Building Real Time Applications with ASP.NET SignalR 2.0

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Agenda

- Overview of SignalR
- Configure SignalR and Visual Studio
- Hubs
- Connections
- Deployment

Overview: What is SignlaR?

- Simplifies real time web development
- ASP.NET Server and JavaScript Client Libraries
- Real-time persistent connection abstraction over HTTP

"Incredibly simply real-time web for .NET"
– Damian Edwards, SignalR team

- Simplicity
- Reach
- Performance

Overview: What is SignalR?

- OWIN http://owin.org/
- Katana https://katanaproject.codeplex.com/

Overview: Why Use SignalR?

- Types of Apps
  - Games, leaderboards
  - Social Applications
  - Business Collaboration
  - Stocks
  - Chat, messaging
  - Dashboards
  - Real time forms
  - Auctions
- Anything that needs live data

Overview: Where you can use SignalR

- HTML & ASP.NET apps
- Windows Store & Phone
- Any JavaScript client

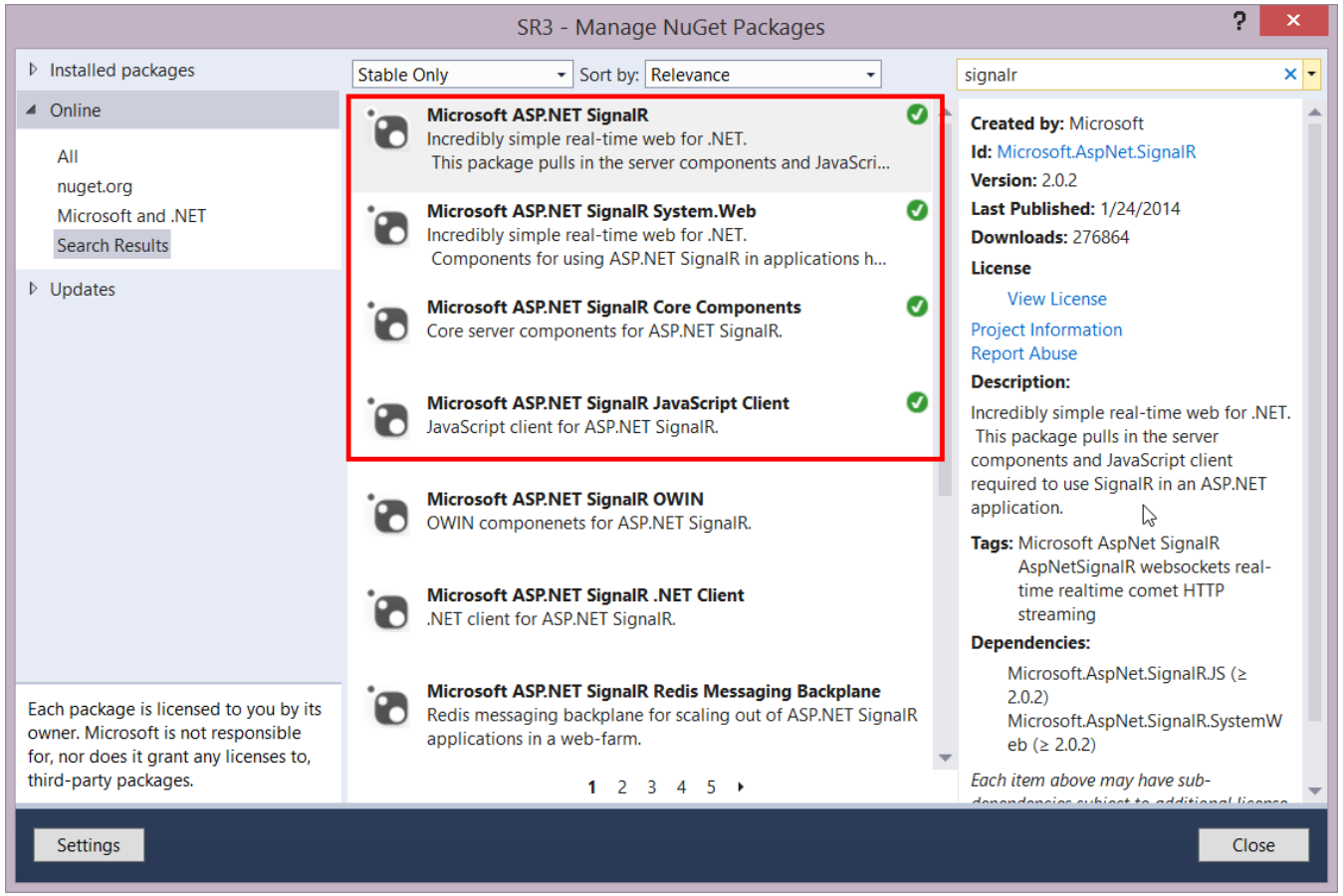
Overview: SignalR in Action

http://shootr.signalr.net

http://JabbR.net

Configure SignalR & Visual Studio

- http://www.asp.net/signalr
- NuGet package
  - OWIN References
  - Scripts
- GitHub download



SignalR Startup

```
using Owin;
using Microsoft.Owin;
[assembly: OwinStartup(typeof(SR3.Startup))]
namespace SR3
{
    public class Startup
    {
        public void Configuration(IAppBuilder app)
        {
            app.MapSignalR();
        }
    }
}
```

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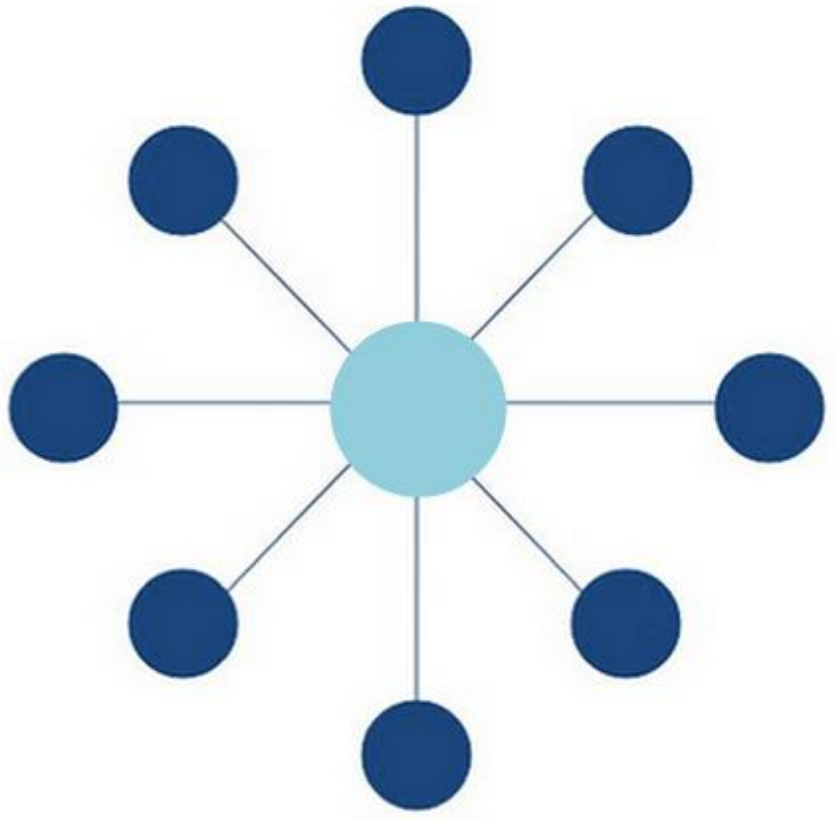
- SignalR setup

Overview: SignalR Namespaces

- Microsoft.AspNet.SignalR.Hub
- http://msdn.microsoft.com/en-us/library/dn440565(v=vs.118).aspx

