



Creators of HTML5 WebSocket

High Performance

## WebSocket 101

DevCon5 – Jul 23, 2012

WebSocket Gateway

Enterprise Support

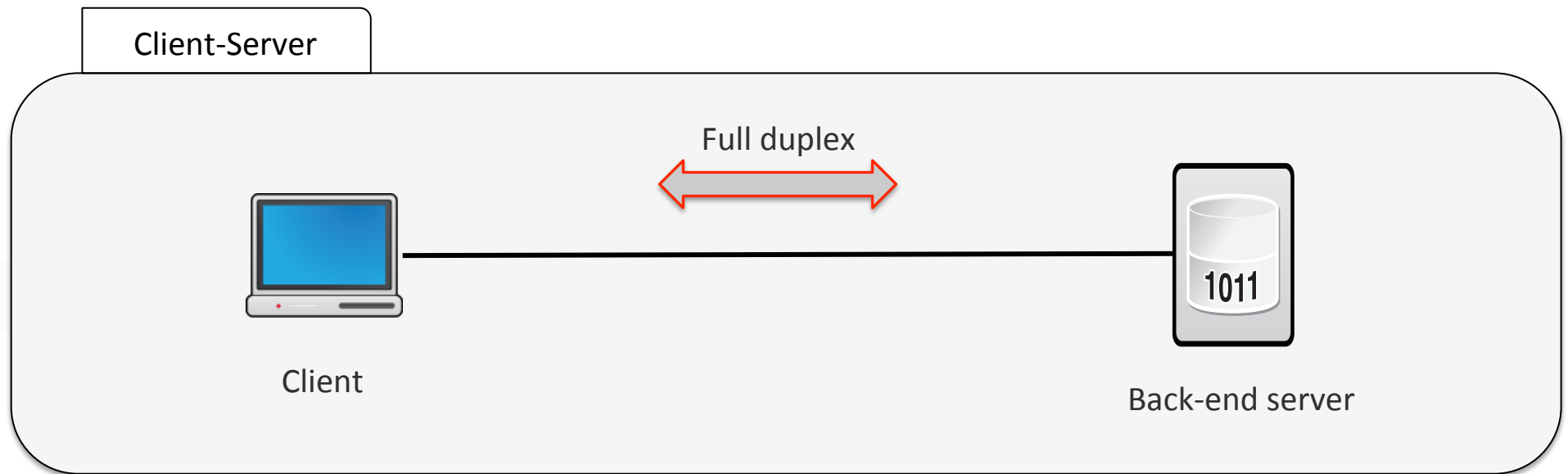
Peter Moskovits - @pmoskovi  
Developer Evangelist

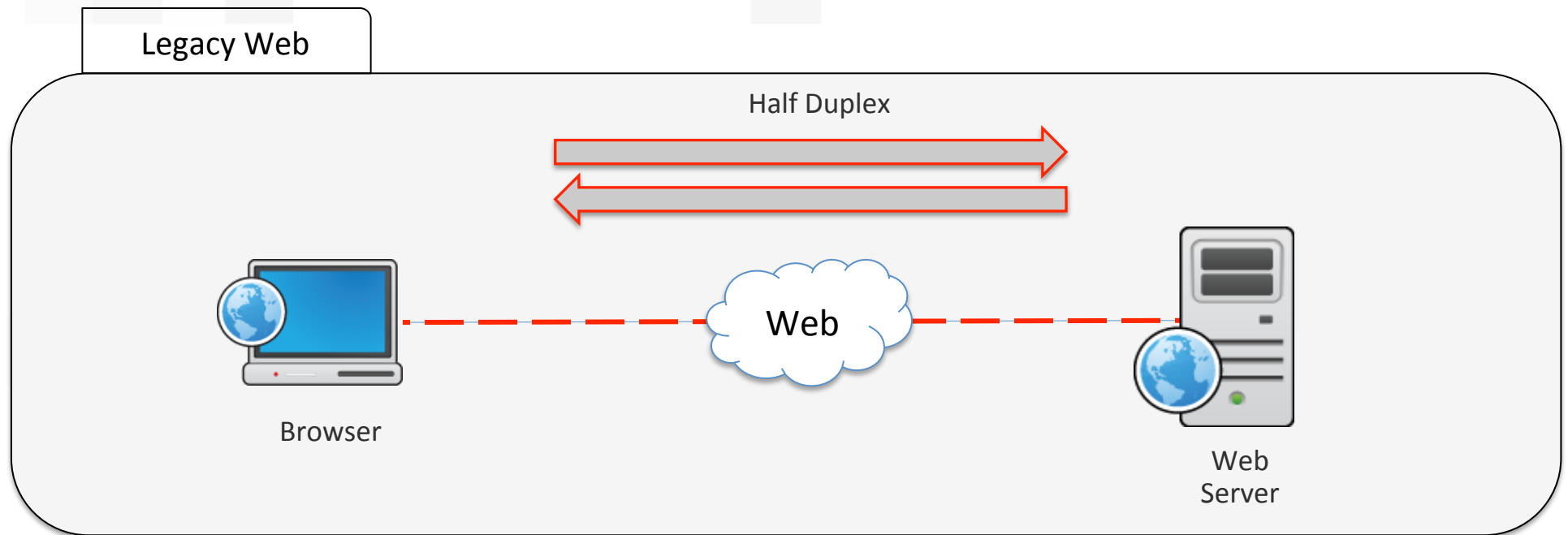
- **Is There a Problem?**
- **How Serious is the Problem?**
- **Any Hope?**
- **Demos**

