Architecting .NET Microservices in a Docker Ecosystem

Hamida Rebaï
Cloud Application Architect & Microsoft MVP

@rebaihamida

Rebai Hamida

MVP in Developer Technologies
at Microsoft

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Microsoft MVP & MCT

Microsoft MVP in Developer Technologies

Member and Speaker at dotnetfoundation

Blogger and Technical writer

Rebai Hamida – Medium

Hamida Rebai Trabelsi | LinkedIn

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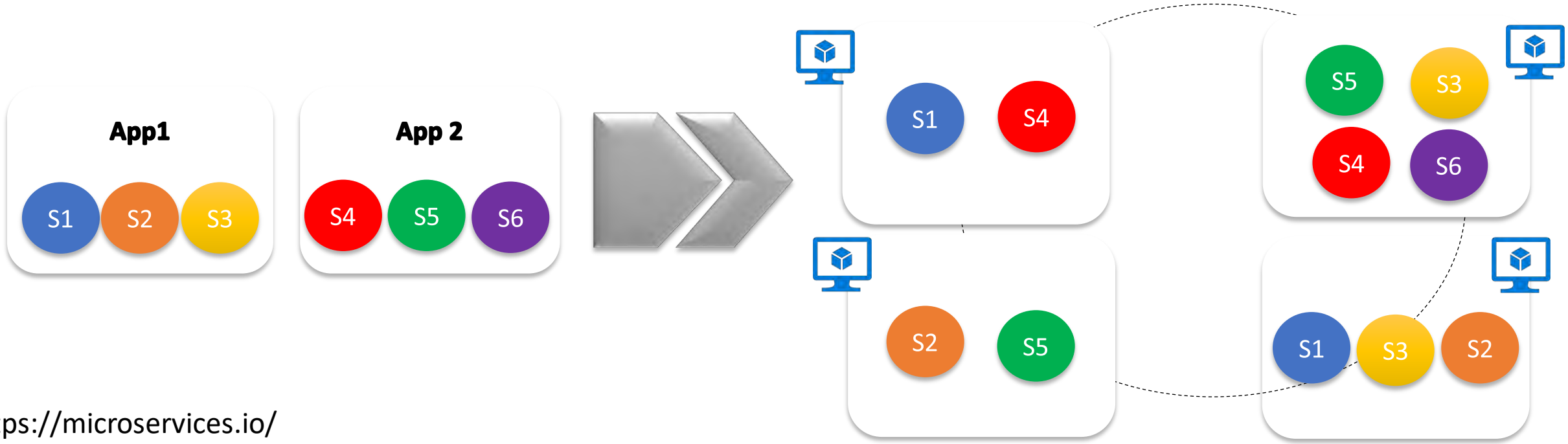
Table of content

