



WebSockets

Bidirectional Communication Protocols



Agenda

- HTTP
- WebSockets
- WebSockets HandShake
- Implementation of webSockets using Node js.
- WebSockets Use Cases
- WebSockets Pros and Cons
- References

HTTP 1.0



open

close

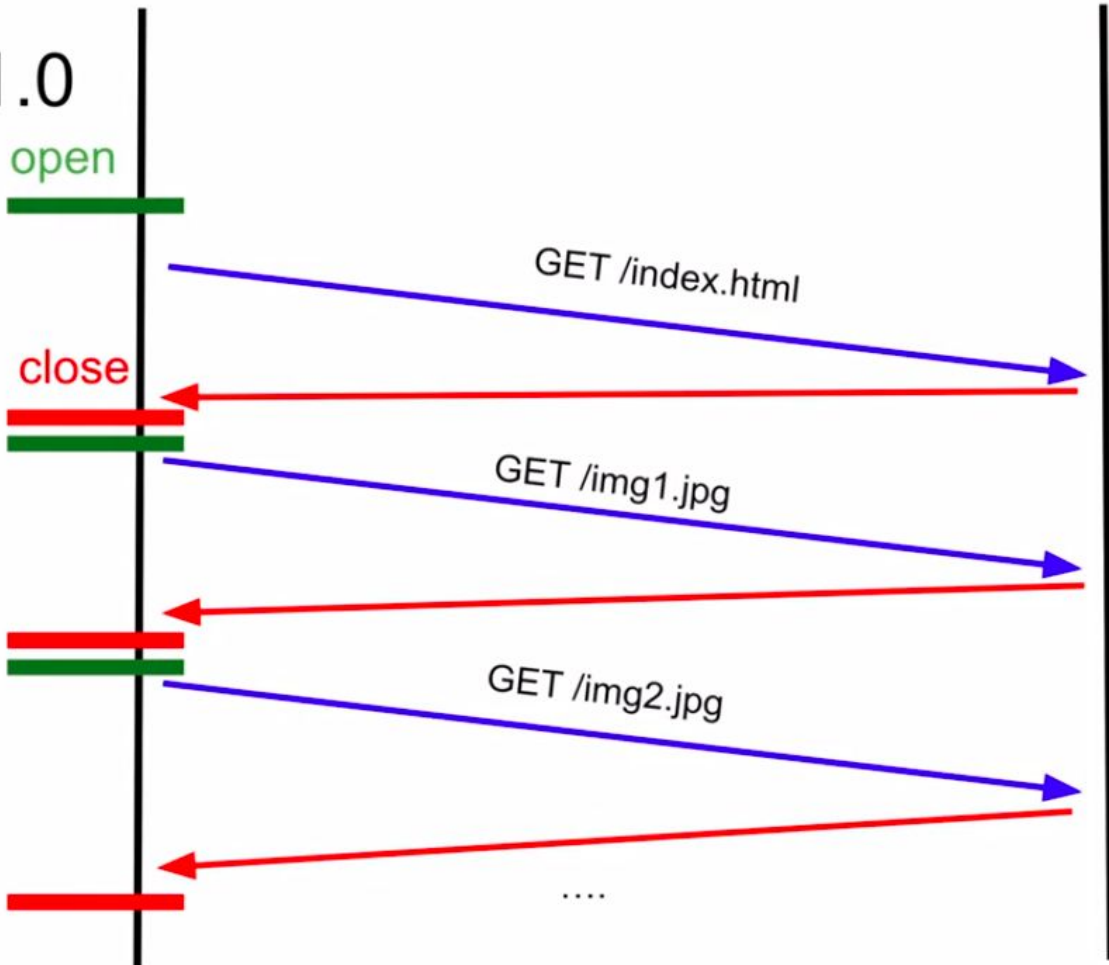
GET /index.html

GET /img1.jpg

GET /img2.jpg

....

