

R-Pi

Team Emertxe



Websockets - API

Introduction



Websockets

Introduction

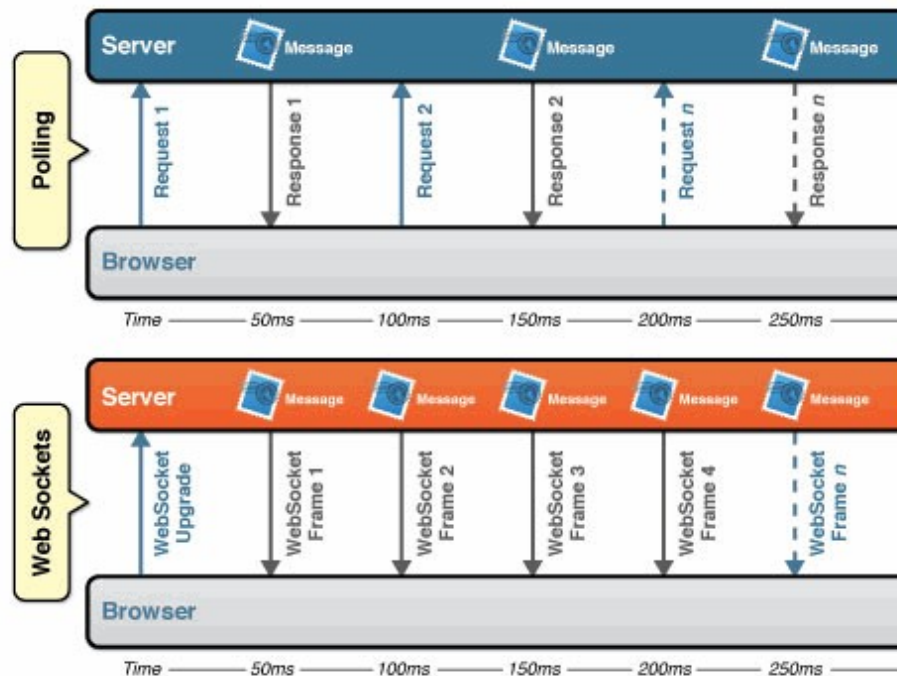


- The WebSocket specification is a new feature of HTML5.
- It defines
 - Full-duplex
 - Single socket connection
 - Bi-directional
- The WebSocket standard simplifies much of the complexity around bi-directional web communication and connection management.
- The Websocket standard reduces polling and the unnecessary network throughput overhead.

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- Once the connection is established, messages can flow from the server to the browser.
- As the connection remains open, there is no need to send another request to the server.



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Protocol



Websockets

Protocol



- To establish a WebSocket connection, the client and server upgrade from the HTTP protocol to the WebSocket protocol during their initial handshake.
- The handshake from the client looks as follows:

```
GET /chat HTTP/1.1
Host: server.example.com
Upgrade: websocket
Connection: Upgrade
Sec-WebSocket-Key: dGhlIHNhbXBsZSBub25jZQ==
Origin: http://example.com
Sec-WebSocket-Protocol: chat, superchat
Sec-WebSocket-Version: 13
```

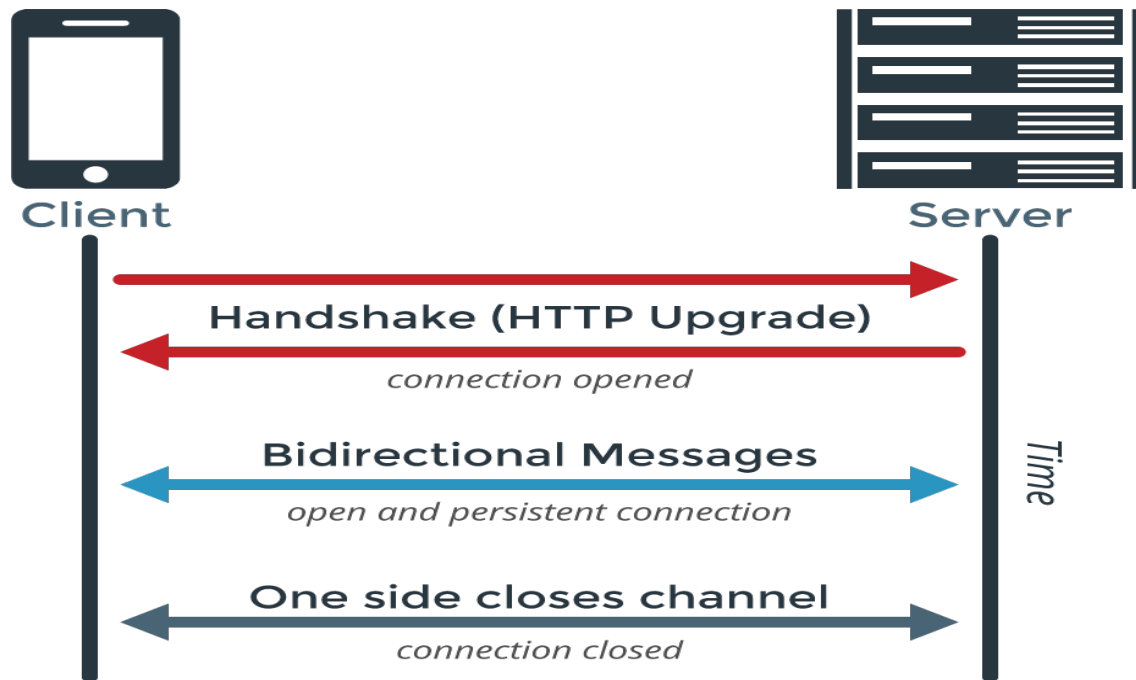
- The handshake from the server looks as follows:

```
HTTP/1.1 101 Switching Protocols
Upgrade: websocket
Connection: Upgrade
Sec-WebSocket-Accept: s3pPLMBiTxaQ9kYGzzhZRbK+xOo=
Sec-WebSocket-Protocol: chat
```