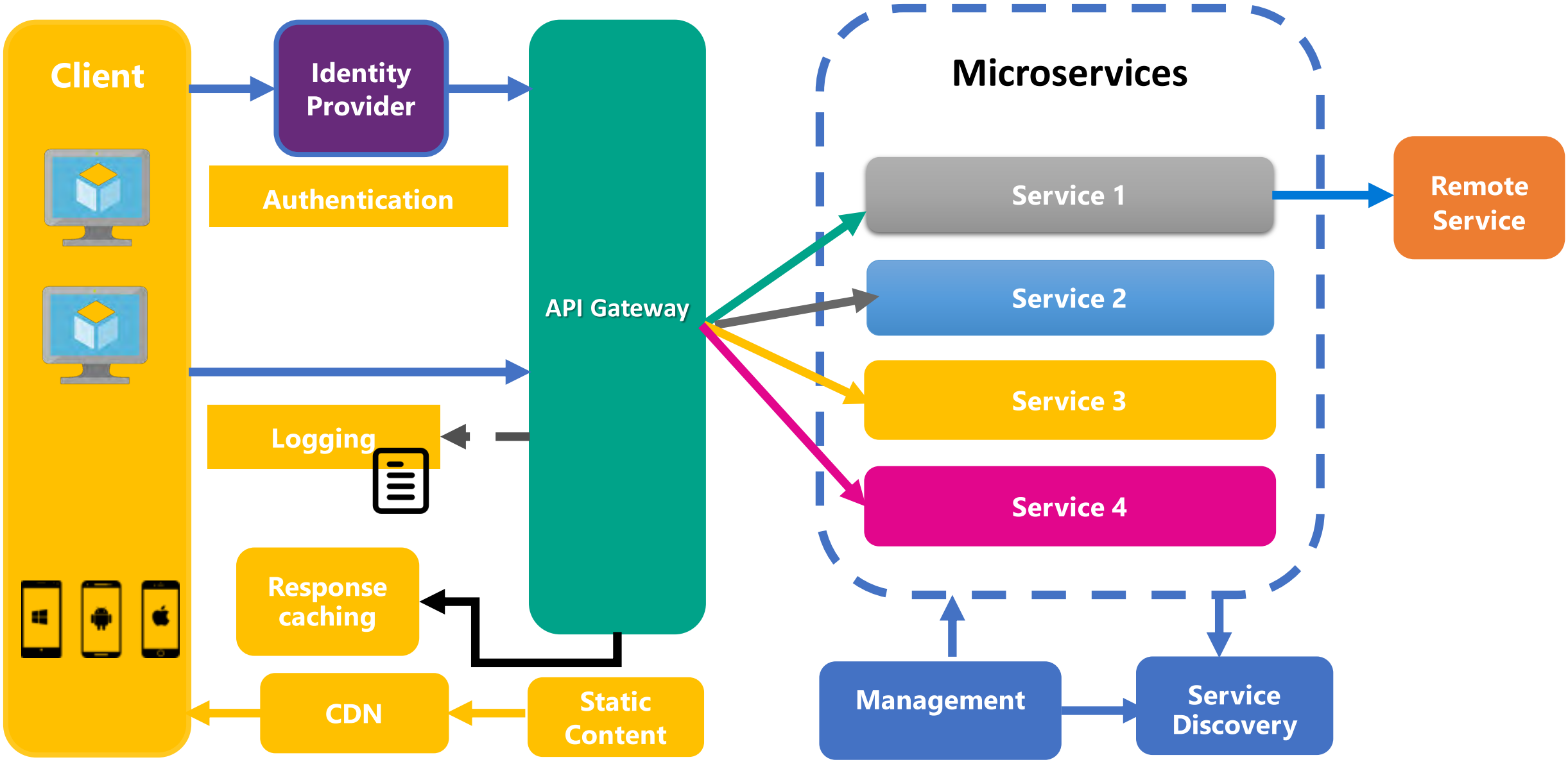
Microservices architecture

- Model approach for distributed and large or complex critical applications that are based on multiple, independent subsystems in the form of autonomous services.
- Application is built as a collection of services car be developed, tested, versioned, deployed, and scaled.

