



# Kubernetes cloud management for Azure Stack Edge

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Microsoft Corporation

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## Applies to

Preview release for Kubernetes cloud management on Azure Stack Edge

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## Revision History

Release Date	Changes
March 23, 2021	Released the guide for Private Preview

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# Kubernetes cloud management for Azure Stack Edge

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## About Kubernetes on Azure Stack Edge

Azure Stack Edge Pro with GPU is an AI-enabled edge computing device with network data transfer capabilities. Microsoft ships you a cloud-managed device that acts as network storage gateway and has a built-in Graphical Processing Unit (GPU) that enables accelerated AI-inferencing.

On your Azure Stack Edge Pro device, you can create a Kubernetes cluster by configuring the compute. When the compute role is configured, the Kubernetes cluster including the master and worker nodes are all deployed and configured for you. This cluster is then used for workload deployment via kubectl, IoT Edge, or Azure Arc.

In the earlier releases on your Azure Stack Edge Pro device:

- Kubernetes and IoT Edge roles were coupled together and were configured by a long, single step of compute configuration. When the compute role was configured, the Kubernetes cluster including the master and worker nodes were all deployed and configured for you. Your IoT Edge role was configured and the associated IoT Hub and IoT Edge devices were created.
- You could deploy Azure Arc separately via the PowerShell interface of the device. Azure Arc enables organizations to view, manage, and govern their on-premises Kubernetes clusters using the Azure portal, command line tools, and APIs.

In this preview release:

- Kubernetes can be enabled via the Azure portal by itself. In these instances, you would use the kubectl to manage your Kubernetes cluster.
- IoT Edge is configured as an addon but when configured, requires the configuration of Kubernetes cluster as well.
- Azure Arc for Kubernetes cluster is also an addon which can be configured via the Azure portal when you configure the Kubernetes cluster or you can configure it separately as well.

## Scenarios covered

The following scenarios enabled by this feature are described in this document:

[This topic is pre-release documentation and is subject to change in future releases.]

1. **Enable Kubernetes service on your device.** This can be done with and without configuring the Azure Arc for Kubernetes clusters as an addon.
  - o If you enable Azure Arc on Kubernetes cluster, then you use Azure Arc to manage your cluster from Azure.
  - o If you disable Azure Arc, you can use `kubect1` to manage your cluster by directly connecting to the device.
2. **Enable IoT Edge service on your device.** To enable IoT Edge service, you must enable the Kubernetes service on your device. Kubernetes is the hosting platform for IoT Edge.
3. **Remove Kubernetes service.** When you remove the Kubernetes service, this action also removes the Azure IoT Edge and the Azure Arc for Kubernetes cluster addons.
4. **Remove IoT Edge service.** When you remove the IoT Edge service, this action removes only the IoT Edge service. You can choose to retain/remove the Kubernetes service and the Azure Arc for Kubernetes cluster addon.

This guide provides a step-by-step procedure of the preceding scenarios. The target audience for this guide is the IT administrators who are familiar with the setup and deployment of workloads on the Azure Stack Edge device.

**Important:** Kubernetes cloud management on Azure Stack Edge Pro devices is in preview. Please review the [terms of use for the preview](#) and sign up before you deploy this solution.

## Sign up for Kubernetes cloud management preview

If you intend to sign up for private preview, make sure that the subscription that you'll use does not have any existing resources. If you have any existing resources in the subscription where the IoT Edge is configured, remove the IoT Edge configuration. For details, follow the steps in [Remove the IoT Edge configuration](#).

Once the IoT Edge configuration is successfully removed, you can request to enable Kubernetes cloud management. If the preceding steps are not followed, your Azure Stack Edge resource will be unsupported.

Use the following custom URL to create any resources in your subscription via the Azure portal for the duration of the preview:

- <https://aka.ms/ase-cloud-mgmt-k8s>

[This topic is pre-release documentation and is subject to change in future releases.]

If you are not using the specified URL and instead use the production URL:

<https://portal.azure.com>, then:

- You will only see the IoT role.
- You won't see the Kubernetes features and won't be able to use those features.
- If you configure compute with this URL, the configuration won't work.

**Important:** If you opt out of the preview, it is your responsibility to delete the Kubernetes configuration before you make the opt-out request. Any resources that you configured in the preview will not be supported once you have opted out of the preview.

## Prerequisites

Before you begin, make sure that:

- You have your Microsoft account with access credentials.
- Your subscription should be enabled for Kubernetes cloud management preview. After the subscription is enabled, Azure Stack Edge team will reach out to you via the email address provided during the preview sign-up.
- Make sure that you have access to an Azure Stack Edge Pro GPU device. This device should be configured and activated as per the detailed instructions in [Tutorial: Activate Azure Stack Edge Pro with GPU](#).
- You have a client to access your device. The client system is running a [supported operating system](#).
  - If using a Windows client, make sure that it is running PowerShell 5.0 or later.
  - You have the Kubernetes API endpoint from the **Device** page in the local UI of your device. You will use this endpoint to create an entry in the client *hosts* file. On a Windows system, go to `C:/windows/system32/drivers/etc/hosts` and add the following entry:

```
<Kubernetes master node IP>           <Kubernetes endpoint>
```

For more information, see the instructions in [Get Kubernetes API endpoint](#).

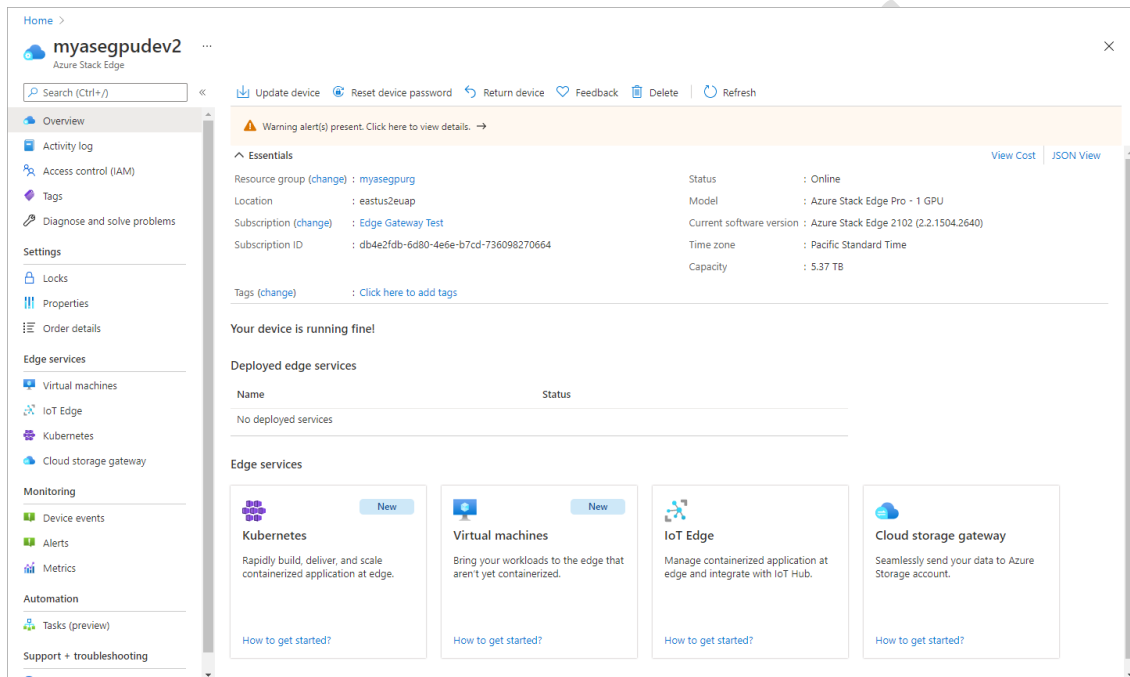
- Before you enable Azure Arc on the Kubernetes cluster, you will need to enable and register *Microsoft.Kubernetes* and *Microsoft.KubernetesConfiguration* against your subscription. See how to register [Kubernetes resource providers](#).
- If you intend to deploy Azure Arc for Kubernetes cluster, then you'll need to create a resource group. You must have owner level access to this resource group.

[This topic is pre-release documentation and is subject to change in future releases.]

## Enable Kubernetes service

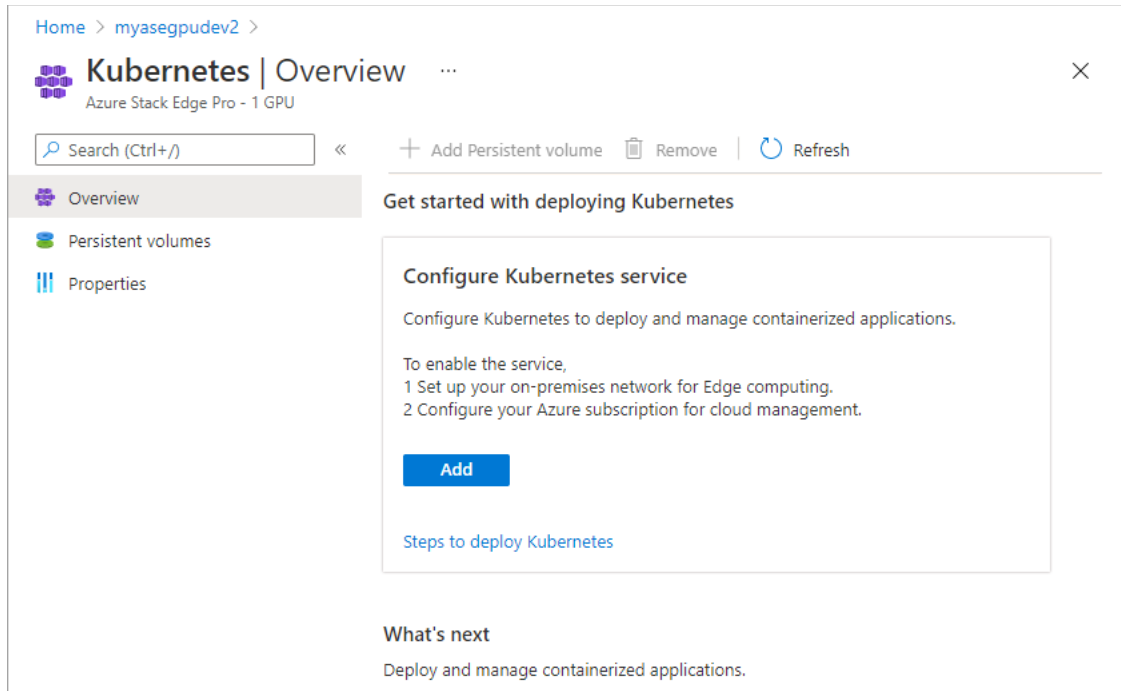
Perform the following steps in the Azure portal to create a Data Box resource.

