

GIANCARLO GOMEZ

REALTIME WITH WEBSOCKETS

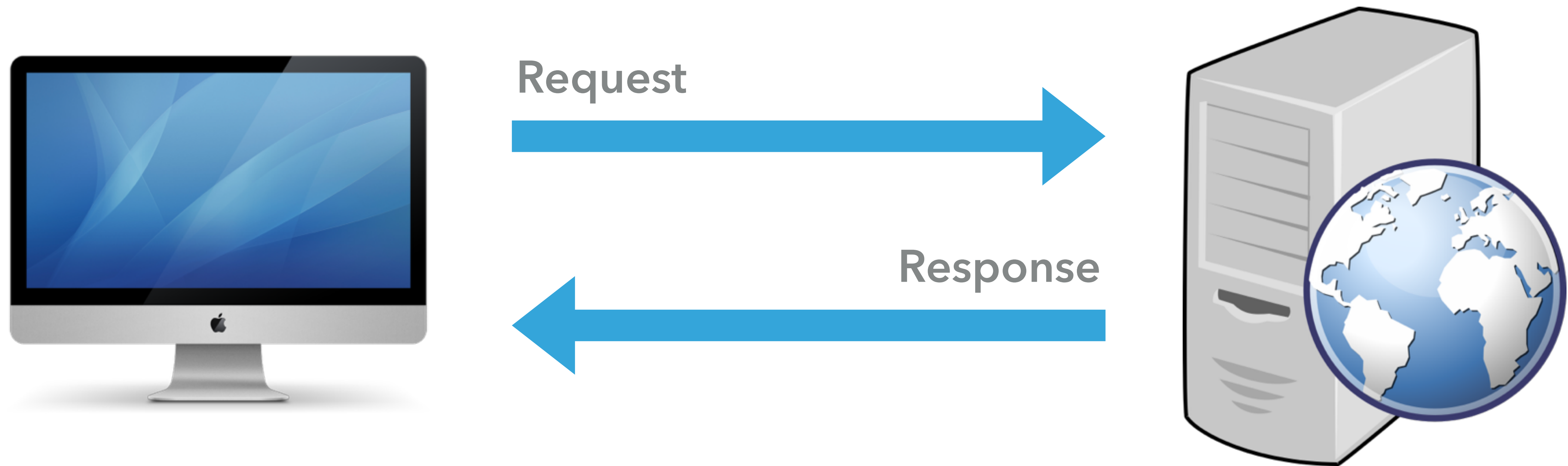
WHO AM I?

- ▶ 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?

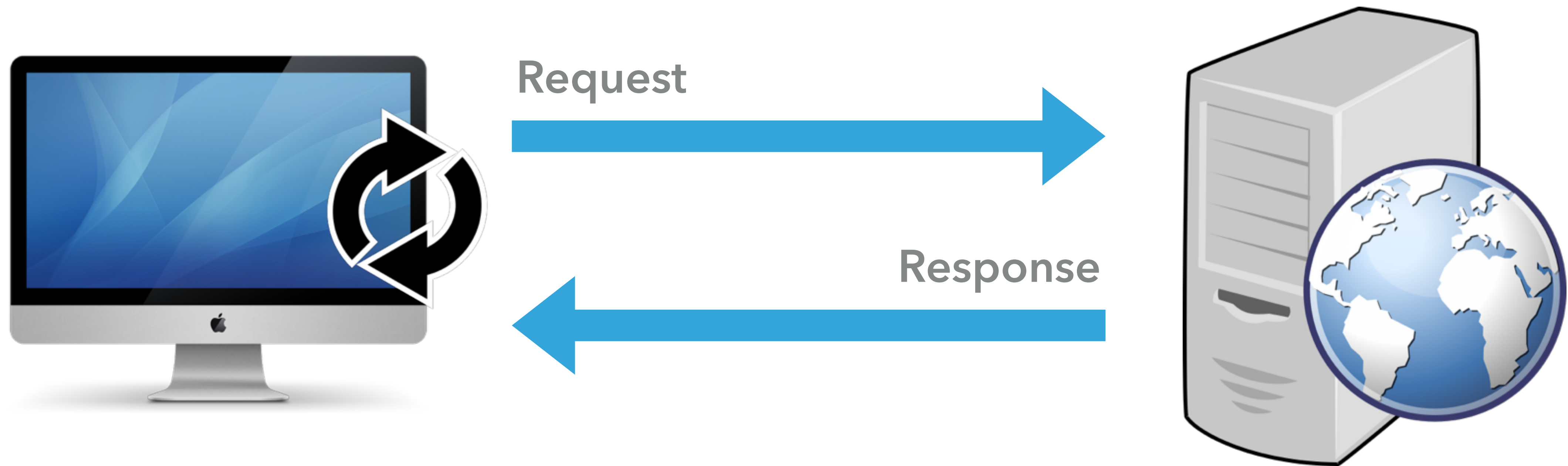
- ▶ WebSockets allow a long-held single TCP socket connection to be established between the client and server.
- ▶ This allows bi-directional, full duplex messaging between both sides with very little overhead resulting in very little latency.
- ▶ WebSockets can replace existing HTTP Long and/or Short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

