

# Dapr 1 Fundamentals

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## Getting Started with Dapr



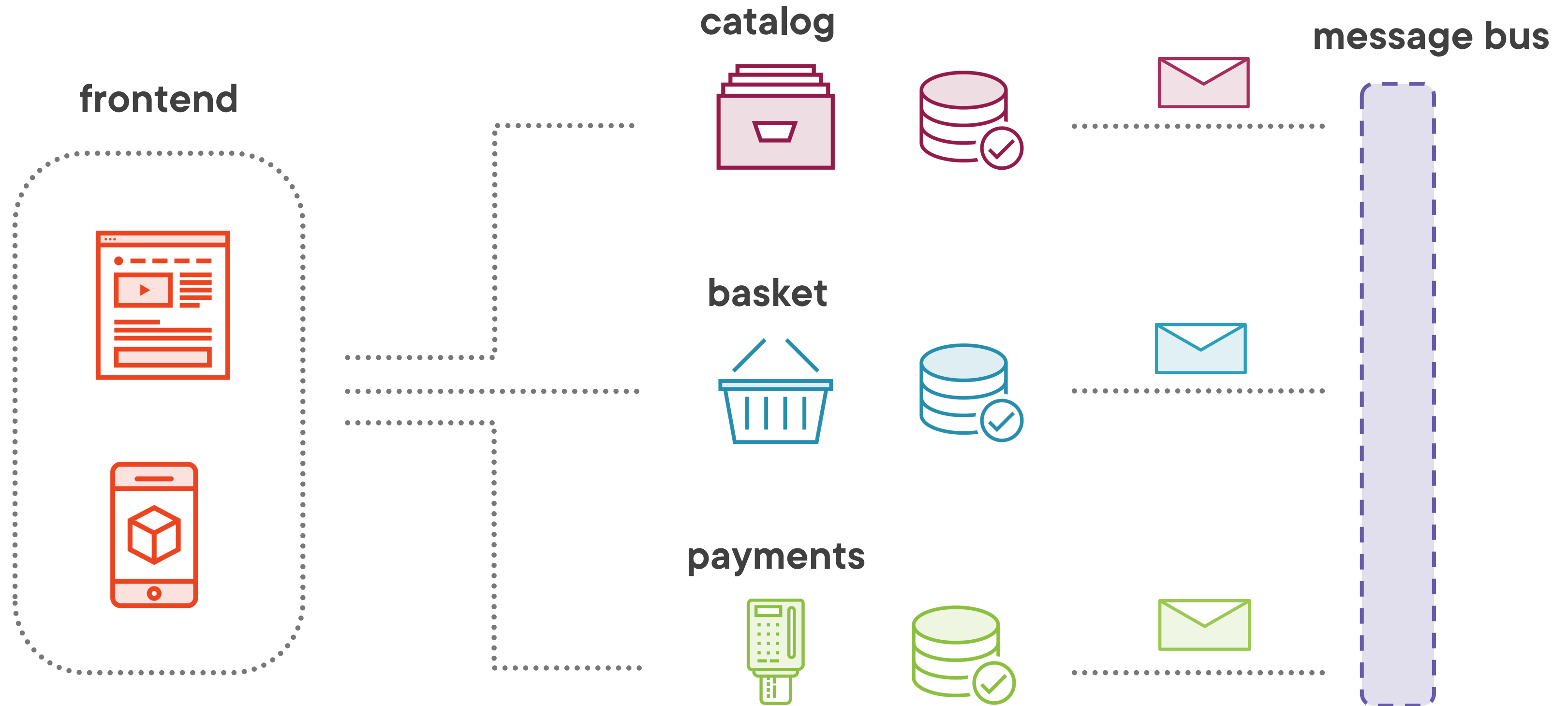
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# Microservices



Adopting microservices  
introduces several challenges



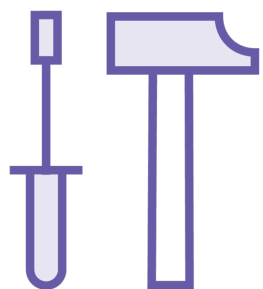
# Microservices Are Not Easy!