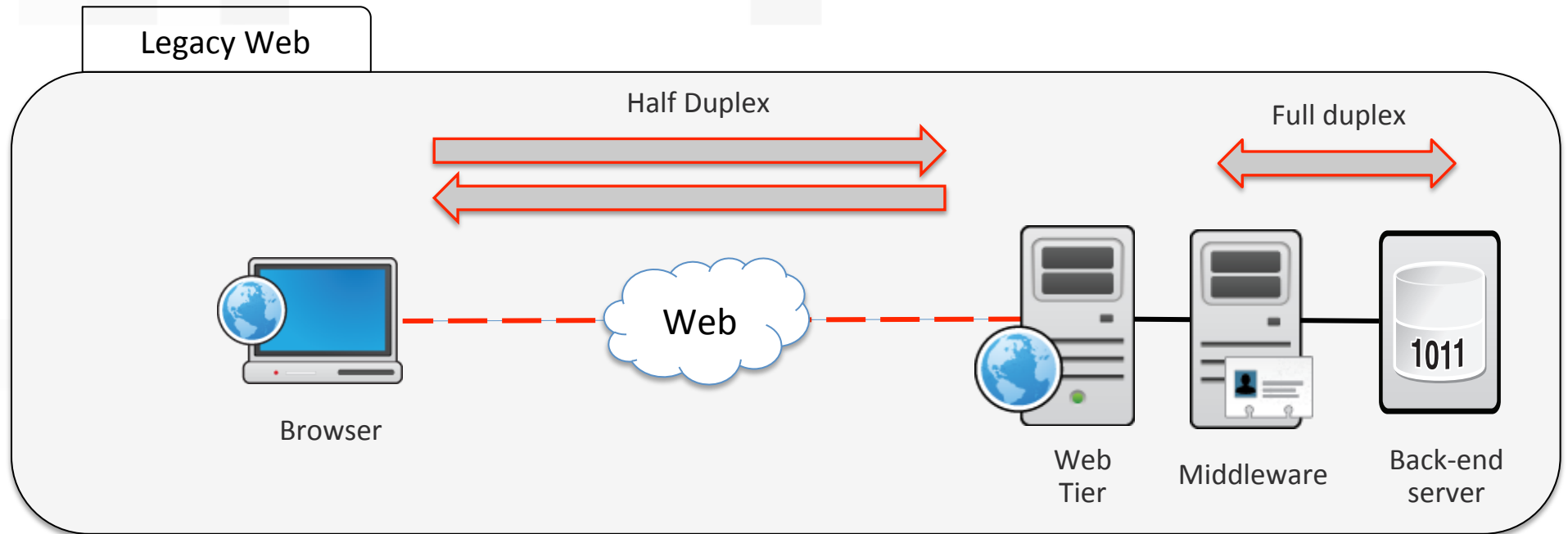


**OFFER BETTER EXPERIENCE EVERYWHERE**



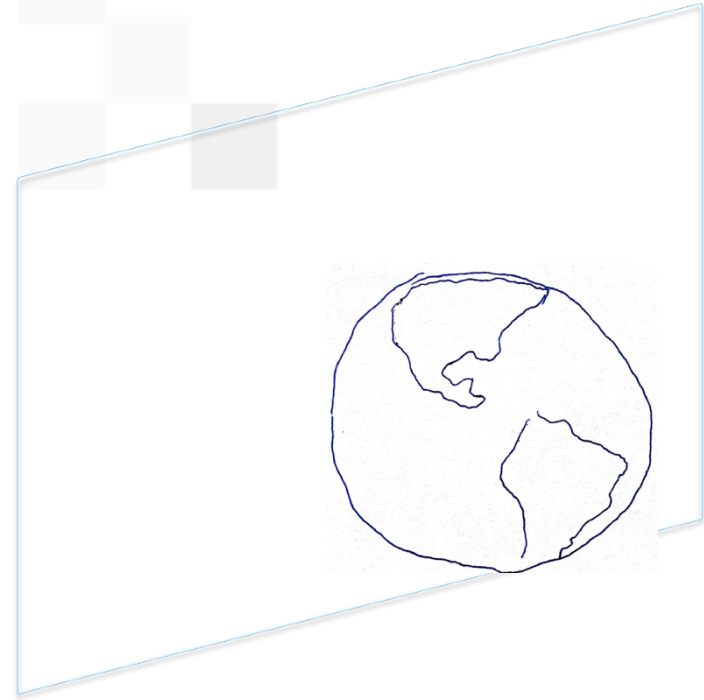






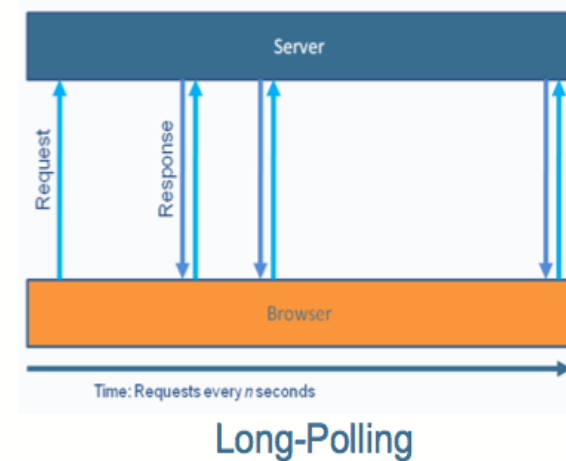
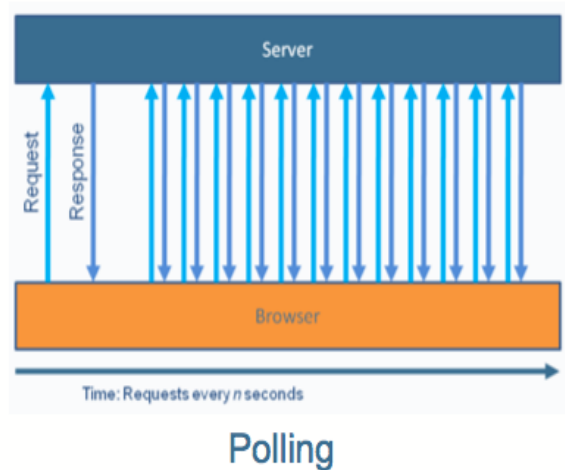


I want Desktop-like Interactions



## A Parallel Universe Without Mailman





## HTTP

- Was designed to serve static documents
- Half duplex, high latency
- Overhead: 800-2000 bytes
- Complex architecture: plugins, polling, legacy application servers
- Expensive to "Webscale" applications

## HTTP Request Headers

Client

```
GET /PollingStock//PollingStock HTTP/1.1
Host: localhost:8080
User-Agent: Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US;
rv:1.9.1.5) Gecko/20091102 Firefox/3.5.5
Accept:
text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-us
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive
Referer: http://localhost:8080/PollingStock/
Cookie: showInheritedConstant=false;
showInheritedProtectedConstant=false; showInheritedProperty=false;
showInheritedProtectedProperty=false; showInheritedMethod=false;
showInheritedProtectedMethod=false; showInheritedEvent=false;
showInheritedStyle=false; showInheritedEffect=false;
```

Google

a  
amazon  
apple  
aol  
apple store

788 bytes + 1 byte

## HTTP Response Headers

Server

```
HTTP/1.x 200 OK
X-Powered-By: Servlet/2.5
Server: Sun Java System Application Server 9.1_02
Content-Type: text/html;charset=UTF-8
Content-Length: 321
Date: Sat, 07 Nov 2009 00:32:46 GMT
```



AJAX: Asynchronous JavaScript and XML  
Used for building highly interactive Web apps  
Content can change without full page refresh  
User-perceived low latency  
"Real-time" often achieved using polling and long-polling

