Portable Multi-cloud Apps with Dapr

Nilesh Gule @nileshgule

$whoami

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        "linkedin" : "https://www.linkedin.com/in/nileshgule",
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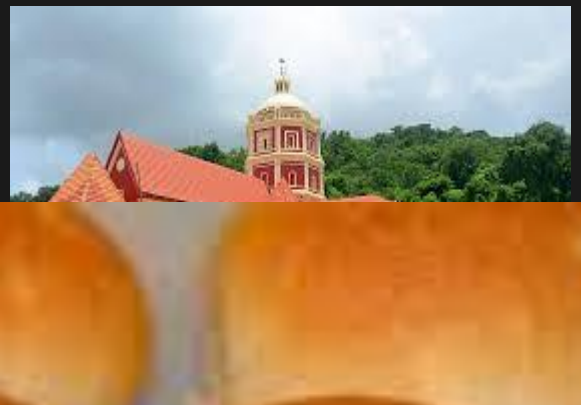
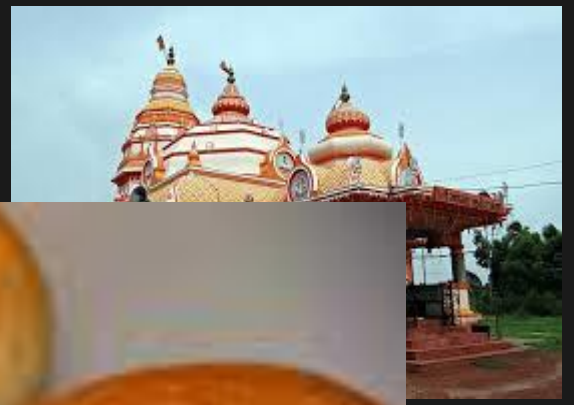
        "likes" : "Technical Evangelism, Cricket",
}
```

INDIA
Goa
Arabian Sea
Bay of Bengal





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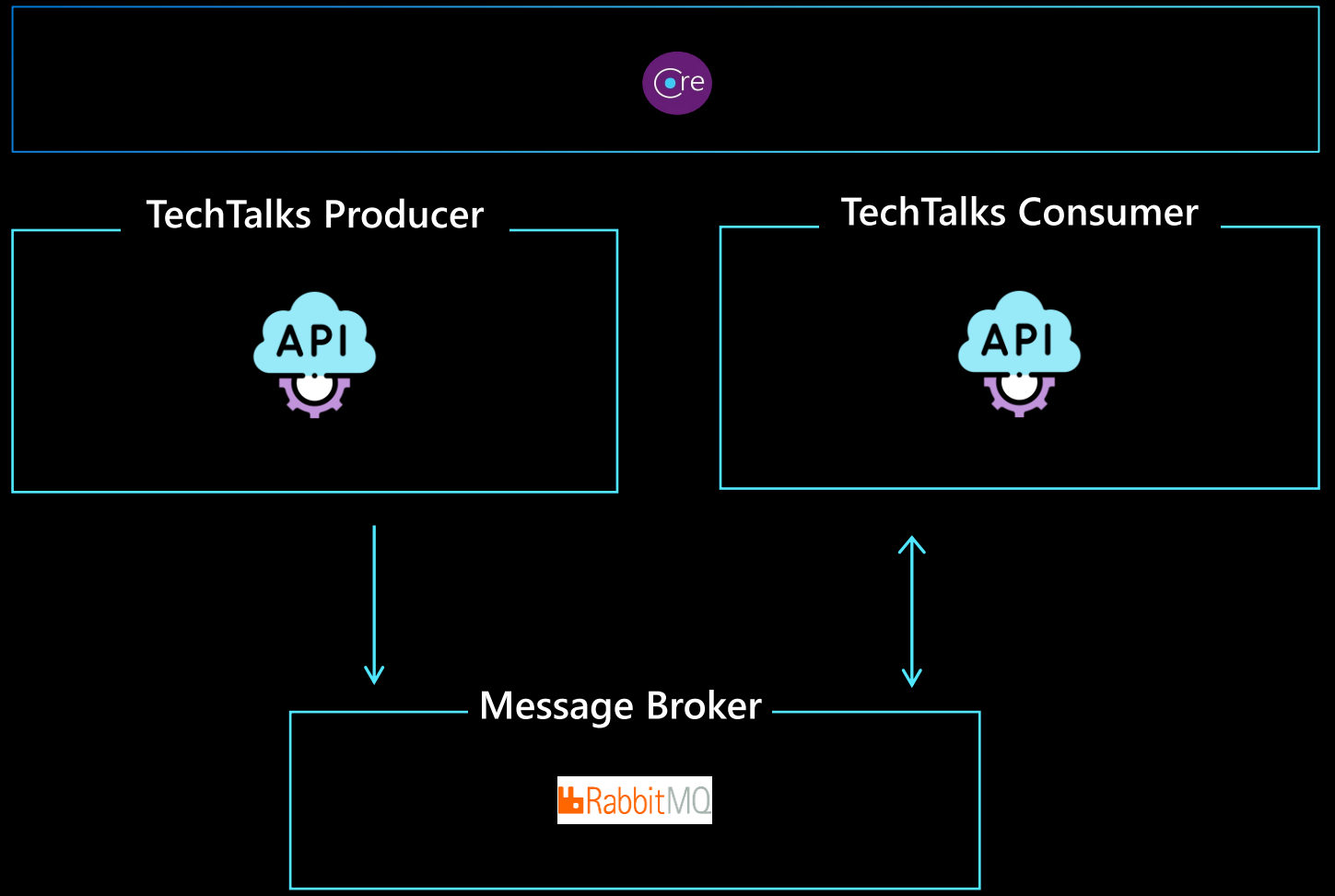
TechTalks Application Architecture – Without Dapr



