

GIANCARLO GOMEZ

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# REALTIME WITH WEBSOCKETS

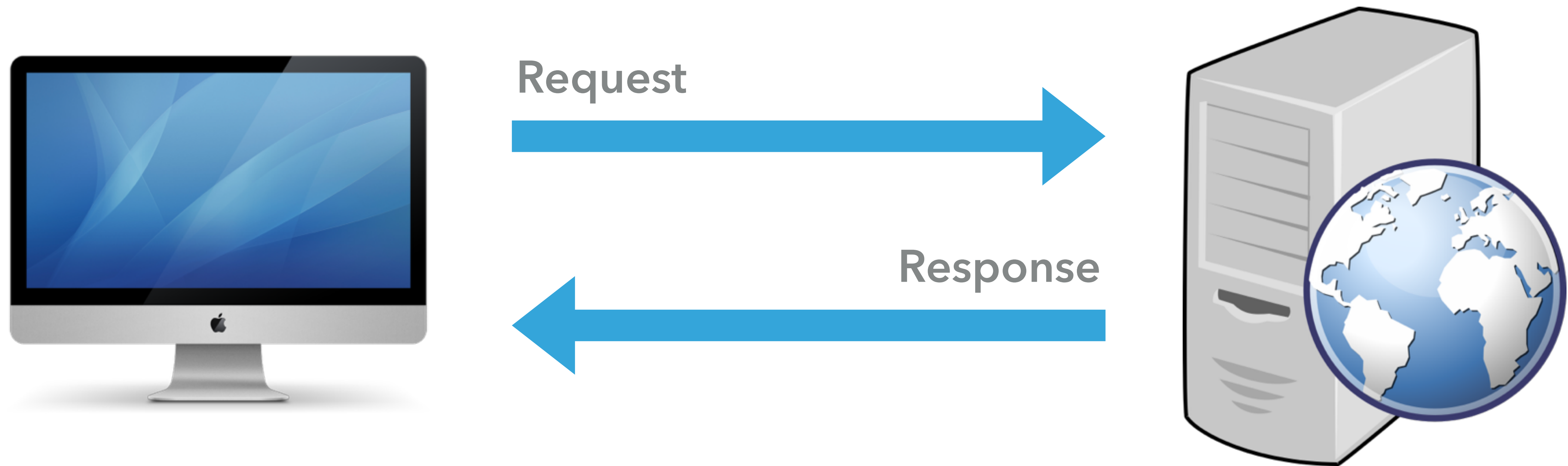
## WHO AM I?

- ▶ Proud Father of 3
- ▶ Web Developer since 1999
- ▶ Freelance since 2001
- ▶ South Florida ColdFusion User Group Co-Manager
- ▶ Owner of Fuse Developments, Inc. and CrossTrackr, Inc.

