

# Getting Started with ASP.NET Core SignalR

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UNDERSTANDING THE REAL-TIME WEB



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# Module Overview



**Real-time web applications**

**AJAX**

**Polling and long polling**

**Server sent events**

**WebSockets**



# Real-time Web Applications

Email clients

Social media

Web documents

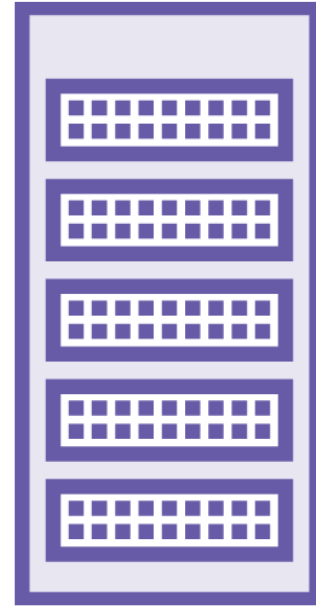
Auctions

Gaming

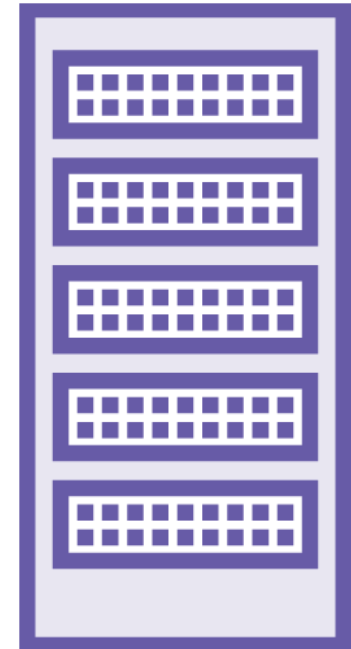
Stock quotes



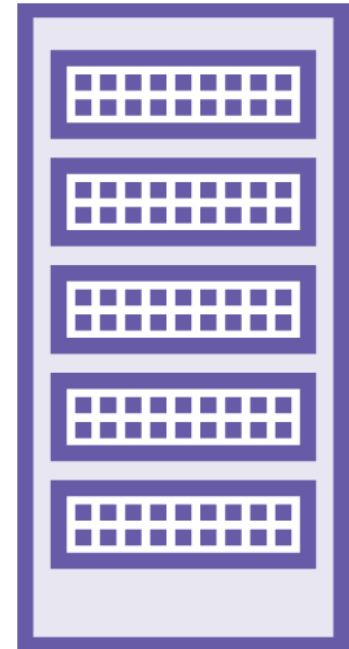
# Client and Server



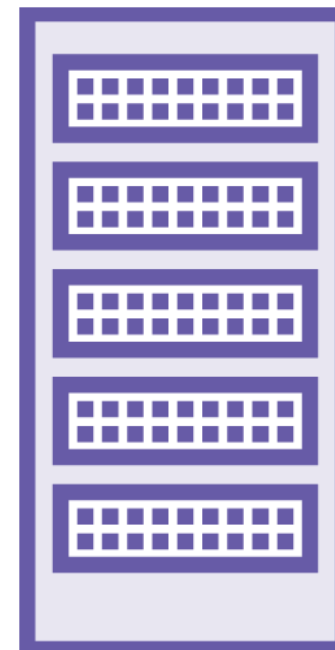
# An HTTP Request



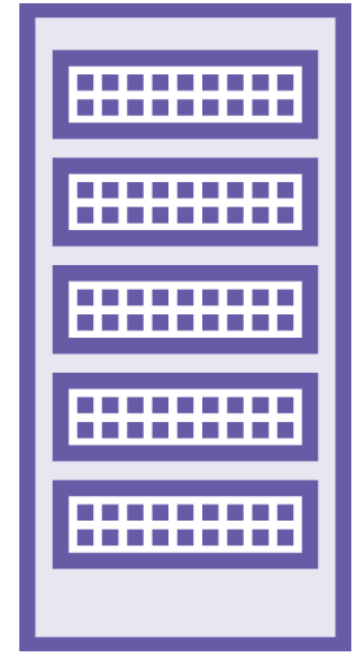
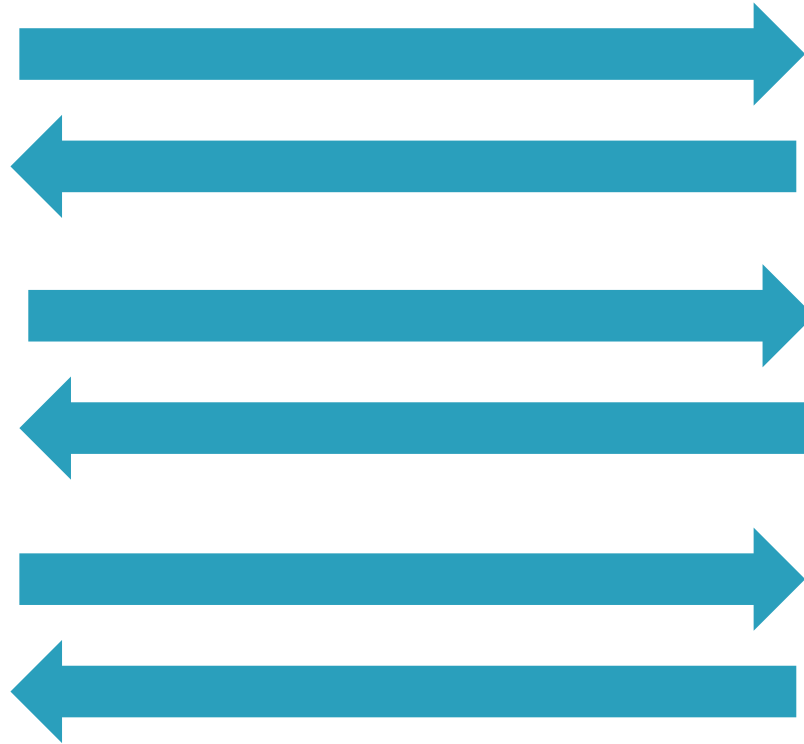
# Server to Client



