Switched fabric

Switched Fabric or **switching fabric** is a network topology in which network nodes interconnect via one or more network switches (particularly crossbar switches). Because a switched fabric network spreads network traffic across multiple physical links, it yields higher total throughput than broadcast networks, such as the early 10BASE5 version of Ethernet, or most wireless networks such as Wi-Fi.

The generation of high-speed serial data interconnects that appeared in 2001–2004 which provided point-to-point connectivity between processor and peripheral devices are sometimes referred to as fabrics; however, they lack features such as a message passing protocol. HyperTransport, for example, continues to maintain a processor bus focus even after adopting a higher speed physical layer. Similarly, PCI Express is just a serial version of PCI; it adheres to PCI's host/peripheral load/store DMA-based architecture on top of a serial physical and link layer

Fibre Channel
Layer 4. Protocol mapping
LUN masking
Layer 3. Common services
Layer 2. Network
Fibre Channel fabric Fibre Channel zoning Registered State Change Notification
Layer 1. Data link
Fibre Channel 8B/10B encoding
Layer 0. Physical

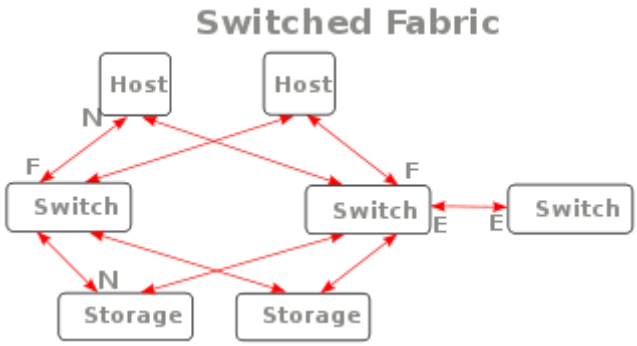
Fibre Channel

In the Fibre Channel *Switched Fabric* (*FC-SW-6*) topology, devices are connected to each other through one or more Fibre Channel switches. While this topology has the best scalability of the three FC topologies (the other two are Arbitrated Loop and point-to-point), it is the only one requiring switches, which are costly hardware devices.

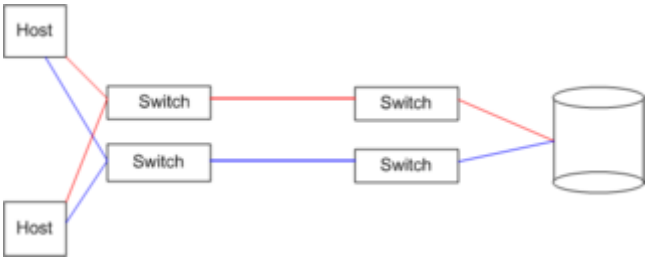
Visibility among devices (called *nodes*) in a fabric is typically controlled with Fibre Channel zoning

Multiple switches in a fabric usually form a mesh network, with devices being on the "edges" ("leaves") of the mesh. Most Fibre Channel network designs employ two separate fabrics for redundancy. The two fabrics share the edge nodes (devices), but are otherwise unconnected. One of the advantages of such setup is capability of failover, meaning that in case one link breaks or a fabric goes out of order, datagrams can be sent via the second fabric.

The fabric topology allows the connection of up to the theoretical maximum of 16 million devices, limited only by the available address space (2^{24}).



Example topology of a Fibre Channel switched fabric network



A storage area network built with two separate switched fabrics (red and blue) to increase reliability

See also

- Clos network
- Fabric Application Interface Standard
- Network traffic control
- RapidIO
- Shortest Path Bridging
- VPX

External links

- What is a Switch Fabric