Real-time Communication with SignalR

THRIVE CONFERENCE

thriveconf.com

Christian Nagel

- Training

- Coaching

- Consulting

- Development

- Microsoft MVP

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Topics

- What's SignalR
- Creating a Server and Client
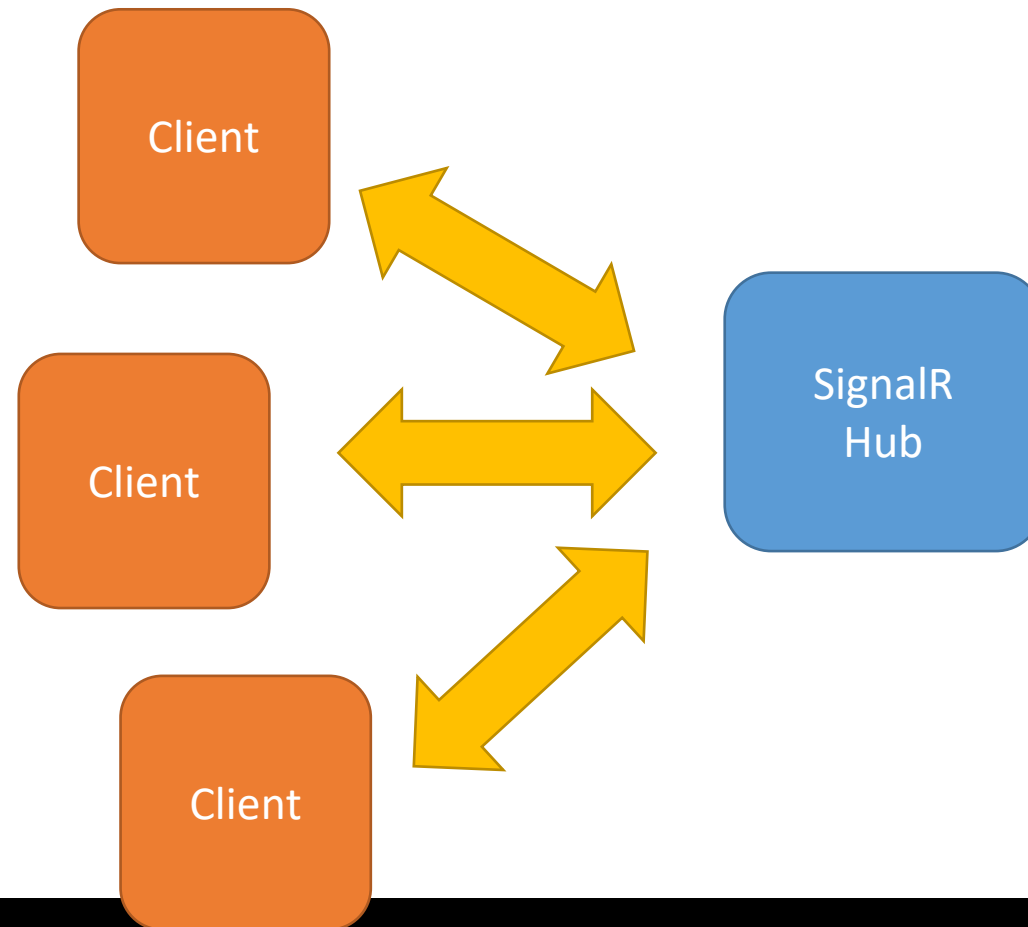- Asynchronous Streaming

Intro to SignalR

What's SignalR?

Real-time functionality for applications

Push content to clients

Overview

Transports

HTML 5 transports

- WebSocket
- Server Sent Events (EventSource)

Comet transports

- Forever frame (IE only)
- Ajax long polling

Serialization

- JSON
  - Enabled by default
- MessagePack
  - Binary and compact
  - Smaller messages than JSON

Libraries

- Server
  - ASP.NET Core
- Client
  - JavaScript
  - .NET
  - Java
  - C++ (unsupported)
  - Swift (unsupported)

Demo – Chat Application

Implementing a Server

- Configure DI
- Configure Middleware
- Create a Hub

```
var builder = WebApplication.CreateBuilder(args);
builder.Services.AddSignalR();
var app = builder.Build();

app.MapHub<ChatHub>("/chat");

app.MapGet("/", () => "Use a SignalR client");

app.Run();
```

