



ColdFusion Summit 2016

Realtime with WebSockets w/ 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.

Realtime with WebSockets

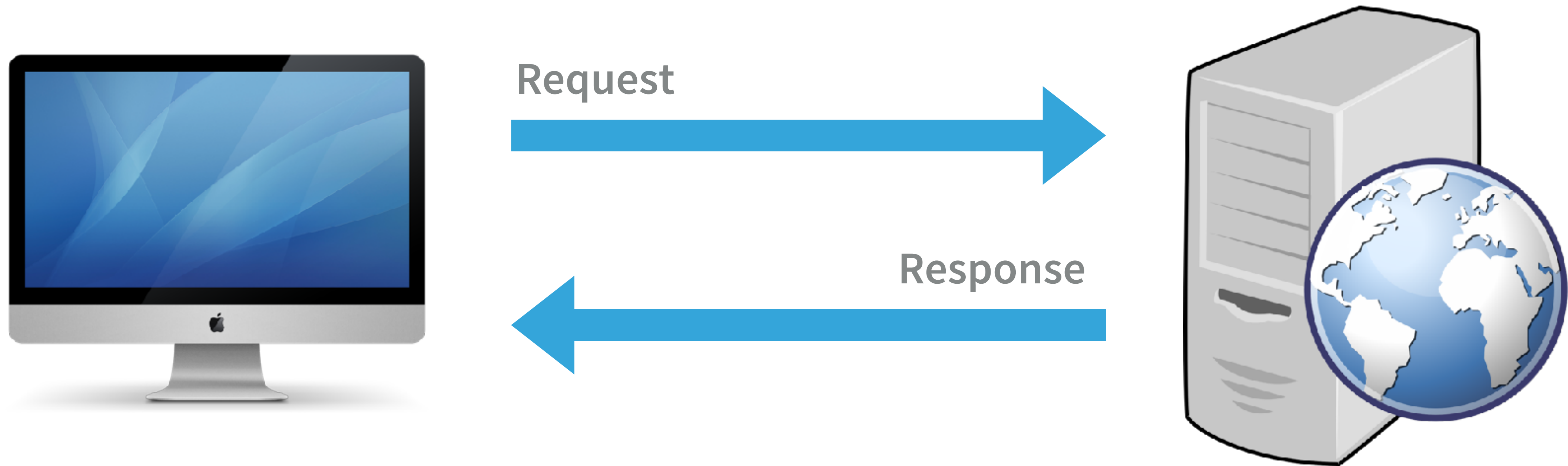
What are WebSockets?

WebSockets are a full-duplex, persistent connection from a client to a server over a single TCP Connection. Once the connection is established, it stays open until the client or server decide to close the connection. This makes web programming entirely event driven, not (just) user initiated. It is stateful, as a single running server is aware of all connections, allowing you to communicate with any number of them at any given time.

Blah Blah Blah ...
Show me what I can do with this
and I don't mean chat.

