DotNet 2021

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#DotNet2021

22nd June 2021

.NET 6 Cloud Native

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#DotNet2021

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Principal Program Manager

I am a PM on the .NET team at Microsoft and have worked on .NET Core from the beginning.

I am the manager of a PM team that are responsable for a whole bunch of .NET app models, most relevant to this talks is that the team builds ASP.NET Core.

@condrong

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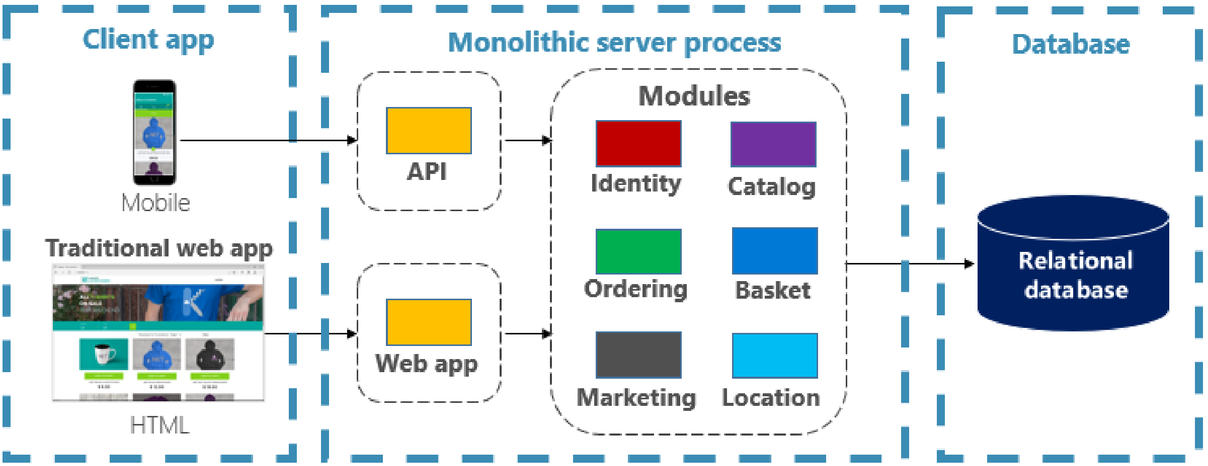
Cloud Native



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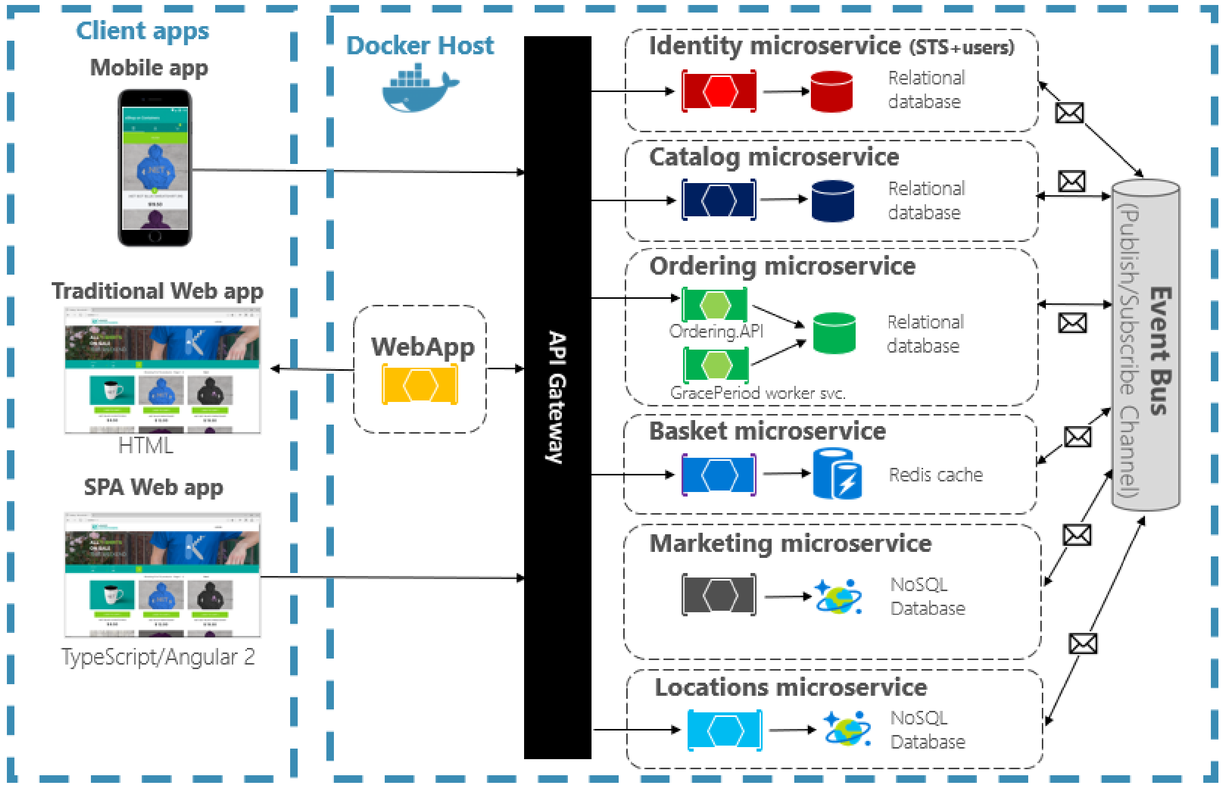