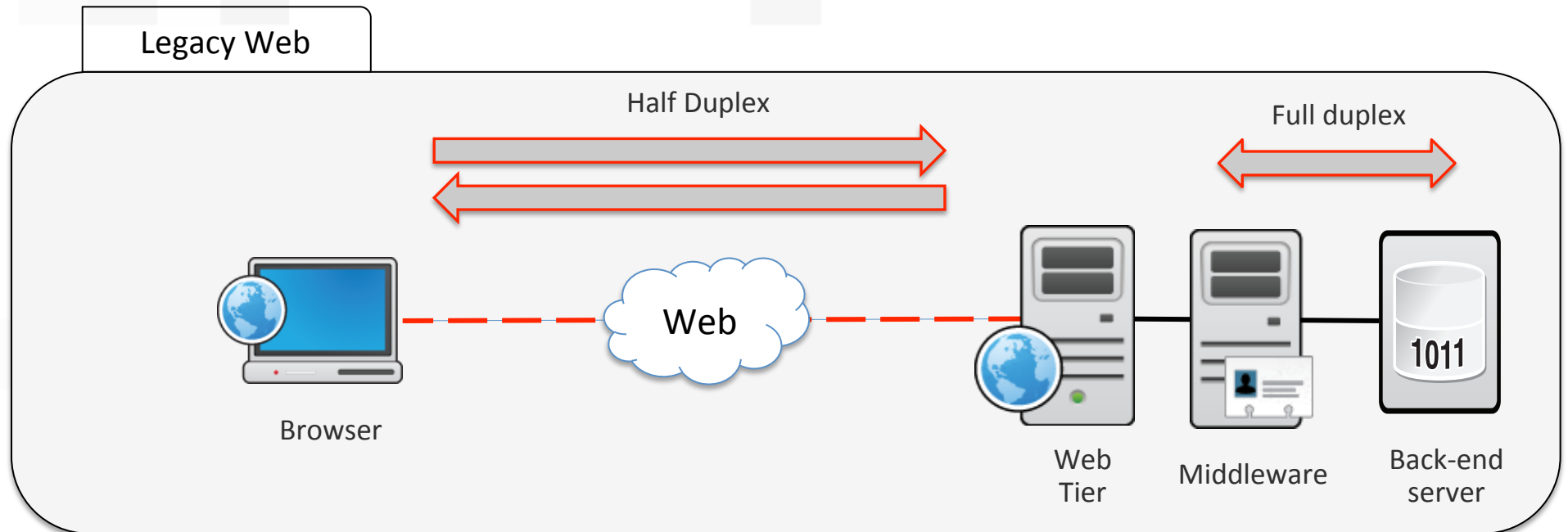


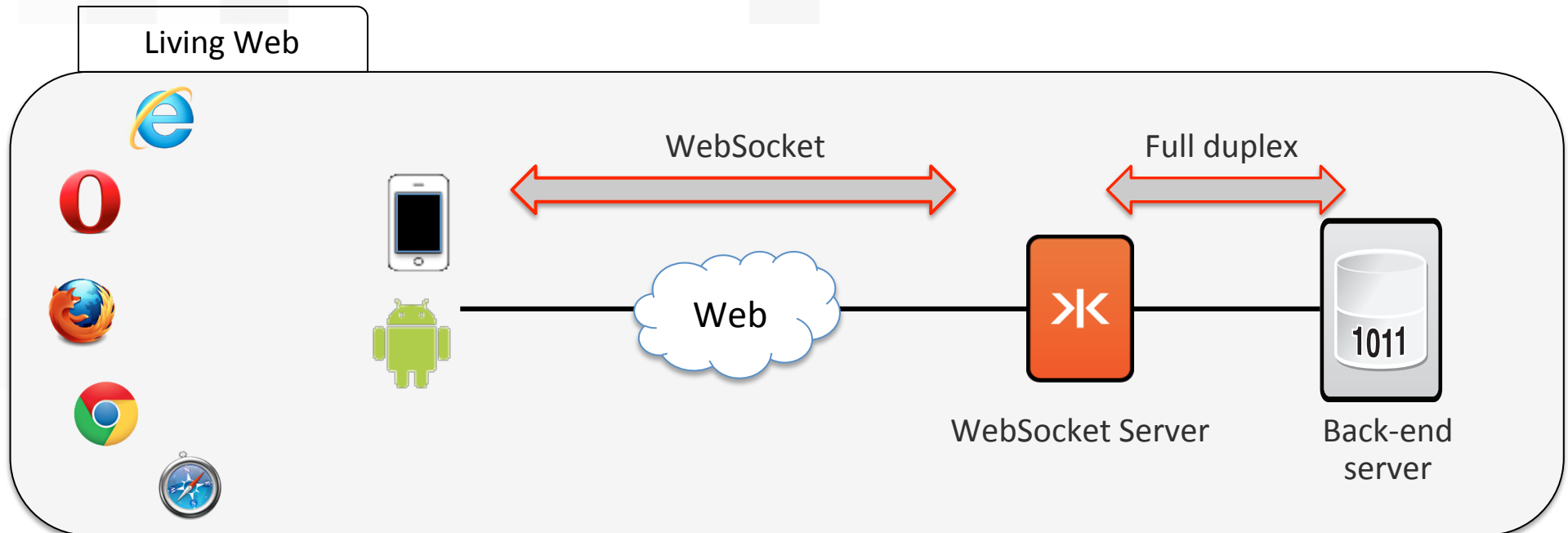
Lack of standard implementation  
Comet adds lots of complexity



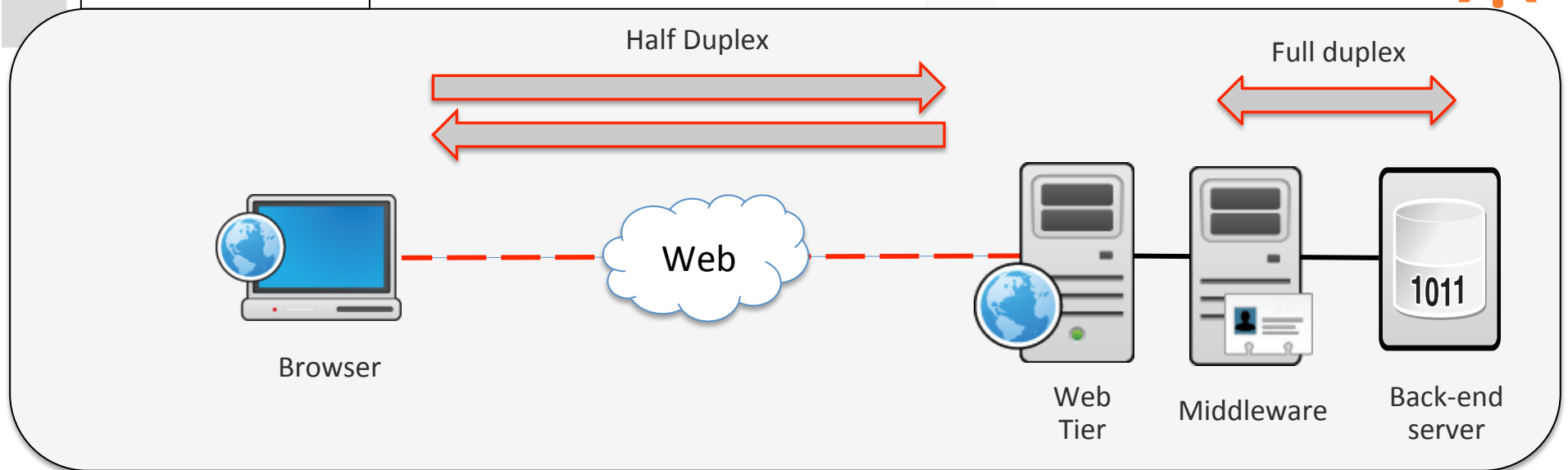
- Extends TCP across the Web
  - Full-duplex, single socket, very low overhead
  - Shares port with HTTP (80/443)
  - Enables new classes of networked apps
- W3C API (JavaScript)
- IETF Protocol



