



RAMA UNIVERSITY

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FACULTY OF ENGINEERING & TECHNOLOGY

BCS-501 Operating System

Lecturer-33

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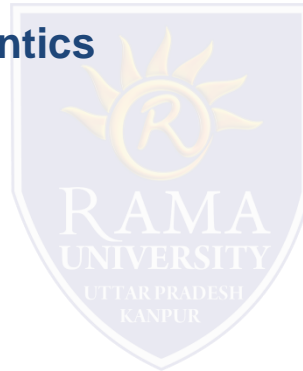
File Sharing

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File Sharing – Remote File Systems

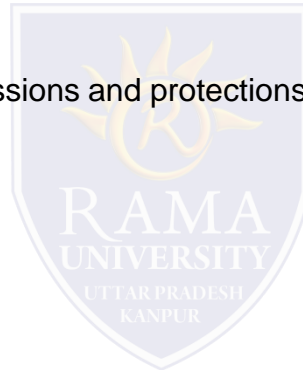
File Sharing – Failure Modes

File Sharing – Consistency Semantics



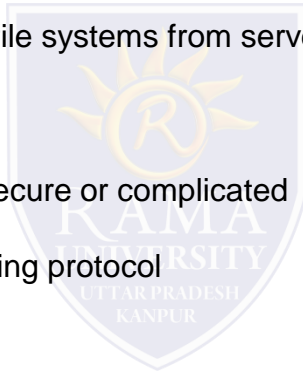
File Sharing

- Sharing of files on multi-user systems is desirable
- Sharing may be done through a protection scheme
- On distributed systems, files may be shared across a network
- Network File System (NFS) is a common distributed file-sharing method
- If multi-user system
 - User IDs identify users, allowing permissions and protections to be per-user Group IDs allow users to be in groups, permitting group access rights
 - Owner of a file / directory
 - Group of a file / directory



File Sharing – Remote File Systems

- Uses networking to allow file system access between systems
 - Manually via programs like FTP
 - Automatically, seamlessly using distributed file systems
 - Semi automatically via the world wide web
- Client-server model allows clients to mount remote file systems from servers
 - Server can serve multiple clients
 - Client and user-on-client identification is insecure or complicated
 - NFS is standard UNIX client-server file sharing protocol
 - CIFS is standard Windows protocol
 - Standard operating system file calls are translated into remote calls
- Distributed Information Systems (distributed naming services) such as LDAP, DNS, NIS, Active Directory implement unified access to information needed for remote computing



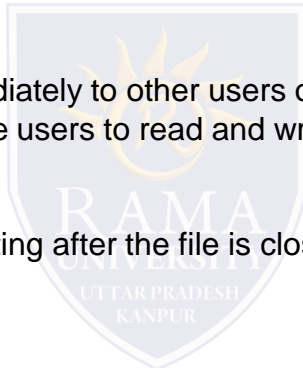
File Sharing – Failure Modes

- All file systems have failure modes
 - For example corruption of directory structures or other non-user data, called metadata
- Remote file systems add new failure modes, due to network failure, server failure
- Recovery from failure can involve state information about status of each remote request
- Stateless protocols such as NFS v3 include all information in each request, allowing easy recovery but less security



File Sharing – Consistency Semantics

- Specify how multiple users are to access a shared file simultaneously
 - Similar to Ch 5 process synchronization algorithms
 - Tend to be less complex due to disk I/O and network latency for remote file systems
 - Andrew File System (AFS) implemented complex remote file sharing semantics
 - Unix file system (UFS) implements:
 - Writes to an open file visible immediately to other users of the same open file
 - Sharing file pointer to allow multiple users to read and write concurrently
 - AFS has session semantics
 - Writes only visible to sessions starting after the file is closed

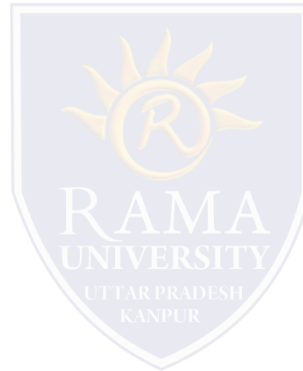


Reliability of files can be enhanced by :

- a) by keeping duplicate copies of the file
- b) making a different partition for the files
- c) by keeping them in external storage
- d) keeping the files safely in the memory

security is only provided at the _____ level.

- a) none of the mentioned
- b) high
- c) central
- d) lower



The major issue with access control lists is :

- a) their maintenance
- b) all of the mentioned
- c) their permissions
- d) their length

Many systems recognize three classifications of users in connection with each file (to condense the access control list) :

- a)) Universe
- b) Group
- c) owner
- d) All of the mentioned

security is only provided at the _____ level.

- a) none of the mentioned
- b) high
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- d) lower

