PPT on Networking Storage

- By Aditya Sharma
- 17/1402
- Bsc. (H) Computer Science

Networking Storage

Network-attached storage (NAS) is a file-level storage architecture where 1 or more servers with dedicated disks store data and share it with many clients connected to a network. NAS is 1 of the 3 main storage architectures—along with storage area networks (SAN) and direct-attached storage (DAS)—and is the only 1 that's both inherently networked and fully responsible for an entire network's storage.

Networking storage in linux

- NAS is often contrasted with SAN (storage area network), which provides only block-based storage and leaves file system concerns on the "client" side. SAN protocols include Fibre Channel, iSCSI, ATA over Ethernet (AoE) and HyperSCSI.
- One way to loosely conceptualize the difference between a NAS and a SAN is that NAS appears to the client OS (operating system) as a file server (the client can map network drives to shares on that server) whereas a disk available through a SAN still appears to the client OS as a disk, visible in disk and volume management utilities (along with client's local disks), and available to be formatted with a file system and mounted.
- Despite their differences, SAN and NAS are not mutually exclusive and may be combined as a SAN-NAS hybrid, offering both file-level protocols (NAS) and block-level protocols (SAN) from the same system. An example of this is Openfiler, a free software product running on Linux-based systems.

Functions in Networking Storage

Functions defined under Networking Storage are as follows:

- nfs_file_operations
- smb_fs_type
- cifs_file_ops
- Iscsi_tcp_transport

nfs_file_operations

- It is for performing operations on files that are on the Network File System.
- Operations to be performed on the file are defined in the “Virtual File System” Block.
- The operations are:
- vfs_read
- vfs_write
- vfs_create

smb_fs_type

- SMB stands for Server Message Block Protocol and is mainly used for providing shared access to files, printers, and serial ports and miscellaneous communications between nodes on a network (here the storage too).
- The function defines the file system type that can be shared in the network.
- The directories on the remote host/server made available via SMB protocol are called “shares.”

cifs_file_ops

- cifs stands for common internet file system protocol and is a part of the SMB.
- It is obsolete now because of better version of SMB i.e. SMB 2 and SMB 3 with better storage architecture.
-

iscsi_tcp_transport

- iscsi stands for Internet Small Computer Systems Interface, an Internet Protocol (IP) -based storage networking standard for linking data storage facilities. It provides block-level access to storage devices by carrying SCSI commands over a TCP/IP network like connecting and using printers, drives, scanner and other peripherals to computer.
- The command iscsi_tcp_transport helps transport the commands over tcp into the network.