

# #Setup ADO agentpool with Autoscale mode under K8s cluster.

## 1. Setting up AKS

Microsoft Azure

Home > Kubernetes services > Create Kubernetes cluster

Kubernetes services

Filter for any field...

Name ↑ Type ↑

poc Kubernetes service

Basics Node pools Authentication Networking Integrations Tags Review + create

Azure Kubernetes Service (AKS) manages your hosted Kubernetes environment, making it quick and easy to deploy and manage containerized applications without container orchestration expertise. It also eliminates the burden of ongoing operations and maintenance by provisioning, upgrading, and scaling resources on demand, without taking your applications offline. [Learn more about Azure Kubernetes Service](#)

Project details

Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \* Visual Studio Enterprise Subscription

Resource group \* (New) Resource group

Create new

Cluster details

Preset configuration

Standard

Quickly customize your cluster by choosing the preset configuration applicable to your scenario. Depending on the selection, values of certain fields might change in different tabs. You can modify these values at any time. [View all preset configurations](#)

Review + create < Previous Next : Node pools >

### Primary node pool

The number and size of nodes in the primary node pool in your cluster. For production workloads, at least 3 nodes are recommended for resiliency. For development or test workloads, only one node is required. If you would like to add additional node pools or to see additional configuration options for this node pool, go to the 'Node pools' tab above. You will be able to add additional node pools after creating your cluster. [Learn more about node pools in Azure Kubernetes Service](#)

Node size \* Standard DS2 v2

Standard DS2\_v2 is recommended for standard configuration. [Change size](#)

Scale method \* Manual

Autoscale

Autoscaling is recommended for standard configuration.

Node count \* 3

Review + create < Previous Next : Node pools >

Home > Kubernetes services > Create Kubernetes cluster

### Select a VM size

Search by VM size... Display cost: Monthly vCPUs: All RAM (GiB): All Add filter

Showing 315 VM sizes. | Subscription: Visual Studio Enterprise Subscription | Region: East US | Current size: Standard\_DS2\_v2 | [Learn more about VM sizes](#) | Group by series

VM Size	Family	vCPUs	RAM (GiB)	Data disks	Max IOPS	Temp storage (GiB)	Premium disk	Cost/month
Most used by Azure users								
D51_v2	General purpose	1	3.5	4	3200	7	Supported	Loading...
D2s_v3	General purpose	2	8	4	3200	16	Supported	Loading...
D2as_v4	General purpose	2	8	4	3200	16	Supported	Loading...
B2s	General purpose	2	4	4	1280	8	Supported	Loading...
B2ms	General purpose	2	8	4	1920	16	Supported	Loading...
DS2_v2	General purpose	2	7	8	6400	14	Supported	Loading...
B4ms	General purpose	4	16	8	2880	32	Supported	Loading...
D4s_v3	General purpose	4	16	8	6400	32	Supported	Loading...
DS3_v2	General purpose	4	14	16	12800	28	Supported	Loading...
D8s_v3	General purpose	8	32	16	12800	64	Supported	Loading...

Select

# Create Kubernetes cluster ...

Basics **Node pools** Authentication Networking Integrations Tags Review + create

## Node pools

In addition to the required primary node pool configured on the Basics tab, you can also add optional node pools to handle a variety of workloads [Learn more about node pools](#)

+

Add node pool

Delete

Name	Mode	OS type	Node count	Node size
<input type="checkbox"/> agentpool	System	Linux	1	Standard_D2s_v3

## Enable virtual nodes

Virtual nodes allow burstable scaling backed by serverless Azure Container Instances. [Learn more about virtual nodes](#)

Enable virtual nodes ☐

## Enable virtual machine scale sets

Enabling virtual machine scale sets will create a cluster that uses virtual machine scale sets instead of individual virtual machines for the cluster nodes. Virtual machine scale sets are required for scenarios including autoscaling, multiple node pools, and Windows support. [Learn more about virtual machine scale sets in AKS](#)

**Review + create** < Previous Next : Authentication >

# Add a node pool ...

OS type \*

☒ Linux

☐ Windows

Availability zones

None

Node size \*

Standard DS1 v2

1 vcpu, 3 GiB memory

[Choose a size](#)

Scale method \*

☒ Manual

☐ Autoscale

Node count \*

3

Max pods per node \*

110

10 - 250

Add

Cancel

# Create Kubernetes cluster ...

Basics Node pools **Authentication** Networking Integrations Tags Review + create

## Cluster infrastructure

The cluster infrastructure authentication specified is used by Azure Kubernetes Service to manage cloud resources attached to the cluster. This can be either a [service principal](#) or a [system-assigned managed identity](#).

