

Submitted by: Arifa

Azure Kubernetes Service:

Task: Public cluster to Private cluster

Step1: Installed the aks-preview extension

```
az extension add --name aks-preview
```

Step 2: Register the 'EnableAPIServerVnetIntegrationPreview' feature flag

```
az feature register --namespace "Microsoft.ContainerService" --name  
"EnableAPIServerVnetIntegrationPreview"
```

The screenshot shows the Azure portal interface. On the left, the 'k8-nginx' Kubernetes service is selected, showing its overview with details like Resource group (k8-rg), Power state (Running), and Location (East US). On the right, a 'Connect to k8-nginx' panel provides instructions and sample commands. At the bottom, a terminal window displays the command to register the feature and its output, which shows the feature is in a 'Registering' state.

```
Use --debug for more information
arifa [ ~ ]$ az feature register --namespace "Microsoft.ContainerService" --name "EnableAPIServerVnetIntegrationPreview"
Once the feature 'EnableAPIServerVnetIntegrationPreview' is registered, invoking 'az provider register -n Microsoft.ContainerService' is required to get the change propagated
{
  "id": "/subscriptions/.../providers/Microsoft.Features/providers/Microsoft.ContainerService/features/EnableAPIServerVnetIntegrationPreview",
  "name": "Microsoft.ContainerService/EnableAPIServerVnetIntegrationPreview",
  "properties": {
    "state": "Registering"
  },
  "type": "Microsoft.Features/providers/features"
}
```

Step 3- Verified the registration status:

```
az feature show --namespace "Microsoft.ContainerService" --name  
"EnableAPIServerVnetIntegrationPreview"
```

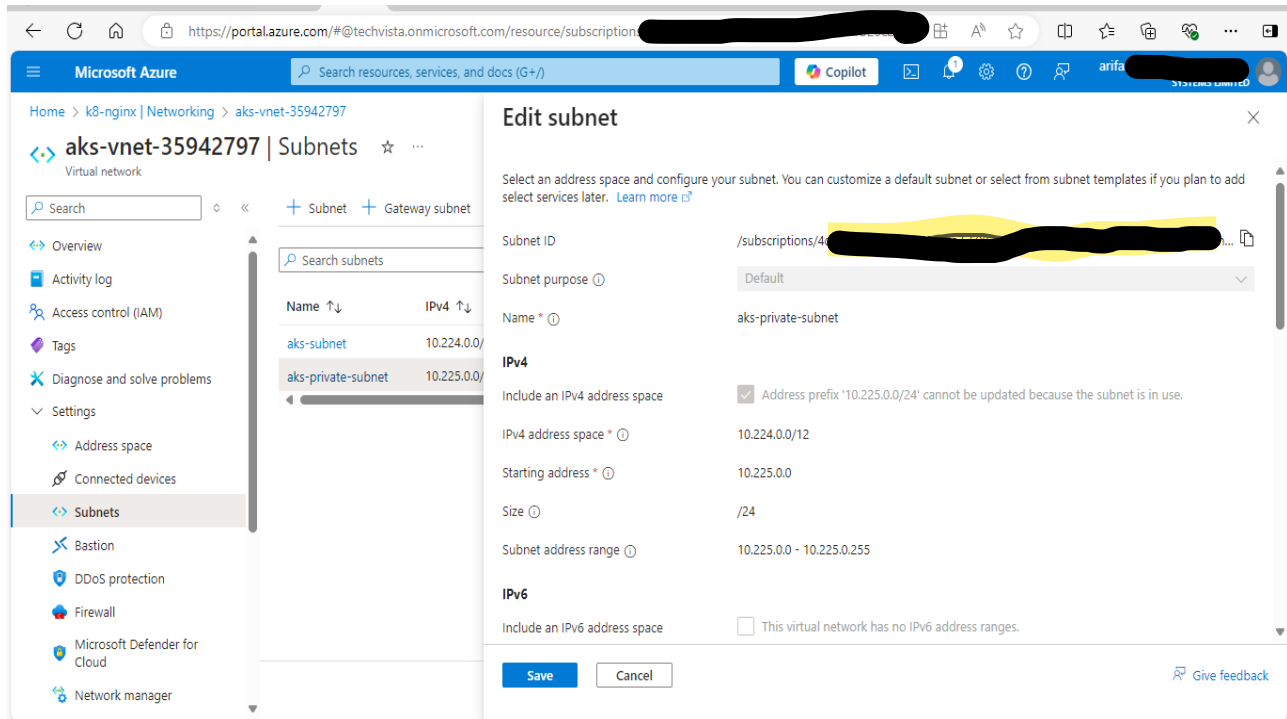
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The screenshot shows the Microsoft Azure portal interface. The main heading is "k8-nginx" (Kubernetes service). The left sidebar contains navigation options: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Microsoft Defender for Cloud, Cost analysis, Kubernetes resources, Settings, Node pools, Cluster configuration, Security configuration, Application scaling, and Networking. The right sidebar shows "Connect to k8-nginx" with a "Download cluster credentials" section containing the command: `az aks get-credentials --resource-group k8-rg --name k8-nginx --overwrite-existi...`. The main content area displays the "Essentials" section with details: Resource group: k8-rg, Power state: Running, Cluster operation st...: Succeeded, Subscription: MPN - Arifa - 34484, and Location: East US. Below this is a terminal window showing PowerShell commands and their output. The command `az feature show --namespace "Microsoft.ContainerService" --name "EnableAPIServerVnetIntegrationPreview"` is executed, resulting in a JSON response indicating the feature is in the "Registering" state.

