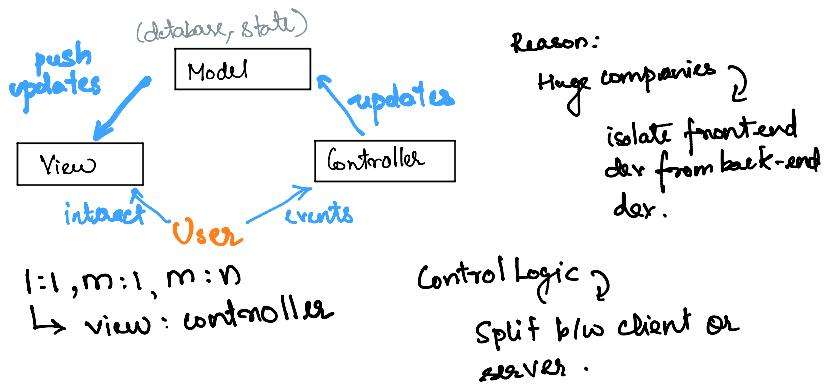


Model View Controller

Wednesday, 1 March 2023 3:38 PM

Model View Controller / Model View - ViewModel



Thick Client → All business/control logic written on client side.

Thin Client → All business logic on server side. Eg: Flutter.

Rendering vs Rasterisation

Rendering: tracking different components together (composing views in a format).

Rasterisation: conversion to bitmaps for display on screen.

Sends output to client, which rasterises onto screen.

MVC 2
shortcoming)
hard to use if we don't get the relations right.

View → A blank canvas
React → uses DOM, not rasterisation.
2 copies of DOM.
One on client & one on server
Virtual DOM.

Smart Client Architecture

Controller + Model on both server + client & sync both.

update both client & server simultaneously.

No transactions are possible due to conflict

Conflict Resolution:
Conflict-free data structures.

MV-VM
<Model View → ViewModel>

Lecture 1

• PAXOS made simple

MV-VM

<Model View → ViewModel>

Windows Presentation framework - Microsoft
< SuperLight >

• PAXU mean

simple

• Chubby Look
service



Sqllites.

Room
(ORM) → Smart. Pool of collections.
Requests were multiplexed.
• Pagination

(bt) Objects

Room : Observer to notify
updates in DB to
ROOM

LIVE
DATA

Sqllite → Not more than
8mb → Or
Exception
thrown.
For
entire
app.

server side → Streaming
grabs logs to get changes.

PATTERNS

ADAPTER

WHAT?

API ←
↑
Abstract
Impl] Violate Open-Closed Principle

DECORATOR

API + Impl

DECORATOR

API → Impl → ERP violated

FACADE

Restricted API ← Impl → Violate LSP

MVC, MVVM → Prev Class.

Mistake in Slides - MVC : Diagram in slides is wrong

provision apps on phones → (managed by enterprise)

MDM → Mobile Device Manager (Kinda like parental control for employees)

Smart Client → Remotely wipe the device possible.

Zero Trust → Auth mechanism, Device ID & an attestation for it,
 client ID & pub/pnv key

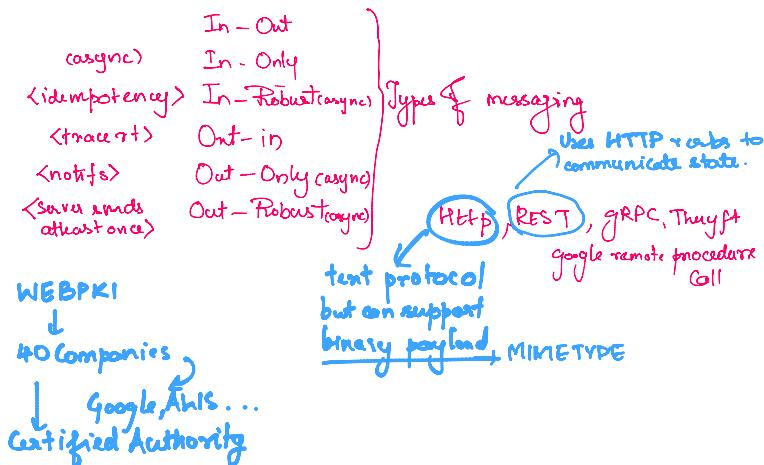
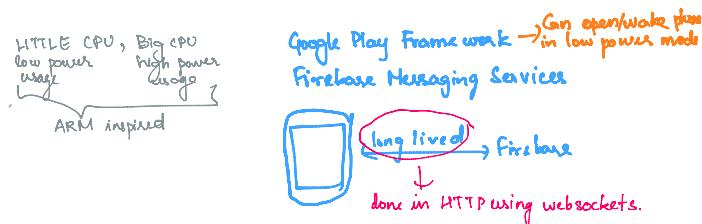
↳ Server trusts on seeing
 this attestation.

