

Práctica 4.

Tarea 1.

Abrimos el cloud powershell de azure e introducimos los comandos:

```
Requesting a Cloud Shell.Succeeded.
Connecting terminal...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

MOTD: Azure Cloud Shell now includes Predictive IntelliSense! Learn more: https://aka.ms/CloudShell/IntelliSense

VERBOSE: Authenticating to Azure ...
VERBOSE: Building your Azure drive ...
PS /home/adrian> Register-AzResourceProvider -ProviderNamespace Microsoft.Kubernetes
```

```
PS /home/adrian> Register-AzResourceProvider -ProviderNamespace Microsoft.KubernetesConfiguration

ProviderNamespace : Microsoft.KubernetesConfiguration
RegistrationState  : Registering
ResourceTypes      : {sourceControlConfigurations, extensions, fluxConfigurations, operations...}
Locations          : {East US, West Europe, West Central US, West US 2...}
```

Tarea 2.

Creacion del cluster de kubernetes

Create Kubernetes cluster

Subscription *

Azure subscription 1

Resource group *

(New) az104-09c-rg1

Create new

Cluster details

Cluster preset configuration

Dev/Test

To quickly customize your Kubernetes cluster, choose one of the preset configurations above. You can modify these configurations at any time.
[Learn more and compare presets](#)

Kubernetes cluster name *

az104-9c-aks1

Region *

(Europe) West Europe

Availability zones

None

AKS pricing tier

Free

Kubernetes version *

1.25.6 (default)

Automatic upgrade

Enabled with patch (recommended)

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 B4ms

4 vcpus, 16 GiB memory

Standard B4ms is recommended for dev/test configuration.

[Change size](#)

Scale method *

☒ Manual

☐ Autoscale

Autoscaling is recommended for dev/test configuration.

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_B4ms

Enable virtual nodes

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

Enable virtual nodes ⓘ

☐

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



Resource identity ⓘ

System-assigned managed identity

By default, Azure uses a managed identity. To use a service principal, use the CLI. [Learn more](#)

Choose between local accounts or Azure AD for authentication and Azure RBAC or Kubernetes RBAC for your authorization needs.

Authentication and Authorization ⓘ

Local accounts with Kubernetes RBAC



i Once the cluster is deployed, use the Kubernetes CLI to manage RBAC configurations. [Learn more](#)

Network configuration ⓘ

☒ Kubenet

☐ Azure CNI

DNS name prefix * ⓘ

az104-9c-aks1-dns



Traffic routing

Load balancer ⓘ

Standard

Alerting

Enable recommended alert rules ⓘ

☐

Ya se ha creado el resource group con el cluster dentro.

az104-09c-rg1



Resource group



Create



Manage view



Delete resource group

Essentials

Subscription [\(move\)](#) : [Azure subscription 1](#)

Subscription ID : 992c76f1-4150-491b-b873-3

Tags [\(edit\)](#) : [Click here to add tags](#)

Resources

Recommendations

Filter for any field...

Type equals all

Showing 1 to 1 of 1 records. ☐ Show hidden types



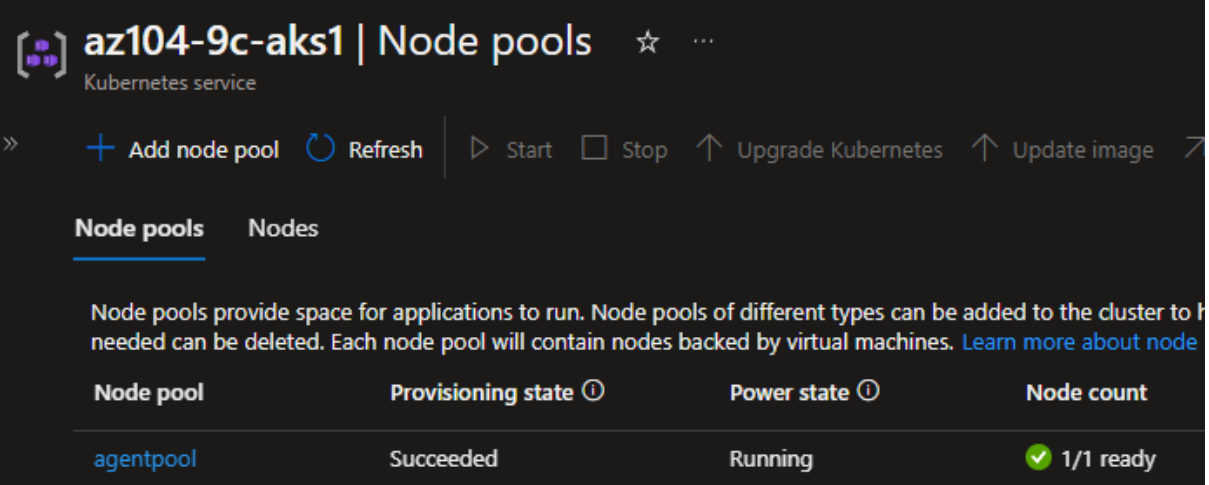
Name ↑↓



az104-9c-aks1

Tarea 3.