**Adopting microservices introduces several challenges**



**Many things are needed for success with microservices**



**Despite many helpful tools, there is still room for improvement!**





**“Distributed application runtime”**

**<https://dapr.io>**

**“APIs for building portable and reliable microservices”**

**Works alongside other frameworks**

**Not language-specific**





# Why use Dapr?

## Dapr 1 Big Picture

Marcel de Vries



# Module Overview



**Building blocks**

**Dapr uses “sidecars”**

**Dapr modes:**

- Self-hosted
- Kubernetes

**Installing the Dapr CLI and runtime**

**GloboTicket demo application**



# Course Overview



## **Dapr “building blocks”**

- State management
- Service to service invocation
- Pub-sub messaging
- Accessing secrets
- Bindings
- Observability

## **Running on Kubernetes**





# Dapr 1 Fundamentals

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Version Check



# Version Check



**This version was created by using:**

- Dapr 1.5
- .NET 6



## Relevant Notes



**Dapr is written in Go, but can be used with any programming language**



# Version Check



**This course is 100% applicable to:**

- Dapr 1.5 through Dapr 1.6



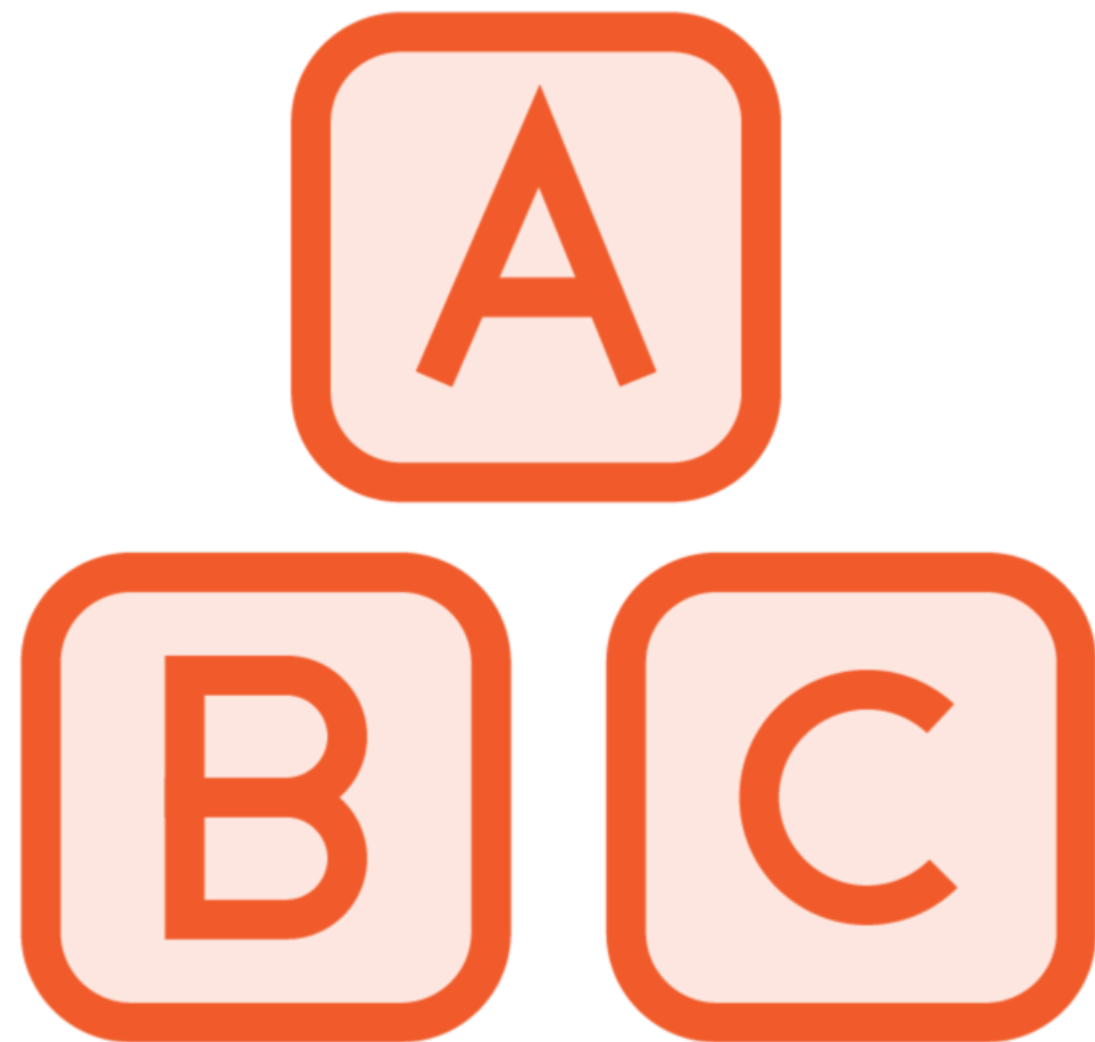
## Relevant Notes



**Dapr avoids making breaking API changes wherever possible**



# Dapr Building Blocks



**Each building block is optional**

- Use the blocks that make most sense

**Easily introduce Dapr into existing microservices**

**Simplify creating new microservices**

**Building blocks use third-party services**

- e.g Redis
- Switch between underlying implementations



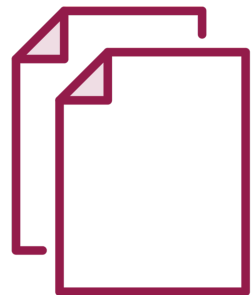
# Dapr Sidecars



**Dapr is not a library loaded into your microservice**



**Dapr runs a “sidecar” alongside your microservice**



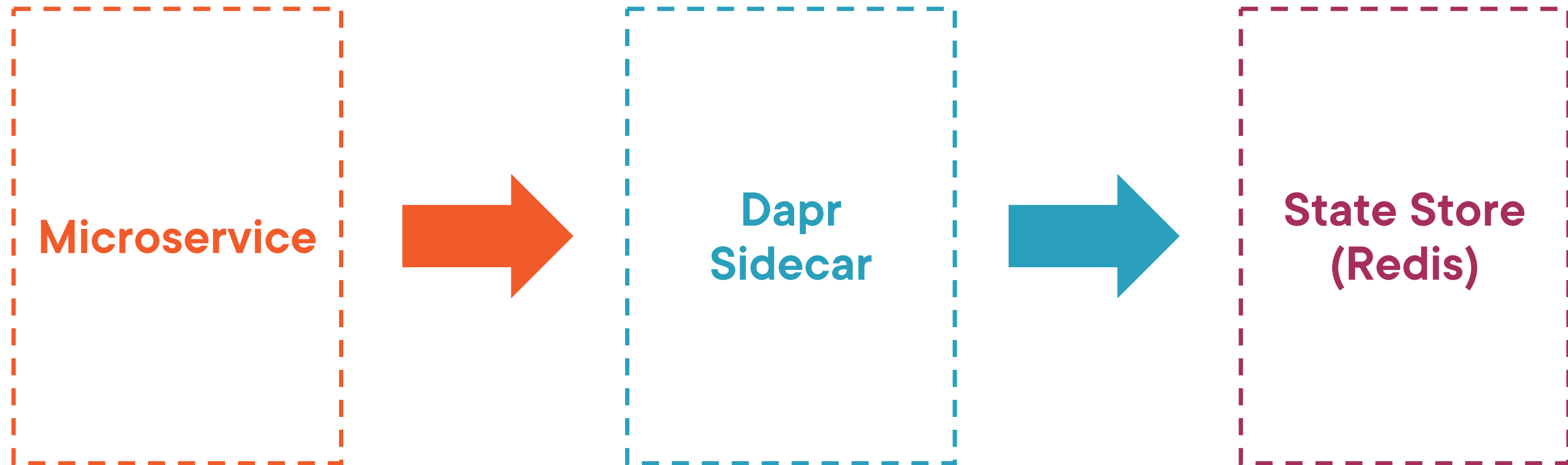
**There is one sidecar for each microservice**



