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TUTORIAL 9

1.> Study about the following Distributed File systems.

(A) The Sun Network File System (NFS)

① This file system was developed by Sun Microsystem Inc. So, its name is SUN NFS.

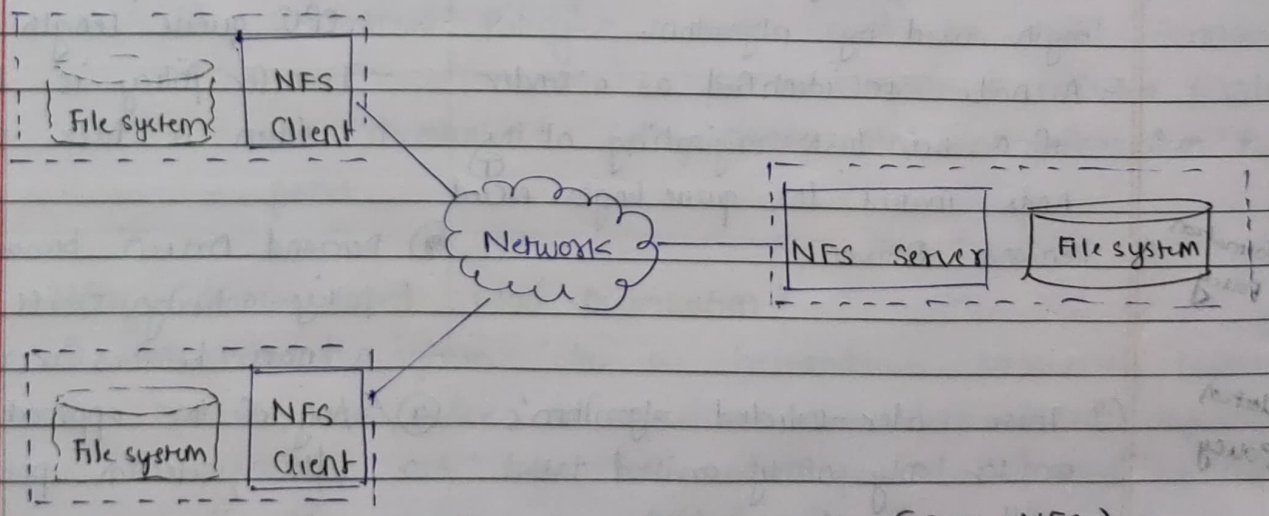
② A network file system is a network & abstraction over a file system that allows a remote client to access it over a network in a similar way to a local file system.

③ The Network-File-System (NFS) is client server application.

④ NFS uses Remote Procedure call (RPC) to route requests between clients and servers.

⑤ In this, a user can view, store, and update the files on a remote computer.

NFS Model

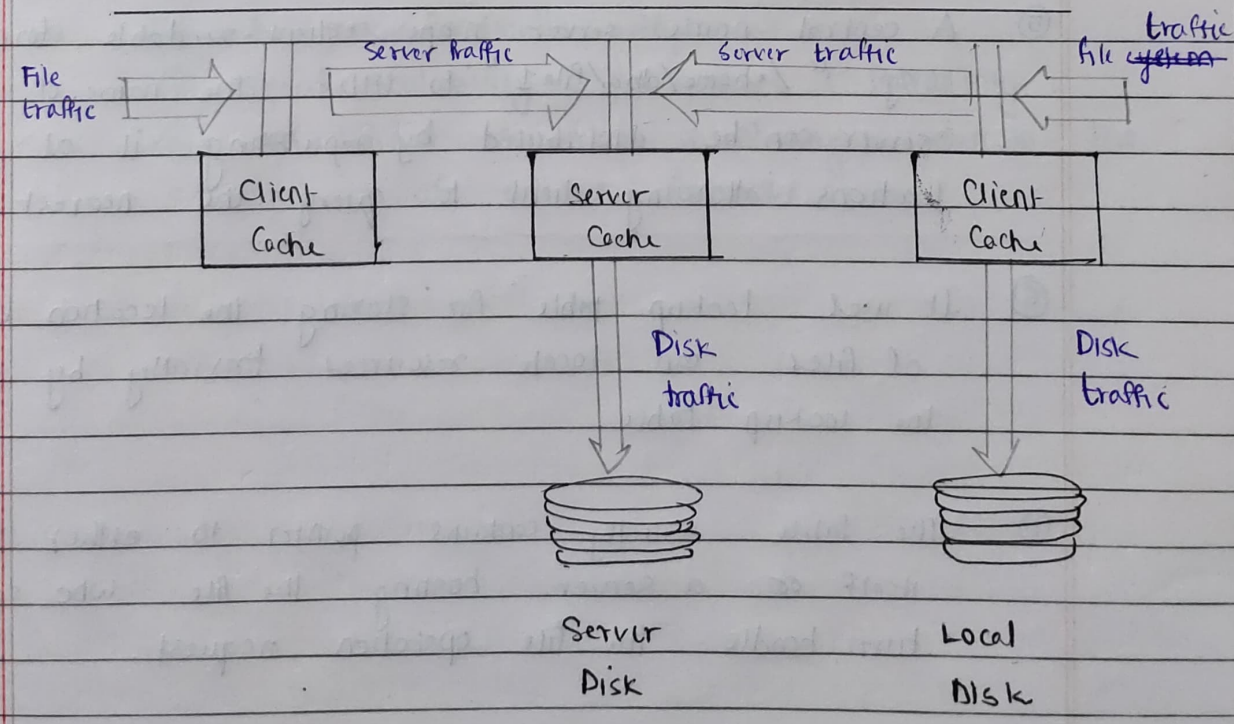


(Sun NFS)

(B) The Sprite File System

1. Unix file system developed for diskless workstations with large memories at UCB.
2. Considers memory as huge cache of disk blocks. Memory is shared between file system and VM.
3. Files are stored on servers. Servers have a large memory that acts as cache as well.
4. On a read, the block may be found in local memory file cache, in server memory cache or on disk
5. Several workstation can cache blocks for read-only files.
6. If a file is being written by more than 1 machine, client caching is turned off -- all requests go to server.

(C) Apollo Domain Distributed file system



File caches in sprite system

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(c) App Apollo DOMAIN system

① Apollo domain system is fully operational distributed computing environment for a network of personal workstation and network servers.

② When it was first developed in 1980, its distributed system focus was on file system that provided users of autonomous workstations with the same ease of file sharing they enjoyed with central time-sharing systems.

③ While the DOMAIN system has ~~seen~~ since been extended to provide stronger base for additional distributed system ~~files~~ facilities.

④ When a new file is created, UID for that file is derived from the time & UID ~~for that~~ of the file's workstation. (Guarantees uniqueness of UID).

⑤ A central name server maps client-readable string (Eg: "/home/dba/file1" to UIDs. The name of the server can be distributed by replicating it at multiple locations allowing client to query the nearest server.

⑥ It used lookup table for storing the location & metadata of files can locate resources trivially by querying the lookup table.

⑦ The table usually contains pointer to either the file itself or a server hosting the file who can in turn handle the file operation request.

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(d) Coda File System

① Developed by CMU ~~SIA~~ in 1987.

② It is distributed file system with its origin in AFS2.

③ Feature of Coda

① Disconnected operation for mobile computing
② Freely Available under a liberal license.
③ High Performance through client side persistent caching.
④ Server replication
⑤ Security model for authentication, encryption & access control.
⑥ Continued operation during partial network failures in server network.
⑦ Network Bandwidth adaptation.
⑧ Good scalability, performance & Reliability.
⑨ Well defined semantics of sharing, even in the presence of network failures.

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