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HTTP 1.1

open



GET /index.html

GET /img1.jpg

GET /img2.jpg

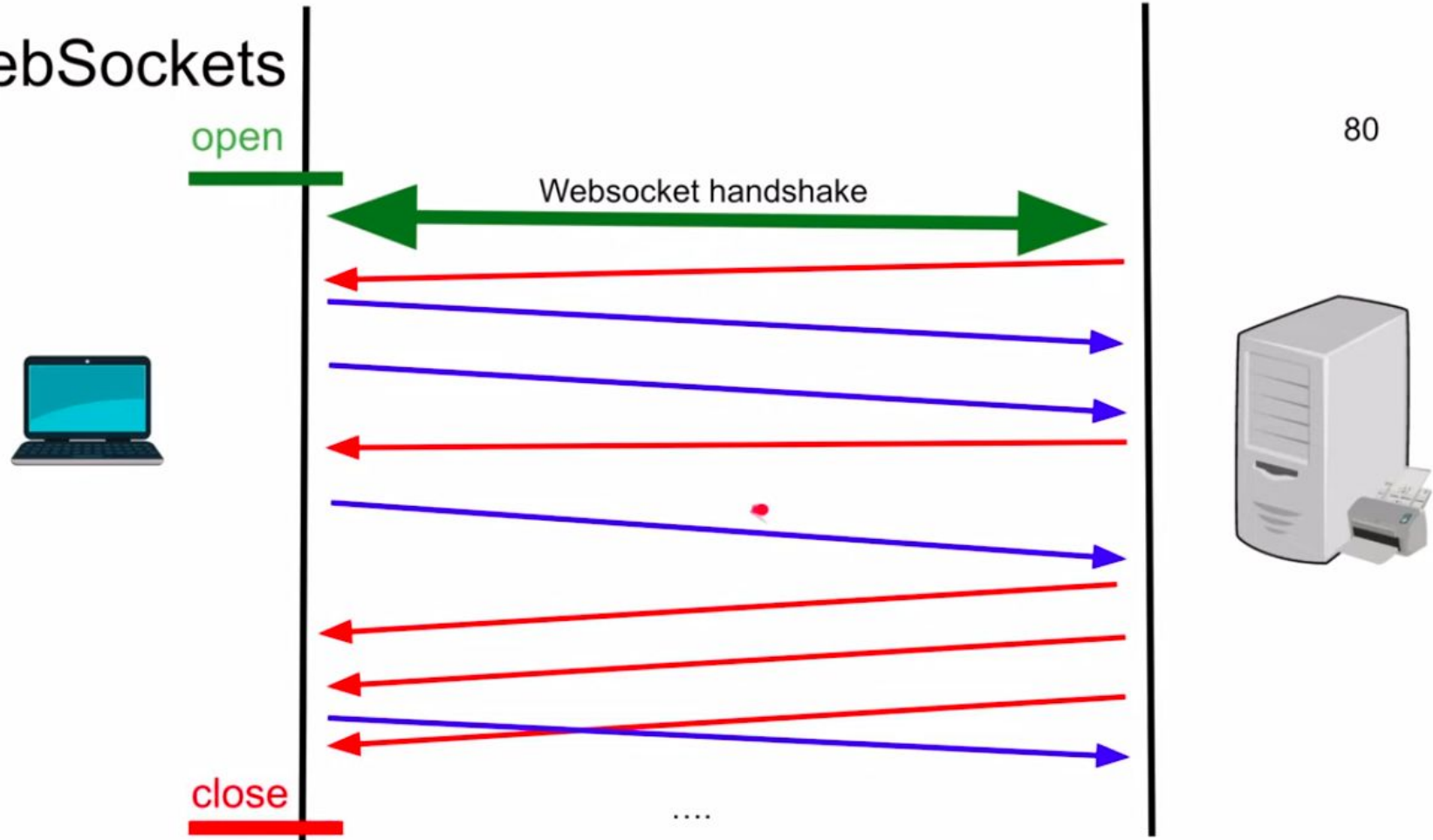
close

....

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WebSockets



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



WebSockets Use Cases

- Chatting (ex - WhatsApp)
- Live Feed (ex - Live Score Displaying)
- Multiplayer gaming
- Showing Client progress/logging .(Notification, uploading status of image etc)



WebSockets Pros

- Full-duplex no need for constant polling.
- Compatible with HTTP.
- Firewalls doesn't block it, doesn't use special ports.



WebSockets Cons

- Proxying is tricky, lots of proxies don't support it yet.
- Timeouts on load balancer.
- More complicated to implement.
- Not ideal for all use cases.



References

- <https://websockets.readthedocs.io/en/stable/reference/index.html>
- https://developer.mozilla.org/en-US/docs/Web/API/WebSockets_API
- <https://www.embedthis.com/appweb/doc/users/webSockets.html>