Hub

- Hub base class
- Overrides on connect, disconnect of clients
- Hub operations
- Access the SignalR context
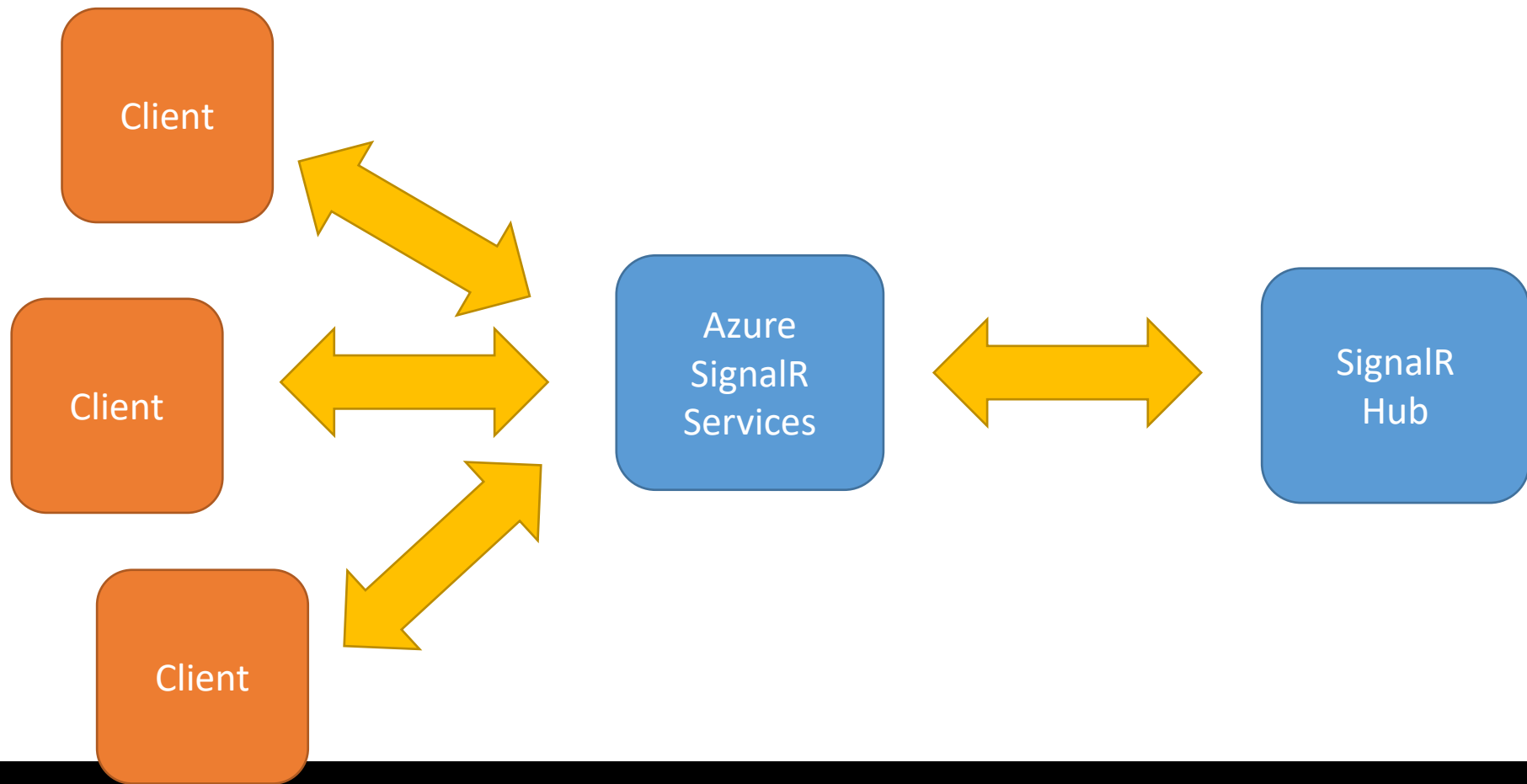- Send message to all clients, a group of clients, or one client (*IHubCallerClients*)

