

Architecture of Network Applications

- that Run on a Network.
- Allows user to Access & share resources
Communicate each other & perform Various tasks.

Client-Server Architecture

- It having 2 component
 - ↳ Client & Servers
- client that make req. for resources
 - services from the server.
- server that provides resources
 - services to client
- This archi. Widely used in
 - Web applications
 - File sharing
 - Email System

Persistent & Non-persistent

→ 2 diff approach for handling the comm b/w Client & server.

Definition

→ Persistent

↳ In which the client & server maintain a continuous conn. even after the initial req. has been fulfilled.

→ N-P

↳ Client & Server establish a new conn. for each req. & then close it once the response has been requested.

Overhead

→ less overhead

↳ due to no need to establish new connection for each request

→ More overhead

↳ Every time new conn. for each req.

↳ Which can slow down the process.

Performance

- **Faster**, especially for web appli. that involve multiple req.
e.g. - dynamic web application
- **Slower**, especially for web appli. that involve multiple req.
e.g. - dynamic web application

Security

- Vulnerable to attacks if Conn. is left open for too long.
- More secure ↳ Close Conn. closed after each Req.
- Persistent is preferred for app. with high traffic & with frequent req.
- Non-Persistent is for
 - low traffic
 - Infrequent req.

Security

↳ Secured using TLS or SSL
↳ Transport Layer Security Layer
↳ Secure Sockets Layer

SMTP

- Used for transmitting Email message b/w Server on the internet.
- Used for sending & Receiving Email.

Client - Server Architecture

→ Email client act as the SMTP Client & " " server act as SMTP server.

Port No

→ 25 by Default

Email Transfer

↳ Store & Forwarding

→ Email is temporarily stored on the SMTP server before being forward to the recipient's Email Server.

Security

→ TLS or SSL

→ SMTPS is secure version of SMTP

MIME

↳ Extended the capabilities of SMTP

by allowing Email to contain Multimedia

↳ Images

↳ Audio

↳ Video



Content Type

↳ including text/plain

image, audio & video.

↳ Each content type is identified by a unique MIME type

↳ which includes message header

Encoding

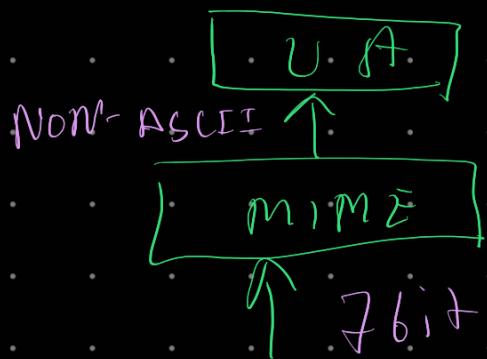
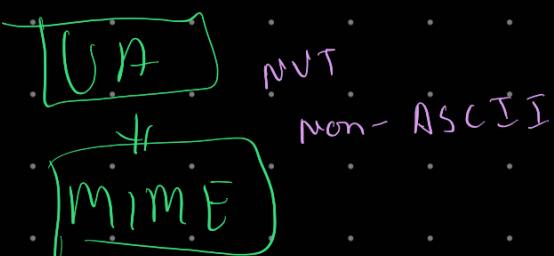
- ↳ Set of Enc. Method that can be used to convert non-ASCII to Binary.