## WHAT IS A WEBSOCKET AND WHY?

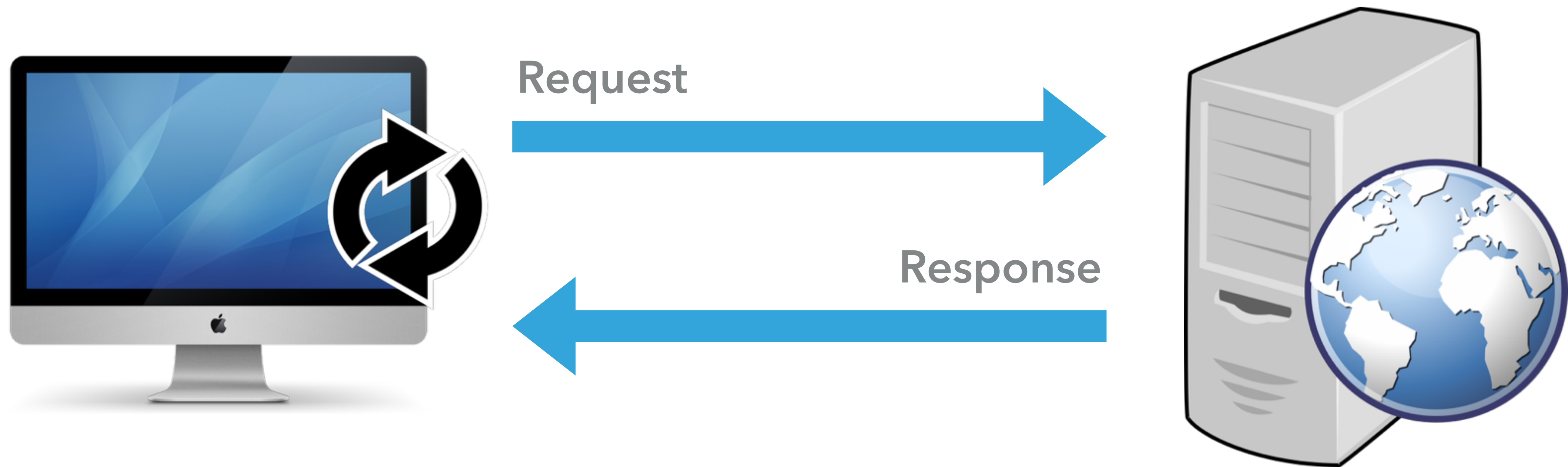
- ▶ WebSockets allow a long-held single TCP socket connection to be established between the client and server.
- ▶ This allows bi-directional, full duplex messaging between both sides with very little overhead resulting in very little latency.
- ▶ WebSockets can replace existing HTTP Long and/or Short Polling techniques.

