Implement security through a pipeline using Azure DevOps - Applied Skills Workshop Training

BILGINÇ IT Academy
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Duration: **1 Day**

Overview

Security has become a fundamental part of modern software delivery, extending beyond application code to include every stage of the CI/CD lifecycle. Azure DevOps provides powerful capabilities that enable development teams to integrate security controls directly into build, test, and deployment pipelines while supporting DevSecOps best practices.

This hands-on course is designed for IT professionals who want to build, manage, and secure Azure DevOps pipelines using industry-recognized security practices. Participants will learn how to secure Azure Pipelines, Azure Repos, service connections, build agents, and secrets while implementing secure deployment workflows.

Throughout the training, learners will gain practical experience configuring Azure DevOps projects, managing identities and permissions, integrating Azure Key Vault, protecting sensitive information, and developing secure YAML pipelines for enterprise environments.

The primary goal of this course is to teach participants how to implement secure CI/CD practices within Azure DevOps while following modern DevSecOps principles.

By the end of the course, participants will be able to:

- Design secure Azure DevOps projects.
- Implement secure repository structures.
- Configure pipeline identities and authentication.
- Protect secrets and sensitive information.
- Integrate Azure Key Vault into deployment pipelines.
- Configure access controls and permissions.
- Build secure and reusable YAML pipelines.

Prerequisites

Participants are recommended to have basic knowledge of:

- Azure DevOps fundamentals
- Git and source control concepts
- YAML pipeline configuration
- Microsoft Azure Portal
- Azure resource management
- Authentication and authorization concepts
- Azure Key Vault basics

Hands-on labs will require participants to work within Azure and Azure DevOps environments.

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Who Should Attend

This course is ideal for:

- Azure DevOps Engineers
- DevOps Engineers
- Cloud Architects
- Software Developers
- Platform Engineers
- Site Reliability Engineers (SRE)
- CI/CD Pipeline Administrators
- Azure Administrators
- Security Engineers
- IT Professionals responsible for Azure DevOps environments

What You Will Learn

Upon successful completion of this course, participants will be able to:

- Understand Azure DevOps security architecture.
- Build secure project and repository structures.
- Configure pipeline identities securely.
- Manage service connections.
- Secure Microsoft-hosted and self-hosted agents.
- Integrate Azure Key Vault with Azure Pipelines.
- Manage variables, secrets, and credentials securely.
- Develop reusable YAML pipeline templates.
- Configure permissions and security policies.
- Audit pipeline security.
- Implement DevSecOps best practices.
- Secure deployment workflows across enterprise environments.

Outline

Module 1 – Azure DevOps Security Fundamentals

This module introduces the core security concepts required to build secure CI/CD environments using Azure DevOps.

Topics

- Azure DevOps security architecture
- DevSecOps principles
- Secure CI/CD concepts
- Common pipeline security risks
- Security best practices

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Module 2 – Secure Project and Repository Design

Learn how to organize Azure DevOps projects and repositories using security-focused design principles.

Topics

- Azure DevOps organization structure
- Project configuration
- Repository management
- Branch strategies
- Protected branches
- Repository access policies
- Secure folder structures

Hands-on Lab

- Creating secure projects
- Configuring repositories
- Implementing branch protection policies

Module 3 – Identity and Access Management

This module focuses on authentication, authorization, and identity management within Azure DevOps.

Topics

- Managed Identity
- Service Principals
- Service Connections
- Agent identities
- Microsoft-hosted agents
- Self-hosted agents
- Least privilege access

Hands-on Lab

- Creating Service Connections
- Configuring Managed Identity
- Securing build agents

Module 4 – Securing Azure Pipelines

Participants will learn how to build secure deployment pipelines using Azure DevOps YAML pipelines.

Topics

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- YAML pipeline architecture
- Pipeline templates
- Nested templates
- Pipeline extensibility
- Secure deployment practices
- Approval workflows
- Environment configuration
- Agent pool security

Hands-on Lab

- Building multi-stage pipelines
- Working with reusable templates

Module 5 – Secrets and Credential Management

This module demonstrates how to protect sensitive information throughout the CI/CD lifecycle.

Topics

- Secret variables
- Variable groups
- Secure files
- Azure Key Vault integration
- Certificate management
- Token security
- Credential management

Hands-on Lab

- Connecting Azure Key Vault
- Managing secrets
- Configuring variable groups

Module 6 – Permissions and Security Governance

Learn how to configure permissions, approvals, and governance controls within Azure DevOps.

Topics

- User permissions
- Pipeline permissions
- Repository permissions
- Branch policies
- Approval workflows
- Audit logs
- Security monitoring
- Compliance reporting

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Hands-on Lab

- Validating permissions
- Testing pipeline security policies

Module 7 – Building Secure YAML Pipelines

This module focuses on advanced techniques for creating secure, maintainable, and reusable deployment pipelines.

Topics

- Secure parameter handling
- Variable security
- YAML validation
- Queue-time variable restrictions
- Script security
- Log protection
- Secure deployment strategies
- DevSecOps implementation best practices

Hands-on Lab

- Developing secure YAML pipelines
- Pipeline security validation
- End-to-end deployment scenarios

Practical Labs

During the course, participants will complete practical exercises including:

- Creating Azure DevOps projects
- Configuring secure repositories
- Building Azure Pipelines
- Integrating Azure Key Vault
- Managing secrets securely
- Configuring Managed Identities
- Creating Service Connections
- Developing reusable pipeline templates
- Auditing security configurations
- Validating permissions
- Implementing secure deployment workflows

Skills Gained

After completing this course, participants will be able to design, implement, and manage secure Azure

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DevOps environments that support enterprise DevSecOps initiatives. They will understand how to secure pipelines, repositories, identities, permissions, and deployment processes while protecting sensitive information throughout the software delivery lifecycle.

The practical knowledge gained during this course can be immediately applied to Azure-based development environments, helping organizations strengthen CI/CD security, improve governance, and reduce operational risk.