

Switched fabric

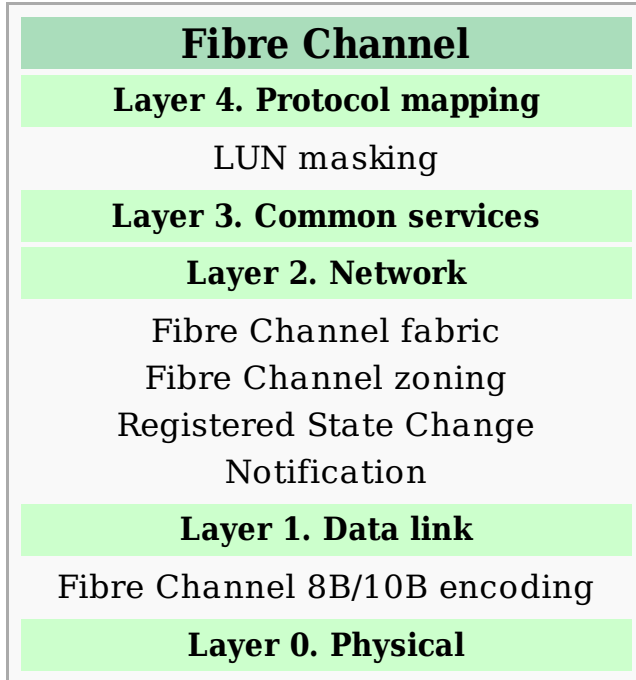
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Switched fabric or **switching fabric** is a network topology in which network nodes interconnect via one or more network switches (particularly crossbar switches). Because a switched fabric network spreads network traffic across multiple physical links, it yields higher total throughput than broadcast networks, such as early Ethernet.

A generation of high-speed serial interconnects that appeared in 2001-2004 and provide 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.

Switched fabric in Fibre Channel

In the Fibre Channel *switched fabric* (*FC-SW*) 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.

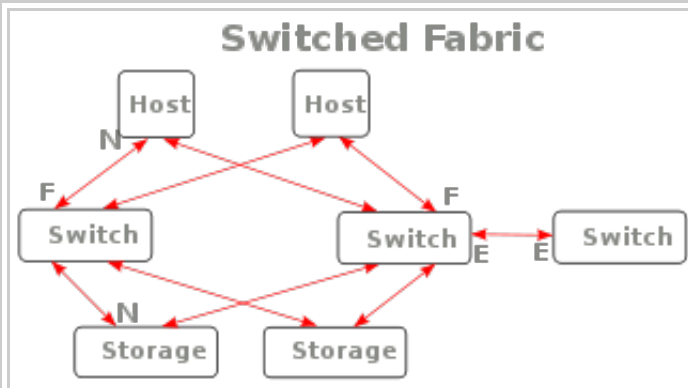
Visibility among devices (called *nodes*) in a fabric is typically controlled with zoning.

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.

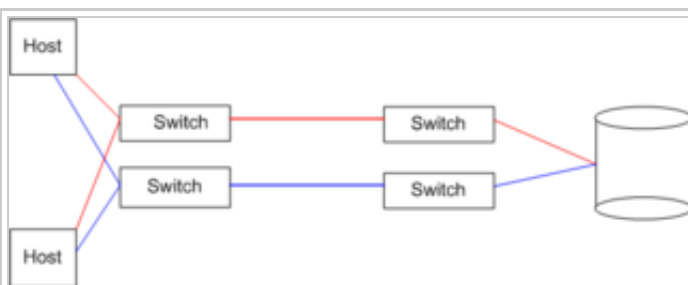
The fabric topology allows the connection of up to the theoretical maximum of 16 million devices, limited only by the available address space (2^{24}).

See also

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



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.

- VPX

External links

- What is a Switch Fabric (<http://etherealmind.com/what-is-the-definition-of-switch-fabric/>)
- Optical Switching Fabric (Oct 2000) (http://www.lightreading.com/document.asp?doc_id=2254)

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Categories: Fibre Channel | Network topology

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