

Learn Azure Kubernetes Service

By

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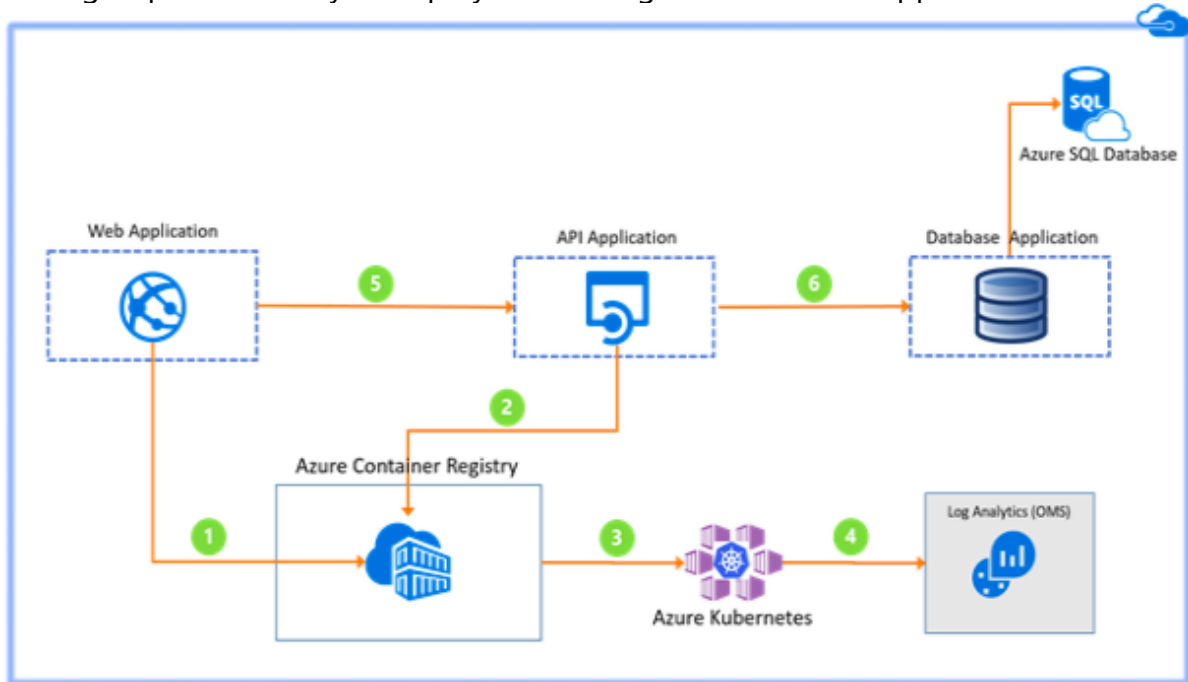
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Azure Kubernetes Service (AKS)

AKS is a highly available, secure, and fully managed Kubernetes service.

Azure Kubernetes Service (AKS) manages your hosted Kubernetes environment, making it quick and easy to deploy and manage containerized applications.