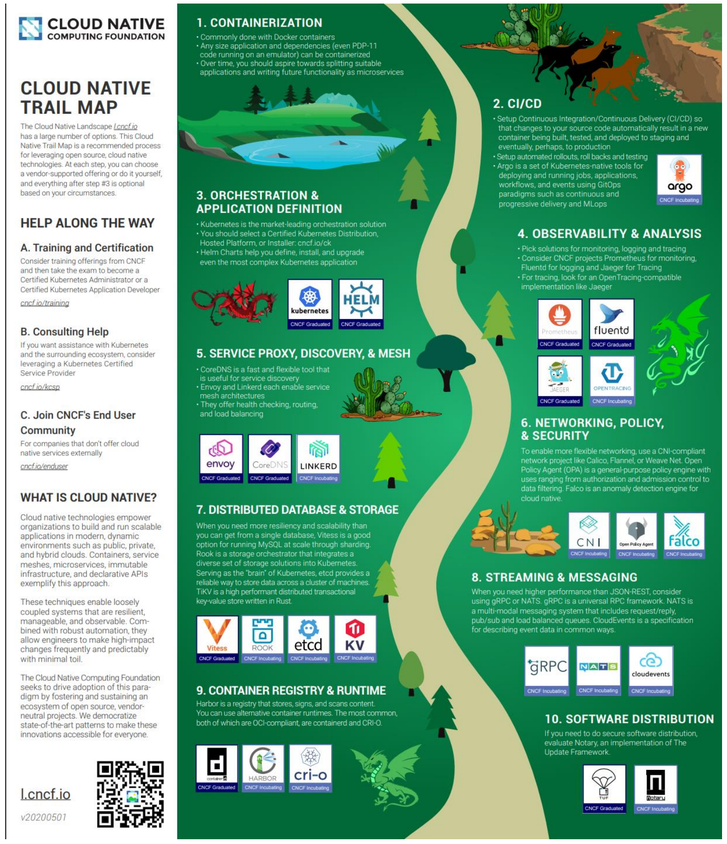
What is Cloud Native?

