Topics: Spotlight on Servers

Approach: Two major Examples: timeserver, mini web server

Today's System Calls: socket(), bind(), listen(), accept(), connect()

Outline

Once one used files and programs on one computer.
Now files and programs can be anywhere. How does it work?

Overview of Client-Server Programming

Abstracting the main functional units into separate functions.

```
make_server_socket(portnum)
connect_to_server(hostname,portnum)
process_request(fd) - talk_to_server(fd)
```

Server Design

The Time Service

1. purpose
2. big picture
3. the server: process_request
   takes a call
   computes the time, tells the caller, hangs up
4. the client: talk_to_server
   makes a call
   copies reply to stdout

An Alternate Time Service

5. the server: process request
   takes a call
   forks - child redirects stdout, execs date
   parent waits (?)

Pros and Cons of Using New Processes

A Mini Web Server

What is a web server? - A remote shell
allows ls, cat, and exec remotely

Building a Web Server
The Main steps
The Protocol : explore it with telnet (see rfc1945)
The Main Loop : take request, send reply
Processing the Request
error handling
listing directories
executing programs
displaying files