Compatibility

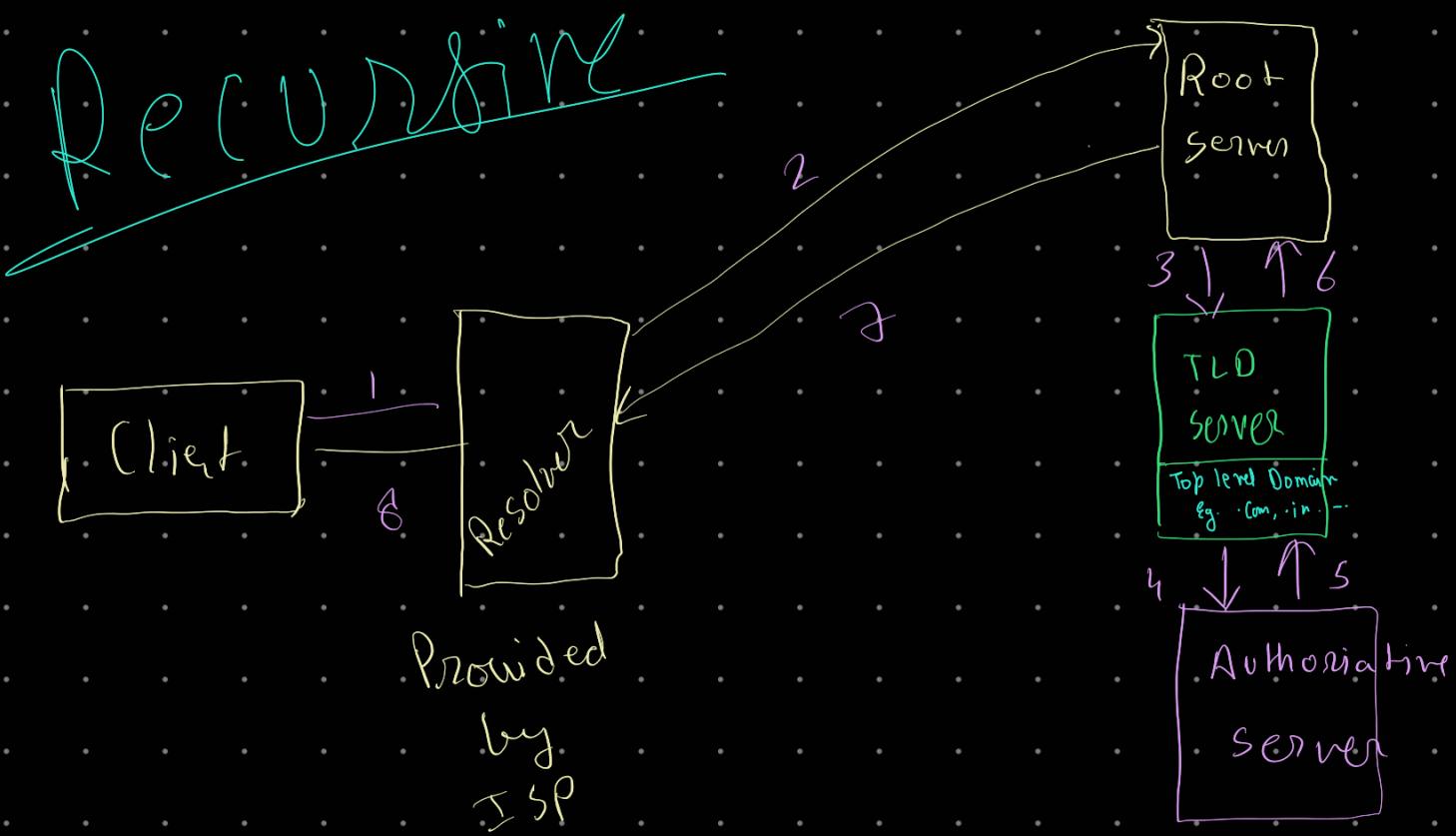
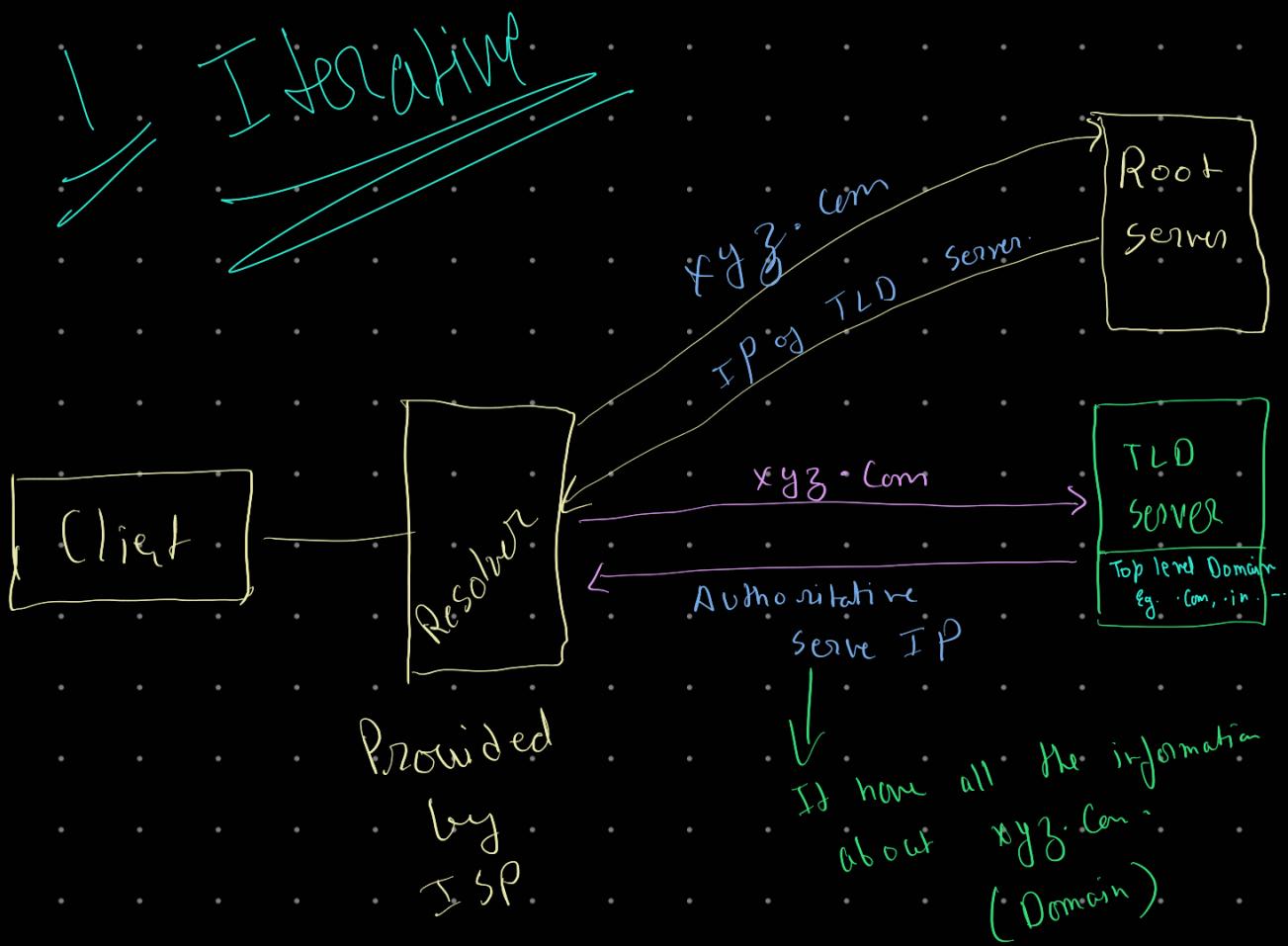
- ↳ Widely used; Easy to send & receive multimedia Email msg.
- ↳ The older Email client & server that do not support MIME.
- ↳ Still send & receive Text Email.

Security

- ↳ add Digital Signature & Enc. to Email msg.



DNS



→ Sys. that translate human-readable

domain names such as google.com.
into IP addresses

i 127.2 - -

2 Naming Hierarchy:

↳ TLDs

such as .com .net

.org

Sub domain

→ mail.google.com

↳ Each domain name have unique IP.

3 Resolution

↳ Process of translating a domain name
to IP address

3 Security

↳ Vulnerable to

↳ DNS spoofing

→ Cache poisoning

→ DNS hijacking

P2P

↳ Method of distributing large files over the internet in which files are shared directly b/w user.

1 Decentralized

↳ No central server that host the file

2 Multiple Sources

↳ files are shared directly b/w users

↳ Each user who downloads a file also become a source of that file.

→ Downloading from multiple source simultaneously

→ download faster & more reliable

3 Scalability

→ Distribution is highly Scalable,

→ More sources for that file.

→ Makes the download faster & more reliable.

↳ Security

↳ Vulnerable to security threats

- ↳ Malware
- ↳ Viruses

↳ Legal Issue

↳ It allows users to share (CR) material without authorization.

→ Decentralized

→ Scalable