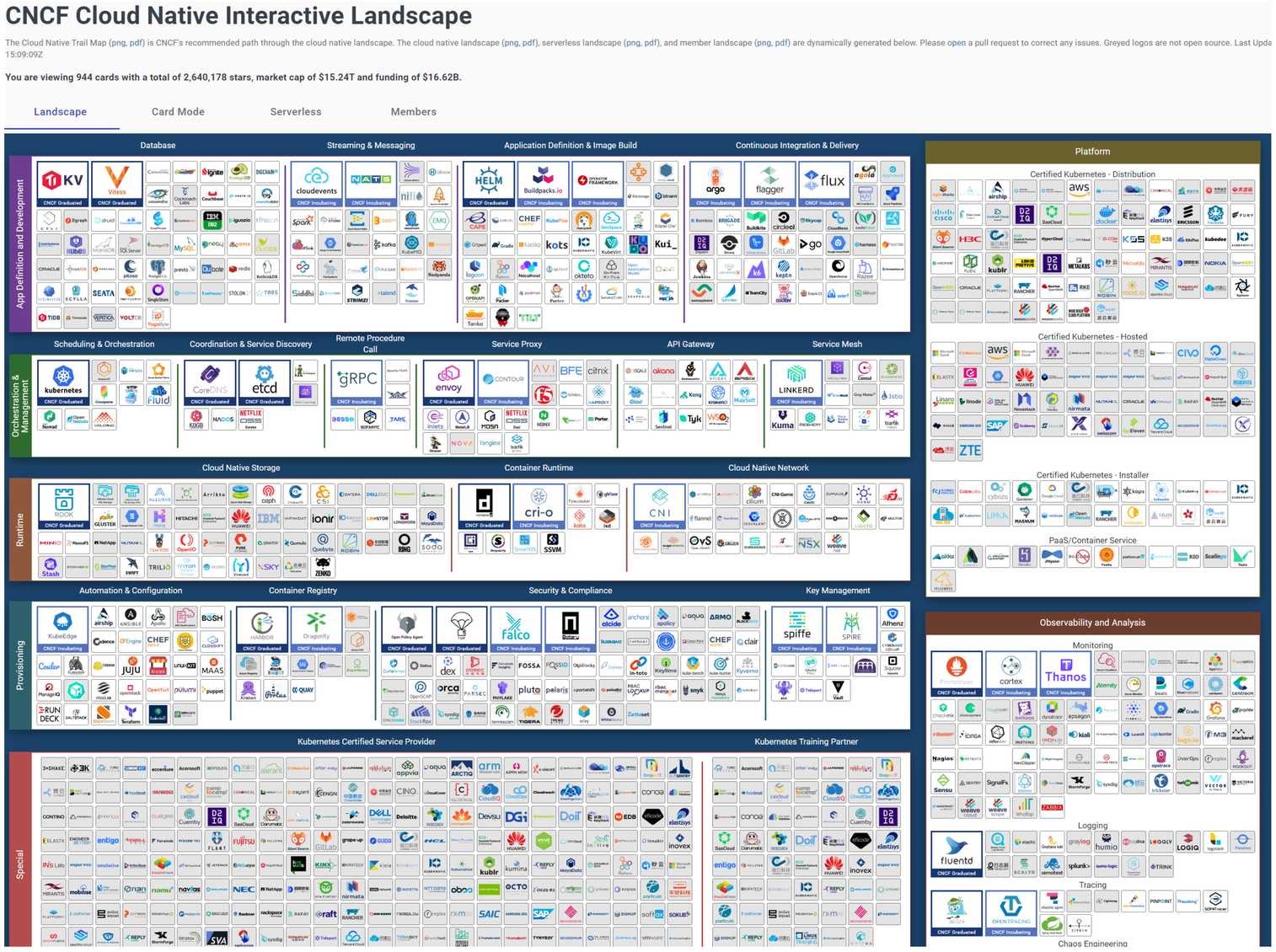
Isn’t it just all buzz words that don’t mean anything?

- First started using it to mean the opposite of lift and shift, i.e. an app/solution that was built with the cloud in mind.
  - 12 factor
  - Embrace failure
  - SPA (expensive compute cheap storage)

What is Cloud Native?

Somehow turned into this





Cloud Native

Why? How?

- **Resilience and Scalability:** Utilizing the cloud to reduce risk of outages or availability
- **Efficiency:** Architect for the cloud to get the most efficient, cheapest to run, app
- **Velocity:** Faster conversion of ideas to code

Cloud Native

Why? How?

