

## *OpenShift Meetup*

*3 Patterns for Connecting Azure DevOps and OpenShift  
+ How can you get started ?*

# Agenda

- OpenShift & DevOps Tooling
- Why Azure DevOps and OpenShift?
- Introduce Components used in the demos
- 3 Patterns for Azure DevOps & OpenShift
- How you can get started?



Benjamin Farr

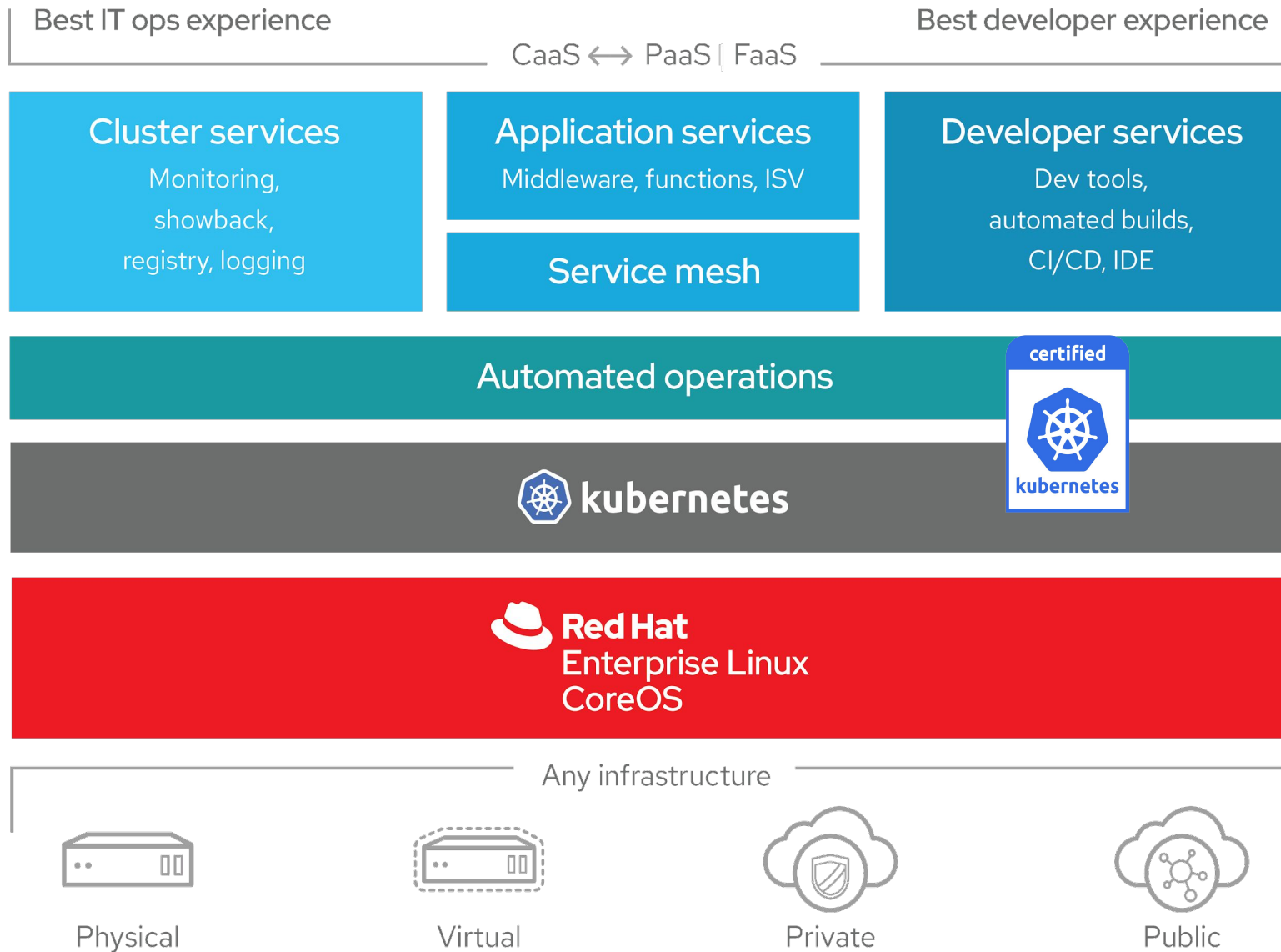
Associate Principal Solution Architect,  
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Specialise in Cloud, Modernisation,  
OpenShift, Applications, Integration