Hubs

- Microsoft.AspNet.SignalR.Hub class
- Server Side Library
- Allows for duplex connectivity



Hubs

- Declare public methods on a hub so that clients can call them.
- Use the **Microsoft.AspNet.SignalR.Hub.Clients** property to access all clients connected to this hub.
- Call a function on the client
- HubName attribute

Hub Events

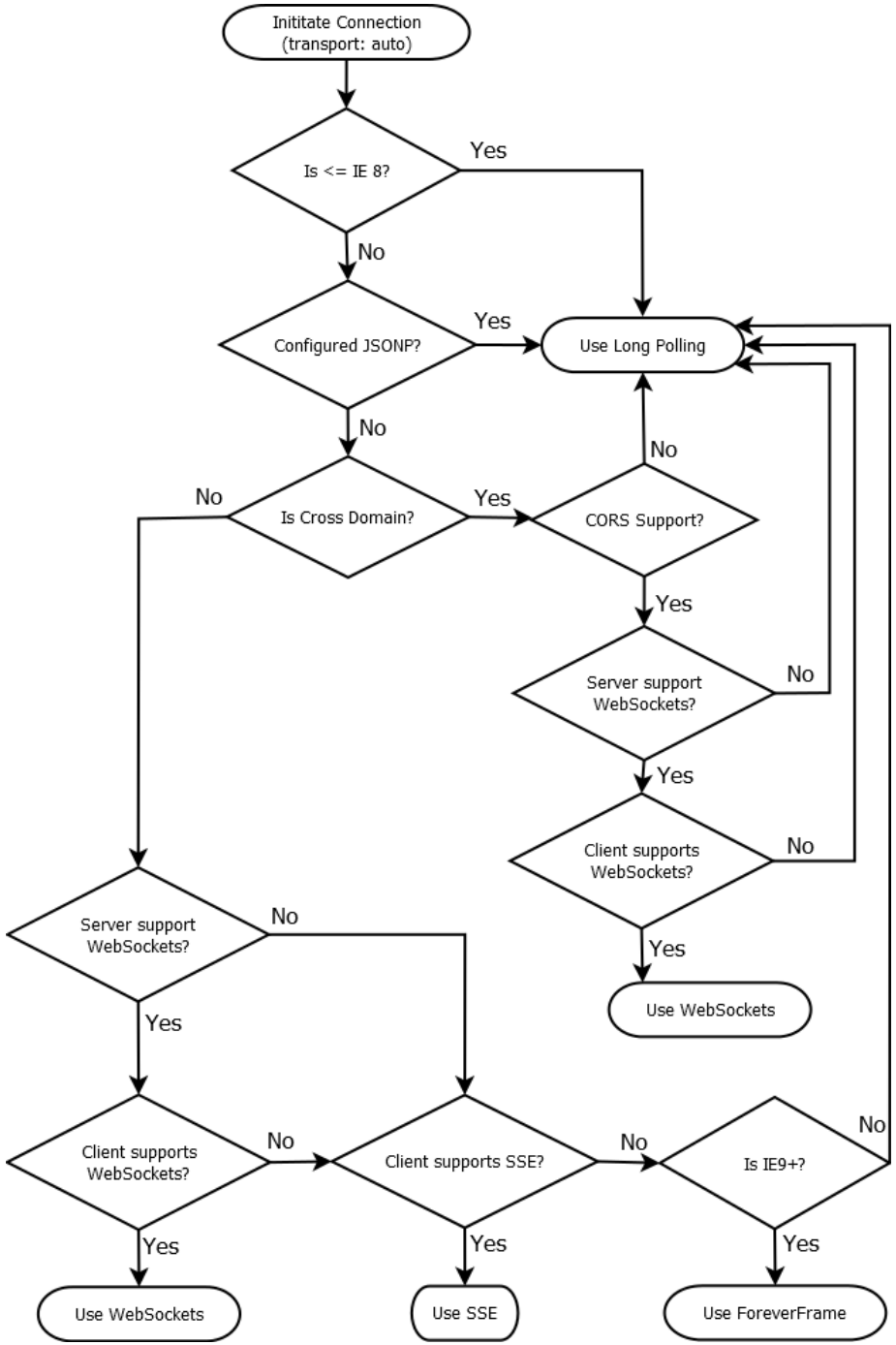
```
public override Task OnConnected()
{
    var id = Context.ConnectionId;
    return base.OnConnected();
}
```