HTTP ARCHITECTURE



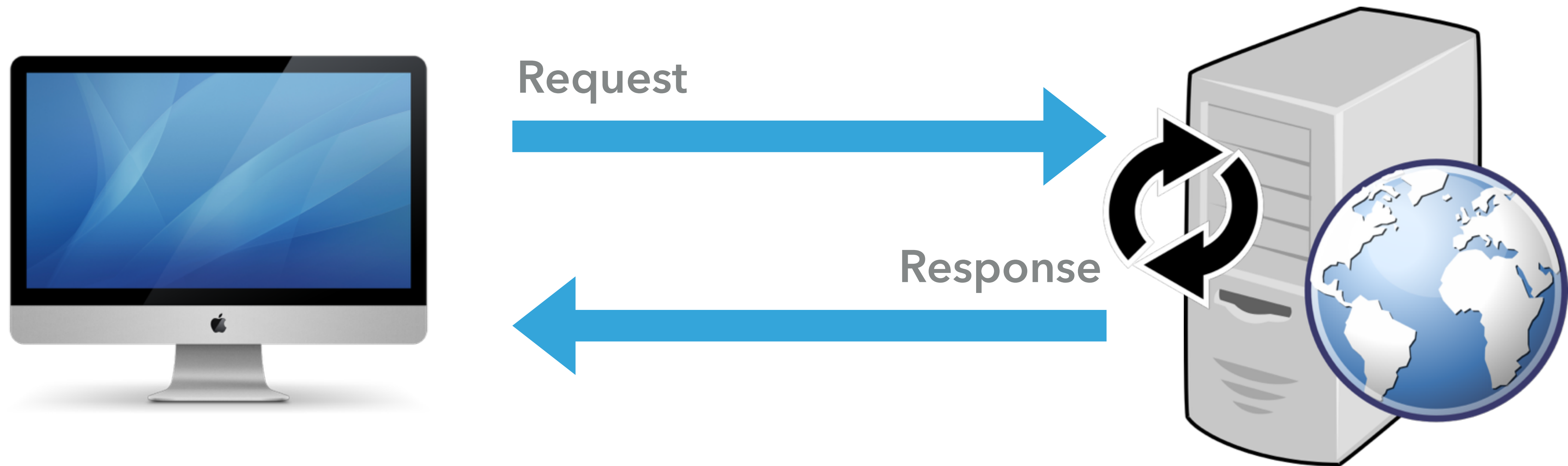
Half-Duplex Communication

SHORT POLLING



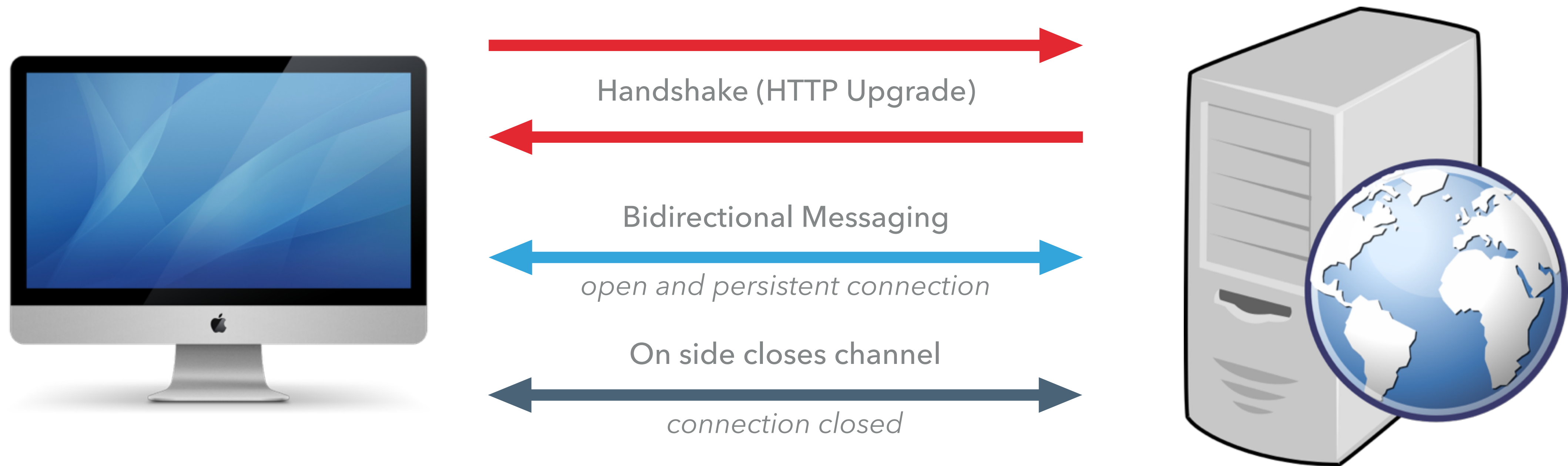
Loop AJAX Request on client side and ask the server for an update

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

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.

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Keystore

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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