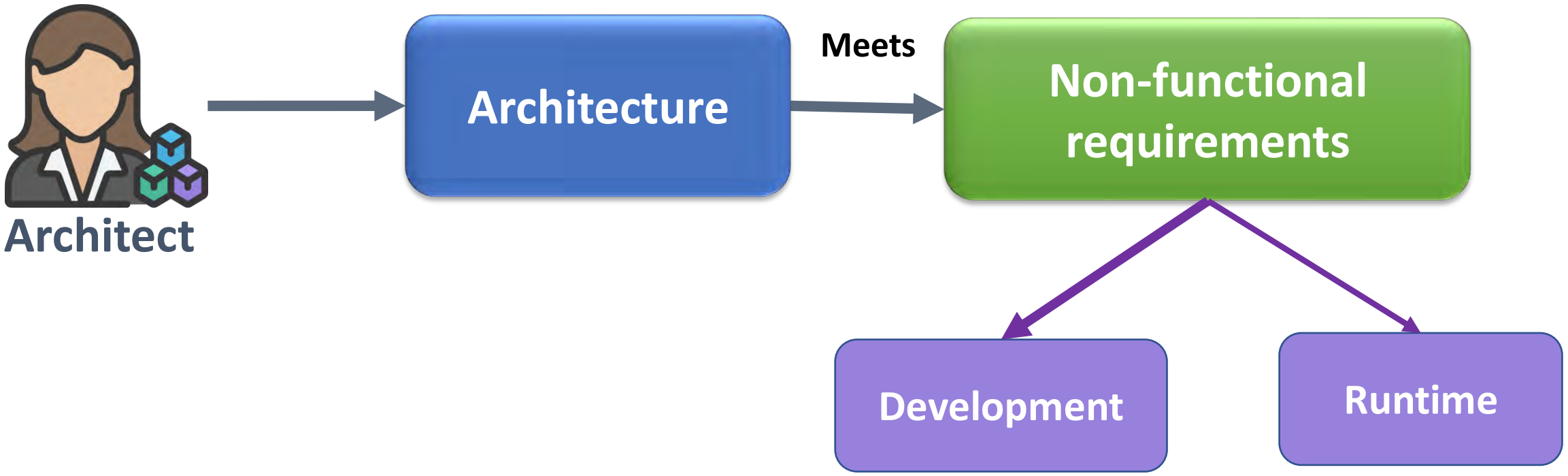


https://microservices.io/

Microservices architecture style

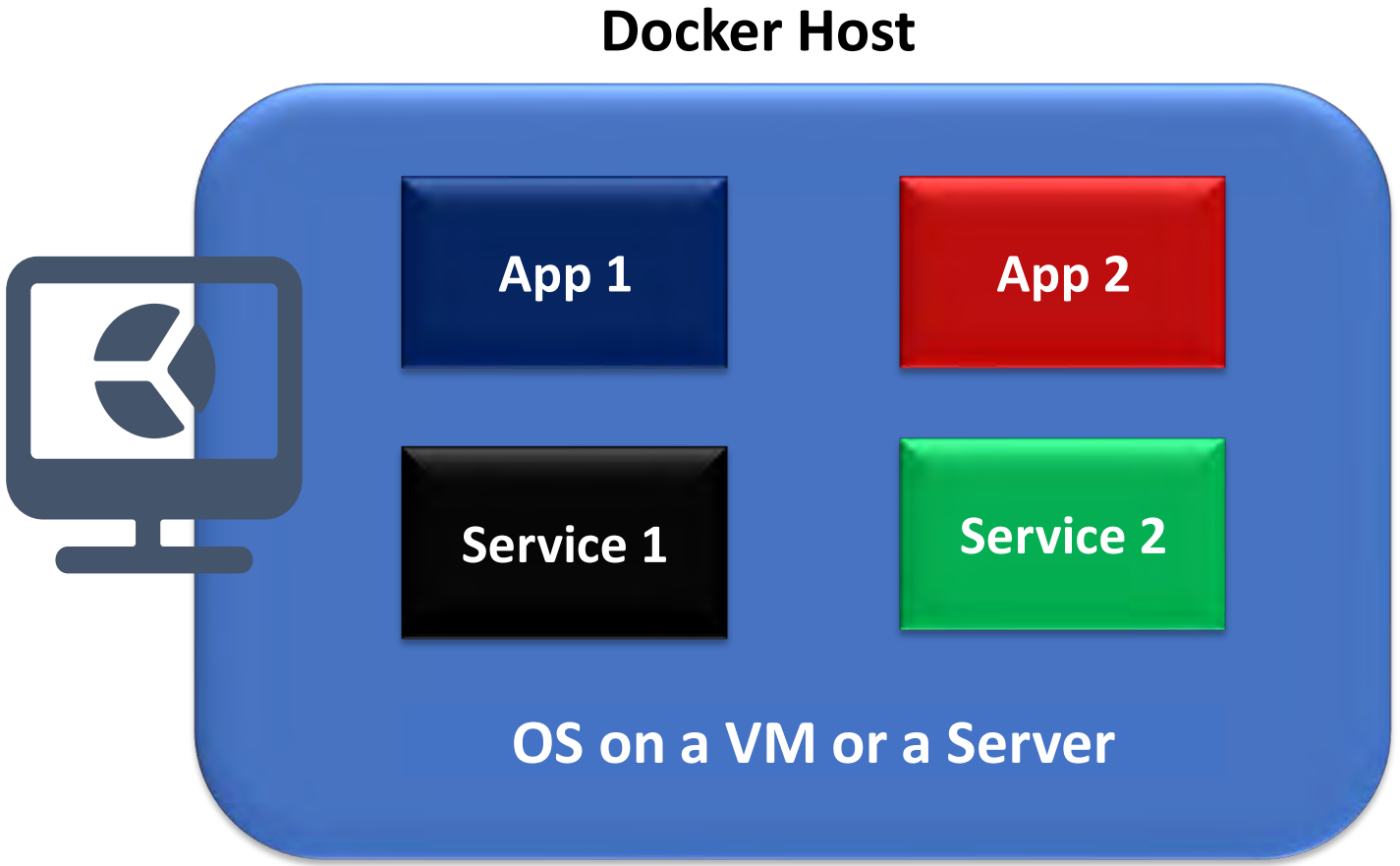


Role of an Architect



Microservices ≠ Container

Containers and Docker



Overview Docker container and image

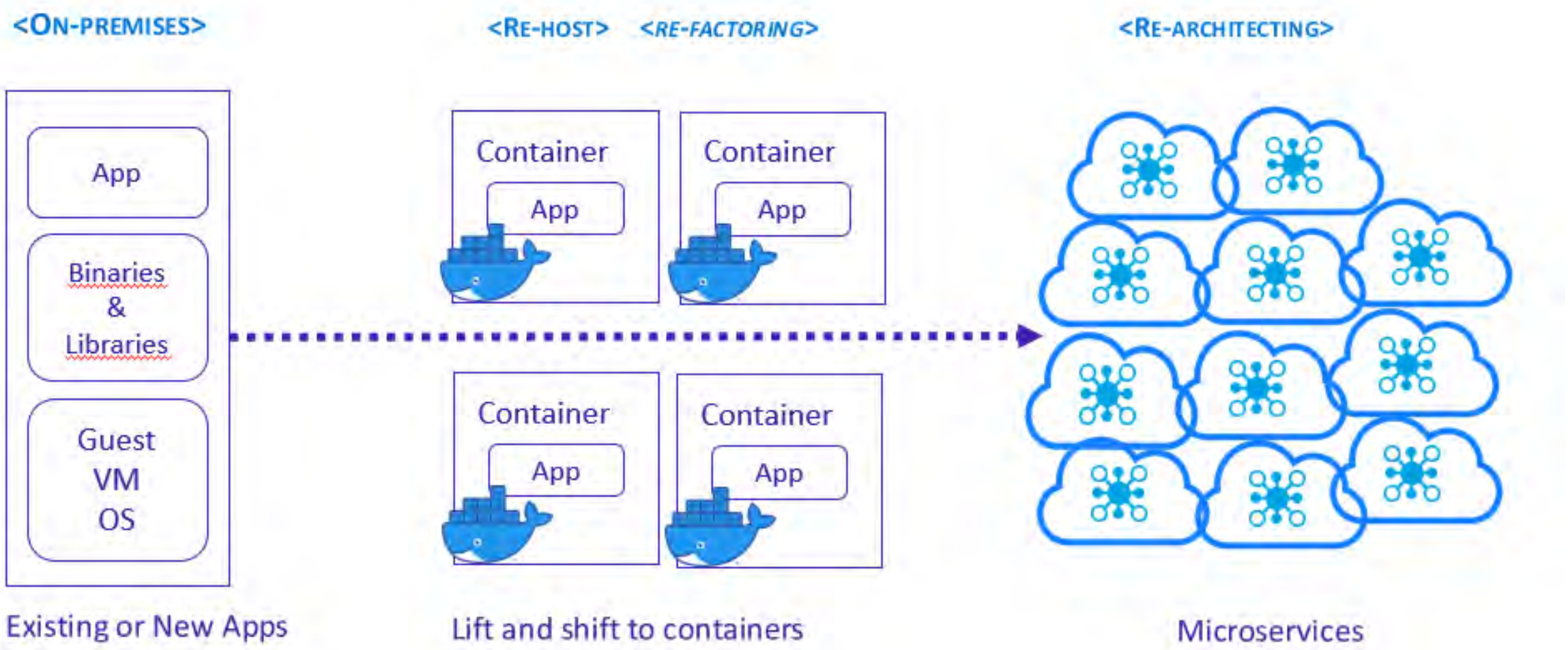
Docker Container

- Virtualized runtime environment used in application development.
- Can use just one machine, share its kernel and virtualize the OS to run more isolated processes.
- Docker containers are **lightweight.**

Docker Images

- Snapshot in other types of VM environments.
- Record of a Docker container at a specific point in time.
- Image can’t be changed, it can be duplicated, shared, or deleted.

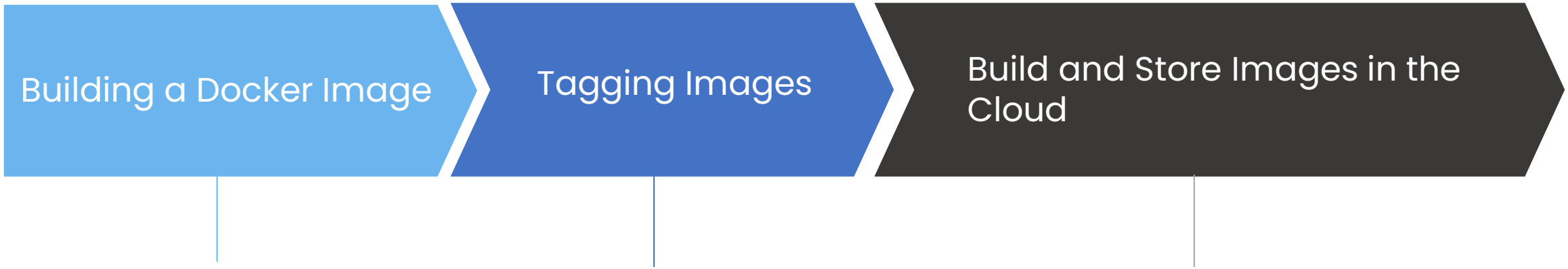
Containers Deployment



Prerequisites

- Install **Docker Desktop** it is free, it is available for Mac and Windows.
- **Docker Hub** account, it is free.
- Install **Visual Studio 2019 or 2022** or **Visual Studio Code**.
- **Azure** account where we are able to create an azure container registry
- **PowerShell** in Windows or **Azure Cloud Shell**.
- If you are using Visual Studio Code, Microsoft C# for Visual Studio Code, Docker and Azure App Service extensions must be installed.

Demonstration flow



Demo: Building a Docker Image

Demo: Tagging an Image

Build and Store Images by Using Azure Container Registry (ACR)

Container and Orchestrator

Store

- Azure Container Registry

For single container

- Azure Container Instance
- Azure App Service as a Container

For Multiple containers

- Azure Kubernetes Service
- Azure Container App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