Features of Cloud Native Apps

Microservices

Purpose driven modular components

Containerized

Lightweight, self-contained

API driven

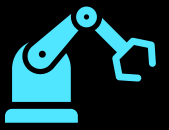
Loosely coupled, integrates using open standards

Resilient

Self healing, recovers faster from failure

Scalable

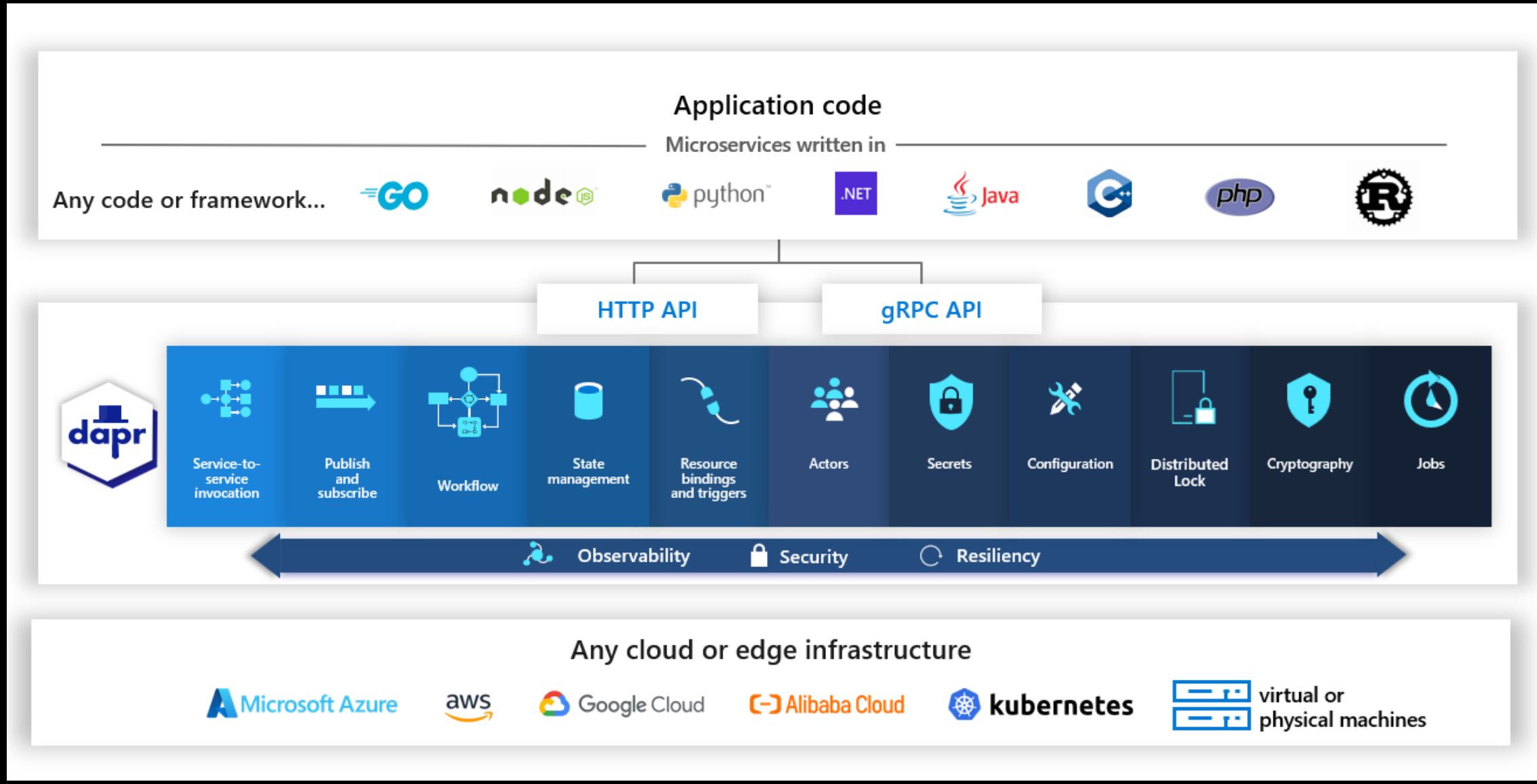
Cost optimized to run with right sized resources



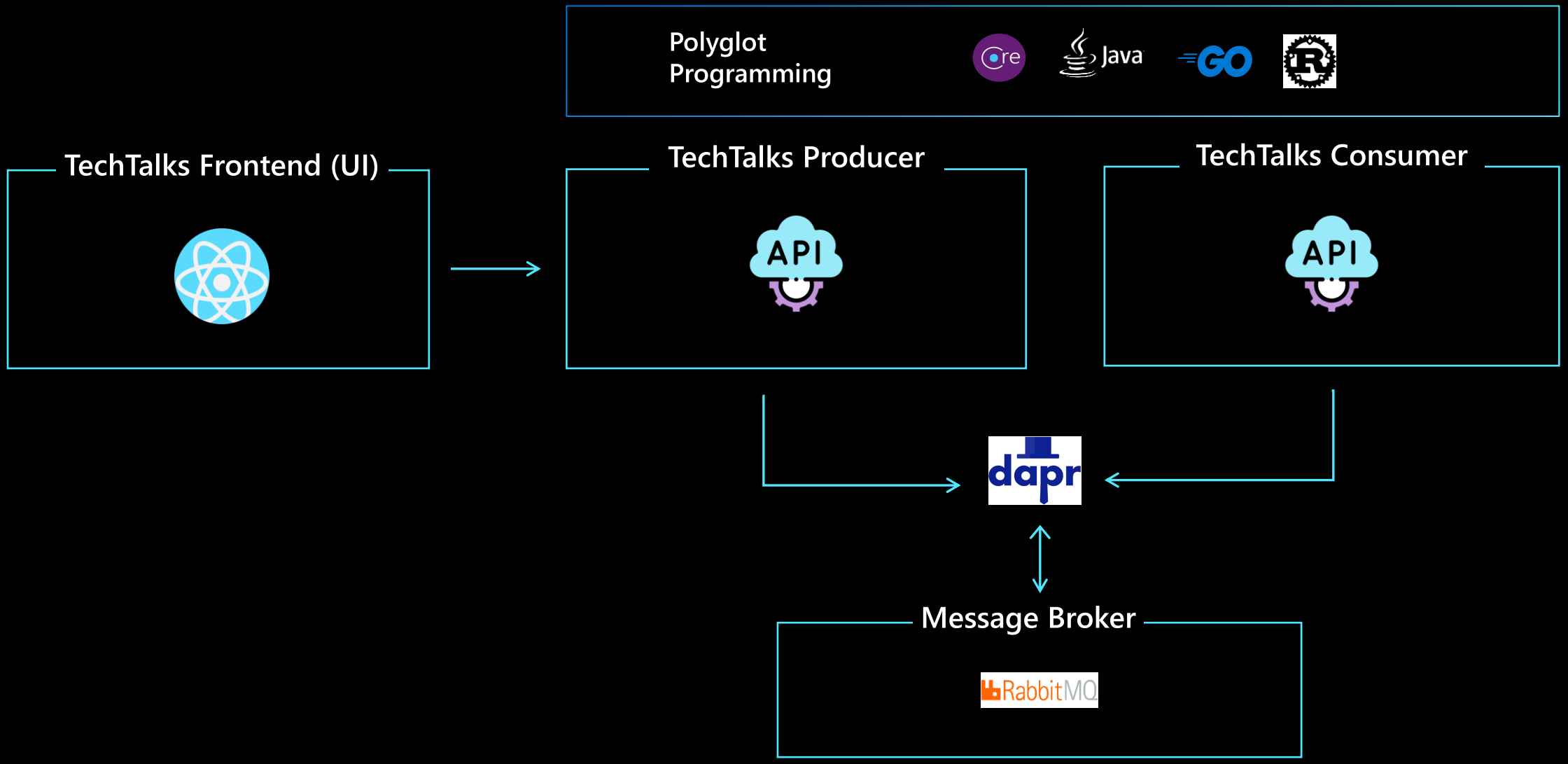
Automation

Automates everything CI CD, Infrastructure as Code (IaC), GitOps

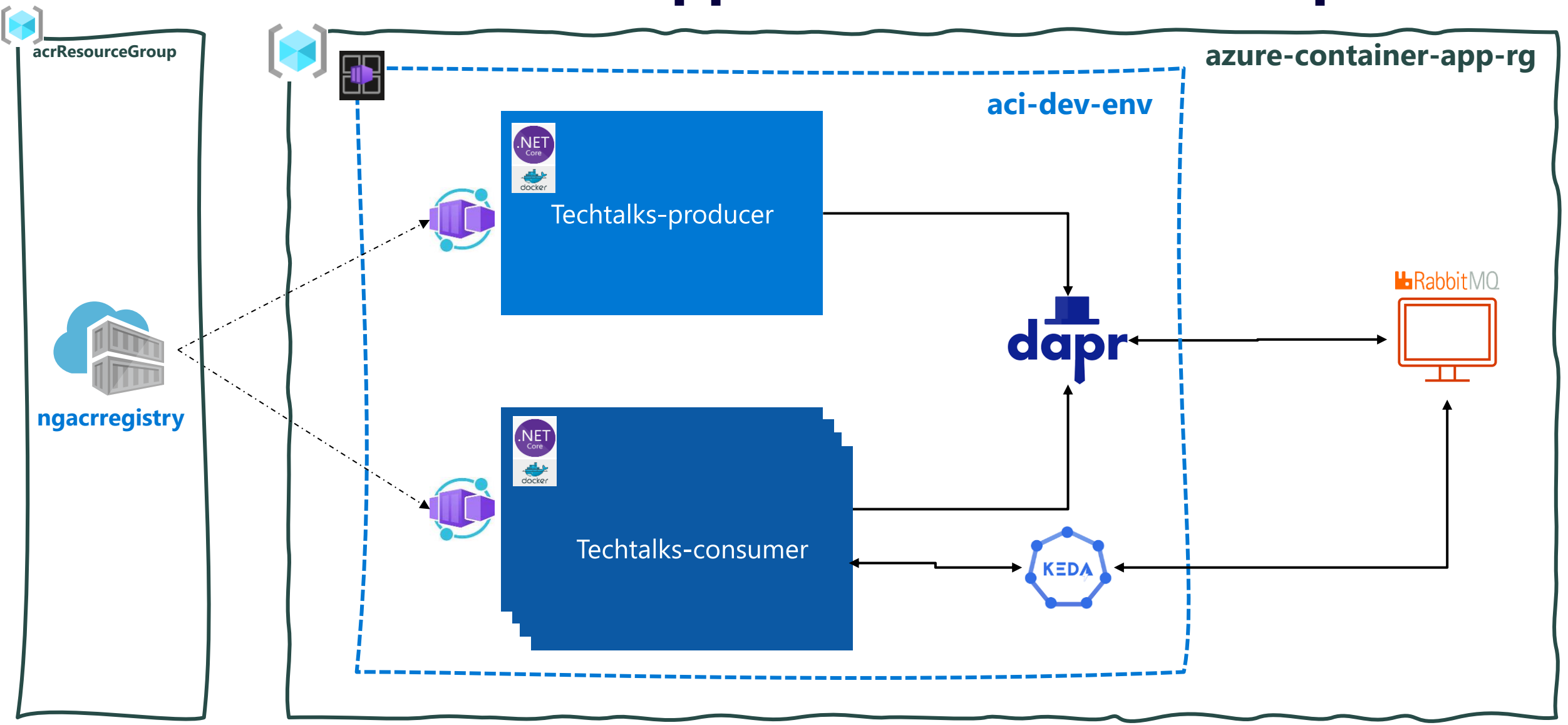