DEMO 1

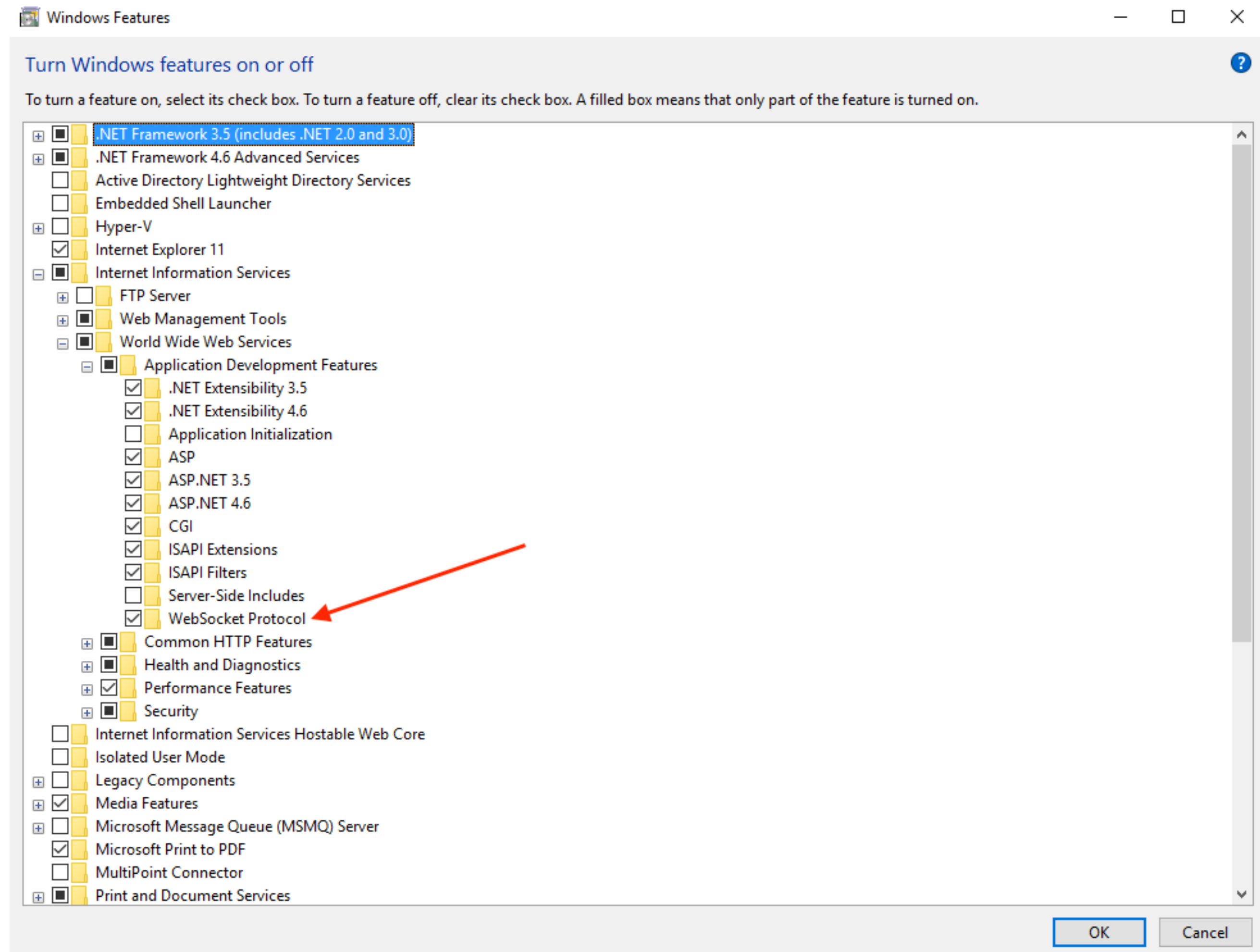
4 easy steps and a little bit more ...

