

# From VMs to Managed Pools

Navigating Azure DevOps Agent Hosting

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A lecture selected by a Program Council consisting of recognized leaders in the IT and Data Science field.

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# Agenda

Why do we need Azure Pipeline agents?

Microsoft-hosted agents

Self-hosted agents

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



# Wolfgang Ofner

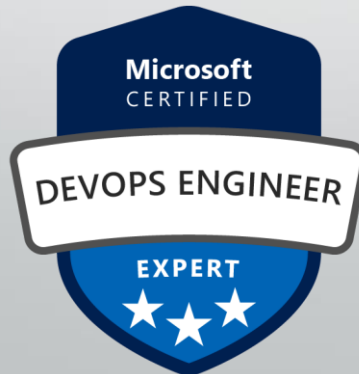
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Why do we need  
Azure Pipeline Agents?



# 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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