Authentication method ☐ Service principal ☒ System-assigned managed identity

## Kubernetes authentication and authorization

Authentication and authorization are used by the Kubernetes cluster to control user access to the cluster as well as what the user may do once authenticated. [Learn more about Kubernetes authentication](#)

Role-based access control (RBAC) ☒ Enabled ☐ Disabled

AKS-managed Azure Active Directory ☐

## Node pool OS disk encryption

By default, all disks in AKS are encrypted at rest with Microsoft-managed keys. For additional control over encryption, you can supply your own keys using a disk encryption set backed by an Azure Key Vault. The disk encryption set will be used to encrypt the OS disks for all node pools in the cluster. [Learn more](#)

Encryption type (Default) Encryption at-rest with a platform-managed key

Review + create

< Previous

Next : Networking >

# Create Kubernetes cluster ...

Application pods are connected directly to the VNet, which allows for native integration with VNet features.

[Learn more about networking in Azure Kubernetes Service](#)

Network configuration ☐ Kubenet ☒ Azure CNI  
**i** The Azure CNI plugin requires an IP address from the subnet below for each pod on a node, which can more quickly exhaust available IP addresses if a high value is set for pods per node. Consider modifying the default values for pods per node for each node pool on the "Node pools" tab. [Learn more](#)

Virtual network \*

Cluster subnet \*

Kubernetes service address range \*

Kubernetes DNS service IP address \*

Docker Bridge address \*

DNS name prefix \*


## Traffic routing


Review + create



< Previous



Next : Integrations >

## Create Kubernetes cluster ...


Kubernetes service address range 


Kubernetes DNS service IP address \* 

Docker Bridge address \*   


DNS name prefix \*   


**Traffic routing**


Load balancer 

Enable HTTP application routing  ☒

**Security**

Enable private cluster  ☐

Set authorized IP ranges  ☐

Network policy  ☒ None  
☐ Calico  
☐ Azure


## Create Kubernetes cluster ...

Basics Node pools Authentication Networking Integrations Tags Review + create

Connect your AKS cluster with additional services.

### Azure Container Registry

Connect your cluster to an Azure Container Registry to enable seamless deployments from a private image registry. You can create a new registry or choose one you already have. [Learn more about Azure Container Registry](#) 

Container registry    
[Create new](#)

### Azure Monitor

In addition to the CPU and memory metrics included in AKS by default, you can enable Container Insights for more comprehensive data on the overall performance and health of your cluster. Billing is based on data ingestion and retention settings.

[Learn more about container performance and health monitoring](#)

[Learn more about pricing](#)

Container monitoring ☒ Enabled ☐ Disabled  
 Azure monitor is recommended for standard configuration.

Log Analytics workspace     
[Create new](#)

Azure Policies

[Review + create](#)

[< Previous](#)

[Next : Tags >](#)

Home > Kubernetes services >

## Create Kubernetes cluster ...

Running final validation...

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### Basics

Subscription	Visual Studio Enterprise Subscription
Resource group	(new) test_group
Region	East US
Kubernetes cluster name	test
Kubernetes version	1.20.9

### Node pools

Node pools	2
Enable virtual nodes	Disabled
Enable virtual machine scale sets	Enabled

### Authentication

Authentication method	System-assigned managed identity
-----------------------	----------------------------------

Create < Previous Next > Download a template for automation

---

Microsoft Azure Search resources, services, and docs (G+)

Home > Kubernetes services > Create Kubernetes cluster >

## Template ...

Download Add to library (preview) Deploy Visualize template

Automate deploying resources with Azure Resource Manager templates in a single, coordinated operation. Define resources and configurable input parameters and deploy with script or code. [Learn more about temp](#)

☒ Include parameters ⓘ

Template Parameters Scripts

Parameters (19)

Variables (0)

Resources (4)

- [parameters('resourceName')]  
(Microsoft.ContainerService/mana
- ConnectAKStoACR-b7d3b4f1-  
1d9d-47cb-9463-0e10194c404f  
(Microsoft.Resources/deployment
- test\_group-vnet  
(Microsoft.Network/virtualNetworl
- ClusterSubnetRoleAssignmentDep  
20210929121441  
(Microsoft.Resources/deployment

```
1 {
2   "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
3   "contentVersion": "1.0.0.0",
4   "parameters": {
5     "resourceName": {
6       "type": "string",
7       "metadata": {
8         "description": "The name of the Managed Cluster resource."
9       }
10    },
11    "location": {
12      "type": "string",
13      "metadata": {
14        "description": "The location of AKS resource."
15      }
16    },
17    "dnsPrefix": {
18      "type": "string",
19      "metadata": {
```