Realtime with WebSockets

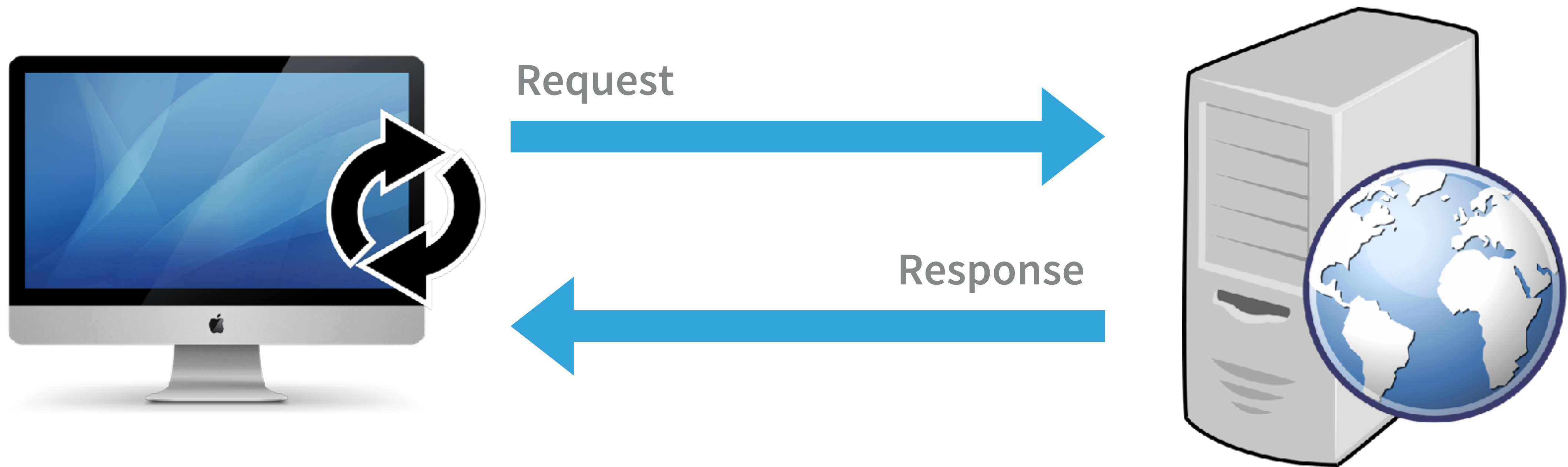
HTTP Architecture



Half-Duplex Communication

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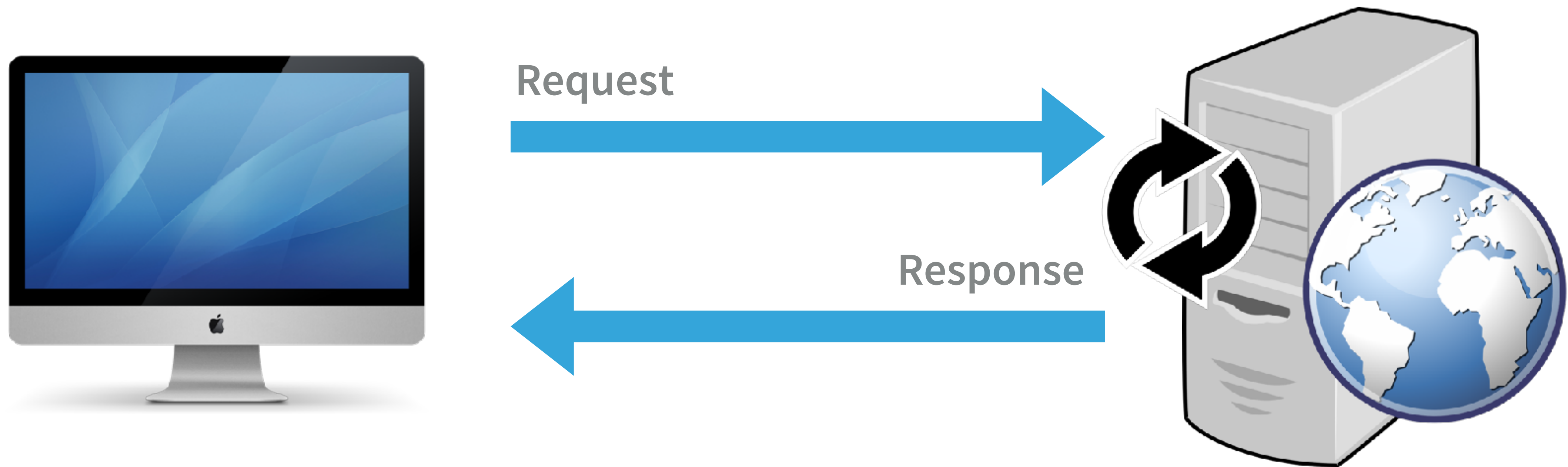
Short Polling