SECURE WEBSOCKETS – WSS

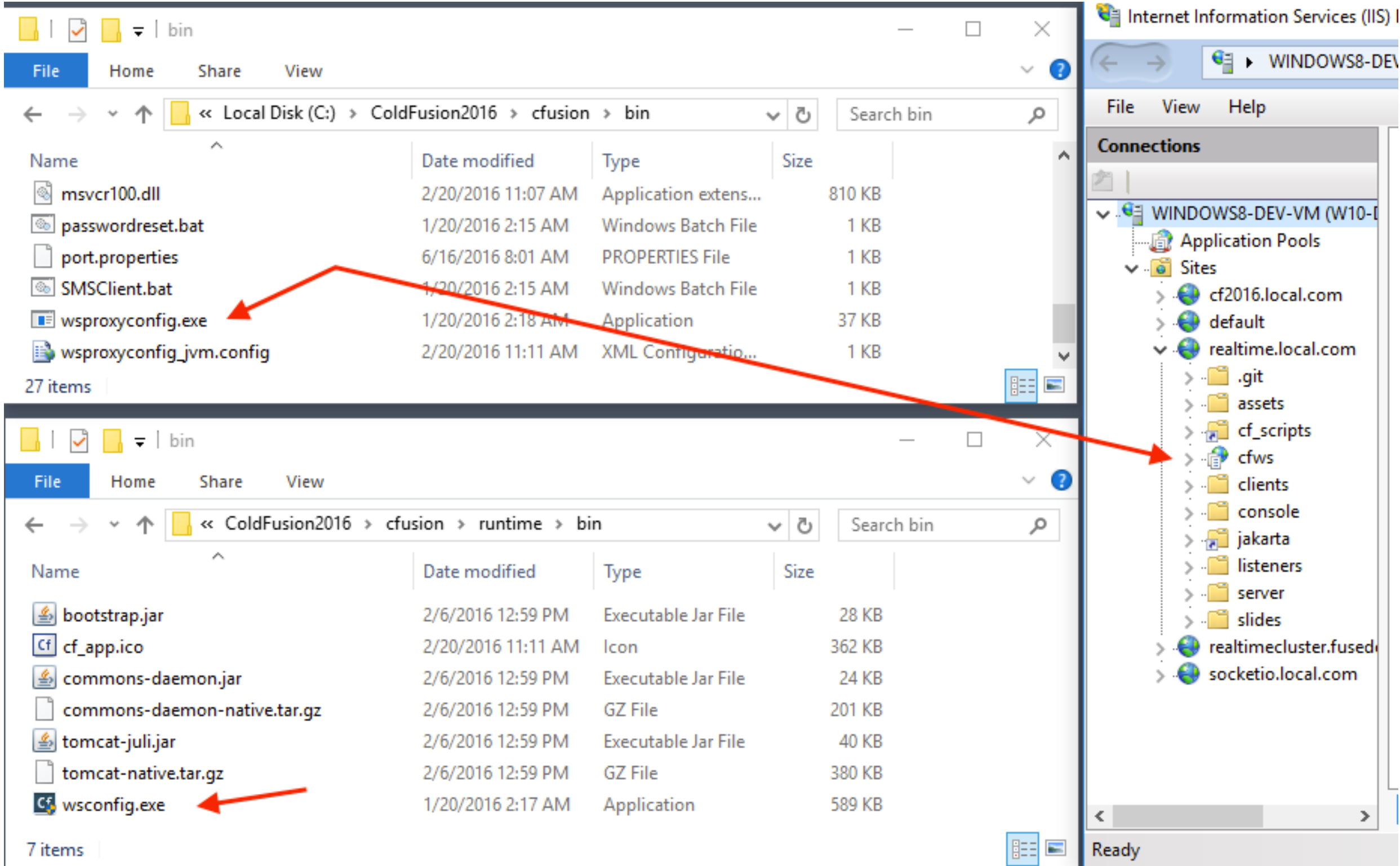
- ▶ Easiest Method, use Proxy. It relies on the SSL certificates defined for the site.
 - ▶ Requires IIS8+ with WebSocket Protocol Enabled or Apache 2.2+ compiled with worker module not prefork (Apache MPM Worker)
- ▶ Using Built in WebSocket Server
 - ▶ Create JKS (Java KeyStore) or PKCS12 file.
<https://info.ssl.com/how-to-create-a-pfx-p12-certificate-file-using-openssl/>
 - ▶ JVM Setting
`-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*
 - ▶ Accept the certificate in local keychain (mac)

