TECHCONNECT

Implement and Manage Build Infrastructure

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Azure Pipelines

Azure Pipelines

Azure Pipelines is a fully featured continuous integration (CI) and continuous delivery (CD) service. It works with your preferred Git provider and can deploy to most major cloud services, which include Azure services.

Start with your code on GitHub, GitHub Enterprise Server, GitLab, Bitbucket Cloud, or Azure Repos. Then you can automate the build, testing, and deployment of your code to Microsoft Azure, Google Cloud Platform, or Amazon Web Services.

Key concepts for new Azure Pipelines users

1. Agent
2. Artifacts
3. Continuous delivery
4. Continuous integration
5. Environment
6. Job
7. Pipeline
8. Run
9. Stage
10. Step
11. Trigger

Agents

Microsoft-hosted agents

If your pipelines are in Azure Pipelines, then you've got a convenient option to run your jobs using a **Microsoft hosted agent**. With Microsoft-hosted agents, maintenance and upgrades are taken care of for you. Each time you run a pipeline, you get a fresh virtual machine. The virtual machine is discarded after one use. Like self-hosted agents, Microsoft-hosted agents can run jobs directly on the VM or in a container.

Self-hosted agents

An agent that you set up and manage on your own to run jobs is a **self-hosted agent**. You can use self-hosted agents in Azure Pipelines or Team Foundation Server(TFS). Self-hosted agents give you more control to install dependent software needed for your builds and deployments. Also, machine-level caches and configuration persist from run to run, which can boost speed.

Default agent pools

- Default pool: for self-hosted agents
- Hosted Ubuntu 1604 pool
- Hosted macOS pool
- Hosted macOS High Sierra pool
- Hosted Windows 2019 with VS2019 pool
- Hosted VS2017 pool
- Hosted pool
- Hosted Windows Container pool

Agent Pools

Agent pools

Instead of managing each agent individually, you organize agents into agent pools. In Azure Pipelines, pools are scoped to the entire organization; so you can share the agent machines across projects. In Azure DevOps Server, agent pools are scoped to the entire server; so you can share the agent machines across projects and collections.

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Typical situations for create self-hosted agent pools

- You're a member of a project and you want to use a set of machines owned by your team for running build and deployment jobs.

- You're member of the infrastructure team and would like to set up a pool of agents for use in all projects.

- You want to share a set of agent machines with multiple projects, but not all of them.

Security of agent pools

Roles are defined on each agent pool, and membership in these roles governs what operations you can perform on an agent pool/

Role	Purpose
Reader	Members of this role can view the agent pool as well as agents. You typically use this to add operators that are responsible for monitoring the agents and their health.
Service Account	Members of this role can use the organization agent pool to create a project agent pool in a project. If you follow the guidelines above for creating new project agent pools, you typically do not have to add any members here.
Administrator	In addition to all the above permissions, members of this role can register or unregister agents from the organization agent pool. They can also refer to the organization agent pool when creating a project agent pool in a project. Finally, they can also manage membership for all roles of the organization agent pool. The user that created the organization agent pool is automatically added to the Administrator role for that pool.

Demo
Deploying a multi-container to Azure Kubernetes Services

References

docs.microsoft.com