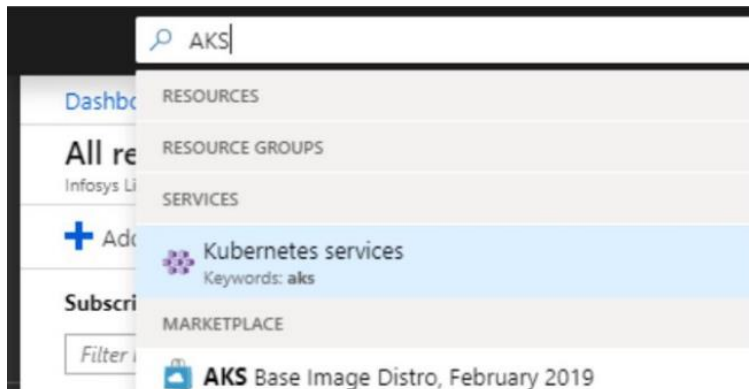


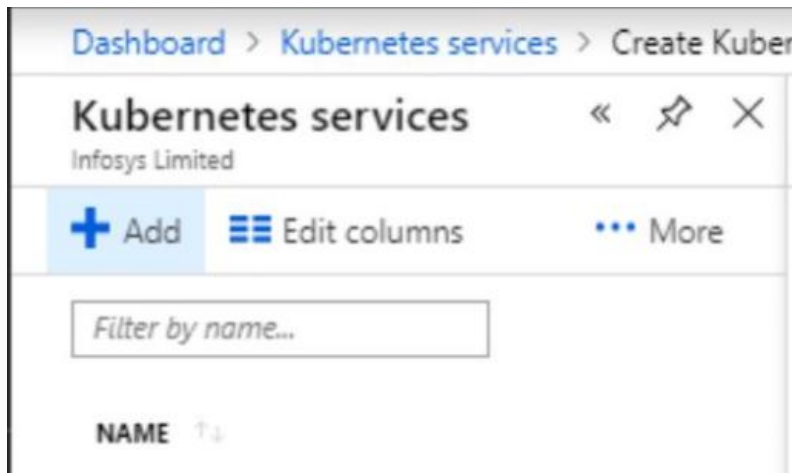
Create AKS cluster using Azure Portal

Sign in to the Azure portal at <https://portal.azure.com>.

If you don't have an account, sign up for free tier. You will get \$ 200 credit with 1-month validity.

Step 1: In the top search bar, search with AKS and click on "Kubernetes Service" and click on "Add"





Step 2: To create an AKS cluster, complete the following steps:

1. Basics: Configure the following options:

PROJECT DETAILS

CLUSTER DETAILS

SCALE

2. Authentication: Configure the following options:

1. Create a new service principal or Configure to use an existing one.
2. Enable the option for Kubernetes role-based access controls (RBAC). These
3. Controls provide more fine-grained control over access to the Kubernetes resources deployed in your AKS cluster.

Create Kubernetes cluster

[Basics](#) [Authentication](#) [Networking](#) [Monitoring](#) [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 ⓘ

* Resource group ⓘ [Create new](#)

CLUSTER DETAILS

* Kubernetes cluster name ⓘ ✓

* Region ⓘ ✓

* Kubernetes version ⓘ ✓

* DNS name prefix ⓘ ✓

SCALE

The number and size of nodes in your cluster. For production workloads, at least 3 nodes are recommended for resiliency. For development or test workloads, only one node is required. You will not be able to change the node size after cluster creation, but you will

[Review + create](#) [Previous](#) [Next : Authentication >](#)

Step 3: Select Review + create and then Create when validated successfully.

It will take some to provision AKS cluster for you. Once deployment completed, click on "Go to resources".

At the top, there are buttons for Delete, Cancel, Redeploy, and Refresh. The main message says "Your deployment is complete" with a green checkmark icon. Below this is a blue button labeled "Go to resource".

Deployment details are listed:

- Deployment name: microsoft.aks-20190216211238
- Subscription: Pay-As-You-Go
- Resource group: GetStart

Below the deployment details is a section titled "DEPLOYMENT DETAILS" with a "(Download)" link. It shows the following information:

- Start time: 16/02/2019, 21:14:06
- Duration: 7 minutes 19 seconds
- Correlation ID: 26a988d8-1369-4570-9355-e13254741d97

A table below shows the deployment resources:

RESOURCE	TYPE	STATUS	OPERATION DET...
my-cluster	Microsoft.Contai...	OK	Operation details
SolutionDeployme	Microsoft.Resour...	OK	Operation details
WorkspaceDeploy	Microsoft.Resour...	OK	Operation details

It will take you to the AKS clusters page.

The screenshot shows the "my-cluster" overview page in the Azure portal. The breadcrumb navigation at the top reads: Dashboard > microsoft.aks-20190216211238 - Overview > my-cluster.

On the left is a sidebar with navigation options: Overview (selected), Activity log, Access control (IAM), Tags, Settings, Upgrade, Scale, Dev Spaces, Properties, Locks, and Automation script.

The main content area shows the cluster details:

- Resource group (change): GetStart
- Status: Succeeded
- Location: East US
- Subscription (change): Pay-As-You-Go
- Subscription ID: 69e15c2b-d2b4-42fe-9f51-f93e56803b9c
- Tags (change): Click here to add tags

On the right, there are two columns of properties:

- Kubernetes version: 1.12.5
- API server address: k8cluster-e4a66a0f.hcp.eastus.azmk8s.io
- Total cores: 6
- Total memory: 21
- HTTP application routing domain: N/A

At the bottom, there are two action buttons: "Monitor containers" (Get health and performance insights, Go to Azure Monitor insights) and "View logs" (Search and analyze logs using ad-hoc, Go to Azure Monitor logs).