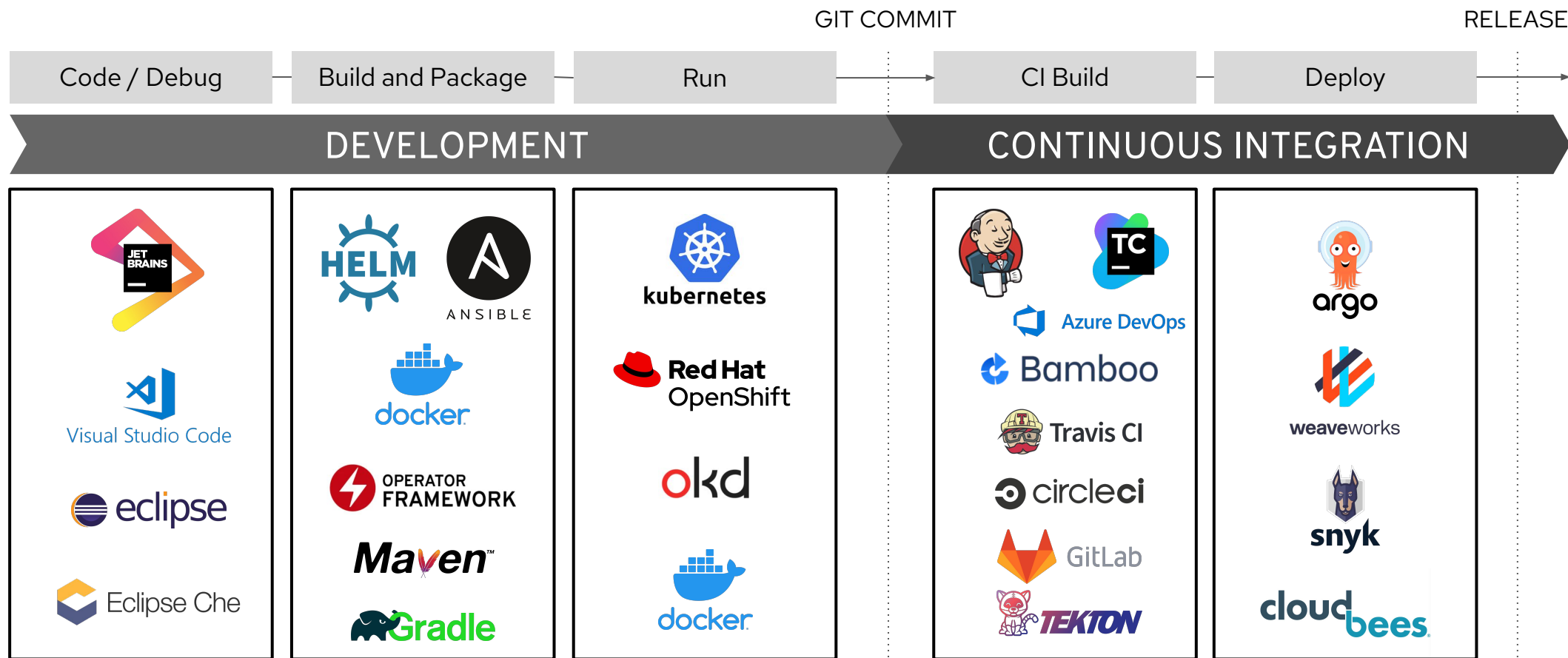
<https://www.linkedin.com/in/farrbenjamin/>



# OpenShift is Enterprise Kubernetes



# OpenShift Integrates Into Your Organization's Preferred Toolchain



Bitbucket

Microsoft  
Visual Studio  
Team Foundation

GitHub

GitLab

QUAY  
by CoreOS

JFrog Artifactory

Sonatype  
Nexus

# The Multiple reasons for Azure DevOps and OpenShift

## App Developers

Azure Services and Tool Suite

Manage in one place

OpenShift Marketplace and Cloud Native Dev

## IT Architects

Securely host containerised workloads anywhere

Fits Organisations preference

Supported Images on OpenShift

## IT Operations

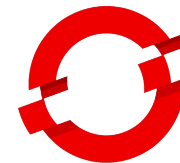
Automated Operations

Support and security patches

Consistent Environments



Azure DevOps



Red Hat  
OpenShift

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Let's Briefly look at the  
components used in the  
demos