How the server will know?
 Public key revocation possible at any time.

port DB
 in client

port DP
 in server

Snapshot clear, but conn. loss might cause problems.



Security in Android

Compiled in GCC → 2008

2016 → LLVM,

musl → can be linked with LLVM or GCC.
 libc
 clang
 libstdc++
 Linux APIs are written in C.
 No interpreter or GC in C/C++.
 Allocator with no GC → native code.

Intermediate
 representation
 LLVM → IR (bitcode)
 GCC → GIMPLE

Why is intermediate code necessary?

Removes need for various versions for each updated std of C++.

LLVM → can compile Go, Julia etc.

Render Script → IR is run by interpreter

Emulates 3D graphics in SW.

LLVM : Sanitizers
 → ASAN <Address San>
 → TSAN <Thread San> (debug)
 → MSAN <Memory San> (debug)

Generic (debug)

HIW (Prod)

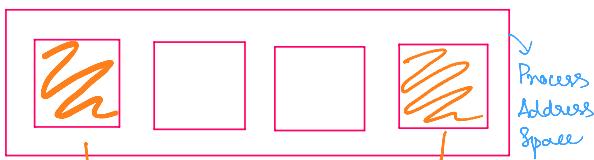
SIN (debug)

...

LLVM : Sanitizers

- ASAN <Address San> → min (green)
- TSAN <Thread San> (debug) → TSAN (debug)
- MSAN <Memory San> (debug)
- UB SAN <Undesired Behavior> (can be enabled in production)

Allocator in Android → Scudo (Slack Allocator)
16 bit allocation.



Segmentation ↙ Poison Areas / Guard pages
(Red Zones)

Usage → Array index out of bounds, use before init, use after free

Error is thrown if we try to free red zones.

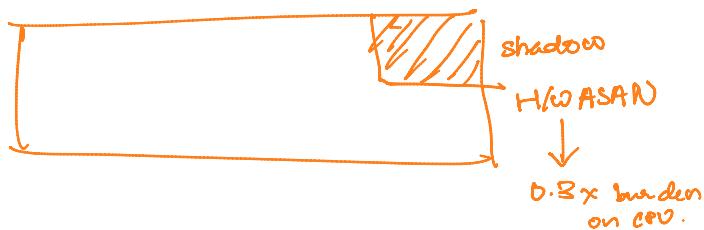
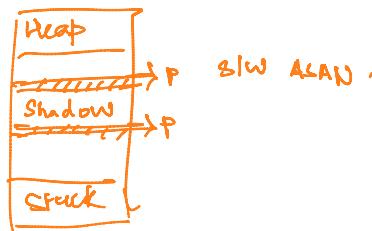
C++ avoids gc, cuz it's faster to do GC on your iphone, but if there's such an allocator, there's gc anyways.

RSS → Residence Set Size.
* Quarantine (epoch) → then unpoisoned & ready to be allocated

Escape Analysis → C++, Java ✓
Android X

In dynamic, you create objects / allocate memory in runtime when you don't know the size required beforehand. So, for this we need heap, which is variable in size and can accommodate the requested allocations.

