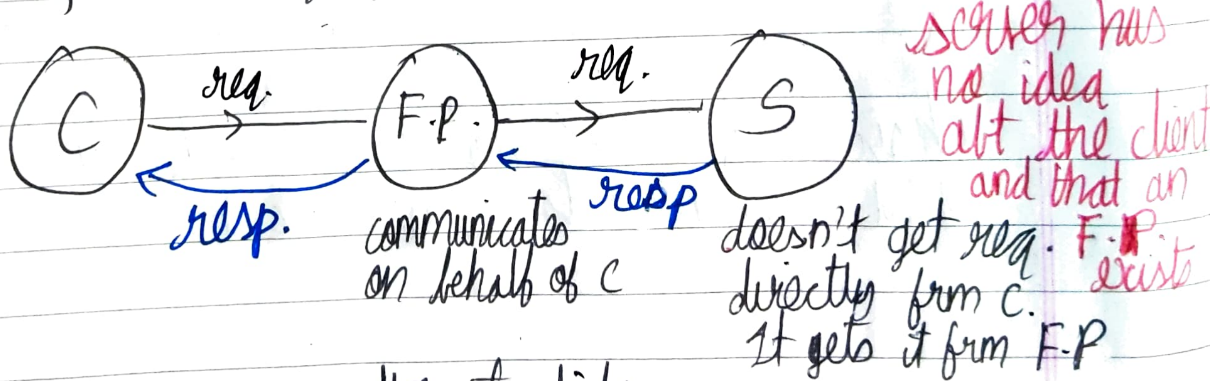
PROXIES

PROXY:
Just a machine-server set up to hide the IP address and other details of an interacting machine (eg:- client, server, etc.)
2 types (primary) :-
i) Forward proxy (usually ref-ed to as - 'proxy')
ii) Reverse proxy

Forward Proxy (F.P.) and Reverse Proxy (R.P)

1] Forward Proxy (F.P.) → on client's team
i) It is a server located b/w client/set of clients & server/set of servers
ii) It acts on behalf on clients/set of clients by hiding clients IP address from server and instead supplyin its own IP address.
iii) When a client sends a req. to the server and this ~~req~~ F.P. has been properly config-ed by client, the req. goes as

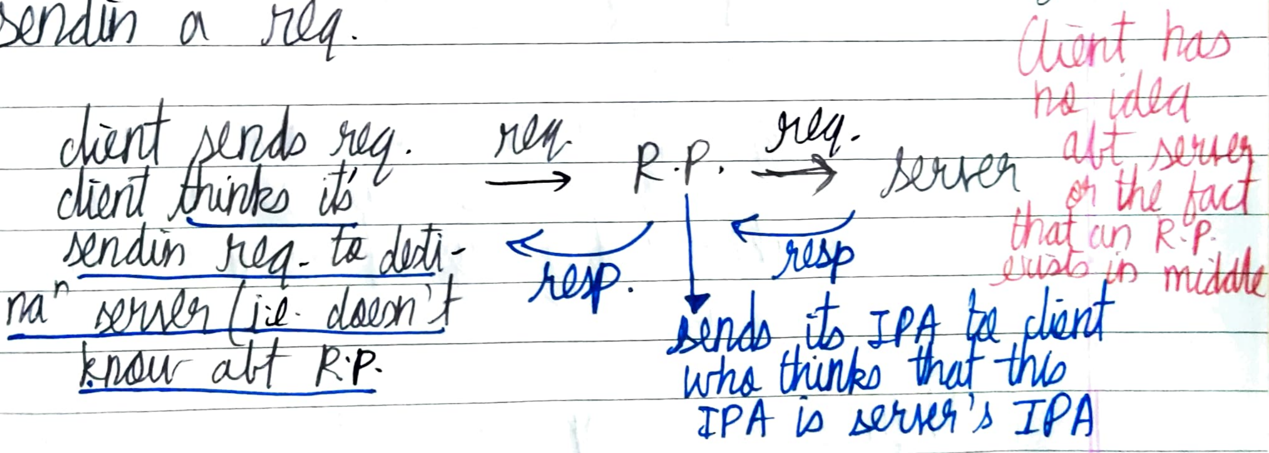

C
F.P.
S
req.
req.
resp.
resp
communicates on behalf of C
doesn't get req. directly from C. It gets it from F.P
server has no idea abt the client and that an F.P. exists

iv) F.P. serves as a way to hide the identity of client ~~fro~~ issuin req. from server by changin source IP address sent in req to its own IP address (:- IPA) instead of clients IPA eg:- VPNs

