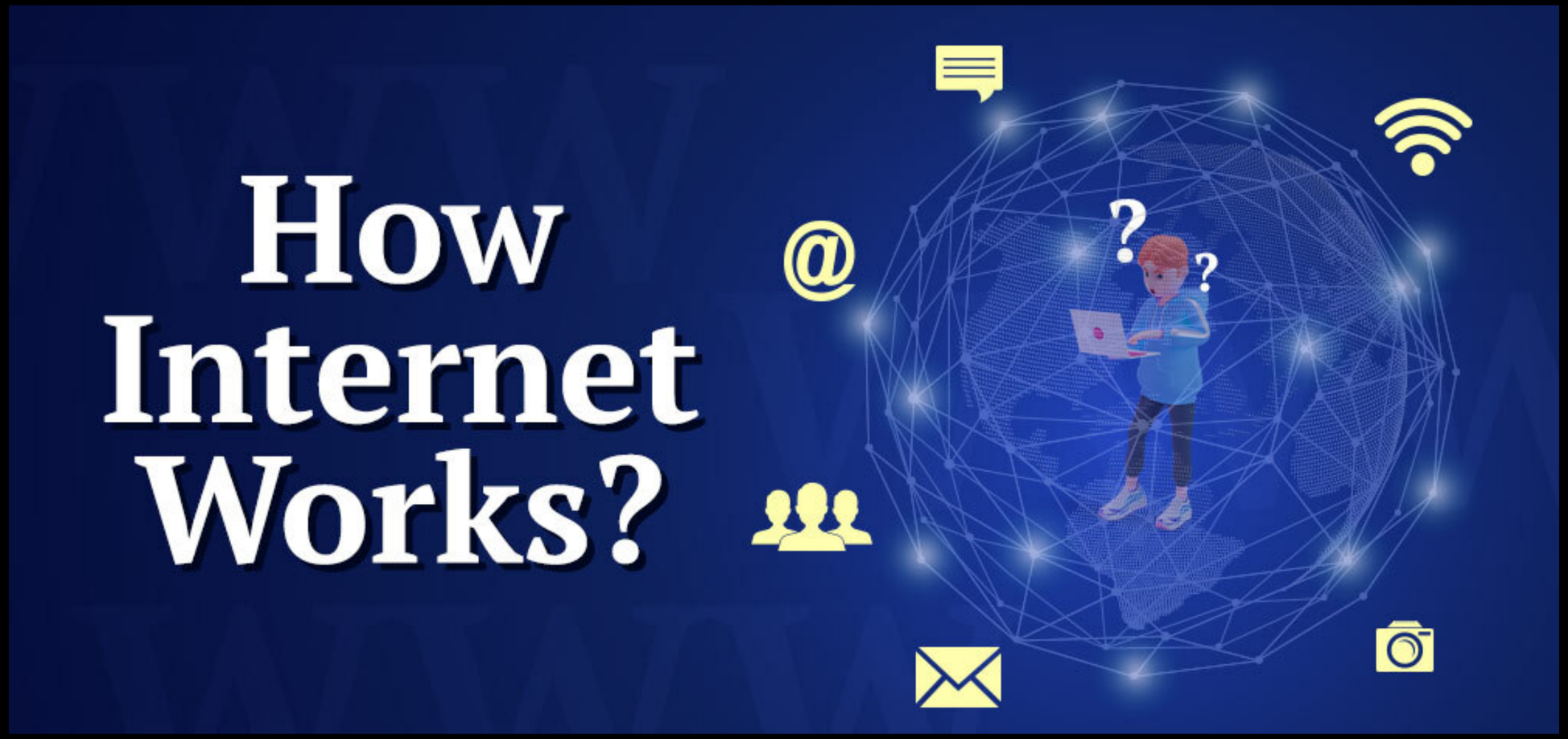
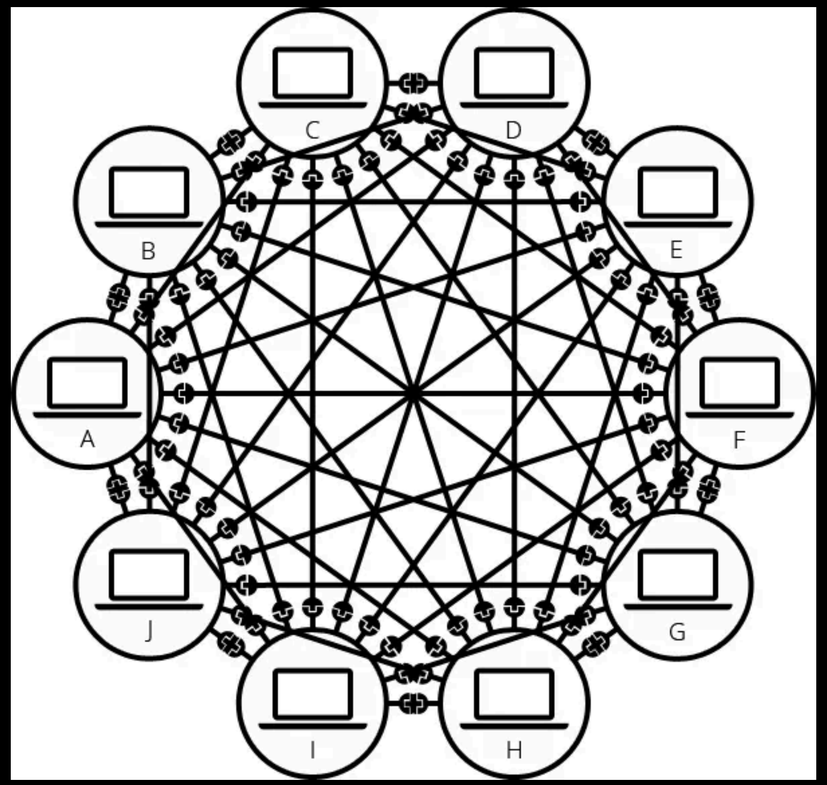
Network 101

Content

Internet	Protocol	HTTPs
Ajax	Websocket	Socket.io


How
Internet
Works?
@
?
?

Transfer data



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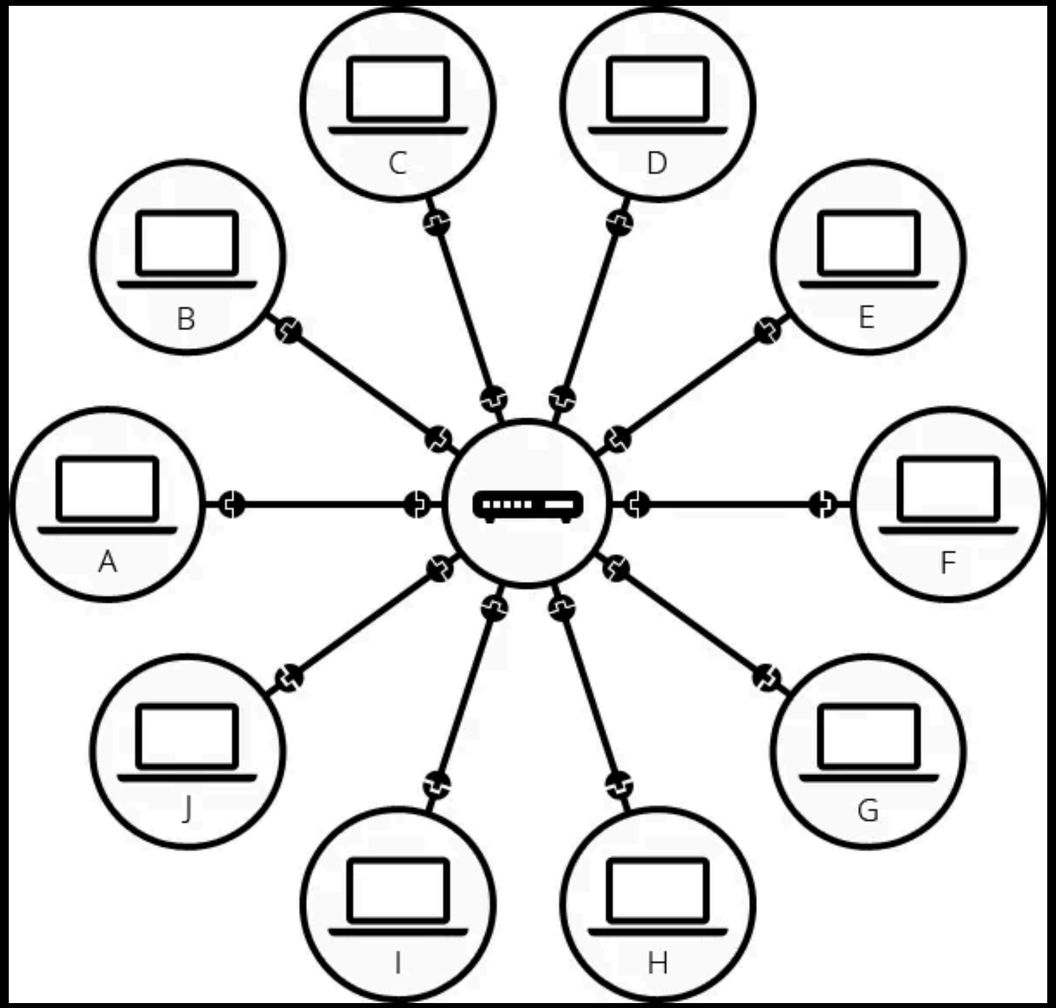
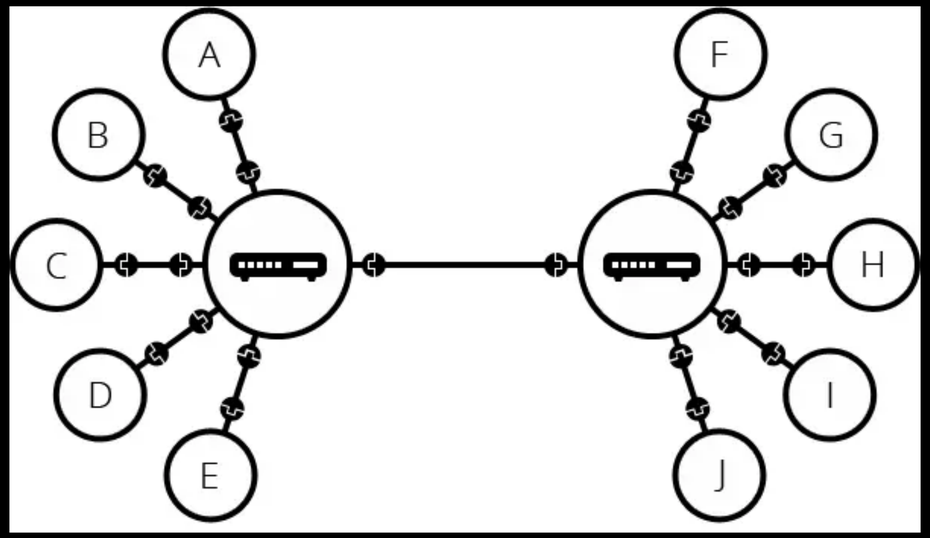
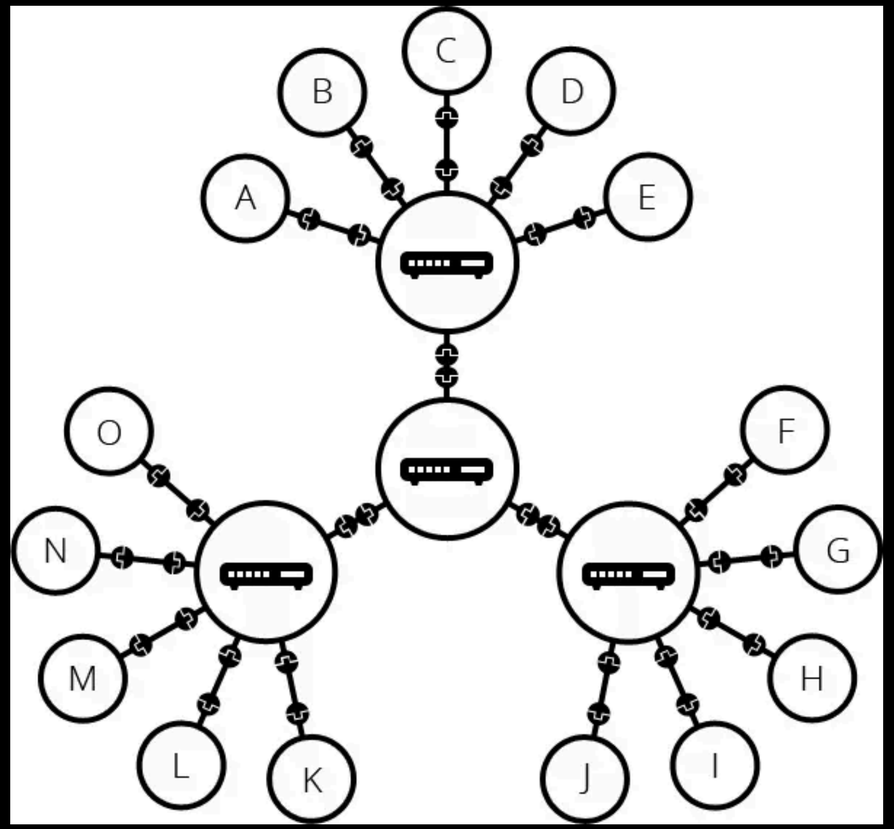
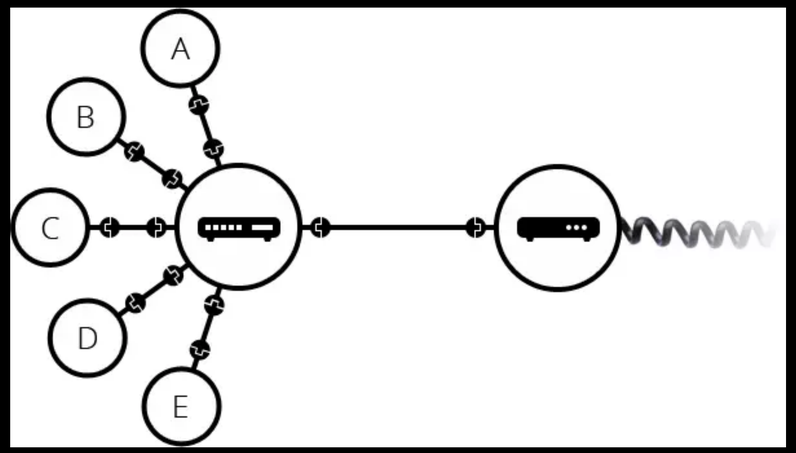