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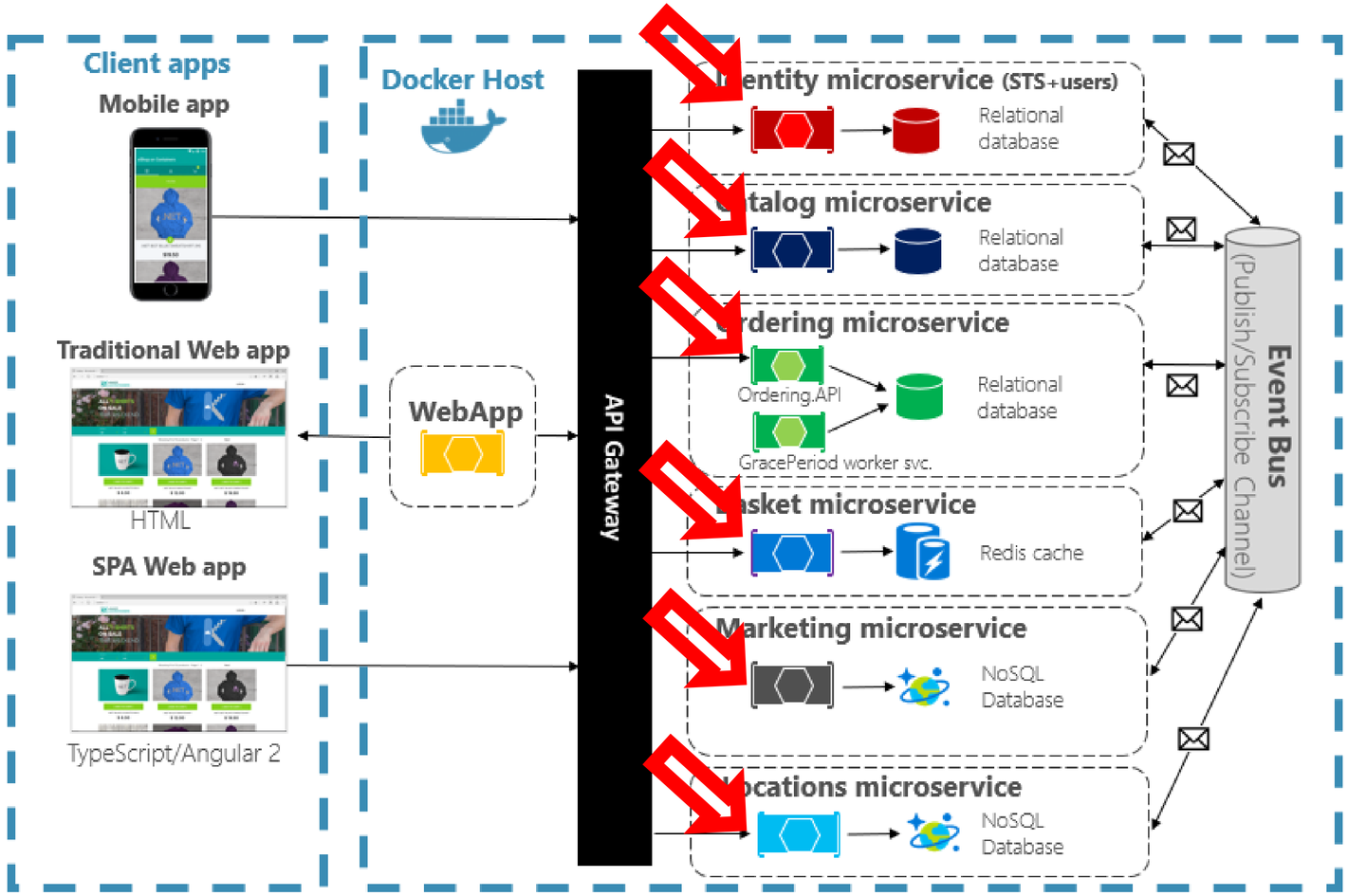
- If you want all these things, then technology seemingly unrelated to the cloud becomes critical such as CI/CD.

- When talking about Cloud Native and .NET we are generally talking about things in .NET that make it easier/better to do the kinds of things people do when they are trying to achieve all of these. Microservices, Containers, Kubernetes, Observability

Cloud Native

APIs

- Minimal hosting and map for more concise services
- gRPC load balancing, better load balancing in k8s clusters.
- Streaming JSON serialization
- Lots of work on the common slide coming later