# oc CLI Tool

Interact with OpenShift from the Command Line

## e.g. Launch a Container

```
oc run appname --rm --restart Never --image idoop/docker-nuget-server:latest
```

## e.g. Source to Image (S2I) Build

```
oc new-app https://github.com/bfarr-rh/pytest-calculator.git --name=appname
```

## e.g. Docker Build (from a local directory)

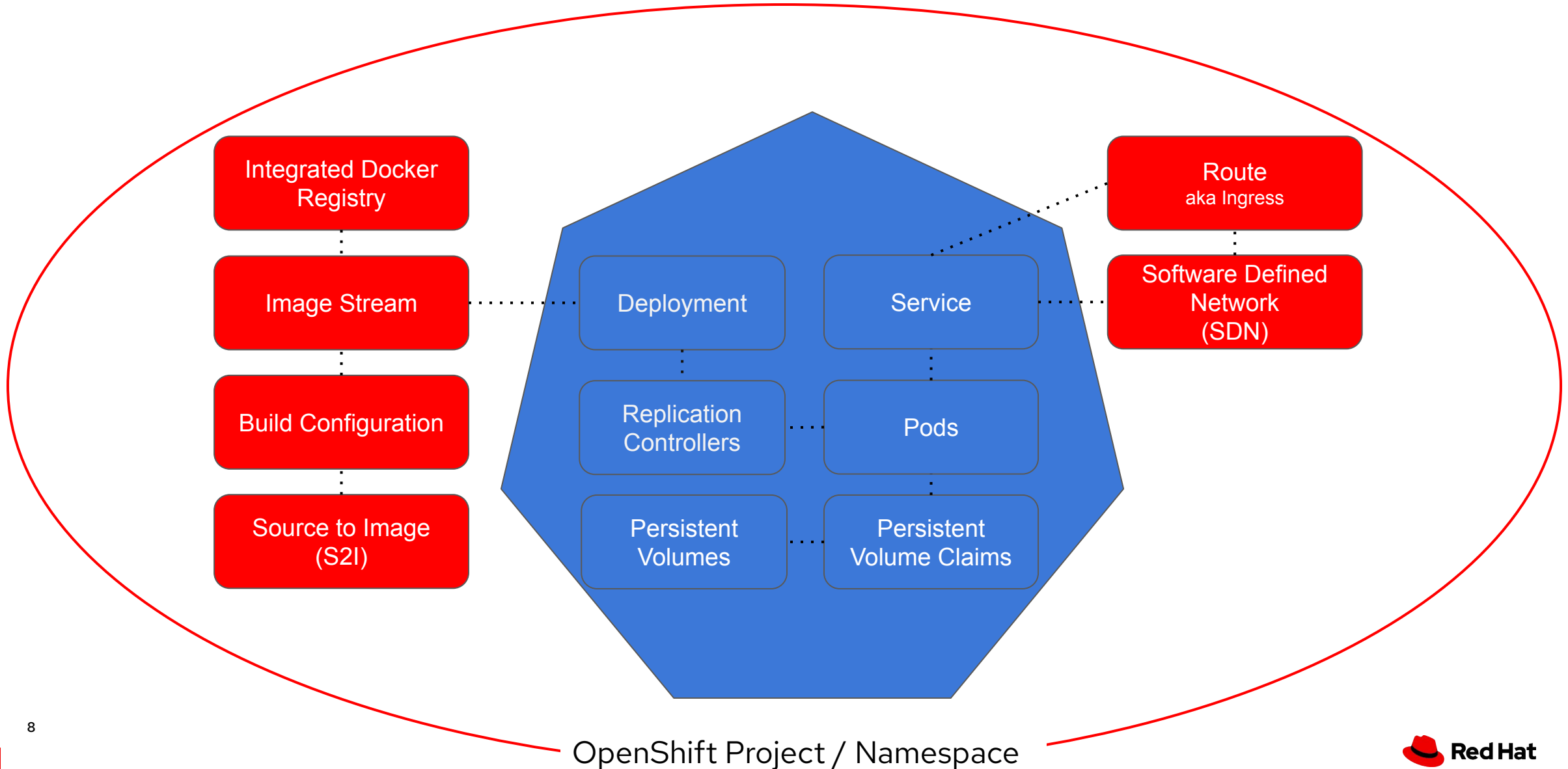
```
oc new-build . --name=appname --strategy=docker
oc start-build appname --from-dir=.
oc new-app appname
```



**Powerful tool** like kubectl  
Kube & Openshift API, Rsh, Sync  
Files, Port Forward, Build jobs+++

- [Download oc for Linux for x86\\_64](#)
- [Download oc for Mac for x86\\_64](#)
- [Download oc for Windows for x86\\_64](#)
- [Download oc for Linux for ARM 64](#)
- [Download oc for Linux for IBM Power, little endian](#)
- [Download oc for Linux for IBM Z](#)

