

Pushing Oracle Coherence Events to Web Browsers using HTML 5 WebSockets and Kaazing

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Agenda

- What is Web Sockets
- Review Coherence Events
- Demo Configuration
- Code



Web Sockets

- Enables Full Duplex Communication between a browser and a Server
- Allows Web Servers to push updates to browsers
- Better than “long polling”
- Establishes a Dedicated Socket to the Backend Web Socket Server

Server Sent Events

- Sent by the Server to the Browser
 - Uni-directional
- Sent over standard HTTP
 - Content Type is text/event-stream
- Supports only Text
- Easier to fallback to Long Polling
- Browser handles reconnect

Web Sockets and Standards

- **This is all in flux**
- Rfc 6455 defines the protocol
- W3C SSE
<http://dev.w3.org/html5/eventsource/>
- W3C WebSockets
<http://dev.w3.org/html5/websockets/>



WebSocket Protocol

Client

```
GET /chat HTTP/1.1
Host: server.example.com
Upgrade: websocket
Connection: Upgrade
Sec-WebSocket-Key:
dGhlIHNhbXBsZSBub25jZQ==
Origin: http://example.com
Sec-WebSocket-Protocol:
chat, superchat
Sec-WebSocket-Version: 13
```

Server

```
HTTP/1.1 101 Switching
Protocols Upgrade: websocket
Connection: Upgrade Sec-
WebSocket-Accept:
s3pPLMBiTxaQ9kYGzzhZRbK+xOo=
Sec-WebSocket-Protocol: chat
```