XOM

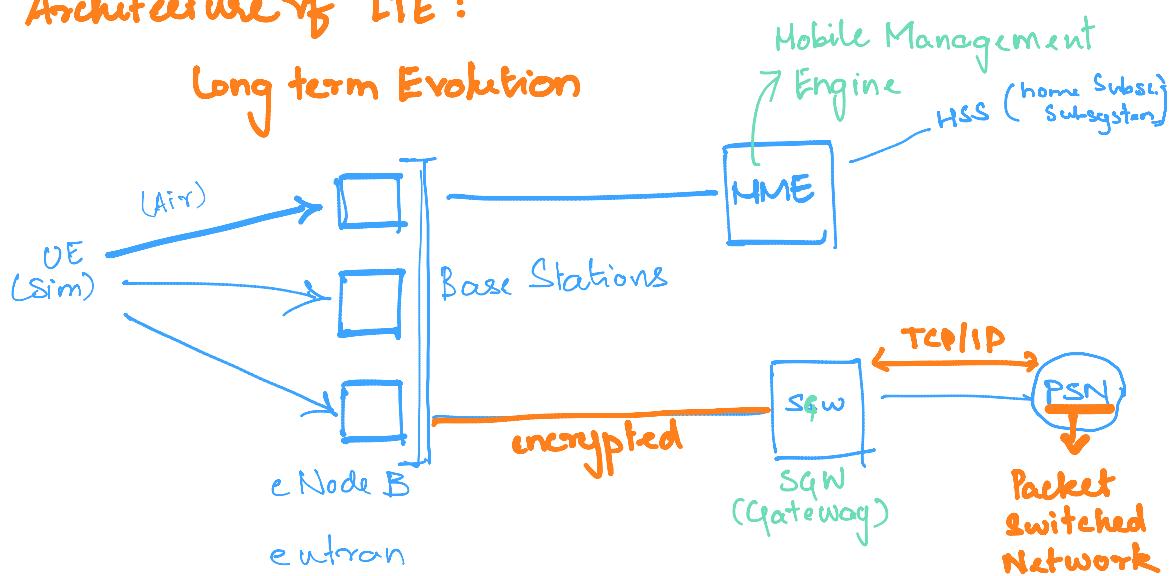


Architecture of LTE :

Mobile Management

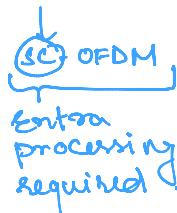
Architecture of LTE :

Long term Evolution



Air interface → higher frequency .

UL, DL → OFDM



FDM → Frequency Division Multiplexing

Uplink speed < Downlink speed .



Time Division Multiplexing

Full Bandwidth available, but at preet time slots.

* Mobile IP

IPv6 → 128 bits

SMS → Govt on or off .

SMS → Govt or us .

Others → You safe

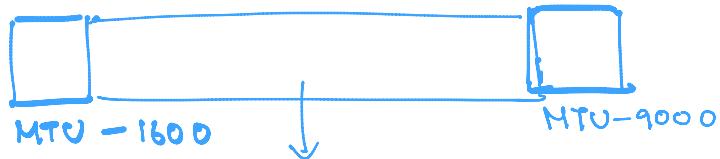
Routing area → Specifically for packet switching

2 things : 1. Control Plane → ICMP/IQMP, MME, HSS

2. Data Plane

→ TCP/UDP / SCTP / SRD / ...

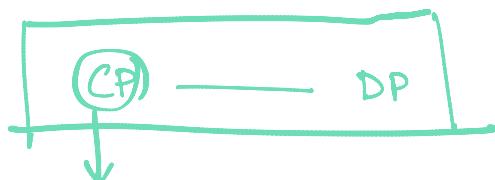
↳ Proprietary to Amazon



ICMP message to ask to send only
1600 mb size packets .

CP → Access Stratum

DP → Non Access Stratum



Can afford
to have downtime
(1 day / yr) : (3 hrs / yr)

16, 64 QAM ,

Quadrature Amplitude Modulation

16, 64 bits

$$\frac{R_c}{N} = SR \text{ (Symbol Rate)}$$

Transducers
↓

Analog to EMW or
EMW to Analog