# HTTP ARCHITECTURE



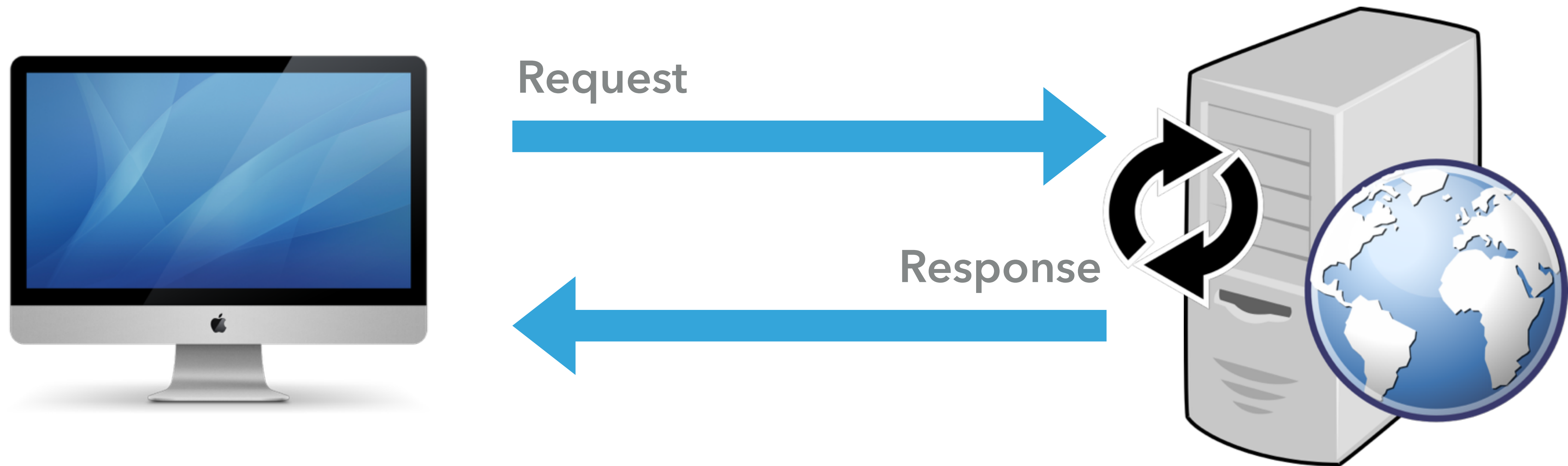
Half-Duplex Communication

## SHORT POLLING



Loop AJAX Request on client side and ask the server for an update

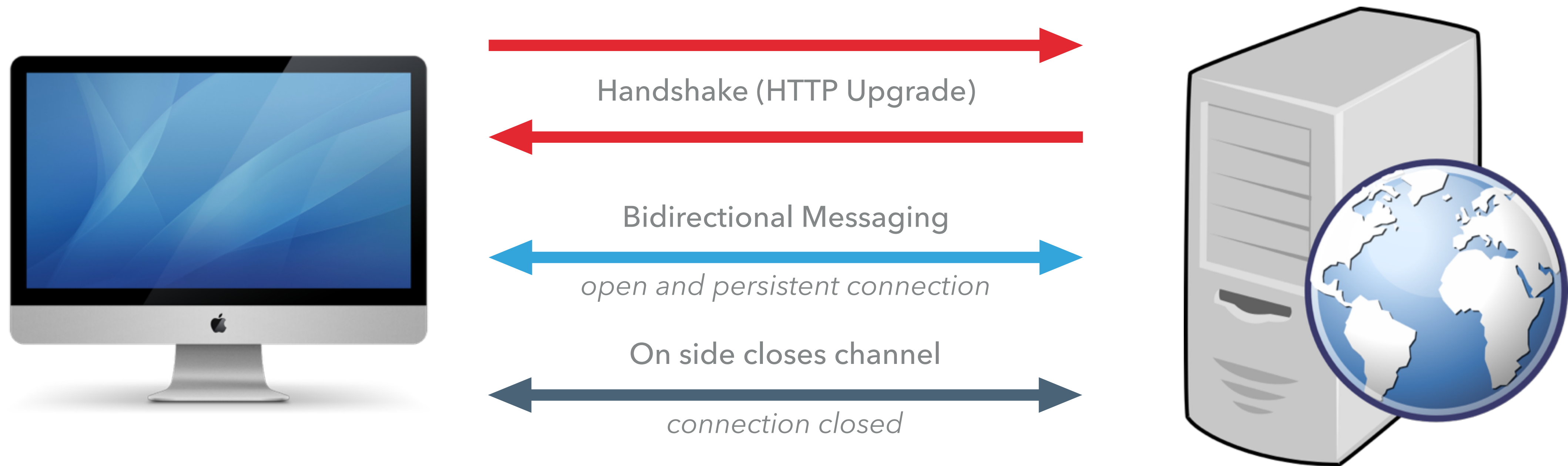
## LONG POLLING



Send AJAX request to server, request loops on server until there is a response and then returns to client and processes starts over again.



# WEBSOCKETS



## WEBSOCKETS IN COLDFUSION

- ▶ Supported as of ColdFusion 10
  - ▶ Support over defined port  
Defaults to 8575
  - ▶ Flash Fallback  
Port 1243  
Defined in lib/neo-websocket.xml
  - ▶ Set Max Data Size (1024 Kb)
  - ▶ 100 Connection Limit on Standard  
\* Unlimited in Enterprise
- ▶ Introduced in ColdFusion 11
  - ▶ No Connection Limits
  - ▶ Proxy Support  
Great when behind a firewall and easier when dealing with SSL and multiple domains
  - ▶ SSL Support  
Most browsers now do not allow for non-secure connections if page is secured
  - ▶ Cluster Support  
\* Enterprise Only



# ENABLE WEBSOCKETS IN COLDFUSION IN 4 EASY STEPS

- ▶ Enable in Admin
- ▶ Add 1 Line in your Application.cfc
- ▶ Use the cfwebsocket tag
- ▶ Write some JavaScript and get creative

```
component {  
    this.name      = "websockets_demo1";  
    this.wschannels = [{name:"demo"}];  
}
```

```
<cfwebsocket name="ws"  
             onmessage="parseMessage"  
             subscrieto="demo" />
```

```
function parseMessage(message){  
    // Not very creative but it's a start  
    console.log(message);  
}
```

# COLDFUSION 10 ADMIN

## Server Settings > WebSocket

☒ **Enable WebSocket Server**

**Port**

The port that the WebSocket server listens to for the request. Restart ColdFusion for the setting to take effect.