1. Sign in to the Azure preview portal at this URL: <https://aka.ms/ase-cloud-mgmt-k8s>. All deployment steps must be performed via the Azure preview portal.
2. In the Azure Stack Edge resource for your device, go to **Edge services > Kubernetes** or select the **Kubernetes** tile in the right-pane.



3. In the **Kubernetes > Overview**, select **Add** to enable Kubernetes service on your device. This service will allow you to deploy and orchestrate Kubernetes workloads on your device.

[This topic is pre-release documentation and is subject to change in future releases.]



4. Select a Kubernetes version and the node size.
  - a. Specify a Kubernetes server version or accept the default. **Kubernetes version** is the server version that is installed on your device and is tied with the Kubernetes client version installed on your client that is accessing the device. The server version associated with the 2101 release is v1.17.3. (The client version installed on client system used to access the device should be skewed from the server by no more than one version.)
  - b. Select the **Node size**. Given you are working with development or test workloads, use *Standard\_DS\_V1* node size. Currently this is the only supported size. The node size is the size of the worker VM. This size can't be changed after creating the cluster.
  - c. Enable Azure Arc management via checking the box against **Manage containers from cloud via Azure Arc enabled Kubernetes**.



[This topic is pre-release documentation and is subject to change in future releases.]

Home > myasegpudev2 > Kubernetes >

## Create Kubernetes service

myasegpudev2

**Basic cluster configuration**

Select the Kubernetes cluster size and version to be used. For production workloads, use Standard\_DS2\_v2 nodes. For development or test workloads, use Standard\_DS1\_v2

Kubernetes version \* ⓘ 1.15.10 (default) ▾

Node size \* ⓘ Standard DS v2 (default) ▾

**Arc enabled Kubernetes (Preview)**

Manage containers from cloud via Arc enabled Kubernetes

Settings [Change](#)

Subscription name Edge Gateway Test

Resource group myasegpurg

Arc enabled Kubernetes cluster name ase-myasegpudev2-9ffdf49ce7dadf89c00f370

Region East US

[Create](#)

- i. Accept the defaults. If you want to modify the default Azure Arc configuration, select change. You'll need to provide a resource group, cluster name, and region.

### Configure Arc enabled Kubernetes

Provide a subscription, resource group, cluster name, and region.

Subscription name ⓘ Edge Gateway Test

Resource group \* ⓘ mydbgnwrg ▾

✘ You don't have sufficient permissions to configure Arc resource on the resource group level. If the access has been recently granted, it may take sometime to be reflected.

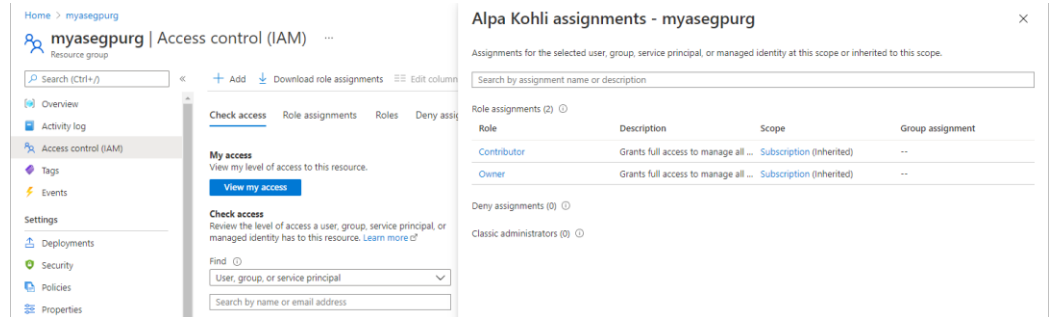
Arc enabled Kubernetes cluster name \* ⓘ ase-myasegpudev2-9ffdf49ce7dadf89c00f370 ✓

Region \* ⓘ East US ▾

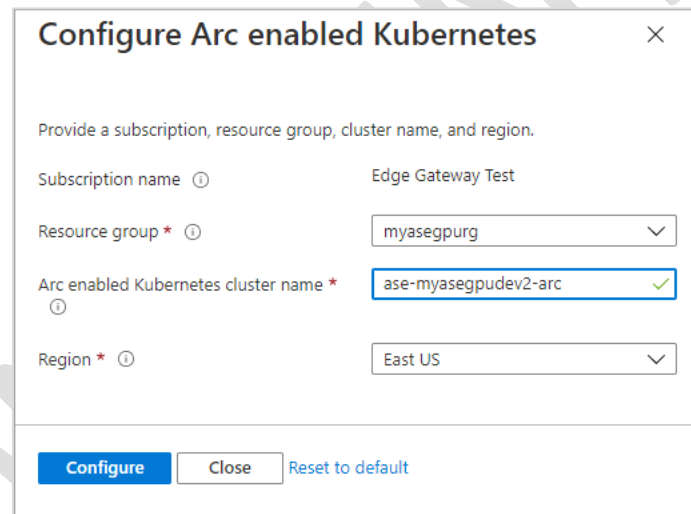
[Configure](#) [Close](#) [Reset to default](#)

- ii. The subscription name should be automatically populated.
- iii. Supply a unique resource group name. **You must have owner level access to this resource group.** To verify the access level for the resource group, go to **Resource group > Access control (IAM) > View my access**. Under the **Role assignments**, you should be listed as an Owner.

[This topic is pre-release documentation and is subject to change in future releases.]



- iv. Specify a name for your Arc enabled Kubernetes cluster or accept the provided default.
- v. Select a region where you will create a resource for your Arc enabled Kubernetes cluster. A filtered list of supported regions is displayed in the dropdown list. For more information, see [supported regions for Azure Arc enabled Kubernetes](#).
- vi. Select **Configure**. You can also reset the Arc settings in this blade to default by selecting the **Reset to default** option.



- vii. Select **Create** to create the Kubernetes service.

[This topic is pre-release documentation and is subject to change in future releases.]

Home > Kubernetes >

## Create Kubernetes service

myasegpudev2

**Basic cluster configuration**

Select the Kubernetes cluster size and version to be used. For production workloads, use Standard\_DS2\_v2 nodes. For development or test workloads, use Standard\_DS1\_v2

Kubernetes version \* ⓘ

Node size \* ⓘ

**Arc enabled Kubernetes (Preview)**

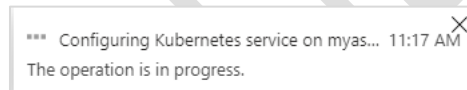
Manage containers from cloud via Arc enabled Kubernetes

Settings [Change](#)

Subscription name: Edge Gateway Test  
Resource group: myasegpurg  
Arc enabled Kubernetes cluster name: ase-myasegpudev2-arc  
Region: East US

[Create](#)

d. You see a notification that the service creation is in progress. Creation of the service and also of a Arc enabled Kubernetes resource with the specified setting takes several minutes. You can select the **Refresh** from the command bar to refresh the pane.



Creation of the Arc resource can take longer than the creation of Kubernetes service. This will also be reflected as the pane is updated.

Home >

## Kubernetes | Overview

Azure Stack Edge Pro - 1 GPU

Search (Ctrl+J) Add Persistent volume Remove Refresh

**Kubernetes service is running fine!**  
Connect Kubernetes clusters to Azure using Azure Arc. For IoT specific scenarios, use azure IoT Edge service. [Learn more](#)

**Addons**  
Total: 0 No

Arc configured K8s	Configure Arc	Creating
IoT Edge Service	Configure IoT	Ready to set up

**Persistent volumes**  
If your containers need to store data on the device, use Edge SMB or NFS shares as persistent volumes.  
[Add Persistent volume](#)

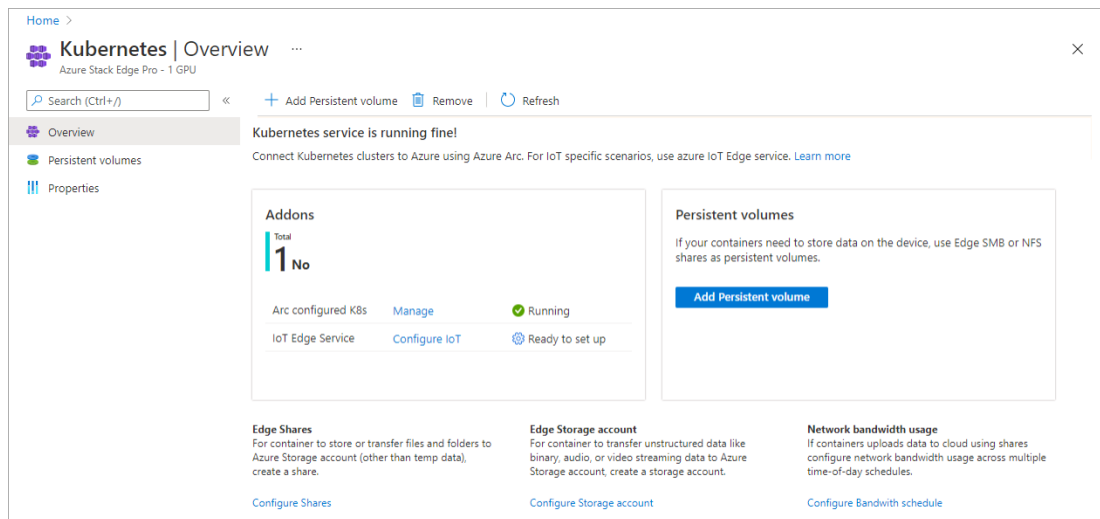
**Edge Shares**  
For container to store or transfer files and folders to Azure Storage account (other than temp data), create a share.  
[Configure Shares](#)

**Edge Storage account**  
For container to transfer unstructured data like binary, audio, or video streaming data to Azure Storage account, create a storage account.  
[Configure Storage account](#)

**Network bandwidth usage**  
If containers uploads data to cloud using shares configure network bandwidth usage across multiple time-of-day schedules.  
[Configure Bandwidth schedule](#)

[This topic is pre-release documentation and is subject to change in future releases.]

