Domain Name Service
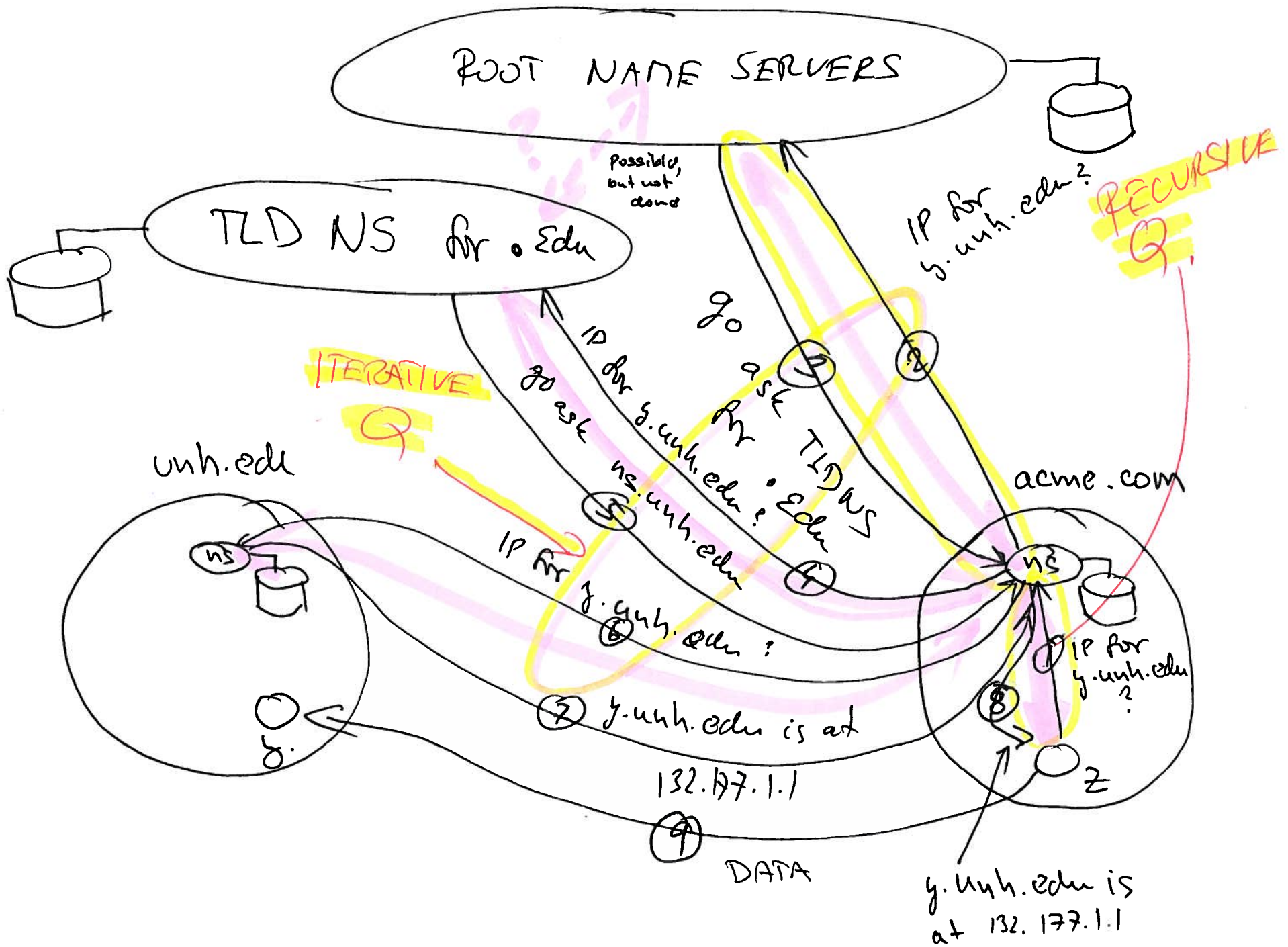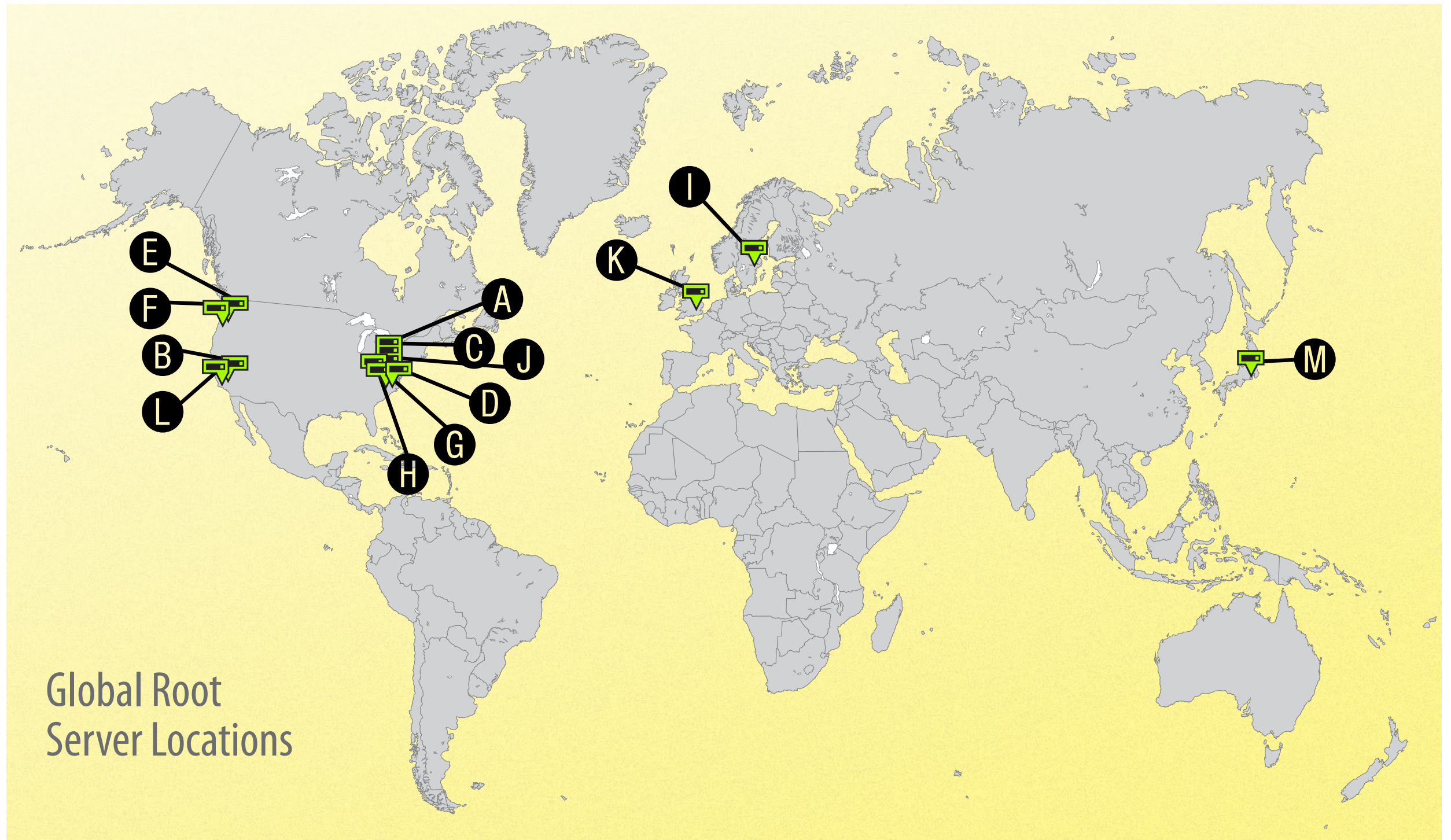
▸ Distributed, redundant, hierarchical database

- ownership

- characteristics of the organization (.com, .org, ...)

- geography (.uk, .cn, .nh.us)

▸ Query delegation:

- recursive

- iterative (non-recursive)

ROOT NAME SERVERS

TLD NS for .Edu

Possible, but not done

IP for y.unh.edu?

RECURSIVE Q

ITERATIVE Q

go ask TLD NS for .Edu

go ask ns.unh.edu

IP for y.unh.edu?

IP for y.unh.edu?

unh.edu

ns

y.

acme.com

ns

IP for y.unh.edu?

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

⑦ y.unh.edu is at

132.177.1.1

⑨ DATA

Z

y.unh.edu is at 132.177.1.1

Root Name Servers

Global Root
Server Locations

DNS Records (examples)

A	address record
AAAA	IPv6 address record
CNAME	canonical name record
MX	mail exchange record
NS	name server record
PTR	pointer record
SOA	start of authority record
TXT	text record

▸ DNS tools: `nslookup`, `host`, `dig`

TELNET — protocol

application (client)

telnetd — server

stdin

stdout

telnet

PROT. STACK

Eph. port #

reliable, bidirectional, connection-oriented communication

(TCP)

well-known port #

23

telnetd

fork()

stdin

PROT. STACK

sh

Stdout

a service process