Lecture 21

- last few file system things
- security

Post-

POSIX File systems

Consistency:

- close-to-open consistency (NFS, AFSP)
- strict consistency (POSIX)

 NFS -

Secure File System

Performs better on big file rather than small file
eventual consistency

host fs

multi-path

raid

google fs

3-way (or more) replication
distributed.

non-file-system key-value-store

Security:

unknown agent

operating resource

authentication

none/implicit

something you have known

password

token,

one-time password

password & authentication:

1. clear text → pw1, pw2

dictionary attack

dict → f(dict)

2. one-way hash

3. one-way + nonce

pw → j(pw + nonce), nonce
Password over a network:

Most straightforward way → cleartext → hash ->

\[\text{client} \rightarrow \text{hash (pw + nonce)} \rightarrow \text{server}\]

goals

- privacy
- non-interference
- confinement 2 e.g. clawfield data
- attack - inherent & external
- robustness
- availability

Privacy: confidentiality of data actions.

Non-interference: integrity of data actions.

Authorization:

user, action, object →

\begin{tabular}{|c|c|c|}
\hline
user 1 & u 2 & u 3 \\
\hline
r 1 w & r 2 \\
\hline
\end{tabular}

object

owner \{ action \}
group \{

world \{ action \}

User, object → actions

object → (user, actions)

create file
change permissions
list dir
traverse dir