3. Build and release pipelines

└ 3.2 Design and implement pipelines

└ 3.2.2 Runner/agent infra: cost, licenses, connectivity

1. What are the types of runners/agents available in GitHub Actions and Azure Pipelines?
2. What are the main cost considerations when selecting hosted vs. self-hosted runners/agents?
3. How do you select the right agent pool or runner for your workload?
4. How do you configure a self-hosted runner in GitHub Actions?
5. How do you configure a self-hosted agent in Azure Pipelines?
6. What connectivity requirements must self-hosted runners/agents meet?
7. What licensing requirements exist for runners/agents?
8. How do you secure access to self-hosted runners/agents?
9. How can you scale runners/agents for parallel job execution?
10. How do you monitor and maintain runner/agent health?

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1. What are the types of runners/agents available in GitHub Actions and Azure Pipelines?

- *GitHub Actions*: *GitHub*-hosted runners and self-hosted runners.
- *Azure Pipelines*: Microsoft-hosted agents and self-hosted agents.

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2. What are the main cost considerations when selecting hosted vs. self-hosted runners/agents?

Hosted runners/agents are billed per minute beyond free quotas; self-hosted options reduce per-minute costs but require you to provide and maintain the infrastructure.

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3. How do you select the right agent pool or runner for your workload?

Choose hosted for ease and standard workloads; select self-hosted for custom requirements, legacy dependencies, higher performance, or cost control.

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4. How do you configure a self-hosted runner in GitHub Actions?

Go to *repo or org settings* → *Actions* → *Runners* → *Add runner* → *Download* and configure agent as instructed, then start the service on the target machine.

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5. How do you configure a self-hosted agent in Azure Pipelines?

Go to *Project Settings* → *Agent pools* → *Add pool/agent* → *Download* the agent package, run the config script, and register with a PAT (Personal Access Token).

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6. What connectivity requirements must self-hosted runners/agents meet?

- They must have outbound internet access to *GitHub/Azure* endpoints
- Access to required build/test/deploy resources
- Any specific firewall/proxy settings applied.

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7. What licensing requirements exist for runners/agents?

- *GitHub*-hosted runners are covered by *GitHub* billing. Self-hosted require appropriate OS and third-party software licenses.
- *Azure*-hosted agents are included in *Azure DevOps* plans; self-hosted agents require you to license the host OS/software.

8. How do you secure access to self-hosted runners/agents?

- Restrict network exposure
- Run with minimum required permissions
- Use firewalls
- Keep systems patched
- Store credentials/secrets securely

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9. How can you scale runners/agents for parallel job execution?

- Increase the number of runners/agents
- Use autoscaling solutions
- Configure jobs/pipelines to utilize available capacity

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10. How do you monitor and maintain runner/agent health?

- Monitor via GitHub/Azure DevOps UI
- Use logs and alerts
- Automate updates/patches
- Routinely validate connectivity and system performance