More routers



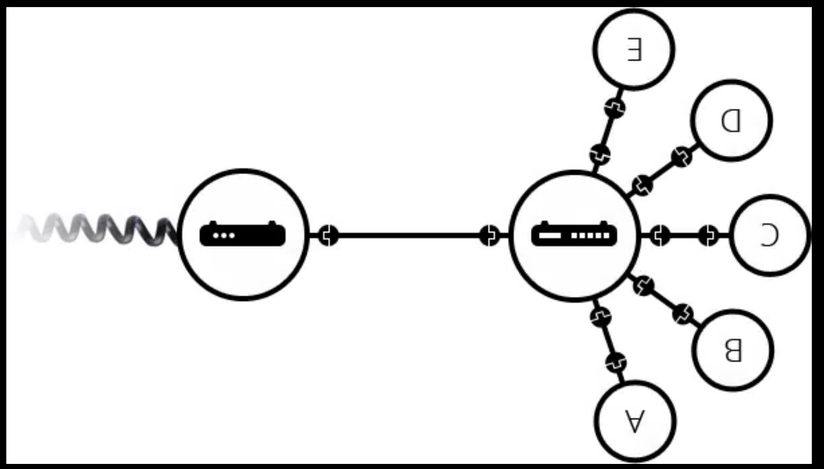


Modem - ISP

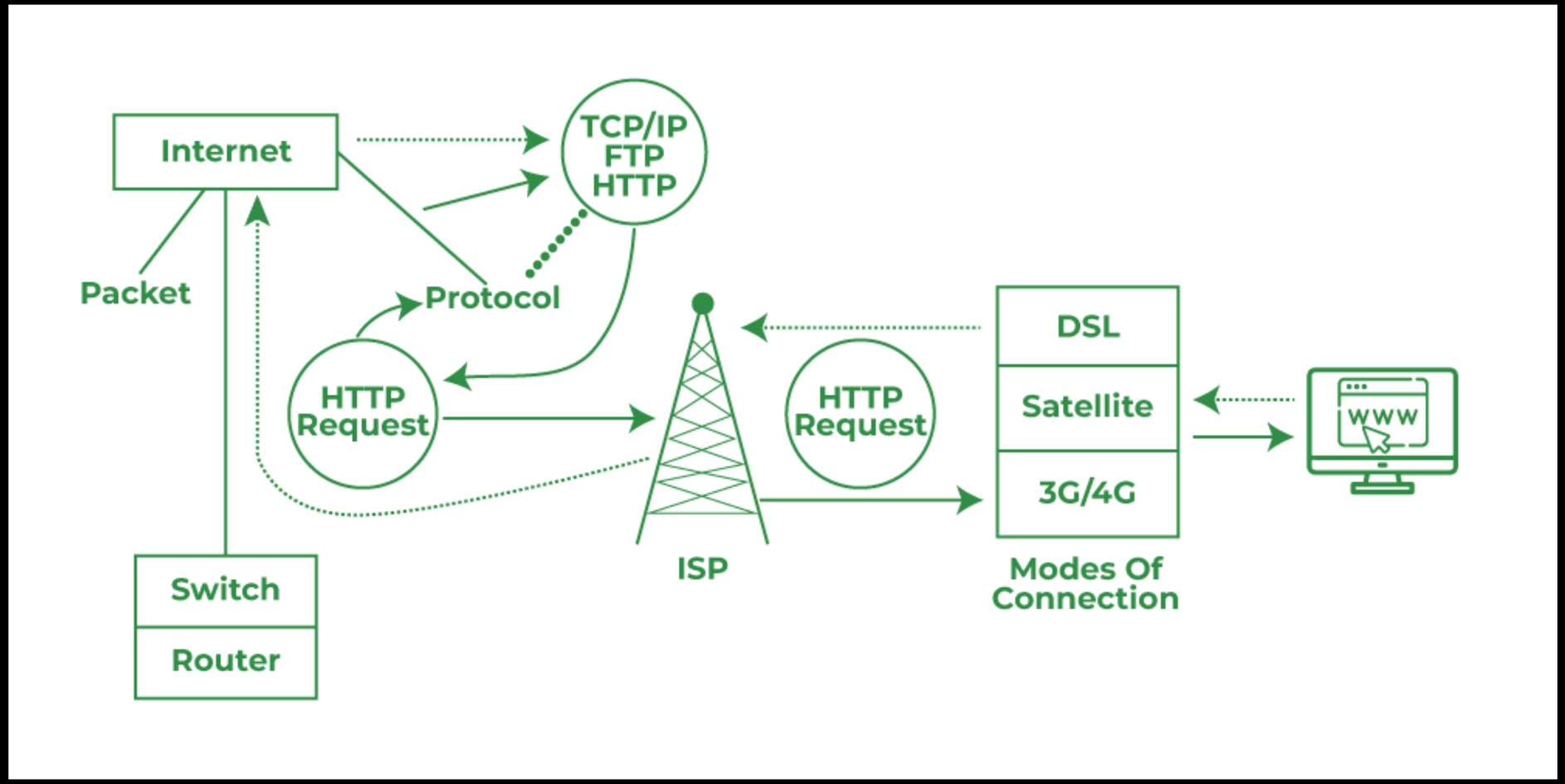


FPT

VNPT



How the web work

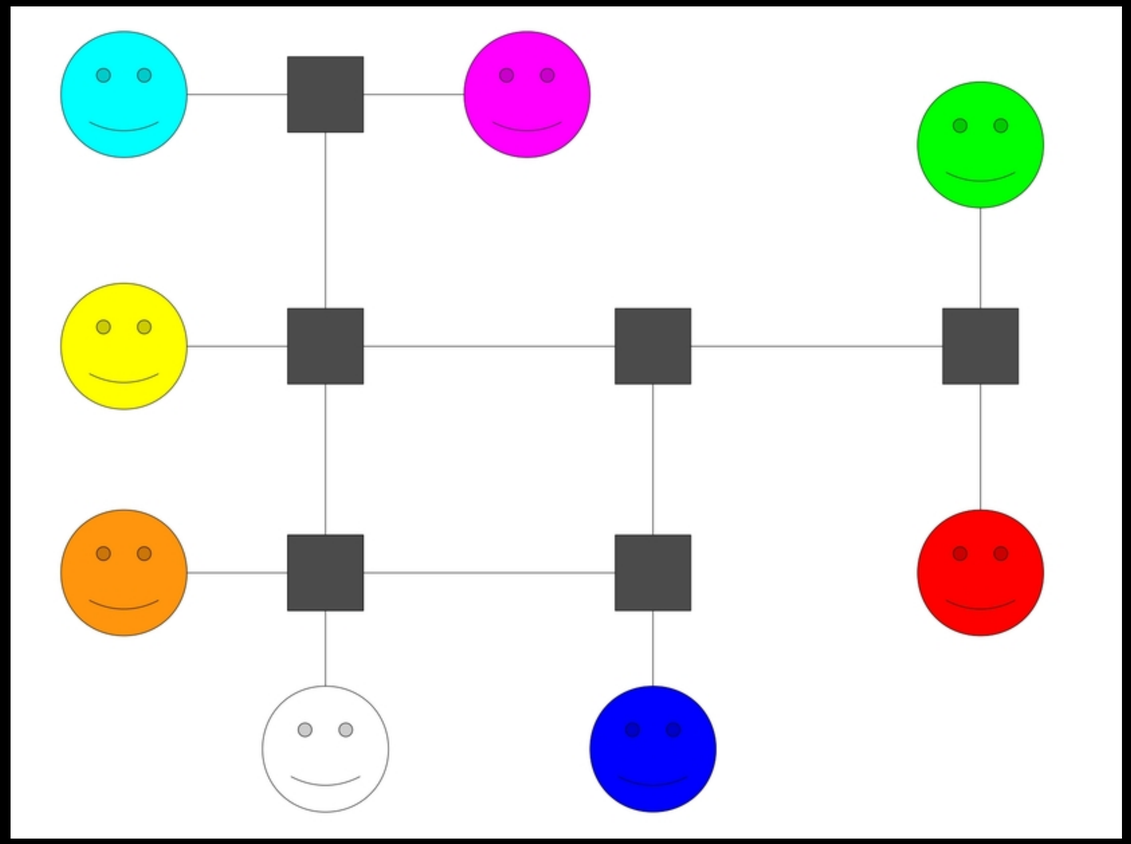


Still so complicated?