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

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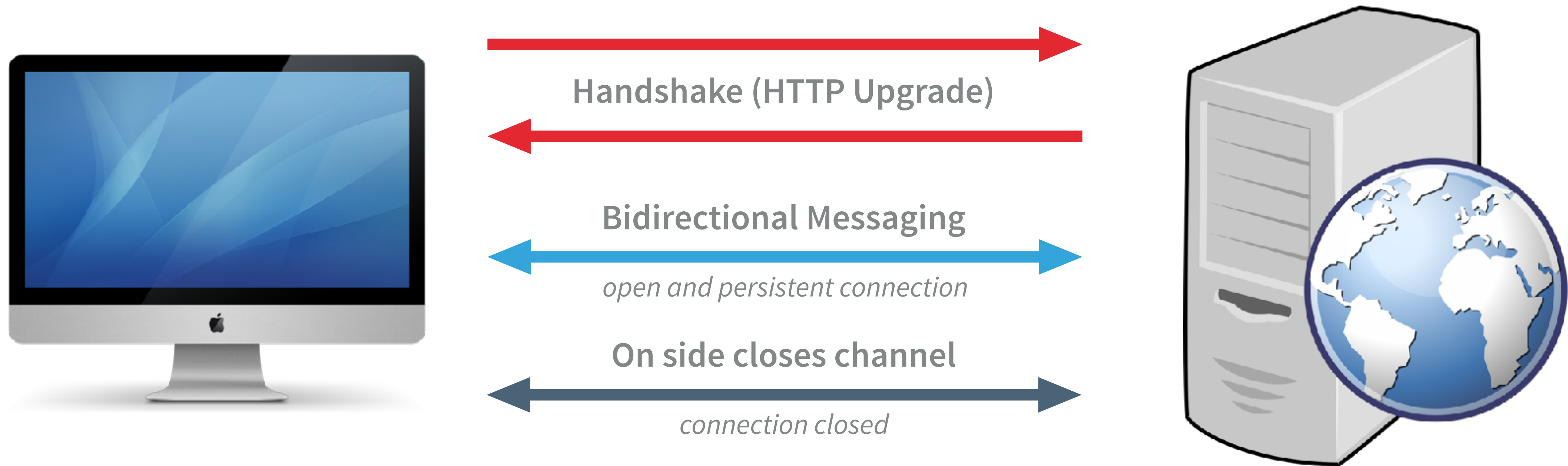
Long Polling



