

From VMs to Managed Pools

Navigating Azure DevOps Agent Hosting

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//MSTS/ MS TECH
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A lecture selected by a Program Council
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Agenda

Introduction to Azure Pipeline Agents

Microsoft-hosted agents

Self-hosted agents

- Hosting on VMs
- Running agents in containers
- Managed DevOps Pools



Wolfgang Ofner

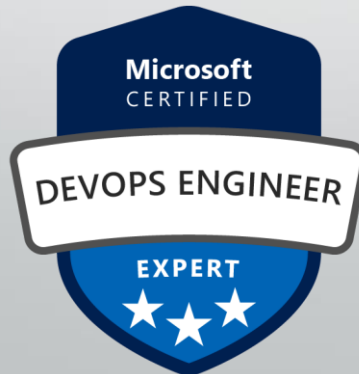
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Focus on Azure, Kubernetes, and DevOps

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Why do we need
Azure Pipeline Agents?



Azure Pipeline Agents


Execution of code

Software installation


Automation

Scalability

Audit logs of deployments



Microsoft-hosted Agents vs. Self-hosted Agents




Microsoft-hosted Agents

Managed by Microsoft

Ubuntu, Windows and MacOS agents

Ease of use



```
jobs:
```

```
- job: Linux
```

```
  pool:
```

```
    vmImage: 'ubuntu-latest'
```

```
  steps:
```

```
    - script: echo hello from Linux
```

```
- job: macOS
```

```
  pool:
```

```
    vmImage: 'macOS-latest'
```

```
  steps:
```

```
    - script: echo hello from macOS
```

```
- job: Windows
```

```
  pool:
```

```
    vmImage: 'windows-latest'
```

```
  steps:
```

```
    - script: echo hello from Windows
```




Microsoft-hosted Agents

Managed by Microsoft

Ubuntu, Windows and MacOS agents

Ease of use

Pre-installed software

Cost-effective



Microsoft-hosted Agent Limitations

Fresh agent for each pipeline job

Pre-installed software

Limited resources

No network integration

Limited execution time

Microsoft-hosted Agent Costs

1 agent with 1800 minutes for free per month

10 agents for free for public projects

\$40 per parallel job with unlimited minutes



Self-hosted Agents

Full control over agent

Developers can install any software

Use powerful hardware

No execution time limit

Integration with your network

Linux, Windows and MacOS agents



Self-hosted Agent Limitations

Maintenance responsibility

Infrastructure costs

Scalability management

Monitoring and resource management

Self-hosted Agent Costs

1 free parallel job per organization

1 free parallel job per Visual Studio Enterprise license

\$15 per parallel job per month

Infrastructure costs



Host Agents on VMs

Hosted Agents on VMs

“Go to” solution for self-hosting

Full control over infrastructure

Install any software needed

Allows for caching

Integrate agent into your network

Use Azure VMSS to automatically scale your agents

Hosted Agents on VMs

VMs and software need to be maintained

Hardware is often underutilized

Infrastructure can be expensive

Secure access needs to be configured and can increase costs



Run Agents in Containers

Run Agents in Containers

Install needed software with Dockerfile

```
FROM ubuntu:24.04
ENV TARGETARCH="linux-x64"
# Also can be "linux-arm", "linux-arm64".
```

```
RUN apt update
RUN apt upgrade -y
```

```
RUN DEBIAN_FRONTEND=noninteractive apt-get install -y -qq --no-install-recommends \
    git \
    jq \
    libicu74 \
    curl \
    software-properties-common
```

```
RUN add-apt-repository ppa:dotnet/backports
RUN apt-get install -y dotnet-sdk-9.0
```

```
RUN apt -y install podman fuse-overlayfs
VOLUME /var/lib/containers
```

```
WORKDIR /azp/
```



Run Agents in Containers

Install needed software with Dockerfile

Easy to test locally

Most commonly used with AKS or ACA

Scale to 0 with KEDA



Run Agents in Containers

Minimal costs

Container know-how needed

Docker-in-Docker

GitOps might be better for Kubernetes

No caching



Azure Managed DevOps Pools

Managed DevOps Pools

Agent runs on Microsoft managed VM

Microsoft agent for Windows or Linux

Custom image with your software

Integrates into your network

Best option to self-host agents

GA since November 2024

Managed DevOps Pools

Only pay when the agents runs

- No caching
- Startup time ~3 minutes (up to 15 minutes)
- Cheap to use most powerful VMs

Use Standby agent for no startup time

Automatic scaling

More features to come this year



Demo Managed DevOps Pools

Thank you for watching!

Remember to leave your questions and rate the presentation in the section below.



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