JS API

Web Socket

`WebSocket(location, protocol)`

Function `onmessage`

Function `onopen`

Function `onclose`

Function `onerror`

`close()`

`send(data)`

Server Sent Events

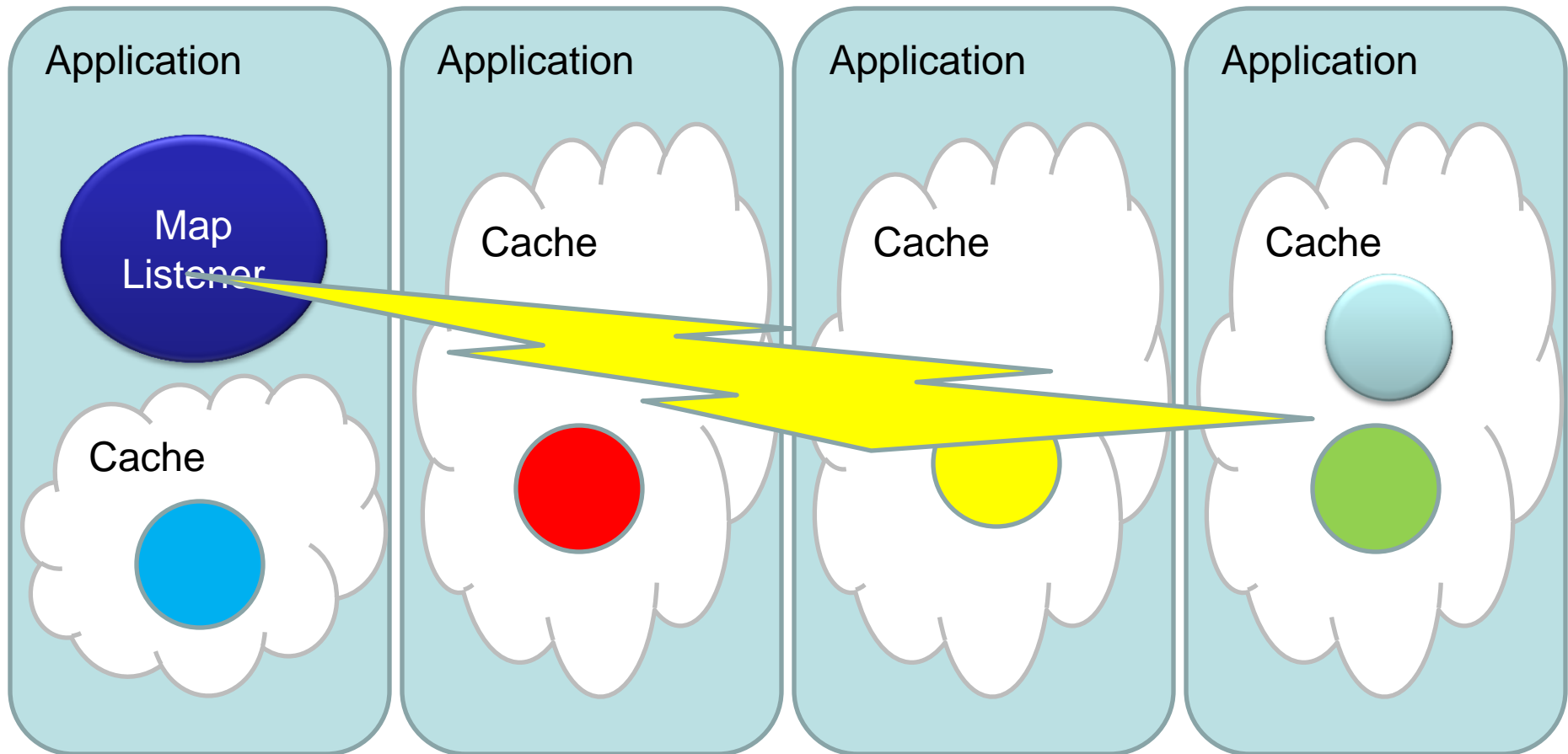
`EventSource(location)`

Function `onmessage`

Function `onopen`

Function `onerror`

Coherence Events Subsystem



Events Code

```
MapListener listener = new MultiplexingMapListener() {  
