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STORAGE NETWORKING GLOSSARY  
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# CISCO STORAGE NETWORKING GLOSSARY OF TERMS

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**Access Control List (ACL):**

Access control lists can be assigned to data traffic, data objects, files and directories. Data traffic can be filtered at a network interface or data access point by controlling whether packets are forwarded or blocked. The interface examines each packet to determine whether to forward or drop the packet, based on the criteria specified within the access lists. Access list criteria can include the source address of the traffic, the destination address of the traffic, the upper-layer protocol, or other information. For data objects the ACL acts as a list that defines the rights of users and groups to access resources. Often used in file system context to denote list maintained by a file system and defining permissions for file and directory access.

**Backup:**

A copy of data stored on non-volatile storage media for the purposes of restoring data in case of data corruption, disaster or for regulatory purposes.

**Block:**

The unit of data in which data is stored and retrieved on storage devices such as disk drives and tapes.

**Common Internet File System (CIFS):**

The common file system uses by the Windows Operating System. The operating systems running on Windows PCs do not include NFS. Instead, the protocol for remote file access is CIFS (Common Internet File System), formerly known as SMB (Server Message Block). In mid-1996, Microsoft began to promote CIFS as an open standard, with a published specification.

**Dense Wave Division Multiplexing (DWDM):**

Wave division multiplexing (WDM) refers to an optical transmission technique where multiple optical signals are transmitted on a single optical fiber using different wavelengths. The term dense wave division multiplexing (DWDM) is often used to describe systems supporting a large number of channels, with "large" not clearly defined, but ranging from upwards of 16.

**Disk Array:**

A set of disks, accessed via a common subsystem controller, which presents the disks to the hosts as a set of virtual disks.

**Fibre Channel:**

Fibre channel is a high-speed interface technology nominally running at speeds of 1Gbps. Data can be transmitted and received at one-gigabit-per-second simultaneously. Typically the Small Computer System Interface (SCSI), runs over Fibre Channel, although Fibre Channel was designed to transport other protocols too.

**Fibre Channel Fabric:**

A Fibre Channel topology with one or more switching devices.

**Fibre Channel over IP (FCIP):**

An proposed IETF standard, undergoing ratification in the IP storage working group, for encapsulating Fibre Channel packets over an IP network



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## F

**File:**

A data object that can be managed by a file system, files act at an abstraction level that allows them to be given a symbolic name that uniquely identifies the data, and can be assigned ownership and access rights. Files may be created and deleted, and may change in size during their lifetimes.

**Filer:**

Filers are customized networked storage appliances for consolidating data storage and providing access to files at the file abstraction level. Generally filer support Multiprotocol heterogeneous data sharing, providing simultaneous file system access to UNIX®, NT, and Web-based servers and clients.

**Gigabits Per Second (Gbps):**

A unit of bandwidth measurement.

**Gigabit Ethernet:**

A group of IEEE standards defined in the IEEE 802.3z committee, in which data is transmitted at 1Gbit per second. Gigabit Ethernet switching can provide full duplex non-blocking 1Gbps throughput. Typically associated with IP data traffic and network attached storage, today also supports voice and video traffic. With the creation of the iSCSI protocol, now also supports block oriented storage traffic.

**10 Gigabit Ethernet:**

In March 1999 representatives from Cisco Systems helped start the IEEE 10 Gigabit Ethernet standards effort by participating in the creation of a study group called the Higher Speed Study Group (HSSG). Since then, approximately 70 companies and 150 engineers have been working on 10 Gigabit Ethernet in the IEEE 802.3 HSSG. This study group concluded its work in November 1999 and in February 2000 became the IEEE 802.3ae 10 Gigabit Ethernet Task Force. The goal of the Task Force is to write the specifications for a 10 Gigabit Ethernet standard to be ratified by March 2002. For general and technical information on 10 Gigabit Ethernet:

**Host Bus Adapter (HBA):**

The host bus adapter connects the host I/O bus to the host's system memory. HBA is the prevalent term for SCSI and Fibre Channel environments, and is the equivalent to Network Interface Card or NIC in the LAN environment.

**Internet Engineering Task Force (IETF):**

The standards body responsible for Internet standards associated with IP and TCP/IP. The IETF has a working group dedicated to IP storage, where the FCIP and iSCSI standards are being developed.

**iSCSI (SCSI over IP):**

iSCSI, or Small Computer Systems Interface (SCSI) over IP, for accessing block-level storage from IP-connected hosts.

