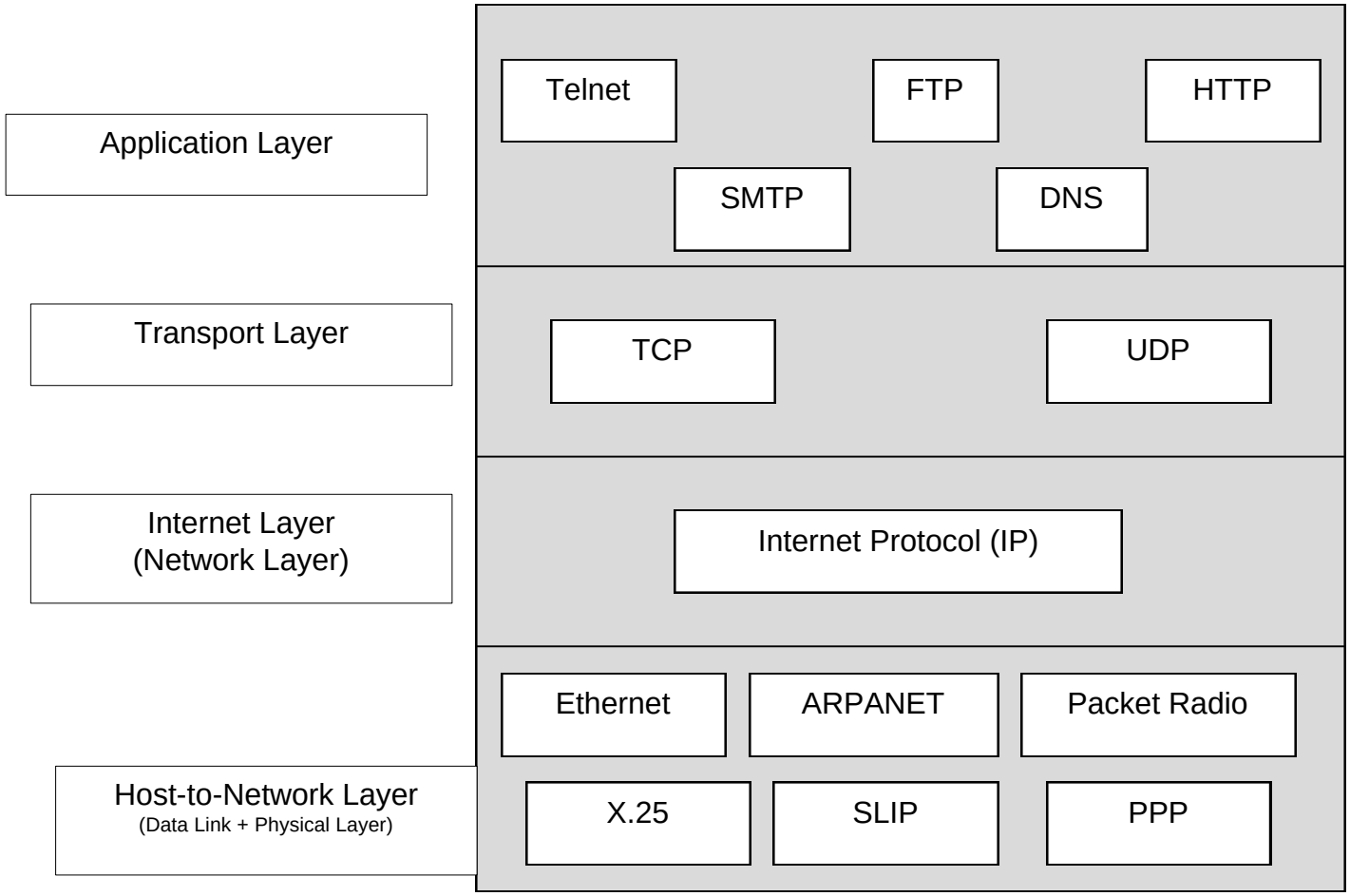
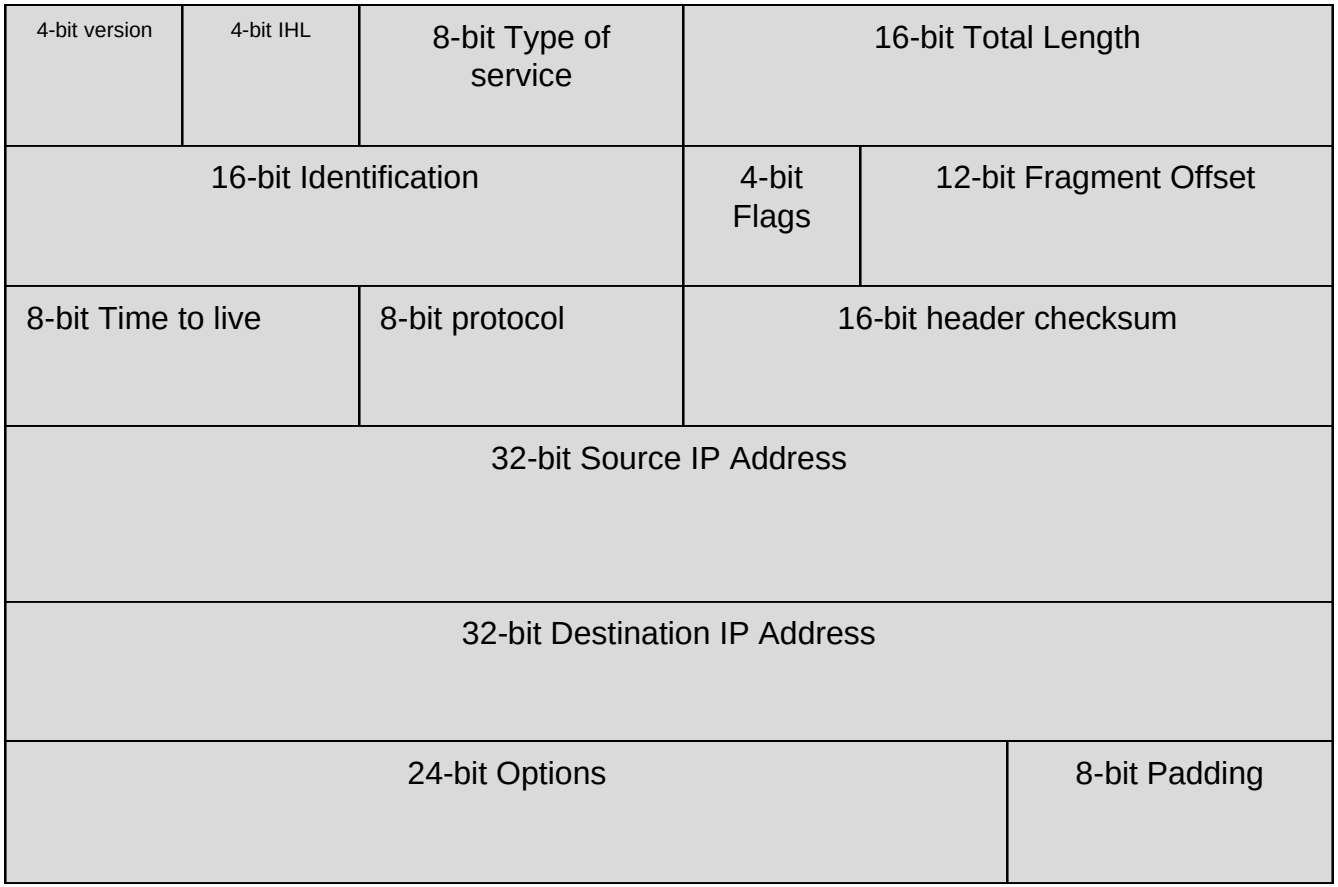
Electronic Commerce: Network Infrastructure