Demo – Chat with Groups
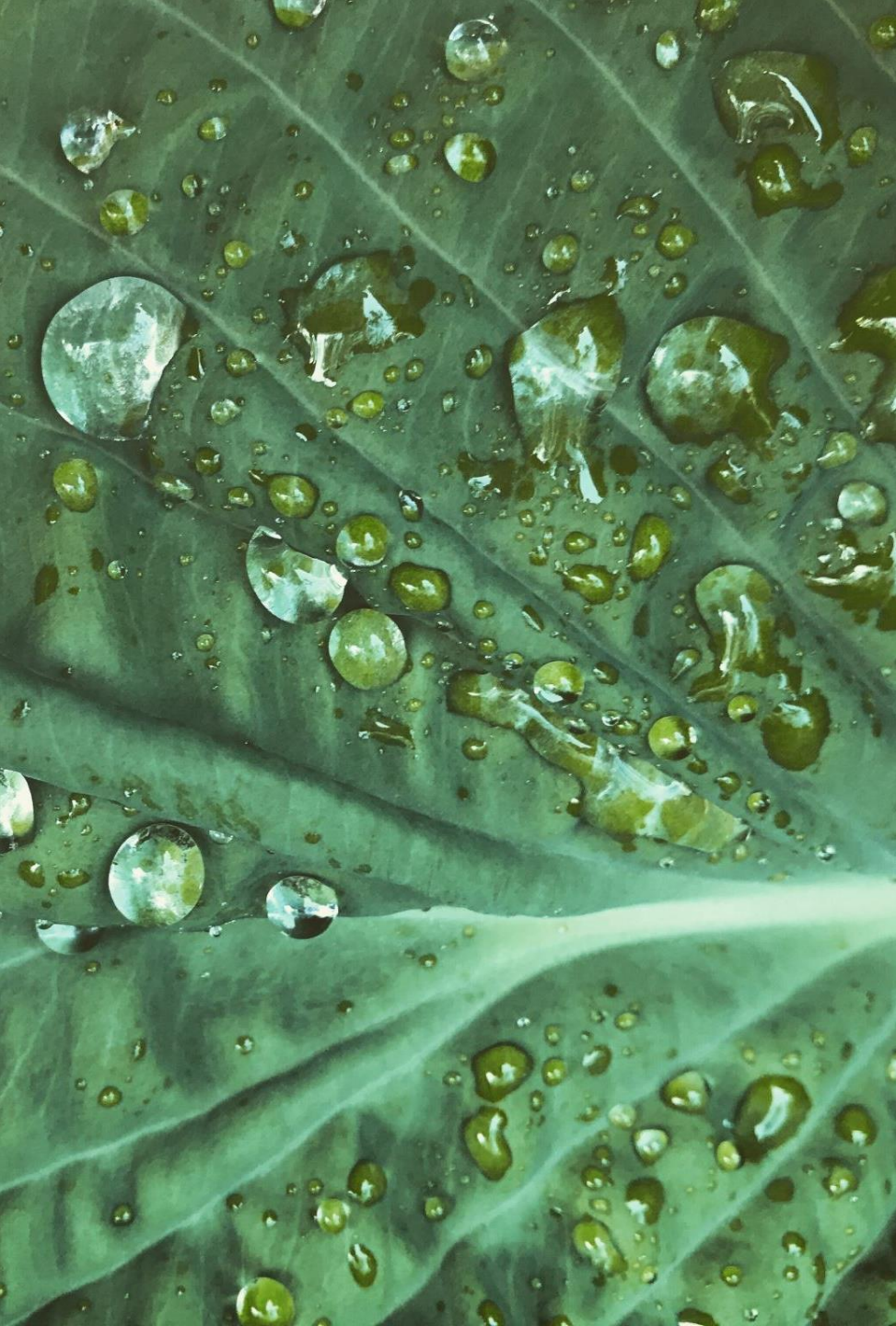
Hosting SignalR

- Azure App Services
- Azure Container Apps

Reduce the load of your server

Asynchronous Streaming

.NET Asynchronous Streaming

- Stream a list of asynchronous results

- IAsyncEnumerable<T>

- IAsyncEnumerator<T>

- IAsyncDisposable

- Enhancements with yield and foreach

Async Streaming with SignalR

- Server
  - Create Channel
  - Return ChannelReader
  - Send data using ChannelWriter
- Client
  - StreamAsChannelAsync
  - TryRead to read from the channel