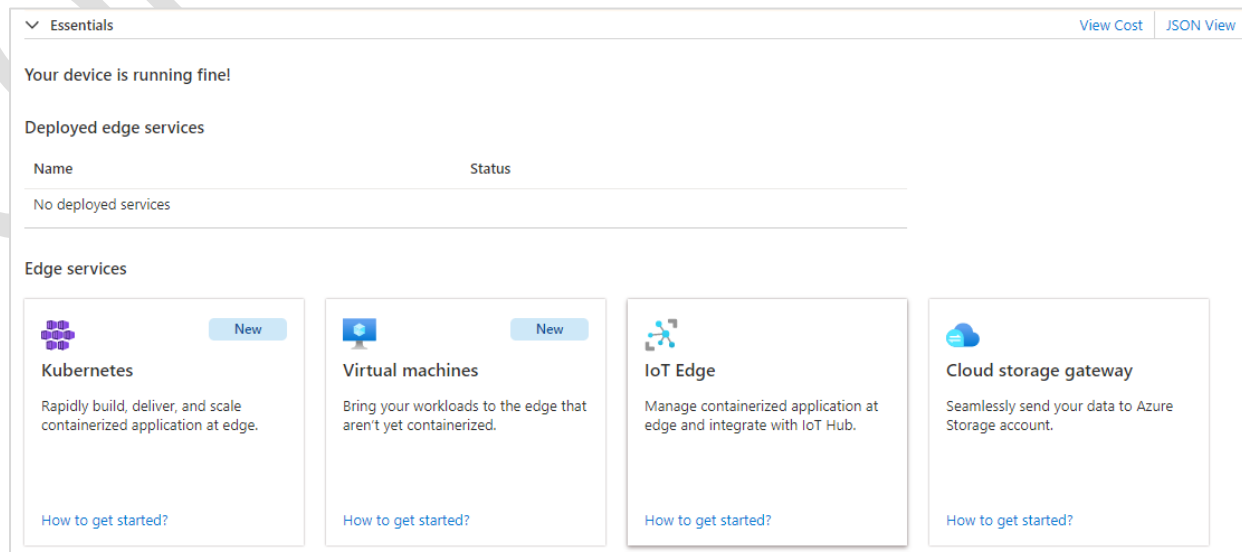
e. After the service is created, your pane is updated to indicate that the Kubernetes service is running.



## Enable IoT Edge service

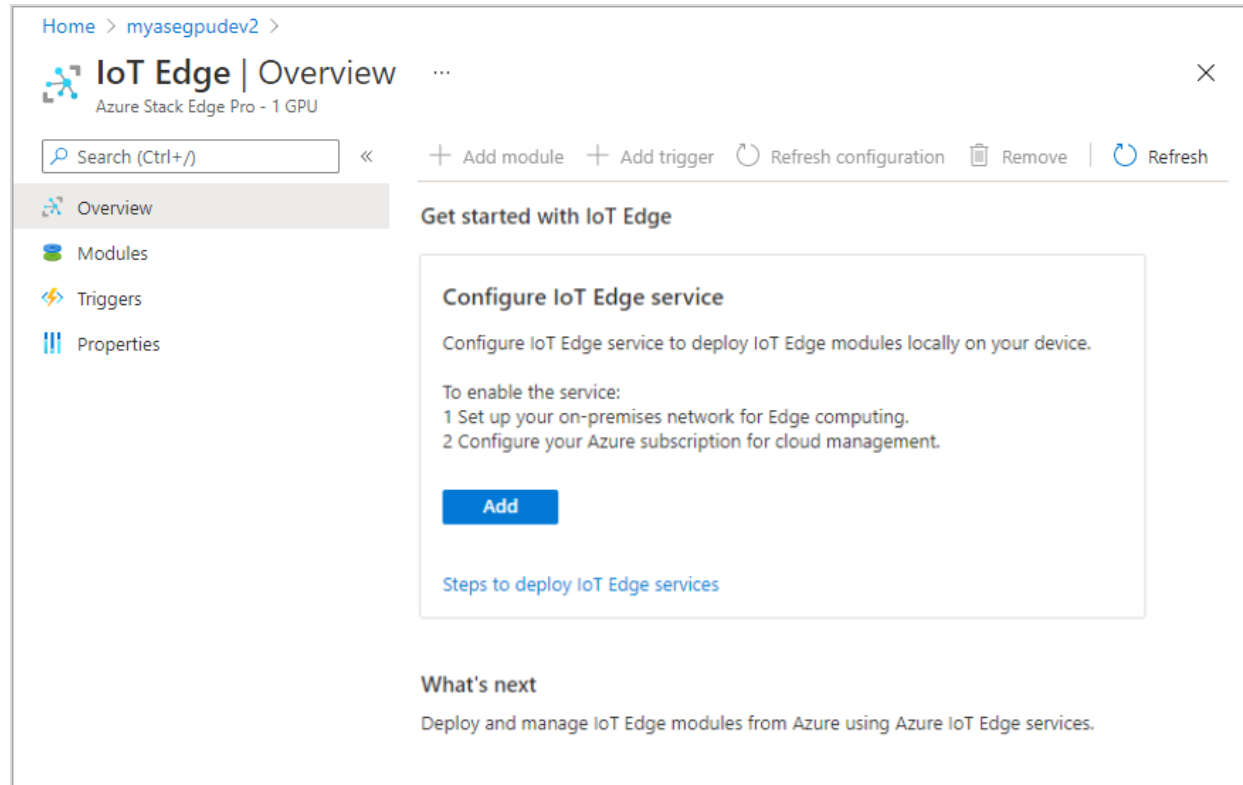
When you enable IoT Edge, Kubernetes is automatically enabled. Perform the following steps in the Azure portal to create a Data Box resource.

1. Use your Microsoft Azure credentials to log into the Azure preview portal at this URL: <https://aka.ms/ase-cloud-mgmt-k8s>. Note all deployment steps must be performed via the Azure preview portal.
2. Go to **Edge services > IoT Edge**. Alternatively you can select the **IoT Edge** tile in the right-pane.



[This topic is pre-release documentation and is subject to change in future releases.]

3. In the IoT Edge > Overview, go to the Configure IoT Edge service tile and select Add.



4. On the Basics tab in the Create IoT Edge service, follow these steps.

1. Select a subscription.
2. Select a resource group to deploy your IoT Edge service.
3. Create a new or select from an existing IoT Hub resource that you want to use with your device. Use the provided name for IoT Hub resource or enter your own.
4. Select **Next:Kubernetes services**.

[This topic is pre-release documentation and is subject to change in future releases.]

Home > myasegpudev2 > IoT Edge >

## Create IoT Edge service

Azure Stack Edge Pro - 1 GPU

**Basics** | Kubernetes services | Review + Create

Connect the device to a new standard tier (S1) Azure IoT Hub. To use a free tier, select an existing IoT Hub resource. [Learn more](#)

Subscription \* ⓘ Edge Gateway Test

Resource group \* ⓘ myasegpurg

IoT Hub \* ⓘ  Create new  Use existing

ase-myasegpudev2-iothub ✓

It takes time to create a new IoT Hub. Under the new IoT Hub, an IoT Edge device and IoT device are configured. [Pricing details for IoT Hub.](#)

*IoT Edge device:* myasegpudev2-edge  
*IoT Gateway device:* myasegpudev2-storagegateway

Only Linux container image types are supported.

**Review + Create** | Previous | Next: Kubernetes services

5. On the **Kubernetes services** tab, follow these steps:
  1. Select a Kubernetes version.
  2. Select the Kubernetes cluster size. This size corresponds to the size of Kubernetes worker VM. Select Standard DS V2 for the development or test workloads that you'll deploy on your device in this preview release. For more information, see [Dv2 and DSv2 series](#).
  3. To manage your containerized workloads via Azure Arc enabled Kubernetes, select the checkbox against the Manage containers from cloud .... option.

[This topic is pre-release documentation and is subject to change in future releases.]

Home > myasegpudev2 > IoT Edge >

### Create IoT Edge service

Azure Stack Edge Pro - 1 GPU

Basics **Kubernetes services** Review + Create

**Basic cluster configuration**

Select the Kubernetes cluster size and version to be used. For production workloads, use Standard\_DS2\_v2 nodes. For development or test workloads, use Standard\_DS1\_v2

Kubernetes version \* ⓘ 1.15.10 (default) ▼

Node size \* ⓘ Standard DS v2 (default) ▼

**Arc enabled Kubernetes (Preview)**

Manage containers from cloud via Arc enabled Kubernetes

Settings [Change](#)

Subscription name	Edge Gateway Test
Resource group	myasegpurg
Arc enabled Kubernetes cluster name	ase-myasegpudev2-e6c3ef38b36d6b9ae3d64ba
Region	East US

[Review + Create](#) [Previous](#) [Next: Review + Create](#)

6. Accept the default configuration. If you want to modify the default configuration, select **Change**. On the **Configure Arc enabled Kubernetes**, follow these steps:

1. The subscription used for Azure Stack Edge will be automatically used to create Arc enabled Kubernetes.
2. Select a resource group to deploy your Arc enabled Kubernetes resource. This can be the same resource group as your Azure Stack Edge resource or a different one.
3. Enter a unique name for your Arc enabled Kubernetes resource. This will also be the Kubernetes cluster name.
4. Specify a region from the list of [supported regions for Arc enabled Kubernetes](#).
5. Select **Configure**.

### Configure Arc enabled Kubernetes

Provide a subscription, resource group, cluster name, and region.

Subscription name ⓘ Edge Gateway Test

Resource group \* ⓘ myasegpurg ▼

Arc enabled Kubernetes cluster name \* ⓘ ase-myasegpudev2-arc1 ✓

Region \* ⓘ East US ▼

[Configure](#) [Close](#) [Reset to default](#)

[This topic is pre-release documentation and is subject to change in future releases.]

7. On the Create IoT Edge service, select **Next: Review + Create**.

The screenshot shows the 'Create IoT Edge service' wizard in the 'Kubernetes services' step. The breadcrumb navigation is 'Home > myasegpudev2 > IoT Edge >'. The title is 'Create IoT Edge service' with a close button. Below the title, it says 'Azure Stack Edge Pro - 1 GPU'. There are three tabs: 'Basics', 'Kubernetes services' (selected), and 'Review + Create'. Under 'Basic cluster configuration', there is a note: 'Select the Kubernetes cluster size and version to be used. For production workloads, use Standard\_DS2\_v2 nodes. For development or test workloads, use Standard\_DS1\_v2'. Two dropdown menus are visible: 'Kubernetes version \*' set to '1.15.10 (default)' and 'Node size \*' set to 'Standard DS v2 (default)'. Under 'Arc enabled Kubernetes (Preview)', the checkbox 'Manage containers from cloud via Arc enabled Kubernetes' is checked. A 'Settings' section has a 'Change' link. At the bottom, there are three buttons: 'Review + Create' (highlighted in blue), 'Previous', and 'Next: Review + Create'.