TCP/IP – Reference Architecture



Internet Layer-



Internet Protocol Packet Header

Internet Layer- IP Addresses

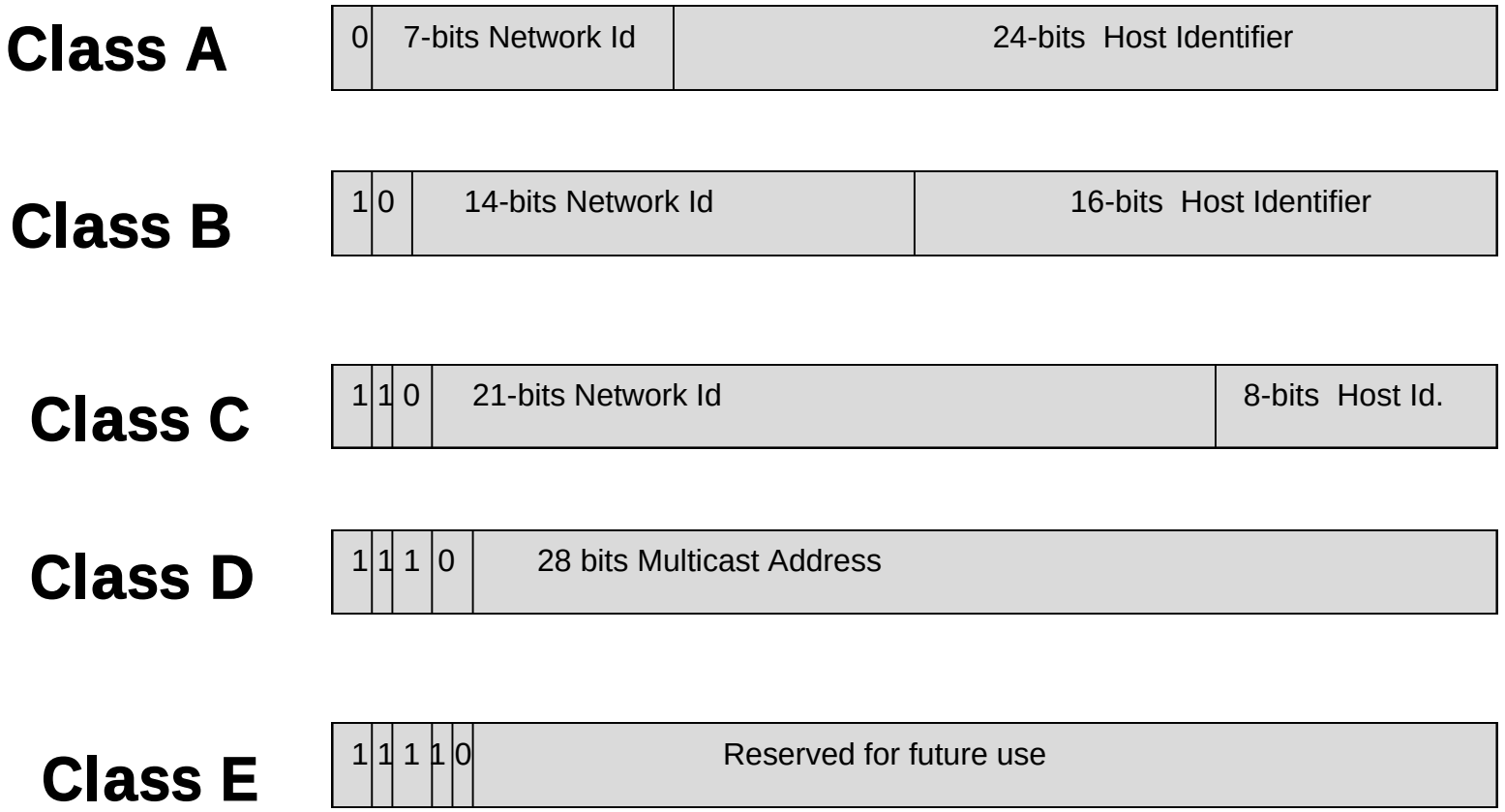
- Every Host and Router on Internet has a Unique number assigned to it. The number is called Internet Protocol Address. Network Information Center (NIC) now IANA, assigns these numbers
- Designers of Internet Protocol used 32 bit address space to assign the IP address. Thus, 0 - 2^{32} -1 as address numbers.
- For ease of readability , number is read as decimal number form, 8 bits at a time, separated by "." e.g., 32 bit address

  10000001 1000000 00000010 00000011

  is denoted in *dotted decimal notation* as

  129.128.2.3
- For routing purposes, address has two components - Network Id (netid) and Host Id. It reduces the size of routing tables. Routing is concerned about making sure packet reaches the right network.