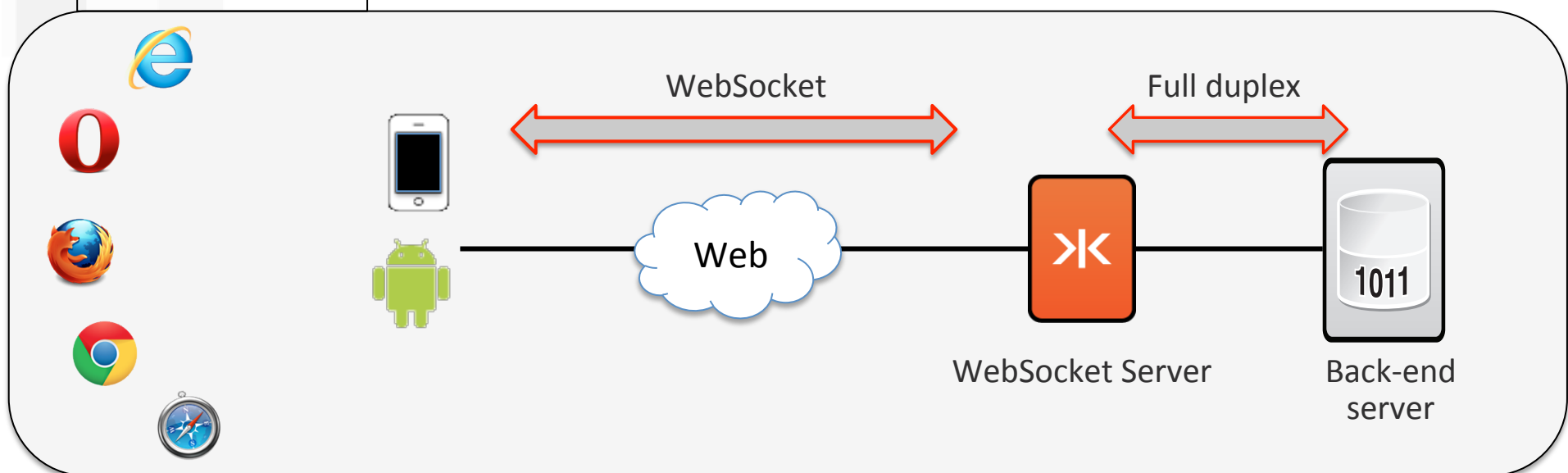




## Legacy Web



## Living Web





# Browser Support




# Can I Use?

caniuse.com

# Web Sockets - Working Draft									
<i>Bidirectional communication technology for web apps</i>									
Resources: <a href="#">WebSockets information</a> <a href="#">Details on newer protocol</a> <a href="#">Wikipedia</a>									
<a href="#">Show all versions</a>	IE	Firefox	Chrome	Safari	Opera	iOS Safari	Opera Mini	Opera Mobile	Android Browser
		3.6						10.0	2.1
	6.0	9.0 <small>Moz</small>				3.2		11.0	2.2
	7.0	10.0 <small>Moz</small>	17.0			4.0-4.1		11.1	2.3
	8.0	11.0	18.0	5.0		4.2-4.3		11.5	3.0
Current	9.0	12.0	19.0	5.1	11.6	5.0	5.0-6.0	12.0	4.0
Near future	10.0	13.0	20.0	5.2	12.0				
Farther future		14.0	21.0						
<b>Note:</b> Partial support refers to the websockets implementation using an older version of the protocol and/or the implementation being disabled by default (due to security issues with the older protocol). Microsoft is currently <a href="#">experimenting</a> with the technology.									
									<a href="#">Feedback</a>

# Can I Use?




## WebSocket.org

Are you plugged in?

[Home](#) [Demos](#) [All About WebSocket](#) [Benefits of WebSocket](#)

This website powered by KAAZING >K

Does your browser support WebSocket?

Chrome 19 Mac 

### Links

- Home
- Demos
  - Echo Test
  - Demos on the Web
- All About WebSocket
- Benefits of WebSocket
- WebSocket API
- WebSocket Protocol

## What is WebSocket?


The WebSocket specification—developed as part of the HTML5 initiative—introduced the WebSocket JavaScript interface, a full-duplex communication channel over a single TCP connection.

## Echo Test

The first section of this page will let you do an HTML5 WebSocket test against the echo server. The second section walks you through creating a WebSocket application yourself.

You can also [inspect WebSocket messages](#) using your browser.

### Try it out

 This browser supports WebSocket.

**Location:**

☐ Use secure WebSocket (TLS)

**Message:**

**Log:**

CONNECTED

SENT: Rock it with HTML5 WebSocket

RESPONSE: Rock it with HTML5 WebSocket

# Can I Use?

## websockettest.com

REAL-TIME WEB TEST – DOES HTML5 WEBSOCKETS WORK FOR YOU?

WebSockets seem to  
**Work for You!**  
...Comet seems to work fine.

Environment	
WebSockets supported	Yes ✓
HTTP Proxy	No
WebSocket protocol version	rfc-6455

WebSockets (Port 80)	
Connected	Yes ✓
Data Receive	Yes ✓
Data Send	Yes ✓
Echo Test	Yes ✓
Server time	2012/5/19 17:20:26

WebSockets (Port 443)	
Connected	Yes ✓
Data Receive	Yes ✓
Data Send	Yes ✓
Echo Test	Yes ✓
Server time	2012/5/19 17:20:26

## JavaScript

```
//Create new WebSocket
var mySocket = new WebSocket("ws://www.WebSocket.org");

// Associate listeners
mySocket.onopen = function(evt) {
    alert("Connection open...");
};

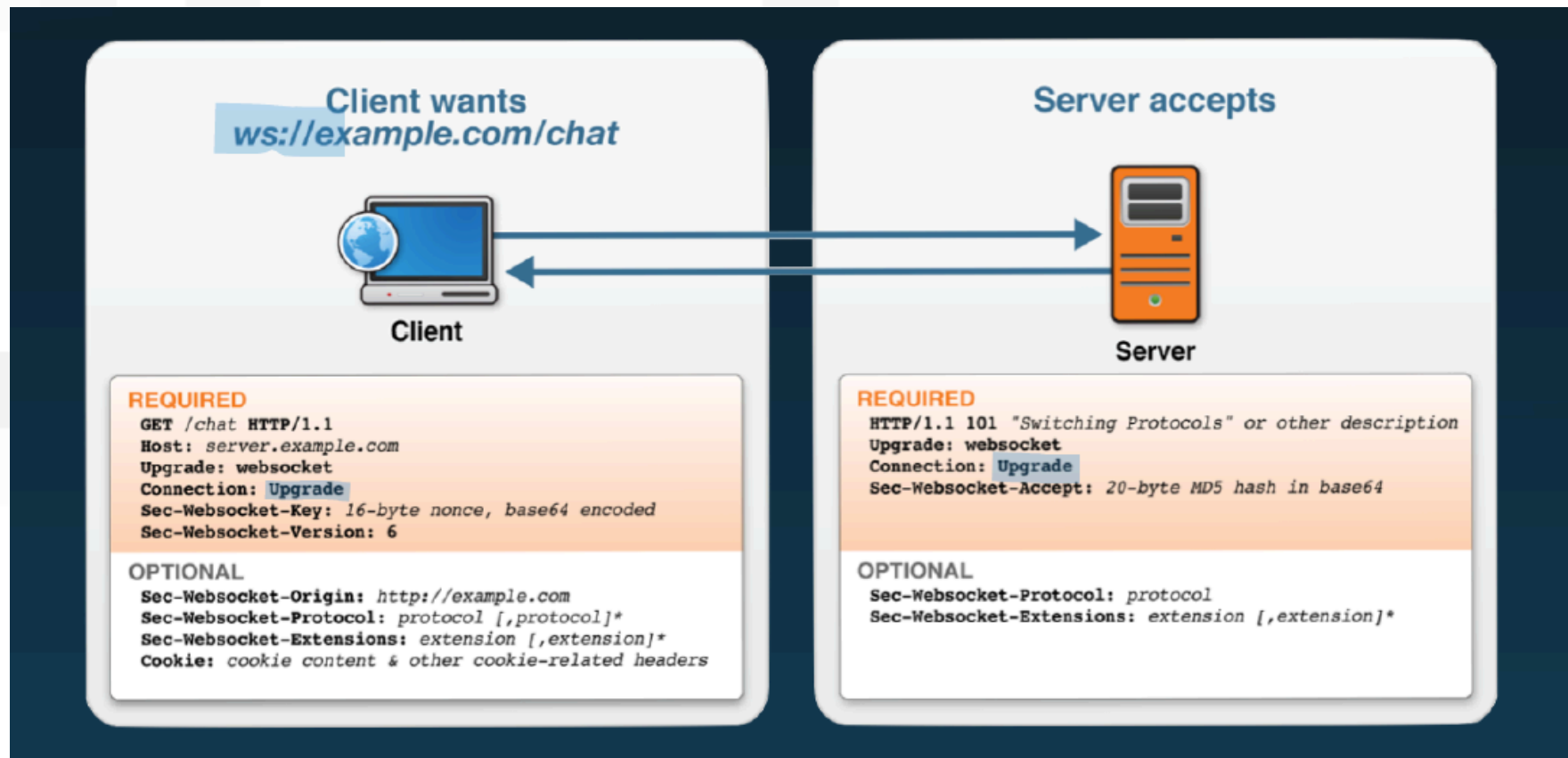
mySocket.onmessage = function(evt) {
    alert("Received message: " + evt.data);
};

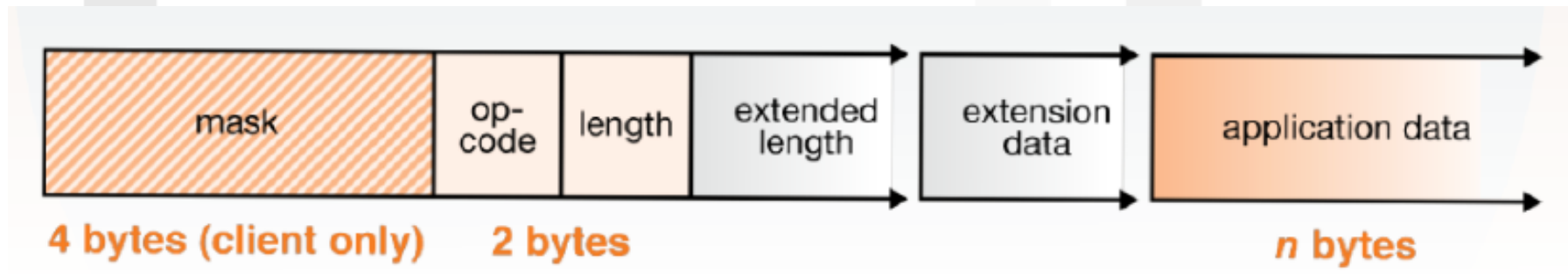
mySocket.onclose = function(evt) {
    alert("Connection closed..");
};
```