Hubs: Transports

- A full duplex, TCP based protocol
- Is not HTTP
- Standardized RFC in 2011

Hubs: Transports

- Transports
  - WebSockets is the only transport that establishes a true persistent, two-way connection between client and server.
  - SSE/Events
  - AJAX Long Polling
  - Forever Frame (IE only)
- Transport selection process
- $.connection.hub.logging = true; // to determine transport



From this SO thread
http://stackoverflow.com/questions/16983630/how-does-signalr-decide-which-transport-method-to-be-used

From this SO user, thomaswr
http://stackoverflow.com/users/2207506/thomaswr

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- Hubs

SignalR Client Script Libraries

SignalR depends on jQuery

```
@Scripts.Render("~/bundles/jquery")
```

SignalR script references

```
<script src="~/Scripts/jquery.signalR-2.0.2.min.js"></script>
<script src="~/signalr/hubs"></script>
```

Connections

- Client Side
- PersistentConnection
- $.connection

Connections: Communications

- Hub to Connection
- Connection to Hub
- Connection to Connection
- Specific Connections

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- Connecting to Hubs

```
public class ChatHub : Hub
{
    public void Send(string name, string message)
    {
        // send to all
        Clients.All.sendMessage(name, message);

        // send to specific client
        Clients.Client(Context.ConnectionId).sendMessage(message);

        // send only to caller
        Clients.Caller.sendMessage(name, message);

        // send to all but caller
        Clients.Others.sendMessage(name, message);

        // excluding some
        Clients.AllExcept(connectionId1, connectionId2).sendMessage(name, message);

        // send to a group
        Clients.Group(groupName). sendMessage(name, message);
    }
}
```

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- Connecting to specific Hubs

Send data via QueryString

- Context.Request
  - Headers
  - QueryString

```
// .NET client
var connection = new HubConnection("http://localhost:8080/", "data=12345");

// JavaScript client
 $.connection.hub.qs = "data=12345";

// Hub server code
var qs = Context.Request.QueryString["myInfo"].ToString();
```

