

## Lecture 6

27 August 2021 17:03

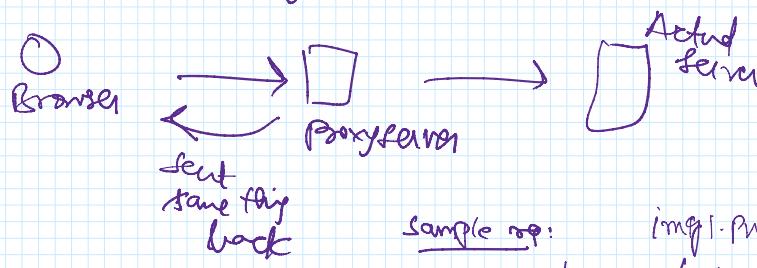
- Recap → HTTP ✓
- FTP ✓
- SMTP ✓ Simple Mail Transfer Protocol
- DNS ✓ Domain Name Systems
- P2P applications ✓
- Conclude APP layer.

HTTP - Hypertext Transfer Protocol.

- HTML Pages transfer.

- HTTP Request → Proxy.py → started a TCP server.

→ Mozilla → set proxy → localhost 12000



- HTTP Response



Sample req: img1.jpg ✓  
GET /img1.jpg

✓ POST  
✓ PUT  
✓ HEAD  
DEL.

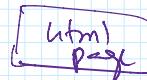
② ↗ Stateless protocol → The server will not keep any information about previous requests.

↙ { Which client  
Which page

③ ↗ → Proxy server

= conditional GET

HTTP req. msg. } User Agent:  
{ Connection: Alias /close  
If Modified Since: 26 Aug 2021 ✓



HTTP Resp  
# Not modified.

HTML page.

FTP - file Transfer and ...

## FTP - file Transfer protocol.

→ control conn  
→ data conn

ls ↗

file transfer Command

→ Control  
TCP  
Conn.

ctrl Port 21  
data 20 port.

{ → out of band - FTP  
→ In-bound - HTTP }  
→ non-persistent conn. (data conn)  
→ state-based protocol.

Host

file  
data

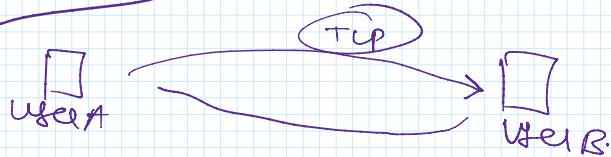
Data  
Req/  
Serv

RFC 3080 - Request for comments

↑  
Standards are explained  
in these docs.

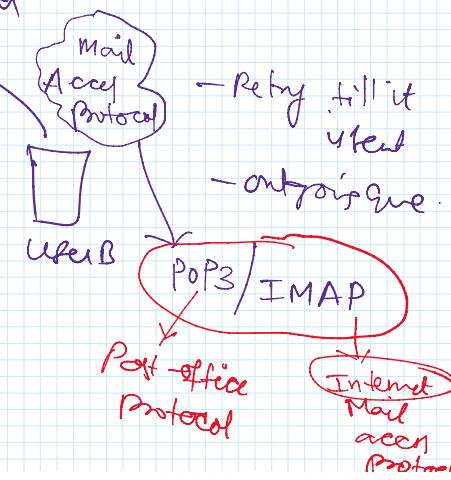
## SMTP - Simple Mail Transfer Protocol.

Direct conn



Issues

- Always ON
- I.P. may change
  - not known to other party



- ① outgoing queue ✓
  - ② Mailboxes for each user ✓
- ↗ incoming mes

② Mailboxes for each user ✓

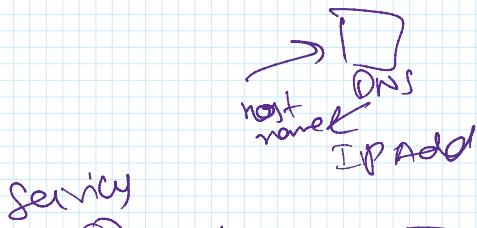
→ incoming msg stored.

• ~~http~~  
Protocol

Internet  
Mail access  
Protocol

## DNS - Domain Name System

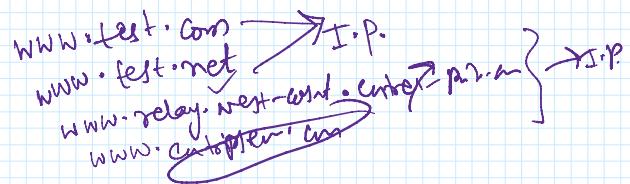
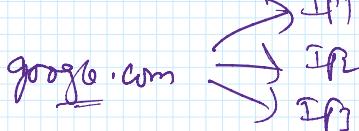
- Device identify IP address
- alias hostnames