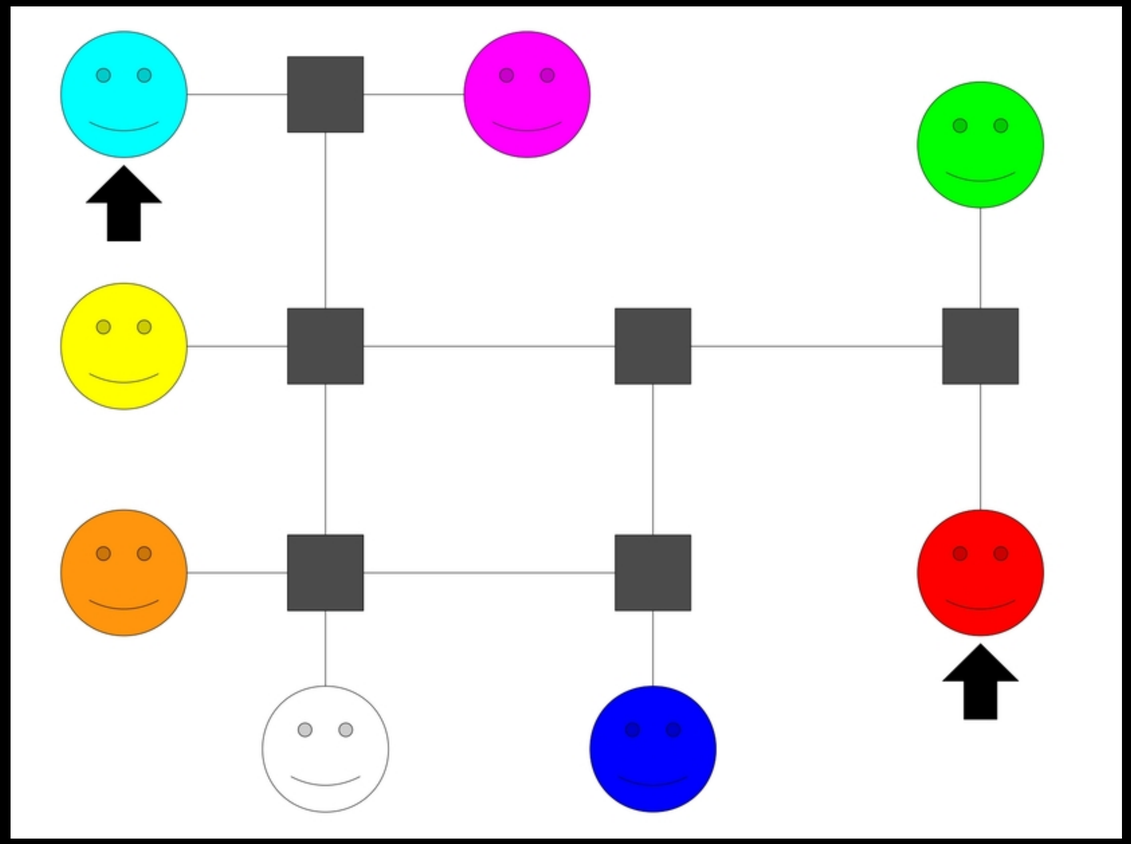
Yeah. Of course. It is a hard part

Let try it again

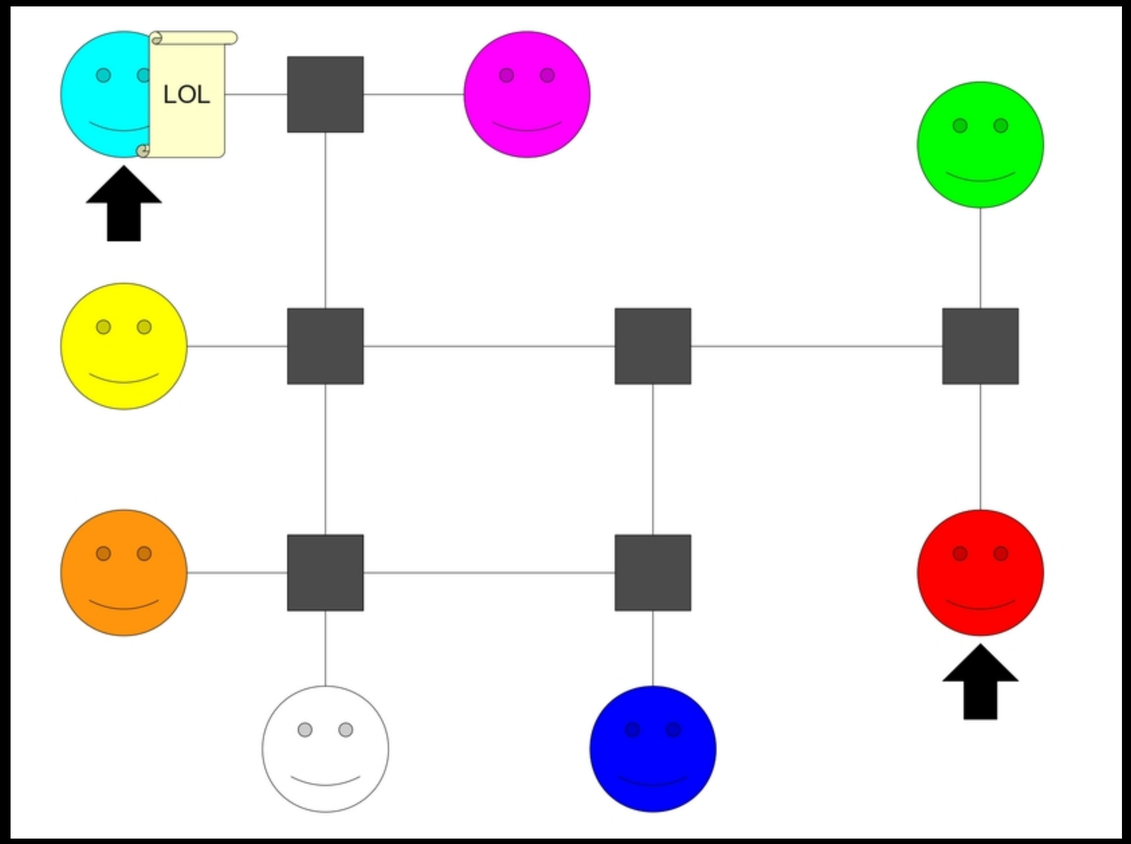
Send and received a message



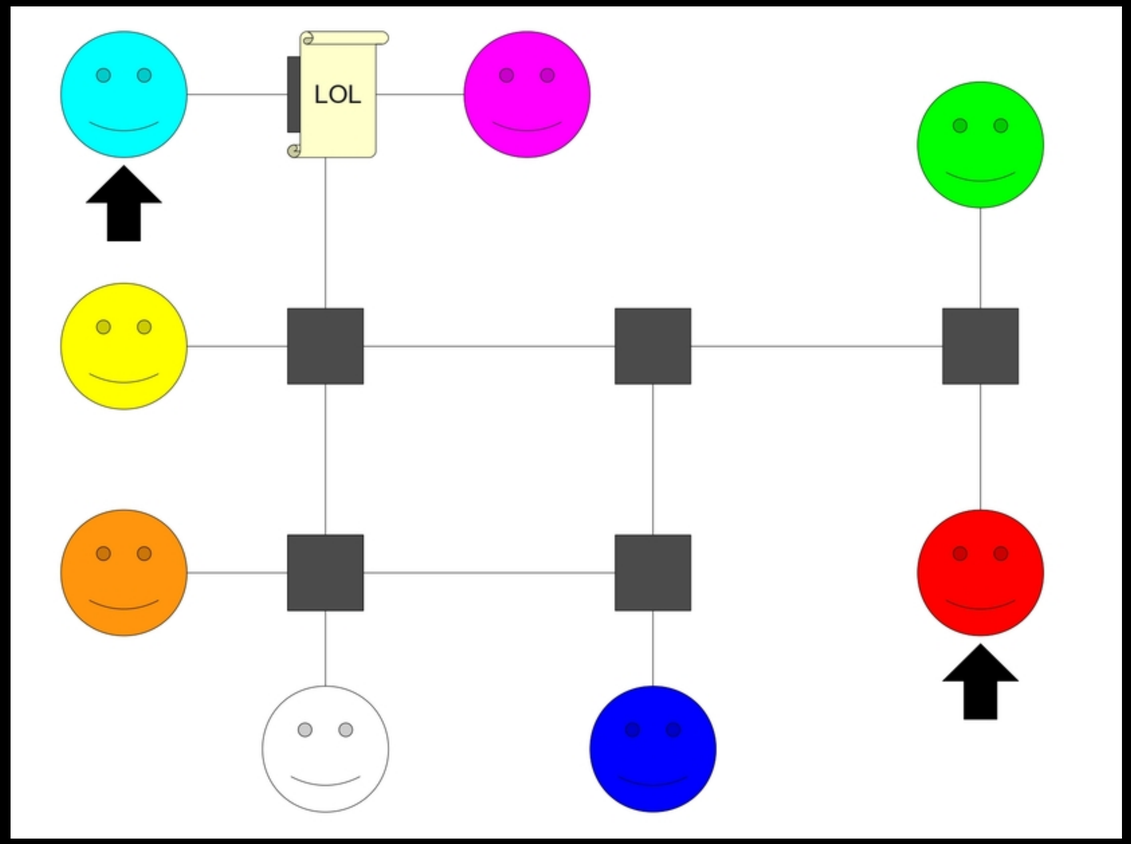
Send and received a message



Send and received a message



Send and received a message



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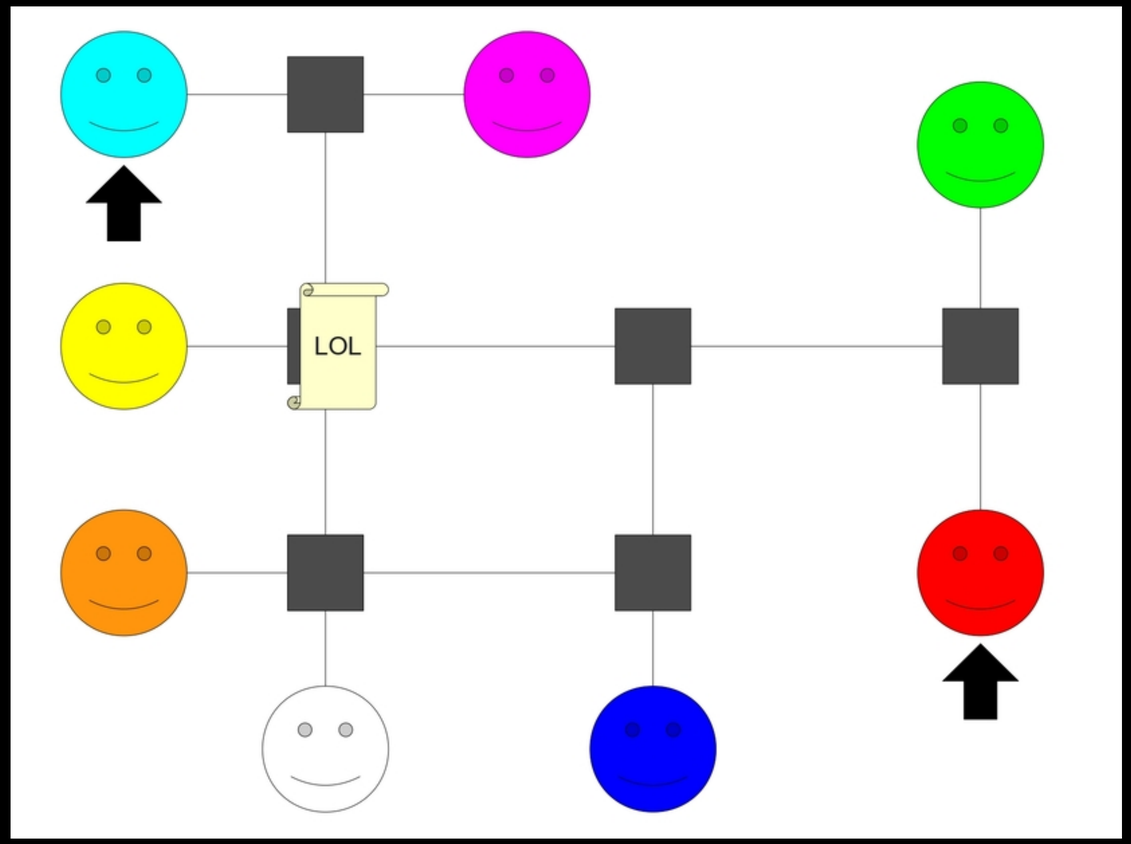

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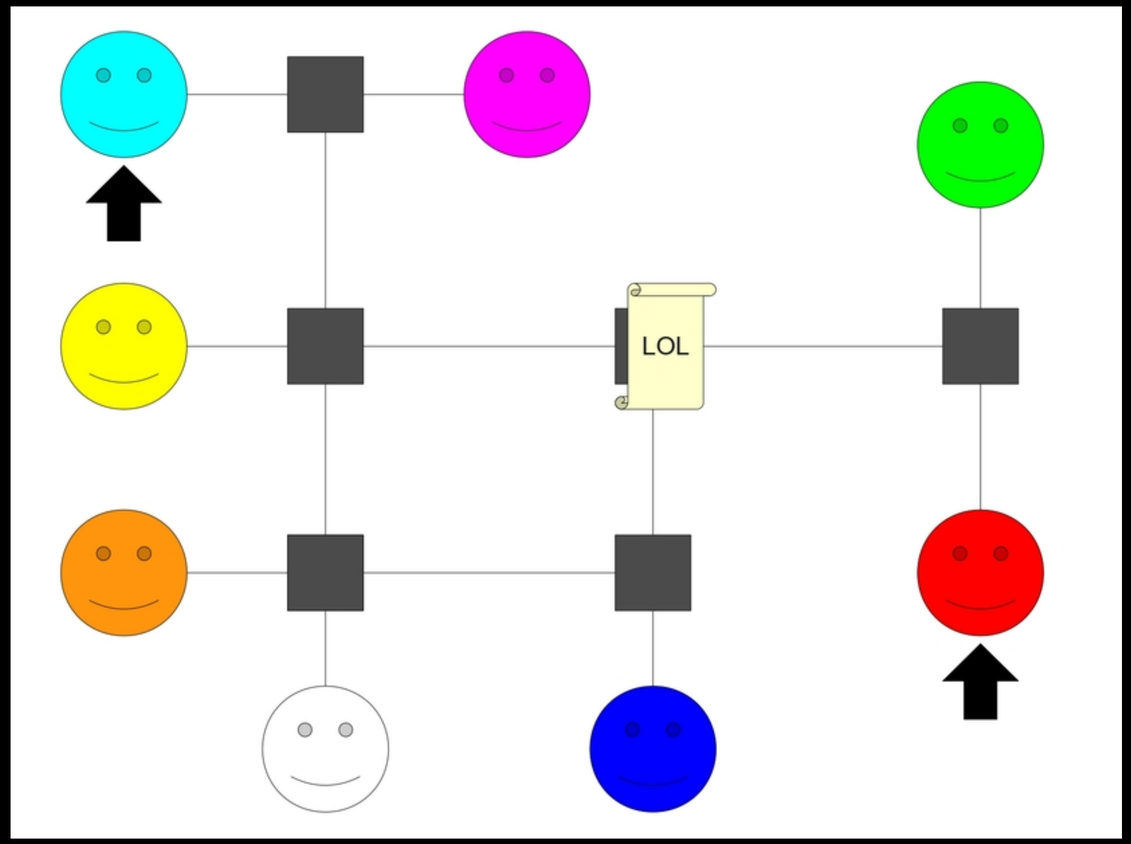
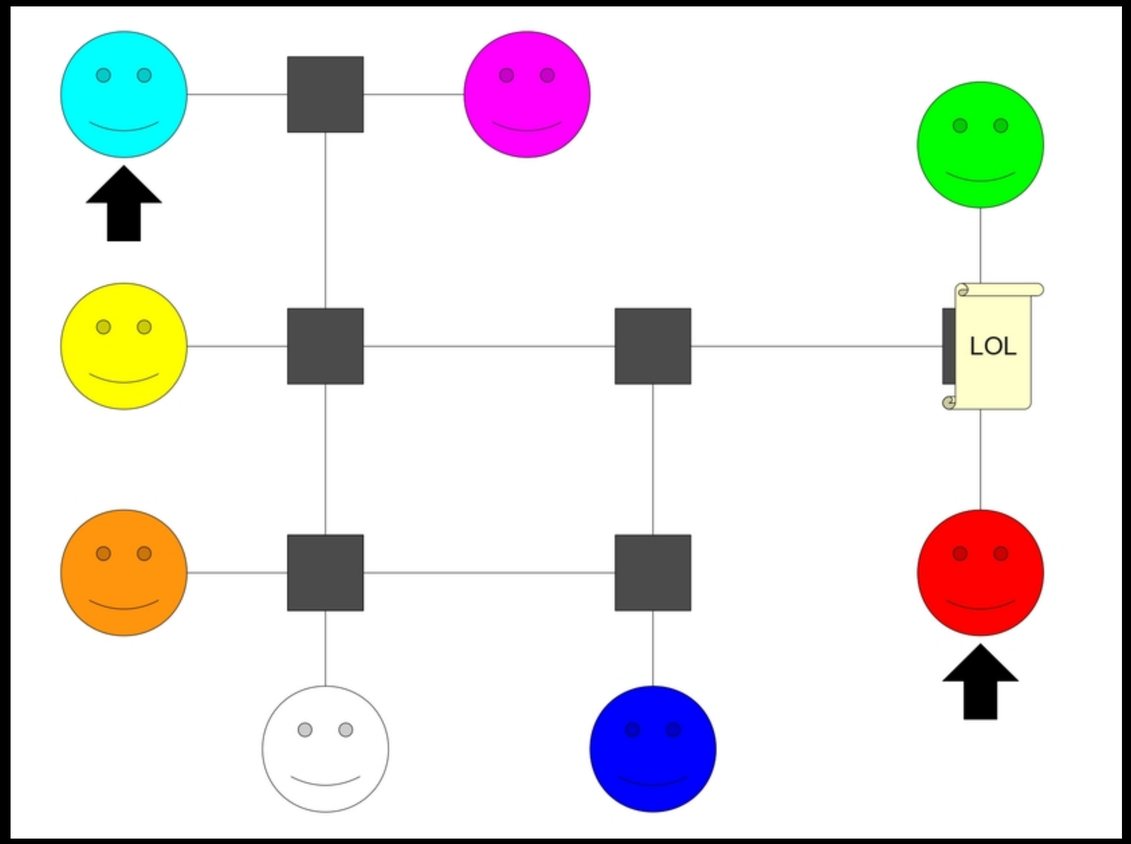
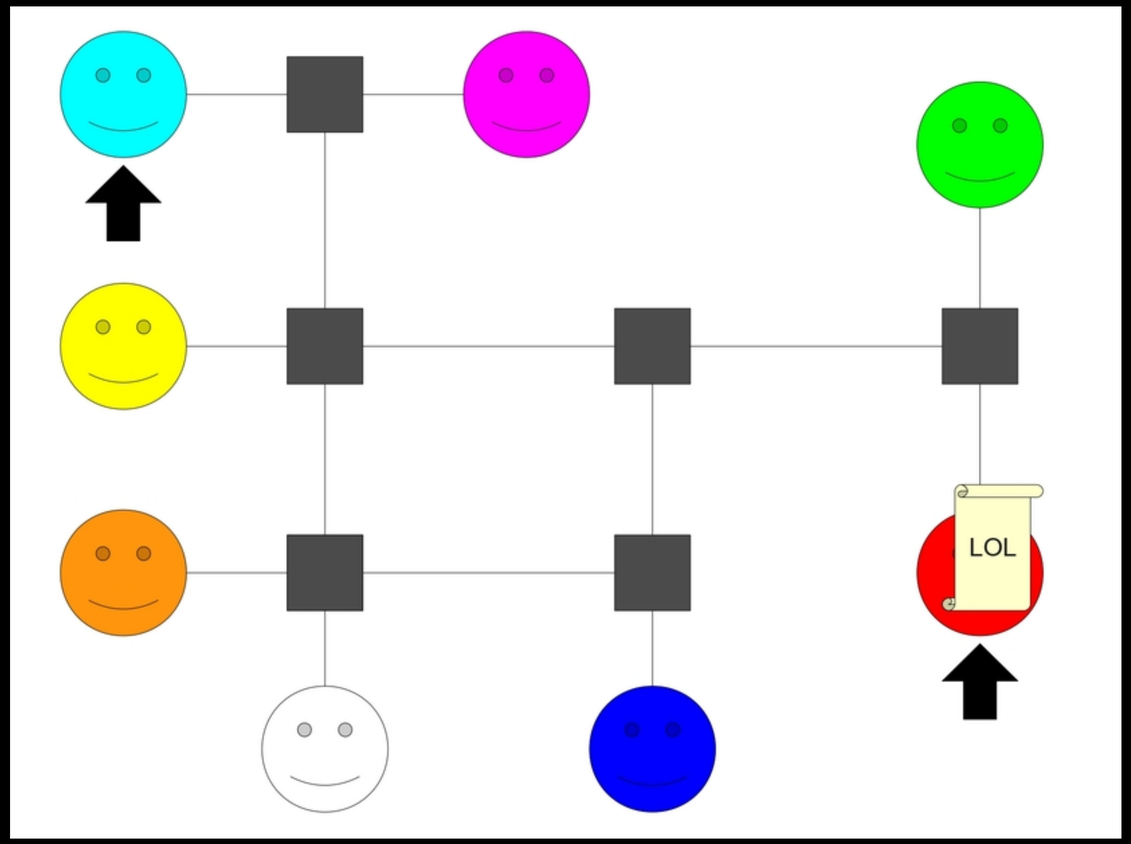