step3- Created a subnet in the existing vnet

The screenshot shows the Microsoft Azure portal interface for the "k8-nginx" Networking page. The left sidebar contains navigation options: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Microsoft Defender for Cloud, Cost analysis, Kubernetes resources, Settings, Node pools, Cluster configuration, Security configuration, Application scaling, and Networking. The right sidebar shows "Connect to k8-nginx" with a "Download cluster credentials" section containing the command: `az aks get-credentials --resource-group k8-rg --name k8-nginx --overwrite-existi...`. The main content area displays the "Virtual network integration" section, which includes a "Virtual network" dropdown set to "aks-vnet-35942797" and a "Subnet" dropdown set to "aks-subnet". Below this is the "Application Gateway ingress controller" section, which shows a message: "Application Gateway Ingress Controller addon is not supported with Azure CNI Overlay." and an "Ingress controller" dropdown set to "Disabled".

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Step 4: Updated cluster to API Server VNet Integration.

```
az aks update --name k8-nginx \ --resource-group k8-rg \ --enable-apiserver-vnet-  
integration \ --apiserver-subnet-id /subscriptions/[redacted]  
[redacted]/resourceGroups/MC_k8-rg_k8-  
nginx_eastus/providers/Microsoft.Network/virtualNetworks/aks-vnet-  
35942797/subnets/aks-private-subnet
```

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Step 5: Enable private cluster mode

```
az aks update --name k8-nginx --resource-group k8-rg --enable-private-cluster
```

The screenshot shows the Microsoft Azure portal interface. On the left, the 'k8-nginx' Kubernetes service is selected, and the 'Overview' tab is active. The 'Essentials' section displays the following details:

- Resource group: k8-rg
- Power state: Running
- Cluster operation status: Succeeded
- Subscription: MPN - Arifa - 34484
- Location: East US

On the right, a 'Connect to k8-nginx' panel provides instructions and sample commands. Below this, a terminal window shows the execution of the command:

```
az aks update --name k8-nginx --resource-group k8-rg --enable-private-cluster
```

The terminal output indicates that the argument '--enable-private-cluster' is in preview and under development, and that the behavior of the command has been altered by the 'aks-preview' extension.

The screenshot shows the 'Kubernetes services' configuration page for the 'k8-nginx' service. The 'Overview' tab is active, displaying various configuration details:

- Encryption type:** Encryption at-rest with a platform-managed key
- Virtual node pools:** Not enabled
- Node pools:** 1 node pool
- Kubernetes versions:** 1.30.6
- Node sizes:** Standard_D4ds_v4
- Configuration:**
 - Kubernetes version: 1.30.6
 - Auto Upgrade Type: Patch
 - Automatic upgrade scheduler: Every week on Sunday (recommended)
 - Node security channel type: Node Image
 - Security channel scheduler: Every week on Sunday (recommended)
- Networking:**
 - API server address: k8-nginx-dns-kgevgz9.hcp.eastus.azmk8s.io
 - Network configuration: Azure CNI Overlay
 - Pod CIDR: 10.244.0.0/16
 - Service CIDR: 10.0.0.0/16
 - DNS service IP: 10.0.0.10
 - Cilium dataplane: Not enabled
 - Network Policy: None
 - Load balancer: Standard
 - Private cluster: Enabled
 - Authorized IP ranges: Not enabled
 - Application Gateway ingress controller: Not enabled