Microsoft

Modernizing Applications with Containers and Orchestrators

Microsoft Services

Microsoft

Module 6 – DevOps with Containers

Microsoft Services

Agenda

- Container Devops Value Proposition
- What is DevOps?
- Azure DevOps overview
- Containerized Workflow Pipeline
- Azure DevOps: Continuous Integration - Windows/Linux
- Azure DevOps : Continuous Deployment - SF/AKS

Software Innovation Collision

Containers
Standardization of the application packaging

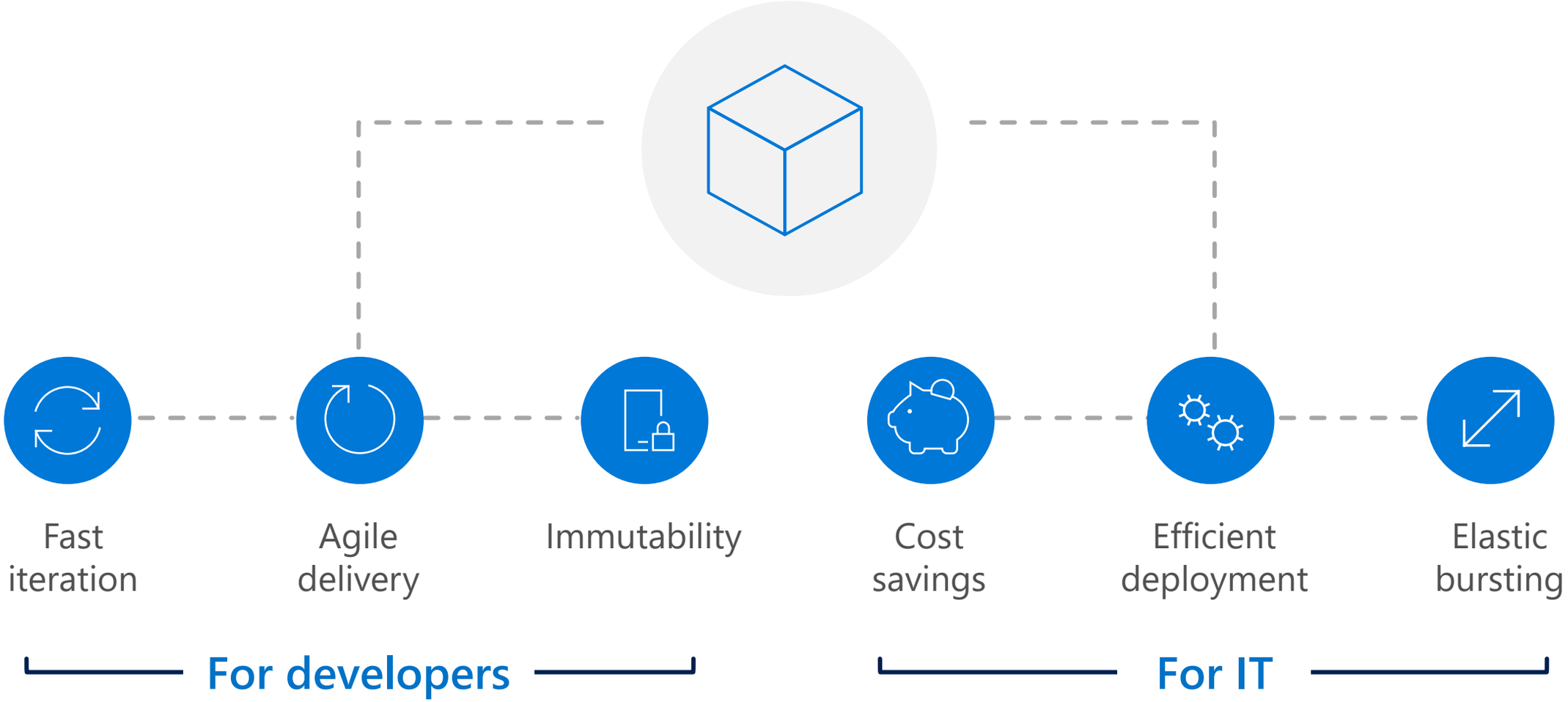
DevOps
Optimizing how applications are built, delivered and managed

Better Software

Microservices
Optimizing how applications are composed

Cloud Orchestrators
Efficient ways to deliver Infrastructure for Applications

Devops View Of The Container Advantage

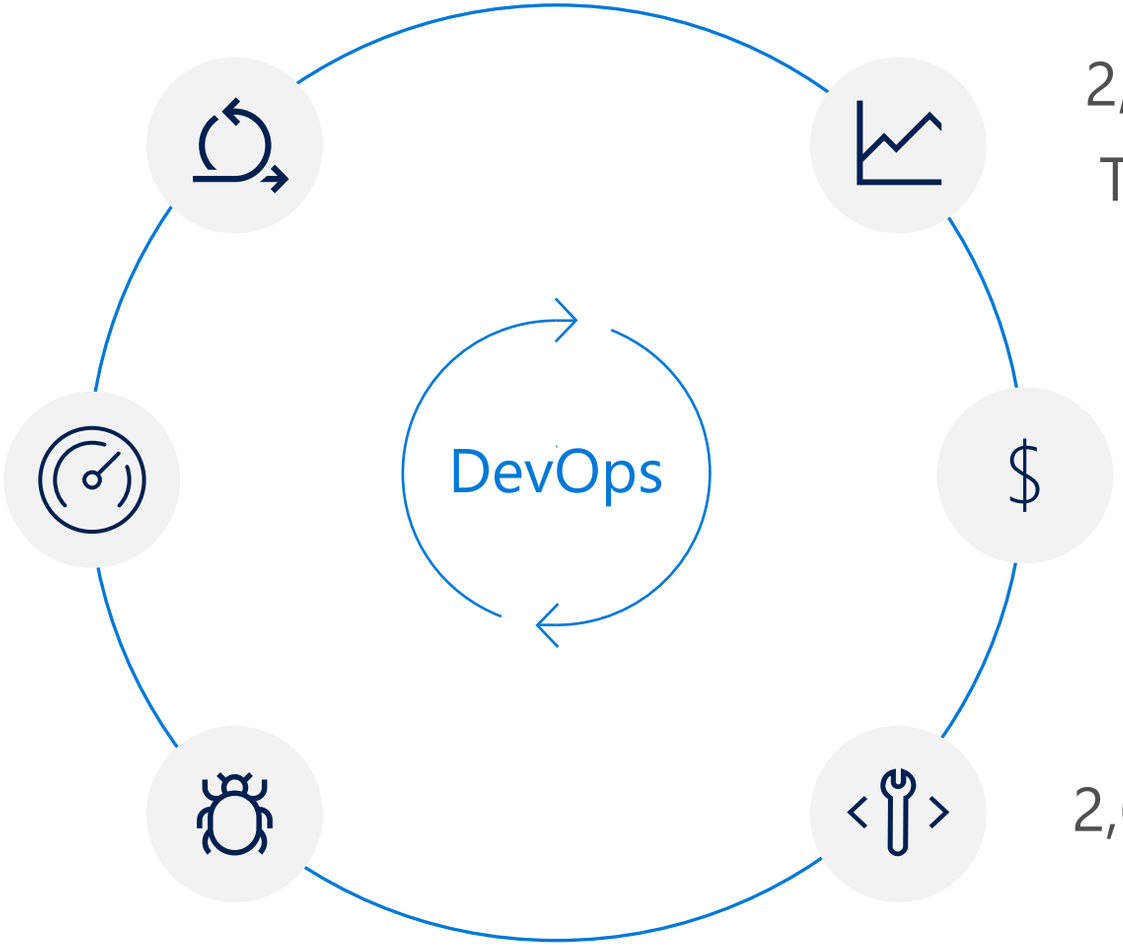


High Performance Devops Companies Achieve...

46x Deployment Frequency

2,555x Faster Lead Time For Changes

Faster Time to Market



Increased Revenue

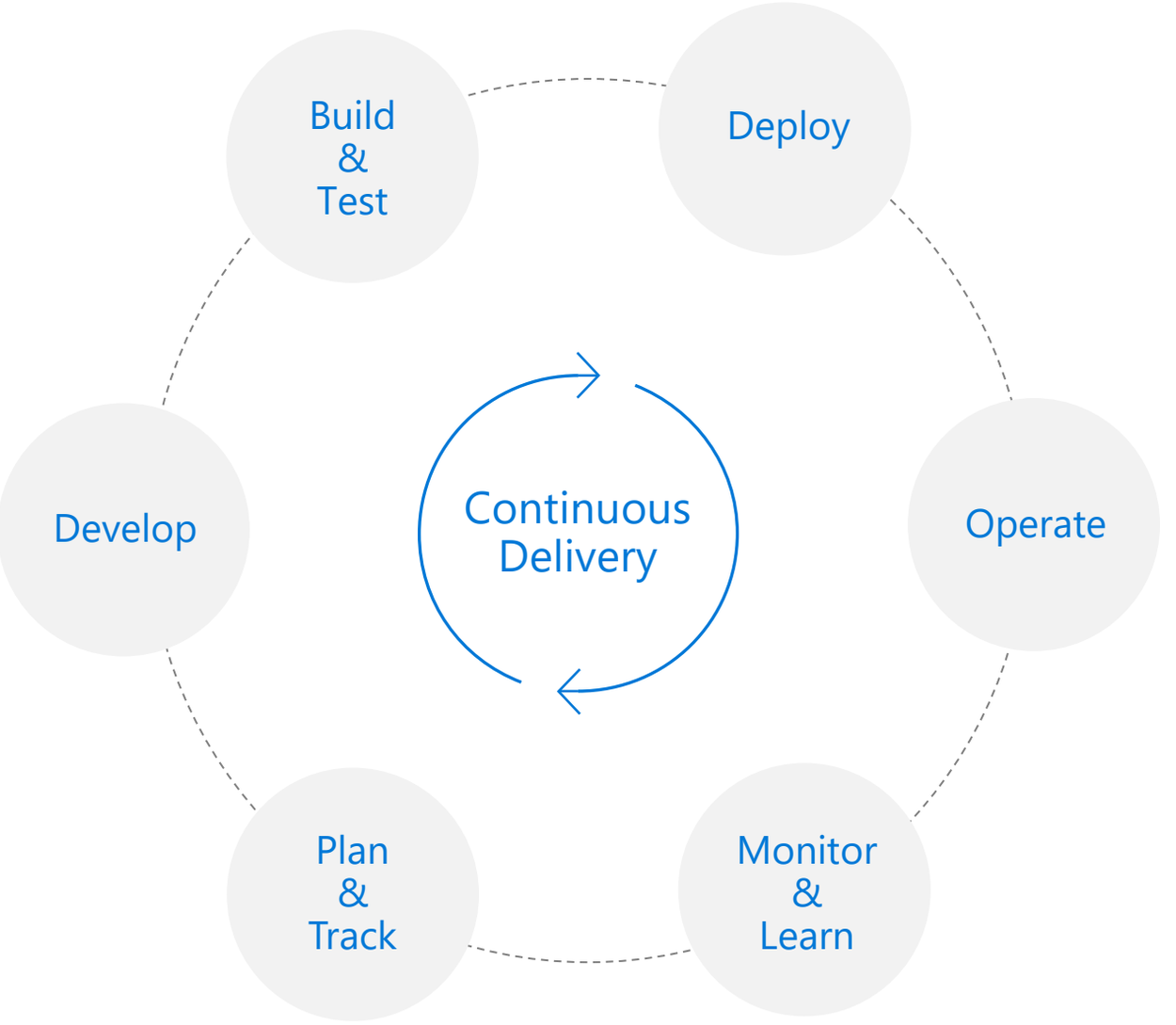
7x Lower Change Failure Rate

2,604x Faster Mean Time to Recover

Source: 2018 Accelerate: State of DevOps: Strategies for a New Economy." N. Forsgren, J. Humble, G. Kim. DevOps Research and Assessment (DORA)

What is DevOps?

> DevOps is the union of **people**, **process**, and **products** to enable continuous delivery of value to your end users.



Azure DevOps

Agile Tools

Track work and manage your backlog with Agile planning tools

Git

Everything you love about git – plus free private repos, social code reviews, code search and more...

Continuous Integration

Simplify continuous integration for your apps for any platform or language.

Tools for Java teams

Eclipse, IntelliJ, Android Studio plugins and Maven, Ant, Gradle and Jenkins for your Java teams.

Package Management

Build, manage, secure and share your software components.

Release Management

Continuous Deployment for your applications- ship faster, ship often.

TFVC

A centralized version control system with free private repos

Testing

Tools for manual, performance and automated testing.

Reporting

Insights that lead to action for fewer bottlenecks and increased productivity.

Increase productivity with powerful features

Code in any IDE/language and build applications for any target platform.

Azure DevOps

Azure Boards

Deliver value to your users faster using proven agile tools to plan, track, and discuss work across your teams.

Azure Pipelines

Build, test, and deploy with CI/CD that works with any language, platform, and cloud. Connect to GitHub or any other Git provider and deploy continuously.

Azure Repos

Get unlimited, cloud-hosted private Git repos and collaborate to build better code with pull requests and advanced file management.

Azure Test Plans

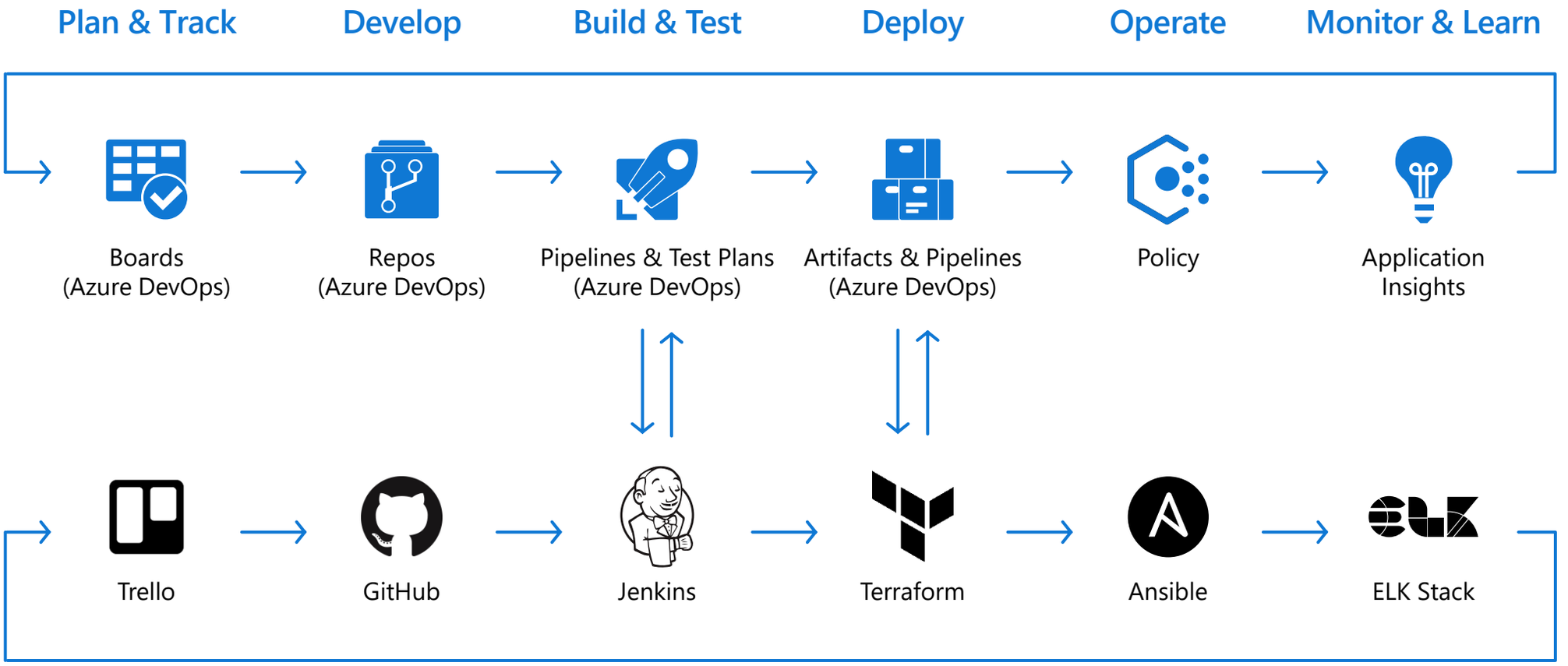
Test and ship with confidence using manual and exploratory testing tools.

Azure Artifacts

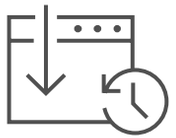
Create, host, and share packages with your team, and add artifacts to your CI/CD pipelines with a single click.

https://azure.com/devops

DevOps on Azure framework



What Technologies Do I Need To Support Devops?



Continuous Integration (CI)

- Improve software development quality and speed.
- When you use Azure Pipelines or Jenkins to build apps in the cloud and deploy to Azure, each time you commit code, it's automatically built and tested and bugs are detected faster.

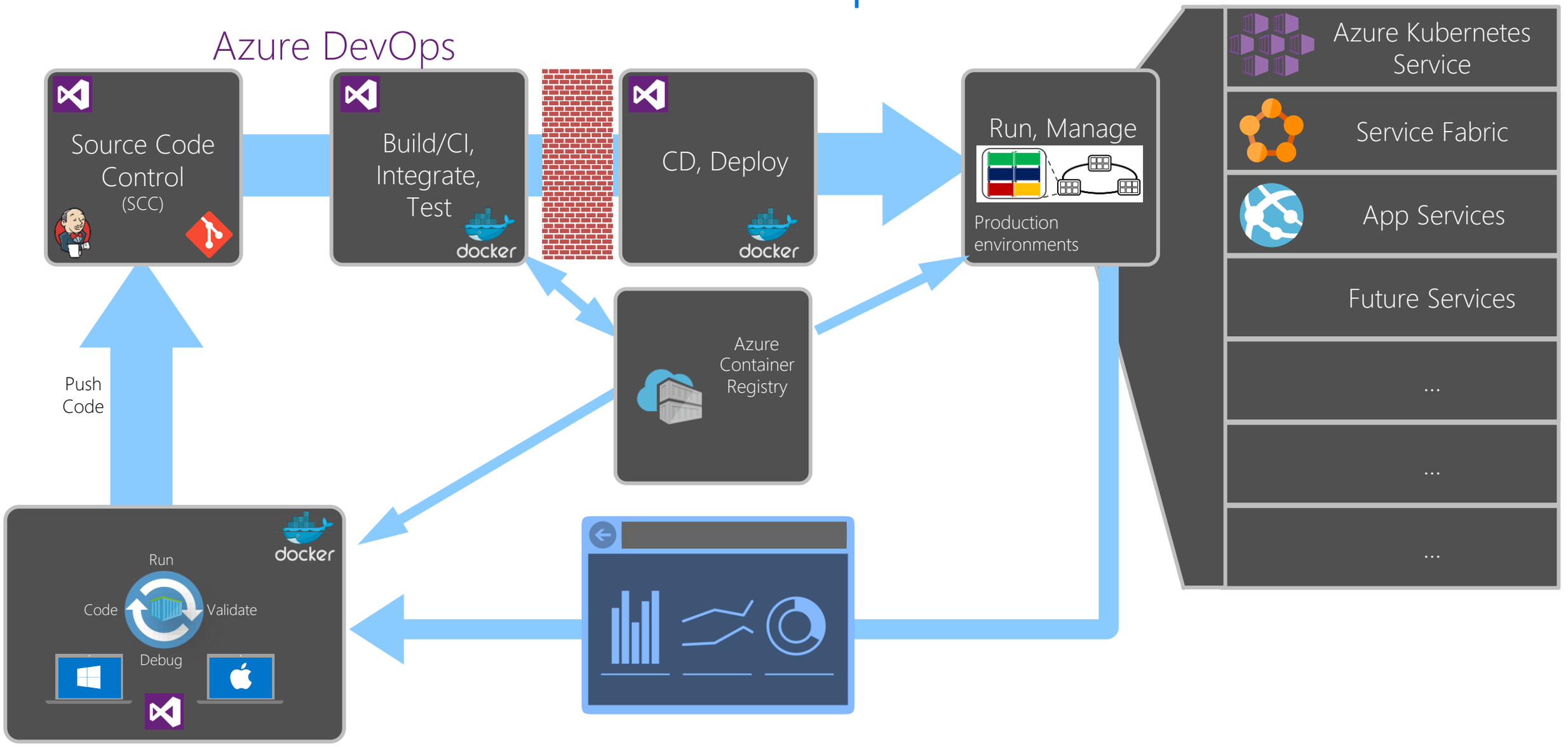
Continuous Deployment (CD)

- By combining continuous integration and infrastructure as code (IaC), you'll achieve identical deployments and the confidence to deploy to production at any time.
- With continuous deployment, you can automate the entire process from code commit to production if your CI/CD tests are successful.

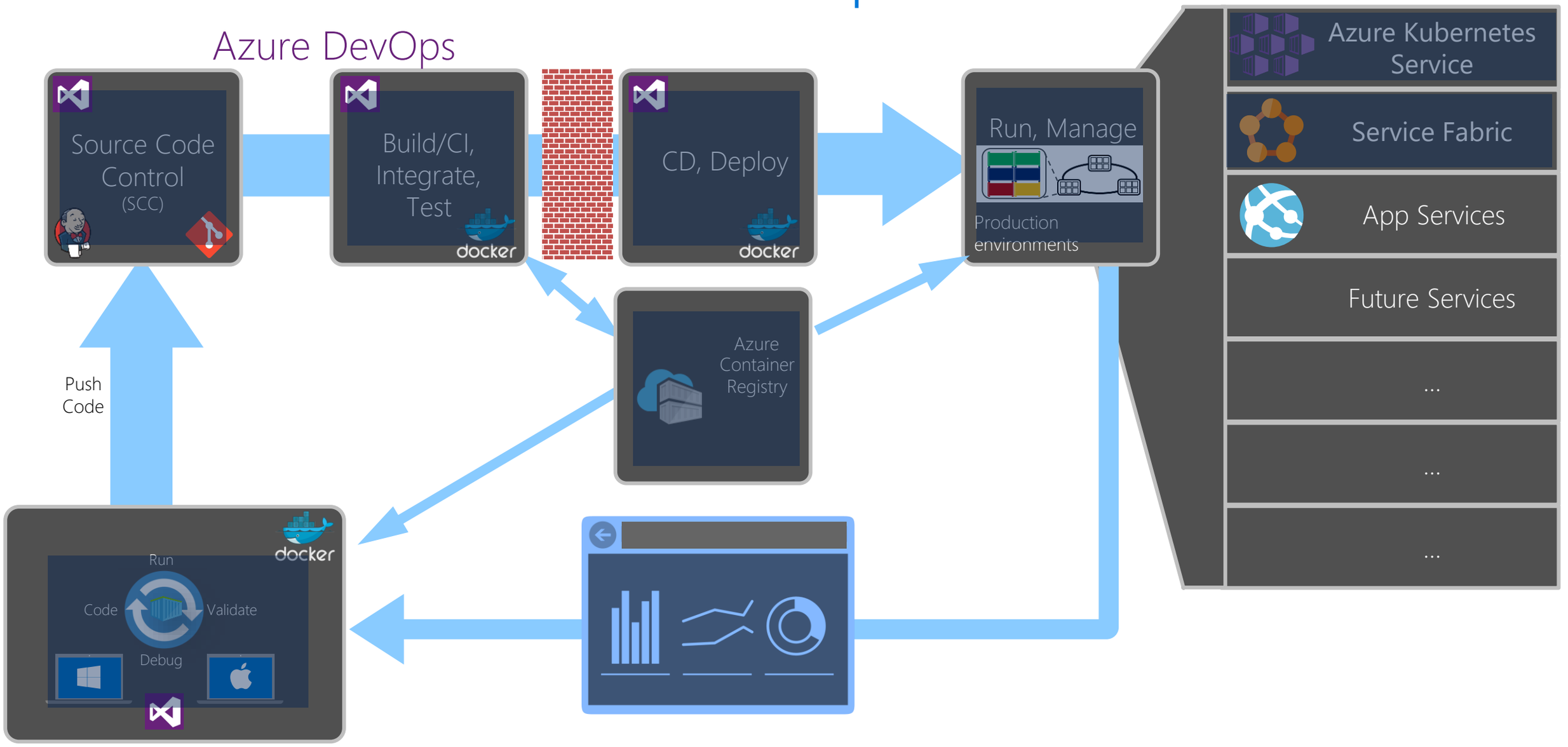
Continuous Learning & Monitoring

- With Azure Application Insights you can identify how your applications are performing and test if the recent deployment made things better or worse.
- Using CI/CD practices, paired with monitoring tools, you'll be able to safely deliver features to your customers as soon as they're ready.

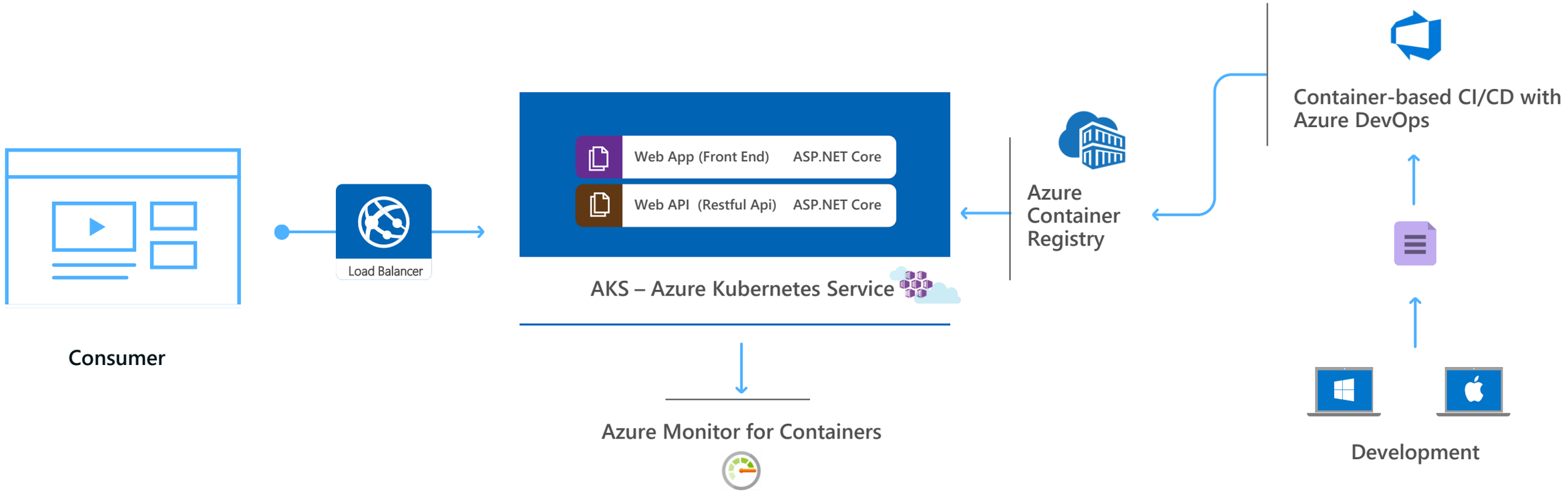
Containerized Workflow Pipeline



Containerized Workflow Pipeline With AKS/SF



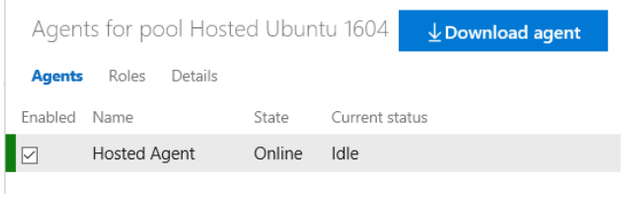
CI/CD Pipeline | Azure DevOps and AKS

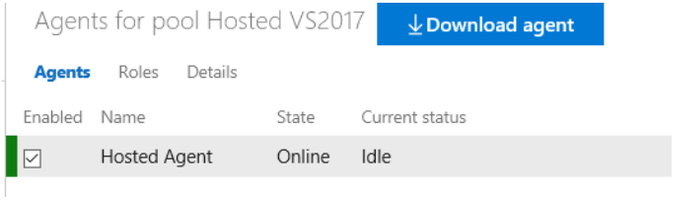


Azure DevOps Agents

- Agents: To build your code or deploy your software you need at least one agent.
  - Private Agents : More control to install dependent software needed for builds and deployments
  - Hosted Agents: Microsoft provides the agent and takes care of the maintenance and upgrades

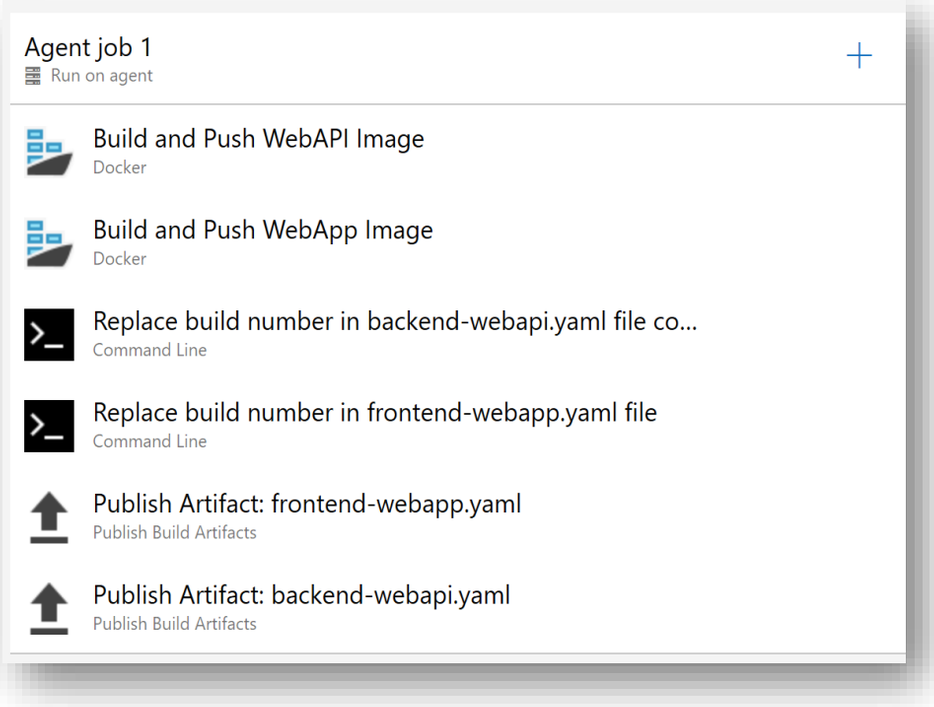
- Linux Agents (Azure Pipeline / TFS 2017): https://docs.microsoft.com/en-us/azure/devops/pipelines/agents/v2-linux?view=vsts
- Windows Agents (Azure Pipeline / TFS 2017): https://docs.microsoft.com/en-us/azure/devops/pipelines/agents/v2-windows



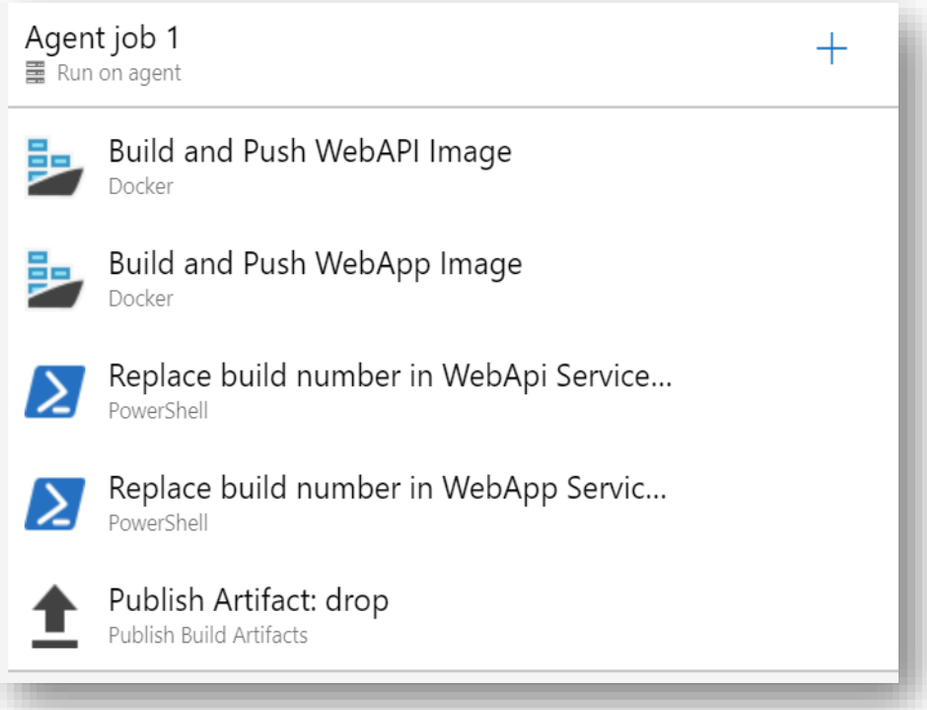


Build Pipeline

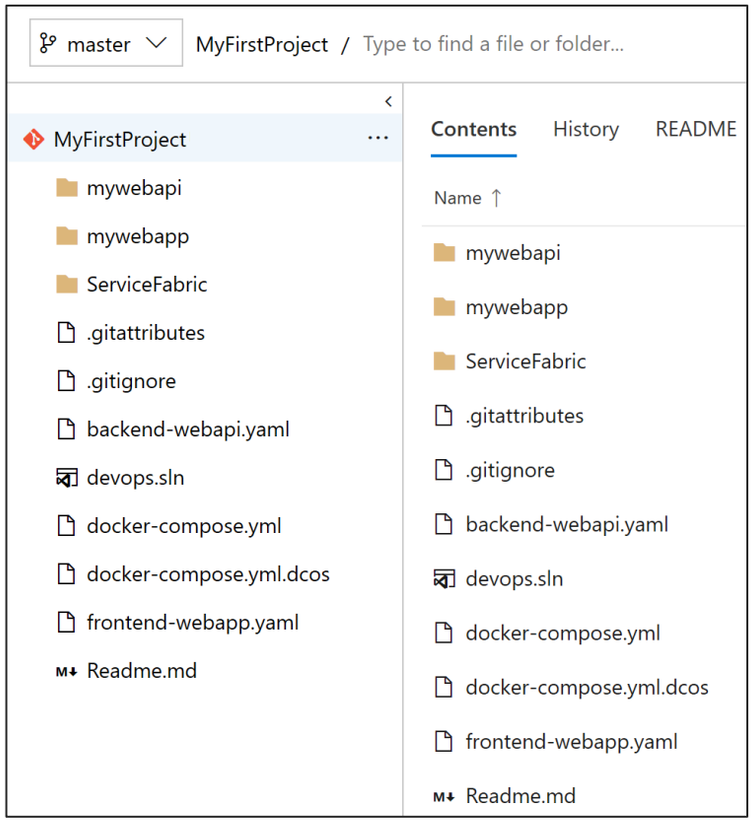
Build for Multi-Container ASP.NET Core Application using Linux Containers



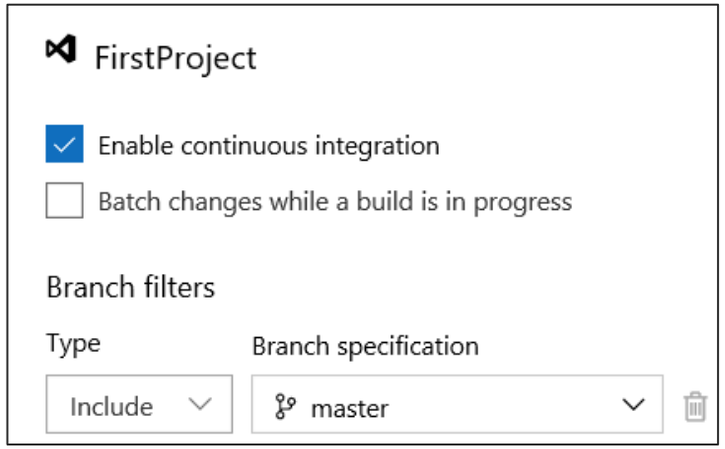
Build for Multi-Container ASP.NET Core Application using Windows Containers



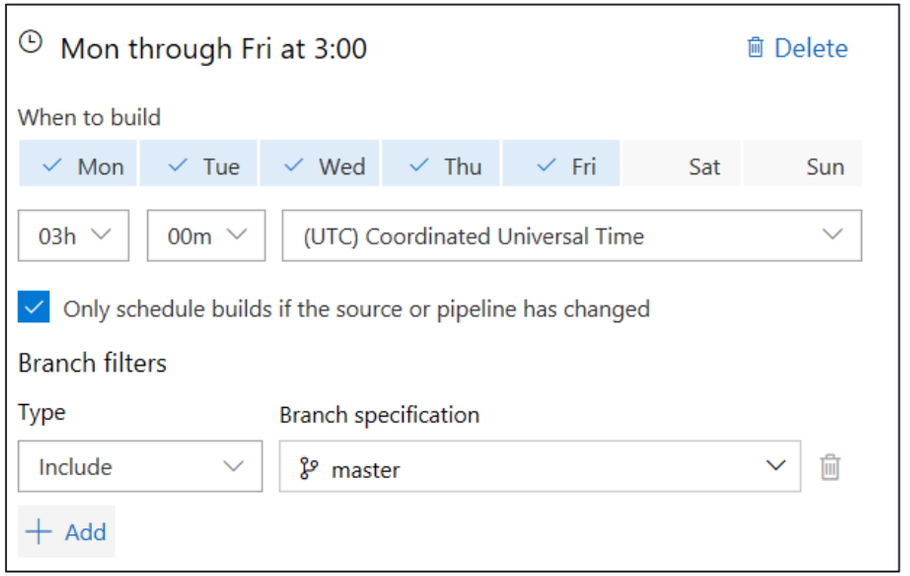
Continuous Integration Setting



Changes to a branch can trigger the build automatically



Build → Triggers → CI Enabled



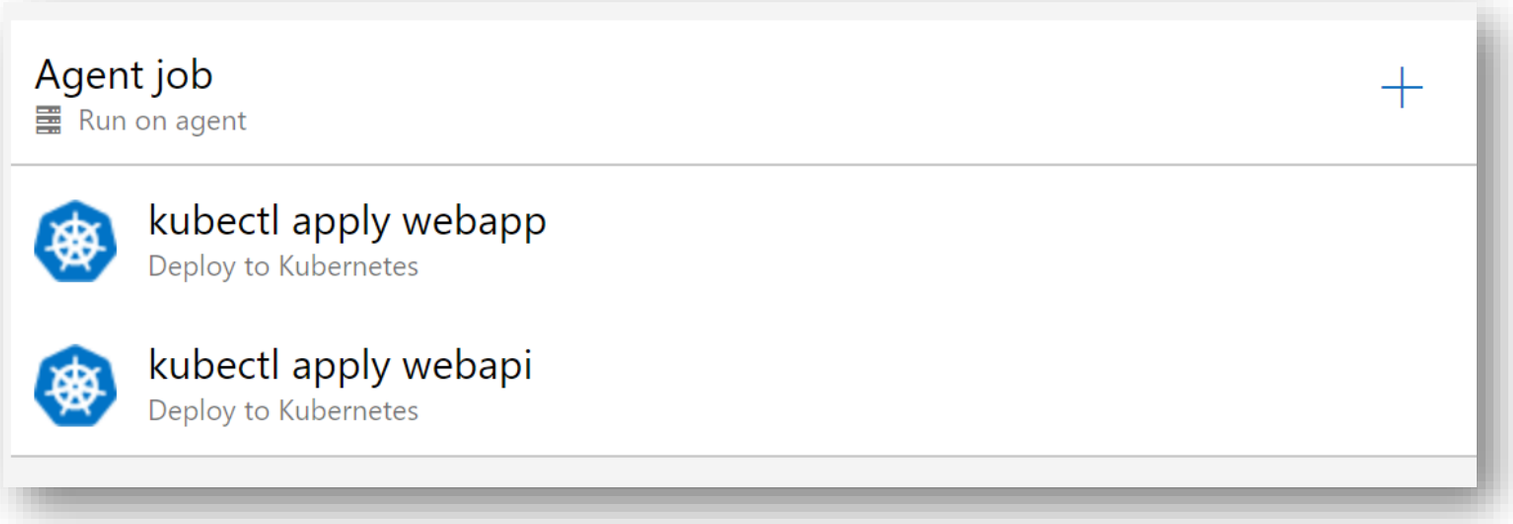
Schedule Build
Example: Nightly/Daily

Demonstration: *Build Pipeline*

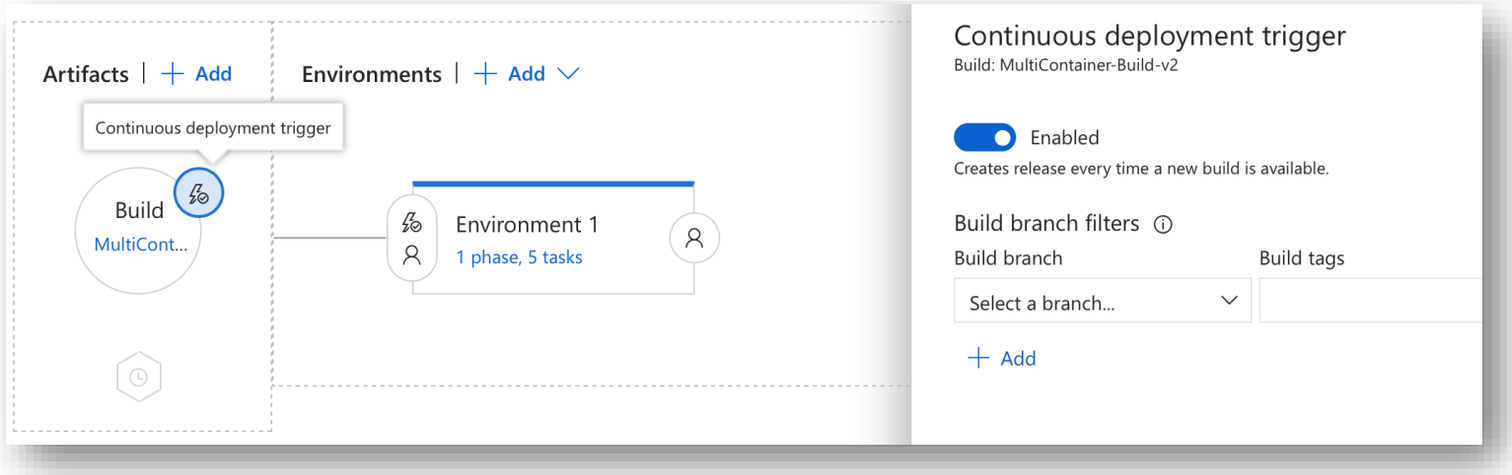
Build Pipeline for Multi-Container Application

Release Pipeline

Release pipeline for AKS | Kubernetes

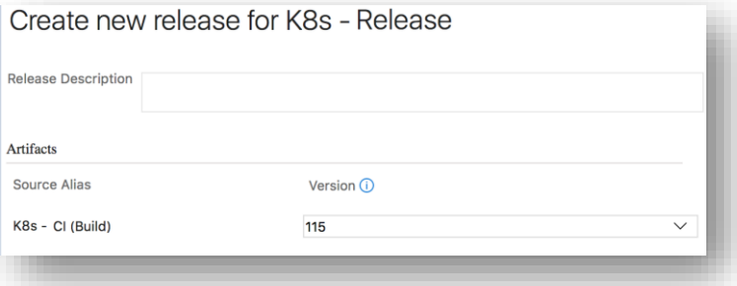


Azure Pipeline Continuous Deployment Setting



Assign Build and select continuous deployment trigger

Continuous Deployment on every successful Build



On-Demand Release Kickoff

Demonstration: *Release Pipeline*

Release Pipeline for AKS

Continuous Deployment Setting