Figure 12.18 *Reservation access method*

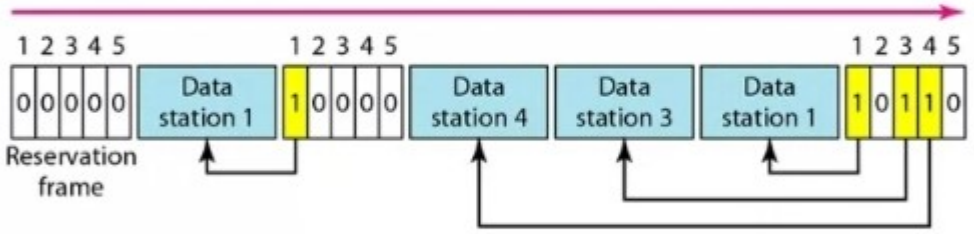


Figure 12.19 *Select and poll functions in polling access method*

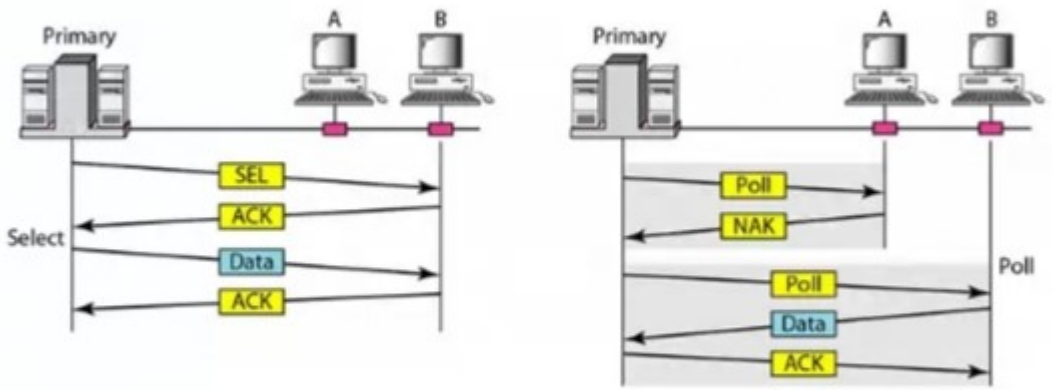
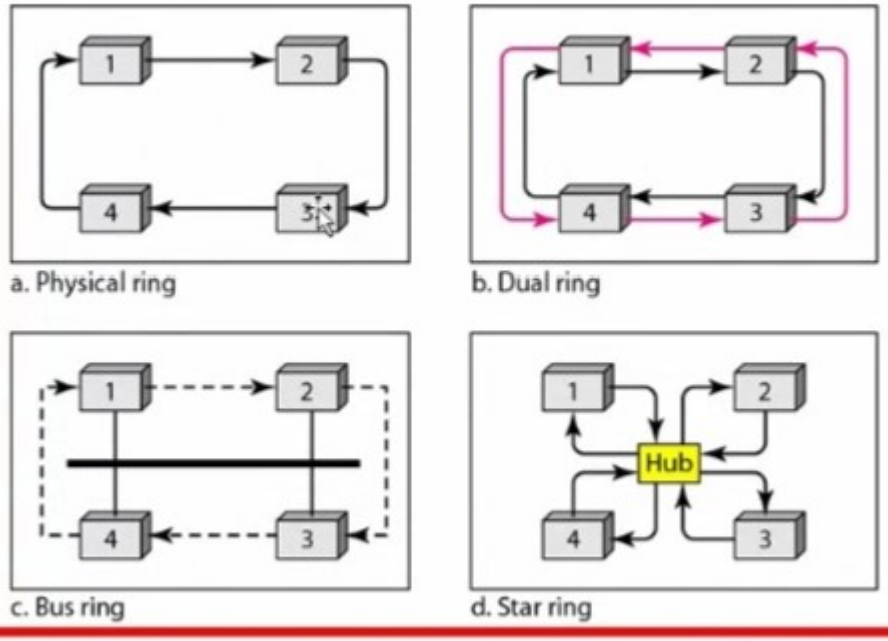


