Microsoft

Azure

Azure DevOps Pipelines

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November 18th, 2020

Today’s agenda

Pipelines

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Azure DevOps Pipelines

Pipelines

What is Azure Pipelines

Types of Pipelines

What is Azure Pipelines

Azure Pipelines automatically builds and tests code projects to make them available to others. It works with just about any language or project type.

Azure Pipelines combines continuous integration (CI) and continuous delivery (CD) to test and build your code and ship it to any target.

Azure Pipelines is organized around Jobs and Tasks, which represent components of work (or actions) which execute on an agent.

Pipelines and CI/CD

Continuous integration automates tests and builds for your project. CI helps to catch bugs or issues early in the development cycle, when they're easier and faster to fix. Items known as artifacts are produced from CI systems. They're used by the continuous delivery release pipelines to drive automatic deployments.

Continuous delivery automatically deploys and tests code in multiple stages to help drive quality. Automated release pipelines consume Continuous Integration artifacts to release new versions and fixes to the target of your choice.

Azure DevOps Pipelines

Pipelines

What is Azure Pipelines

Types of Pipelines

Types of Pipelines

Azure Pipelines are available in 3 types:

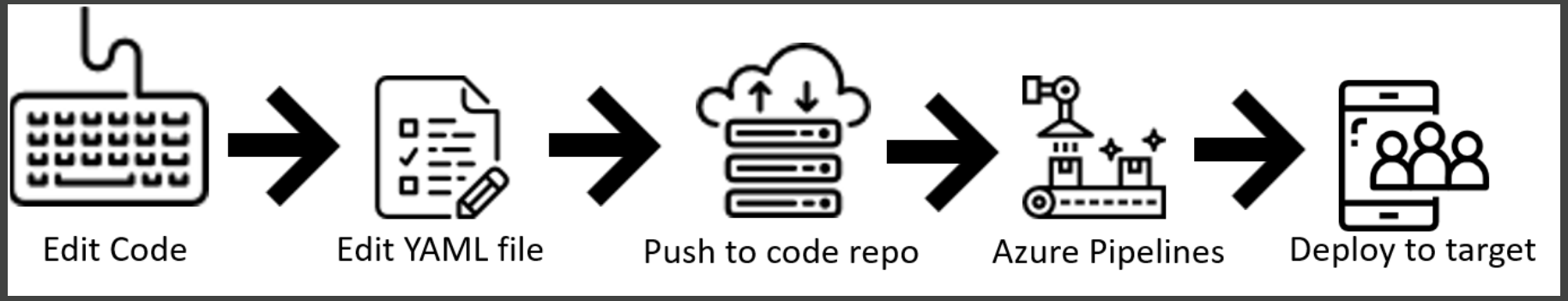
- YAML
- Classic Build
- Classic Release

Certain pipeline features are only available when using YAML or when defining build or release pipelines with the Classic interface.
See: https://docs.microsoft.com/en-us/azure/devops/pipelines/get-started/pipelines-get-started?view=azure-devops#feature-availability

YAML Pipelines

Pipeline defined in a YAML

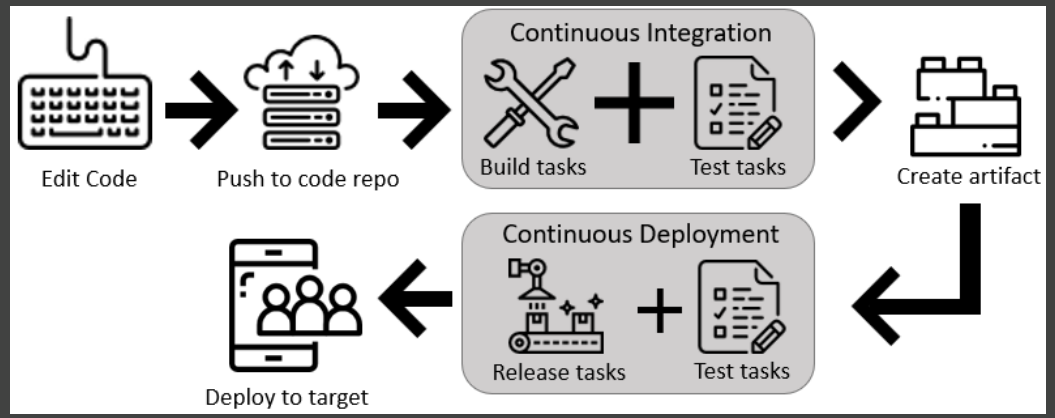
The pipeline is versioned with your code. It follows the same branching structure.



Classic Build and Release Pipelines

Create and configure pipelines in the Azure DevOps web portal with the Classic user interface editor.

You define a build pipeline to build and test your code, and then to publish artifacts. You also define a release pipeline to consume and deploy those artifacts to deployment targets and test them.



Demo

YAML and Classic Pipelines

Questions?

