Pipelines & Azure

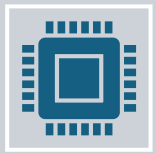
Agenda

- Concept of pipelines
- Hello world pipeline
- Service connections
- Deploying Infrastructure as Code
- Stages and other Azure DevOps pipeline concepts

Learning objectives

- Understand concept of pipelines
- Capability to read and modify pipeline files
- Deploy first IaC pipeline
- Understand Azure DevOps yaml pipeline basics

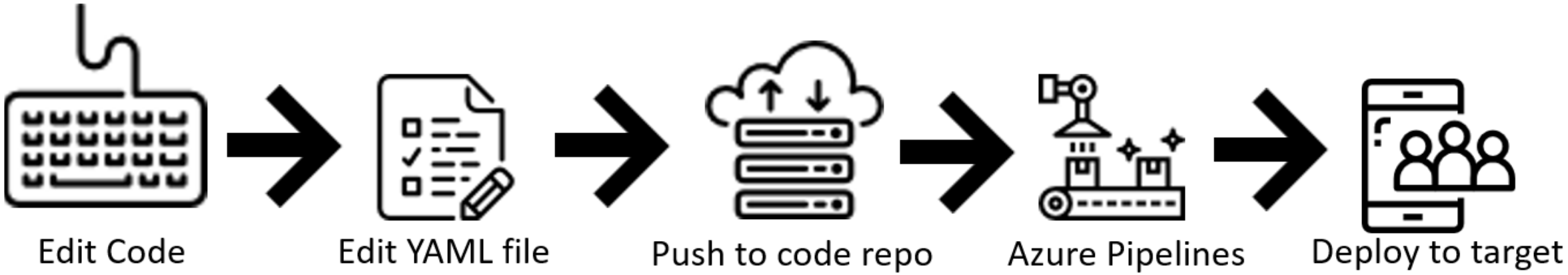
Concept of pipelines



Continuous integration (CI) and Continuous deployment (CD) pipelines are used to build, test and deploy software automatically from code to working product or service

Pipelines can be triggered automatically for example by events, schedules, or git repository updates

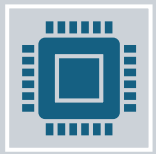
Automated software build, test and deployment reduces risks of software deployment by forcing computer to do all boring and repetative work



Azure DevOps YAML pipeline process

Use Azure Pipelines - Azure Pipelines | Microsoft Learn

Agents



Device, where the pipeline code runs on

Microsoft managed agents or self-hosted agents

Self-hosted can be almost any device; RaspberryPi, VM, Container, Scaleset...

Jenkins

Azure DevOps

GitLab

Pipeline engines

Azure DevOps pipeline schema

```
trigger:
parameters:
variables:
pool:
steps/jobs/stages:
```

Iac.yaml

Lab 1

Deploy Hello World pipeline

Service connections

Service account to target service

Pipeline uses service connection (recognized with name) if it has permissions to use it

In pipeline, chosen task uses the service connection during connecting to the service

Deploying Azure IaC with pipeline

Azure DevOps has several tasks to connect to Azure such as AzureCLI@ and AzurePowerShell@

Both tasks connects to Azure with provided service connection and runs a script either inline or from file