**Max Data Size**  **KB**

The maximum size of the data packet sent/received.

☒ **Start Flash Policy Server**

To enable Flash fallback if there is no native WebSocket support at the client side.



# COLDFUSION 11 ADMIN

## USING PROXY

Server Settings > WebSocket

☒ Enable WebSocket Service

☒ Use Proxy

ColdFusion WebSocket requests will be served by WebSocket proxy module configured with an external web server. Restart ColdFusion for the setting to take effect.

☐ Use Built-in WebSocket Server

ColdFusion WebSocket requests will be served by the built-in ColdFusion WebSocket server. Restart ColdFusion for the setting to take effect.

Port

The port that the WebSocket server listens to for all incoming ColdFusion WebSocket requests. Restart ColdFusion for the setting to take effect.

## STANDARD

Server Settings > WebSocket

☒ Enable WebSocket Service

☐ Use Proxy

ColdFusion WebSocket requests will be served by WebSocket proxy module configured with an external web server. Restart ColdFusion for the setting to take effect.

☒ Use Built-in WebSocket Server

ColdFusion WebSocket requests will be served by the built-in ColdFusion WebSocket server. Restart ColdFusion for the setting to take effect.

Port

The port that the WebSocket server listens to for all incoming ColdFusion WebSocket requests. Restart ColdFusion for the setting to take effect.

☒ SSL Port

The port that the WebSocket server listens to for secure communication (SSL). Restart ColdFusion for the setting to take effect.

Keystore

Browse Server

Location of the Keystore. Keystore contains the private key and certificate. The supported type is JKS(Java KeyStore) and pkcs12.

KeyStore Password

Password used to open the keystore to load public/private key.

Max Data Size  KB

The maximum size of the data packet sent/received.

☐ Start Flash Policy Server

Enables Flash fallback if there is no native WebSocket support at the client side.

## ENTERPRISE

Server Settings > WebSocket

☒ Enable WebSocket Service

☐ Use Proxy

ColdFusion WebSocket requests will be served by WebSocket proxy module configured with an external web server. Restart ColdFusion for the setting to take effect.

☒ Use Built-in WebSocket Server

ColdFusion WebSocket requests will be served by the built-in ColdFusion WebSocket server. Restart ColdFusion for the setting to take effect.

Port

The port that the WebSocket server listens to for all incoming ColdFusion WebSocket requests. Restart ColdFusion for the setting to take effect.

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The port that the WebSocket server listens to for secure communication (SSL). Restart ColdFusion for the setting to take effect.

Keystore

Browse Server

Location of the Keystore. Keystore contains the private key and certificate. The supported type is JKS(Java KeyStore) and pkcs12.

KeyStore Password

Password used to open the keystore to load public/private key.

Max Data Size  KB

The maximum size of the data packet sent/received.

☐ Start Flash Policy Server

Enables Flash fallback if there is no native WebSocket support at the client side.

☐ Enable WebSocket cluster

Multicast Port

The port that the WebSocket Cluster will use to broadcast node up/down events. Restart ColdFusion for the setting to take effect.

REAL TIME WITH WEBSOCKETS

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# DEMO 1

4 easy steps and a little bit more ...