8. Review the configuration and select **Create**.

The screenshot shows the 'Create IoT Edge service' wizard in the 'Review + Create' step. The breadcrumb navigation is 'Home > myasegpudev2 > IoT Edge >'. The title is 'Create IoT Edge service' with a close button. A green banner at the top says 'All validations have passed.' with a checkmark icon. There are three tabs: 'Basics', 'Kubernetes services', and 'Review + Create' (selected). Under 'IoT Configuration', there is a table with the following data:

Subscription name	Edge Gateway Test
Resource group	myasegpurg
IoT Hub	(New) ase-myasegpudev2-iothub
IoT Edge device	myasegpudev2-edge
IoT Gateway device	myasegpudev2-storagegateway

Under 'Basic cluster configuration', there is a table with the following data:

Kubernetes version	1.15.10 (default)
Node size	Standard DS v2 (default)

Under 'Azure Arc enabled Kubernetes (Preview)', there is a table with the following data:

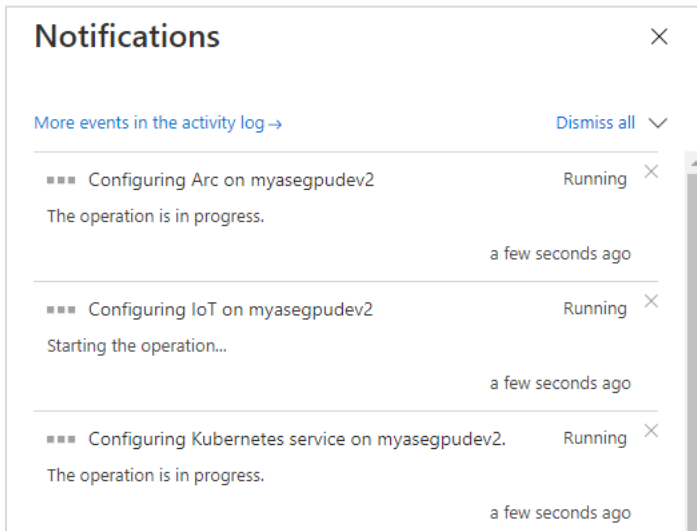
Subscription name	Edge Gateway Test
Resource group	myasegpurg
Arc enabled Kubernetes cluster name	ase-myasegpudev2-arc1
Region	East US

At the bottom, there are three buttons: 'Create' (highlighted in blue), 'Previous', and 'Next'.

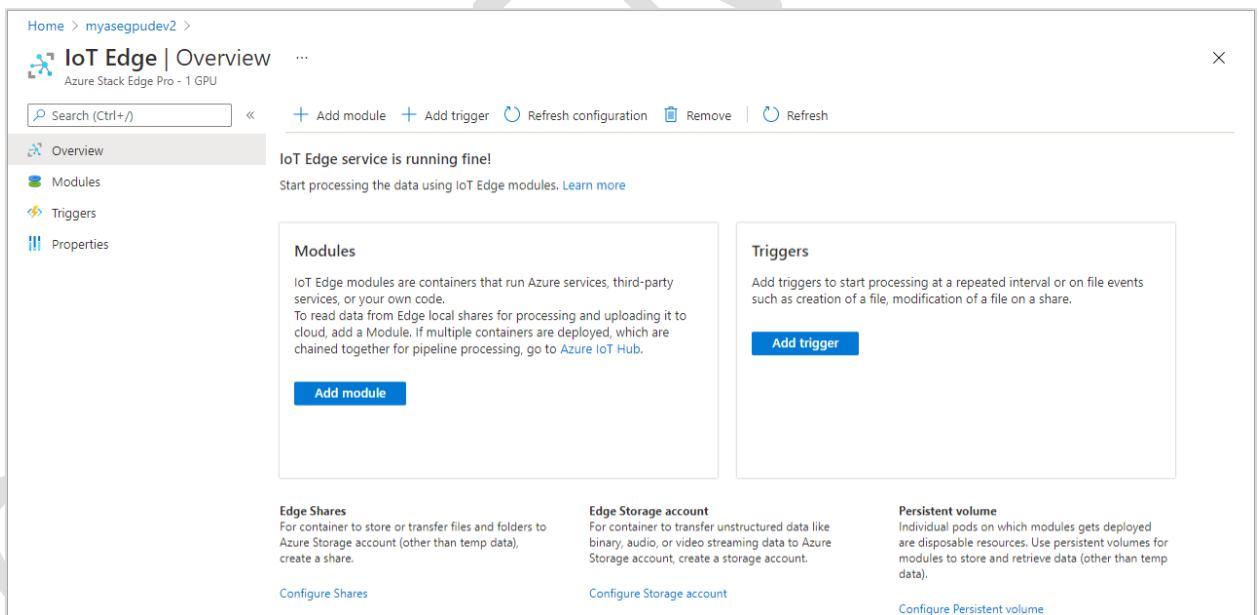


[This topic is pre-release documentation and is subject to change in future releases.]

9. You'll see notifications that the Kubernetes cluster, IoT Edge and Arc enabled Kubernetes are being configured. This step takes up to 20 minutes.

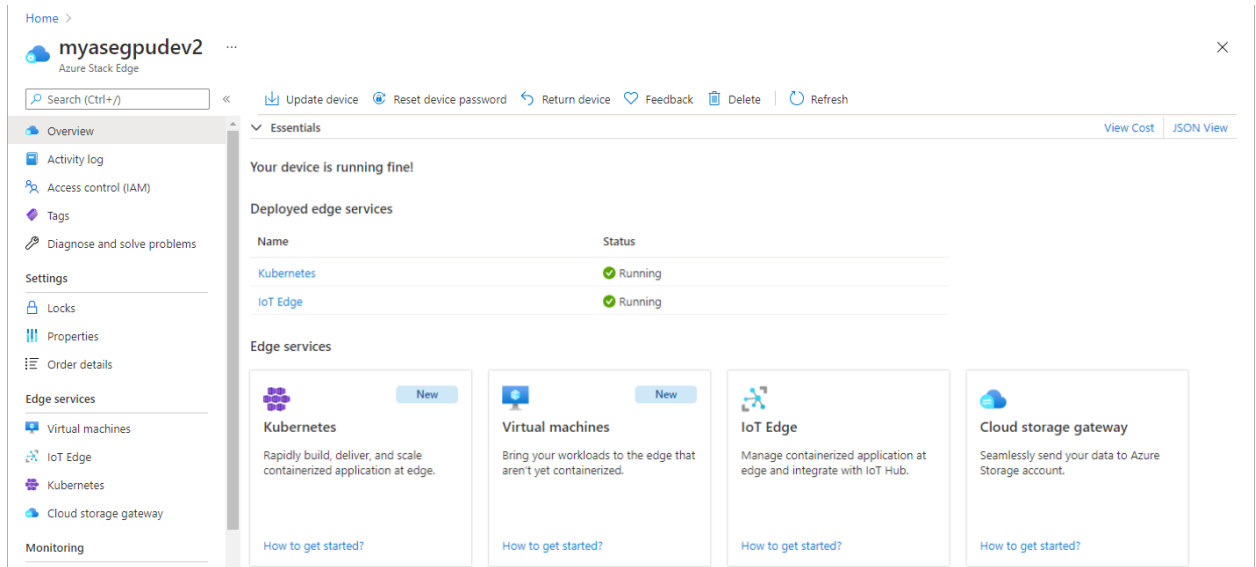


As the services are configured, you'll see that the **Overview** page updates.



As you return to the **Overview** page in the Azure Stack Edge resource, you'll see the deployed Edge services that are running.

[This topic is pre-release documentation and is subject to change in future releases.]



## Add a persistent volume

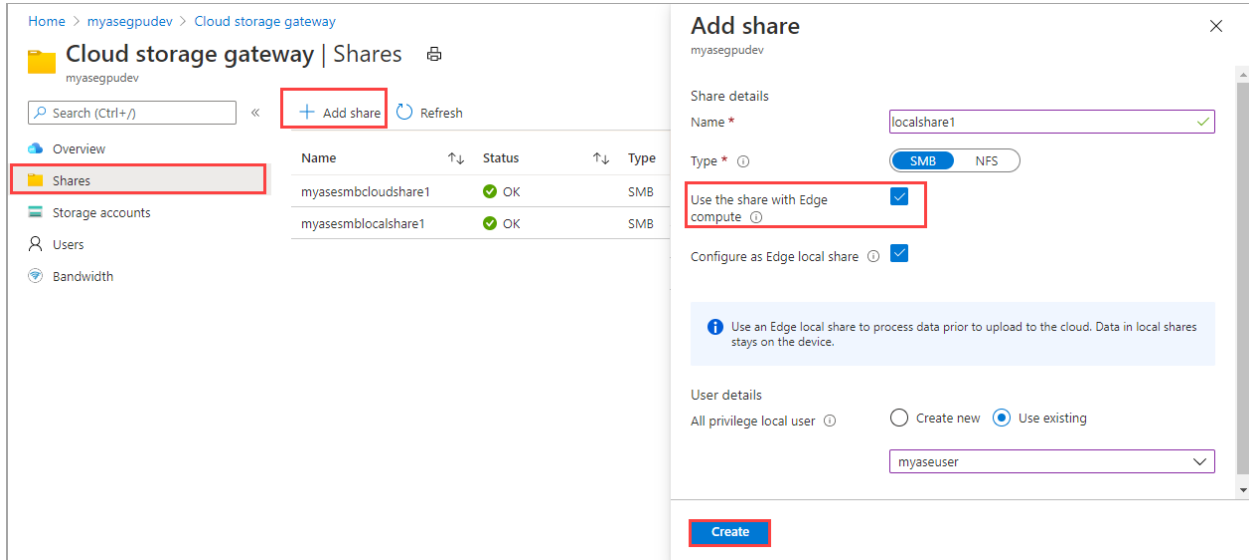
**PersistentVolume (PV)** refers to a piece of storage in the Kubernetes cluster. Kubernetes storage can be statically provisioned as `PersistentVolume`. It can also be dynamically provisioned as `storageClass`. For more information, see [Storage requirements for Kubernetes pods](#).

There are two different workflows depending on whether the compute is enabled inline when the share is created.

