

Storage Area Network (SAN)

Technical Overview

A SAN, or storage area network, is a dedicated network that is separate from LANs (local area networks) and WANs (wide area networks). It generally serves to interconnect the storage-related resources that are connected to one or more servers. It is often characterized by its high interconnection data rates (Gigabits/sec) between member storage peripherals and by its highly scalable architecture. Though typically spoken of in terms of hardware, SANs very often include specialized software for their management, monitoring and configuration.

SANs are built up from unique hardware components. These components are configured together to form the physical SAN itself and usually include an assortment of equipment, including RAID storage systems, switches, servers, interface cards and cabling.

SANs evolved to address the increasingly difficult job of managing storage at a time when storage usage is growing explosively. With devices locally attached to a given server or in the server enclosure itself, performing day-to-day management tasks becomes extremely complex; backing up the data in the data center requires complex procedures as the data is distributed amongst the nodes and is accessible only through the server to which it is attached. As a given server outgrows its current storage pool, storage specific to that server has to be acquired and attached, even if there are other servers with ample storage space available. Other benefits can be gained — multiple servers can share data (sequentially or in some cases in parallel), backing up devices can be done by transferring data directly from a storage device or media to another device or media over the SAN network instead of taking a costly hit on performance on the host.

Storage area networks capitalize on the best of the storage and network technologies to provide a low latency, high bandwidth interconnect which can span large distances, provide high connectivity and good management infrastructure from the start.

Typical SAN Configuration