- Server
  - Return IAsyncEnumerable
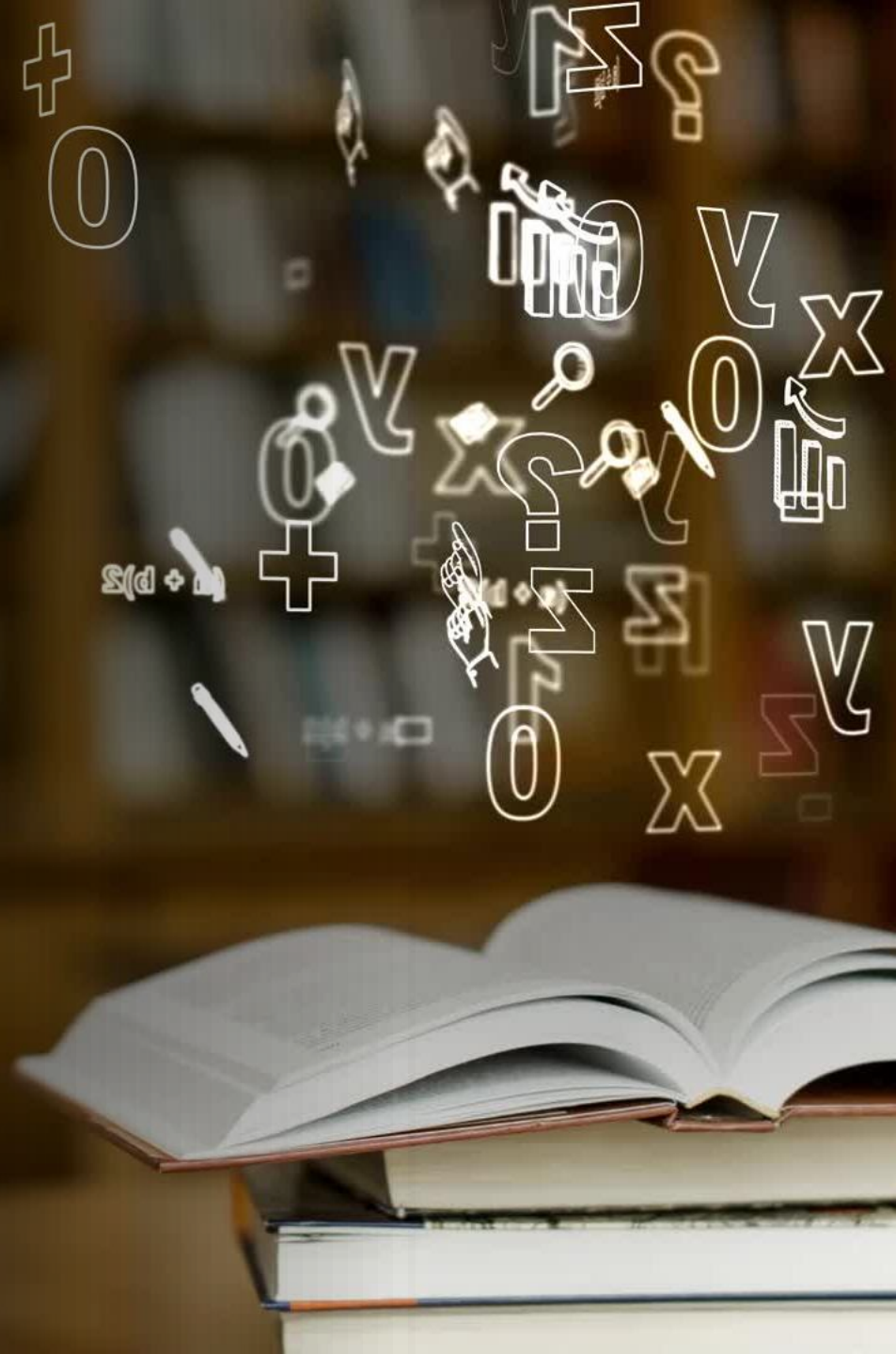 - Use yield statement

- Client
  - StreamAsync
  - await foreach

Demo – Async Streaming

Summary

- Easy to use library for real-time communication
- Asynchronous streaming

More Information

- https://csharp.christiannagel.com
- https://github.com/ProfessionalCSharp
- https://github.com/cnilearn/thrive2022

THANK YOU

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