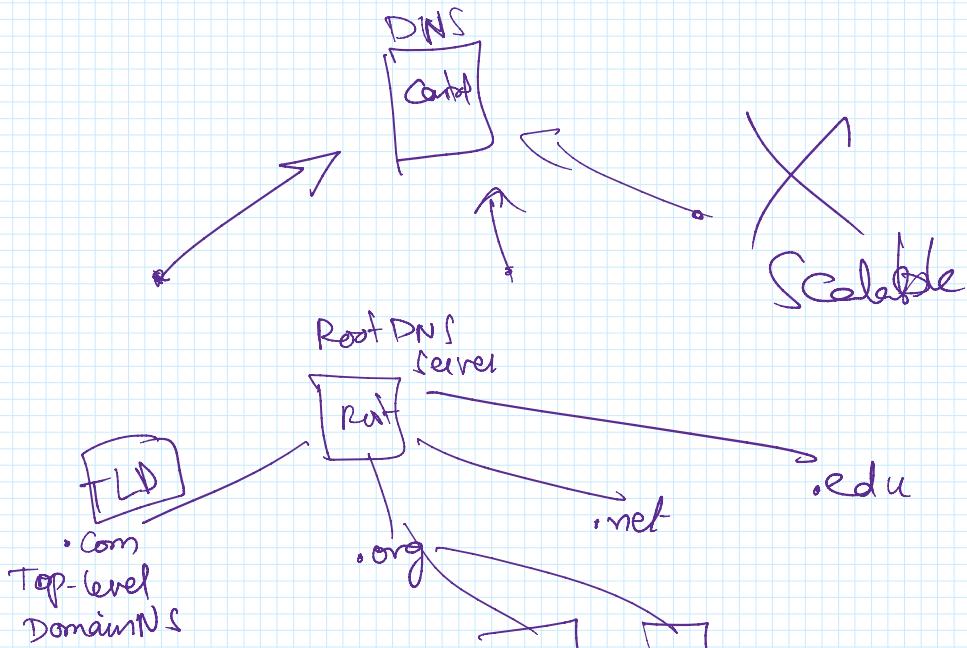
① hostname → IP Add

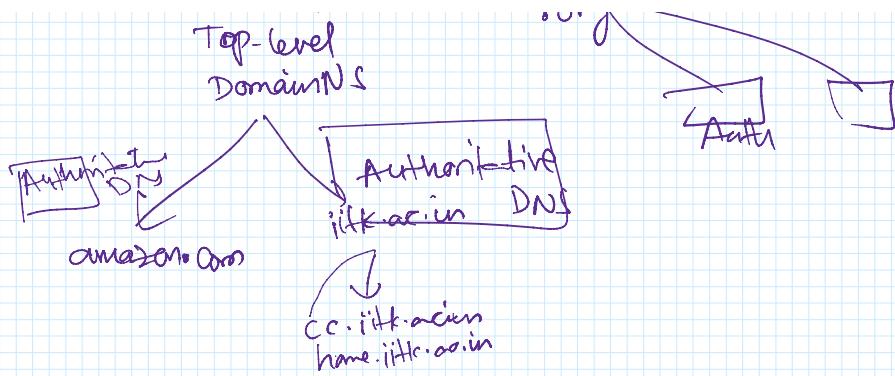
② Local Distribution →

③ Host Aliasing

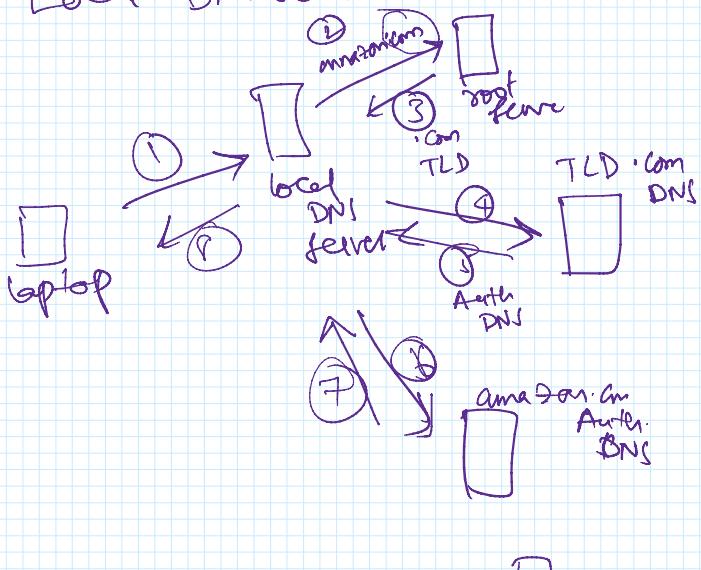


## Structure of DNS database distribution





Local DNS server at ISP level.



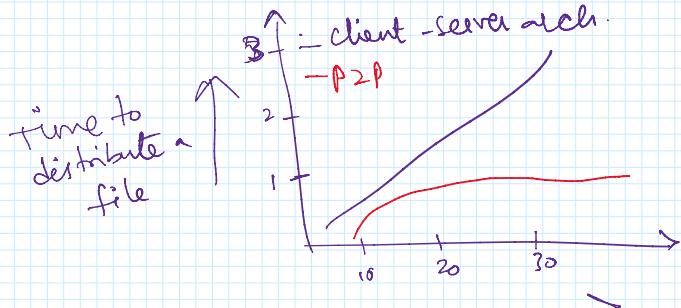
DNS Records

DNS Sec 2.5  
Kunje & Ravi book  
6<sup>th</sup> edition  
(Indian version)

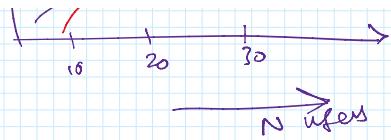
Type A:  
NS: Authoritative

P2P

— Scales well with number of users.



(Refer Sec 2.6 of  
Kunje & Ravi book  
6<sup>th</sup> Edition  
(Indian version))



Indian  
versim)

## ② Bit-torrent protocol.

→ Tracker (Infrastructure node that keeps track of which peers contain a copy of a particular file.)

- Has the I.p. address of those peers.)

→ tit-for-tat incentive mechanism.