Intro to WebSockets 

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What is it

- Web protocol, like http(s), for real-time communication b/t a client and server.
  - Ex: Instant message/chat, notifications, live updating charts, web-based games, etc.
- HTTP Alternative: Polling

How it works

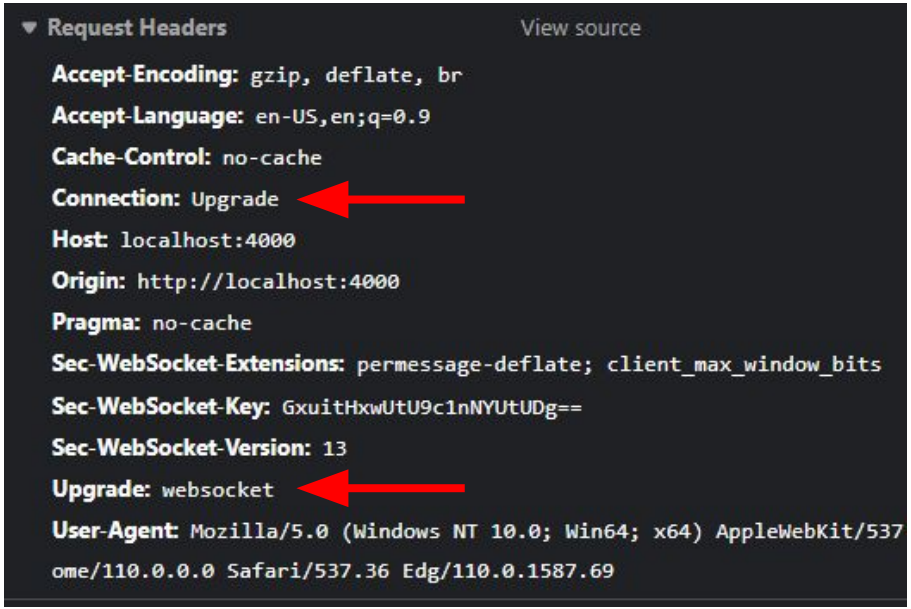
3 step handshake b/t client and server:

- Opening handshake (connecting)
- Data transfer (open)
- Closing handshake (closing/closed)

Opening Handshake

Client requests for the connection to be upgraded to a WS connection using some special headers.

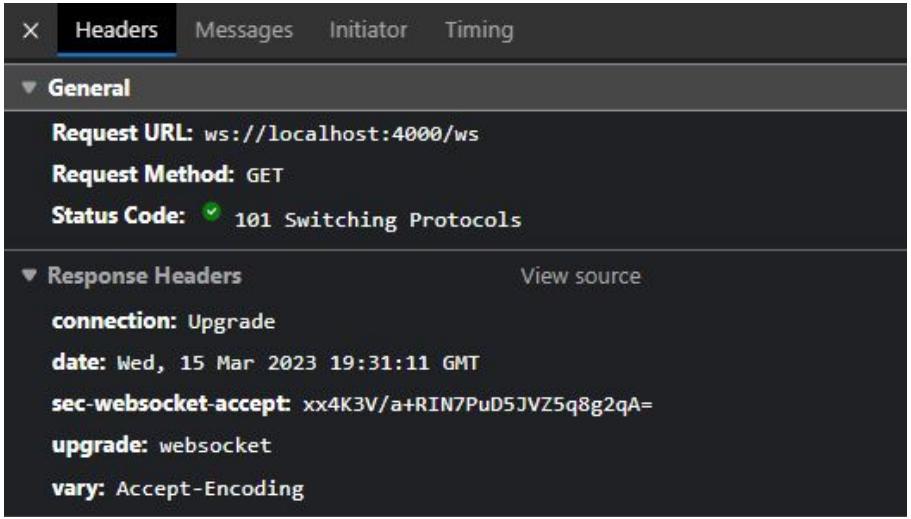
Upgrade strategy allows a single server to handle both HTTP and WS requests all on the same port.



Opening Handshake

Server validates the request and responds with its own set of special headers including a status code of 101.

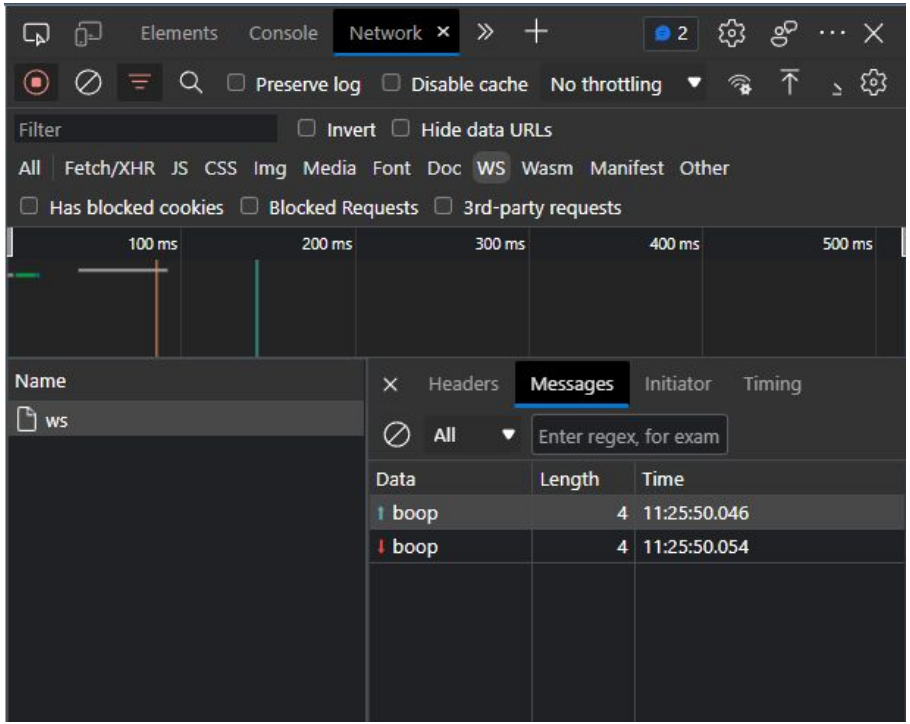
The client then validates the response from the server and the upgrade is complete.



Data transfer

The client and server can now independently send messages at will.

Payloads can include raw text or binary data.



Closing handshake

- Either the client or server can initiate the closing handshake at any time by sending a message with a special ‘Close’ control frame.
- Optionally, this close message can include a reason for the closure.
- Whichever party receives the control frame then responds with their own Close control frame.
- Once the initiating party receives the Close control frame the connection can be safely closed.
- Similar to TCP’s FIN/ACK handshake.

The best part is...

You don't have to worry about any of that!

What you do *need* to know

- ‘ws://’ vs ‘wss://’
- PING & PONG
- Sending/receiving messages
- Troubleshooting

Lets see an example shall we

Okay, it's starting to make sense, but how would that work in a *real* application? 🃏

WebSocket Libraries

- C# - SignalR
- Go - Gorilla
- Java - Tyrus
- JS - Socket.io

facundofarias/awesome-websockets: A curated list of Websocket libraries and resources. (github.com)

Thank you! 

References

- https://www.rfc-editor.org/rfc/rfc6455#section-1.2
- https://websockets.spec.whatwg.org/
- https://github.com/lvl-mattwells/DevsPlayingPoker
- https://github.com/mattwells19/IntroToWebSockets
- https://github.com/facundofarias/awesome-websockets