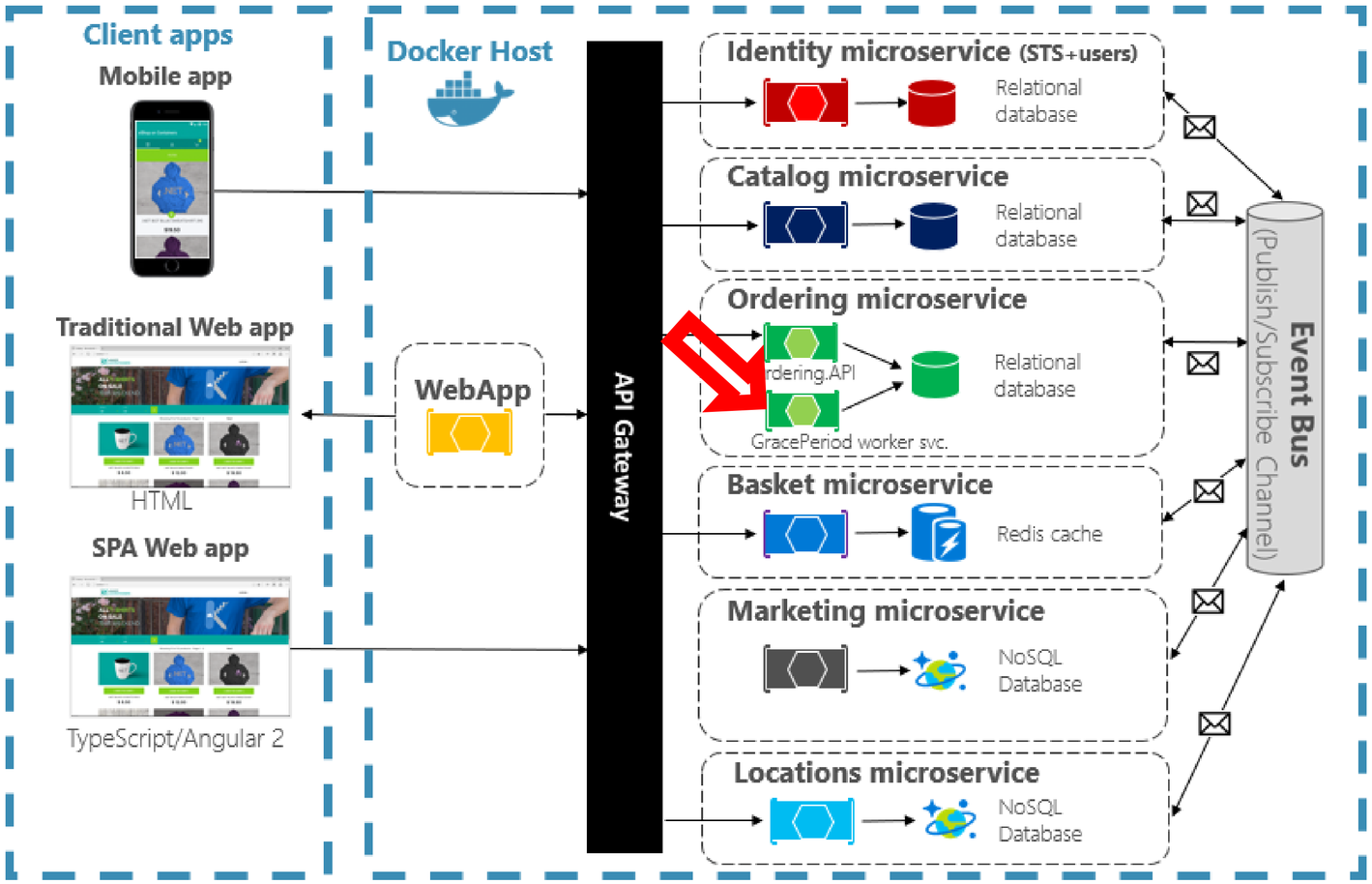
Minimal Apps

```
var builder = WebApplication.CreateBuilder(args);
await using var app = builder.Build();

if (app.Environment.IsDevelopment())
{
    app.UseDeveloperExceptionPage();
}

app.MapGet("/", () => "Hello World!");

await app.RunAsync();
```

Cloud Native

Workers

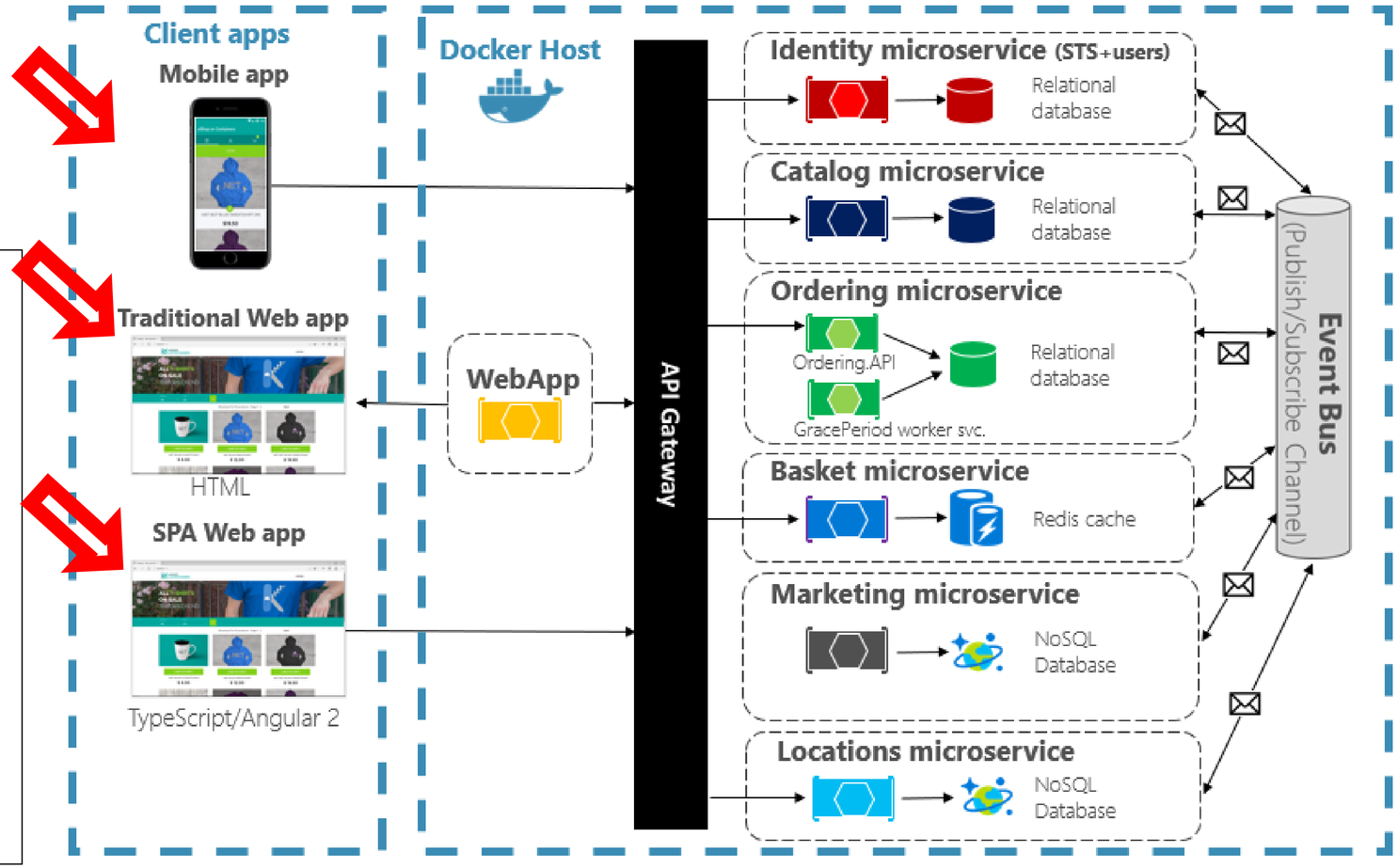
- Not a lot of explicit work here but I want to call out that the template exists and we expect to be doing some work here in the not too distant future.