## JavaScript

```
// Sending data  
mySocket.send("WebSocket Rocks!");  
  
// Close WebSocket  
mySocket.close();
```

# The WebSocket Handshake



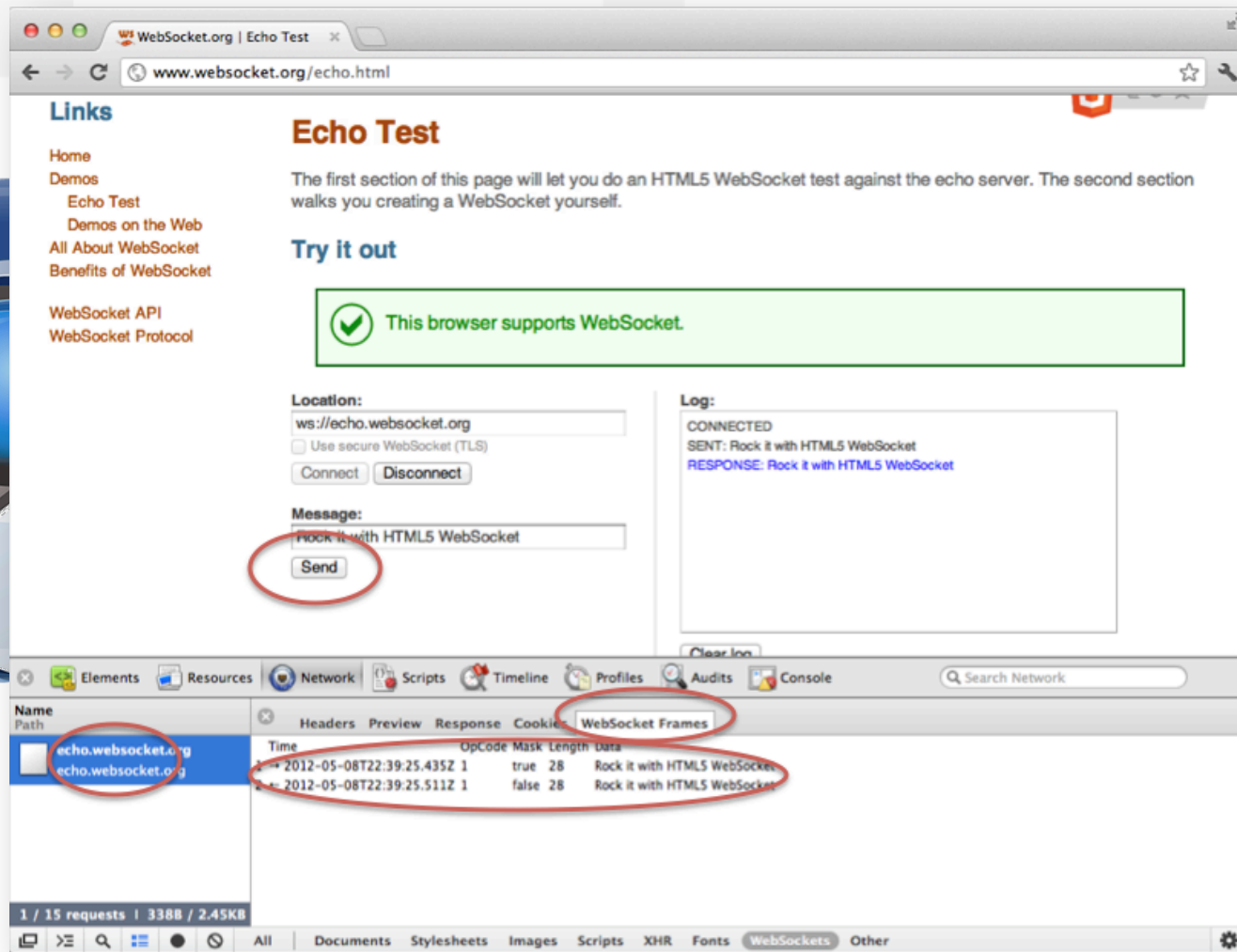


- Only a few header bytes
- Data may be text or binary
- Frames from client to server are masked (XORed w/ random value) to avoid confusing proxies