# AJAX

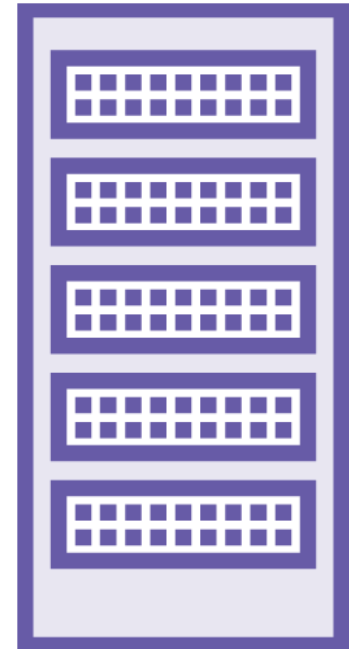


# Polling

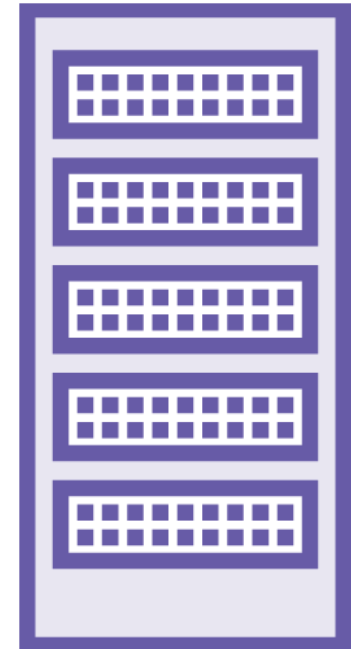




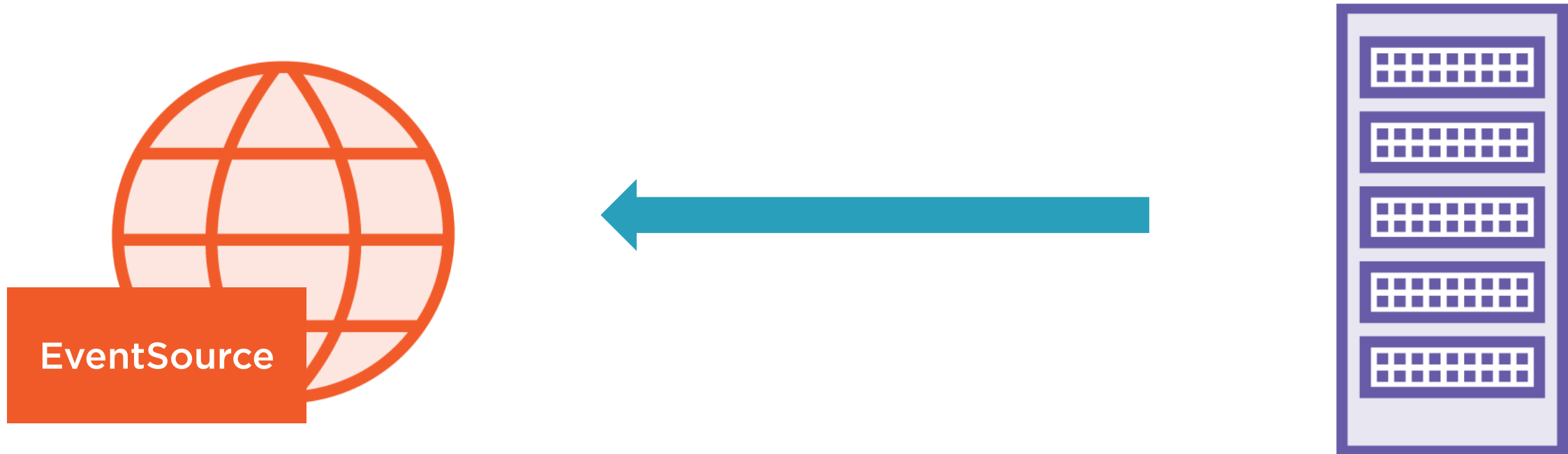
# Long Polling



# Long Polling



# Server Sent Events (SSE)



# Server Sent Events

Simple HTTP

Auto reconnects

No support for older browsers

Easily polyfilled

Maximum HTTP connections issue

Just text messages

One-way connection



# Web Sockets

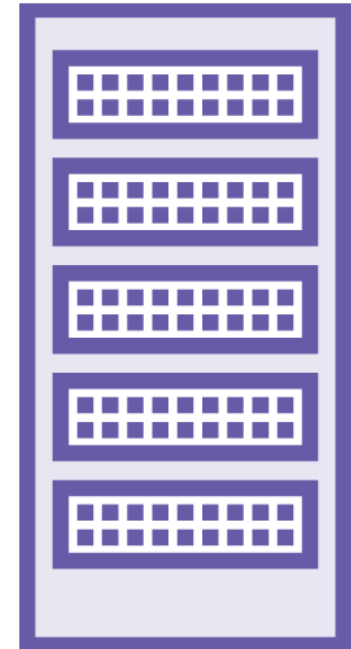
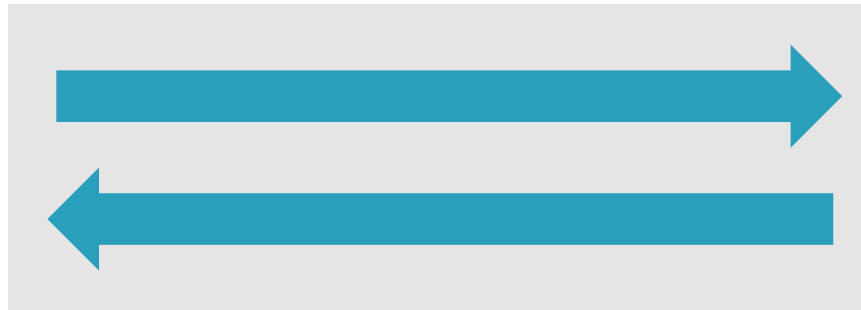
A standardized way to use one TCP socket through which messages can be sent from server to client and vice versa.