Dapr overview



TechTalks Application Architecture – with Dapr



Azure Container Apps - TechTalks with Dapr



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Let the messages flow

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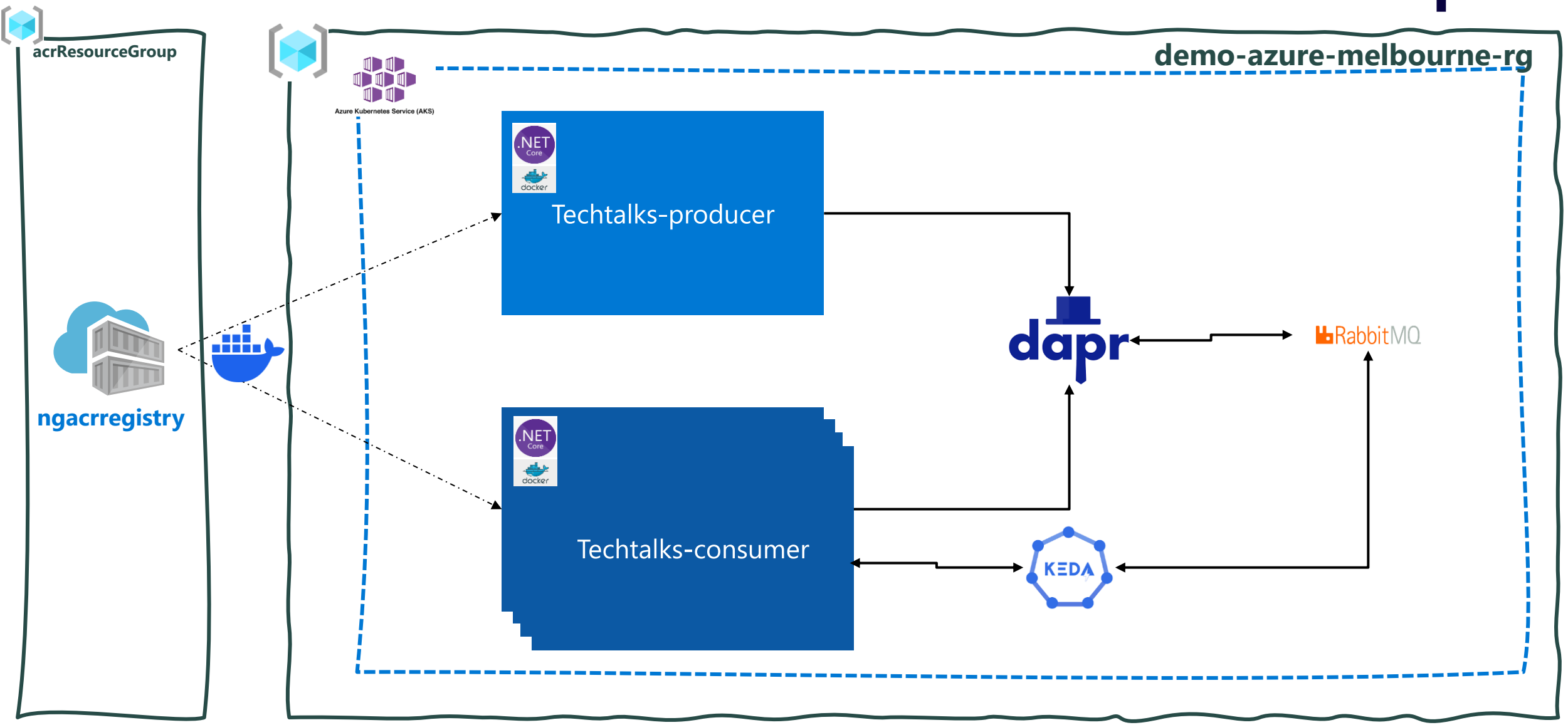