**Your microservice makes network requests to its Dapr sidecar**

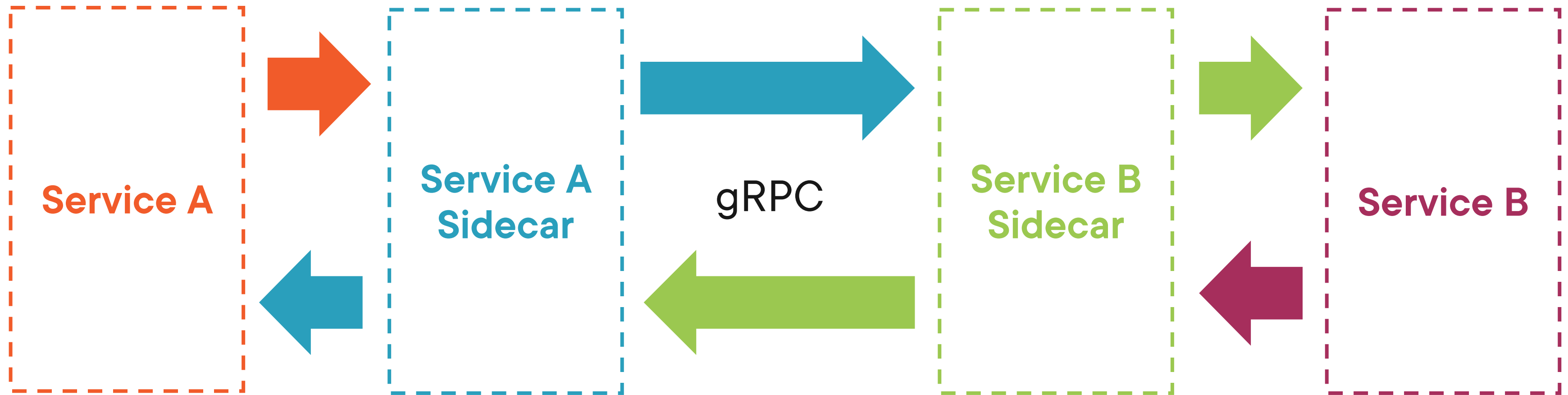


# Sidecar Example: State Store





# Sidecar Example: Service to Service Invocation



Automatic retries



Encrypt with mTLS



Access control policies



Tracing and metrics



Use any language that can  
make a HTTP request



# Self-Hosted

**Run a sidecar alongside each microservice on the same machine**

**Use the “dapr run” command**

**Building block dependencies often run as containers**

**Often used for local development**

**Used in production when not using containers**



# Kubernetes

**Often used in production**

**Can be used for local development**

**Start by installing Dapr into the cluster**

**Annotate microservices**

**The Dapr runtime automatically creates the sidecars**

**The Kubernetes “pod” contains both the microservice and sidecar**



# Demo



## Installing the Dapr CLI



```
Set-ExecutionPolicy RemoteSigned -scope CurrentUser
```

Enable remote signed PowerShell scripts on Windows

Upgrade to the latest Dapr CLI  
by running the install script  
again



# Demo



## Installing the Dapr runtime in self-hosted mode





# Demo



## Installing the Dapr runtime on Kubernetes

- Requires kubectl context to be configured in advance
- Use the `dapr init -k` command