# Web Sockets



TCP Socket



# Web Sockets

**Full duplex messaging**

**No 6 connection limit**

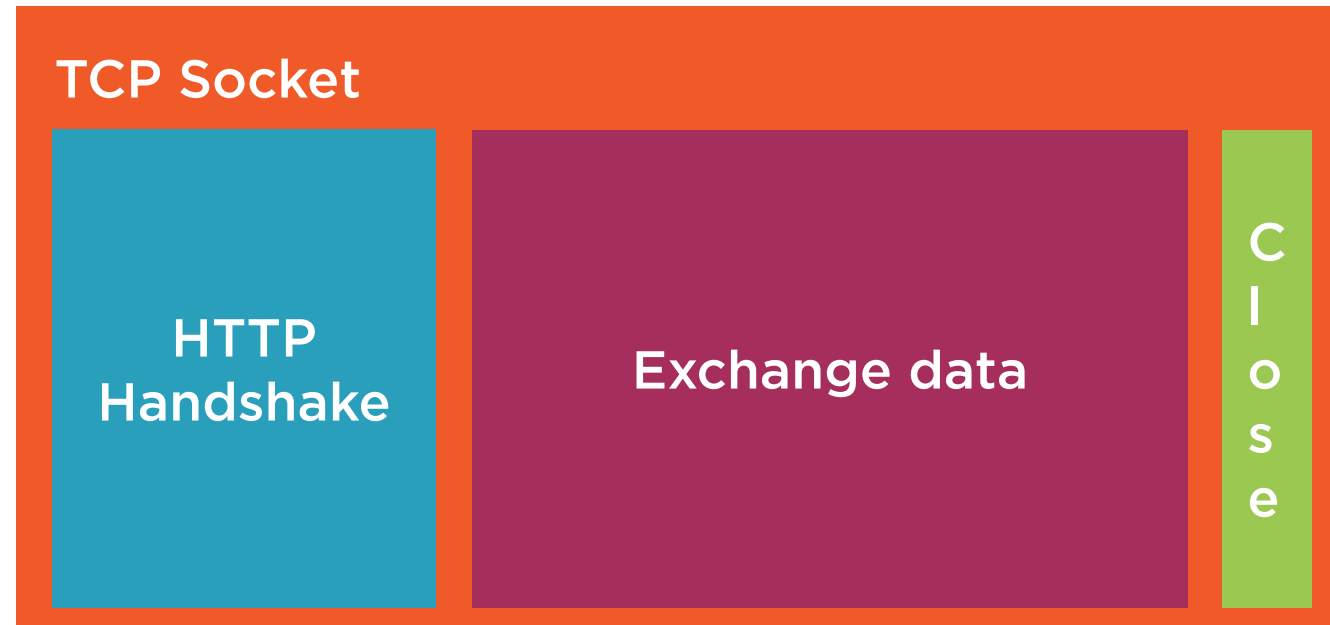
**Multi data-type support**

**TCP socket upgrade**

**WS protocol**

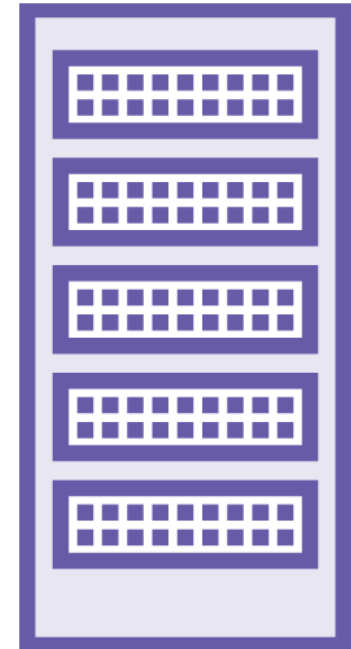


# Lifetime of a Web Socket





# Web Sockets Handshake



# Web Sockets Handshake: Request

```
GET /chat HTTP/1.1
Host: server.chat.com
Origin: client.chat.com
Upgrade: websocket
Connection: Upgrade
Sec-WebSocket-Key: dfsddscxvb
Sec-WebSocket-Protocol: chat, superchat
Sec-WebSocket-Version: 13
Sec-WebSocket-Extensions: deflate-stream
```