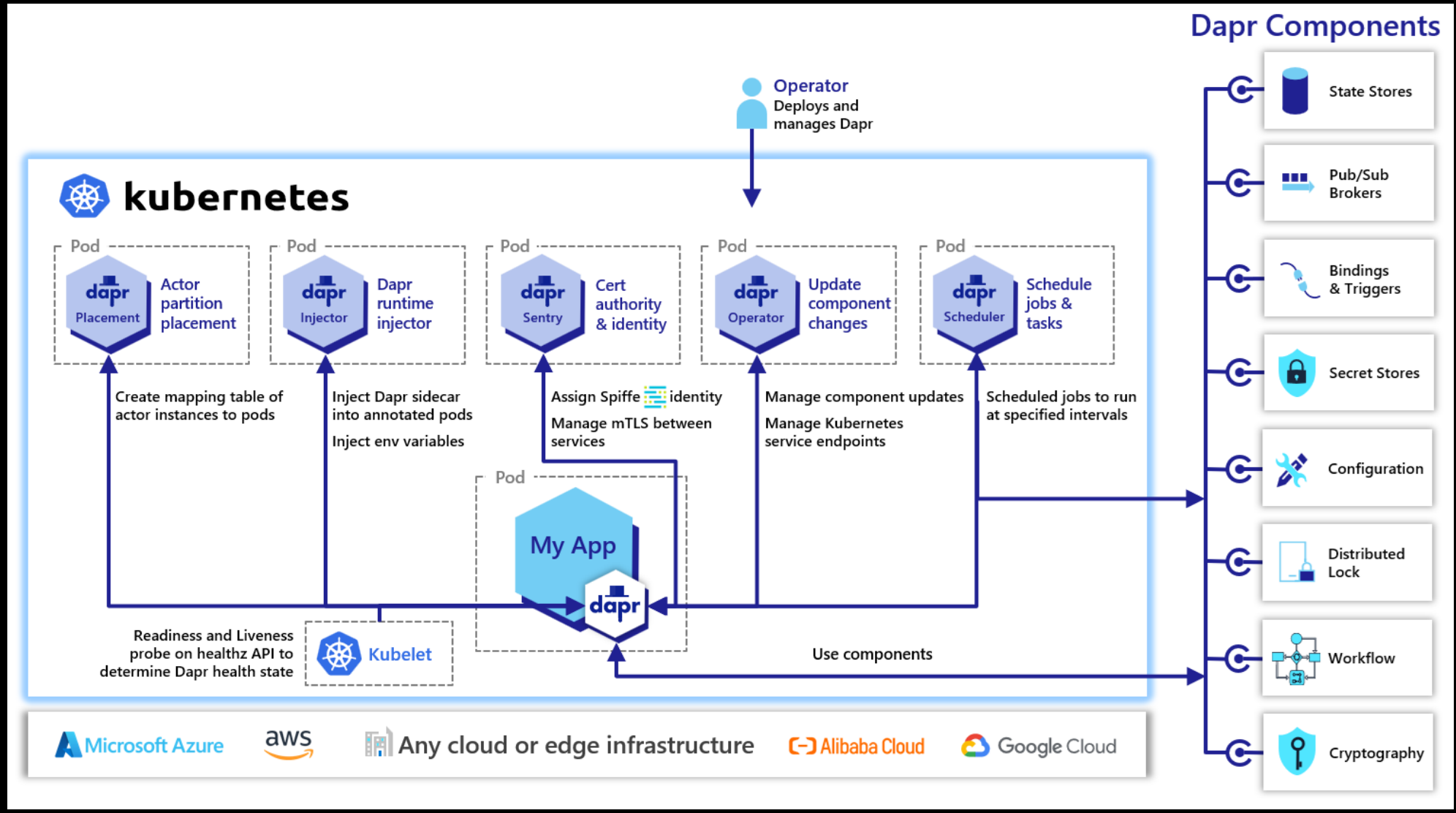
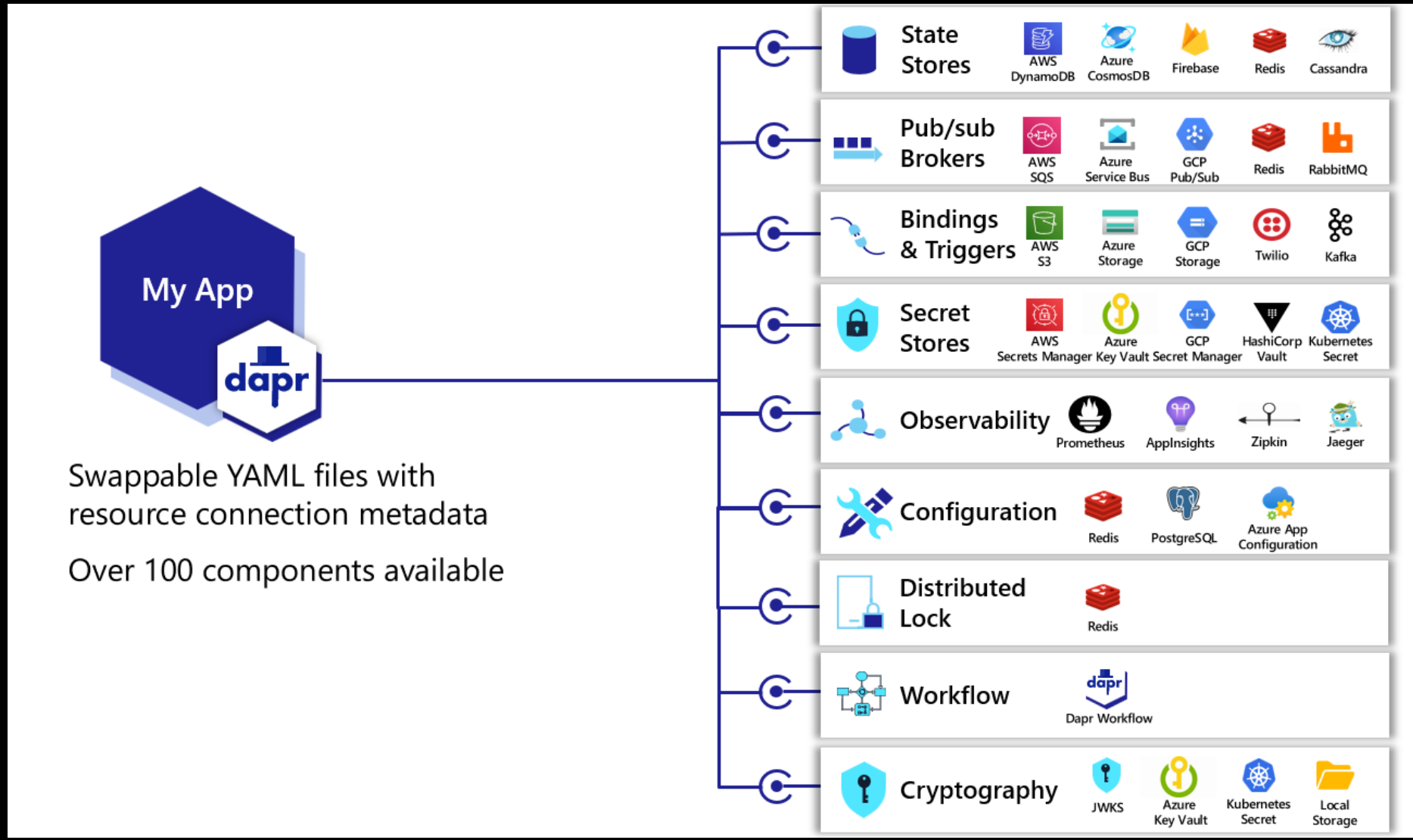
Azure Kubernetes Service - TechTalks with Dapr



Dapr Kubernetes cluster



Dapr Components



https://docs.dapr.io/concepts/components-concept/#built-in-and-pluggable-components