Cloud Native

Client Apps

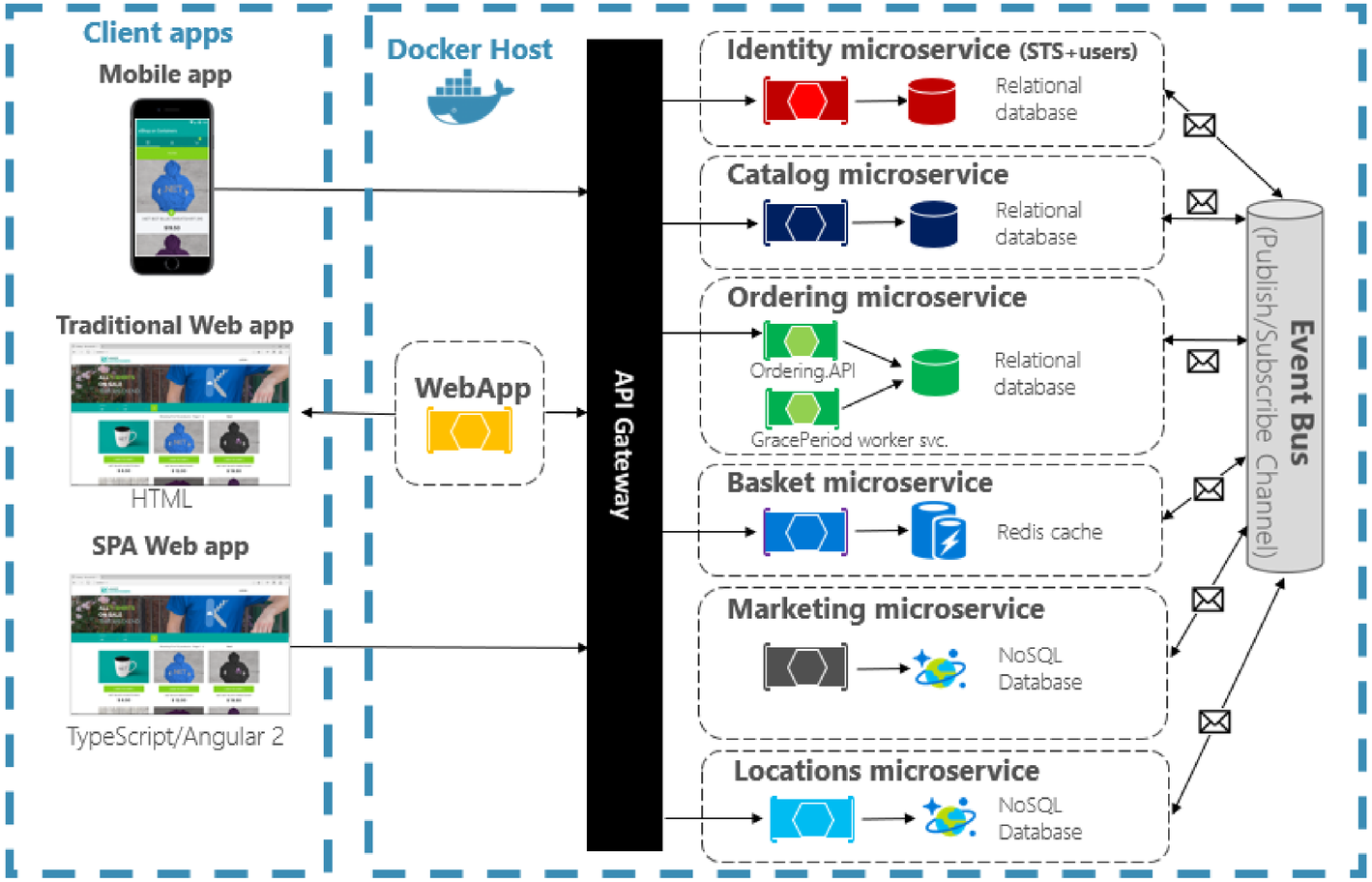
- Not commonly thought of as part of Cloud Native but they are part of the overall solution.
- Blazor
- Other SPAs
- MAUI