    public void onMapEvent(MapEvent evt) {  
        // do something with the trader  
    }  
};
```

```
NamedCache mapTrades = ...  
    Filter filter =  
        new AndFilter(new EqualsFilter("getTrader", traderid),  
            new EqualsFilter("getStatus", Status.OPEN));
```

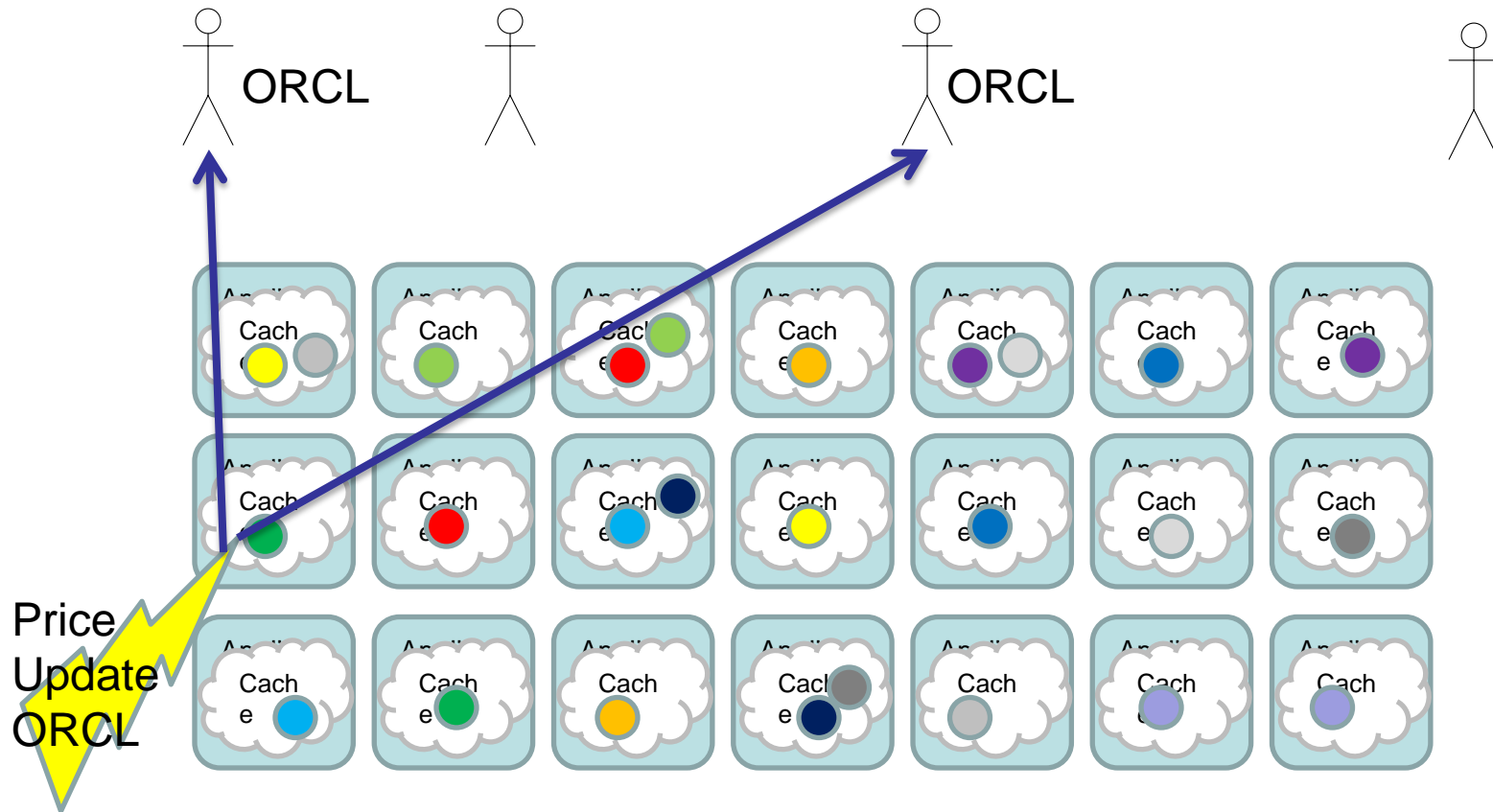
```
mapTrades.addMapListener(listener, new  
    MapEventFilter(filter), true);
```