Azure DevOps Pipelines

Pipeline Basics

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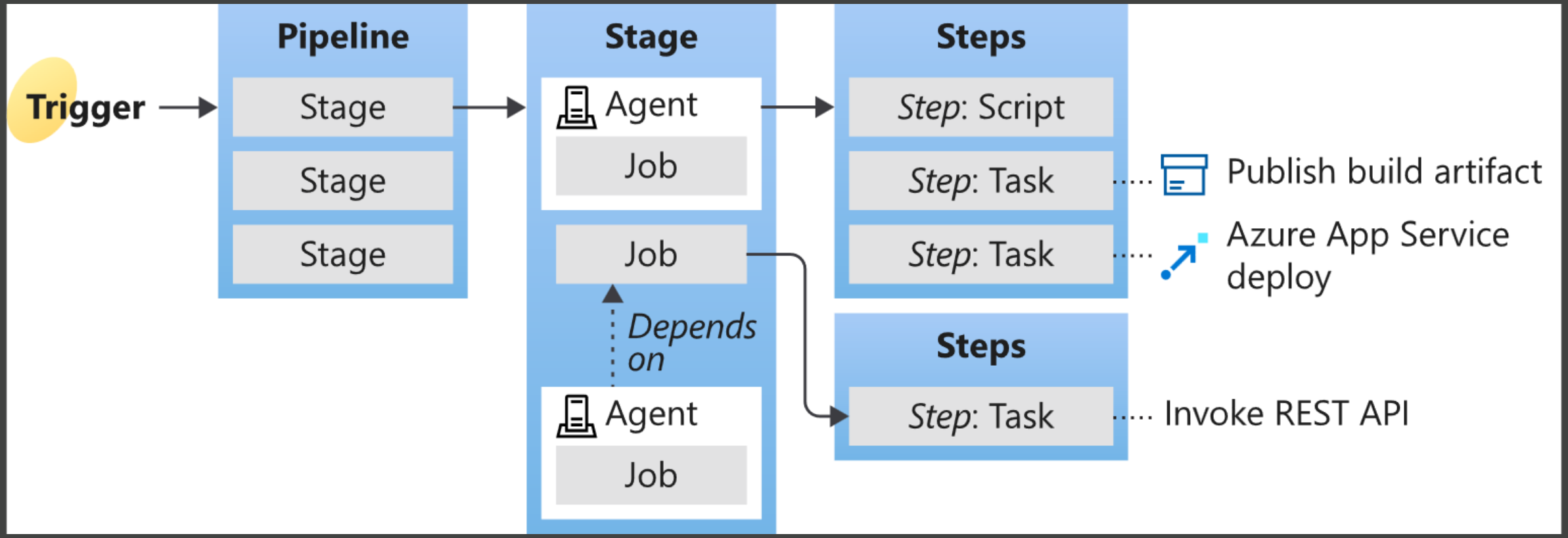
Structure


Trigger
Pipeline
Stage
Stage
Stage
Stage
Agent
Job
Job
Depends on
Agent
Job
Steps
Step: Script
Step: Task
Step: Task
Steps
Step: Task
Publish build artifact
Azure App Service deploy
Invoke REST API

Structure

A trigger tells a Pipeline to run.

A pipeline is made up of one or more stages. A pipeline can deploy to one or more environments.

A stage is a way of organizing jobs in a pipeline and each stage can have one or more jobs.

Each job runs on one agent. A job can also be agentless.

Each agent runs a job that contains one or more steps.

A step can be a task or script and is the smallest building block of a pipeline.

A task is a pre-packaged script that performs an action, such as invoking a REST API or publishing a build artifact.

An artifact is a collection of files or packages published by a run.

Demo

Building a Pipeline

Azure DevOps Pipelines

Pipeline Basics

Structure

Agents

Agents

Microsoft Hosted Agents

If your pipelines are in Azure Pipelines, then you've got a convenient option to run your jobs using a Microsoft-hosted agent. With Microsoft-hosted agents, maintenance and upgrades are taken care of for you. Each time you run a pipeline, you get a fresh virtual machine for each job in the pipeline. The virtual machine is discarded after one job. Microsoft-hosted agents can run jobs directly on the VM or in a container.

Self Hosted Agents

An agent that you set up and manage on your own to run jobs is a self-hosted agent. You can use self-hosted agents in Azure Pipelines or Team Foundation Server (TFS). Self-hosted agents give you more control to install dependent software needed for your builds and deployments. Also, machine-level caches and configuration persist from run to run, which can boost speed.

Agents

Azure Virtual Machine Scale Sets (VMSS)

Azure virtual machine scale set agents are a form of self-hosted agents that can be auto-scaled to meet your demands. This elasticity reduces your need to run dedicated agents all the time. Unlike Microsoft-hosted agents, you have flexibility over the size and the image of machines on which agents run.

Capabilities

Every self-hosted agent has a set of capabilities that indicate what it can do. Capabilities are name-value pairs that are either automatically discovered by the agent software, in which case they are called system capabilities, or those that you define, in which case they are called user capabilities.

When you author a pipeline, you specify certain demands of the agent. The system sends the job only to agents that have capabilities matching the demands specified in the pipeline.

Demo

Agents

Questions?

Azure DevOps Pipelines

Integration with Other Services

Demo

Integration with other services

Questions?