# OpenShift builds upon Core Kubernetes Resources





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# 3 Patterns for Azure DevOps and OpenShift

# 1

## Introducing

### Azure Pipelines OpenShift Extension



**Execute conditional oc command**  
OpenShift execute CLI command if the conditi...

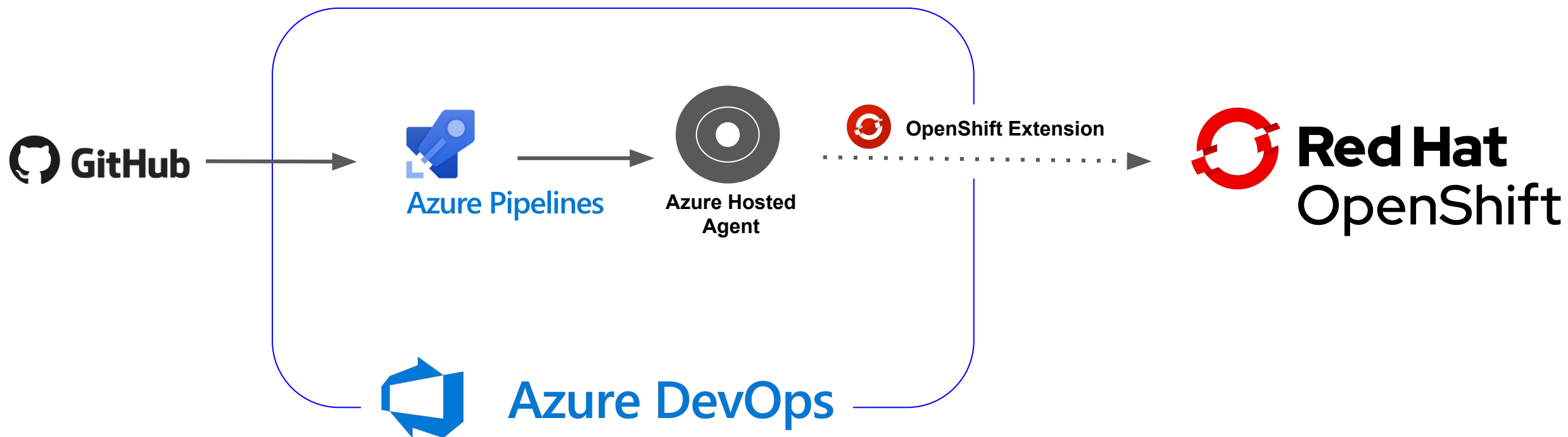


**Execute oc command**  
OpenShift execute CLI command.



**Update ConfigMap**  
Applies environment properties to specified O...

# OpenShift Extension



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# Demo - Pattern 1

<https://www.youtube.com/watch?v=BnLc3DmLfqs>

# Pipeline Flow



## Azure DevOps

### Setup

Azure  
Hosted  
Agent

```
pool:  
vmImage: 'ubuntu-latest'
```



Execute oc command  
OpenShift execute CLI command.

Service  
Connection

### Key Steps



Git Clone



Connect to OpenShift



Start and wait for Build

```
start-build pytest-calculator --from-dir=./1/s --wait --follow
```



Execute Tests within the Deployed Container & Transfer

```
exec $(POD_NAME) -- pytest --junitxml=junit.xml  
rsync $(POD_NAME) :/opt/app-root/src/junit.xml $(DefaultWorkingDirectory)
```