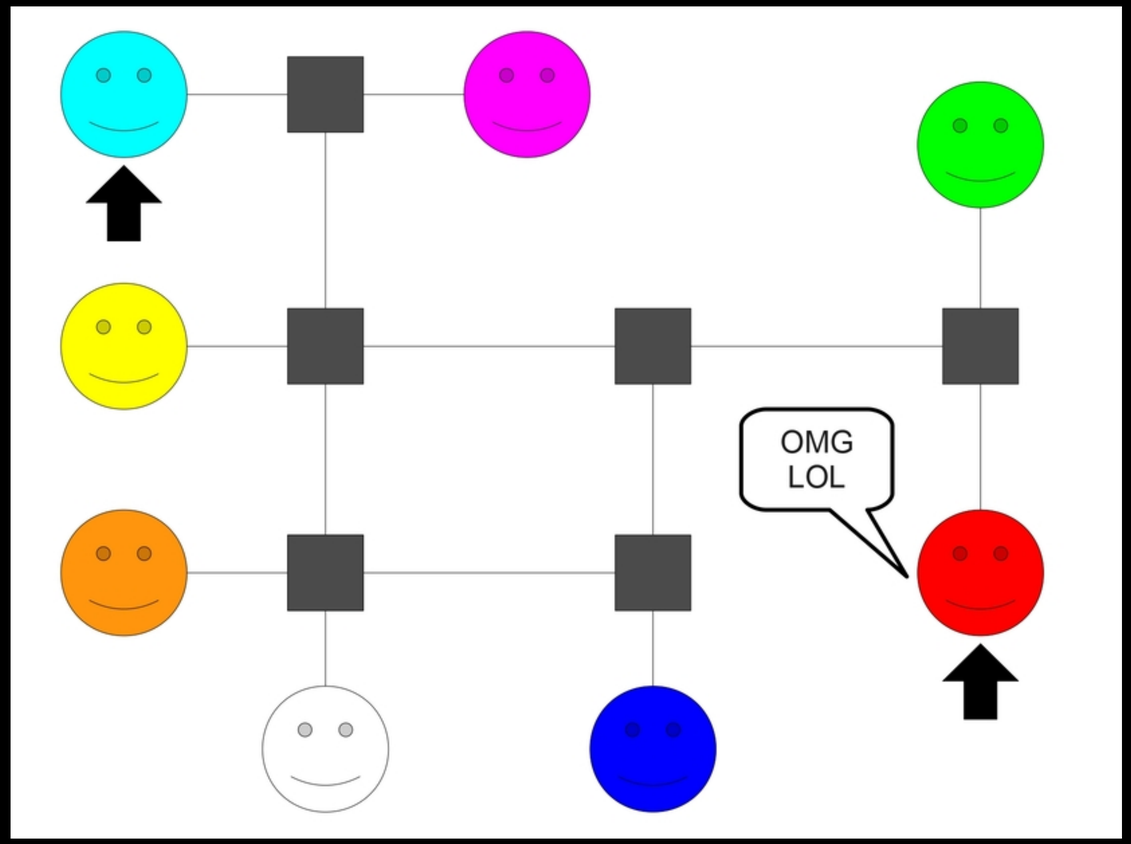
Send and received a message



Send and received a message



Send and received a message



IP Adress

Local IP Adress

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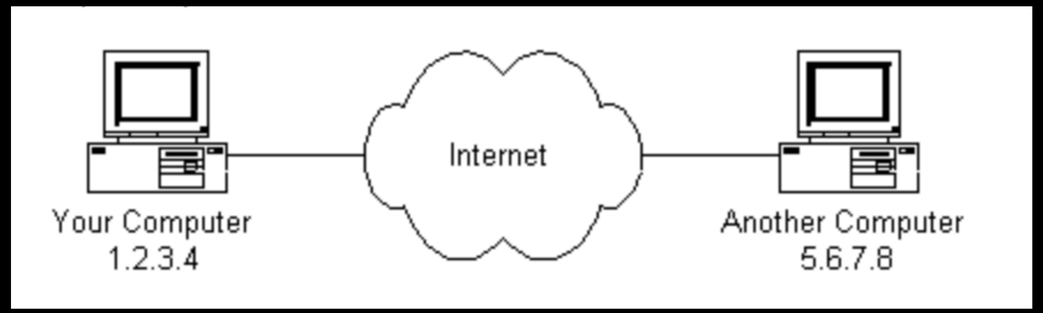
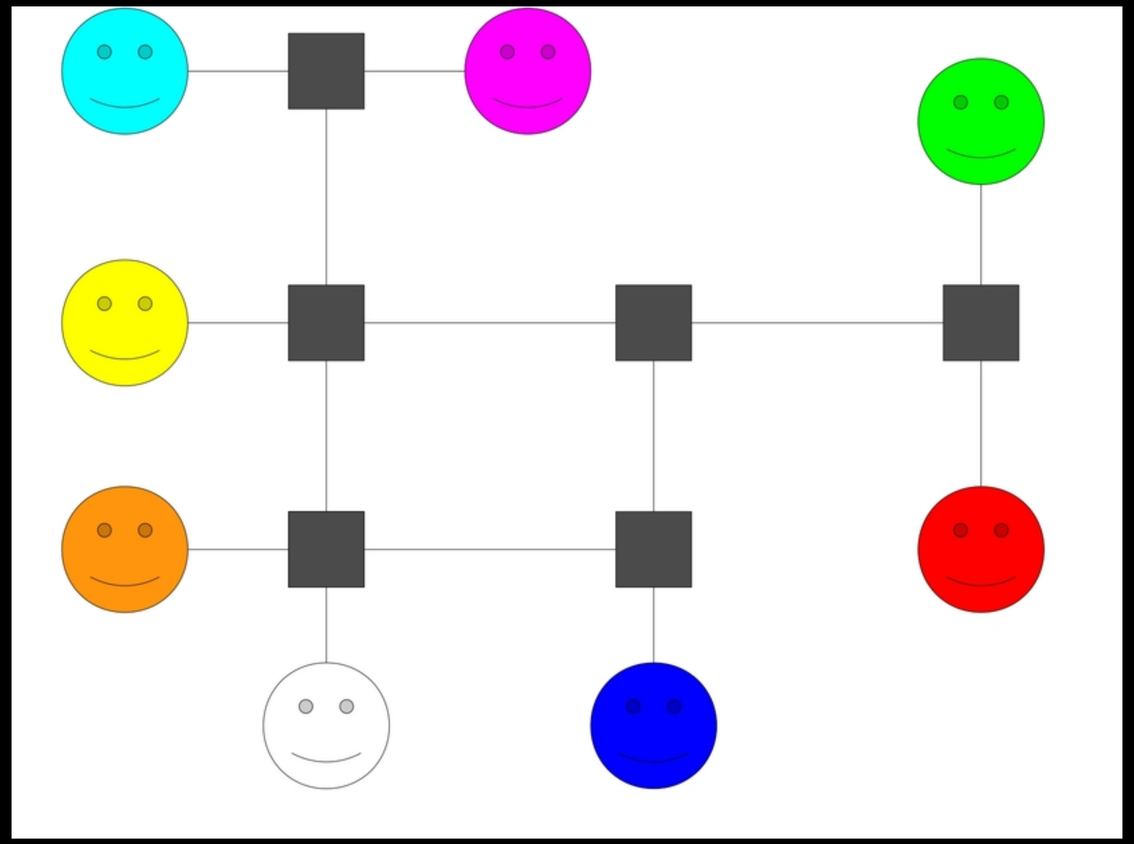
- 172.16.0.0 - 172.31.255.255
- 192.168.0.0 - 192.168.255.255