Cloud Native

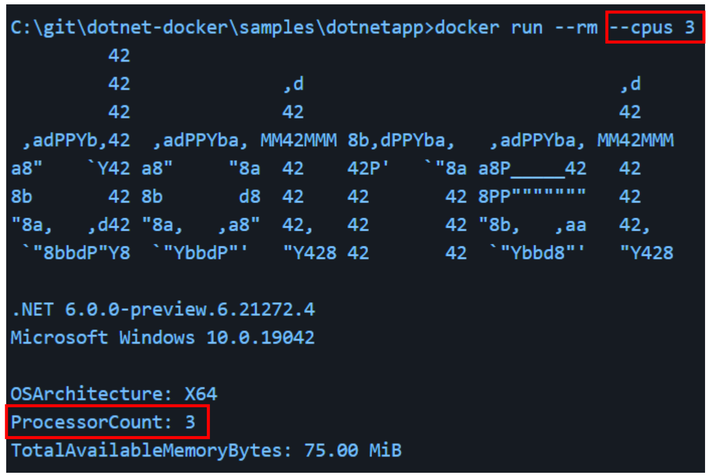
Common

- Data Perf: EF Core 6.0 performance is now 70% faster on the industry-standard TechEmpower Fortunes benchmark, compared to 5.0.
- IO perf writing 1mb is 2x faster reading is 4x faster
- C# language features
  - Improved Lambdas, Global Usings, Top Level Statements
- Constrained Environments
- Open Telemetry
- Improved Single File
- Logging Source Generators



Container Improvements

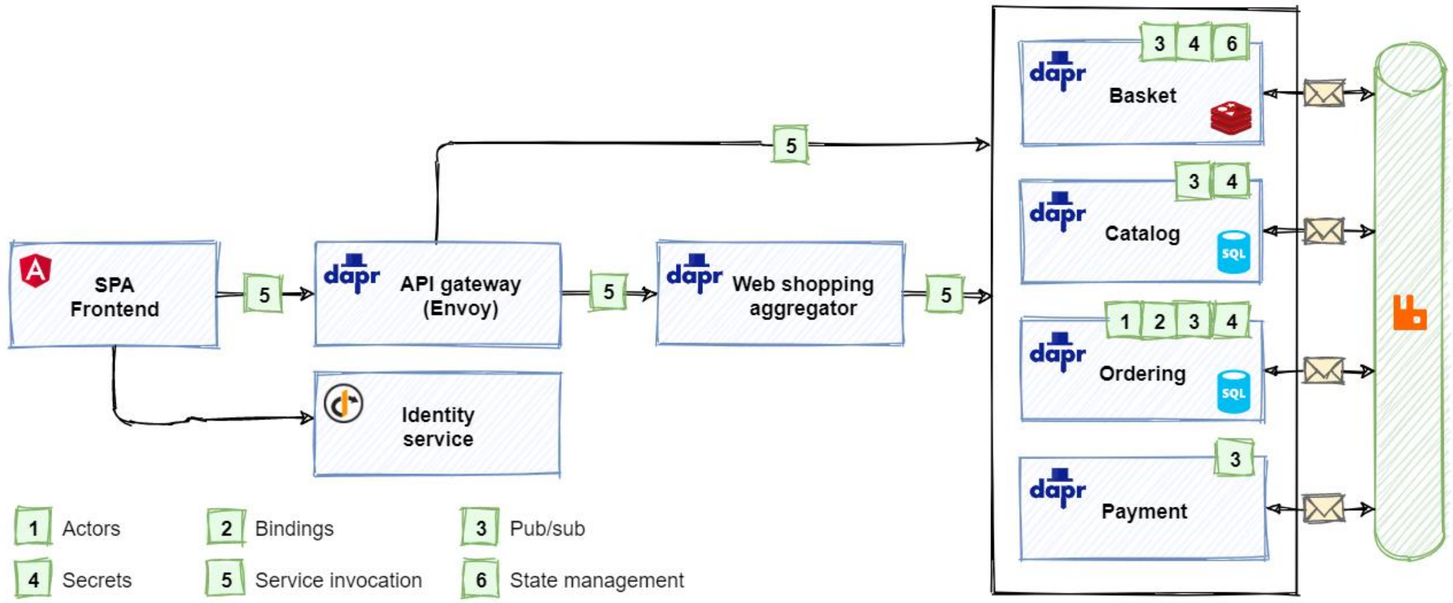
- Honor CPU settings for Windows containers (worked on Linux before .NET 6)
- Flexibility in what Environment.ProcessorCount returns
  - Lots of algorithms in .NET tune themselves according to the value of ProcessorCount. i.e. GC, Kestrels IO threads, concurrent data structures behavior.
  - In 6 ProcessorCount returns the value of –cpus but you can change that to have it return a specific value to aggressively tune things.