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

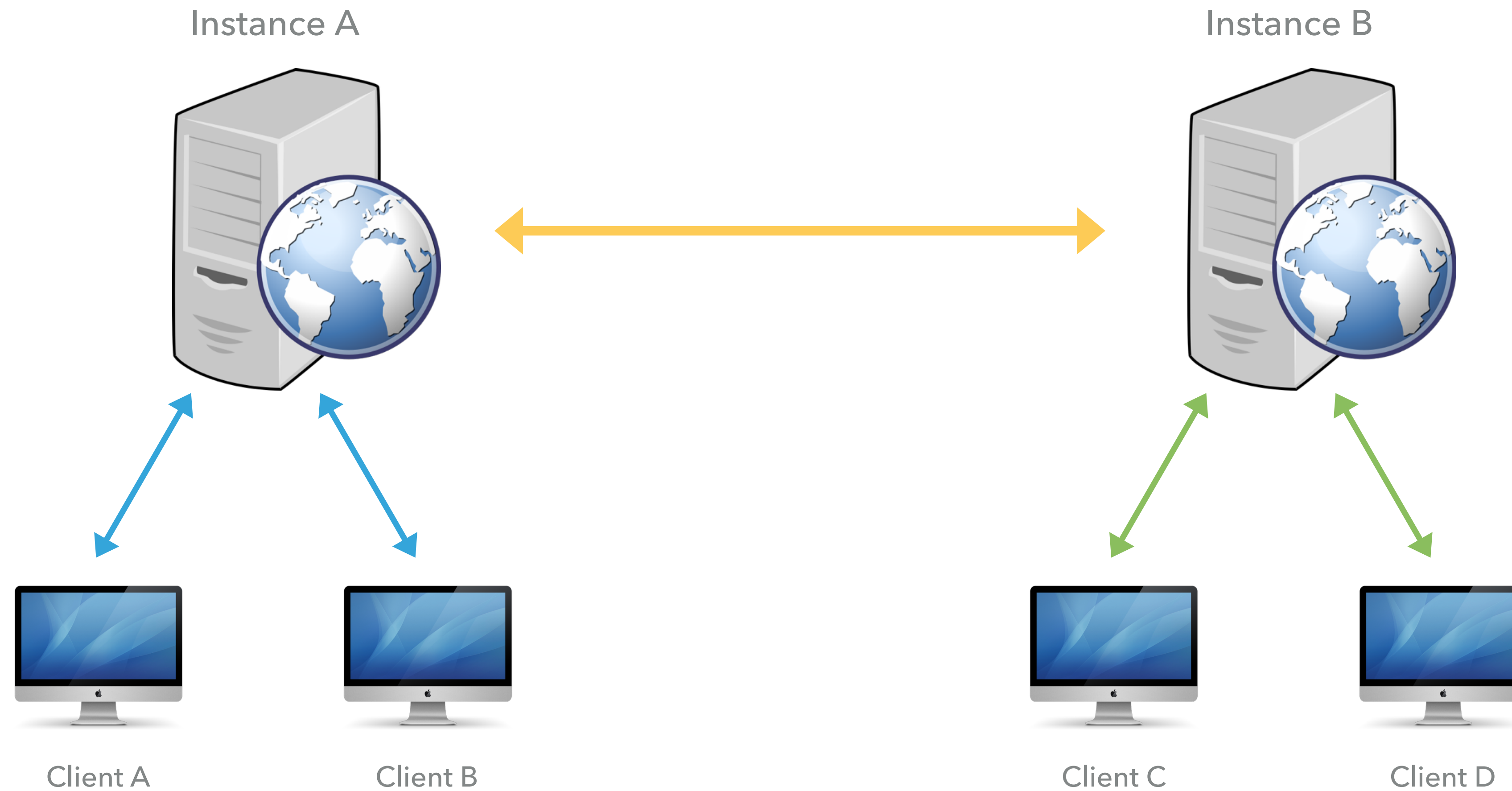


REAL TIME WITH WEBSOCKETS

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

REAL TIME WITH WEBSOCKETS

DEMO 3

Wait, they gave me something kinda broken?

REAL TIME WITH WEBSOCKETS

DEMO 4

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

REAL TIME WITH WEBSOCKETS

DEMO 5

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

HELPFUL LINKS

- ▶ Repos
 - ▶ <https://github.com/GiancarloGomez/AdvancedSocket>
 - ▶ <https://github.com/GiancarloGomez/ColdFusion-CFSummit-WebSockets>
 - ▶ <https://github.com/CFUG-SFL/CFUG-2016-02-CF2016-WEBSOCKETS-AND-SOCKETIO>
- ▶ 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