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

Realtime with WebSockets

WebSockets



Realtime with 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

Browsers no longer allow for non-secure connections over secured connections

▶ Cluster Support

* Enterprise Only

Realtime with WebSockets

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);  
}
```


Realtime with WebSockets

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.

Realtime with WebSockets



ColdFusion 11 Admin

Server Settings > WebSocket

Using Proxy

☒ 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.

Server Settings > WebSocket

Standard

☒ 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.

Server Settings > WebSocket

Enterprise

☒ 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

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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.

DEMO 01

4 easy steps and a little bit more ...

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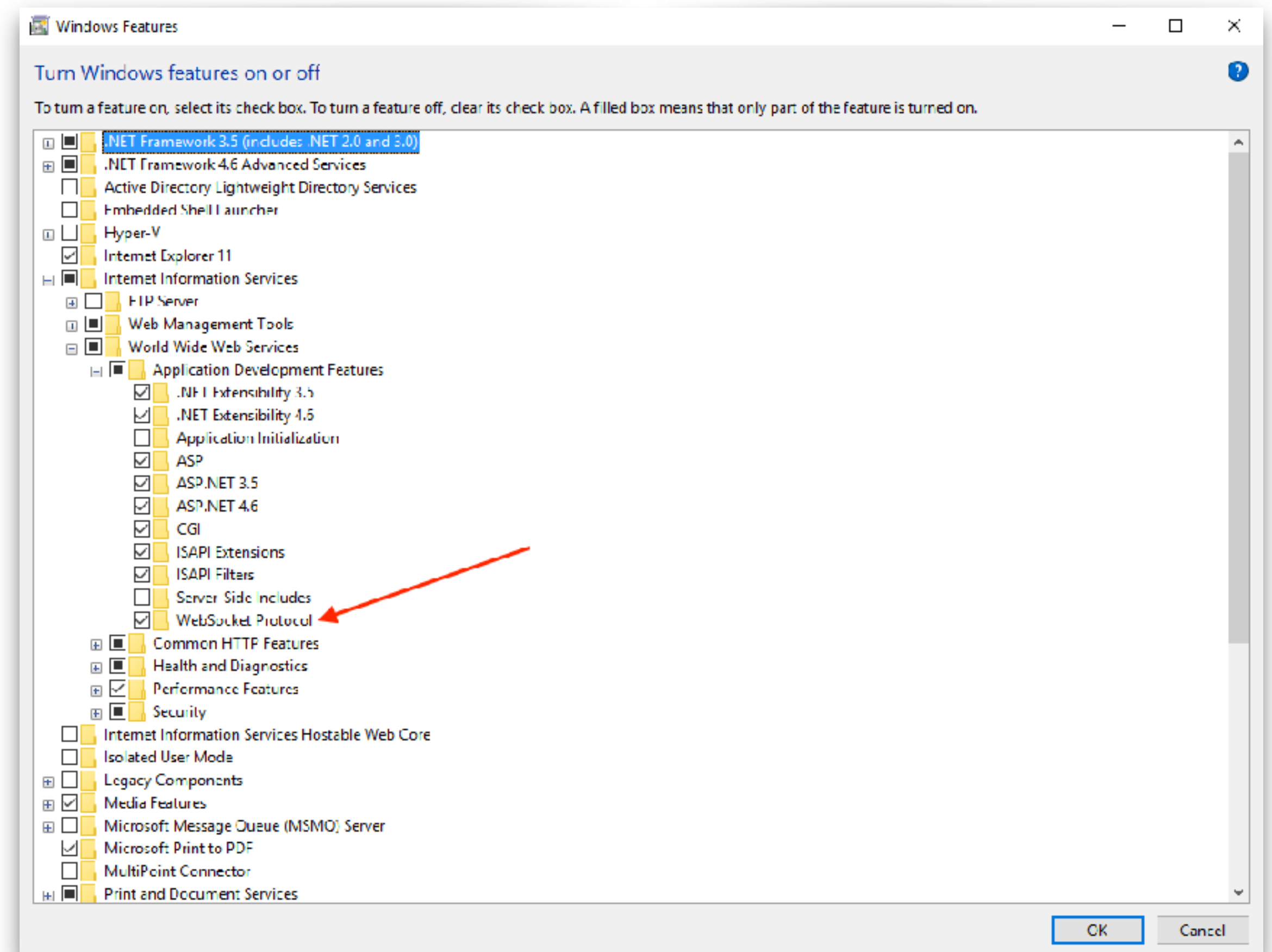
Secure WebSockets - WSS

- ▶ 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.
 - ▶ 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

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Secure WebSockets - WSS - Server Requirements

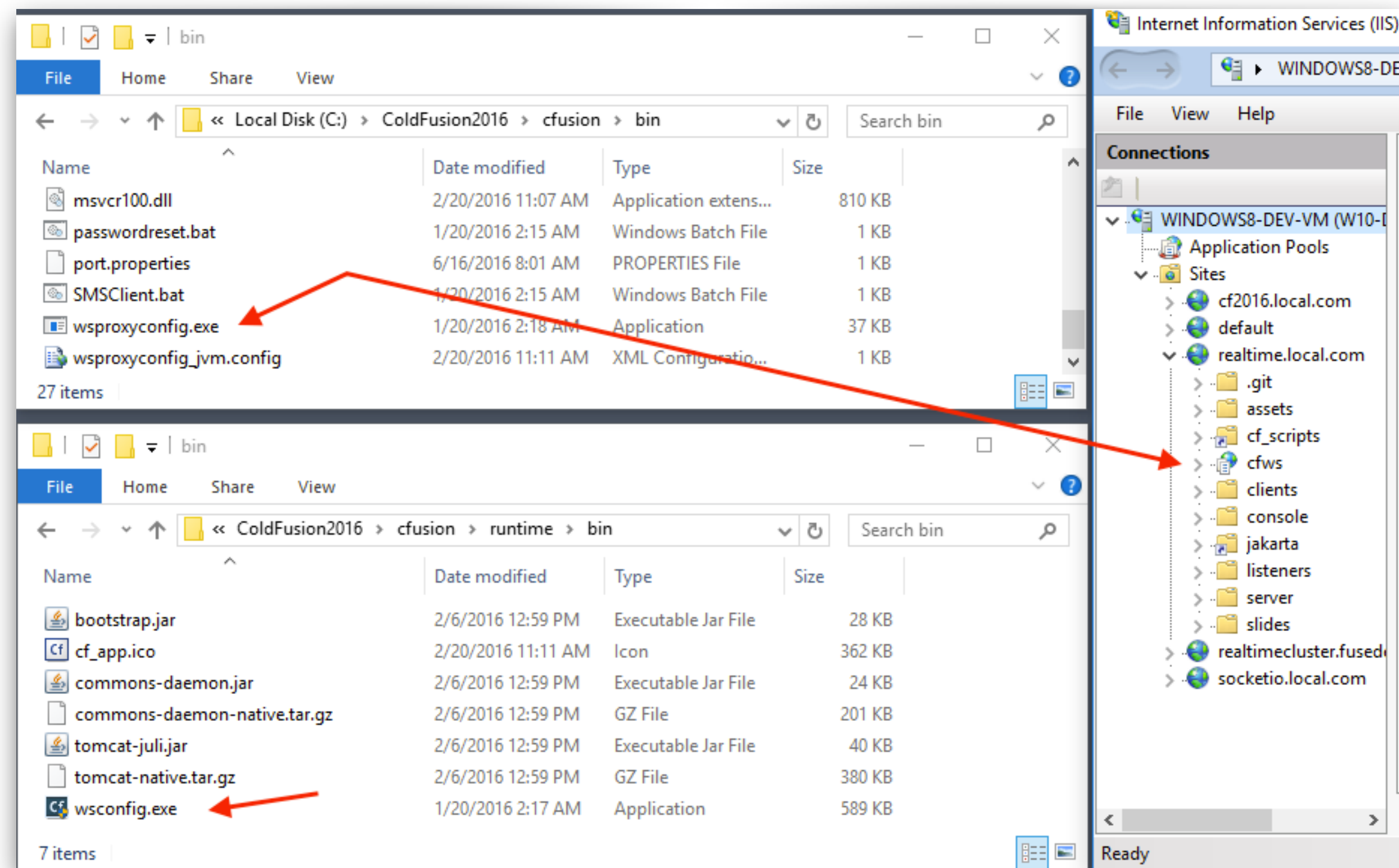
```
→ apachectl -V
Server version: Apache/2.4.18 (Unix)
Server built:   Feb 20 2016 20:03:19
Server's Module Magic Number: 20120211:52
Server loaded:  APR 1.4.8, APR-UTIL 1.5.2
Compiled using: APR 1.4.8, APR-UTIL 1.5.2
Architecture:   64-bit
Server MPM:     prefork ←
                threaded: no
   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



