

AZ-400: Microsoft Azure DevOps Solutions

AZ-400T01-A: Implementing DevOps Development Processes

Course Outline

Module 1: Getting started with Source Control

Lessons

- What is Source Control?
- Benefits of Source Control
- Types of source control systems
- Introduction to Azure Repos
- Migrating from TFVC to Git
- Authenticating to your Git Repos

After completing this module, students will be able to:

- Describe the benefits of using source control
- Migrate from TFVC to Git

Module 2: Scaling git for enterprise DevOps

Lessons

- How to structure your git repo
- Git Branching workflows
- Collaborating with Pull Requests
- Why care about GitHooks?
- Fostering Internal Open Source
- Git Version
- Public projects
- Files in Git

After completing this module, students will be able to:

- Scale Git for Enterprise DevOps

Module 3: Implement & Manage Build Infrastructure

Lessons

- The concept of pipelines in DevOps
- Azure Pipelines

- Evaluate use of Hosted vs Private Agents
- Agent pools
- Pipelines & Concurrency
- Azure DevOps and Open Source projects
- Azure Pipelines YAML vs Visual Designer
- Setup private agents
- Integrate Jenkins with Azure Pipelines
- Integration external source control with Azure Pipelines
- Analyze & Integrate Docker multi-stage builds

After completing this module, students will be able to:

- Implement and manage build infrastructure

Module 4: Managing application config & secrets

Lessons

- Introduction to Security
- Implement secure & compliant development process
- Rethinking application config data
- Manage secrets, tokens & certificates
- Implement tools for managing security and compliance in a pipeline

After completing this module, students will be able to:

- Manage application config & secrets

Module 5: Implement a mobile DevOps strategy

Lessons

- Introduction to Mobile DevOps
- Introduction to Visual Studio App Center
- Manage mobile target device sets and distribution groups
- Manage target UI test device sets
- Provision tester devices for deployment
- Create public and private distribution groups

After completing this module, students will be able to:

- Implement a mobile DevOps strategy

AZ-400T02-A: Implementing Continuous Integration

Course Outline

Module 1: Implementing Continuous Integration in an Azure DevOps Pipeline

In this module, you'll be introduced to continuous integration principles including: benefits, challenges, build best practices, and implementation steps. You will also learn about implementing a build strategy with workflows, triggers, agents, and tools.

Lessons

- Continuous Integration Overview
- Implementing a Build Strategy

Lab : Enabling Continuous Integration with Azure Pipelines

Lab : Creating a Jenkins Build Job and Triggering CI

After completing this module, students will:

- Explain why continuous integration matters
- Implement continuous integration using Azure DevOps

Module 2: Managing Code Quality and Security Policies

In this module, you will learn how to manage code quality including: technical debt, SonarCloud, and other tooling solutions. You will also learn how to manage security policies with open source, OWASP, and WhiteSource Bolt.

Lessons

- Managing Code Quality
- Managing Security Policies

Lab : Managing Technical Debt with Azure DevOps and SonarCloud

Lab : Checking Vulnerabilities using WhiteSource Bolt and Azure DevOps

After completing this module, students will be able to:

- Manage code quality including: technical debt SonarCloud, and other tooling solutions.
- Manage security policies with open source, OWASP, and WhiteSource Bolt.
- Manage code quality including: technical debt, SonarCloud, and other tooling solutions.

Module 3: Implementing a Container Build Strategy

In this module, you will learn how to implement a container strategy including how containers are different from virtual machines and how microservices use containers. You will also learn how to implement containers using Docker.

Lessons

- Implementing a Container Build Strategy

Lab : Existing .NET Applications with Azure and Docker Images

After completing this module, students will be able to:

- Implement a container strategy including how containers are different from virtual machines and how microservices use containers.
- Implement containers using Docker.

AZ-400T03-A: Implementing Continuous Delivery

Course Outline

Module 1: Design a Release Strategy

Lessons

- Introduction to Continuous Delivery
- Release strategy recommendations
- Building a High Quality Release pipeline
- Choosing a deployment pattern
- Choosing the right release management tool

Lab : Building a release strategy

After completing this module, students will be able to:

- Differentiate between a release and a deployment
- Define the components of a release pipeline
- Explain things to consider when designing your release strategy
- Classify a release versus a release process, and outline how to control the quality of both
- Describe the principle of release gates and how to deal with release notes and documentation
- Explain deployment patterns, both in the traditional sense and in the modern sense
- Choose a release management tool

Module 2: Set up a Release Management Workflow

Lessons

- Create a Release Pipeline
- Provision and Configure Environments

- Manage And Modularize Tasks and Templates
- Integrate Secrets with the release pipeline
- Configure Automated Integration and Functional Test Automation
- Automate Inspection of Health

Lab : Automating your infrastructure deployments in the Cloud with Terraform and Azure Pipelines

Lab : Setting up secrets in the pipeline with Azure Key vault

Lab : Setting up and Running Load Tests

Lab : Setting up and Running Functional Tests

Lab : Using Azure Monitor as release gate

Lab : Creating a Release Dashboard

After completing this module, students will be able to:

- Explain the terminology used in Azure DevOps and other Release Management Tooling
- Describe what a Build and Release task is, what it can do, and some available deployment tasks
- Classify an Agent, Agent Queue and Agent Pool
- Explain why you sometimes need multiple release jobs in one release pipeline
- Differentiate between multi-agent and multi-configuration release job
- Use release variables and stage variables in your release pipeline
- Deploy to an environment securely, using a service connection
- Embed testing in the pipeline
- List the different ways to inspect the health of your pipeline and release by using, alerts, service hooks and reports
- Create a release gate

Module 3: Implement an appropriate deployment pattern

Lessons

- Introduction into Deployment Patterns
- Implement Blue Green Deployment
- Feature Toggles
- Canary Releases
- Dark Launching
- AB Testing

- Progressive Exposure Deployment

Lab : Blue-Green Deployments

Lab : Traffic Manager

After completing this module, students will be able to:

- Describe deployment patterns
- Implement Blue Green Deployment
- Implement Canary Release
- Implement Progressive Exposure Deployment

AZ-400T04-A: Implementing Dependency Management

Course Outline

Module 1: Designing a Dependency Management Strategy

Lessons

- Introduction
- Packaging dependencies
- Package management
- Implement a versioning strategy

Lab : Updating packages

After completing this module, students will be able to:

- Recommend artifact management tools and practices
- Abstract common packages to enable sharing and reuse
- Inspect codebase to identify code dependencies that can be converted to packages
- Identify and recommend standardized package types and versions across the solution
- Refactor existing build pipelines to implement version strategy that publishes packages
- Manage security and compliance

Module 2: Manage security and compliance

Lessons

- Introduction
- Package security
- Open source software
- Integrating license and vulnerability scans

After completing this module, students will be able to:

- Inspect open source software packages for security and license compliance to align with corporate standards