Public IP Adress

IP Adress



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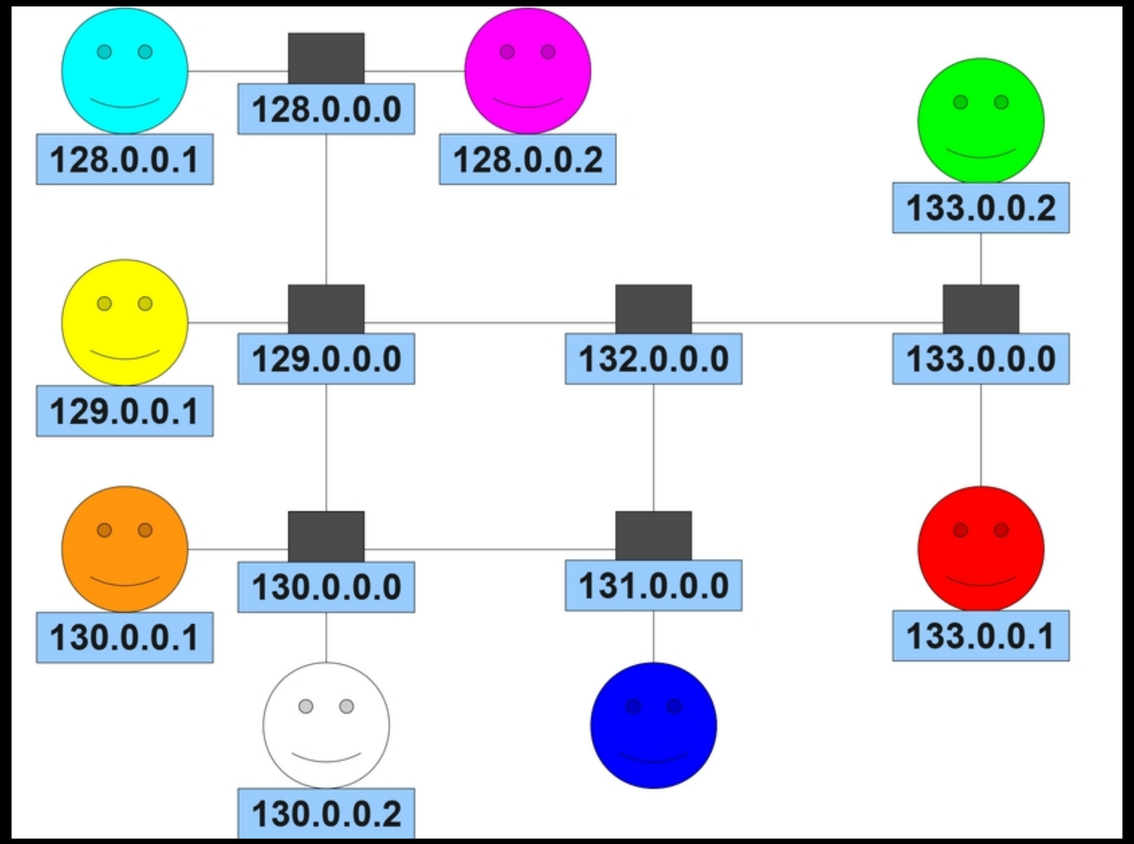
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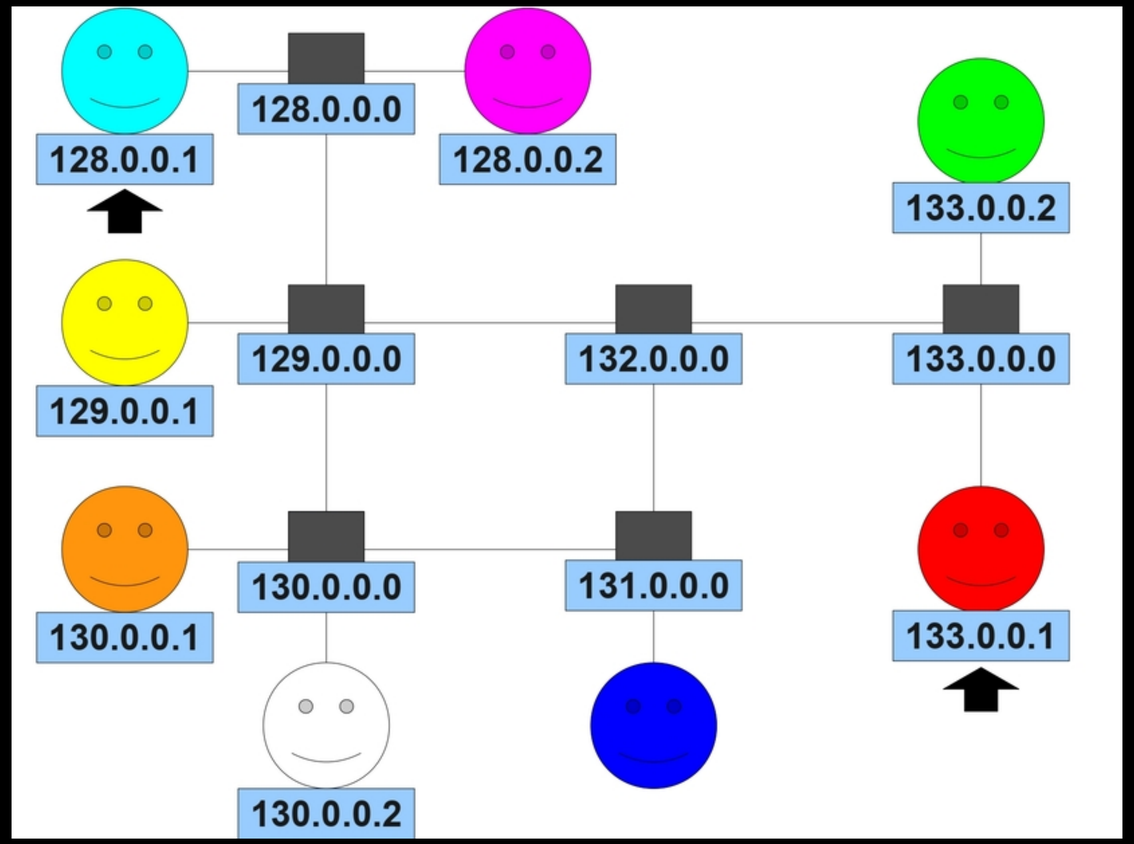
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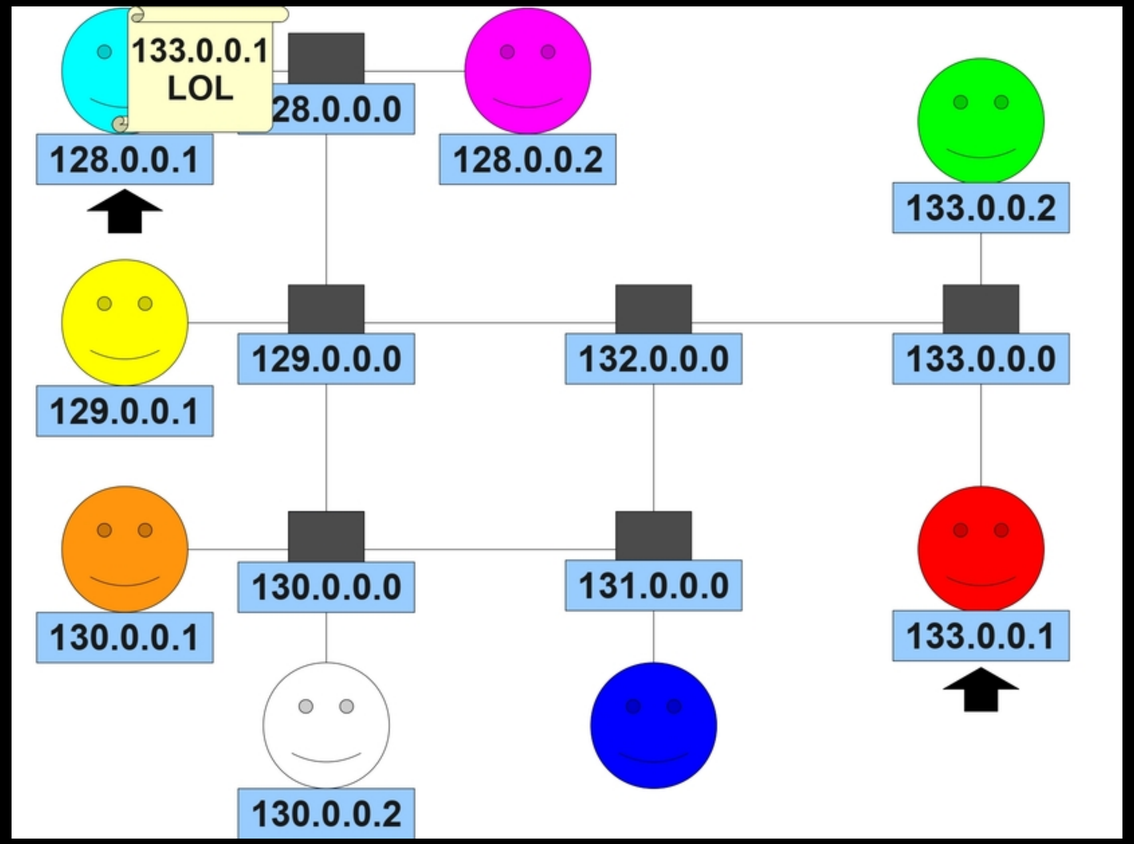
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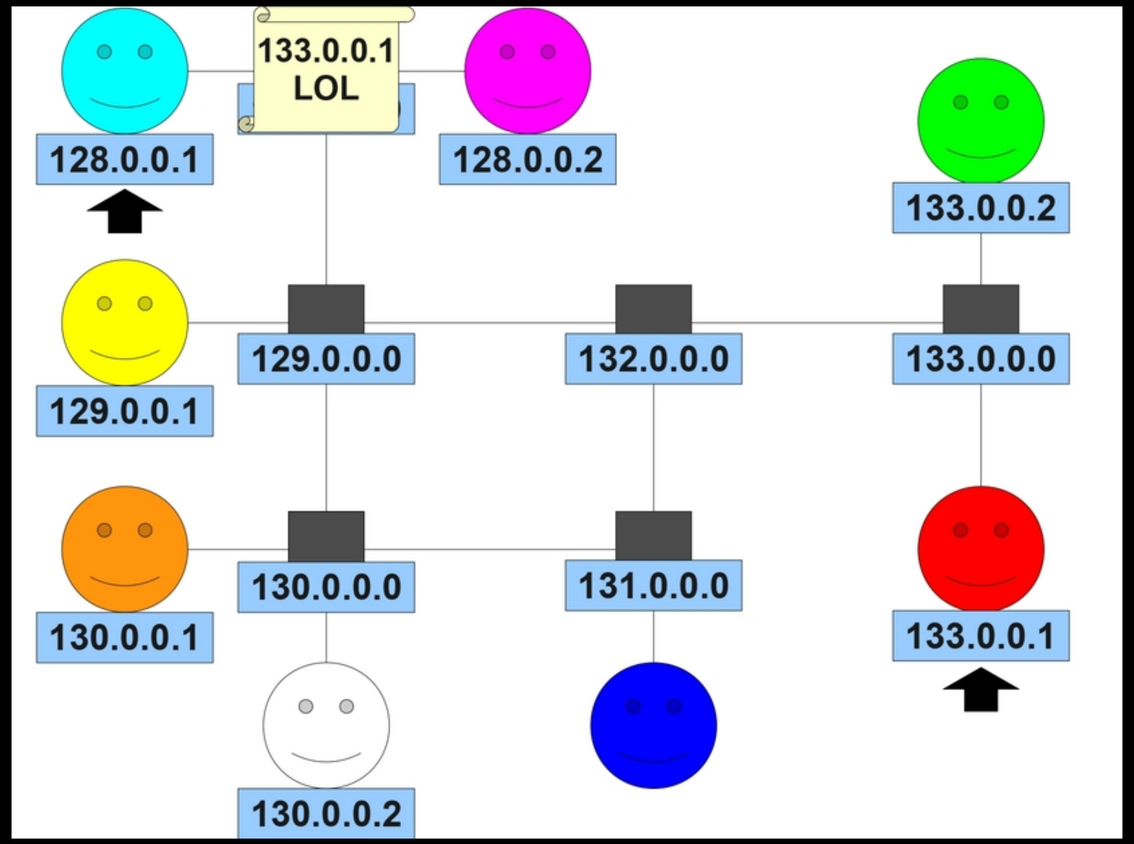
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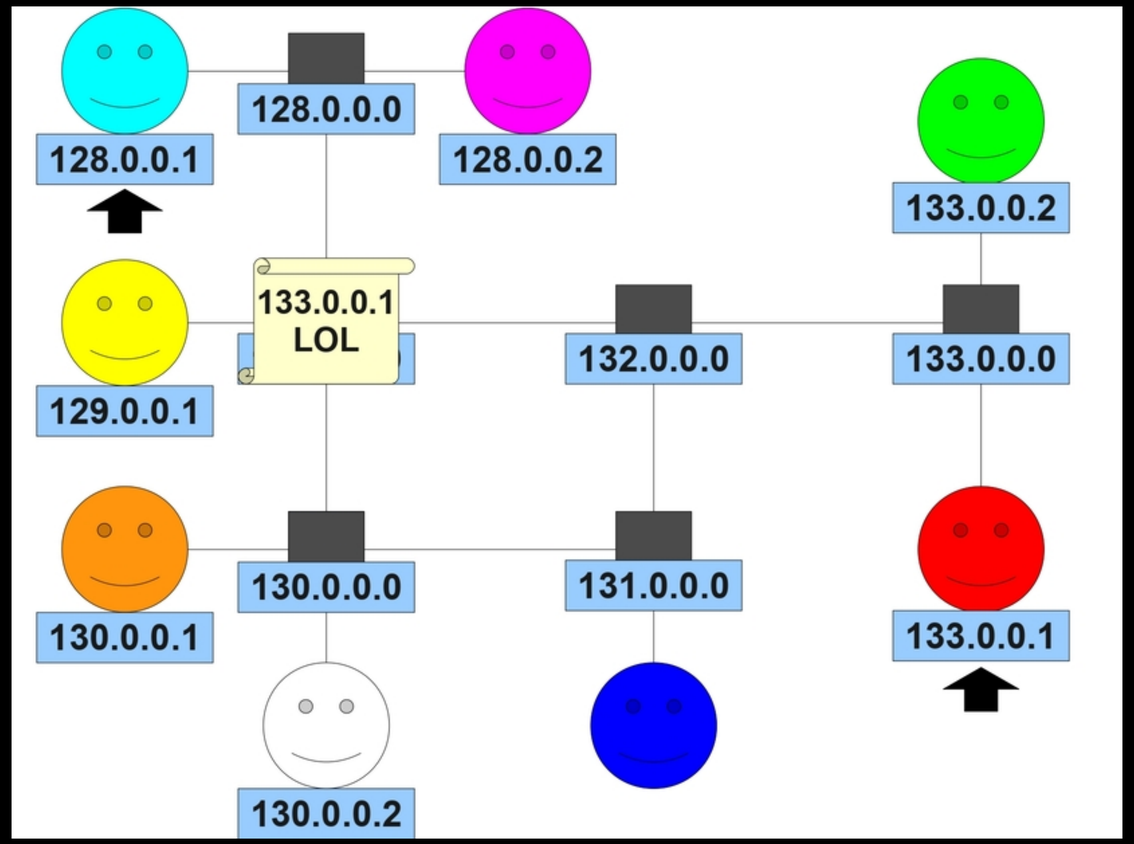
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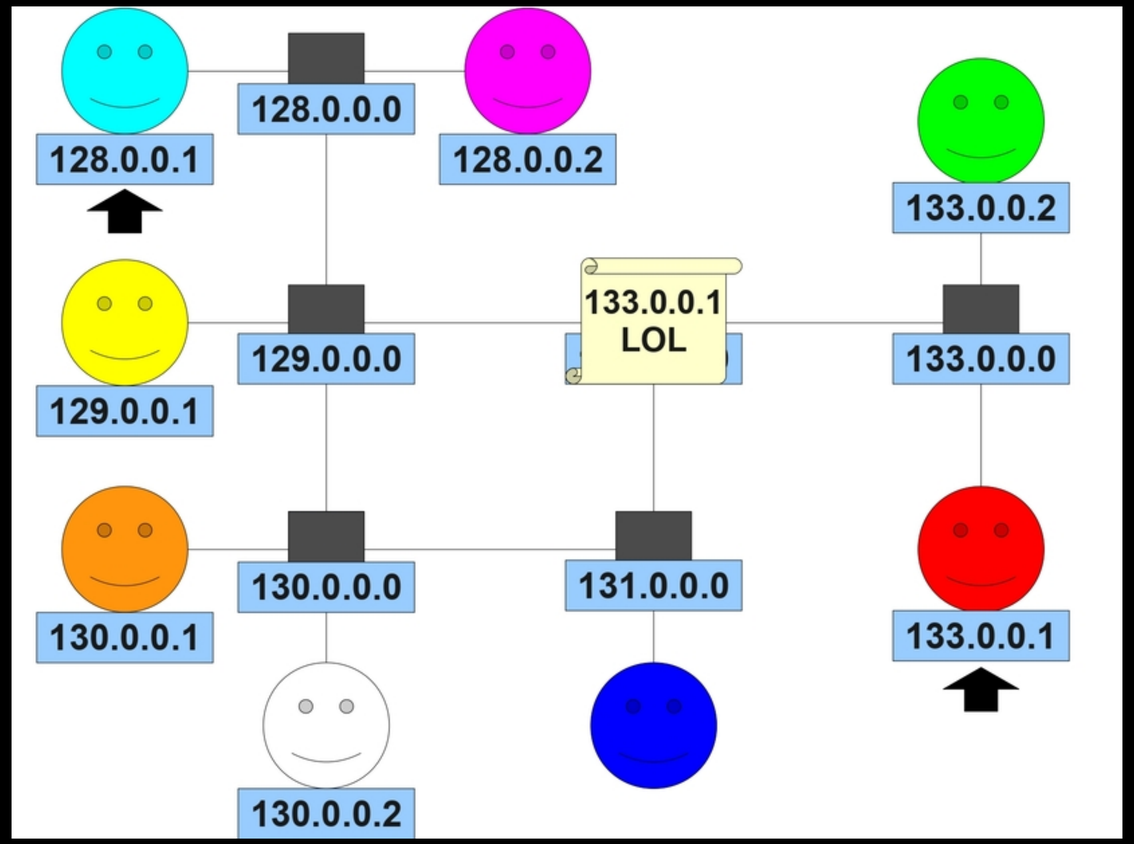
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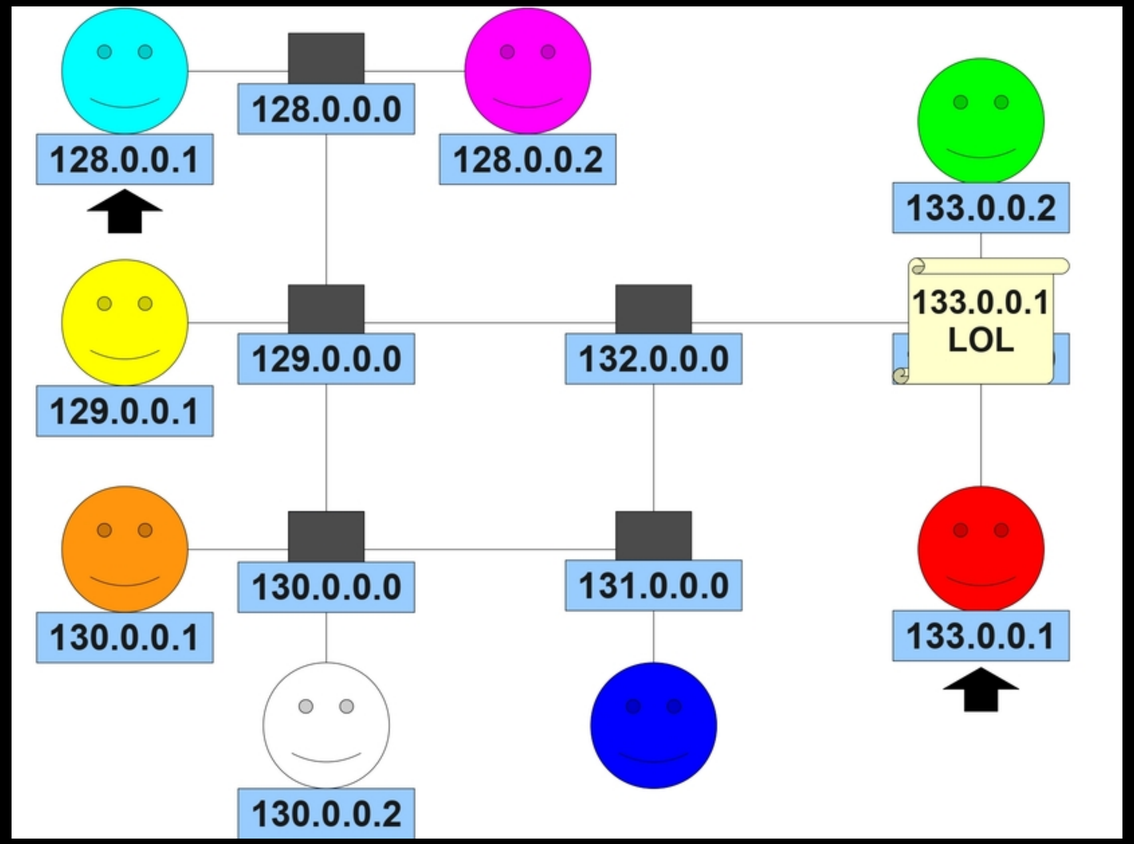
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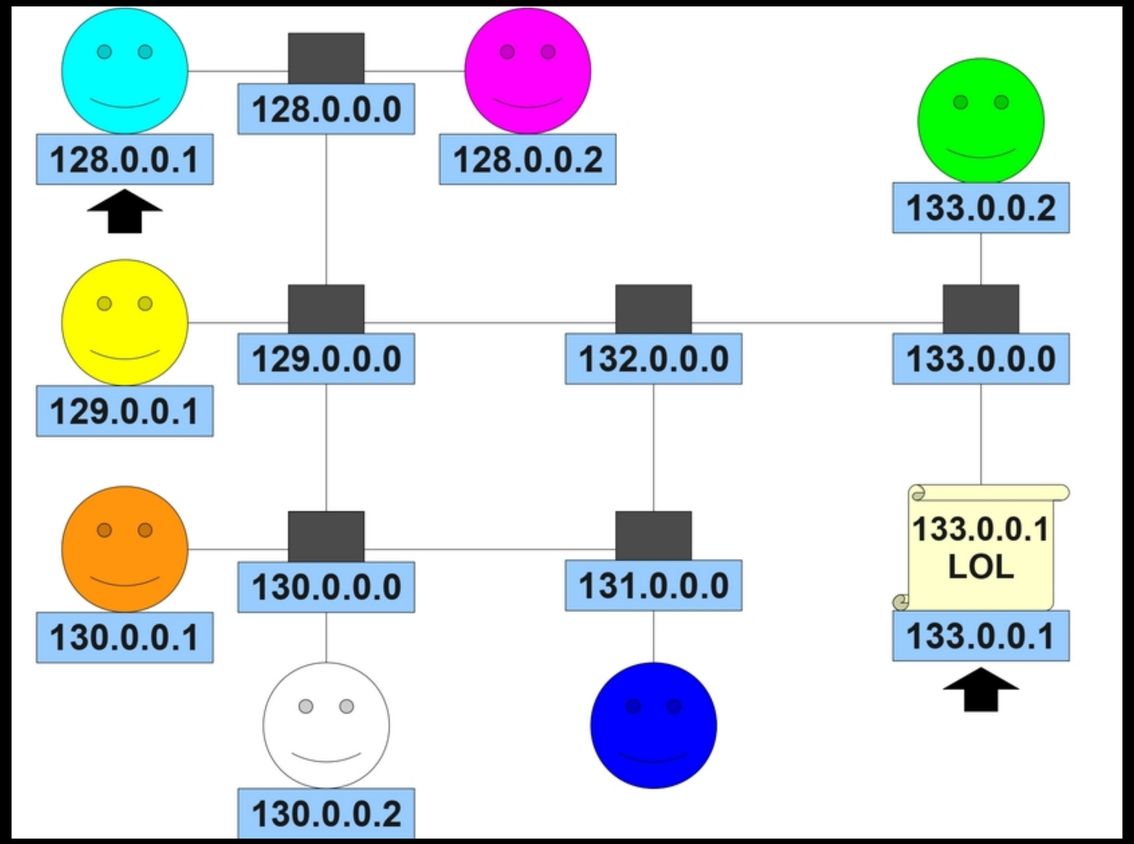
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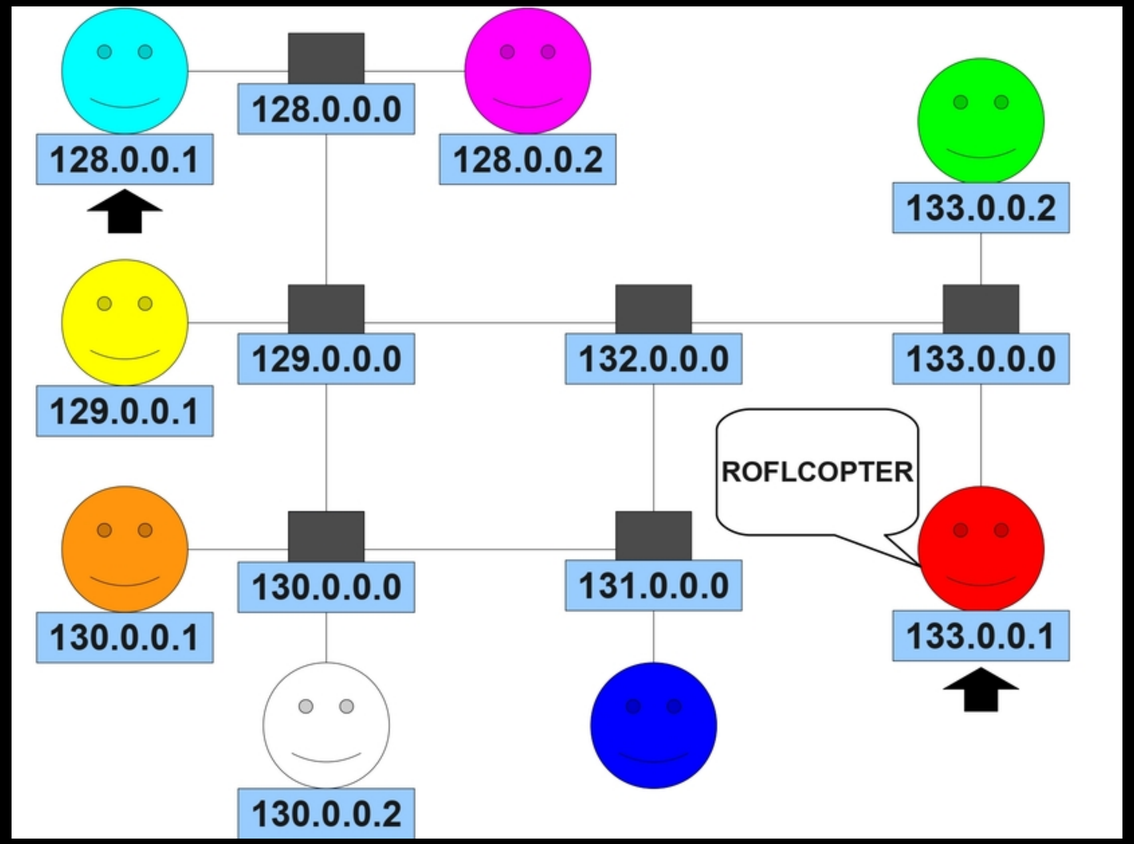
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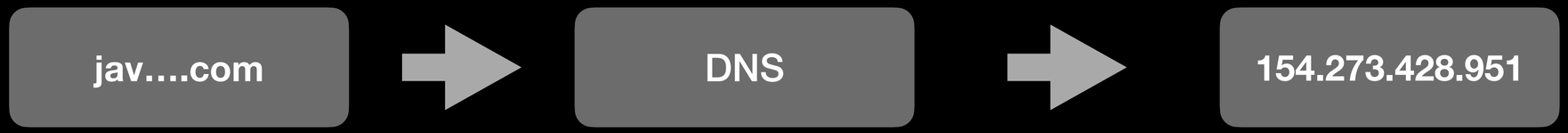
Host Name