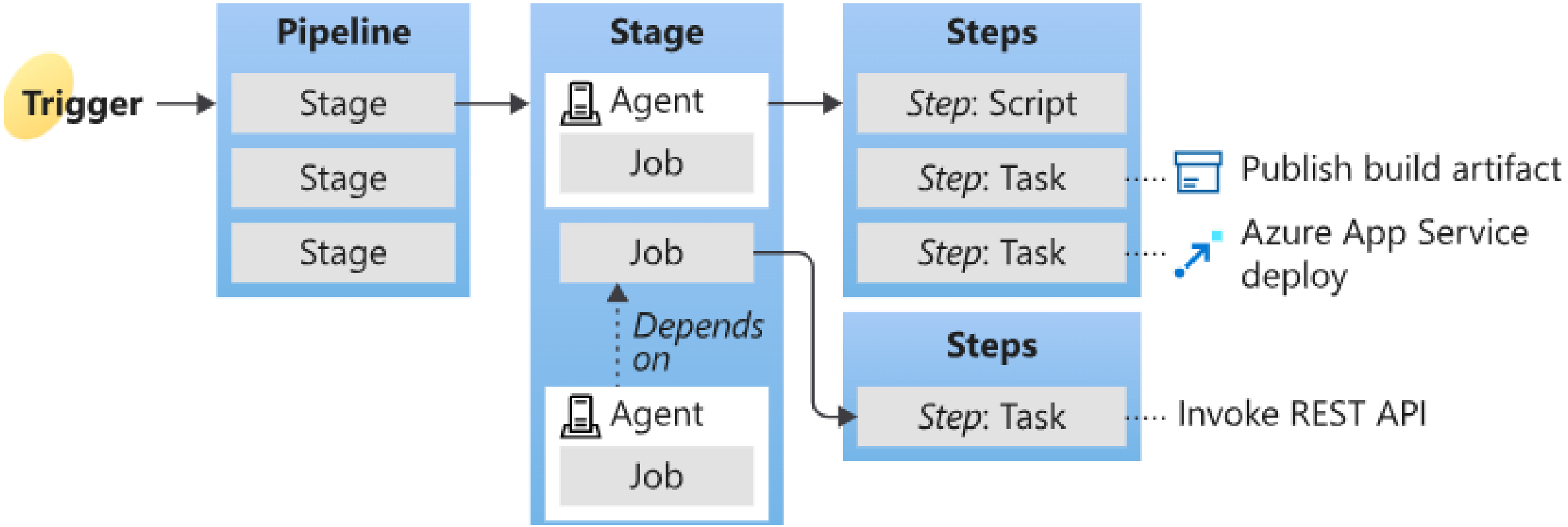
Prefer using AzurePowerShell@ task and windows-based agent to avoid caveouts of AzureCLI@ task (such as usage of user-assigned managed identities)

Deploying Azure IaC with pipeline

```
jobs:
  - job: 'DeployToAzure'
    displayName: 'Deploy to Azure'
    steps:
      - task: AzurePowerShell@5
        name: DeployAzureIac
        displayName: 'Deploy Azure IaC'
        inputs:
          azurePowerShellVersion: LatestVersion
          azureSubscription: 'AzureIacTraining'
          scriptType: 'InlineScript'
          errorActionPreference: 'stop'
          Inline:  |
            New-AzDeployment -Location 'swedencentral'...
```

Lab 2

Deploy Azure IaC pipeline



Azure DevOps pipeline phases

Pipeline phases

Approvals and checks

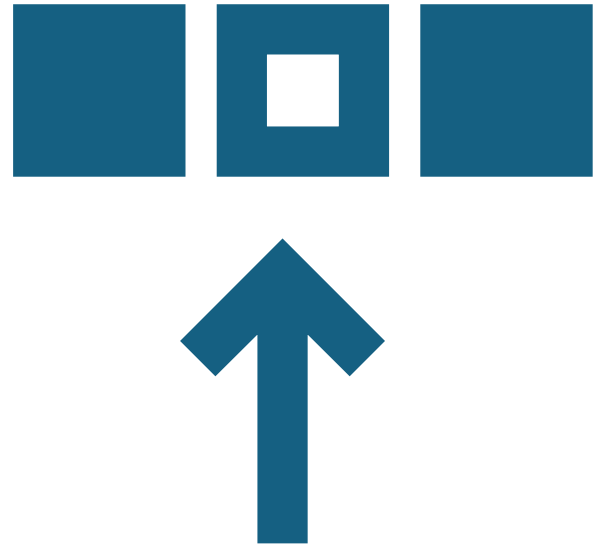
- Branch control enables to ensure the source branch
- Approvals enables manual approvals to continue
- Ensure that source branch, business hours are correct, or Azure monitor does not have any active alerts
- Make internal or external checks or runs before the pipeline runs by using REST requests or Azure Function

Environments and libraries

- Logical group to manage pipeline run controls
- Target VM, App Service, or other services can be added to group all actions in one place
- Variable groups and secure files can be stored in library and used during the pipeline runs

Release pipelines and artifacts

- Release pipelines are meant to be used in continuous deployment and can be configured only through graphical interface
- Release pipelines has more run actions for release management than *Azure DevOps Build-pipelines*
- Artifacts is collection of files or packages published by a pipeline run
- Azure DevOps provides also artifact feed to publish new packages



Azure DevOps tasks for Azure

- AzurePowerShell@5 - Azure PowerShell v5 task | Microsoft Learn
- AzureCLI@2 - Azure CLI v2 task | Microsoft Learn

- Azure Pipelines task reference | Microsoft Learn