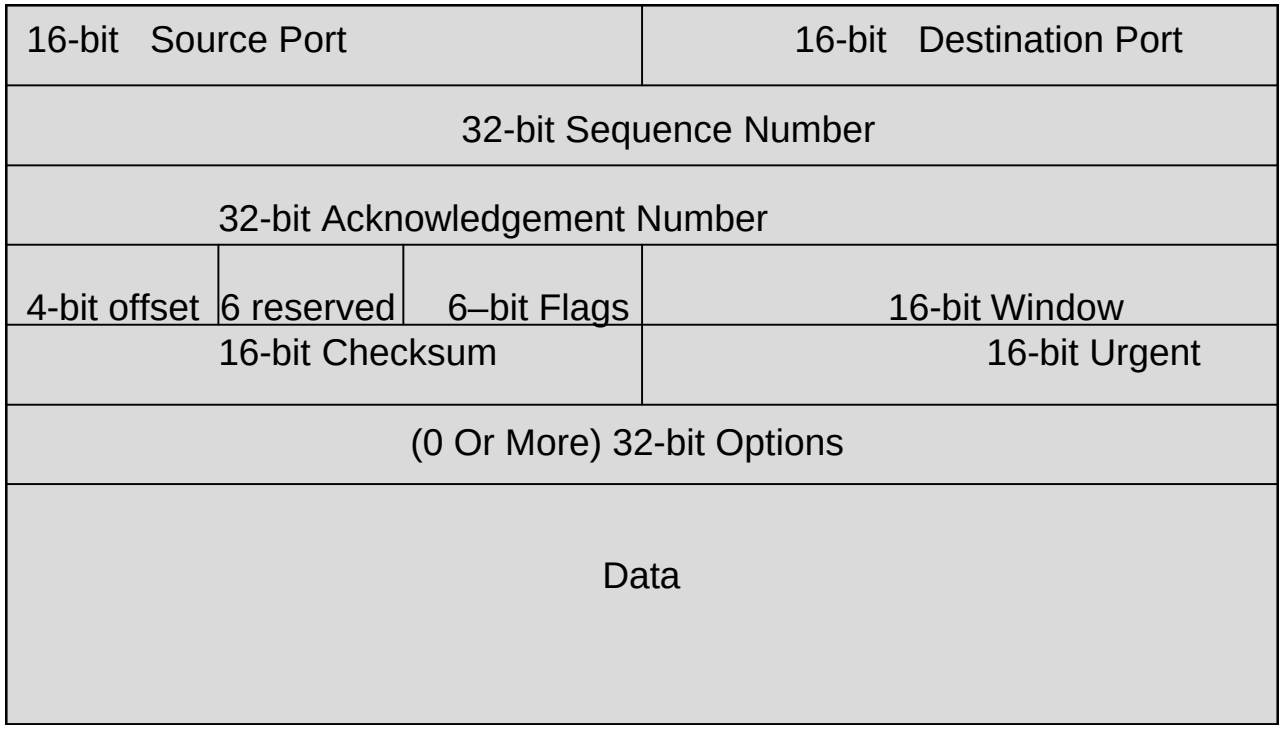
Internet Layer- IP Addresses



Local Area Networks- Media Access

Address Class	Number of Networks	Hosts
A	127	16,777,214
B	16,383	65,534
C	2,097,151	254

TCP Packet Format



UDP Packet Header Format

16-bit Source Port	16-bit Destination Port
UDP Length	UDP Checksum

Domain Name System (DNS)

IP Addresses are difficult to remember and It's way easier to associate hosts with symbolic names