Figure 12.20 *Logical ring and physical topology in token-passing access method*



- ✓ Like an architect Who designs the entire layout of a house that includes plumbing, electrical wiring and so on, a network architect too considers an entire bunch of factors before designing a network. Apart from network topologies, different IEEE standards like Ethernet, Token Ring, and FDDI and so on.
- ✓ The IEEE standards form a basis for promoting standards related to maintaining networks with safe and standardized connections, encryption, and error checking algorithms and network media.
- ✓ All these standards fall under IEEE's Project 802 that was implemented to standardize the logical and physical elements of networks.
- ✓ When it comes to troubleshooting issues related to networks, the most crucial aspect is identifying the problem area and solving it. Problems may occur in connections, in topologies in devices and in many such components or services associated within networks.
- ✓ The IEEE networking specifications pertaining to connectivity, error checking algorithms, encryption, networking media, emerging technologies, etc come under IEEE's Projects 802 which was implemented in order to standardize the physical and logical elements of a network. IEEE developed the 802 standards before ISO came up with the OSI model. But the IEEE 802 standards can be applied to the OSI model's layers.

IEEE 802 Standards

Standard	Name	Topic
	Internetworking	Routing,Bridging,and network-to-network Communications
802.2	Logical Link Control	Error and flow control over data frames
802.3	Ethernet LAN	All forms of Ethernet media and interfaces
802.4	Token BUS LAN	All forms of Token Bus media and interfaces
802.5	Token Ring LAN	All forms of Token Ring media and interfaces
802.6	Metropolitan Area Network	MAN technologies,Addressing, and Services
802.7	Broadband technical Advisory Group	Broadband network media,interfaces, and other Equipments
802.8	Fiber Optic Technical Advisory Group	Fiber Optic media use in token-passing networks like FDDI
802.9	Integrated Voice/ Data Network	Integration of voice and data traffic over a single network medium
802.10	Netwok Security	Network access controls,encryption,Certification, and other Security topics
802.11	Wireless Networks	Standards for wireless networking for many different broadcast frequencies and usage techniques
802.12	High-Speed Networking	A variety of 100 Mbps-plus technologies,including 100 BASE-VG
802.14	Cable Broadband LANs and MANs	Standards for designing network over coaxial cable-based broadband connections.
802.15	Wireless Personal Area Networks	The coexistence of wireless personal area networks with Others wireless devices in unlicensed frequency bands.
802.16	Broadband Wireless Access	The atmospheric interface and related functions associated with Wireless Local Loop(WLL)

- IEEE 802 refers to a family of IEEE standards
  - Dealing with local area network and metropolitan area network.
  - Restricted to networks carrying variable-size packets.
  - Specified in IEEE 802 map to the lower two layers
    - ✓ Data link layer
    - ✓ Physical layer

ETHERNET (IEEE 802.3)

- Ethernet is a set of technologies and protocols that are used primarily in LANs. It was first standardized in 1980s by IEEE 802.3 standard.
- IEEE 802.3 defines the physical layer and the medium access control (MAC) sub-layer of the data link layer for wired Ethernet networks.
- Ethernet is classified into two categories: classic Ethernet and switched Ethernet.
- Classic Ethernet is the original form of Ethernet that provides data rates between 3 to 10 Mbps. The varieties are commonly referred as 10BASE-X. Here, 10 is the maximum throughput, i.e. 10 Mbps, BASE denoted use of baseband transmission, and X is the type of medium used.
- A switched Ethernet uses switches to connect to the stations in the LAN. It replaces the repeaters used in classic Ethernet and allows full bandwidth utilization.
- The IEEE 802.3 standard specifies the CSMA/CD (Carrier Sense Multiple Access with Collision Detection) media access control method. CSMA/CD is the most commonly employed access method for LANs using a bus or tree topology. It is the media access control method used by Ethernet.
  - ✓ Most widely type used at present, with a huge installed base and considerable operational experience.
  - ✓ Protocol is very simple
  - ✓ Stations can be added without making the network down.
  - ✓ The delay at low load is practically zero. (no token waiting)