

Training Module: Building CI/CD Pipelines in Azure DevOps from YAML

Duration: 2 Days

Target Audience: DevOps Engineers, CI/CD Engineers, Software Developers with DevOps experience

Prerequisites: Familiarity with Azure DevOps, basic knowledge of YAML syntax, and general CI/CD concepts. Knowledge of .NET and IIS will be helpful.

Day 1: Introduction to Azure DevOps YAML Pipelines & Concepts

Module 1: Introduction to YAML-based Pipelines

- **Duration:** 1 hour
 - **Objective:** Understand the structure and key components of a YAML-based Azure DevOps pipeline.
 - **Topics Covered:**
 - What is YAML in the context of Azure DevOps?
 - Key components of an Azure DevOps YAML pipeline:
 - YAML Syntax Overview (Lists, Key-Value pairs)
 - Basic Azure DevOps Pipeline Structure

Hands-on Lab:

- Create a basic pipeline YAML file with one job and one step that runs a simple script (e.g., echo "Hello, World").
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Module 2: Important YAML Properties in Azure DevOps Pipelines

- **Duration:** 1.5 hours
 - **Objective:** Deep dive into important YAML properties for Azure DevOps pipeline configuration.
 - **Topics Covered:**
 - **trigger:** Define triggers (e.g., on push to branch)
 - **pool:** Define the agent pool to use (default and custom)
 - **jobs:** How to define multiple jobs (and parallel execution)
 - **variables:** Using pipeline variables to store values
 - **steps:** Different types of steps (script, task, etc.)
 - **condition:** Controlling when a step/job runs
 - **timeout:** Configuring timeouts for jobs and steps

Hands-on Lab:

- Create a YAML file with triggers for different branches, variable definitions, and jobs with conditional execution.

Module 3: Integrating Azure DevOps Agents with Active Directory Service Accounts

- **Duration:** 1 hour
 - **Objective:** Learn how to integrate Azure DevOps agents with Active Directory service accounts for secure authentication and authorization.
 - **Topics Covered:**
 - Overview of Azure DevOps Agents and their role in pipelines
 - Introduction to Service Accounts in Active Directory
 - Configuring an Azure DevOps agent to authenticate with Active Directory

Hands-on Lab:

- Configure a Windows-based agent in Azure DevOps to authenticate using an Active Directory service account.

Day 2: Advanced CI/CD Concepts & Pipeline Deployment

Module 4: Building a CI Pipeline with Static Application Security Testing (SAST) Integration

- **Duration:** 2 hours
 - **Objective:** Learn how to integrate SAST tools into a CI pipeline and handle failure conditions for security vulnerabilities.
 - **Topics Covered:**
 - Overview of Static Application Security Testing (SAST)
 - Popular SAST tools and integrations in Azure DevOps (e.g., SonarCloud)
 - Configure failure conditions for pipeline steps when a SAST tool fails

Hands-on Lab:

- Integrate SonarCloud into a CI pipeline for static code analysis.
 - Configure the pipeline to fail when certain issues are detected and also generate a report as an artifact.
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Module 5: Deploying a .NET Web APP to Multiple Windows Servers with IIS

- **Duration:** 2 hours
 - **Objective:** Learn how to deploy a .NET Web APP to multiple Windows servers using IIS through an Azure DevOps pipeline.
 - **Topics Covered:**
 - Preparing IIS on target Windows servers for .NET hosting
 - Creating a pipeline to build and deploy a .NET Web APP application
 - Defining IIS web app configuration within the pipeline
 - Using Azure DevOps tasks for IIS deployment (e.g., IIS Web App Deployment)
 - Automating the deployment to multiple IIS instances using parallel jobs
 - Rollback strategies in case of failed deployment

Hands-on Lab:

- Build a CI/CD pipeline to deploy a .NET Web APP to IIS on two different Windows Servers.
 - **Step 1:** Build the Web APP project.
 - **Step 2:** Deploy the application to multiple IIS servers.
 - **Step 3:** Implement rollback strategy if deployment fails on one server.