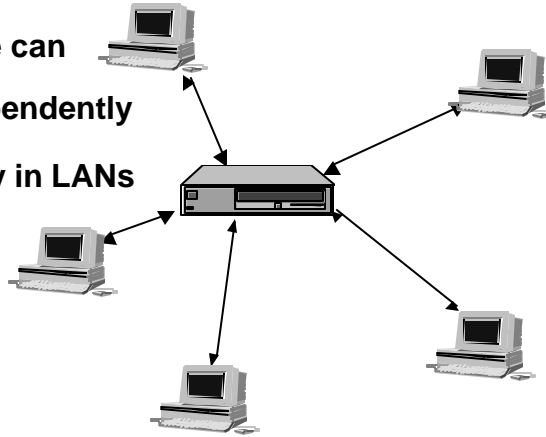
RING-STAR

- **Loss of automatic acknowledgment**
- **Not much expected in terms of performance improvement**

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Star Topology

- Each networked device can access the media independently
- The dominant topology in LANs
 - Scalable
 - Flexible
 - Relatively inexpensive



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Star Topology

- Functions of central Hub
 - ✍ Store-and-Forward
 - ✍ Broadcasting

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Star Topology (Cont.)

✍ Twisted Pair and Optical Fiber

- » Coaxial cable VS. twisted pair
 - Superior performance
 - Comparable cost of installation
- » HOWEVER:
 - Unshielded twisted pair installations already exist
 - Make twisted pair more favorable than Coaxial cables
- » Maximum link is limited to 100m
- » Or by using Optical Fiber, maximum limit is 500m

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LAN Topologies (Contd.)

BUS	RING	STAR
<ul style="list-style-type: none"> ✍ Economical, simple, reliable, easy to work with ✍ Network slows with traffic ✍ Cable break can bring many users down 	<ul style="list-style-type: none"> ✍ Equal access to and even performance of all computers. ✍ Failure of one computer can impact entire network 	<ul style="list-style-type: none"> ✍ Its centralized management allows for easy growth ✍ Failure of one computer does not affect the remainder of the network ✍ Hub in the star provides central point of failure

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