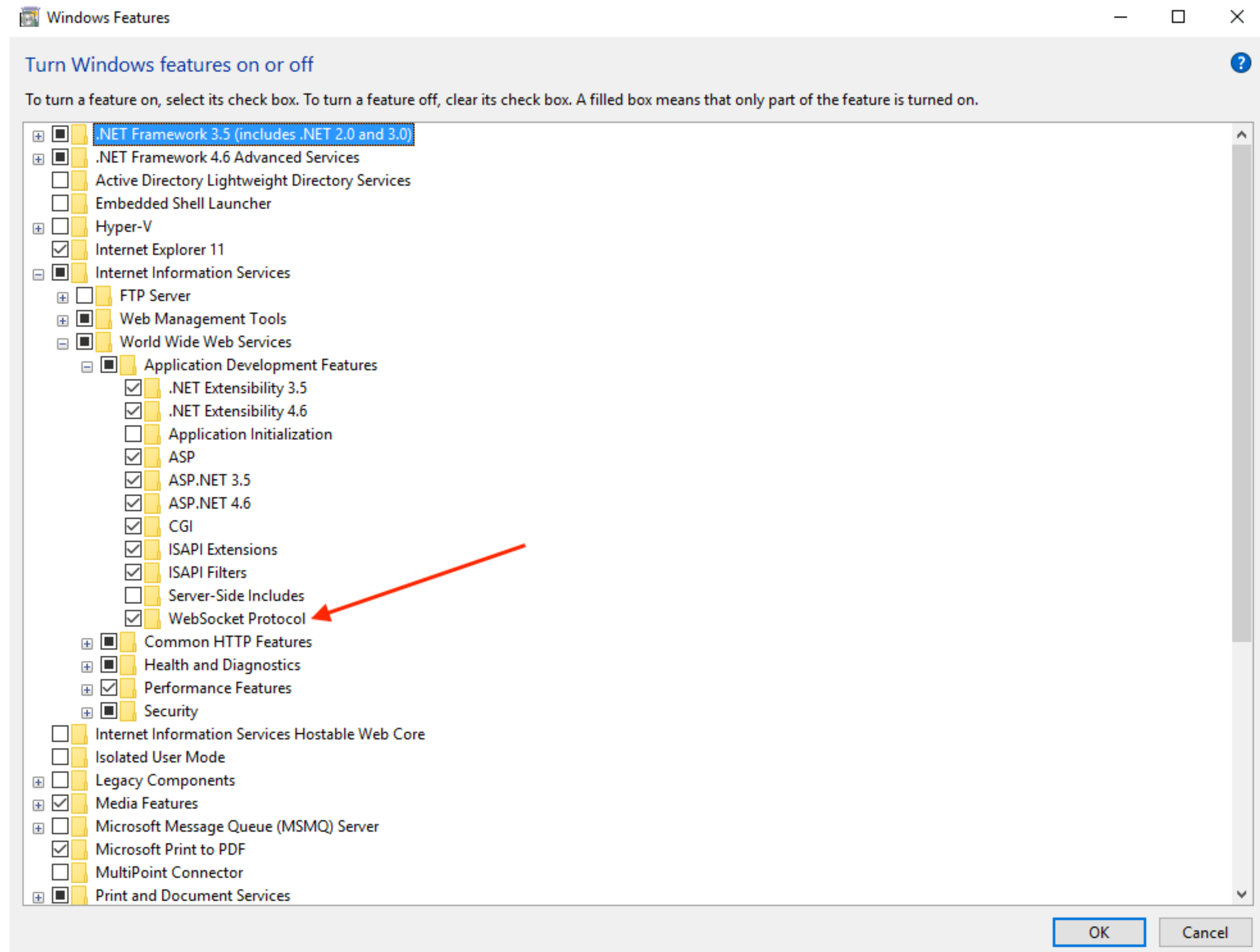
## SECURE WEBSOCKETS – WSS

- ▶ Easiest Method, use Proxy. It relies on the SSL certificates defined for the site. Requires ...
  - ▶ IIS8+ with WebSocket Protocol Enabled
  - ▶ Apache 2.2+ compiled with worker module not prefork (Apache MPM Worker)
- ▶ Using Built in WebSocket Server
  - ▶ Create JKS (Java KeyStore) or PKCS12 file.  
<https://info.ssl.com/how-to-create-a-pfx-p12-certificate-file-using-openssl/>
  - ▶ JVM Setting (Fixes SSLException Error)  
`-Dcom.sun.net.ssl.enableECG=false`
  - ▶ If using self-assigned certificate
    - ▶ Add certificate as a trusted certificate in Java keystore  