### ARM template for this cluster config.



aks\_arm\_template.zip





```

service/vault-agent-injector-svc ClusterIP 10.0.135.53 <none> 443/TCP 7d21h

NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/vault-agent-injector 1/1 1 1 7d21h

NAME DESIRED CURRENT READY AGE
replicaset.apps/vault-agent-injector-686797ccd5 1 1 1 7d21h

NAME REFERENCE TARGETS MINPODS MAXPODS REPLICAS AGE
horizontalpodautoscaler.autoscaling/keda-hpa-azure-pipelines-scaledobject Deployment/azdevops-deployment 0/1 (avg) 1 5 1 21d

a@h@Azure:~$
a@h@Azure:~$
a@h@Azure:~$
a@h@Azure:~$ kubectl get hpa
NAME REFERENCE TARGETS MINPODS MAXPODS REPLICAS AGE
keda-hpa-azure-pipelines-scaledobject Deployment/azdevops-deployment 0/1 (avg) 1 5 1 21d
a@h@Azure:~$ kubectl delete hpa keda-hpa-azure-pipelines-scaledobject
horizontalpodautoscaler.autoscaling "keda-hpa-azure-pipelines-scaledobject" deleted
a@h@Azure:~$ kubectl get all
NAME READY STATUS RESTARTS AGE
pod/vault-agent-injector-686797ccd5-ptxfm 1/1 Running 0 7d21h

NAME TYPE CLUSTER-IP EXTERNAL-IP PORT(S) AGE
service/external-vault ClusterIP 10.0.142.169 <none> 8280/TCP 7d20h
service/kubernetes ClusterIP 10.0.0.1 <none> 443/TCP 28d
service/vault-agent-injector-svc ClusterIP 10.0.135.53 <none> 443/TCP 7d21h

NAME READY UP-TO-DATE AVAILABLE AGE
deployment.apps/vault-agent-injector 1/1 1 1 7d21h

NAME DESIRED CURRENT READY AGE
replicaset.apps/vault-agent-injector-686797ccd5 1 1 1 7d21h
a@h@Azure:~$

a@h@Azure:~$ ls
clouddrive helm3 sample-app
a@h@Azure:~$
a@h@Azure:~$ cd sample-app/
a@h@Azure:~/sample-app$ ls
'\ deployment2.yaml dockeragent get_helm.sh kaniko keda.yaml pod3.yaml test.sh
config.json deployment.yaml eks-tf jobs.yaml keda2.yaml pod2.yaml pod.yaml working_jfrog.json
ashutosh@Azure:~/sample-app$

```

### 3. Setup PAT token @ADO Organization

The screenshot shows the Azure DevOps web interface. On the left, the 'Azure DevOps' sidebar is visible with a 'New organization' button. The main area displays a list of projects, including one named 'SP'. A user profile menu is open in the top right corner, showing options like 'Profile', 'Time and Locale', 'Permissions', 'Notifications', 'Theme', 'Usage', 'Personal access tokens', 'SSH public keys', and 'Alternate credentials'. The 'Personal access tokens' option is highlighted. Below this, a 'Personal Access Tokens' dialog is shown, allowing the user to create a new token. The dialog includes fields for 'Name' (set to 'new'), 'Organization' (selected), 'Expiration (UTC)' (set to '30 days' with a date picker showing '10/29/2021'), and 'Scopes' (set to 'Full access').

Take AZP\_TOKEN: {{ }}

Project Settings  
ai-lab

General

- Overview
- Teams
- Permissions
- Notifications
- Service hooks
- Dashboards
- Boards
- Project configuration
- Team configuration
- Git-Hub connections
- Pipelines
- Agent pools**

### Agent pools

Name	Queued jobs	Running jobs
aks-keda-poc		1

#### Add agent pool

Agent pools are shared across an organization.

Pool to link:

☒ New ☐ Existing

Pool type:

Select an agent pool type

- Self-hosted
- Azure virtual machine scale set

#### Add agent pool

Agent pools are shared across an organization.

Pool to link:

☒ New ☐ Existing

Pool type:

Self-hosted

A pool of agents that you set up and manage on your own to run jobs. [Learn more.](#)

Name:

dddd

Description (optional):

[Markdown supported.](#)

Pipeline permissions:

☒ Grant access permission to all pipelines

Create

```
linux-agents > deployments > ! agent-deployments
1  apiVersion: v1
2  kind: Namespace
3  metadata:
4    name: kaniko
5  ---
6  apiVersion: v1
7  kind: Secret
8  metadata:
9    name: kanikoazdosecret
10 namespace: kaniko
11 data:
12   AZP_TOKEN: __azp-token__
13 ---
14 apiVersion: apps/v1
15 kind: Deployment
16 metadata:
17   name: agent-deployment
18   namespace: kaniko
19   labels:
20     name: agent-deployment
21 spec:
22   replicas: 1
23   selector:
24     matchLabels:
25       app: agent-deployment
26   template:
27     metadata:
28       labels:
29         app: agent-deployment
```

```
Bash
app: azdevops-agent
name: azdevops-deployment
spec:
  replicas: 1
  selector:
    matchLabels:
      app: azdevops-agent
  template:
    metadata:
      labels:
        app: azdevops-agent
    spec:
      containers:
        - name: azdevops-agent
          image: kanikopoc.azurecr.io/samplekaniko:11544
          env:
            - name: AZP_URL
              value: "https://dev.azure.com/!-g-ad-ory"
            - name: AZP_POOL
              value: "aks-keda-poc"
            - name: AZP_TOKEN
              valueFrom:
                secretKeyRef:
                  name: azdevops
                  key: AZP_TOKEN
          volumeMounts:
            - mountPath: /var/run/docker.sock
              name: docker-volume
          volumes:
            - name: docker-volume
              hostPath:
                path: /var/run/docker.sock
...@Azure:~/sample-app$ kubectl apply -f deployment.yaml
```





```

Bash
ashutosh@Azure:~/sample-app$ cat keda.yaml
apiVersion: v1
kind: Secret
metadata:
  name: pipeline-auth
data:
  personalAccessToken: -----
# organizationURL: # -----
---
apiVersion: keda.sh/v1alpha1
kind: TriggerAuthentication
metadata:
  name: pipeline-trigger-auth
spec:
  secretTargetRef:
    - parameter: personalAccessToken
      name: pipeline-auth
      key: personalAccessToken
    - parameter: organizationURL
      name: pipeline-auth
      key: organizationURL
---
apiVersion: keda.sh/v1alpha1
kind: ScaledObject
metadata:
  name: azure-pipelines-scaledobject
spec:
  scaleTargetRef:
    name: azdevops-deployment
# app: azdevops-agent
minReplicaCount: 1
maxReplicaCount: 5
triggers:

```

```

Bash
apiVersion: keda.sh/v1alpha1
kind: TriggerAuthentication
metadata:
  name: pipeline-trigger-auth
spec:
  secretTargetRef:
    - parameter: personalAccessToken
      name: pipeline-auth
      key: personalAccessToken
    - parameter: organizationURL
      name: pipeline-auth
      key: organizationURL
---
apiVersion: keda.sh/v1alpha1
kind: ScaledObject
metadata:
  name: azure-pipelines-scaledobject
spec:
  scaleTargetRef:
    name: azdevops-deployment
# app: azdevops-agent
minReplicaCount: 1
maxReplicaCount: 5
triggers:
  - type: azure-pipelines
    metadata:
      poolID: "1"
      organizationURLFromEnv: AZP_URL
      personalAccessTokenFromEnv: "AZP_TOKEN"
      targetPipelinesQueueLength: "1"
  authenticationRef:
    name: pipeline-trigger-auth

```

NAME	REFERENCE	TARGETS	MINPODS	MAXPODS	REPLICAS	AGE
horizontalpodautoscaler.autoscaling/keda-hpa-azure-pipelines-scaledobject	Deployment/azdevops-deployment	0/1 (avg)	1	5	1	12m


```

ashutosh@Azure:~/sample-app$ kubectl apply -f keda.yaml
secret/pipeline-auth unchanged
triggerauthentication.keda.sh/pipeline-trigger-auth unchanged
scaledobject.keda.sh/azure-pipelines-scaledobject unchanged
ashutosh@Azure:~/sample-app$

```




ADO agent Docker file

```
spec:
  containers:
    - name: azdevops-agent
      image: [REDACTED]/samplekaniko:11544
      env:
        - name: AZD_URL
```

 [wi-256541-Azure](#)

[Agents](#) / [linux-agents](#) / [agent-capabilities](#) / Dockerfile

 [REDACTED] modified a few things

 contributors  

52 lines (47 sloc) | 1.78 KB

```
1 FROM ubuntu:18.04
2
3 # To make it easier for build and release pipelines to run apt-get,
4 # configure apt to not require confirmation (assume the -y argument by default)
5 ENV DEBIAN_FRONTEND=noninteractive
6 ARG JFROG_PASSWORD
7 ARG JFROG_USER
8 ENV JFROG_USER=$JFROG_USER
9 ENV AILAB_JFROG_PASSWORD=$JFROG_PASSWORD
10 RUN echo "APT::Get::Assume-Yes \"true\";" > /etc/apt/apt.conf.d/90assumeyes
11
12 ## Microsoft suggested capabilities for Agent setup ##
13 RUN apt-get update && apt-get install -y --no-install-recommends \
14     ca-certificates \
15     curl \
16     jq \
17     git \
18     iputils-ping \
19     libcurl4 \
20     libc6 \
21     libunwind8 \
```

**Delete Auto scaled offline agents from agents' pool:**



agents\_delete.py