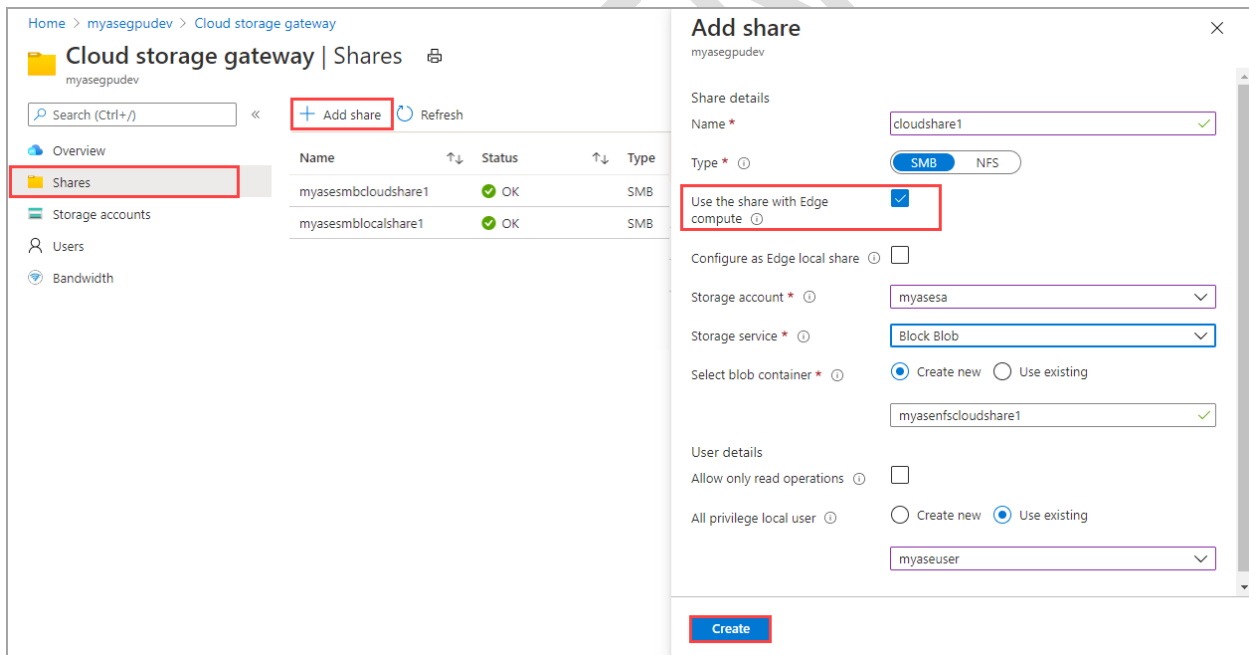
### Compute enabled inline during share creation

On your Azure Stack Edge Pro device, statically provisioned `PersistentVolumes` are created using the device's storage capabilities. When you provision a share and **Use the share with Edge compute** option is enabled, this action creates a PV resource automatically in the Kubernetes cluster.

[This topic is pre-release documentation and is subject to change in future releases.]



To use cloud tiering, you can create an Edge cloud share with the Use the share with Edge compute option enabled. A PV is again created automatically for this share. Any application data that you write to the Edge share is tiered to the cloud.

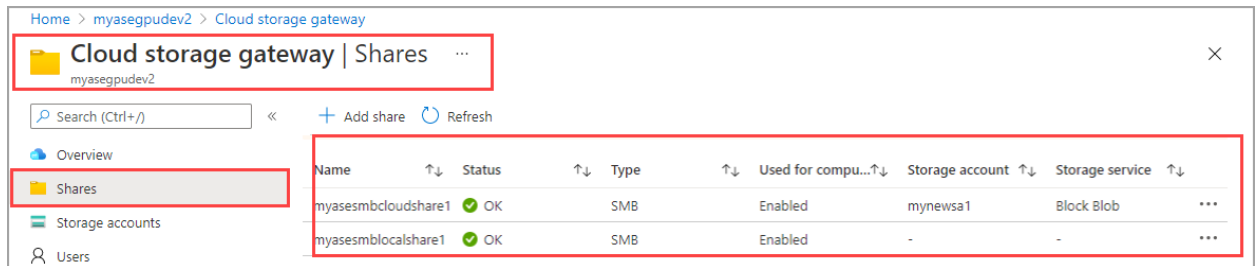


## Compute not enabled inline during share creation

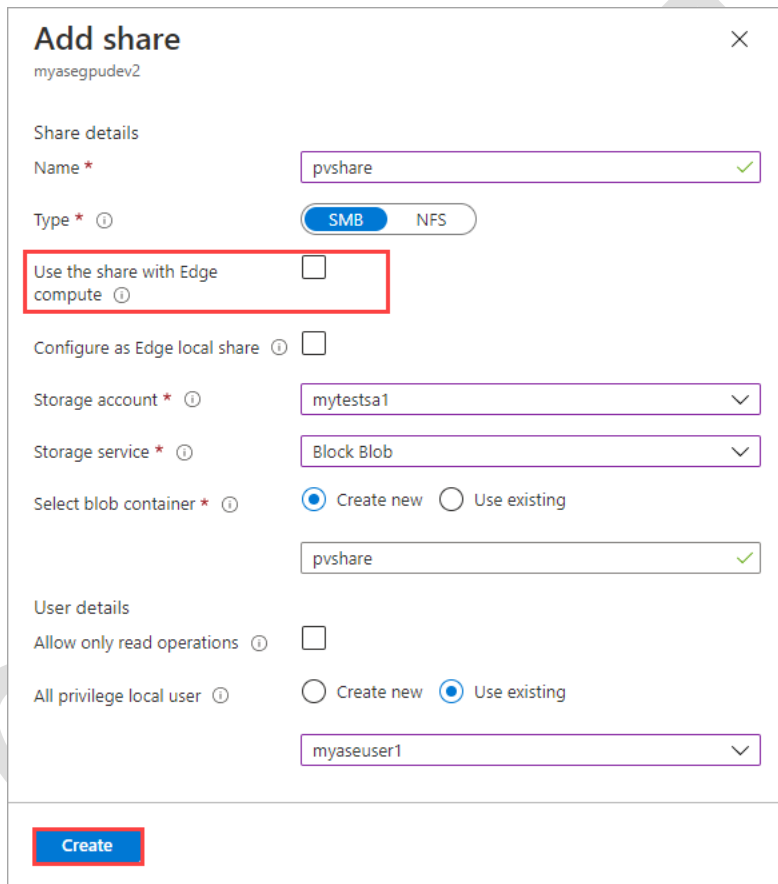
For the shares that were created with the Use the share with Edge compute option unchecked, you can add a persistent volume using the following steps.

[This topic is pre-release documentation and is subject to change in future releases.]

1. In the Azure portal, go to the Azure Stack Edge resource for your device. Go to Cloud storage gateway > Shares. You can see that the device currently has shares that have the Edge compute option checked.

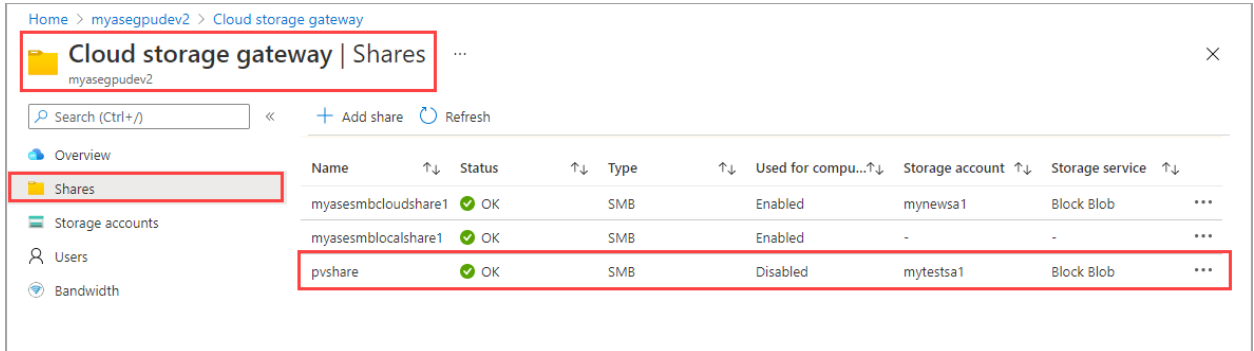


2. Select + Add share. For this share, make sure that Use the share with Edge compute option is unchecked.

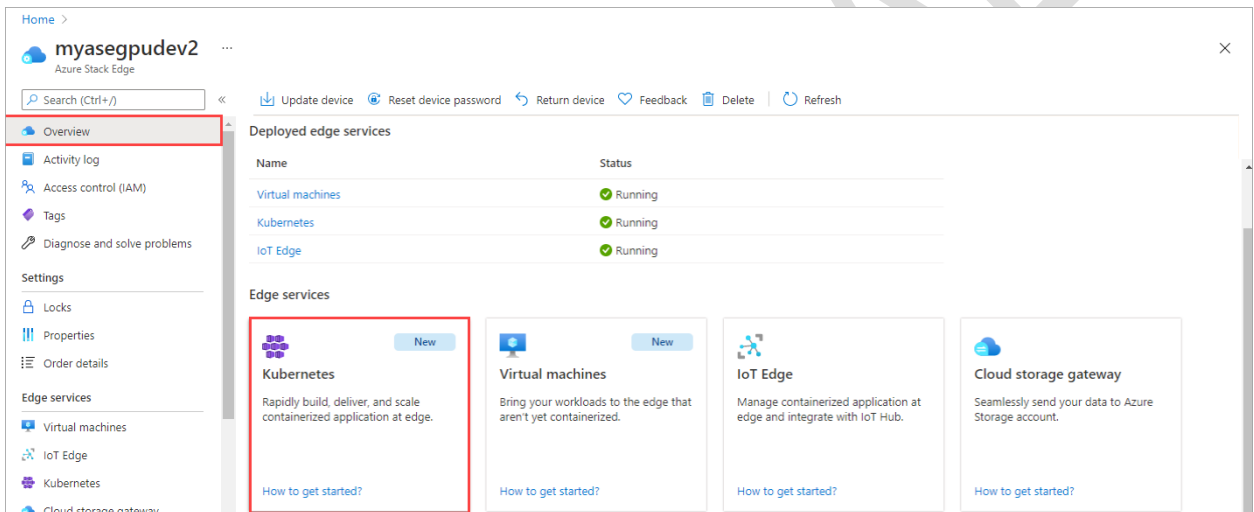


3. You can see the newly created share in the list of shares and **Used for compute** shows as Disabled.

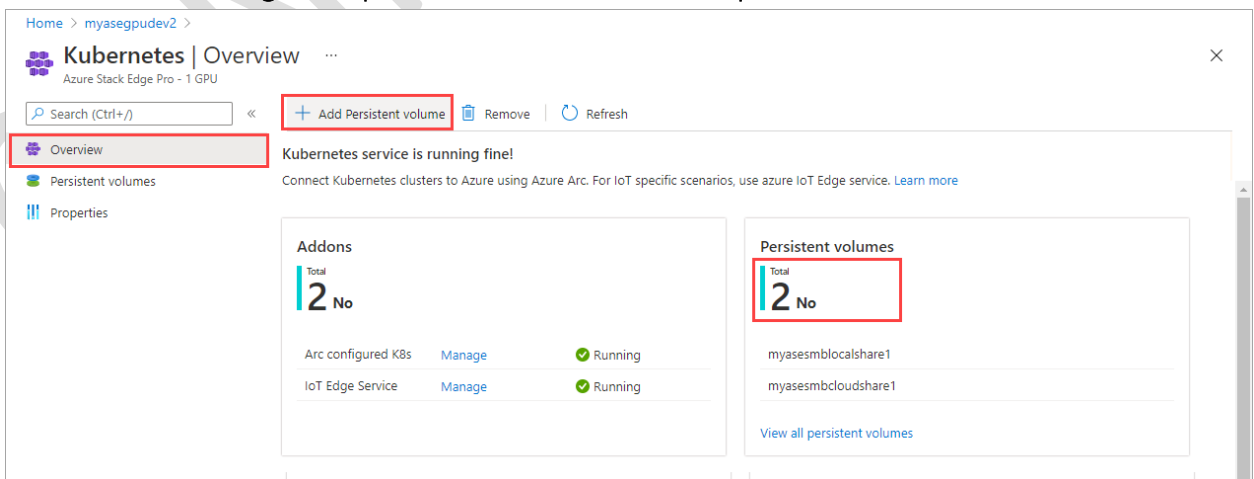
[This topic is pre-release documentation and is subject to change in future releases.]