Cloud Native

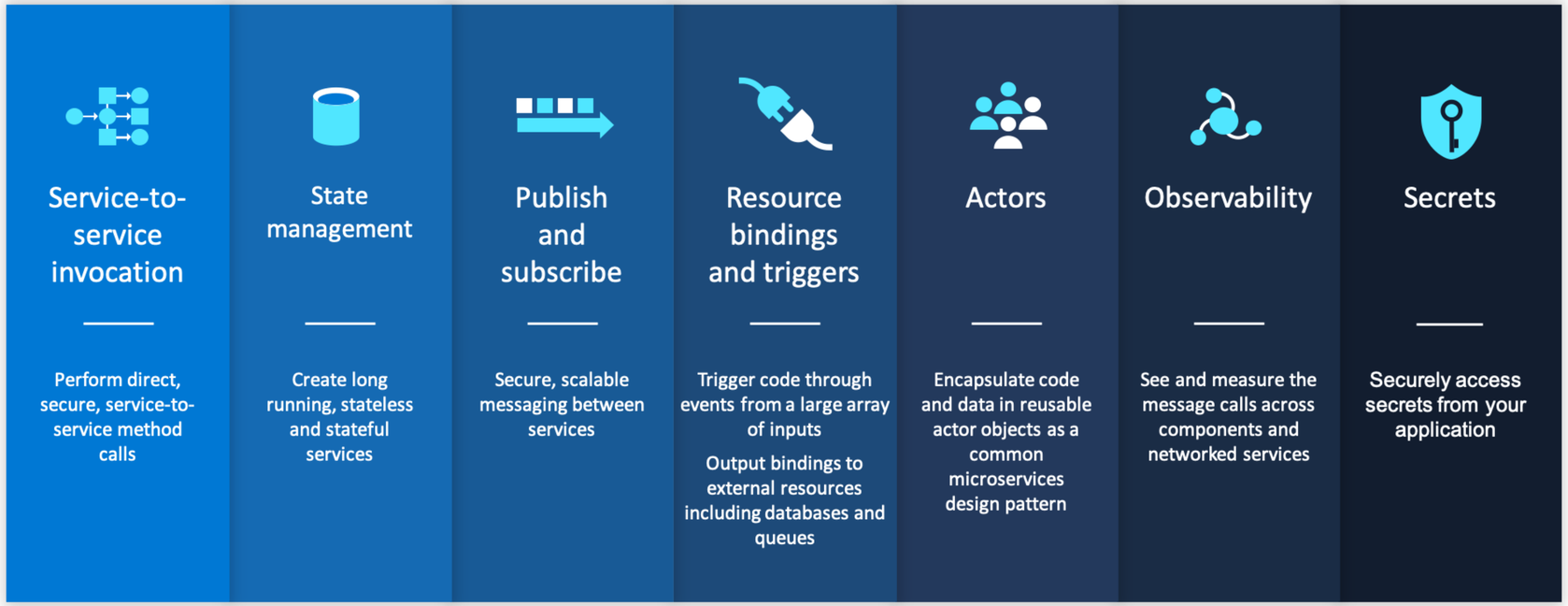
DAPR

- DAPR aims to solve common Cloud Native problems with a set of polyglot building blocks.
- https://github.com/dotnet-architecture/eShopOnDapr



DAPR

Use what makes sense



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Thanks and ...
See you soon!

Thanks also to the sponsors. Without whom this would not have been posible.