*\* this will fix issues with cfhttp calls as well - the following might as well*  
`-Dsun.security.ssl.allowUnsafeRenegotiation=true -Djsse.enableSNIExtension=false`
    - ▶ Trust the certificate using your browser



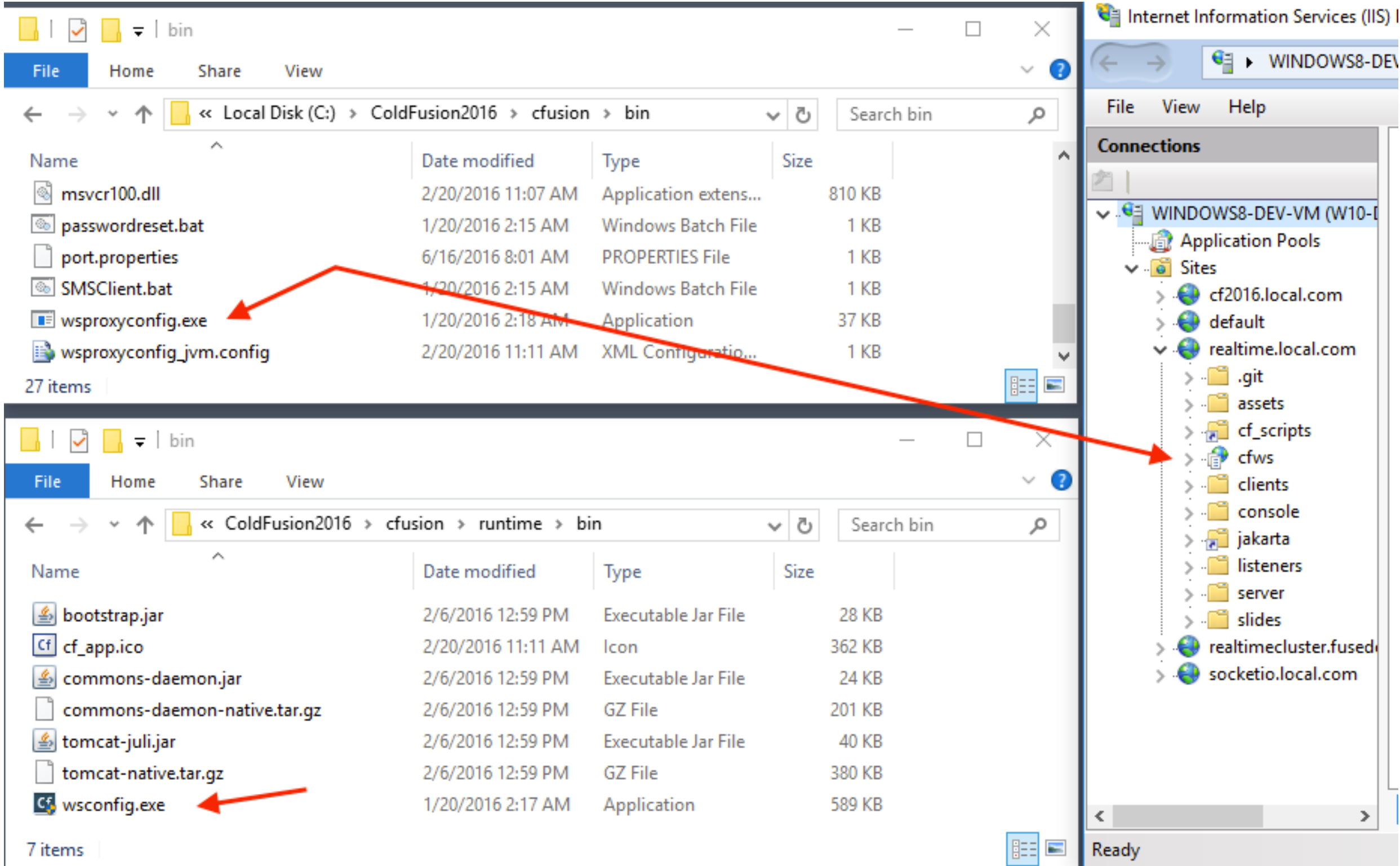
# SECURE WEBSOCKETS – WSS

```
→ apachectl -V
Server version: Apache/2.4.18 (Unix)
Server built:   Feb 20 2016 20:03:19
Server's Module Magic Number: 20120211:52
Server loaded:  APR 1.4.8, APR-UTIL 1.5.2
Compiled using: APR 1.4.8, APR-UTIL 1.5.2
Architecture:   64-bit
Server MPM:     prefork ←
                threaded: no
                forked:  yes (variable process count)
```