4. Go back to the Azure Stack Edge resource > Overview. In the right-pane, select the Kubernetes tile.

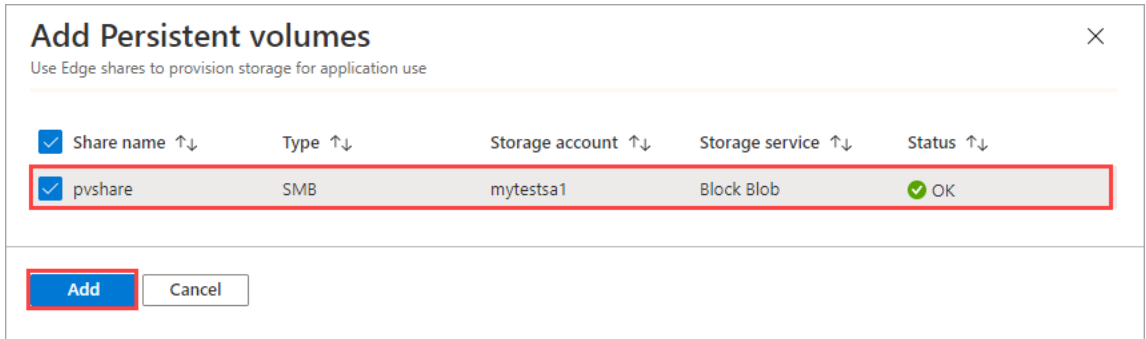


5. In the Kubernetes > Overview page, the Persistent volumes tile shows two persistent volumes that exist. These volumes were created automatically when the shares were created with Use the share with Edge compute enabled. Select + Add persistent volume.

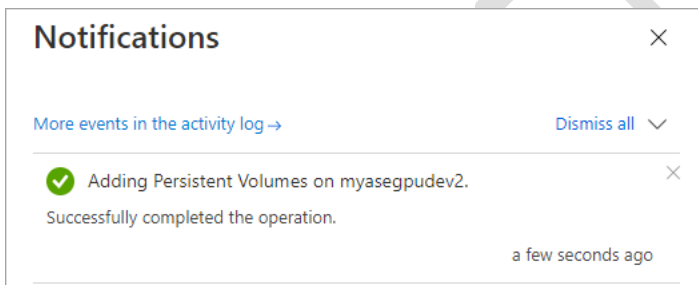


6. In the Add persistent volumes blade, select the share for which you want to create the persistent volume.

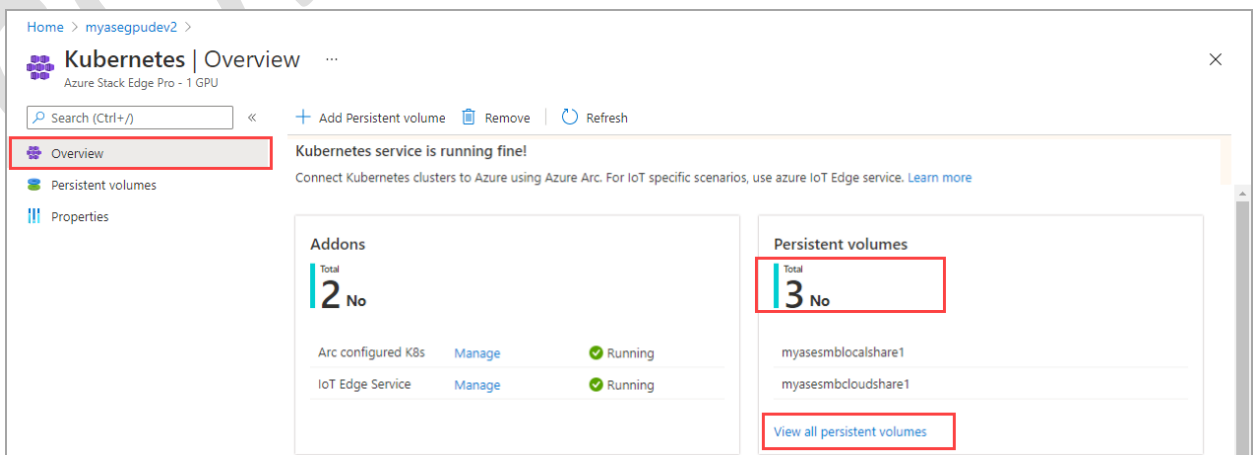
[This topic is pre-release documentation and is subject to change in future releases.]



7. You'll see a notification that the persistent volume is being created. This operation may take a couple minutes to complete.

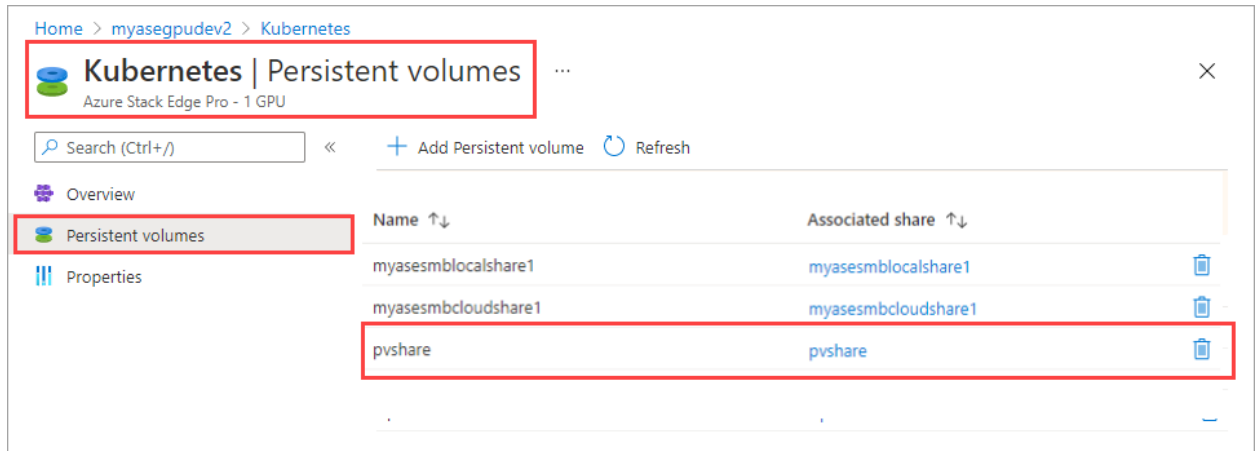


8. After the persistent volume is created the Overview page updates to indicate the newly added persistent volume.

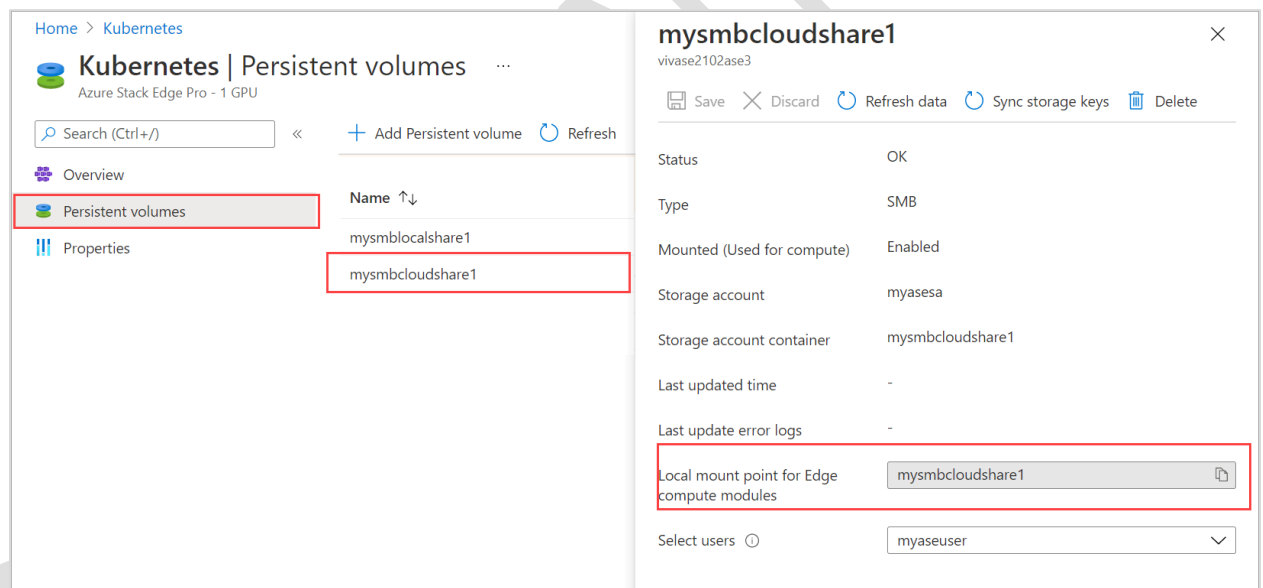


[This topic is pre-release documentation and is subject to change in future releases.]