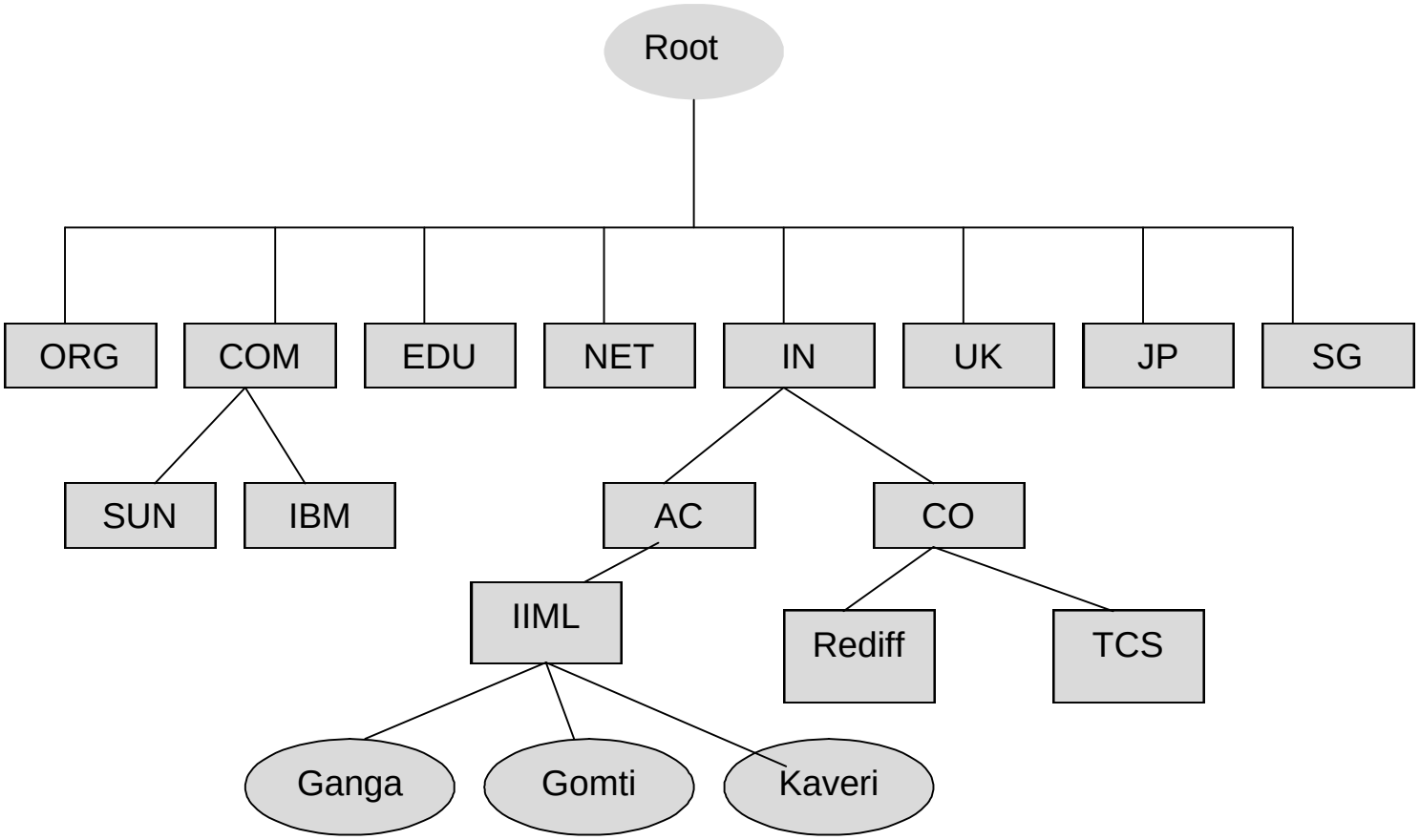
Originally, the file /etc/hosts containing the list of hostname and IP addresses was used for translating name to IP address (Resolving).

Approach worked for few hundred hosts, every night each host will fetch common hosts file from InterNIC computer. Larger the number more resolution conflicts and inconsistent data.