# SECURE WEBSOCKETS – WSS



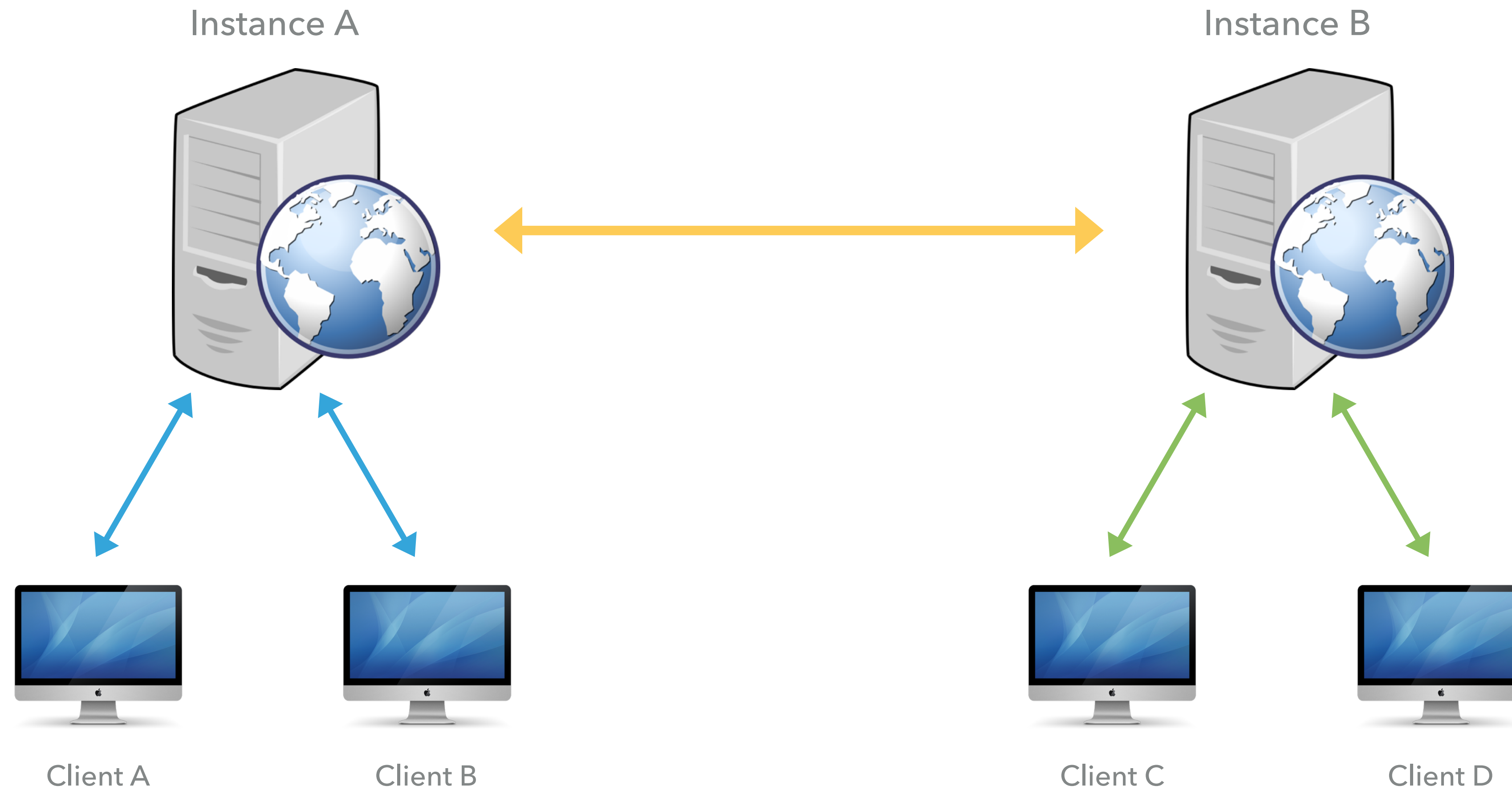
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# DEMO 2

