

# [An local copy.4. when the process in the](https://assignbuster.com/an-local-copy4-when-the-process-in-the/)

An Andrew file system (AFS) is a location-independent file systemthat uses a local cache to reduce the workload and increase theperformance of a distributed computing environment. A first requestfor data to a server from a workstation is satisfied by the server andplaced in a local cache. A second request for the same data issatisfied from the local cache.

The Andrew file system was developed at Carnegie-MellonUniversity. Question one – B: 1. When a user process in a client computer issues an open systemcall for a file in the shared file space and there is not a current copy ofthe file in the local cache, the server holding the file is located and issent a request for a copy of the file. 2. The copy is stored in the local UNIX file system in the clientcomputer.

The copy is then opened, and the resulting UNIX file descriptor isreturned to the client. 3. Subsequent read, write and other operations on the file byprocesses in the clientcomputer is applied to the local copy. 4. When the process in the client issues a close system call, if the localcopy has beenupdated its contents are sent back to the server. The server updatesthe file contents and the timestamps on the file. The copy on theclient’s local disk is retained in case it is needed again by a user-levelprocess on the same workstation.

We discuss the observed performance of AFS below, but we canmake some general observations and predictions here based on thedesign characteristics described above:• For shared files that are infrequently updated (such as thosecontaining the code of UNIX commands and libraries) and for filesthat are normally accessed by only a single user (such as most of thefiles in a user’s home directory and its subtree), locally cached copiesare likely to remain valid for long periods – in the first case becausethey are not updated and in the second because if they are updated, the updated copy will be in the cache on the owner’s workstation. These classes of file account for the overwhelming majority of fileaccesses.• The local cache can be allocated a substantial proportion of the diskspace on eachworkstation – say, 100 megabytes. This is normally sufficient for theestablishmentof a working set of the files used by one user. The provision ofsufficient cache storage for the establishment of a working setensures that files in regular use on agiven workstation are normally retained in the cache until they areneeded again.– Sequential access is common, and random access is rare.

– Most files are read and written by only one user. When a file isshared, it is usually only one user who modifies it.– Files are referenced in bursts. If a file has been referenced recently, there is ahigh probability that it will be referenced again soon. These observations were used to guide the design and optimizationof AFS, not to restrict the functionality seen by users.• AFS works best with the classes of file identified in the first pointabove.

There is one important type of file that does not fit into any ofthese classes – databases are typically shared by many users and areoften updated quite frequently. Question two: Routing overlay is: A distributed algorithm known as routingoverlay, it locates nodes and objects, it is middleware layerresponsible for routing requests from clients to hosts thatholds the object to which request is addressed. The Main difference is that routing is implemented inapplication layer (besides the IP routing at network layer)It is termed an overlay since it implements in the client arouting algorithm that is quite separate from the routing ofindividual IP packets, the routing overlay ensures that any nodecan access any object through a sequence of nodes, byexploiting the knowledge at each of them to locate thedestination objectAn overlay network decouples network services from the underlyinginfrastructure by encapsulating one packet inside of another packet. After the encapsulated packet has been forwarded to the endpoint, itis de-encapsulated. Overlay routing is different than IP routing however is stronglyinfluenced by IP routing, Routing tables may be updatedsynchronously or asynchronously. The authors of Pastry have developed the Squirrel peer-to- peer webcaching service foruse in local networks of personal computers