Socket Names and DNS

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INFO-I320
Reading

1. Rhodes and Goerzen, Chapter 4
Names

- Naming and name resolution
- Hostnames
- Domain names
- Socket names?
  - (host, port)
    - (’www.example.com’, 80)
    - (’192.168.1.41’, 32696)
Name Resolution and DNS

- Translation of hostname to IP address
- Configuration files
  - /etc/hosts
  - /etc/host.conf
  - /etc/resolv.conf
  - WINS
- Try /etc/hosts first, then DNS
DNS: Domain Name Service

- Globally distributed, hierarchical database
- Host names, IP addresses, etc.
- Each server provides data for hosts within its organization
  - May also cache recently served external hosts
- Your computer “knows” one or more DNS servers; DNS lookup begins with the primary
Example

Assume

- Query: www.cs.ucla.edu
- Primary DNS server: dns.myisp.com

Process (most queries may return an answer or the address of the next name server):

- /etc/hosts
- dns.myisp.com
  - Top-level domain server for .edu
  - Name server for ucla.edu
  - Name server for cs.ucla.edu
Modern Address Resolution

socket.getaddrinfo is newer and more flexible than socket.gethostname, socket.gethostbyname, etc.

Example on p. 55: tuple deconstruction

*ftpca[0:3]
IPv6

- Is it here?
- Incentives for using IPv6
- Queries

```python
>>> getaddrinfo('www.google.com', 'http', family=AF_INET6)
>>> getaddrinfo('www.iue.edu', 'http', family=AF_INET6)
```

- Connect?

```python
>>> sock = socket(family=AF_INET6, type=SOCK_STREAM)
>>> sock.connect(('www.google.com', 80))
```
Other Matters

- Reverse DNS lookup
- Zeroconf
- Dynamic DNS
Unix Commands

- ping
- hostname
- host
- nslookup
- dig
- man pages for these