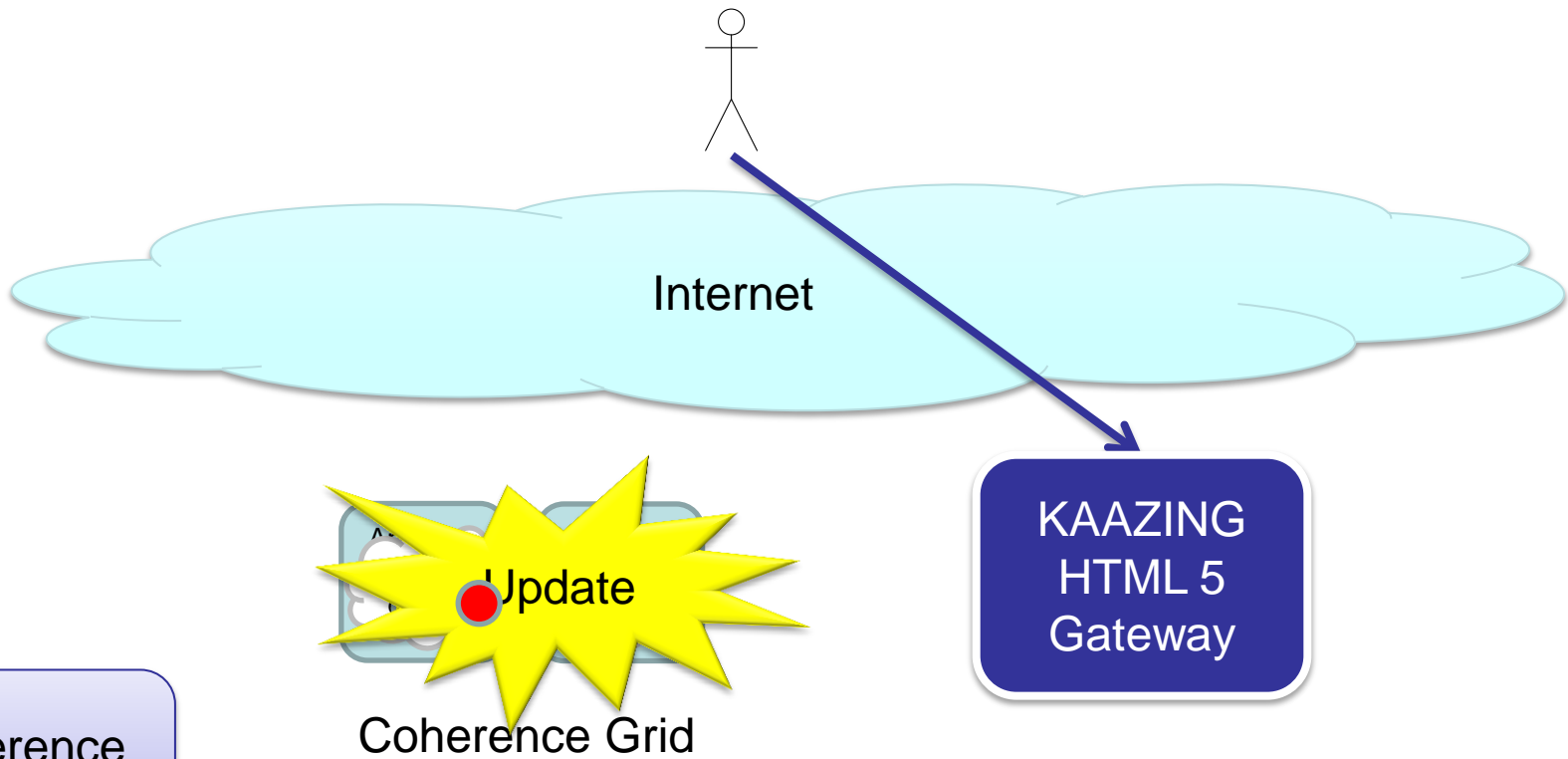
Events

- **E_ALL**
 - All Events
- **E_INSERTED**
 - Inserts
- **E_DELETED**
 - Deletes
- **E_UPDATED**
 - Updated
- **E_UPDATED_ENTERED**
 - Updated and now matched
- **E_UPDATED_LEFT**
 - Updated and now not matched
- **E_UPDATED_WITHIN**
 - Updated still matched
- **E_KEYSET**
 - All updated which change the matching set

Asynch Push to the UI



Demo Setup



Coherence
Client

Coherence Grid

KAAZING
HTML 5
Gateway



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ORACLE Gold
Partner
Specialized
Application Grid

Coherence Initialisation

```
String remoteURL = args[0];  
NamedCache cache =  
CacheFactory.getCache("conquery");  
  
KaazingStockClient client = new  
KaazingStockClient(remoteURL, "conquery");  
  
cache.addMapListener(new StockMapListener(client));
```



Map Listener

```
@Override
public void entryUpdated(MapEvent event) {
    if (event.getNewValue() instanceof Stock) {
        System.out.println("Stock : " + event.getKey() + " has been
updated");
        client.pushStockUpdate();
    }
}
```



Push to Kaazing

```
// Convert to JSON
JSONArray stocksJson = new JSONArray();
stocksJson.addAll(stocks);

// Push via UDP to KAAZING
URI remoteURI = URI.create(remoteURL);
SocketAddress remoteAddress = new
InetSocketAddress(remoteURI.getHost(),
remoteURI.getPort());
DatagramSocket socket = new DatagramSocket();
byte[] buf = message.getBytes();
DatagramPacket packet = new DatagramPacket(buf,
buf.length, remoteAddress);
socket.send(packet);
```



Graph JavaScript

```
var eventSource = new EventSource("http://ec2-46-137-53-185.eu-west-1.compute.amazonaws.com:8001/sse");

eventSource.onmessage = function(event) {
    var array = JSON.parse(event.data);
    for (var i = 0; i < array.length; i++) {
        var object = array[i];
        var x = (new Date()).getTime();
        var y = object.price;
        document.chart.series[i].addPoint([x,y], true, true);
    }
}
```


Thank you



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