Introducing ASP.NET SignalR - Push Services with Hubs

Hub Clients

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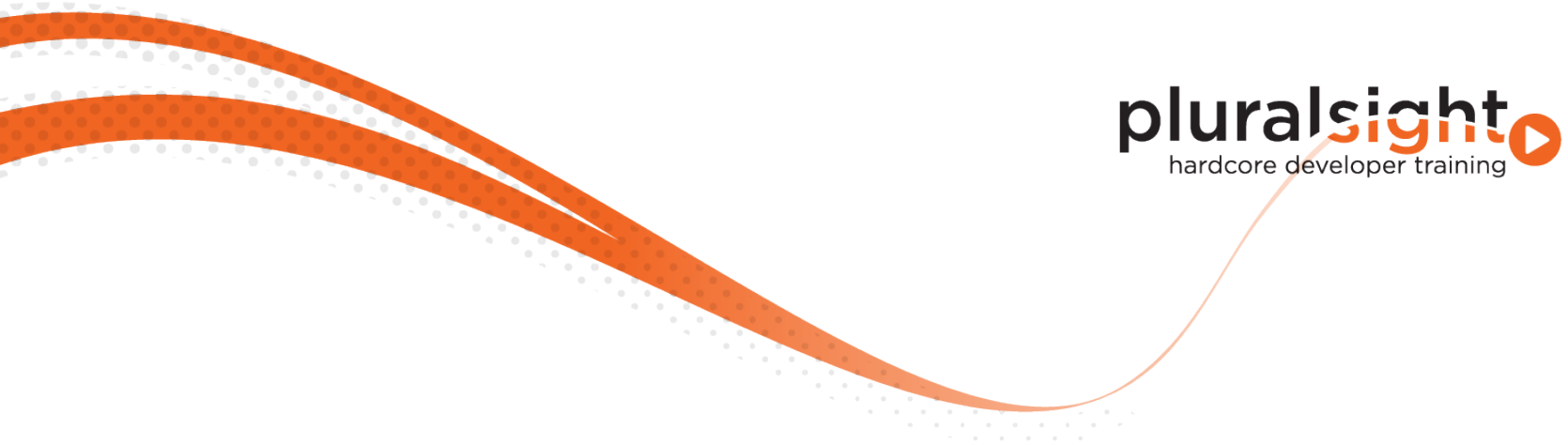

pluralsight
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Outline

- Hub consumers
- jQuery clients
- .NET clients

Hub consumers

- **Consumers can be classic client applications or other services/hubs**

- **SignalR provides a variety of client libraries**
- **Microsoft SignalR team**
  - .NET 4.0+
  - WinRT
  - Windows Phone 8
  - Silverlight 5
  - jQuery
  - C++
- **Community**
  - iOS native
  - iOS via Mono
  - Android via Mono

jQuery client

- **HTML5-based applications often use jQuery**

```
Install-Package Microsoft.AspNet.SignalR.JS
```

- **JSON-based wire protocol makes it easy to integrate with JavaScript**
- **SignalR jQuery plugin offers two approaches**
  - Proxy-based with generated proxy
  - Without proxy but 'late binding'

jQuery with proxy

- **Automatic proxy code via `/signalr/hubs`**
  - Script generated based on hubs declaration in .NET
  - 'Contract' if you will
- ***Optionally*: create static proxy file via *signalr.exe* tool**

- **Simple steps to get going**
  1. Get reference to hub
  2. Wire up events
  3. Start hub connection
  4. Call method
  5. Done

- **Hubs become properties on `$.connection`**
  - E.g. `$.connection.chatHub`
  - Hub name camel cased

DEMO

jQuery client with proxy

jQuery with proxy - II

- **`$.connection.hub.start` can take transport configuration**
  - Auto, or any of the supported persistent connection transports
- **`[hub].server.`*`abc`***
  - Call methods on the server hub

```
var chat;
chat = $.connection.chat;
$.connection.hub.start({ transport: 'longPolling'});
chat.server.joinRoom('private');
```

- **`[hub].client.`*`xyz`***
  - Define client-side methods to be invoked by server hub

```
var chat;
chat = $.connection.chat;
chat.client.newMessage = onNewMessage;
```

jQuery with proxy - III

- **Round-tripping data/state via `state` property**

- **`error` handler with error string on `$.connection.hub`**
- **Events for connection state handling**
- **Detect slow connections**
  - Based on 'keep alive'
  - `$.connection.hub.connectionSlow`

- **Client-side `logging` into JavaScript console**

- **Cross-domain support**
  - Web Sockets, CORS-enabled long polling, or JSONP long polling
  - Cross-domain URLs are auto detected
  - Enforce JSONP via `start` config option

DEMO

jQuery client with proxy

jQuery without proxy file

- **We can also use a late binding approach**
- **Simple steps to get going**
  1. Create hubConnection
     - Derived from `$.connection`
  2. Get dynamic proxy
  3. Wire up events based on method/event handler name via on
  4. Start & invoke methods based on method name via `invoke`

```
var connection = $.hubConnection();
var proxy = connection.createHubProxy('chat');
proxy.on('newMessage', onNewMessage);
connection.start();

proxy.invoke('sendMessage', $('#message').val());
```

- **Same connection-related event handlers**
- **Cross-domain support same as with static proxy**

DEMO

jQuery client without proxy file

.NET client

- **Client NuGet package contains binaries for all supported .NET flavors**
  - .NET 4.x, SL5
  - WP8, WinRT

```
Install-Package Microsoft.AspNet.SignalR.Client
```

- **Mental model resembles proxy-less JavaScript approach**
- **Simple steps to get going**
  1. Create `HubConnection`
  2. Create hub proxy via `CreateHubProxy`
  3. Wire up event handlers via `On`
  4. Start connection with `Start`
  5. Call methods via `Invoke`

```
var hubConnection = new HubConnection("http://localhost/ps");
var chat = hubConnection.CreateHubProxy("chat");

chat.On<string>("newMessage", …);
hubConnection.Start().Wait();
…
```

.NET client - II

- **Connection-related events on `HubConnection`**
  - Opened
  - Closed
  - Error
  - Received
  - Reconnected
  - Reconnecting
  - StateChanged

DEMO

.NET 4.5 client & Windows Phone 8 client

Summary

- **NuGet packages for various client frameworks**
- **Easy-to-use programming models for jQuery**
  - With or without static proxy
- **.NET clients for .NET Framework, Windows Phone 8, Silverlight 5, and WinRT**
- **Hook into connection events to build non-fragile consumers**