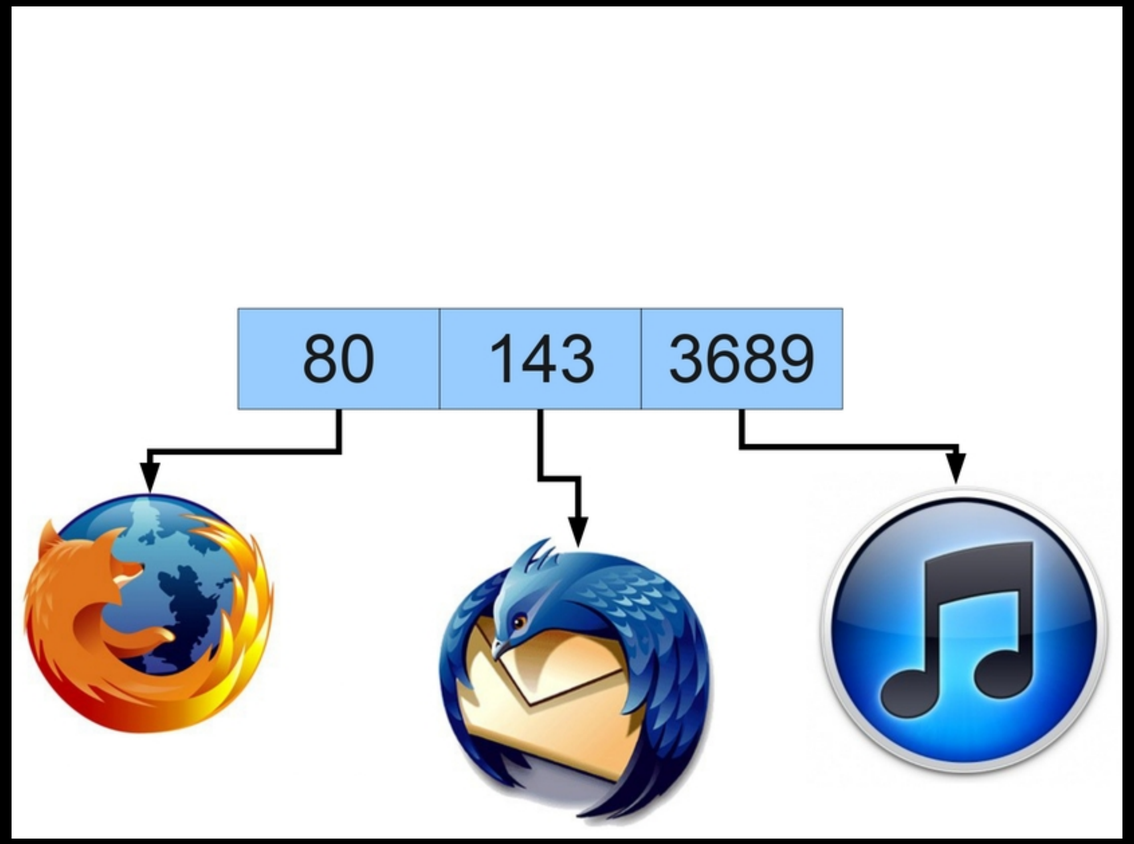
A problem

- You are chatting in telegram
- Watching a clip in Youtube
- Checking your email

So how computer can
send the right packet
to the right application

Port

- every packet has labeled with a port number
- Different application listen different port
  + Send email (SMTP): port 25
  + Browsing web (HTTP): port 80
  + Checking email (IMAP): port 143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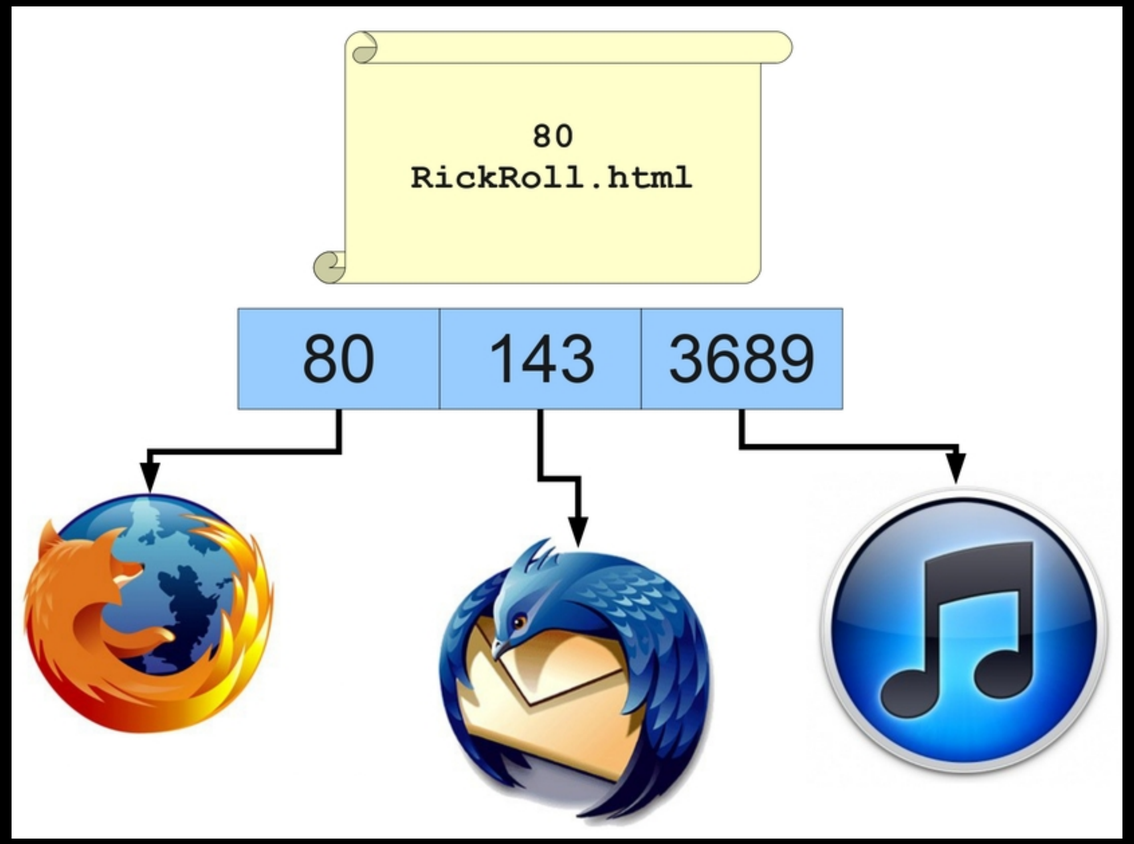
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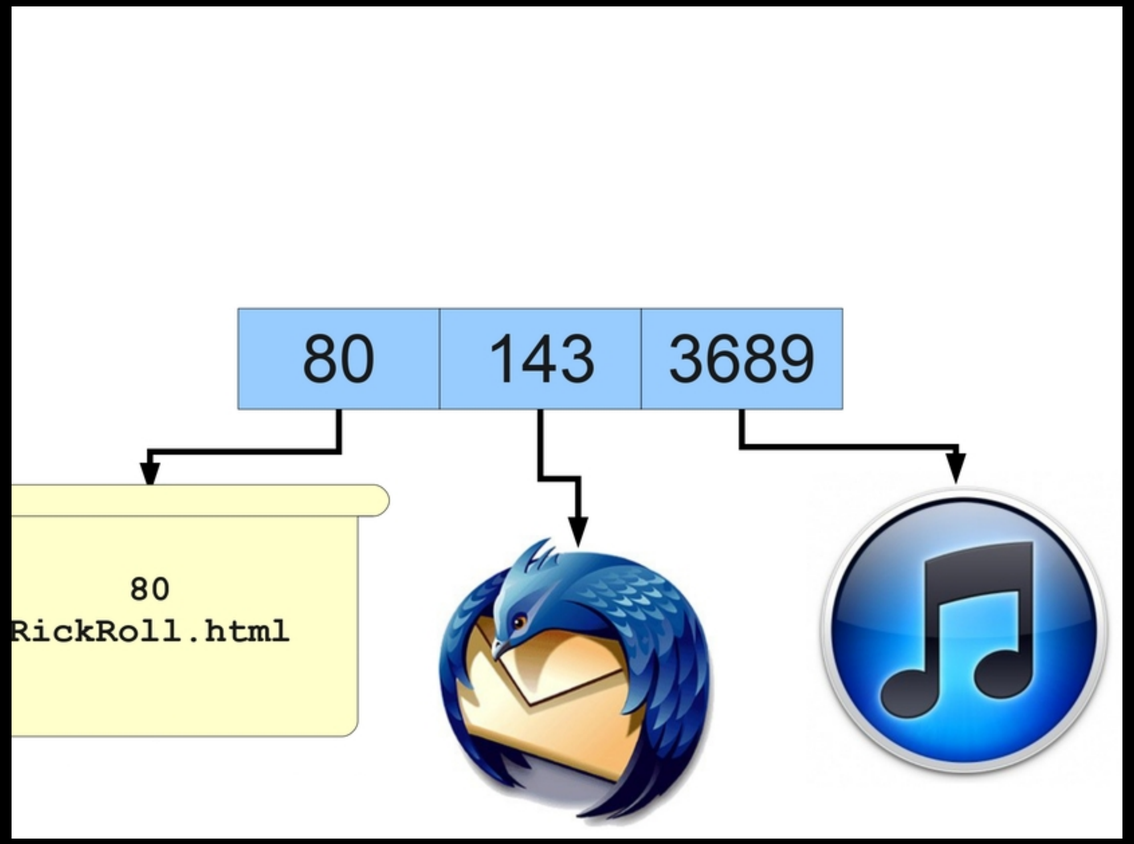
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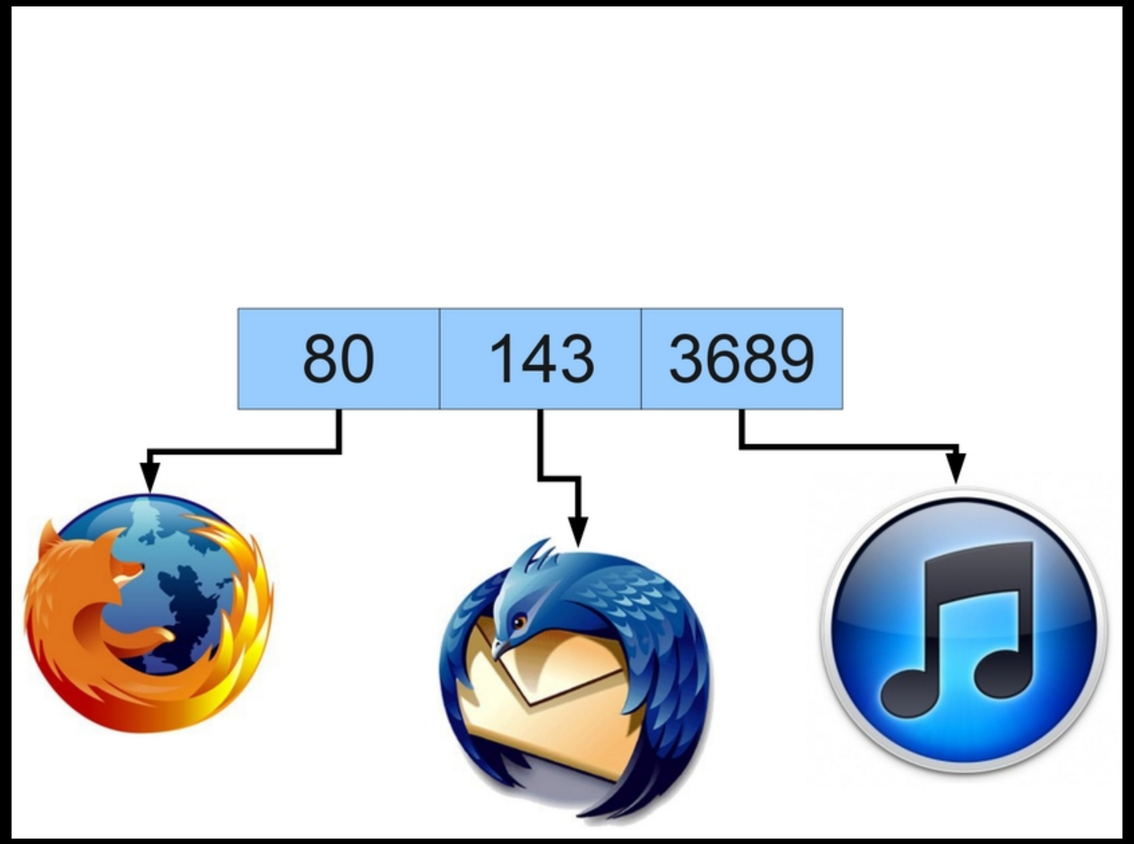
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Never Gonna Give
You Up.m4a
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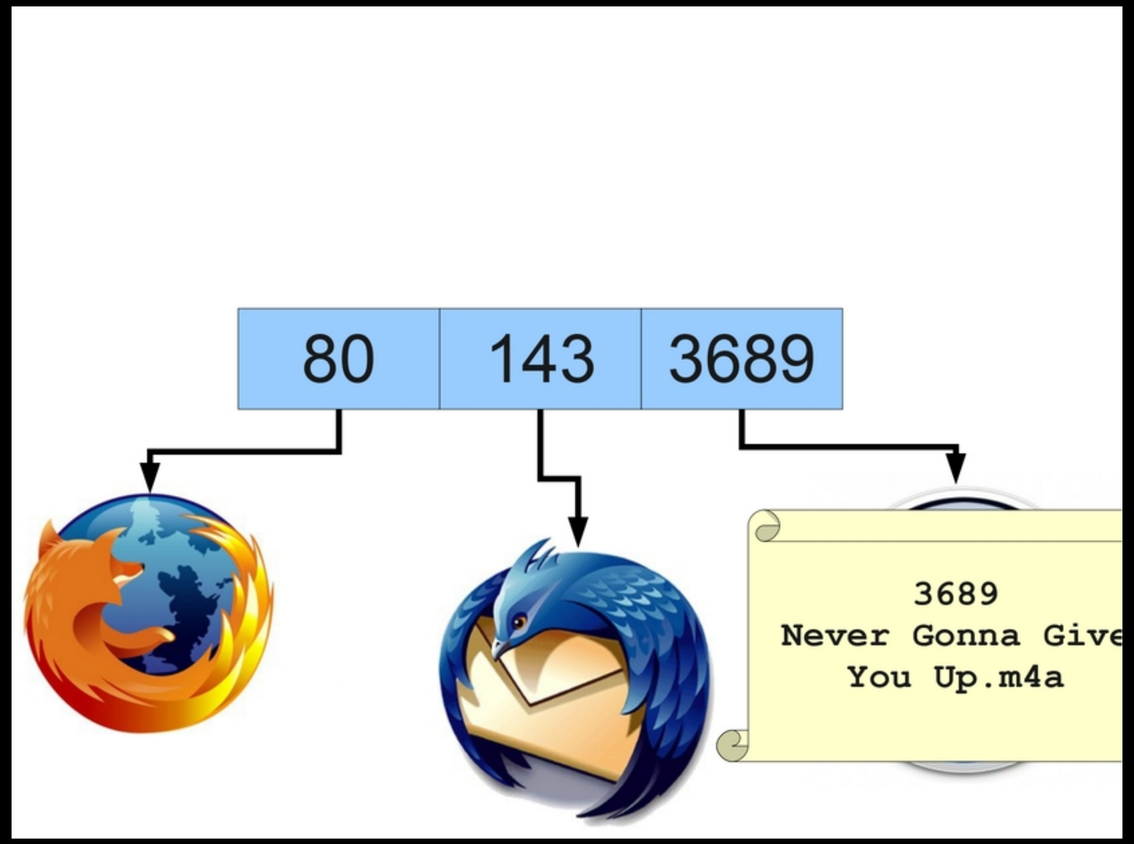
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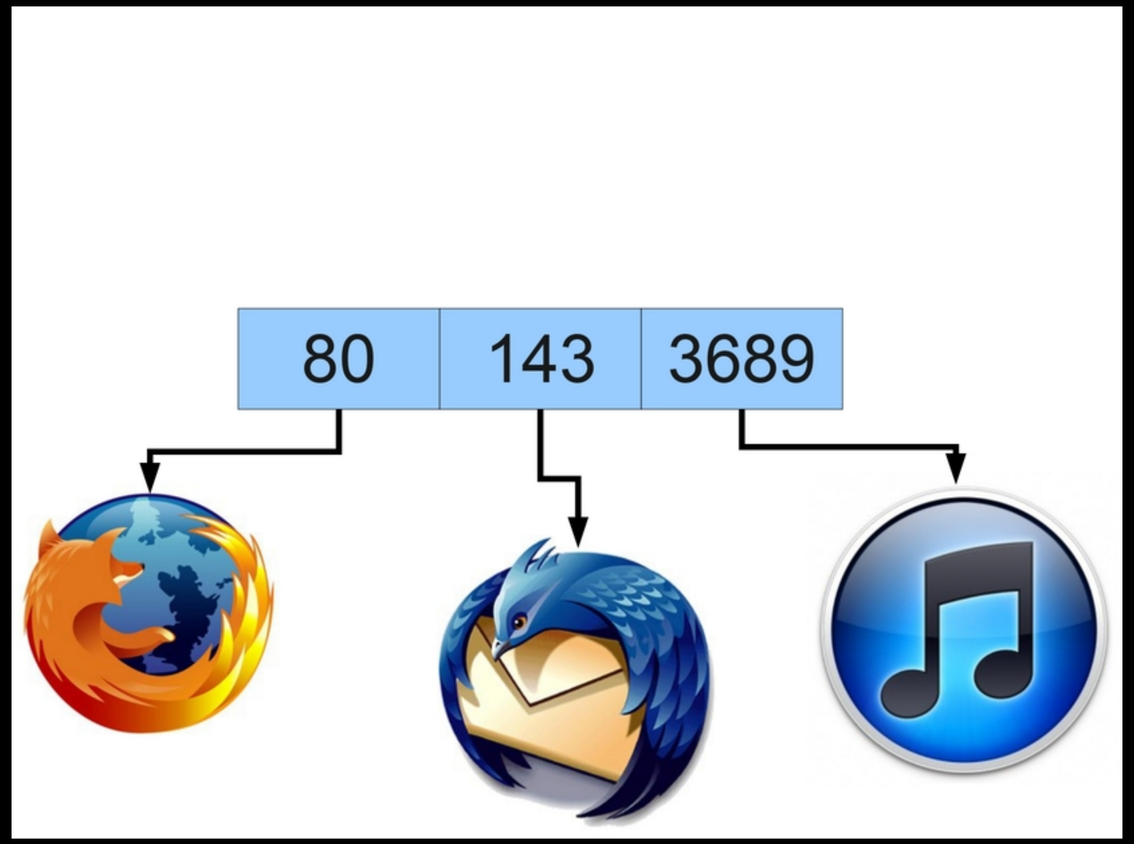
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3689

Socket

- Socket = IP address + a port number
  - (what program should read the message).
  - All information => the right program, the right computer.

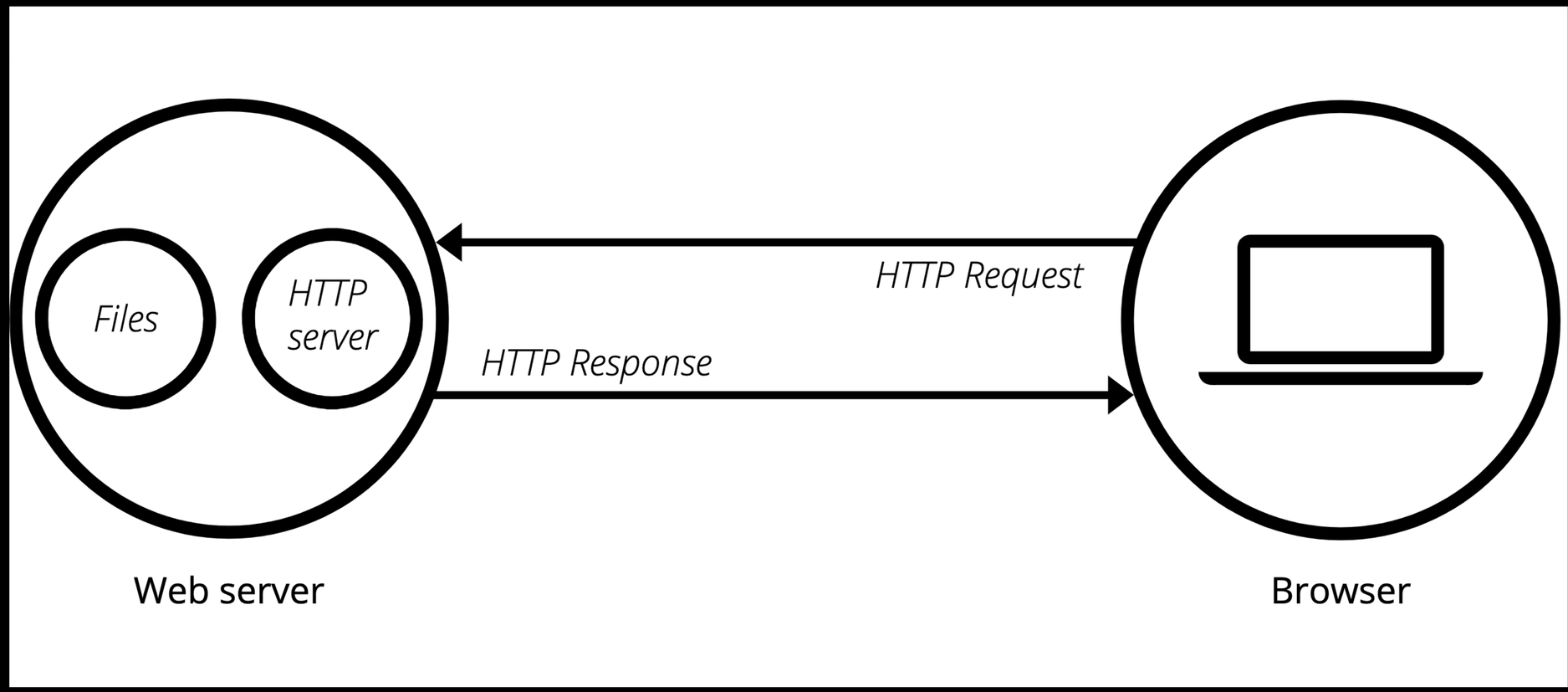
Protocol

How to communicate
right in internet

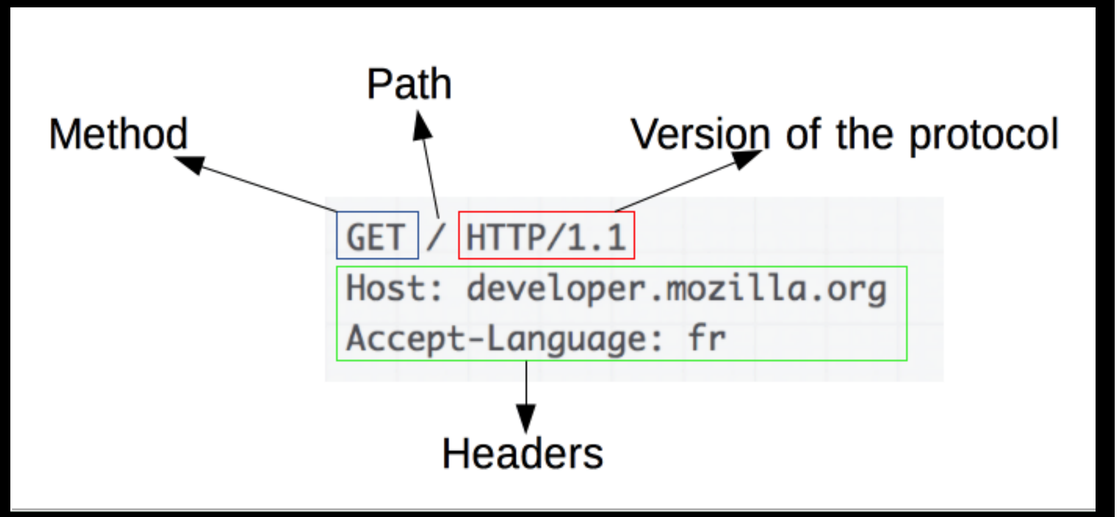
TCP vs UDP

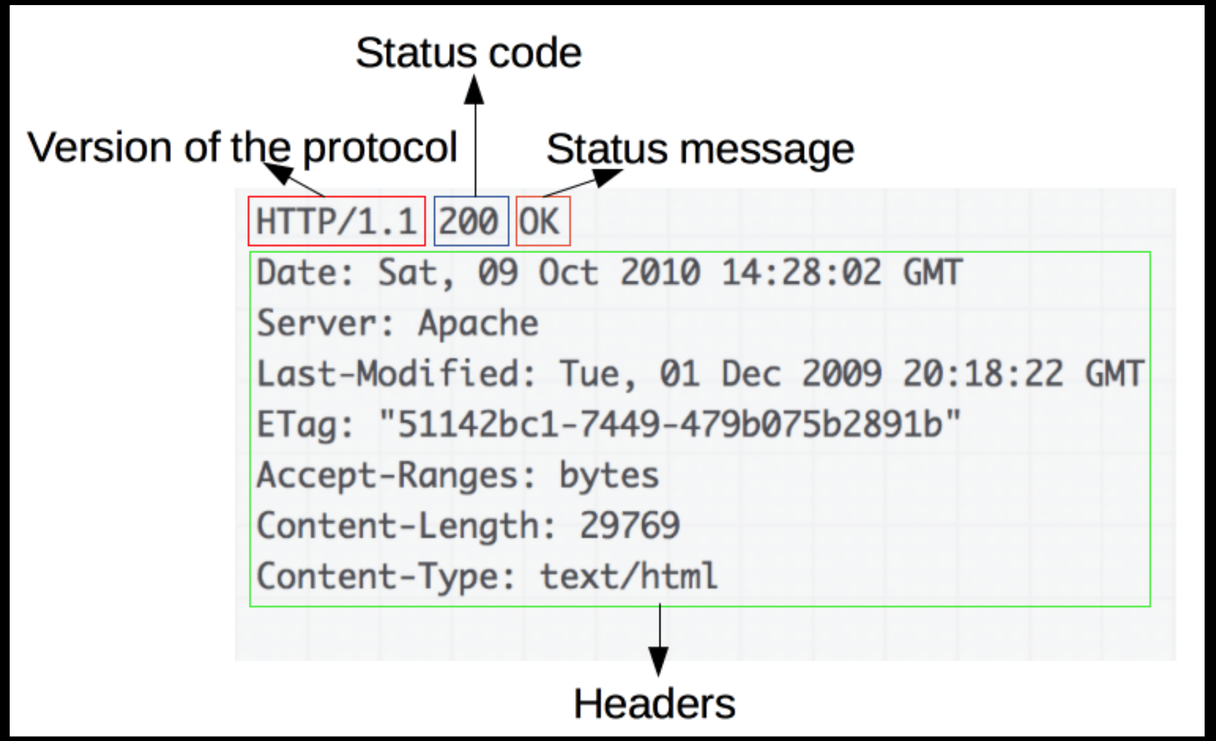
TCP	UDP
Bắt tay 3 bước trước khi gửi	Gửi liền ngay lập tức
Gói tin phức tạp hơn	Gói tin đơn giản hơn
Không cho phép mất gói tin	Cho phép mất gói tin
Đảm bảo việc truyền dữ liệu	Không đảm bảo việc truyền dữ liệu
Có sắp xếp thứ tự các gói tin	Không sắp xếp thứ tự các gói tin
Tốc độ truyền thấp	Tốc độ truyền cao
Thông tin chính xác…	Livestream, video…

HTTP


Files
HTTP server
HTTP Request
HTTP Response
Web server
Browser

HTTP Message

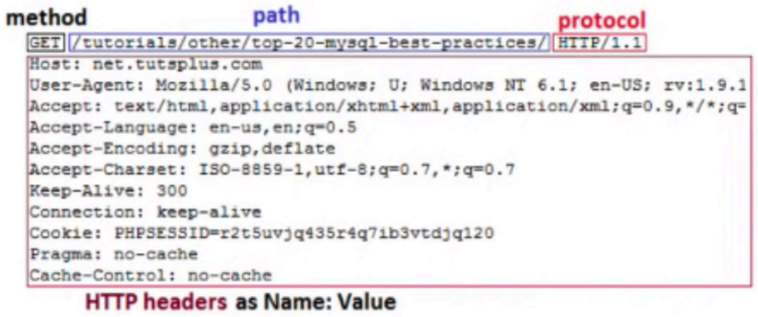




HTTP Method

- ✓ GET - Retrieves data from server
- ✓ POST - Submit data to the server
- ✓ PUT - Update data already on the server
- ✓ DELETE - Deletes data from the server

HTTP Headers



General:

- Request URL
- Request Method
- Status Code
- Remote Address
- Referrer Policy

Response:

- Server
- Set-Cookie
- Content-Type
- Content-Length
- Date

Request:

- Cookies
- Accept-xxx
- Content-Type
- Content-Length
- Authorization
- User-Agent
- Referrer

HTTP Status Code

1xx : Informational

Request recieved / processing

2xx: Success

Successfully Recieved, understood and accepted

3xx: Redirect

Further action must be taken / redirect

4xx: Client Error

Request does not have what it needs

5xx: Server Error

Server failed to fulfil an apparent valid request

200 - OK

201 - OK created

301 - Moved to new URL

304 - Not modified (Cached version)

400 - Bad request

401 - Unauthorized

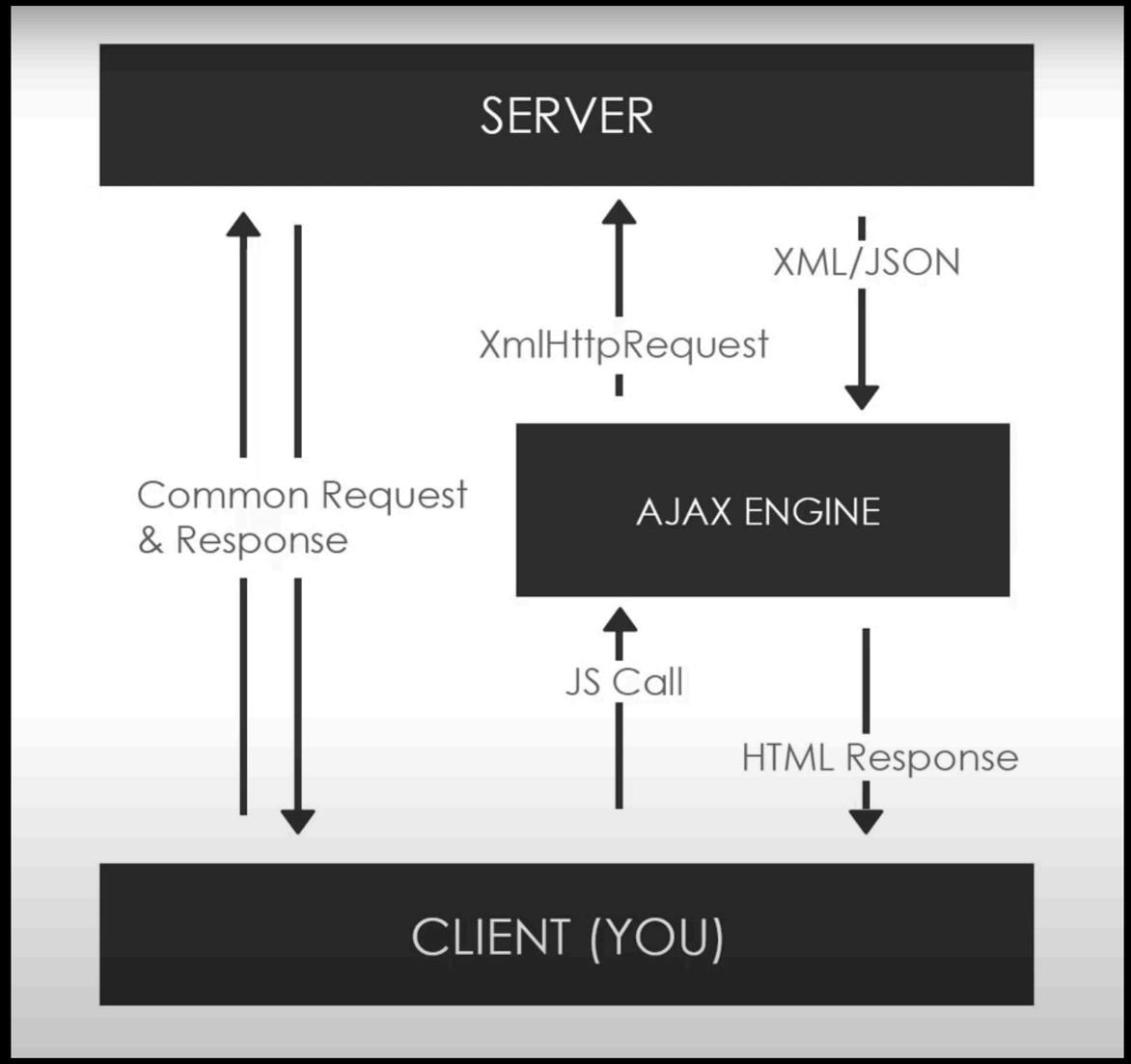
404 - Not found

500 - Internal server error

Ajax

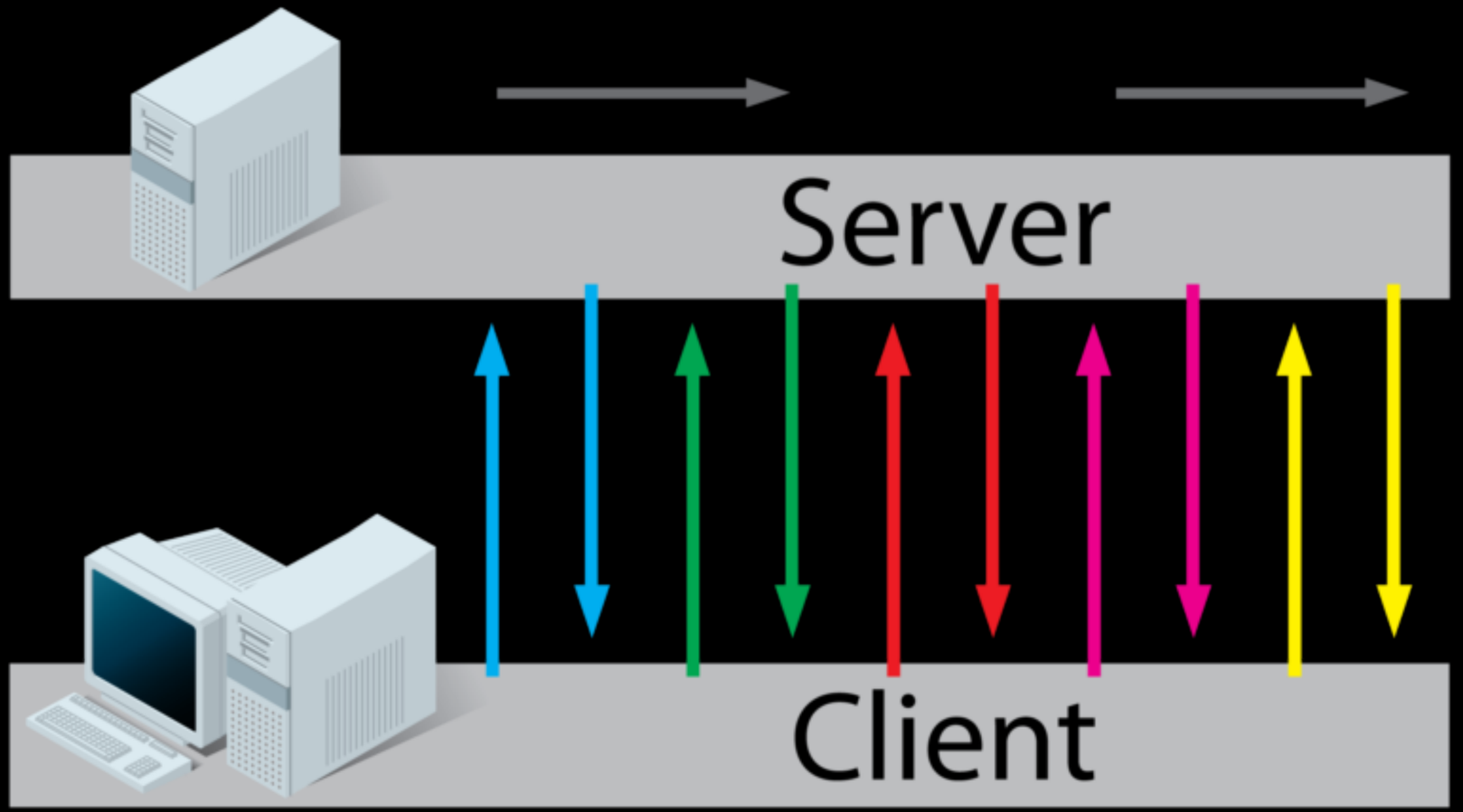
- ✓ Asynchronous JavaScript And XML
- ✓ Set of web technologies
- ✓ Send & receive data asynchronously
- ✓ Does not interfere with current webpage
- ✓ JSON has replaced XML for the most part

Ajax

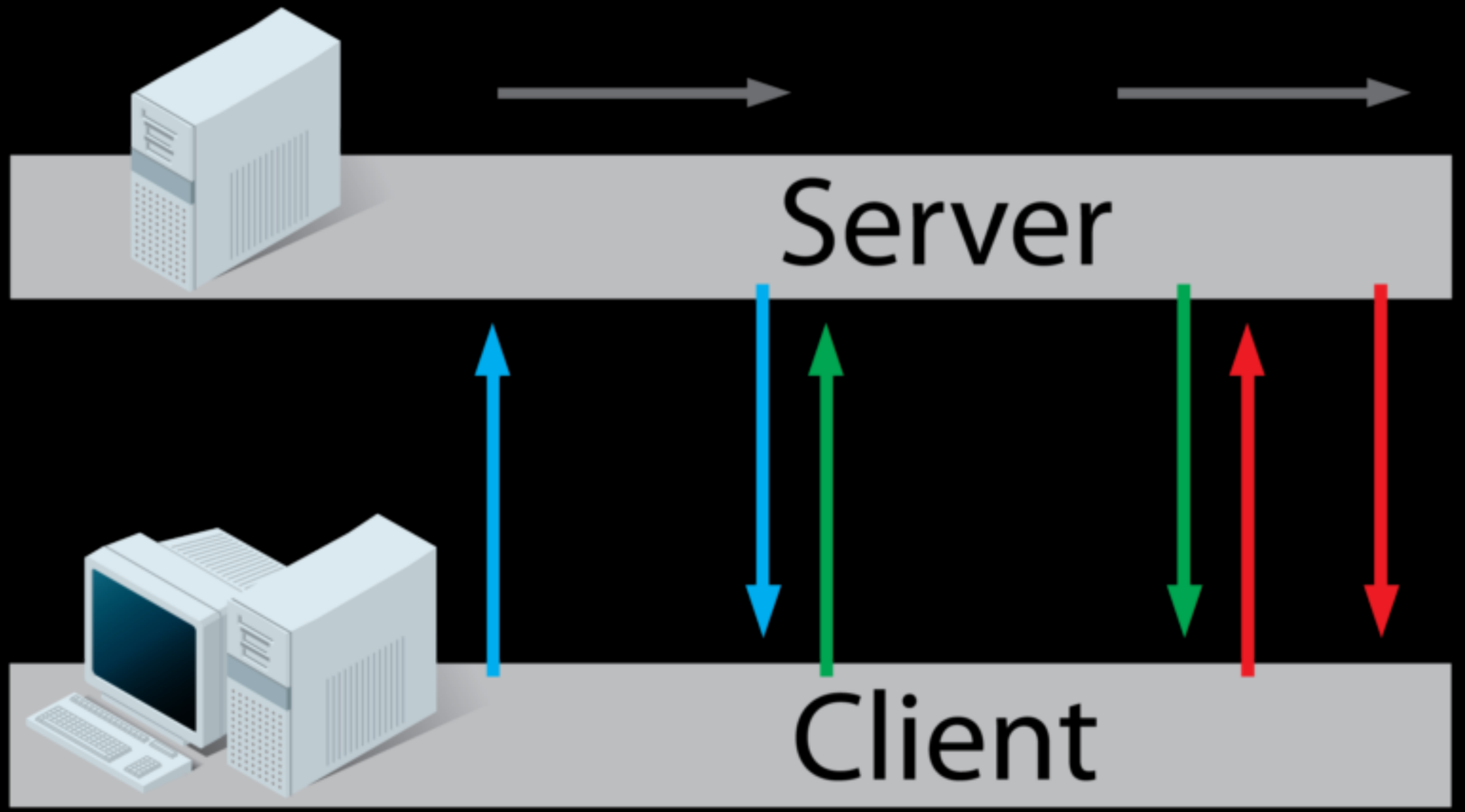

SERVER
XML/JSON
XmlHttpRequest
Common Request
& Response
AJAX ENGINE
JS Call
HTML Response
CLIENT (YOU)

How to deal with realtime application?

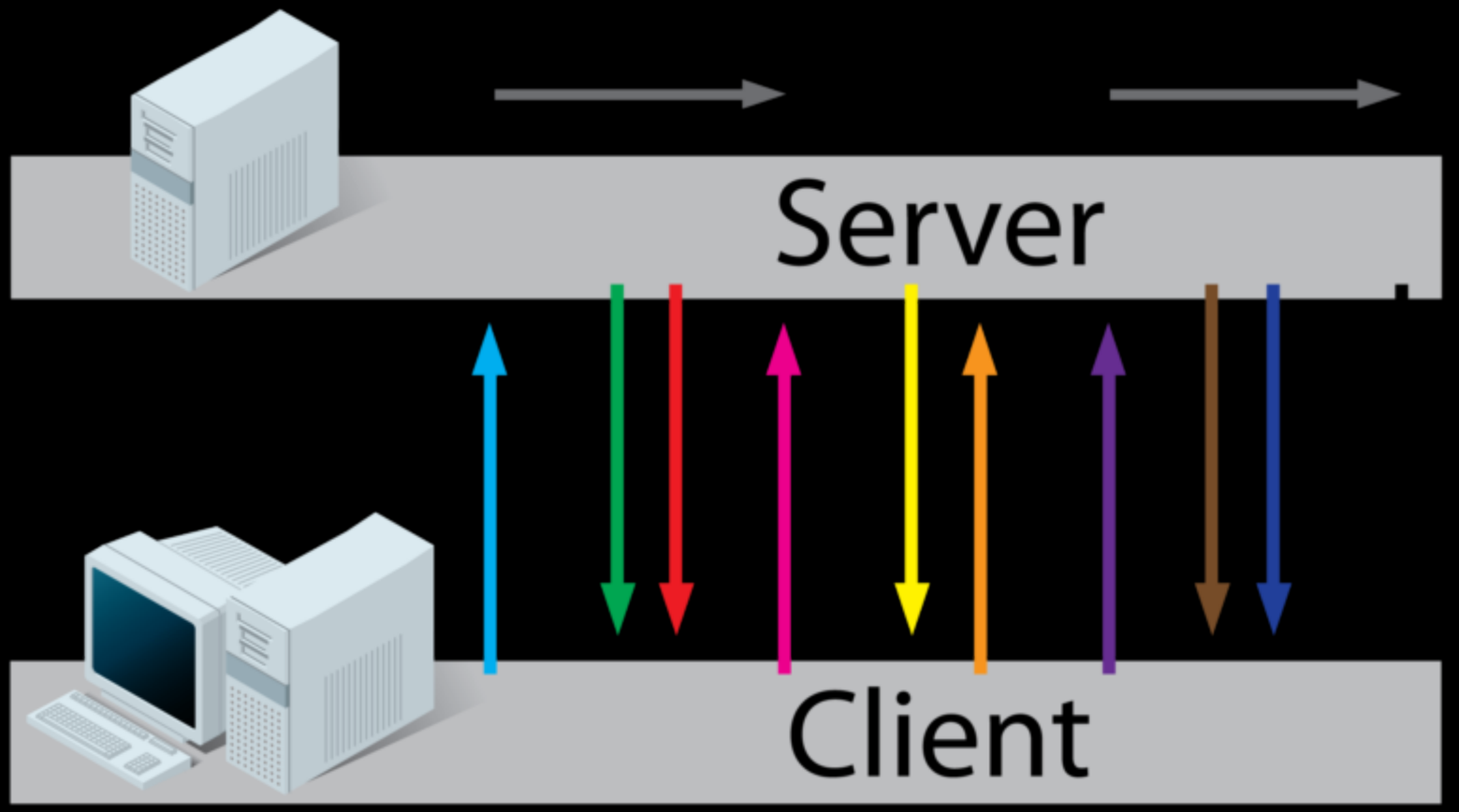
Polling



Long Polling



Web Socket



Summary

- ✓ Socket = IP + PORT
- ✓ HTTP: client => server
- ✓ HTTP status: 2xx, 3xx, 4xx, 5xx
- ✓ Ajax: - XmlHttpRequest => long polling
- ✓ WebSocket: - 2 ways server <=> client
- ✓ SocketIO = long polling + webSocket