# Upgrading Dapr



## **In self-hosted mode:**

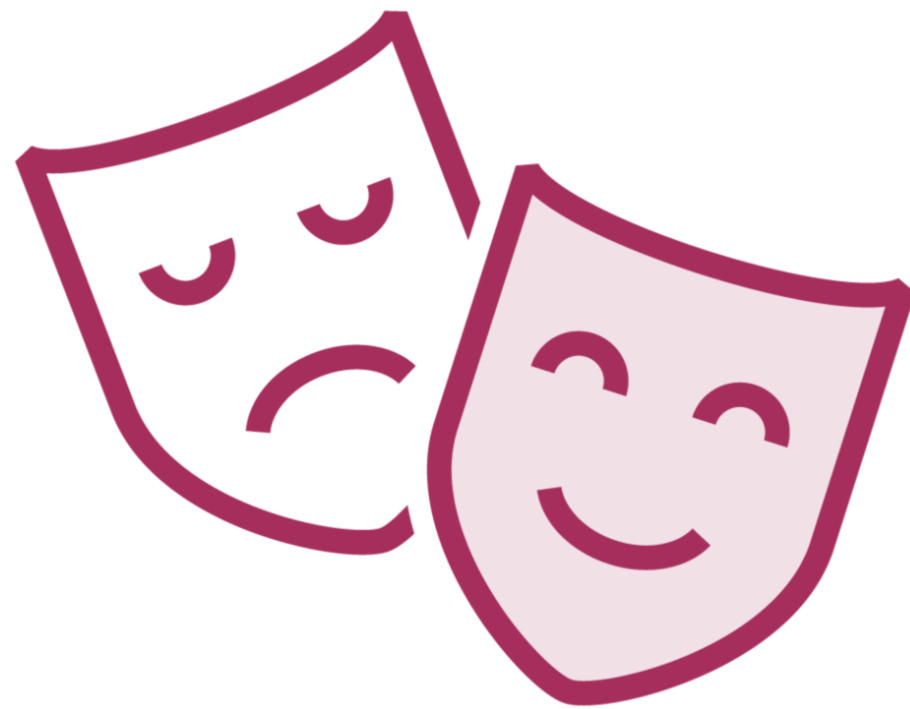
- `dapr uninstall -all`
- `dapr init`

## **In Kubernetes:**

- `dapr upgrade -k --runtime-version=1.5.1`



# GloboTicket



## **Microservices architecture**

- Allows dev teams to work independently

## **Simplify development with Dapr**

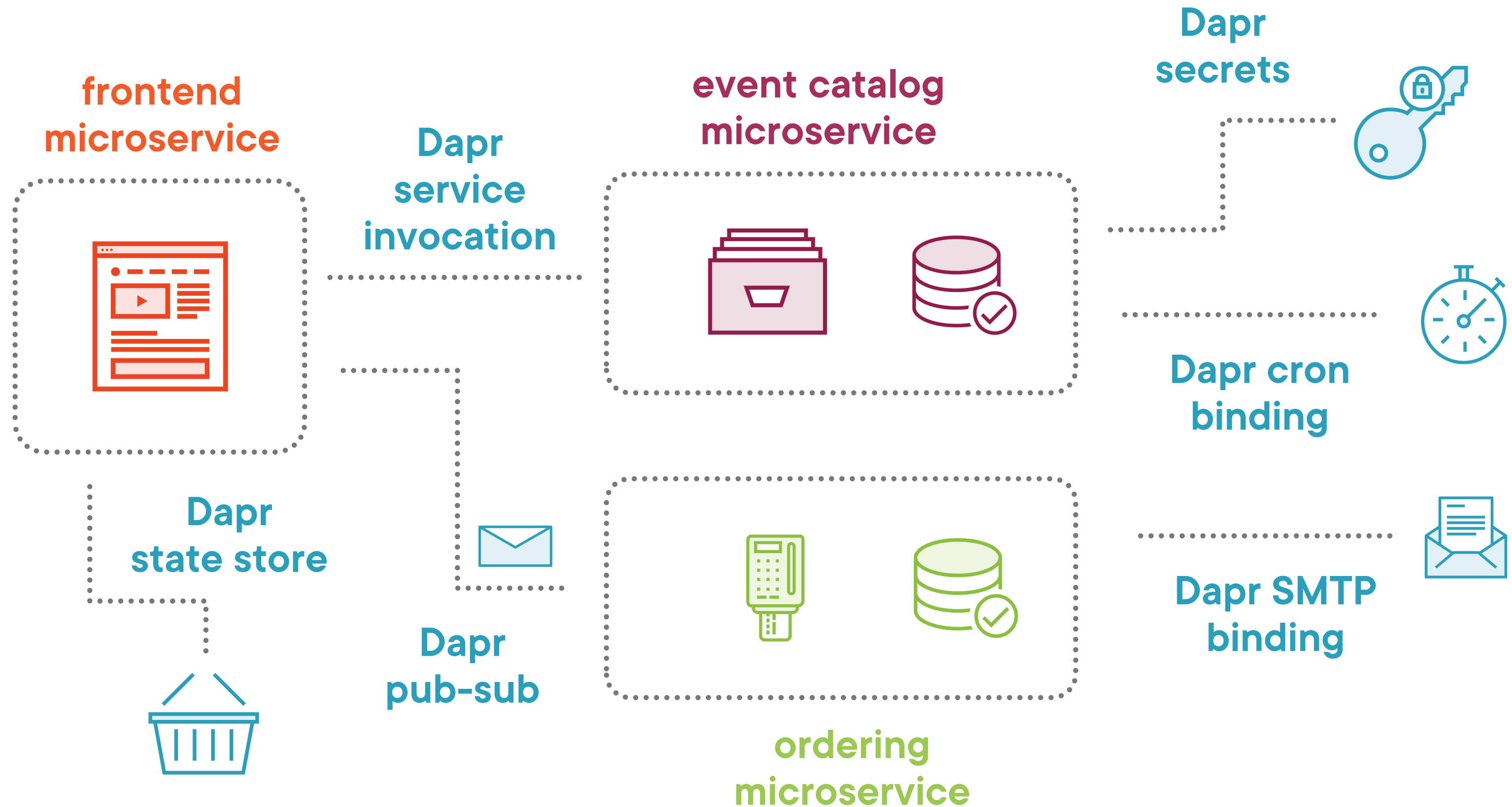
- Add Dapr to existing microservices

## **Currently has three microservices**

## **Dapr does not assume “microservices”**

- Each service is a Dapr “application”
- Each application has its own sidecar
- Each application has a name – the “app id”

# GloboTicket Architecture





**GloboTicket uses the .NET Dapr SDK with C#**

**The Dapr SDK is optional**

- But simplifies using the building blocks

**[github.com/markheath/globoticket-dapr](https://github.com/markheath/globoticket-dapr)**

- Run self-hosted or on Kubernetes

**Try Dapr with your own microservices**



# Summary



**Installing Dapr CLI and runtime**

**Dapr “building blocks”**

**Sidecar architecture**

**Self-hosted and Kubernetes modes**

**GloboTicket demo application**



Up Next:  
Implementing State Management

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