9. Select **View all persistent volumes** to see the newly created persistent volume.



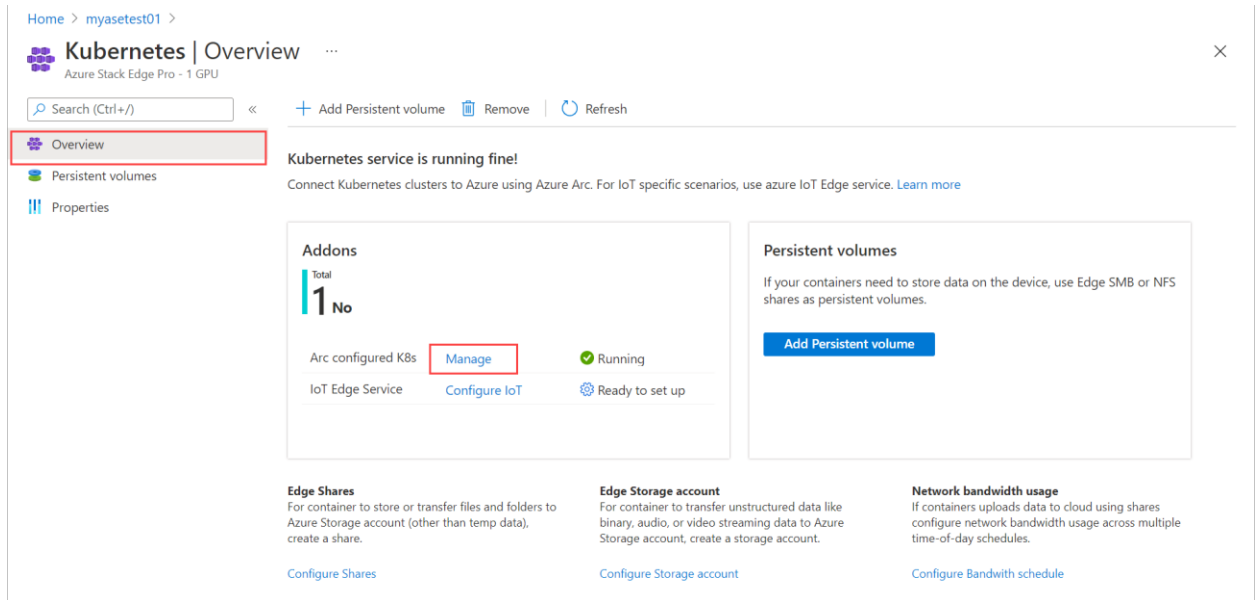
10. You can select the share link corresponding to any persistent volume and view the mount point details.



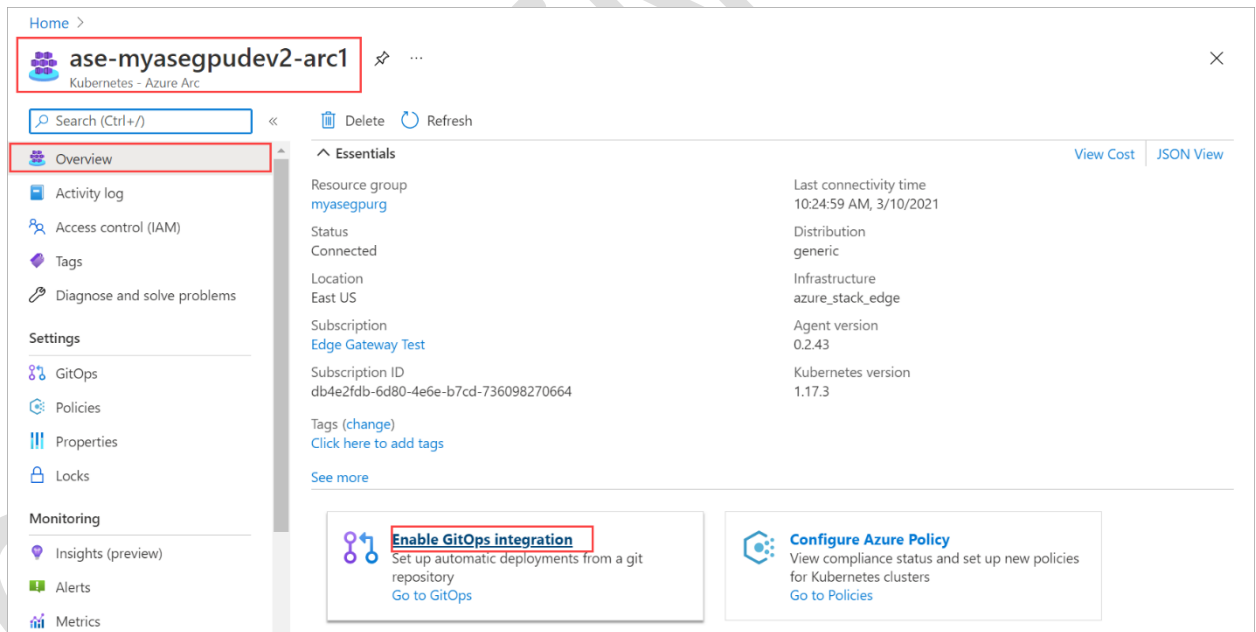
## Manage via Azure Arc enabled Kubernetes

1. Go to Kubernetes > Overview. On the Addons tile, corresponding to Arc configured K8s, select Manage.

[This topic is pre-release documentation and is subject to change in future releases.]



2. This action takes you to the Azure Arc enabled Kubernetes resource. Select **Enable gitops** integration.



For more information, see an example of how to [deploy an application on Azure Arc enabled Kubernetes cluster on your device](#).

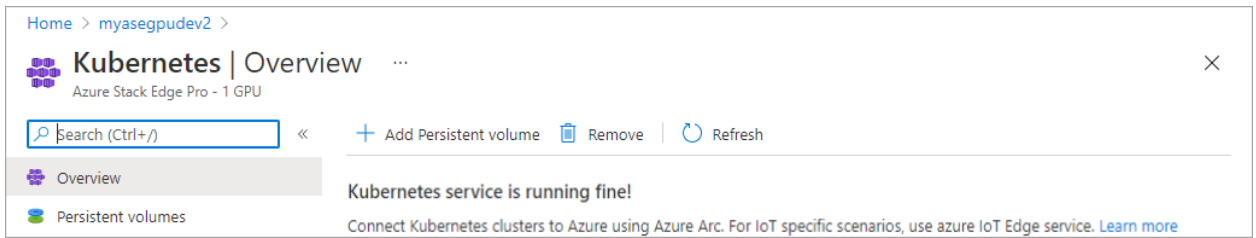
## Remove Kubernetes service

Perform the following steps in the Azure preview portal to remove the Kubernetes service.

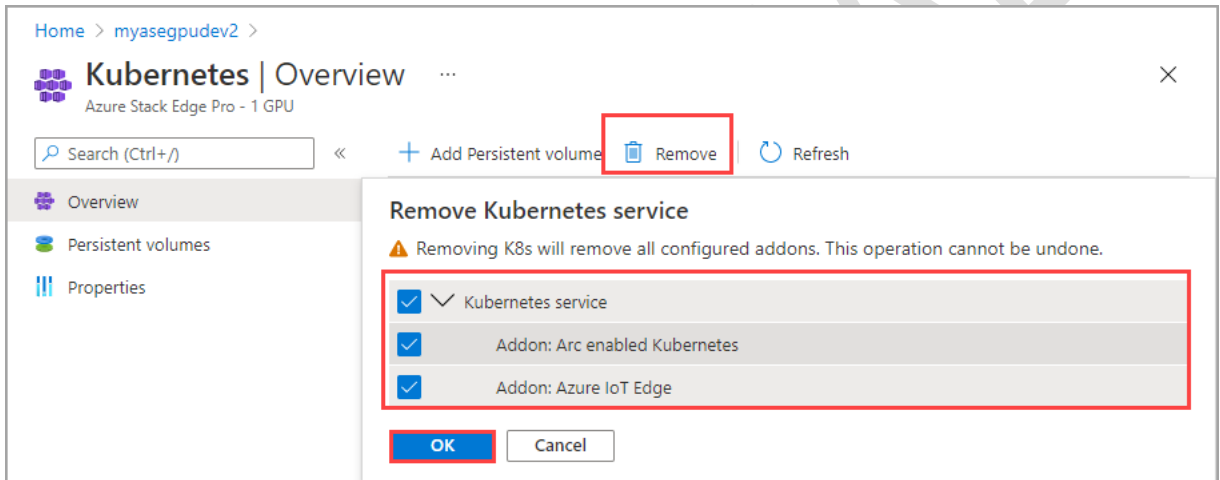
1. In your Azure Stack Edge resource, go to **Kubernetes > Overview**.
2. From the top command bar, select **Remove**.



[This topic is pre-release documentation and is subject to change in future releases.]



3. Select the configured addons that you want to remove. Both Azure Arc enabled Kubernetes and IoT Edge are addons. If you remove Kubernetes service, both IoT Edge and Azure Arc are automatically removed. The operation is irreversible and can't be undone. Select **OK**.

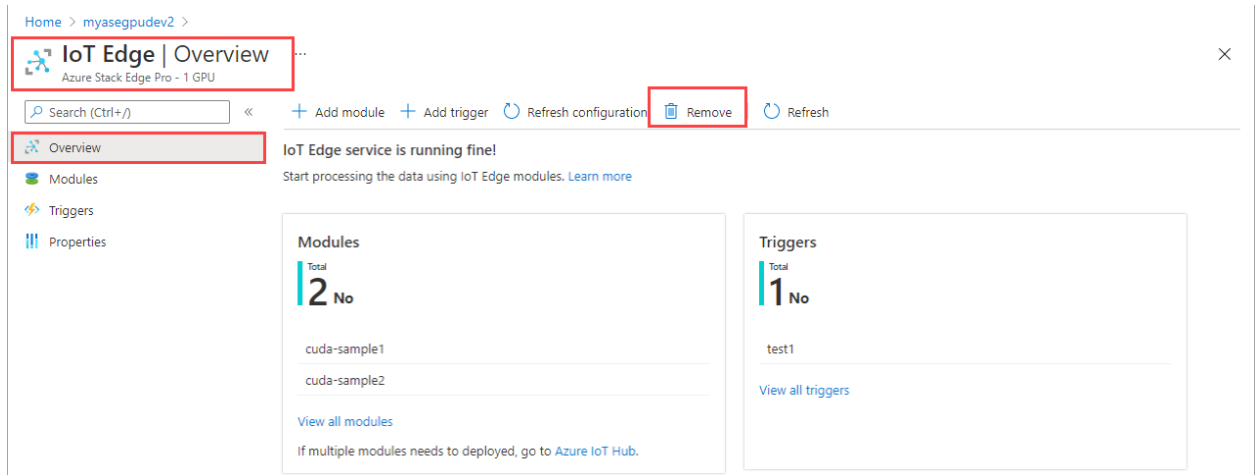


## Remove IoT Edge service

Perform the following steps in the Azure preview portal to remove the Kubernetes service.