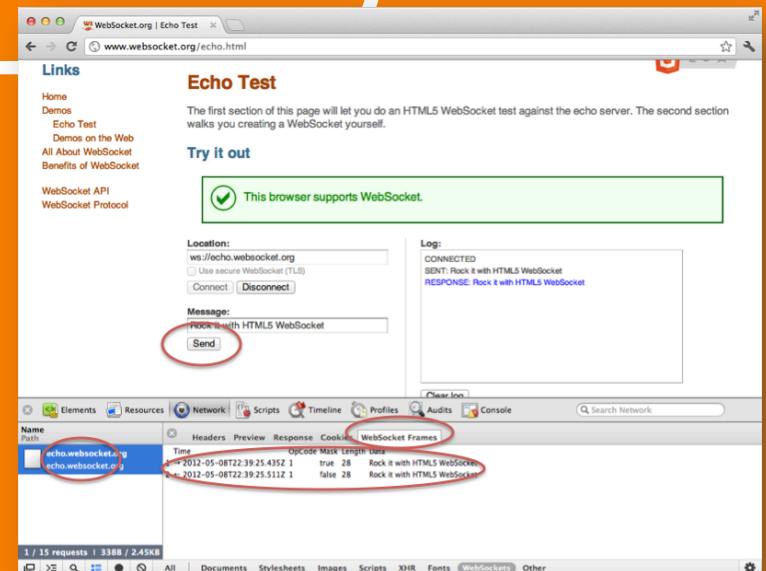
# Inspecting WebSocket Frames

Available today in Chrome



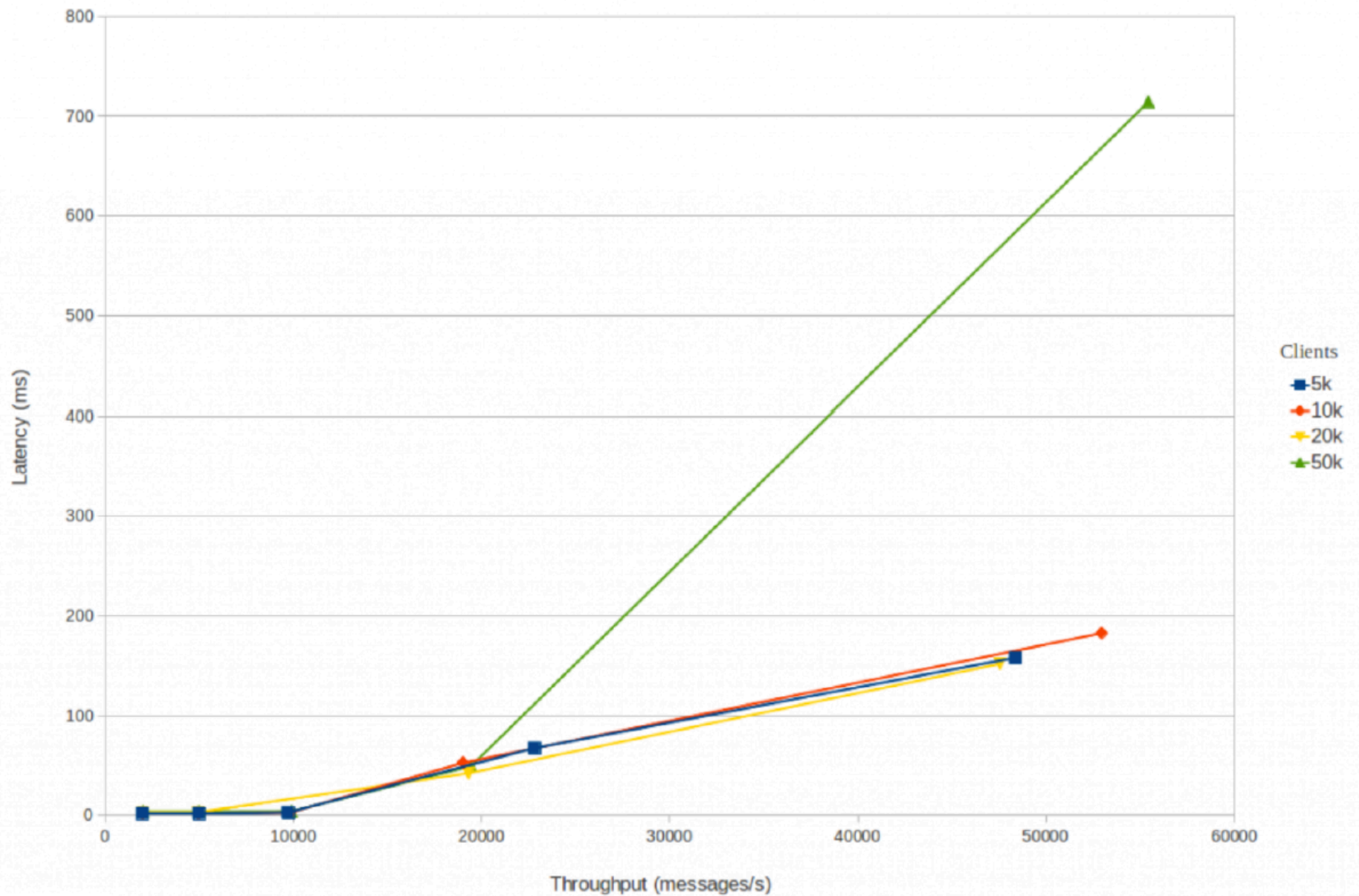
# *Demo!*

## *Inspecting WebSocket Frames*



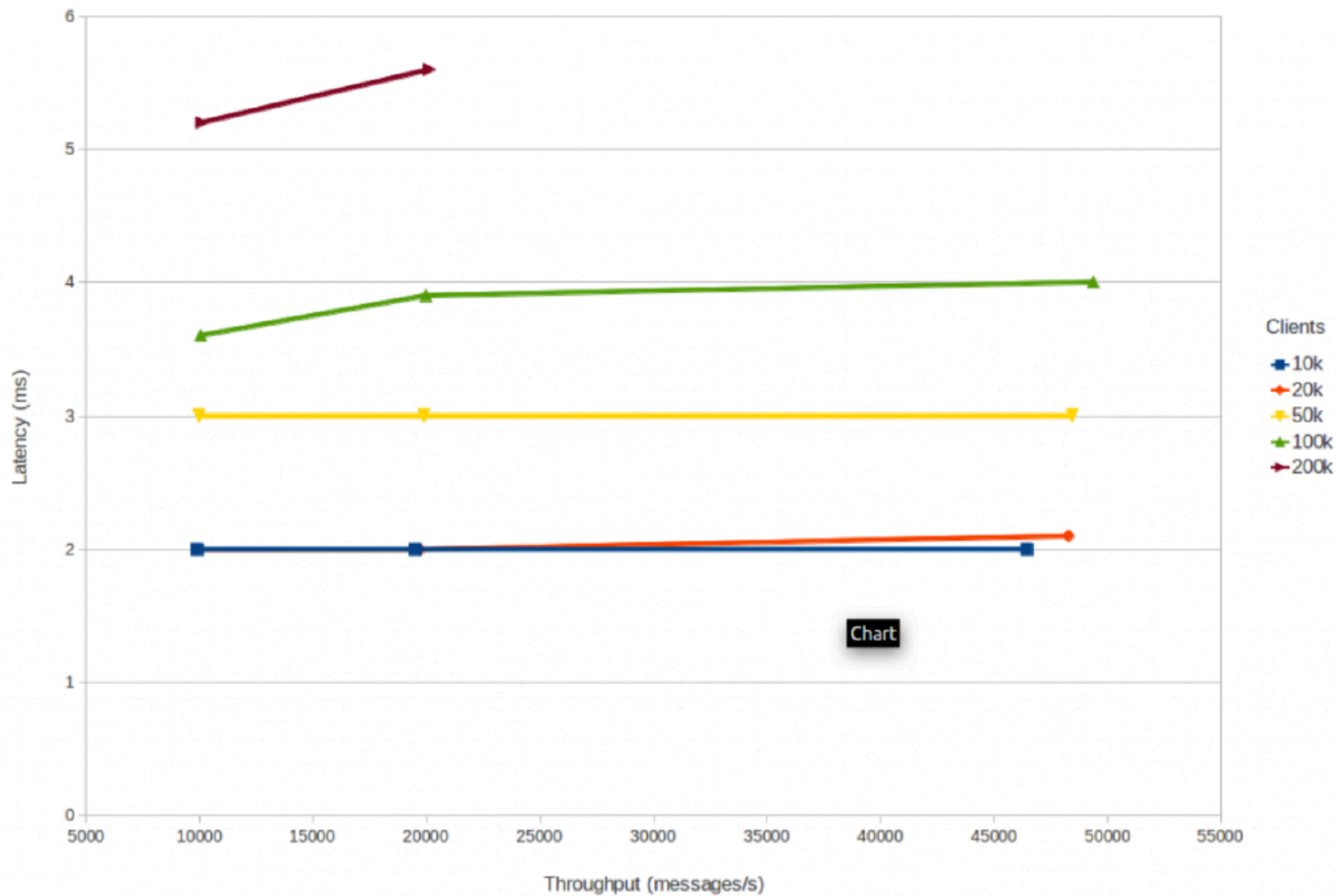
## CometD-2.4.0 HTTP

Latency (smaller is better)



