

Switched High-Speed LANs: Switched Ethernet

Switched LAN Principles

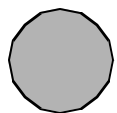
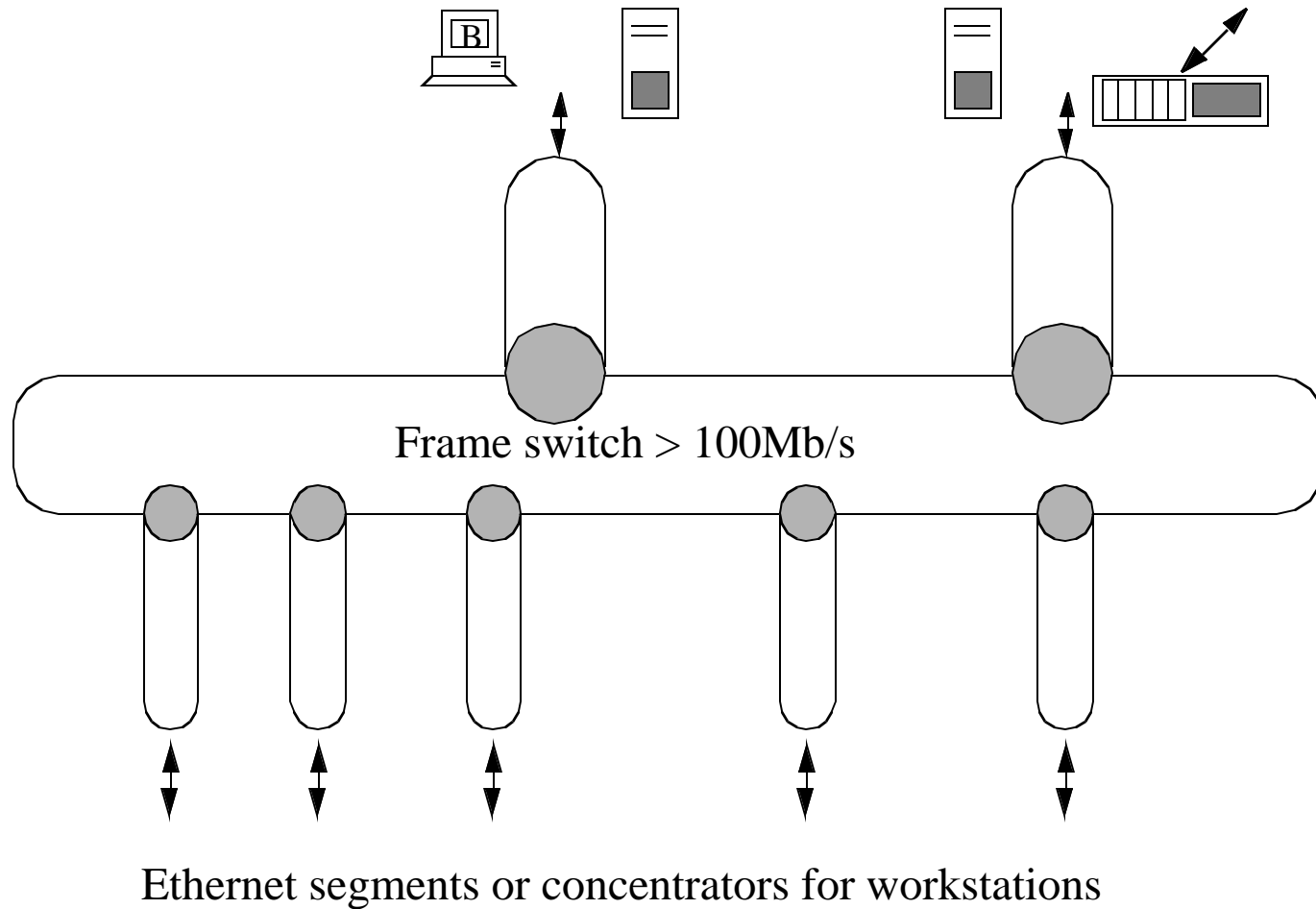
Switching hub may be:

- Wired switching hub:
 - Electronics at hub do the arbitration as to which conflicting packet gets through.
 - Wired backplane distributes successful inputs to all outputs emulating the action of a CSMA/CD bus.
 - Collisions are usually non-destructive so throughput is higher.
- High-bandwidth bus, either arbitrated or 100 Base T Ethernet.
 - Arbitration:
 - Involves a control mechanism to determine which conflicting packet gets onto the bus.
 - Higher throughput than Fast Ethernet.
 - Allows control of sequence of service, hence delay jitter.
- FDDI on a shelf (i.e. physically small - no propagation delay).
- VG100-AnyLAN (an arbitrated, tree-hub design).