SOLUTION

- a hierarchical directory look up
- Domain based case insensitive Naming Scheme
- Maps Names and Email destinations to IP Addresses

DNS-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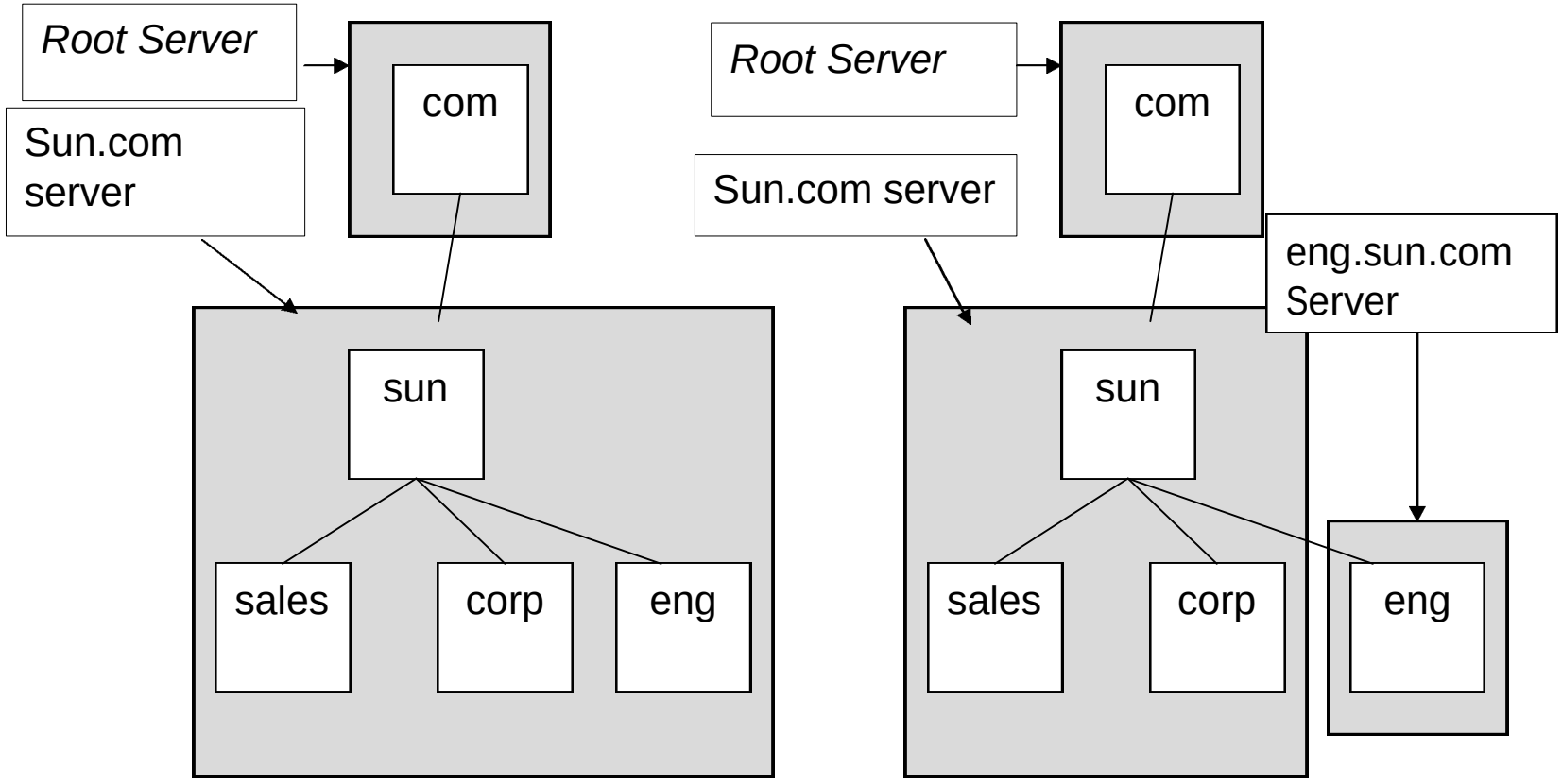
ORG
COM
EDU
NET
IN
UK
JP
SG
SUN
IBM
AC
CO
IIML
Rediff
TCS
Ganga
Gomti
Kaveri

DNS – Alternate Organizations



Internet Industry Structure

