Week-18 | Azure DevOps Scenario Based Interview Questions with Answers

Azure DevOps Interview Questions & Answers

1. Complete CI/CD Pipeline Process

Scenario: How does the Azure DevOps CI/CD Pipeline look in your organization?

Continuous Integration (CI):

- Triggers on code changes.
- Clones code from the repository.
- Runs unit tests and static code analysis.
- Builds artifacts (e.g., compiled code, container images).
- Stores artifacts in Azure Pipelines artifacts for deployment.

Continuous Delivery (CD):

- Triggers on successful CI completion or manually.
- Deploys artifacts to designated environments (staging, production).
- Runs environment-specific tests (e.g., integration, acceptance).
- Approvals or gates can be implemented before deployment.
- Optionally, rolls back deployments if issues arise.

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2. Securing Sensitive Information in Pipelines

Scenario: You need to securely store API keys and other secrets used in your pipeline tasks. How would you ensure their protection while maintaining pipeline functionality?

Answer:

- Use **Azure Key Vault** to securely store secrets.
- Access secrets using **managed identities** or **service connections** with minimal privileges.
- Avoid hardcoding secrets in the pipeline script.
- Implement **Azure DevOps variable groups** to reference secrets securely.

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3. Integrating Azure Container Registry (ACR) with Pipelines

Scenario: Your application uses Docker containers. How would you integrate ACR with Azure Pipelines for building, pushing, and deploying container images?

Answer:

- Configure **Docker tasks** in the pipeline to build images.
- Authenticate with **Azure Container Registry (ACR)** using service connections.
- Push images to the registry.
- Deploy images using **Kubernetes (AKS)** or **Azure App Service for Containers**.

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4. Debugging Pipeline Failures

Scenario: Your pipeline consistently fails at a specific stage. How would you approach troubleshooting and identifying the root cause of the issue?

Answer:

- Use **pipeline logs** and **diagnostics tools** in Azure DevOps.
- Enable **system.debug** in pipeline variables for detailed logs.
- Check **environment configurations** and **resource availability**.
- Identify errors in **YAML files, dependencies, or task misconfigurations**.

- Use **Azure Monitor and Application Insights** for additional insights.

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5. Handling Code Merges and Rollbacks in Pipelines

Scenario: You discover a critical bug in the recently deployed production environment. How would you leverage Azure Pipelines for a rollback and ensure safe merging of a fix?

Answer:

- Use **feature branches and Git strategies** (e.g., hotfix branches).
- Implement **blue-green deployment or canary releases**.
- Rollback using **Azure Deployment Slots** (if using App Service).
- Use **versioned artifacts** to redeploy a previous stable version.
- Add **approval gates** to prevent faulty releases from reaching production.

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6. Utilizing Azure Runners for Self-Hosted Environments

Scenario: Your company has specific infrastructure requirements and needs to run pipelines on self-hosted machines. How would you leverage Azure Runners for this purpose?

Answer:

- Use **self-hosted agents** instead of Microsoft-hosted ones.
- Ensure **network isolation, security, and proper permissions**.
- Choose the correct **OS and dependency configurations** for the runner.
- Monitor agent performance and **scale agent pools** as needed.

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7. Implementing Role-Based Access Control (RBAC) in Pipelines

Scenario: Your team has various roles with different access needs. How would you configure RBAC within Azure Pipelines to ensure users have appropriate permissions?

Answer:

- Use **Azure DevOps built-in roles** (Reader, Contributor, Build Admin).
- Create **custom role assignments** for specific pipeline tasks.
- Restrict access using **Azure AD and DevOps policies**.
- Apply **least privilege principles** to limit unauthorized access.

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8. Automating Infrastructure Provisioning with Pipelines

Scenario: You want to automate infrastructure provisioning and deployment alongside your application code. How would you integrate Infrastructure as Code (IaC) tools like Terraform with Azure Pipelines?

Answer:

- Use **Terraform tasks in Azure Pipelines** to manage infrastructure.
- Store Terraform state in **Azure Storage with remote backend**.
- Implement **CI/CD workflows for infrastructure updates**.
- Use **Azure Service Principal** for authentication with minimal permissions.

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9. Maintaining Pipeline Security Throughout the CI/CD Process

Scenario: How would you ensure overall security within your Azure Pipelines throughout the CI/CD process, from code building to deployment?

Answer:

- Enforce **secure coding practices** (e.g., linting, static code analysis).
- Perform **vulnerability scanning** for dependencies and container images.
- Use **Azure Key Vault** to protect credentials and secrets.
- Implement **RBAC policies** to control access to pipelines.
- Conduct **regular pipeline security audits** and **enable logging & monitoring**.

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10. Managing Pipeline Dependencies Efficiently

Scenario: Your application relies on multiple dependencies. How would you efficiently manage and cache dependencies in Azure Pipelines to improve performance?

Answer:

- Use **Azure Artifacts** to store and manage dependencies.
- Enable **caching mechanisms** for npm, Maven, or Python dependencies.
- Use **YAML templates** to define common dependency installation steps.
- Implement **parallel execution** where possible to speed up builds.

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11. Implementing Blue-Green Deployment in Azure Pipelines

Scenario: Your company wants to minimize downtime during deployments. How would you implement blue-green deployment in Azure Pipelines?

Answer:

- Deploy the new version in a **separate slot or environment**.
- Use **Azure Traffic Manager or Load Balancer** to switch traffic between versions.
- Test the new version in the blue environment before switching.
- Use **rollback strategies** in case of failure.

12. Monitoring Application Performance Post-Deployment

Scenario: How do you ensure the deployed application performs optimally?

Answer:

- Integrate **Application Insights and Azure Monitor** to track performance.
- Configure **health checks in Azure Load Balancer or AKS probes**.
- Set up **alerts for slow response times or increased error rates**.
- Enable **logging and distributed tracing** for better debugging.

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13. Ensuring Compliance & Governance in Azure Pipelines

Scenario: Your organization has strict compliance requirements. How do you ensure Azure Pipelines adhere to governance policies?

Answer:

- Use **Azure Policy** to enforce compliance checks.
- Implement **auditing and logging** for all pipeline executions.
- Use **approval gates and change management workflows**.
- Follow **security best practices** for data handling and deployments.

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14. Handling Zero-Downtime Deployments

Scenario: Your application must be deployed without downtime. What strategies would you use in Azure Pipelines?

Answer:

- Use **rolling deployments** in Kubernetes (AKS).
- Implement **deployment slots** in Azure App Service.
- Use **feature flags** to enable/disable new features post-deployment.
- Leverage **traffic routing with Azure Front Door** for smooth transitions.