Why a Switched Ethernet

- Ethernet is not perfect but it is cheap because it is simple and produced in great quantities with well-known technology.
- Throughput limitations of Ethernet could be overcome by:
 - Focusing contention in a smaller space;
 - Making contention non-destructive and controlled.

Switched Ethernet Concepts

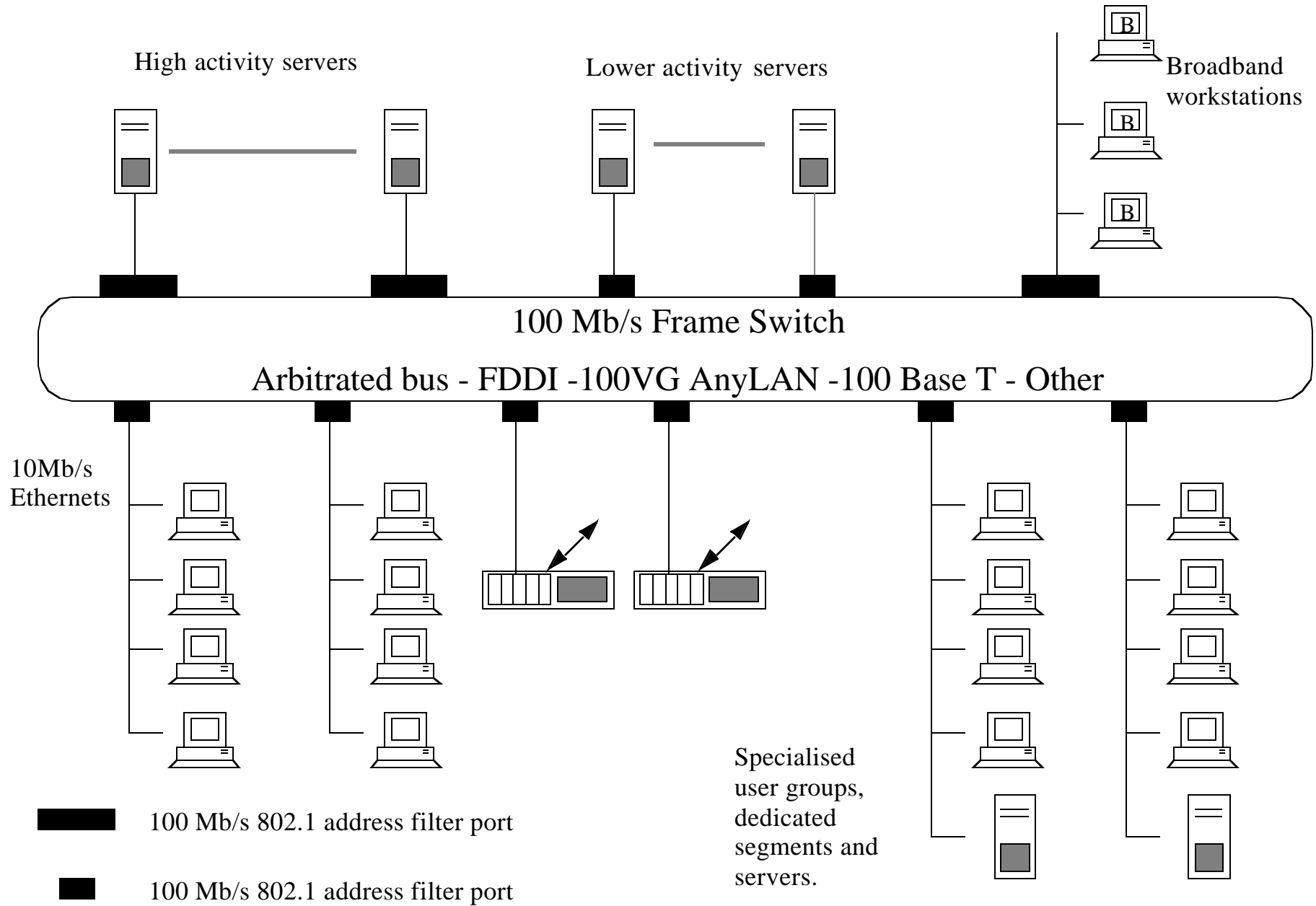


802.1d Bridge address filters (100Mb/s ports)



802.1d Bridge address filters (10Mb/s ports or less)

Switched Ethernet



Switched Ethernet Characteristics

- Flexible architecture including non-homogeneous interfaces for different speeds and loads:
 - e.g. high-speed, high-load server can have dedicated 100 Mb/s, 100BaseT interface to switch.
- Contention occurs at switch in controlled, arbitrated fashion.
- Throughput can approach 100 Mb/s or more depending on switch.
- Segmentation accommodates communities of communication as with other networks.
- Builds on existing:
 - CSMA-CD interfaces;
 - Wiring.
 - Switches 802.2 frames - fully compatible with 802.x networks
- Interfaces to switch are simple CSMA-CD and 802.1d bridges.
- No special provision for isochronous, real-time traffic.