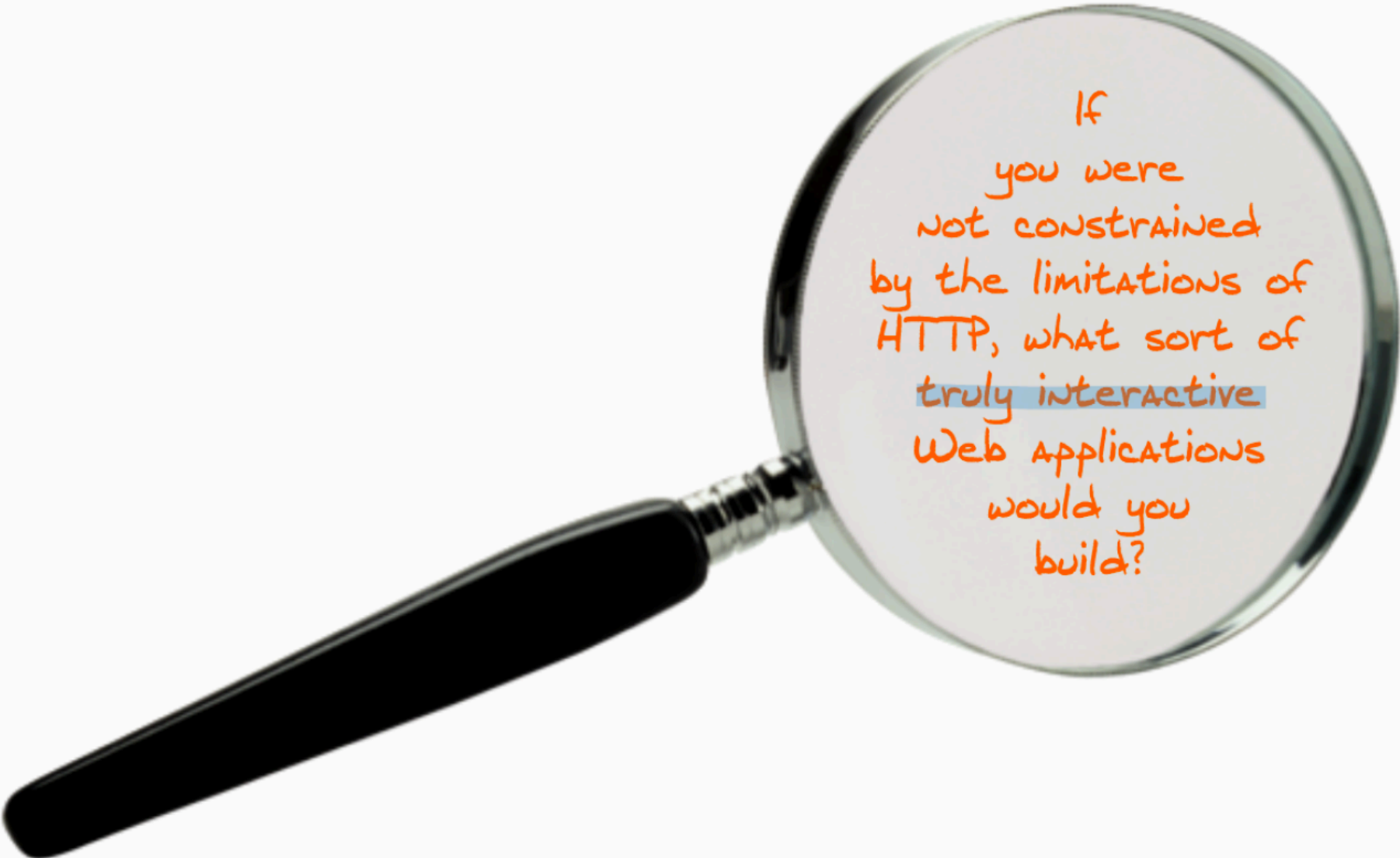
## CometD-2.4.0 WebSocket

Latency (smaller is better)



# Got WebSockets – Now What?





If  
you were  
not constrained  
by the limitations of  
HTTP, what sort of  
truly interactive  
Web applications  
would you  
build?