**Just a Bunch of Disks (JBOD):**

JBOD refers to one or more physical disk units that form a single volume. As opposed to RAID devices, these are independent devices and are not striped or mirrored.

**LAN (Local Area Network):**

A LAN links servers, computers or peripheral devices together. LANs are built using networking components such as switches, hubs and routers.



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## L

**Logical Unit Number (LUN):**

An identifier used on an SCSI bus to distinguish among up to eight devices (logical units) with the same SCSI ID. LUNs are assigned to each disk drive in an array so the host can address and access the data on those devices.

**Megabits Per Second (Mbps):**

A unit of bandwidth measurement.

**Metropolitan Area Network (MAN):**

A network that covers the metropolitan area, typically within a radius of about 100km. Often associated with higher bandwidth technologies than are typically found in the wide area networking environments.

**Mirroring:**

A method of ensuring that identical data is stored on separate storage media, typically for purposes of protecting against disk failure or where remote mirroring is implemented, for disaster recovery.

**Network Attached Storage (NAS):**

File-oriented storage networking implementation, deployed in the form of customized storage appliances that are connected to the IP network. Due to the file abstraction layer, NAS offers both storage and data sharing services across multiple platforms and protocols.

**Network Data Management Protocol (NDMP):**

An open standards protocol defined by the Network Data Management Task Force, NDMP allows a backup application to control the retrieval of data from a storage subsystem or NAS device, and copy it directly to a second storage device (normally a tape drive) across the network.

**Network Interface Card (NIC):**

Network Interface Adapters connect computers to a network. This term is prevalent in the LAN environment, and is interchangeable with HBA's in the fibre channel or SCSI environments. To date NICs have processed layers 2 and 3, leaving higher layers such as TCP to the host CPU to process. Now that TCP I/O rates of 1Gbps and above are being encountered with the introduction of iSCSI, NIC vendors are developing TCP acceleration on the NIC itself, so that host CPU utilization is minimized.

**Network File System (NFS):**

Most UNIX clients use NFS for remote file access. Sun® Microsystems introduced NFS in 1985. Since then, it has become a de facto standard protocol, used by over ten million systems worldwide. NFS is particularly common on UNIX-based systems, but NFS implementations are available for virtually every modern computing platform in current use, from desktops to supercomputers.

**Quality of Service (QoS):**

Quality of services (QoS) enables complex networks to control and predictably service a variety of applications. QoS is implemented through a range of traffic engineering and queuing mechanisms that can ensure end-to-end service quality across the network.

**Redundant Array of Independent Disks (RAID):**

A disk array in which part of the physical storage capacity is used to store redundant information about user data stored on the remainder of the storage capacity. The redundant information enables regeneration of user data in the event that one of the array's member disks or the access path to it fails.



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## S

**Small Computer Systems Interface (SCSI):**

A collection of ANSI interface standards for host computers communicating with attached peripherals. Initially associated with a parallel bus interface, today SCSI also supports serial networked interfaces for connection across Fibre Channel(FCP) and Gigabit Ethernet(iSCSI).

**Storage Networking Industry Association (SNIA):**

The SNIA was incorporated in December 1997. Consisting of more than 70 voting members across the storage and networking industries, SNIA is dedicated to ensuring that storage networks become complete and trusted solutions across the IT community.

**Storage Area Network (SAN):**

The term Storage Area Network defines the hardware and software associated with enabling block-level data transfer between storage devices and hosts in a networked paradigm. Today, the predominant SAN technology is Fibre Channel, however with the creation of iSCSI, we can expect a combination of FC and technologies to form the infrastructure for SANs in the future.

**Virtual Local Area Networks (VLANs):**

A VLAN is an administratively defined broadcast domain. A VLAN enhances performance by limiting traffic; it allows the transmission of traffic among stations that belong to it and blocks traffic from other stations in other VLANs. VLANs can provide security barriers (firewalls) between end stations on different VLANs within the same switch. Only end stations within the VLAN receive packets that are unicast, broadcast, or multicast (flooded).

**Volume:**

A virtual disk into which a file system or other application places data. A volume can be a single disk partition or multiple partitions on one or more physical drives.

**VLAN (Virtual LAN):**

A VLAN is a user-configured logical workgroup or collection of Ethernet addresses, as opposed to a physical LAN that is determined entirely by wiring. VLANs are generally configured within switches.

**WAN (Wide Area Network):**

A WAN connects geographically separated systems that are generally spread over long distances. WANs usually consist of two or more LANs.