↳ computer networking for DevOps
↳ How does the Internet work
↳ OSI model
↳ TCP/IP model
↳ Important Protocols
↳ Hands on aws
- VPC, subnets, CIDR, Gateways, Route t

* Computer networking for DevOps

→ As devops engineer You have to do certai tasks as infrastructure management (like server setup, internet routing in server) check if the server is getting Proper connectivity or not, security followups, check if it is creating through automation or not.

* How does the Internet work?

→ Internet is used for communicating with people which are at different Places. Then if a person is in Ahmedabad & other in USA, So make connection with them we used optic fibres.
(wires which are established in ocean) Submarine lines through connect globe.

→ This optic fibre is of tier-1 companies.
Ex. At&t, ofs, corning

Tier 1 Company	Tier 2 company

$$ →

→ Now tier 2 ask tier 1 their optic fibre on Rent.

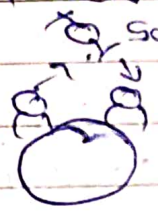
Tier 2 company	Tier 3 company

→ Vi, Jio

→ Go to submarine cable map & you can see it.

Internet

→ Problem through Satelite connection

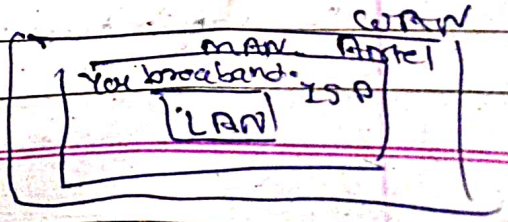


→ Distance of Satelite connectivity is too big while connectivity through optic fibre is less.

→ Tier-3 every month take Payment & Provide us internet.

You broadband = Internet Service Provider
↳ It is there to Provide You internet.
↳ If Providing on city level than it is called metro Politan Area network. (city lvl)

→ If You broadband Go to Airtel And ask for Internet then It is coming on wide Area network.



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* OSI model :- Open System Inter-connection
↳ International Standard organization set
Standard
logical standard set by ISO.

	Nibba	Nibbi
whatsapp / Software layer	Application	Application
	Presentation	Presentation
	Session	Session
Hardware	Transport	Transport
	network	network
	Datalink	Datalink
	Physical	Physical

⇒ Nibba nibbi are communicating (talking) on whatsapp. In whatsapp above chat written can be found as end-to-end encryption.

→ There is Presentation layer which format there conversation, Encrypt & Decrypts it so that they can communicate easily. (End to End Encryption)

→ they communicate when some of them come online so between them a Session is maintained. (they both came online & Session is maintained.

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-> (Pyar ki baatein) starts transporting.
First 3 layers are software layers, now, when it starts transporting when messages go through Internet (network)

-> Her Device address, for that you have to crack link, when Data is link. Then Nibbi should have Internet (router) means Physical layer

-> last 3 comes in hardware.

=>

-> At receiving end nibbi (Physical) she should have router, then we should know router address, IP address, MAC address so Data link layer. So we need network, Transport Session should be maintained, encryption in Presentation & whatsapp (Application)

* Application layer
↳ UI, browser where you access Internet

glue
Presentation layer
↳ Data come in Different format. (Formatting)
Encryption, Decryption

Session layer (Security)
↳ Server & client you have to maintain a session
So it won't break (maintaining session)

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Heart of OSI
[Transport layer]
↳ Transfer Data using Protocol. Protocol means Set of rules. ♦
Ex. from a device to another Device I want to send something so there is some set of rules. e.x. TCP/IP
→ Transmission Control Protocol / Internet Protocol

Network layer
↳ To transport that Data you need a network. All the Protocols are here)
IP (Internet Protocol), FTP, SMTP, DNS, Http.

Datalink layer
↳ Device's MAC address, IP address. For that there are diff Protocols like ARP, RARP

Physical layer
↳ Cables, NIC, Wifi, LAN

H/W

* TCP/IP model

→ ISO made a standard of OSI model. But in reality / real world we use TCP/IP model which has only 4 layers.
Application layer, Transport layer, Network layer, Network Access layer

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OSI model	TCP/IP model
Application layer	Application layer
Presentation layer	
Session layer	
Transport layer	Transport layer
network layer	Network layer
Data link layer	Network Access layer
Physical layer	

→ OSI model is a logical model which was developed by ISO which you use in real life you use it through TCP/IP model.

Application layer → UI, Browser

A+P+S

browser through internet Access, webpages load on it, webpages load in html. In html ht stands for hypertext when transfering hypertext in browser for that there is a Protocol called http. hyper text transfer Protocol

mail = simple mail Transfer Protocol SMTP

If email is not working then you will not check gmail, you will check SMTP server.

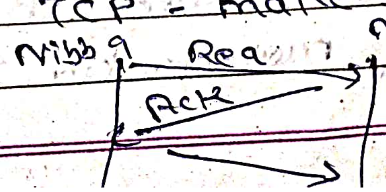
Transport layer → Error checking, check sum, Packets transferred, if Packets are going securely or not. For that in transport layer Protocols available.

like TCP - make secure connection (Transmission control Protocol)

whatsapp ed

Hi dear

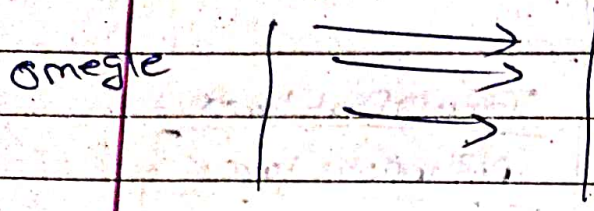
MIM



3 way handshake

Hi chudel

UDP : User Datagram Protocol



→ Nibba keeps sending messages even if previous msg received or not.

→ Not secure.

→ Send is done, Response is also done but no acknowledge system.

→ Ex. Streaming

* Network layer (also called Internet layer)

→ Your IP address,

Source IP · dest IP

www.google.com → APP → Transport layer → N/W

Interview Que How to find source ip & dest ip, in above scenario?

→ You have to trace when searching / to reach google.com

1. tracert. traceroute google.com

1. 192.168.0.1 → Your local device IP

2. 120.138.124.36 → Your ISP Provided Your IP

copy it & search on google.

IP locater & Paste it.

It will give Your Source IP

Mumbai, Maharashtra, India

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3.137.59.64.25

logical Address which tell you where it came from.

Pune

~~Mumbai~~ MAC address - media access contr
MAC address - Device address
↳ Sometimes you want to send Data over a device

IP

Mumbai - Pune - mumbai
~~Pune - Mumbai - Pune~~

- After connection established it will go to

4. California

* ~~Network Access layer - Datalink - Physical layer~~
* Network Access layer Datalink - Physical

→ there is a Protocal called Address Resolution Protocal which

Your IP address	Your MAC address	IP Sender	IP receiver	MAC of receiver ?	You don't know it ?

→ You don't Know the MAC of receiver so it broadcast it where it broadcast it, It has a reference of your MAC address, which reference is added here.