What do you mean it doesn't work?

# WEBSOCKET CLUSTERS



## WEBSOCKETS CLUSTERS

- ▶ Must use built in WebSocket Server
- ▶ Create Instances in Instance Manager
- ▶ Define Cluster
- ▶ Rebuild Connections
- ▶ Turn on WebSocket clustering on all instances
- ▶ Have fun testing ....

## REAL WORLD USES

- ▶ Dashboards (Stocks, Airlines, ...)
- ▶ Auctions Sites
- ▶ Chat
- ▶ Push Messaging (email, notifications, etc)
- ▶ Games
- ▶ Use your imagination ... anything is possible

# REAL WORLD ISSUES!!!

- ▶ Network Connections
- ▶ Application Reloads
- ▶ Server Uptime

**Me and every other Developer**



## HELLO ADVANCEDSOCKET

- ▶ Easily integrates with cfwebsocket
- ▶ Callbacks for connection drops that easily lets you add notifications to for users
  - ▶ Application Reinit
  - ▶ Server Downtime
  - ▶ Network Connection
- ▶ Automatically reconnect to subscribed channels

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# DEMO 3

Wait, they gave me something kinda broken?

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# DEMO 4

Show me a real app! Ok let's chat ...

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# DEMO 5

I don't meet the requirements, what can I do?

## HELPFUL LINKS

- ▶ Repos
  - ▶ <https://github.com/GiancarloGomez/Realtime-With-WebSockets-Demo-Code>
  - ▶ <https://github.com/GiancarloGomez/AdvancedSocket>
  - ▶ <https://github.com/GiancarloGomez/ColdFusion-CFSummit-WebSockets>
- ▶ SSL Related Links
  - ▶ <https://blog.httpwatch.com/2013/12/12/five-tips-for-using-self-signed-ssl-certificates-with-ios/>
  - ▶ <https://info.ssl.com/how-to-create-a-pfx-p12-certificate-file-using-openssl/>
- ▶ ColdFusion Articles
  - ▶ <http://www.adobe.com/devnet/coldfusion/articles/html5-websockets-coldfusion-pt1.html>
  - ▶ <http://www.adobe.com/devnet/coldfusion/articles/html5-websockets-coldfusion-pt2.html>
  - ▶ <http://www.adobe.com/devnet/coldfusion/articles/using-websocket.html>
  - ▶ <https://helpx.adobe.com/coldfusion/developing-applications/coldfusion-and-html-5/using-coldfusion-websocket/websocket-enhancements.html>
- ▶ WebSockets (Server / Services)
  - ▶ <http://socket.io/>
  - ▶ <https://www.pubnub.com/>
  - ▶ <https://pusher.com/>

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Q & A