

Lecture 9

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Discussed Papers

- The Evolution of the UNIX Time-Sharing System - Ritchie - 1984
- The Rise of "Worse is Better" - Gabriel - 1991

9.1 Unix System

UNIX system was developed by Ritchie and Thompson at Bell Labs on a PDP-7 machine to run "Space Travel". Because of the monopoly Bell had on telephone system; Bell labs had virtually unlimited money to invest on research and this gave opportunity to many of their researches to work on different side projects. UNIX can be described as a one man's system. It was built not to satisfy a range of users so things were kept very simple. It was the first system to support untyped files, shell, mounting, pipes, etc. Unix lacks a well defined permission hierarchy or an access control list and supports only three classes of permission.

9.1.1 Everything is a File

One of the most important aspects of Unix systems is that everything is considered a file. This gives Unix access to a wide range of I/O resources in a unified manner and provides a common abstraction for handling them.

9.1.2 NFS vs. AFS

Andrew file system is a transparent file system. It uses a set of servers to create a transparent view of the world and thus it doesn't scale well. NFS used in Unix on the other hand allows a user on a client computer to access files over a network in a manner similar to how local storage is accessed. This is one of the places where we can see the concept of worse is better in action. NFS although less elegant, has the easier more straight forward implementation and thus is widely used.

9.2 Apple

News of Jobs' death was released last night. A small detour was made to discuss his business philosophy and methods he used as an industrial designer. The iPhone application development environment was also discussed. iPhone uses chroot jail to lock applications in a closed environment. What it basically does is it assigns a folder to each application and the application is then responsible for having all the files it needs on that folder. iOS changes the apparent root directory for the current running process and its children.

A program that is run in such a modified environment cannot name or access files outside the designated directory tree.