Step 4: Connect to the cluster

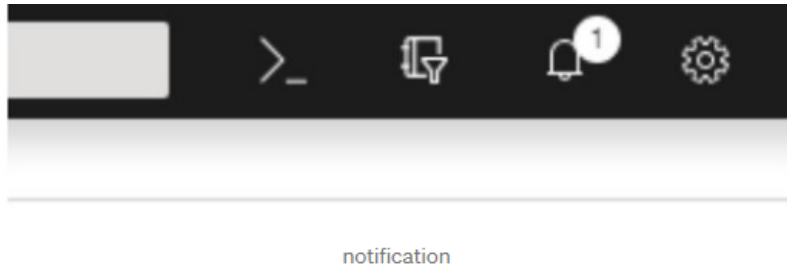
Cloud shell is pre-loaded with kubectl. Open cloud shell using the button on the top right-hand corner of the Azure portal.

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To assemble kubectl to attach to your Kubernetes cluster, use the az aks get-credentials command.

```
$ az aks get-credentials — resource-group GetStart — name my-cluster
```

To verify the association to your cluster, use the kubectl get command to come to an inventory of the cluster nodes.

```
$ kubectl get nodes
NAME STATUS ROLES AGE VERSION
aks-agentpool-74406193-0 Ready agent 4m52s v1.12.5
aks-agentpool-74406193-1 Ready agent 5m9s v1.12.5
aks-agentpool-74406193-2 Ready agent 5m3s v1.12.5
```

Now your cluster is ready to deploy your application.

Creating the AKS cluster using the Azure CLI

1. Open the **Command Prompt** with administrative mode.
2. The first step for using the Azure CLI is logging in:

az login

```
Command Prompt
Microsoft Windows [Version 10.0.17134.112]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\>az login
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code GHTVCTXXG to authenticate.
{
  "cloudName": "AzureCloud",
  "id": " ",
  "isDefault": true,
  "name": " ",
  "state": "Enabled",
  "tenantId": " ",
  "user": {
    "name": " ",
    "type": "user"
  }
},
```

Note: This login **method** is configured using the OAuth DeviceProfile flow.

3. If you have multiple subscriptions in Azure, you might need to use `az account list` and `az account set --subscription <Your Azure Subscription ID>` to make sure you're working on the right one:

```
Command Prompt
}
]
C:\Users\>az account set --subscription 
```

4. Create a resource group

1. You need a resource group to contain the AKS instance. (Technically it doesn't matter which location you deploy the resource group too, but I suggest going with one that is supported by AKS and sticking with it throughout the setup.)
2. Create a resource group with the [az group create](#) command. An Azure resource group is a logical group in which Azure resources are deployed and managed.
3. When creating a resource group you are asked to specify a location, this is where your resources will live in Azure.

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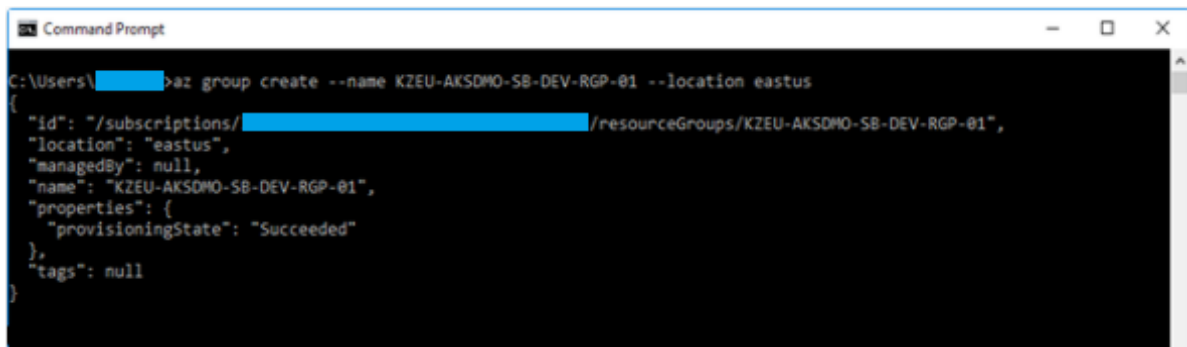
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4. The following command creates a resource group named **KZEU-AKSDMO-SB-DEV-RGP-01** in the **eastus** location.

```
az group create --name KZEU-AKSDMO-SB-DEV-RGP-01 --location eastus
```



```
Command Prompt
C:\Users\>az group create --name KZEU-AKSDMO-SB-DEV-RGP-01 --location eastus
{
  "id": "/subscriptions/ /resourceGroups/KZEU-AKSDMO-SB-DEV-RGP-01",
  "location": "eastus",
  "managedBy": null,
  "name": "KZEU-AKSDMO-SB-DEV-RGP-01",
  "properties": {
    "provisioningState": "Succeeded"
  },
  "tags": null
}
```