Publish Test Results

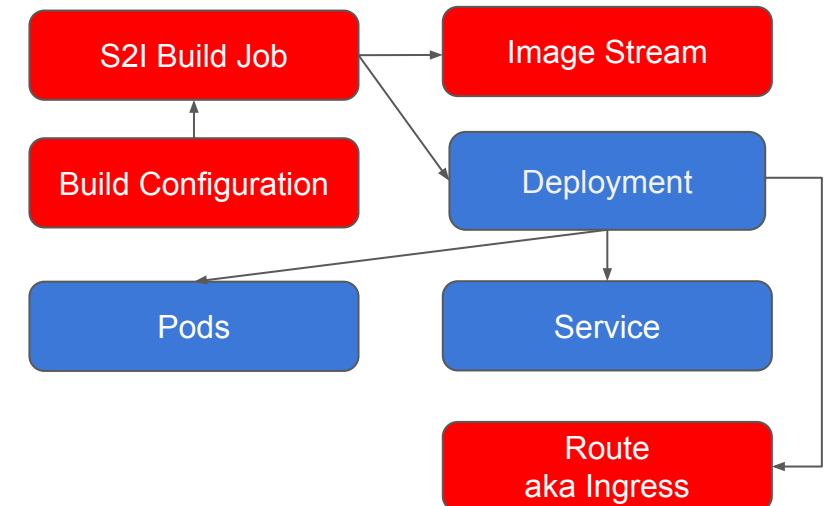


## Red Hat OpenShift

### Setup

Create Project, Service Account  
Get Token for Login

### Key Resources



# Establish connection with oc and use the OpenShift Maven Plugin



## JKube OpenShift Maven Plugin

- Generates OpenShift YAML files.
- Provides **Zero Configuration** for a quick ramp-up.

1. Login to OpenShift with the oc cli tool.

```
oc login
```

2. Create your OpenShift resource descriptors.

```
mvn clean oc:resource
```

3. Start S2I build

```
mvn package oc:build
```

4. Deploy your application on OpenShift cluster

```
mvn oc:deploy
```

<https://www.eclipse.org/jkube/>

# Java App Pipeline Flow



Azure DevOps



Red Hat  
OpenShift

## Setup

Azure Hosted

vmImage: 'ubuntu-latest'



Execute oc command  
OpenShift execute CLI command.

Service  
Connection

## Setup

Create Project, Service Account  
Get Token for Login

## Key Steps



Git Clone



Maven Build & Unit Test



Connect to OpenShift



Generate OpenShift Resources (YAML)

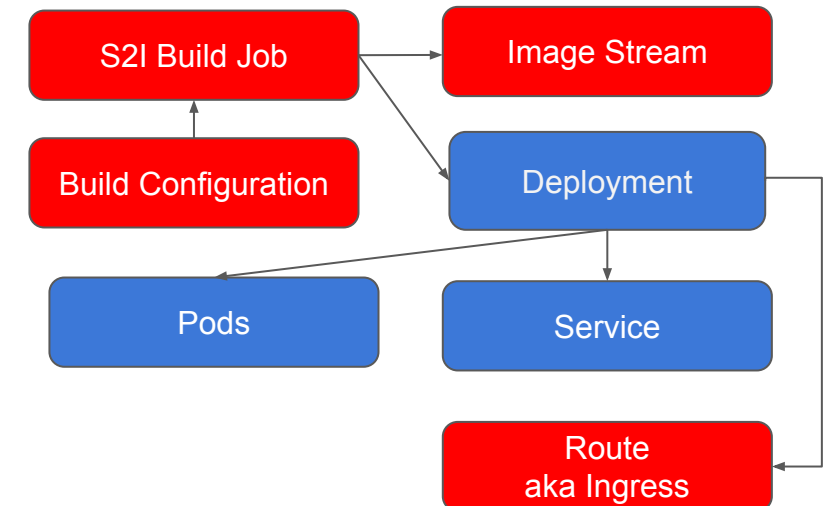


Container Build



Deploy

## Key Resources



# 2

## Introducing

### Azure Pipelines Kubernetes Extensions



#### Deploy to Kubernetes

Use Kubernetes manifest files to deploy to clu...

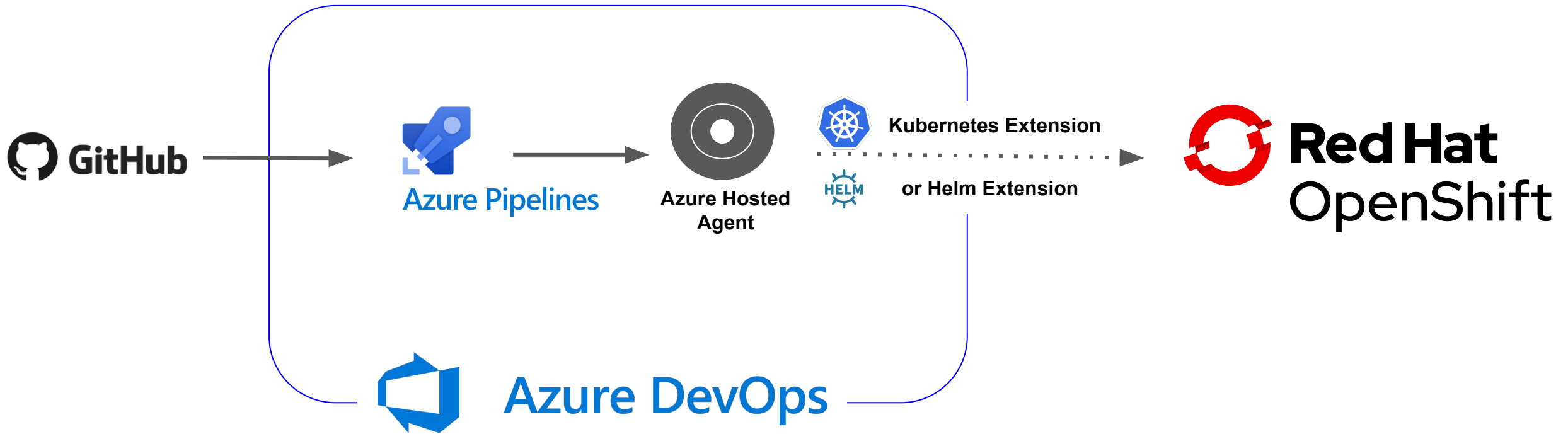


#### Kubectl

Deploy, configure, update a Kubernetes cluste...



# Kubernetes or Helm Extensions



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# Demo - Pattern 2

<https://www.youtube.com/watch?v=vEcwgwbMKG8>

# Space Game

← **Jobs in run #20211130.2**  
bfarr-rh.mslearn-tailspin-spacegame-web-kubernetes

**Build and push**

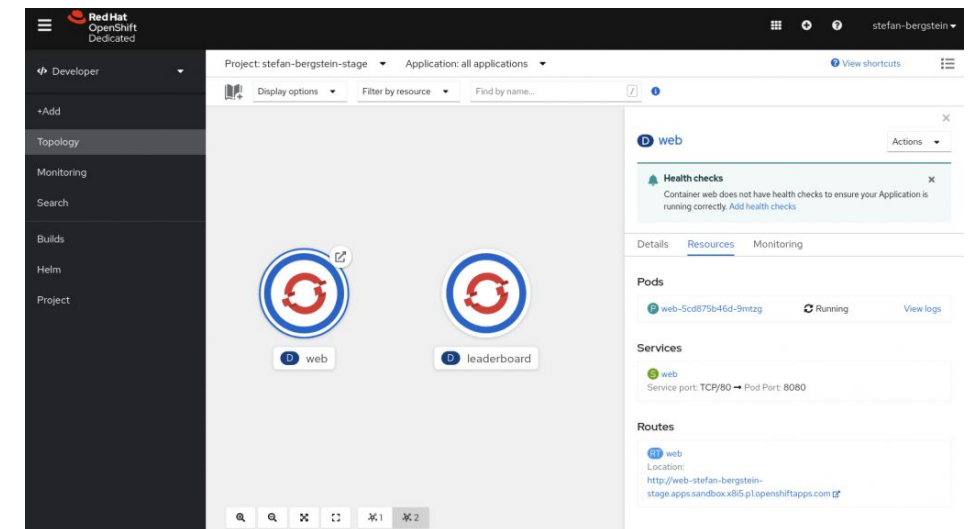
✓	Build job	1m 44s
✓	Initialize job	<1s
✓	Checkout bfarr-rh/msl...	2s
✓	Build and push the i...	52s
✓	Build and push the le...	43s
✓	PublishPipelineArtifact	3s
✓	Post-job: Checkout b...	<1s
✓	Finalize Job	<1s

**Deploy the containers**

✓	Deploy	48s
✓	Initialize job	<1s
✓	Download	5s
✓	Create imagePullSecret	4s
✓	Deploy to Kubernetes...	37s
✓	Finalize Job	<1s

✓ **Deploy**

- 1 Pool: [Azure Pipelines](#)
- 2 Image: ubuntu-18.04
- 3 Agent: Hosted Agent
- 4 Started: Yesterday at 11:55
- 5 Duration: 48s



# Space Game - Pipeline Flow



## Azure DevOps

### Setup

Azure  
Hosted  
Agent

```
pool:  
  vmImage: 'ubuntu-latest'
```

Container  
Registry  
Connection

Kubernetes  
Environment

Kubernetes  
Service  
Connection

### Key Steps



Git Clone



Build and push the image to container registry



Create image Pull Secret



Deploy to Kubernetes cluster

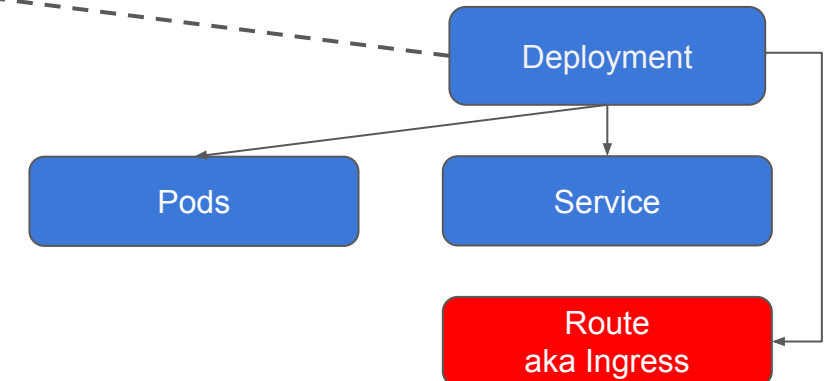


## Red Hat OpenShift

### Setup

Create Project, Service Account  
Get Token for Login

### Key Resources



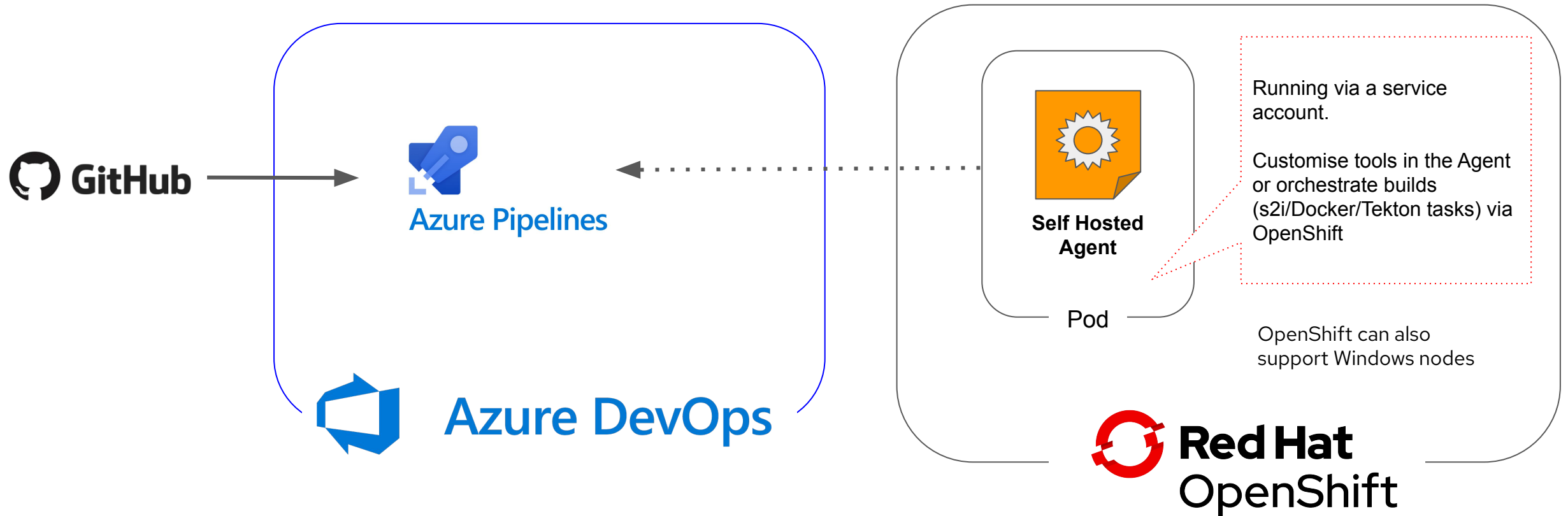
# 3

## Introducing

OpenShift (or Self Hosted) - Azure Pipelines Agent



# OpenShift Hosted Agent



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# Demo - Pattern 3

<https://www.youtube.com/watch?v=AUxGFfwme1k>

# Self Hosted Agent - Pipeline Flow



Azure DevOps

## Setup

Self Hosted Agent

```
pool:  
  name: 'OpenShift-Agent'
```



Variables

Agent Pool

Personal Access Token

HTTPS Register with PAT



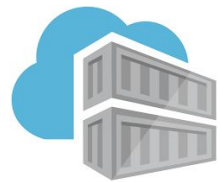
Red Hat OpenShift

## Setup

Project and Service Account

Self Hosted Agent

## Key Resources



Copy Image to ACR



Self Hosted Agent(s)

Pod

S2I Build

Deploy

S2I Build Job

Image Stream

Build Configuration

Deployment

Pods

Service

Route  
aka Ingress



# Which Pattern is Best?

1

**Azure Pipelines OpenShift Extension**



2

**Azure Pipelines Kubernetes (or Helm) Extensions**

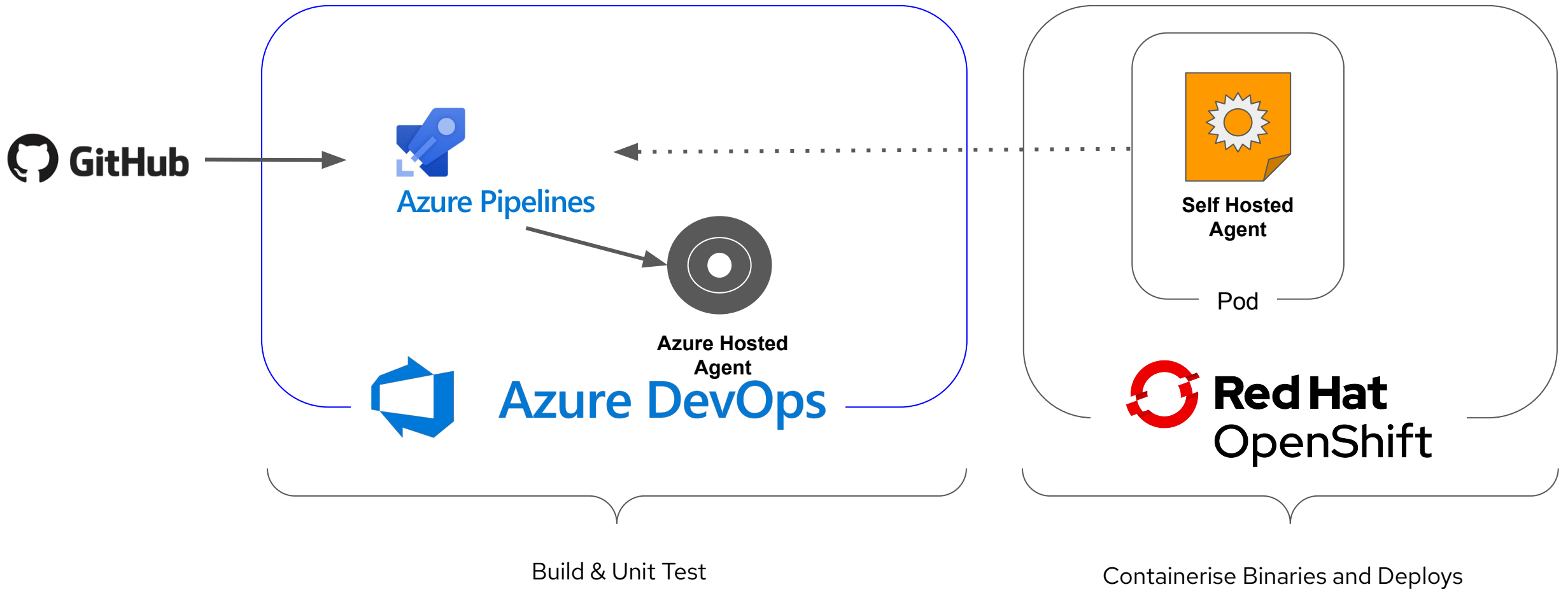


3

**OpenShift (or Self Hosted) - Azure Pipelines Agent**



## Sometimes it maybe a Combination



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# How can you get started?

# Reference Links for each Pattern

1



## OpenShift Extension for Azure DevOps

<https://github.com/bfarr-rh/pytest-calculator>

<https://github.com/bfarr-rh/jkube-zeroconfig.git>



**JKube** <https://www.eclipse.org/jkube/>

2

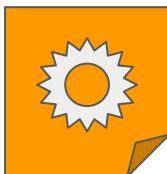


## Azure DevOps Kubernetes Tasks

<https://github.com/bfarr-rh/mslearn-tailspin-spacegame-web-kubernetes.git>

<https://www.opensourcerers.org/2021/05/31/how-to-rock-ci-cd-with-azure-devops-and-openshift-in-6-easy-steps/>

3



## OpenShift Hosted Agent

<https://github.com/bfarr-rh/azure-devops-ocp-agent>

<https://github.com/bfarr-rh/dot-net-examples.git>

## Azure Documentation Self Hosted Agents



## DotNet Workloads on OpenShift

[Strategies for Moving .NET Workloads to OpenShift Container Platform](#)

[Run .Net code on Red Hat OpenShift Container Platform on Mac OS](#)

# Thank you

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