# Web Sockets Handshake: Response

HTTP/1.1 101 Switching Protocols

Upgrade: websocket

Connection: Upgrade

Sec-WebSocket-Accept: vcbvcbasdef

Sec-WebSocket-Protocol: chat

Sec-WebSockets-Extensions: deflate-stream



# WebSocket Keys

Client sends random string

Server add constant and hashes and  
base64 encodes

Sends key back in accept header

Cache busting



# Message Types

**Text**

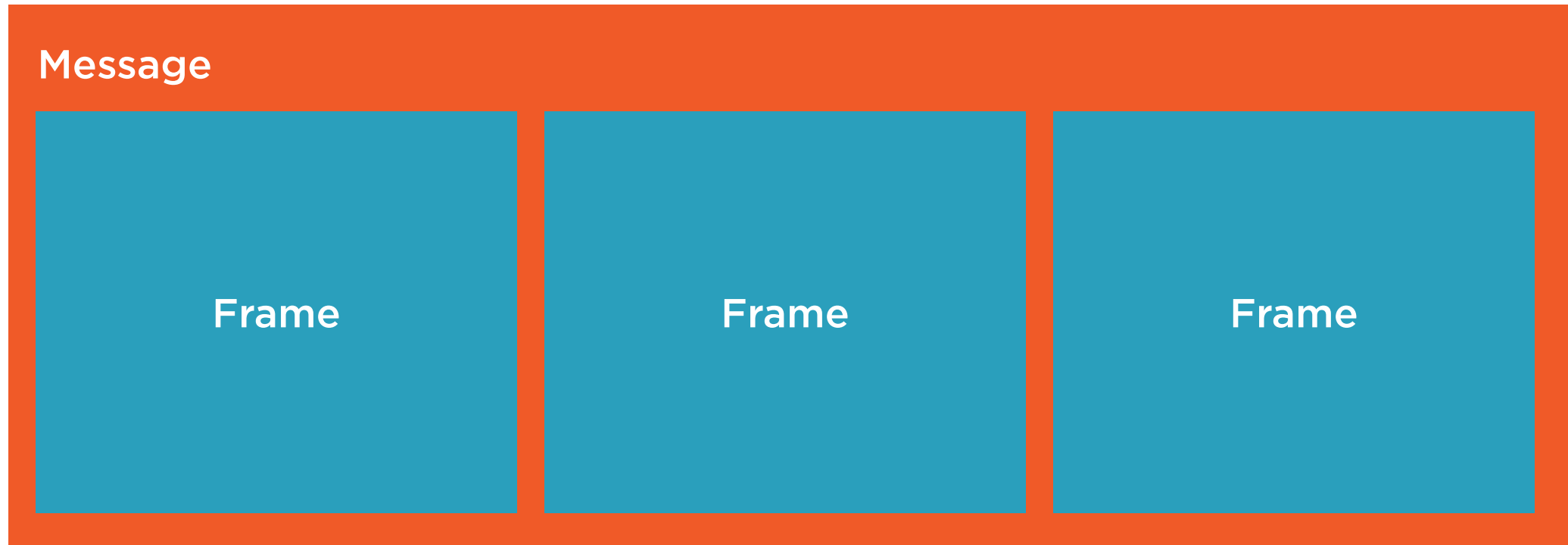
**Binary**

**Ping/pong**

**Close**



# Frames



# Frames

**Header bits**

**Client to server messages are masked**

**Payload is the message content**



# Summary



**Real-time web applications are essential**

**Several techniques to make real-time web apps happen**

**Some more efficient than others**