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- Using QueryStrings

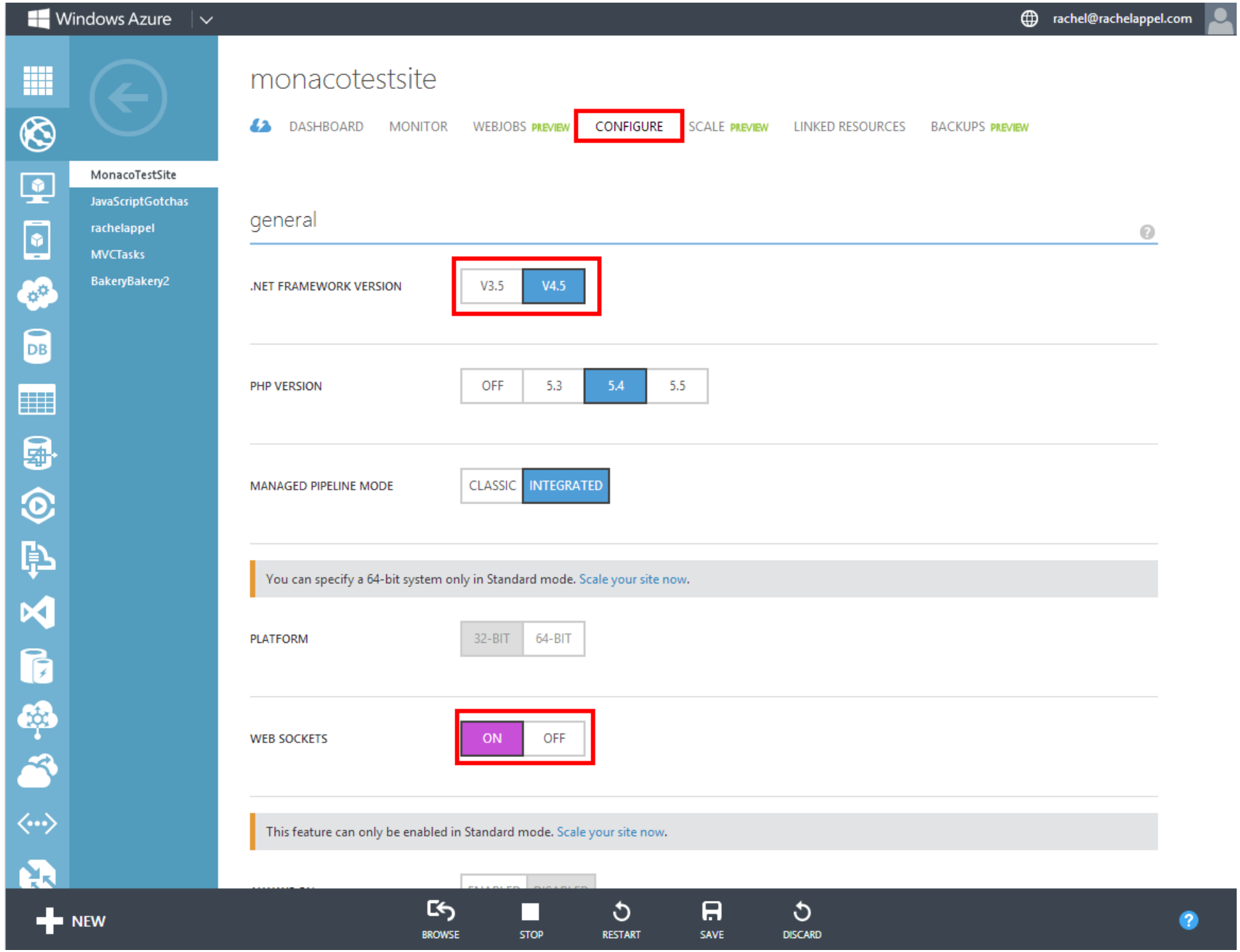
Connection Status

- Notify the client of slow or unavailable connectivity

```
$.connection.hub.connectionSlow(function () {
    notifyUserOfConnectionProblem();
})
$.connection.hub.reconnecting(function () {
    notifyUserOfReconnection();
});
```

SignalR Deployment

- Azure SDK
- Deployment To-Do's
  - Enable WebSockets
  - Enable V 4.5
- Multiple Azure instances
  - http://www.asp.net/signalr/overview/signalr-20/getting-started-with-signalr-20/using-signalr-with-windows-azure-web-sites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BACKUPS PREVIEW
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V3.5
V4.5
PHP VERSION
OFF
5.3
5.4
5.5
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CLASSIC
INTEGRATED
You can specify a 64-bit system only in Standard mode. Scale your site now.
PLATFORM
32-BIT
64-BIT
WEB SOCKETS
ON
OFF
This feature can only be enabled in Standard mode. Scale your site now.
NEW
BROWSE
STOP
RESTART
SAVE
DISCARD

Thank You!

Rachel's Website

http://rachelappel.com

MSDN Modern Apps Column

http://msdn.microsoft.com/en-us/magazine/ee532098.aspx?sdmr=RachelAppel&sdmi=authors

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