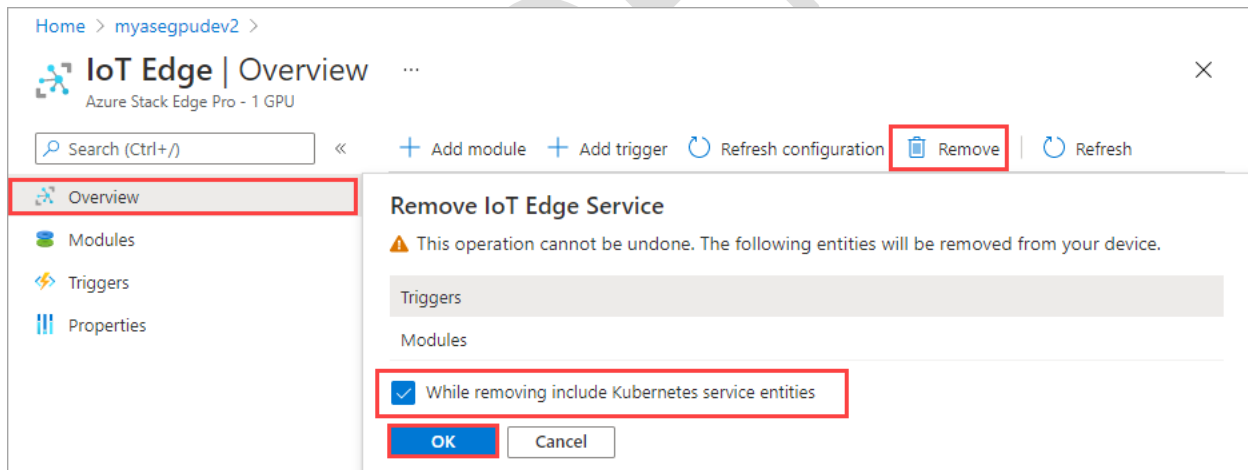
1. In your Azure Stack Edge resource, go to **IoT Edge > Overview**.
2. From the top command bar, select **Remove**.

[This topic is pre-release documentation and is subject to change in future releases.]



The triggers and modules associated with IoT Edge are also removed. You can choose to retain or remove the Kubernetes service entities including the Arc enabled Kubernetes cluster add-on.

3. Select OK.



## Manage using API

After you enable Kubernetes cloud management on your device, you'll need to use the latest version of the API for IoT Edge role management.

## API usage

[This topic is pre-release documentation and is subject to change in future releases.]

If you're currently performing IoT Edge role management via API, you should use the new API version. If you're using the current Role API, after you install the upcoming device software version, you must move to the PUT, GET, or DELETE Kubernetes role, followed by the PUT IoT Add-on API.

## For the PUT method

### The current HTTP request

- The API calls are made at this URI: <https://management.azure.com/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/providers/Microsoft.DataBoxEdge/dataBoxEdgeDevices/testedgedevice/roles/IoTRole1?api-version=2019-08-01>
- The request body looks like this:

```
{
  "kind": "IOT",
  "properties": {
    "hostPlatform": "Linux",
    "IoTDeviceDetails": {
      "deviceId": "iotdevice",
      "ioTHostHub": "iothub.azure-devices.net",
      "ioTHostHubId": "/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/Microsoft.Devices/IoTHubs/testrxiothub",
      "authentication": {
        "symmetricKey": {
          "connectionString": {
            "value": "Encrypted<<HostName=iothub.azure-devices.net;DeviceId=iotDevice;SharedAccessKey=2C750FscEas3JmQ8Bnui5yQWZPyml0/UiRtlbQwd8=>>",
            "encryptionCertThumbprint": "348586569999244",
            "encryptionAlgorithm": "AES256"
          }
        }
      }
    },
    "IoTEdgeDeviceDetails": {
      "deviceId": "iotEdge",
      "ioTHostHub": "iothub.azure-devices.net",
      "ioTHostHubId": "/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/Microsoft.Devices/IoTHubs/testrxiothub",
      "authentication": {
        "symmetricKey": {
          "connectionString": {
```

[This topic is pre-release documentation and is subject to change in future releases.]

```
        "value": "Encrypted<<HostName=iotHub.azure-  
devices.net;DeviceId=iotEdge;SharedAccessKey=2C750FscEas3JmQ8Bnui5yQWZP  
yml0/UiRt1bQwd8=>>",  
        "encryptionCertThumbprint":  
        "1245475856069999244",  
        "encryptionAlgorithm": "AES256"  
    }  
}  
},  
"shareMappings": [],  
"roleStatus": "Enabled"  
}  
}
```

The highlighted strings in the preceding code snippet should be the encrypted value. For more information, see [send event sample to Azure IoT Edge device](#).

#### The upcoming HTTP request

- The API calls for the Kubernetes role are made at the following URI:  
<https://management.azure.com/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/providers/Microsoft.DataBoxEdge/dataBoxEdgeDevices/testedgedevice/roles/KubernetesRole?api-version=2020-12-01>

The request body will look like this:

```
{  
  "kind": "Kubernetes",  
  "properties": {  
    "hostPlatform": "Linux",  
    "kubernetesClusterInfo": {  
      "version": "v1.17.3"  
    },  
    "kubernetesRoleResources": {  
      "storage": {  
        "endpoints": []  
      },  
      "compute": {  
        "vmProfile": "DS1_v2"  
      }  
    }  
  }  
}
```

- The API calls for the IoT Edge add-on are made at the following URI:

[This topic is pre-release documentation and is subject to change in future releases.]

<https://management.azure.com/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/providers/Microsoft.DataBoxEdge/dataBoxEdgeDevices/testedgedevice/roles/KubernetesRole1/addons/iotaddon?api-version=2020-12-01>

The request body will look like this:

```
{
  "kind": "IotEdge",
  "properties": {
    "iotDeviceDetails": {
      "deviceId": "iotdevice",
      "ioTHostHub": "iothub.azure-devices.net",
      "ioTHostHubId": "/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/Microsoft.Devices/IotHubs/testrxiothub",
      "authentication": {
        "symmetricKey": {
          "connectionString": {
            "value": "Encrypted<<HostName=iothub.azure-devices.net;DeviceId=iotDevice;SharedAccessKey=2C750FscEas3JmQ8Bnui5yQWZPym10/UiRtlbQwd8=>>",
            "encryptionCertThumbprint": "348586569999244",
            "encryptionAlgorithm": "AES256"
          }
        }
      }
    },
    "ioTEdgeDeviceDetails": {
      "deviceId": "iotEdge",
      "ioTHostHub": "iothub.azure-devices.net",
      "ioTHostHubId": "/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/Microsoft.Devices/IotHubs/testrxiothub",
      "authentication": {
        "symmetricKey": {
          "connectionString": {
            "value": "Encrypted<<HostName=iothub.azure-devices.net;DeviceId=iotEdge;SharedAccessKey=2C750FscEas3JmQ8Bnui5yQWZPym10/UiRtlbQwd8=>>",
            "encryptionCertThumbprint": "1245475856069999244",
            "encryptionAlgorithm": "AES256"
          }
        }
      }
    }
  }
}
```

For the GET method

### The current HTTP response

- The API calls are made at the following URI:  
<https://management.azure.com/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/providers/Microsoft.DataBoxEdge/dataBoxEdgeDevices/testedgedevice/roles/IoTRole1?api-version=2019-08-01>
- The response body looks like this:

```
"kind": "IOT",
  "properties": {
    "hostPlatform": "Linux",
    "IoTDeviceDetails": {
      "deviceId": "iotdevice",
      "ioTHostHub": "iothub.azure-devices.net",
      "ioTHostHubId": "/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/Microsoft.Devices/IotHubs/testrxiothub",
      "authentication": {
        "symmetricKey": {}
      }
    },
    "IoTEdgeDeviceDetails": {
      "deviceId": "iotEdge",
      "ioTHostHub": "iothub.azure-devices.net",
      "ioTHostHubId": "/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/Microsoft.Devices/IotHubs/testrxiothub",
      "authentication": {
        "symmetricKey": {}
      }
    },
    "shareMappings": [],
    "roleStatus": "Enabled"
  },
  "id": "/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/providers/Microsoft.DataBoxEdge/dataBoxEdgeDevices/testedgedevice/roles/IoTRole1",
  "name": "IoTRole1",
  "type": "dataBoxEdgeDevices/roles"
}
```

### The upcoming HTTP response

- The API calls are made at the following URI:  
<https://management.azure.com/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/providers/Microsoft.DataBoxEdge/>

[This topic is pre-release documentation and is subject to change in future releases.]

[dataBoxEdgeDevices/testedgedevice/roles/KubernetesRole1/addons/iotaddon?api-version=2020-12-01](https://management.azure.com/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/providers/Microsoft.DataBoxEdge/dataBoxEdgeDevices/testedgedevice/roles/KubernetesRole1/addons/iotaddon?api-version=2020-12-01)

- The response body looks like this:

```
{
  "kind": "IotEdge",
  "properties": {
    "provisioningState": "Creating",
    "iotDeviceDetails": {
      "deviceId": "iotdevice",
      "ioTHostHub": "iothub.azure-devices.net",
      "ioTHostHubId": "/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/Microsoft.Devices/IotHubs/testrxiothub",
      "authentication": {
        "symmetricKey": {}
      }
    },
    "ioTEdgeDeviceDetails": {
      "deviceId": "iotEdge",
      "ioTHostHub": "iothub.azure-devices.net",
      "ioTHostHubId": "/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/Microsoft.Devices/IotHubs/testrxiothub",
      "authentication": {
        "symmetricKey": {}
      }
    },
    "version": "0.1.0-beta10"
  },
  "id": "/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/providers/Microsoft.DataBoxEdge/dataBoxEdgeDevices/res1/roles/kubernetesRole/addons/iotName",
  "name": "iotName",
  "type": "Microsoft.DataBoxEdge/dataBoxEdgeDevices/roles/addon",
}
```

### For the DELETE method

The current API calls

The API calls are made at the following URI:

<https://management.azure.com/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/providers/Microsoft.DataBoxEdge/dataBoxEdgeDevices/testedgedevice/roles/IoTRole1?api-version=2019-08-01>

### The upcoming API calls

The API calls are made at the following URI:

[This topic is pre-release documentation and is subject to change in future releases.]

<https://management.azure.com/subscriptions/4385cf00-2d3a-425a-832f-f4285b1c9dce/resourceGroups/GroupForEdgeAutomation/providers/Microsoft.DataBoxEdge/dataBoxEdgeDevices/testedgedevice/roles/KubernetesRole1/addons/iotaddon?api-version=2020-12-01>

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