Create AKS cluster

1. Next you need to create the AKS cluster:
2. Use the [az aks create](#) command to create an AKS cluster. The following command creates a cluster named *DemoAKS01* with one node.

```
az aks create --name KZEU-AKSDMO-SB-DEV-AKS-01 --resource-group KZEU-AKSDMO-SB-DEV-RGP-01 --node-count 1 --generate-ssh-keys --kubernetes-version 1.11.2 --node-vm-size Standard_DS1_v2
```



```
Command Prompt - az aks create --name KZEU-AKSDMO-SB-DEV-AKS-01 --resource-group KZEU-AKSDMO-SB-DEV-RGP-01 --node-count 1 --generate-ssh-keys --kubernetes-version 1.11.2 --node-vm-size Standard_DS1_v2
C:\Users\ASTRANI>az aks create --name KZEU-AKSDMO-SB-DEV-AKS-01 --resource-group KZEU-AKSDMO-SB-DEV-RGP-01 --node-count 1 --generate-ssh-keys --kubernetes-version 1.11.2 --node-vm-size Standard_DS1_v2
Finished service principal creation[#####] 100.000%
```

After several minutes the command completes and returns JSON-formatted information about the cluster.

Important: Save the JSON output during a separate computer file, as a result of you would like the ssh keys later during this document.

Note: If you get the below error whereas running the on top of az aks create command, then you'll re-run an equivalent command once more

```
Deployment failed. Error occurred in request., ConnectionError: HTTPSConnectionPool(host='management.azure.com', port=443): Max retries exceeded with url: /subscriptions/.../providers/Microsoft.ContainerService/locations/westeurope/operations/...?api-version=2017-08-11 (caused by NewConnectionError('curllib3.connection.VerifiedHTTPSConnection object at 0x056805f0: Failed to establish a new connection: [Errno 11002] getaddrinfo failed'))
```

Note:

While creating AKS, internally a new resource group is created (like **MC_<Resource Group Name>_<AKS Name>_<Resource Group Location>**) which consists of Virtual machine, Virtual network, DNS Zone, Availability set, Network interface, Network security group, Load balancer and Public IP address etc....

Connect to the cluster

1. To manage a Kubernetes cluster use [kubectl](#), the Kubernetes command-line client.
2. If you want to install it locally, use the [az aks install-cli](#) command.

az aks install-cli

Connect kubectl to your Kubernetes cluster by using the [az aks get-credentials](#) command and configure accordingly. This step downloads credentials and configures the Kubernetes **user interface** to use them.

```
az aks get-credentials --resource-group KZEU-AKSDMO-SB-DEV-RGP-01 --name KZEU-AKSDMO-SB-DEV-AKS-01
```

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.17134.285]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>az aks get-credentials --resource-group KZEU-AKSRES-SB-DEV-RGP-01 --name KZEU-AKSRES-SB-DEV-AKS-01
Merged "KZEU-AKSRES-SB-DEV-AKS-01" as current context in C:\Users\...\.kube\config

C:\WINDOWS\system32>_
```

Verify the connection to your cluster via the [kubectl get](#) command to return a list of the cluster nodes. Note that this can take a few minutes to appear.

kubectl get nodes

Administrator: Command Prompt

```
C:\WINDOWS\system32>kubectl get nodes
NAME                                STATUS    ROLES    AGE    VERSION
aks-agentpool-11197220-0            NotReady agent    20d    v1.11.2

C:\WINDOWS\system32>
```

You should also check that you are able to open the Kubernetes dashboard by running

az aks browse --resource-group KZEU-AKSDMO-SB-DEV-RGP-01 --name KZEU-AKSDMO-SB-DEV-AKS-01

Administrator: Command Prompt - az aks browse --resource-group KZEU-AKSDMO-SB-DEV-RGP-01 --name KZEU-AKSDMO-SB-DEV-AKS-01

```
C:\WINDOWS\system32>az aks browse --resource-group KZEU-AKSDMO-SB-DEV-RGP-01 --name KZEU-AKSDMO-SB-DEV-AKS-01
Merged "KZEU-AKSDMO-SB-DEV-AKS-01" as current context in C:\Users\██████████\AppData\Local\Temp\tmp3q90e8o0
Proxy running on http://127.0.0.1:8001/
Press CTRL+C to close the tunnel...
Forwarding from 127.0.0.1:8001 -> 9090
Forwarding from [::1]:8001 -> 9090
Handling connection for 8001
Handling connection for 8001
Handling connection for 8001
Handling connection for 8001
Handling connection for 8001
```

This will launch a browser tab with a graphical representation:

