

# Web Sockets & Server-Sent Events

# Agenda

- HTTP
- WebSockets
- WebSockets Handshake
- WebSockets use cases
- Web Sockets Example
- Web Sockets Pros and Cons
- Server Sent Events
- SSE Example
- SSE Pros and Cons

# HTTP 1.0



open



close



GET /index.html

GET /img1.jpg

GET /img2.jpg

....

80



# HTTP 1.1

open



GET /index.html

GET /img1.jpg

GET /img2.jpg

close



....

80



# WebSockets

open

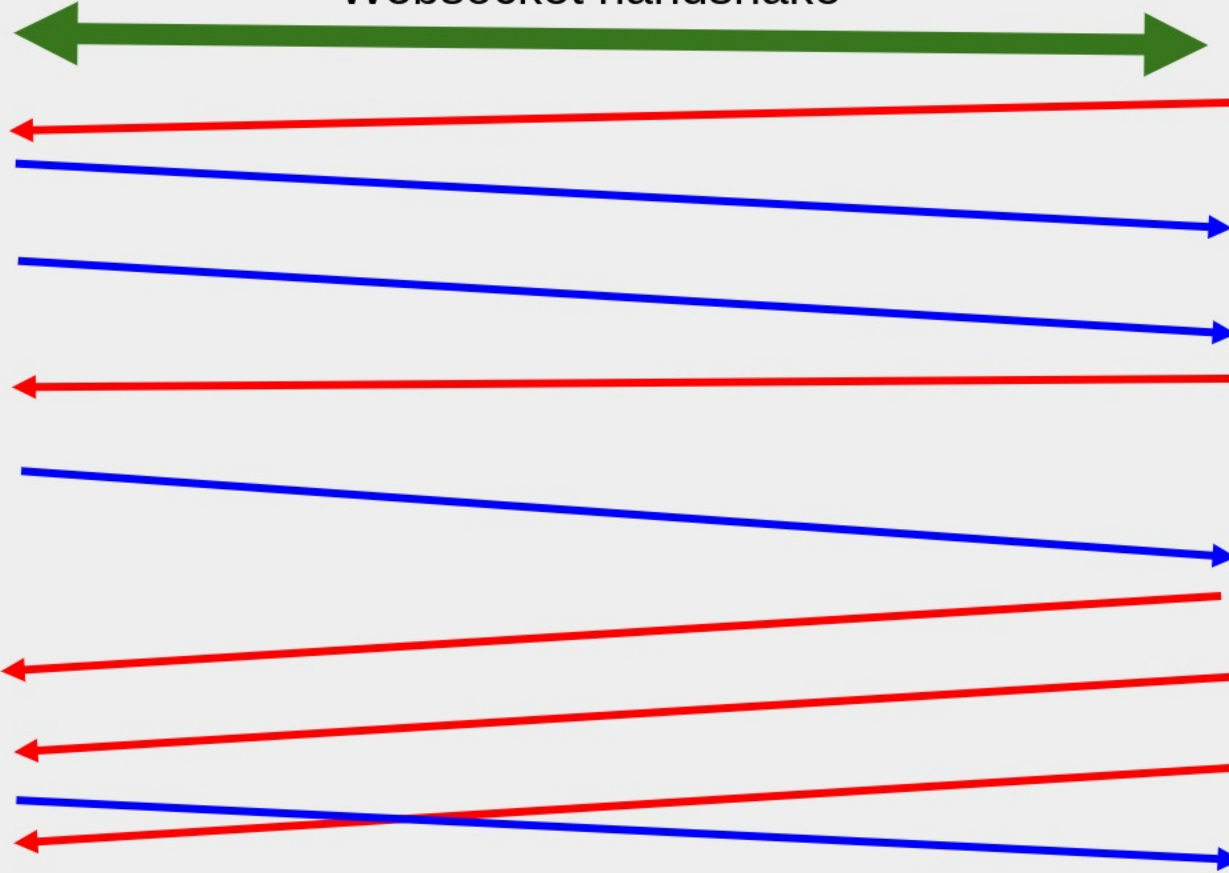
Websocket handshake



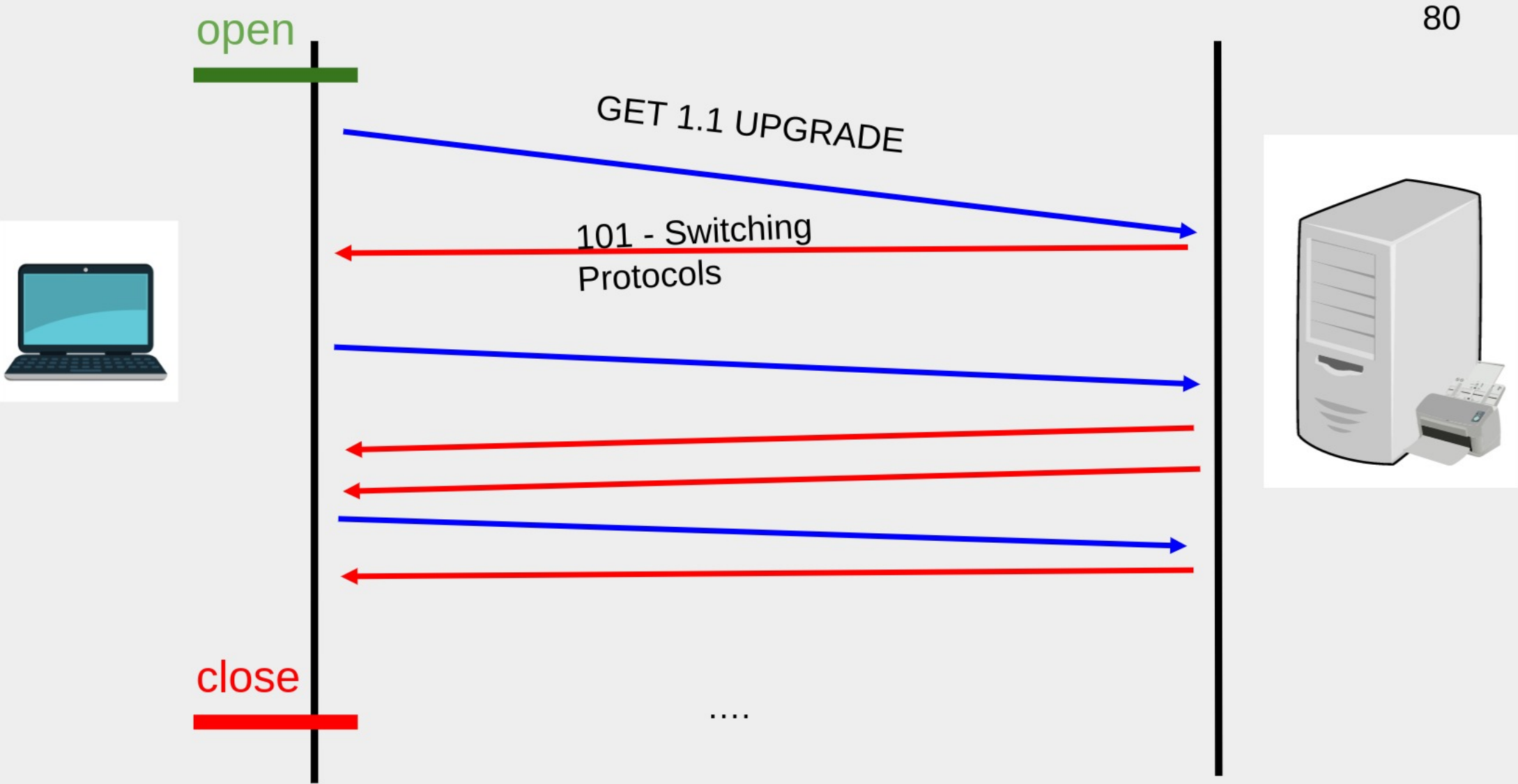
80

close

....



# WebSockets Handshake ws:// or wss://



# WebSocket Handshake

```
GET /chat HTTP/1.1
Host: server.example.com
Upgrade: websocket
Connection: Upgrade
Sec-WebSocket-Key: x3JJHMbDL1EzLkh9GBhXDw==
Sec-WebSocket-Protocol: chat, superchat
Sec-WebSocket-Version: 13
Origin: http://example.com
```

Client

```
HTTP/1.1 101 Switching Protocols
Upgrade: websocket
Connection: Upgrade
Sec-WebSocket-Accept: HSmrc0sMlYUkAGmm5OPpG2HaGWk=
Sec-WebSocket-Protocol: chat
```

Server

# Web Sockets use cases

- Chatting
- Live Feed
- Multiplayer gaming
- Showing client progress/logging



# Web Sockets Example

- CODE TIME!
- Raw websocket client/server

# WebSockets Pros and Cons

## Pros

- Full-duplex (no polling)
- HTTP compatible
- Firewall friendly (standard)

## Cons

- Stateful, difficult to horizontally scale

# Do you have to use Web Sockets?

- NO! Rule of thumb - do you absolutely need bidirectional communication?
- Long polling
- EventSource

SSE

open

80



GET text/event-stream

text/event-stream

Transfer-Encoding: chunked

close

....

# SSE use cases

- Live Feed
- Showing client progress
- Logging

# SSE Example

- CODE TIME!
- Raw SSE client/server with NodeJS

## SSE Pros and Cons

### Pros

- Lightweight
- HTTP & HTTP/2 compatible
- Firewall friendly (standard)

### Cons

- Stateful, difficult to horizontally scale

# Summary

- HTTP
- WebSockets
- WebSockets Handshake
- WebSockets use cases
- WebSockets Example
- WebSockets Pros and Cons
- Server Sent Events
- SSE Example (Code YAY!)
- SSE Pros and Cons



# Code Reference

- Github

[https://github.com/noelimmi/ws\\_and\\_sse](https://github.com/noelimmi/ws_and_sse)