

SERVER PUSH

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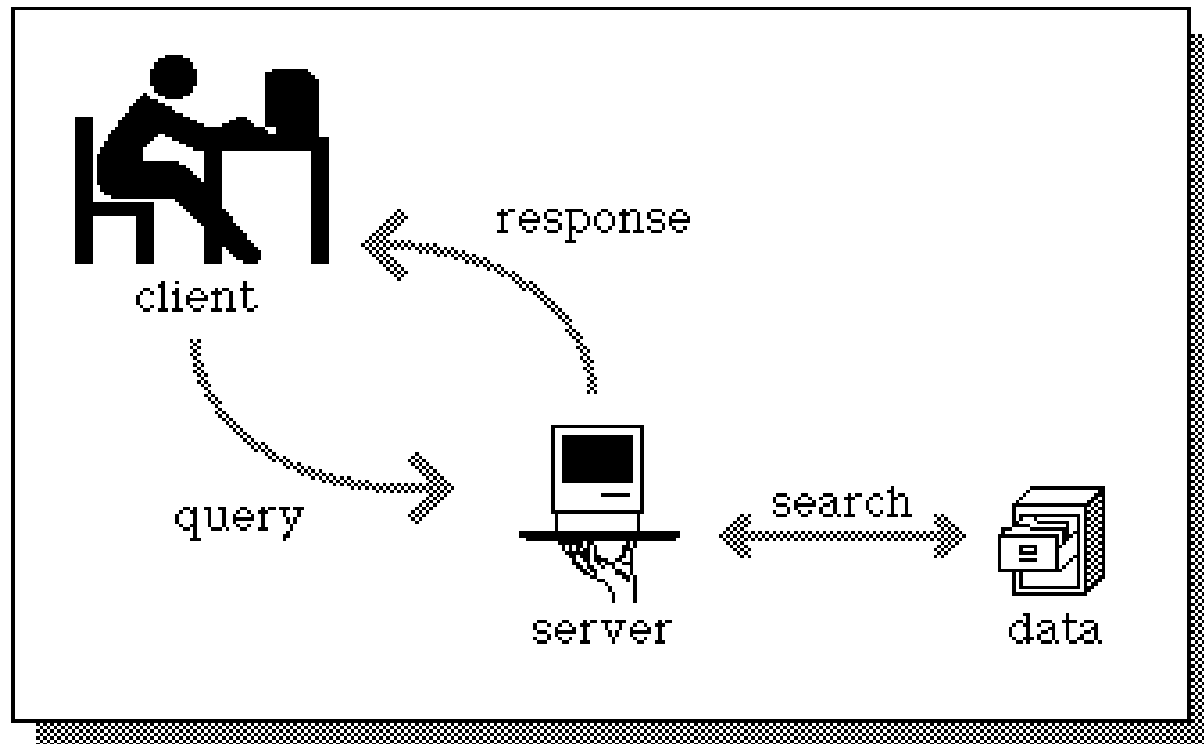


"I'm OK . . . just a little too much 'push' technology."

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Classic Web

- HTTP protocol .
- initiated by the client and never by the server.
- No long-term state information .



Classic Web

What about such cases ?

- Chat System
- Photo sharing
- On-Line Gaming
- Collaborative Tools

Server Push technology

Push or Server Push technology , describes a style of internet-based communication where the request of transaction is initialized from the server .

Short Polling

- Client polls at regular and short intervals.

```
setInterval(function(){  
    $.ajax({ url: "server", success: function(data){  
        //Update your dashboard gauge  
    }, dataType: "json"});  
}, 30000);
```

- Responsiveness at the cost of performance (on the server side). Wasteful in terms of resources.
- Queue of requests in server with no order of execution.
- Easy, but not really what we are looking

Long Polling

- Longer intervals , Each time something is returned from the server, a new request is started .
- Carrying the overhead of http.

Bayeux

- Protocol for transporting asynchronous messages (primarily over HTTP), with low latency between a web server and a web client.

Bayeux

- A client sends a request to the server .
- The server responds with success or error code.
- Thus asynchronous events cannot be delivered from server to client unless a previously issued request exists.
- Bayeux supports the use of multiple HTTP connections between a client and server.

Bayeux

- Bayeux connections are negotiated between client and server with handshake messages that allow the connection type, authentication and other parameters to be agreed upon between the client and the server.

Bayeux

- Channels:

Meta channels :

The channels within the `"/meta/"` segment are the channels used by the Bayeux protocol itself.

Clients shouldn't subscribe to these channels .

Service channels:

The channels within the `"/service/"` channel segment are special channels designed to assist request/response style messaging

Bayeux

- Messages :

(Channel , version , minimum version , supportedConnectionTypes ,
clientId , data , connectionType , id) .

```
{  
  "channel": "/meta/handshake",  
  "version": "1.0",  
  "minimumVersion": "1.0beta",  
  "supportedConnectionTypes": ["long-polling", "callback-polling"]  
}
```

Bayeux

- .Cometd & Bayeux.
- .CometD is a project by the Dojo Foundation to provide multiple implementation of the Bayeux protocol in several programming languages (in Java, Perl and Python)
- . Java implementation uses Jetty.

Web Sockets

- Web technology providing full-duplex communications channels over a single TCP connection.
- standardized by the IETF as RFC 6455 in 2011.
- WebSocket API in Web IDL is being standardized by the W3C
- Its only relationship to HTTP is that its handshake is interpreted by HTTP servers as an Upgrade request.

Web Sockets

Request :

GET /mychat HTTP/1.1

Host: server.example.com

Upgrade: websocket

Connection: Upgrade

Sec-WebSocket-Key: x3JJHMbDL1EzLkh9GBhXDw==

Sec-WebSocket-Protocol: chat

Sec-WebSocket-Version: 13

Origin: http://example.com

Web Sockets

Response :

HTTP/1.1 101 Switching Protocols

Upgrade: websocket

Connection: Upgrade

Sec-WebSocket-Accept:

HSmrc0sMIYUkAGmm5OPpG2HaGWk=

Sec-WebSocket-Protocol: chat

Web Sockets

- Once the connection is established, the client and server can send WebSocket data or text frames back and forth in full-duplex mode.
- The data is minimally framed, with a small header followed by payload.

Ratchet

Websockets for PHP

- Ratchet is loosely coupled PHP library that provide tools to build real-time and bi-directional applications between servers and clients over websockets .

Demo