Naming

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Fall 2016

NAMES & ADDRESSES
Types of Identifiers

- **Names**
  - for human consumption
  - location independent

- **Addresses**
  - used internally in system
  - encoding aids in locating entity

**Saltzer’s (1977) Naming Objectives**

- Share objects by references to names
- Multiple, independent name *creators*
- Sharing (and naming) *independent of location*
  - Objects can move without changing names or embedded references to names
- Object references can proceed *even if some systems are down or isolated*
Lampson’s (1986) Name Resolution Service adds:

- Universal (all distributed objects)
- Arbitrary number of names and administrative organizations
- Long duration with many changes in the name space and its configuration
- Mistrust among users

**Names and Name Contexts**

```
root context
  usr
  src

“usr” context
  jasleen

“src” context
  foo

“/usr/jasleen”

“jasleen” context
  foo.c

“/src/foo/foo.c”

object
  foo.c
```

Internet Names and Addresses

- **Internet Names**
  - Human consumable, location independent, identifiers for hosts, service aliases, etc.
  - examples:
    - swift
    - capefear.cs.unc.edu
    - www.amazon.com

- **Internet Addresses**
  - 32 bit integer (IPv4) or 128 bits (IPv6)
  - identifies connection to Internet
    - synonymous with network interface
  - examples:
    - 152.2.128.19
    - 152.2.128.25
    - 208.33.218.15
Domain Name System

- Primary functions:
  - Map domain names for machines to Internet addresses
    - maps name to list of addresses \{0, 1, ..., N\}
    - e.g.,
      - capefear.cs.unc.edu \rightarrow 152.2.128.19
      - swift \rightarrow 152.2.128.25
      - www.llbean.com \rightarrow \{65.124.170.23, 65.126.254.23\}
  - Map domain names for service aliases (e.g, mail) to Internet addresses
    - mail.cs.unc.edu \leftrightarrow wren.cs.unc.edu \leftrightarrow 152.2.128.86
Name Hierarchy in DNS

- Domain name is “dot” separated catenation of domain names along path toward the root
- Example: unc.edu, cs.unc.edu, capefear.cs.unc.edu

Top Level Domains

- Generic Domains
  - Current
    - .com, .org, .net, .edu, .gov, .mil, .int, .biz, .info, .name, .pro, .mobi
  - Special Sponsored names
    - .aero, .coop, .museum, .jobs, .travel

- Country Code Domains
  - (.uk, .de, .jp, .us, .cn, .in, etc.)
Growth of DNS Registrations

Internet Domain Survey Host Count

July 2014: 1,028,544,414

Some Recent Prices

BuyDomains.com, GreatDomains.com, 8/20/07

- SoulSeek.com $4,550,000
- healthcare.com $3,999,000
- shrimp.com $3,000,000
- message.com $750,000
- BeatStreams.com $380,000
- streetmaps.com $375,000
- LuvHomes.com $359,000
- defy.com $350,000
- lovelife.com $350,000
- ConnectingStudents.com $318,000
- WorkSearch.com $313,000
- Fun4Mobile.com $265,000
- sourcecodes.com $250,000
- main.com $250,000
- Grappa.com $250,000
- TeamSpeak.net $240,000
- PopcornMachine.com $225,000
- Muertos.com $215,000
The story of .tv domain

Since 1999, Tuvalu has been able to earn over several million dollars a year marketing its Internet domain name through the American company .TV Corporation. Tuvalu’s unique suffix, ”.TV”, attracts interest from many individuals, entities and television companies around the world, and some have been willing to pay large sums for internet addresses such as www.china.tv or www.nbc4.tv. The scheme got off to a rough start, but has now proven to be the largest source of income for the nation. http://www.tuvaluislands.com/about.htm

- videos.tv $250,000
- cinema.tv $250,000
- movie.tv $250,000
- trips.tv $250,000
- food.tv $125,000
- sx.tv $100,000
- channel.tv $85,000
- hamberger.tv $80,000