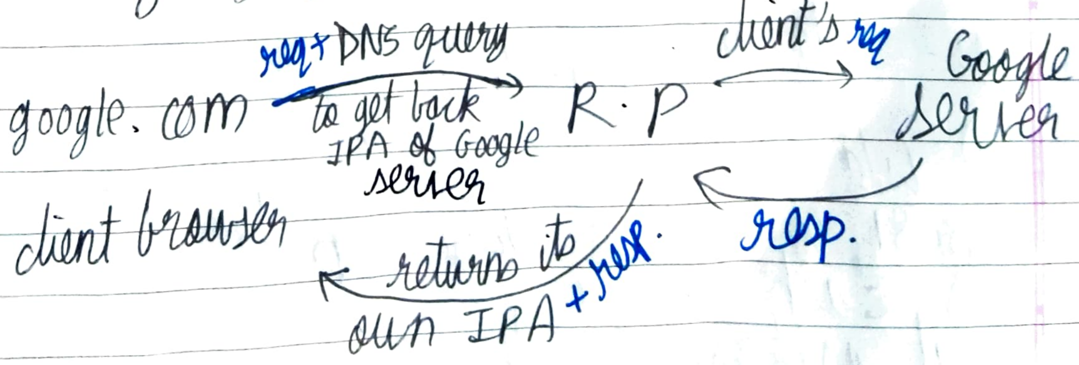
v) Some types of ~~proxy~~ F.P.s make client IPA visib. to server in some way, but, typically original source IPA is replaced

NOTE: VPN → a trusd proxy b/w client and server that hides the client's identity
∴ client can access servers restricted to it.
Thus, client can, for eg, access a website not availa. in his/her country but avail. in other.

2] Reverse Proxy (R.P.) → on server's team.
i) A server b/w client / set of clients and server / set of servers
ii) When a client interacts with a server. eg:- sendin a req.


client sends req.
client thinks its sendin req. to destina^n server (i.e. doesn't know abt R.P.
req
R.P.
req.
server
resp.
resp
sends its IPA to client who thinks that this IPA is server's IPA
Client has no idea abt server or the fact that an R.P. exists in middle

eg:- say google.com sets up an R.P.


google.com
client browser
req + DNS query to get back IPA of Google server
R.P
client's req
Google Server
resp.
returns its own IPA + resp.

Date:
M T W T F S S

Use of R.P.s → Powerful tool for sys. des.

1) eg:- Config. R.P. to filter out reqs. you want your sys to ignore

2) eg2:- Log stuff, gather metrics → can be done by R.P.

3) eg3:- R.P. can also cache stuff (eg:- HTML pages) Thus, server doesn't get bothered a lot

4) eg 4:- As a load balancer → a server that can distri req. load amongst a bunch of servers

NOTE: 1] ~~Malicious~~ Malicious client → sends a fuckload of reqs. to a server to bring it down.
Now R.P. actin as load balancer will distri these req.s across all servers, thereby safeguardin sys. frm malicious clients, viruses etc.

2] NginX is a popular web server that can be used as an R.P.

eg:- Code on opp page:

1) We set up an R.P. for any req. comin to port 8081 of our web service
2) Each time a req. is directed to the endpt='/' at port 8081, the req. header on the req. ~~known~~ as 'systemexpert-tutorial' and set it to 'true'
3) Then we gonna frwd this req. to the server that pts. to localhost:3000 (its name is nodejs-backend)

nginx.conf — proxies
nginx.conf
server.js
Ln 9, Col 18 (4 selected)
Spaces: 3
UTF-8
LF
Properties
proxies — node server.js — 93×23
~/Documents/Content/Design_Fundamentals/Examples/proxies — node server.js
proxies — -bash — 93×24
~/Documents/Content/Design_Fundamentals/Examples/proxies — -bash
server.js > app.get('/hello') callback
algoexpert.io

```
events { }

http {
   upstream nodejs-backend {
      server localhost:3000;
   }

   server {
      listen 8081;

      location / {
       proxy_set_header systemsexpert-tutorial true;
         proxy_pass http://nodejs-backend;
      }
   }
}
```

```
const express = require('express');
const app = express();

app.listen(3000, () => console.log('Listening on port 3000.'));

app.get('/hello', (req, res) => {
  console.log(req.headers);
  res.send('Hello.\n');
});
```

```
Clements-MBP:proxies clementmihailescu$ node server.js
Listening on port 3000.
```

```
Clements-MBP:proxies clementmihailescu$ curl localhost:3000/hello
```