# Build Highly Scalable Web Messaging Apps KAAZING >K®

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**RFID Tracking**

**Smart Metering**

**Monitoring Dashboards**

**Social Networking**

**Real-time Gambling**

**Logistics  
and Supply Chains**

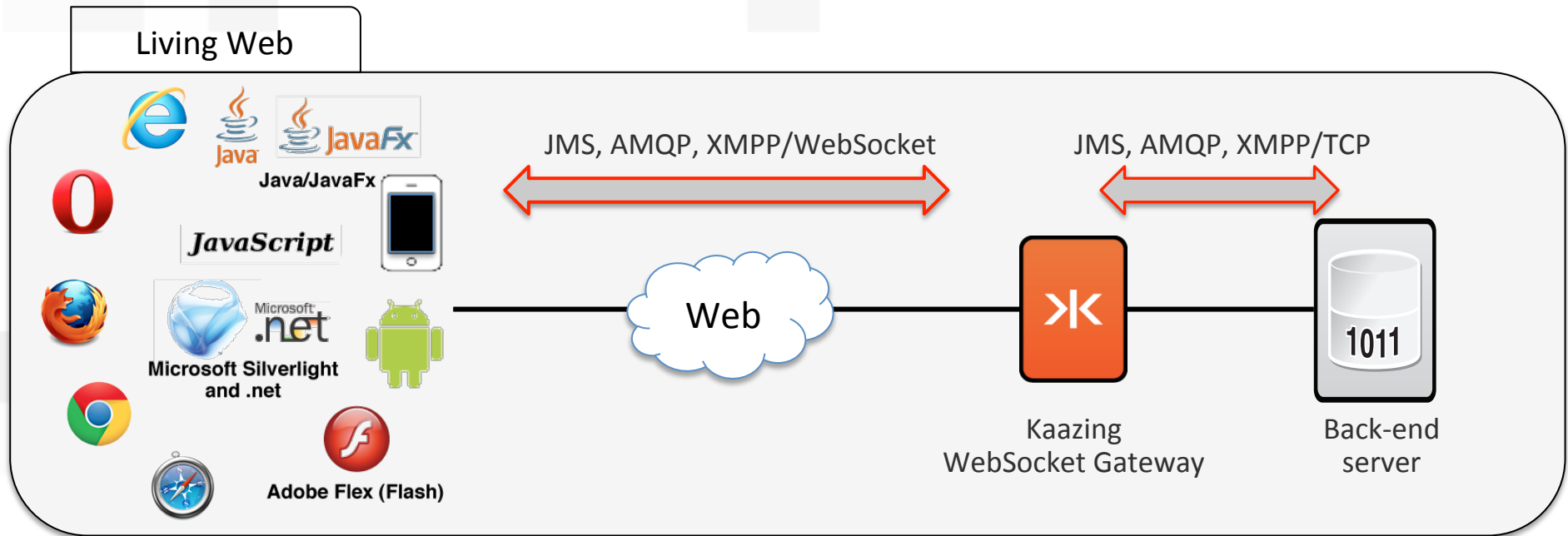
**IPTV**

**Single Trader Desktop**

**On-line Gaming**

**Gaming/Betting Platform**

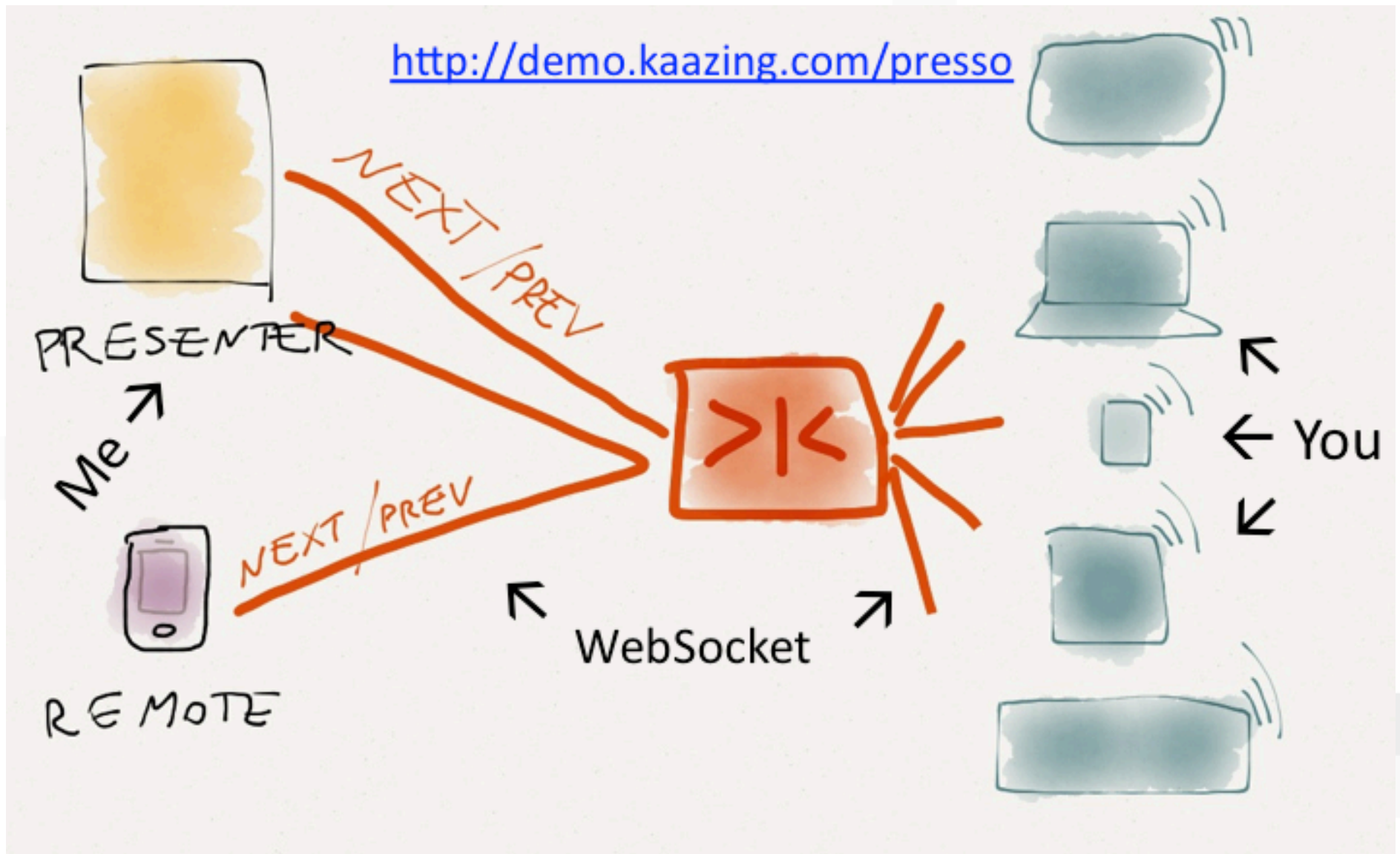
# Extend the Reach of Your Rich Business Protocols to the Web

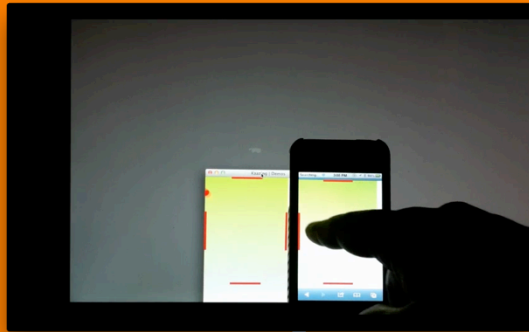




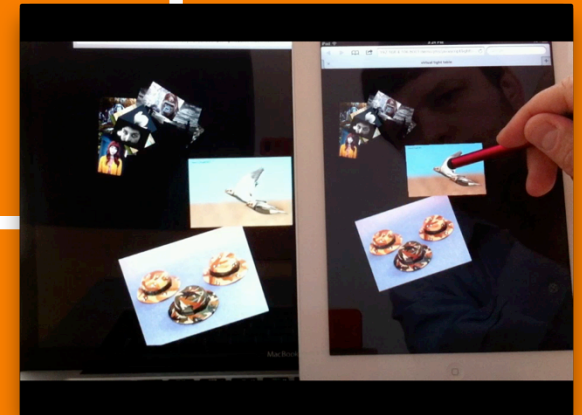
*Demos!*

# Presso: WebSocket Powered Social HTML5 Presentation Tool **KAAZING** >K<sup>®</sup>





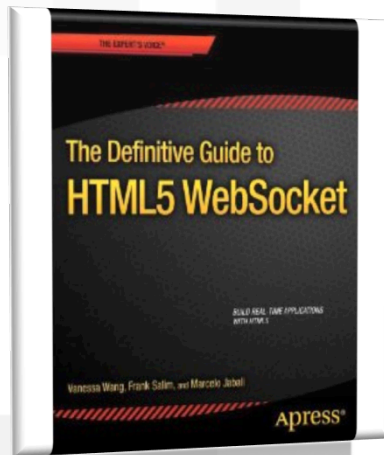
*Demos!*



Real-Time Portfolio via JMS and Portfolio via JMS and WebS

Company	Ticker	Price	Change	Shares	Value	Ticker	Price	Change	Shares	Value	Buy	Sell
Co	MMM	123.38	-0.55	13	1603.94	MMM	123.38	-0.55	13	1603.94	Buy	Sell
&T Inc.	T	13.13	0.14	0	0.00	T	13.13	0.14	0	0.00	Buy	Sell
ing Co.	BA	4.45	-0.01	0	0.00	BA	4.45	-0.01	0	0.00	Buy	Sell
group, Inc.	C	10.10	-0.15	0	0.00	C	10.10	-0.15	0	0.00	Buy	Sell
ell-Packard Co.	HPQ	32.69	0.23	4	130.76	HPQ	32.69	0.23	4	130.76	Buy	Sell
el Corporation	INTC	10.08	-0.01	5	50.40	INTC	10.08	-0.01	5	50.40	Buy	Sell
ernational Business Machines	IBM	2.14	0.01	0	0.00	IBM	2.14	0.01	0	0.00	Buy	Sell
Donald's Corporation	MCD	40.88	-0.01	0	0.00	MCD	40.88	-0.01	0	0.00	Buy	Sell
icrosoft Corporation	MSFT	25.26	-0.12	0	0.00	MSFT	25.26	-0.12	0	0.00	Buy	Sell





[kaazing.com/download](http://kaazing.com/download)  
The Zinger: [blog.kaazing.com](http://blog.kaazing.com)  
Pro HTML5 Programming Guide  
The Definitive Guide to WebSocket

## More Demos & Content

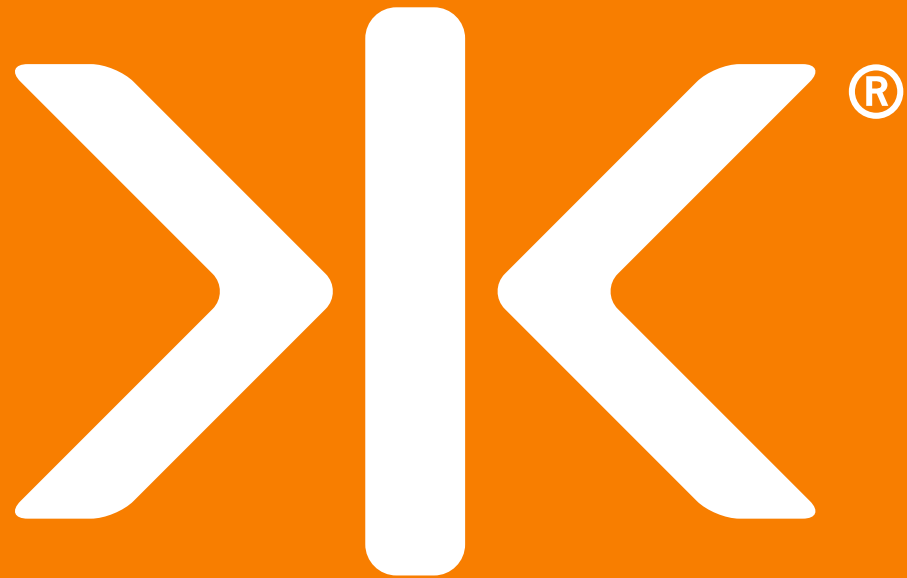
- [kaazing.com/demo](http://kaazing.com/demo)
- [websocket.org](http://websocket.org)
- [kaazing.com/about/collateral](http://kaazing.com/about/collateral)

## Kaazing University

- HTML5 Fast Track
- HTML5 Mobile Mastery
- Kaazing Master Class



**Rich Real-Time User Experience**



**KAAZING**