```
app.UseCloudEvents();

client.PublishEventAsync(pubsubName, topicName,
talk, cancellationToken);
```

```
app.UseCloudEvents();

app.MapSubscribeHandler();

app.MapPost("/process", ([FromBody] TechTalk
techTalk) =>

}).WithTopic("rabbitmq-pubsub", "techtalks")
```

icons created by smashingstocks – Flaticon https://www.flaticon.com/free-icons/

```
client.publishEvent("rabbitmq-pubsub", "techtalks", techTalk,
singletonMap(Metadata.TTL_IN_SECONDS, MESSAGE_TTL_IN_SECONDS)).block();
```

```
@Topic(pubsubName="rabbitmq-pubsub", name="techtalks")
   @PostMapping(path = "/process", consumes = MediaType.ALL_VALUE)
   public Mono<ResponseEntity> consumeMessage(@RequestBody(required = false)
CloudEvent<TechTalk> cloudEvent) {

      return Mono.fromSupplier(() -> {
         try {
            TimeUnit.MILLISECONDS.sleep(250);
            TechTalk techtalk = cloudEvent.getData();
            logTechTalkDetails(techtalk);
            return ResponseEntity.ok("SUCCESS");
         } catch (Exception e) {
            throw new RuntimeException(e);
         }
      });
   }
```

icons created by smashingstocks – Flaticon https://www.flaticon.com/free-icons/

```
client.PublishEvent(ctx, pubsubComponentName, pubsubTopic, techTalk);
```

```
var sub = &common.Subscription{
   PubsubName: "rabbitmq-pubsub",
   Topic:    "techtalks",
   Route:    "/techtalks",
}
```