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Secure WebSockets - WSS - Proxy w/ IIS

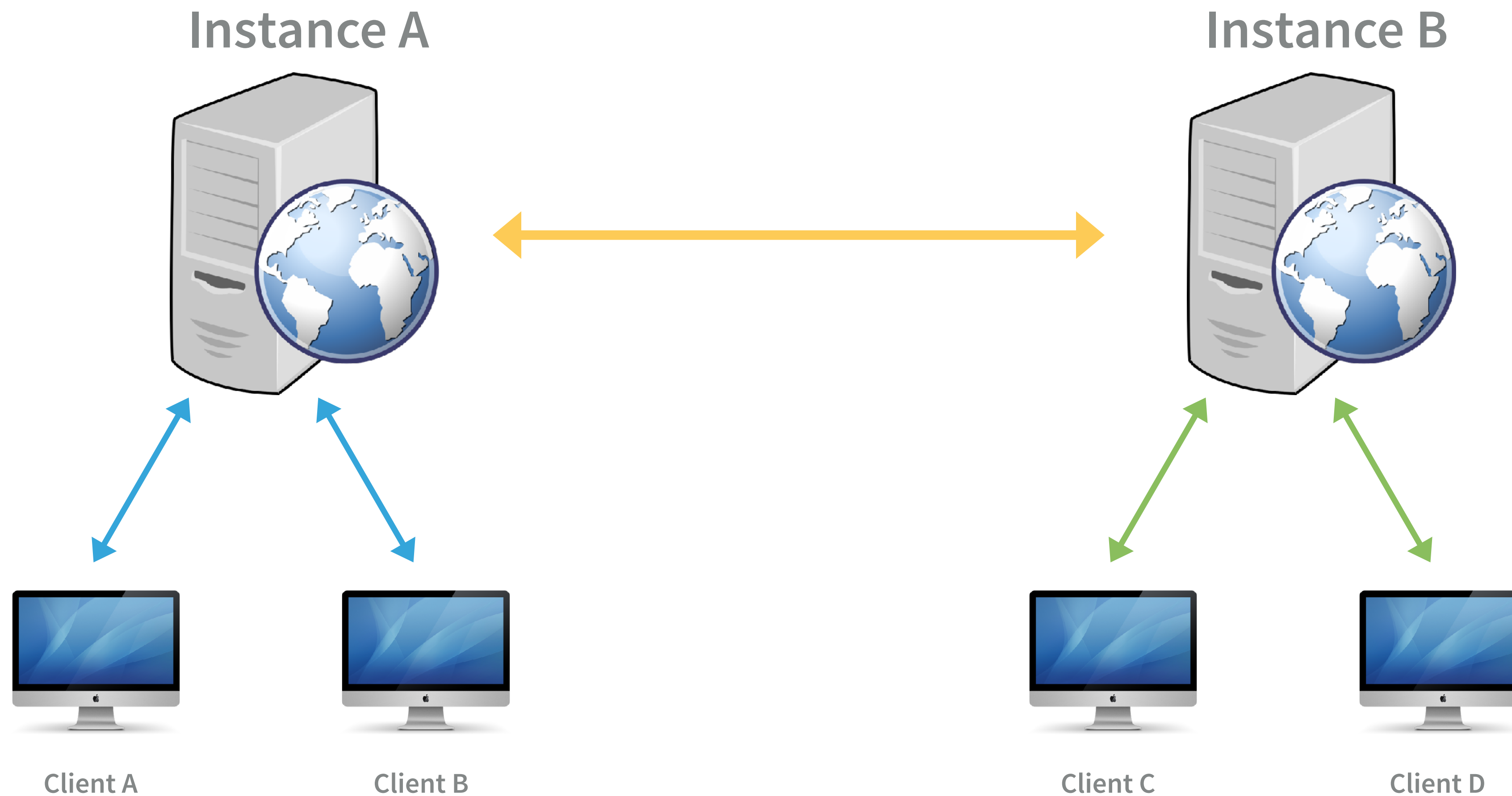


DEMO 02

What do you mean it does not work?

Realtime with WebSockets

WebSocket Clusters



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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

Realtime with WebSockets

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

Realtime with WebSockets

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

DEMO 03

Wait, they gave me something kind of broken?

DEMO 04

Ok show me how easy it is to build an app ...
Now we chat

DEMO 05

I don't meet the requirements.
What can I do?

Realtime with WebSockets

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