Websockets

Protocol

- When creating a WebSocket connection, the first step is a handshake over TCP in which the client and server agree to use the WebSocket Protocol.



Websockets

Protocol



- The WebSocket API enables your applications to control the WebSocket protocol and respond to events triggered by the server.
- Since the API is purely event driven, once the full-duplex connection is established, when the server has data to send to the client, or if resources that the application is monitoring change their state, it automatically sends the data or notifications.
- With an event-driven API, there is no need to poll the server for the most updated status of the targeted resource.

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Events



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Events



- There are four main Web Socket API events
 - Open
 - Message
 - Close
 - Error
- Each of the events are handled by implementing the functions like `onopen`, `onmessage`, `onclose` and `onerror` functions respectively.
- It can also be implemented with the help of `addEventListener` method.

Websockets

Actions



- Events are usually triggered when something happens.
- On the other hand, actions are taken when a user wants something to happen.
- Actions are made by explicit calls using functions by users.
- The Web Socket protocol supports two main actions,
 - `send()`
 - `close()`

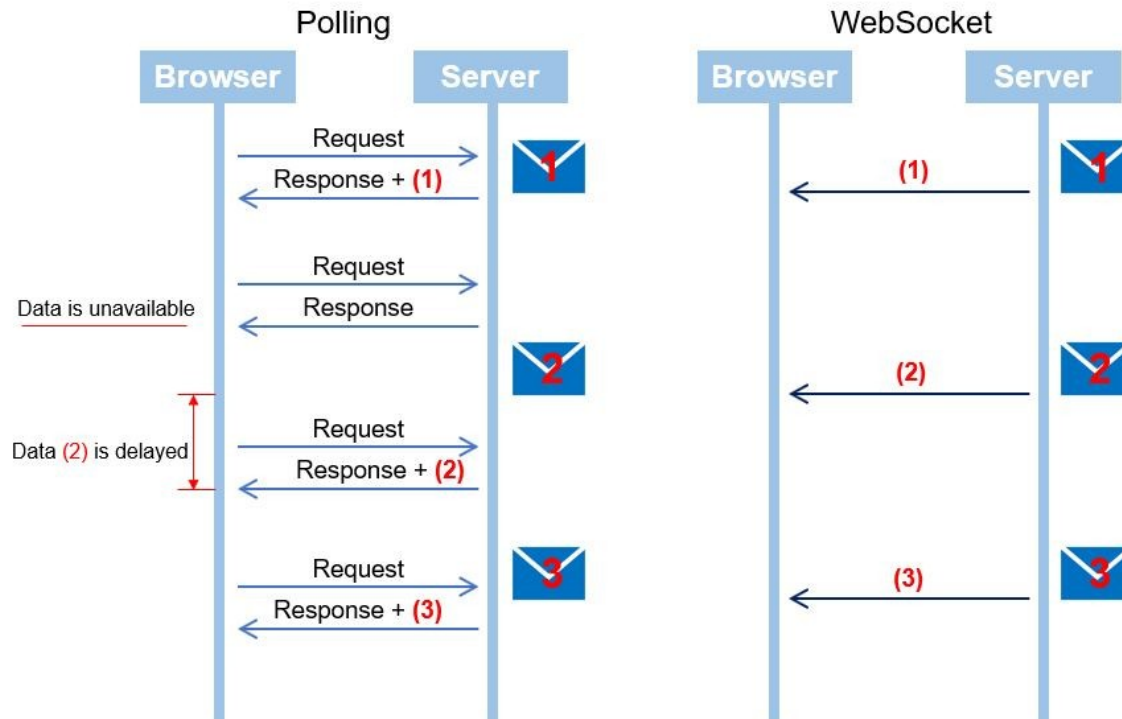
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REST vs Websockets



Websockets

Rest Vs Websockets



THANK YOU