```
s := daprd.NewService(":" + appPort)
err := s.AddTopicEventHandler(sub, eventHandler)
```

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Why use Dapr

- Any language, any framework, anywhere
- Building blocks for cloud and edge
- Multiple hosting environments
- Language specific SDKs
  - C++, Go, Java, JavaScript, .NET, PHP, Python, Rust
- Frameworks
  - ASP.NET Core, Spring Boot , Flask, Express
- Designed for operations

Summary

Key benefits of Dapr

- Dapr tries to simplify the Microservices development and deployment
- Dapr Components help to extract underlying functionality and provides abstractions
- Best practices related to cloud native applications
- Build portable app to deploy on local laptop, public cloud (Azure / AWS), Private Cloud / PaaS (OpenShift), Hybrid cloud, multi cloud scenarios etc.
- Make app portable to run in serverless as well as managed cloud services
- Implement observability features to monitor apps

References

https://dapr.io/

Dapr Publish and Subscribe

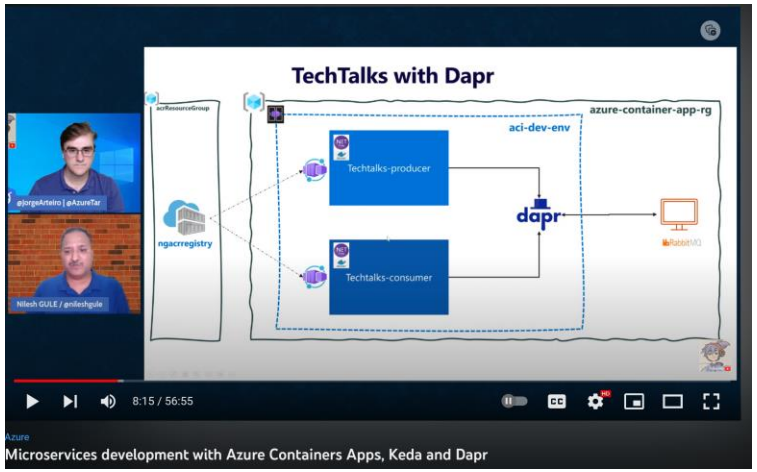
Dapr Secrets management

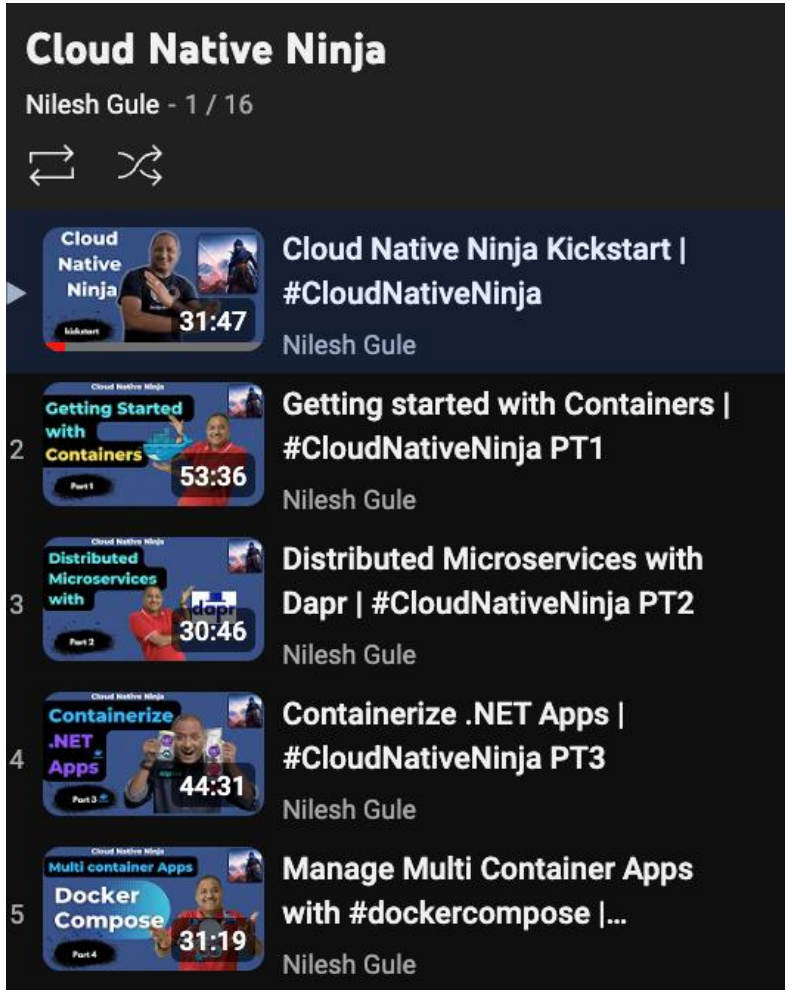
Dapr in local environment

Dapr on Kubernetes

Dapr Quickstarts

Serverless - Dapr and Azure Container Apps





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Dapr Demo Resources

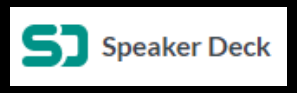
Cloud Native Ninja GitHub repo: https://github.com/NileshGule/cloud-native-ninja

Azure container Apps repo: https://github.com/NileshGule/techtalks-azure-container-apps-demo

Initial version without Dapr repo: https://github.com/NileshGule/pd-tech-fest-2019

Slides

Slideshare: https://www.slideshare.net/nileshgule/



Speaker Deck: https://speakerdeck.com/nileshgule/

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Q&A