Abrimos el grupo de nodos:



az104-9c-aks1 | Node pools ☆ ...
Kubernetes service

» + Add node pool Refresh | ▶ Start □ Stop ↑ Upgrade Kubernetes ↑ Update image ↗

Node pools Nodes

Node pools provide space for applications to run. Node pools of different types can be added to the cluster to meet different needs. Node pools that are no longer needed can be deleted. Each node pool will contain nodes backed by virtual machines. [Learn more about node pools](#)

Node pool	Provisioning state ⓘ	Power state ⓘ	Node count
agentpool	Succeeded	Running	✓ 1/1 ready

y la consola en azure cloud console en bash y verificamos la conexión.

```
adrian [ ~ ]$ RESOURCE_GROUP='az104-09c-rg1'
AKS_CLUSTER='az104-9c-aks1'
az aks get-credentials --resource-group $RESOURCE_GROUP --name $AKS_CLUSTER
kubectl get nodes
Merged "az104-9c-aks1" as current context in /home/adrian/.kube/config
NAME                                STATUS    ROLES    AGE    VERSION
aks-agentpool-48599477-vmss000000 Ready    agent    22m    v1.25.6
```

Creamos un pod:

```
adrian [ ~ ]$ kubectl create deployment nginx-deployment --image=nginx
deployment.apps/nginx-deployment created
```

Verificamos la creación del pod:

```
adrian [ ~ ]$ kubectl get pods
NAME                                READY    STATUS    RESTARTS    AGE
nginx-deployment-5fbdf85c67-7pfrf  1/1      Running   0            32s
```

Y lo hacemos accesible desde internet:

```
adrian [ ~ ]$ kubectl expose deployment nginx-deployment --port=80 --type=LoadBalancer
service/nginx-deployment exposed
```

Después vemos la ip publica del pod para poder acceder al servicio.

```
adrian [ ~ ]$ kubectl get service
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
kubernetes	ClusterIP	10.0.0.1	<none>	443/TCP	45m
nginx-deployment	LoadBalancer	10.0.61.224	20.126.215.45	80:30038/TCP	20m

20.126.215.45

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

Tarea 4.

Escalamos el número de pods de 1 a 2.

```
adrian [ ~ ]$ kubectl scale --replicas=2 deployment/nginx-deployment
deployment.apps/nginx-deployment scaled
```

Verificamos si se ha creado el pod nuevo.

```
adrian [ ~ ]$ kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-5fbdf85c67-cxhtk	0/1	Pending	0	6s
nginx-deployment-5fbdf85c67-vtpgv	1/1	Running	0	57s

Creamos un nuevo nodo en el cluster pasando de 1 a 2.

```
adrian [ ~ ]$ kubectl get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
aks-agentpool-11425770-vmss000000	Ready	agent	14m	v1.25.6
aks-agentpool-11425770-vmss000001	Ready	agent	72s	v1.25.6

Escalamos el número de pods a 10.

```
adrian [ ~ ]$ kubectl scale --replicas=10 deployment/nginx-deployment
deployment.apps/nginx-deployment scaled
adrian [ ~ ]$ kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-5fbdf85c67-2ksjt	1/1	Running	0	12m
nginx-deployment-5fbdf85c67-2plsq	1/1	Running	0	10s
nginx-deployment-5fbdf85c67-2scgw	0/1	ContainerCreating	0	10s
nginx-deployment-5fbdf85c67-84jnh	1/1	Running	0	9m7s
nginx-deployment-5fbdf85c67-9gwp7	0/1	ContainerCreating	0	10s
nginx-deployment-5fbdf85c67-b2vzb	1/1	Running	0	10s
nginx-deployment-5fbdf85c67-gzn5n	0/1	ContainerCreating	0	10s
nginx-deployment-5fbdf85c67-hfkfk	0/1	ContainerCreating	0	10s
nginx-deployment-5fbdf85c67-n4pnt	1/1	Running	0	10s
nginx-deployment-5fbdf85c67-x276t	1/1	Running	0	10s

Vemos la distribución de los pods en los nodos.

```
adrian [ ~ ]$ kubectl get pod -o=custom-columns=NODE:.spec.nodeName,POD:.metadata.name
NODE                                POD
aks-agentpool-11425770-vmss000000  nginx-deployment-5fbdf85c67-2ksjt
aks-agentpool-11425770-vmss000000  nginx-deployment-5fbdf85c67-2plsq
aks-agentpool-11425770-vmss000001  nginx-deployment-5fbdf85c67-2scgw
aks-agentpool-11425770-vmss000000  nginx-deployment-5fbdf85c67-84jnh
aks-agentpool-11425770-vmss000001  nginx-deployment-5fbdf85c67-9gwp7
aks-agentpool-11425770-vmss000000  nginx-deployment-5fbdf85c67-b2vzb
aks-agentpool-11425770-vmss000001  nginx-deployment-5fbdf85c67-gzn5n
aks-agentpool-11425770-vmss000001  nginx-deployment-5fbdf85c67-hfkfk
aks-agentpool-11425770-vmss000000  nginx-deployment-5fbdf85c67-n4pnt
aks-agentpool-11425770-vmss000001  nginx-deployment-5fbdf85c67-x276t
```

Y borramos la implementación.

```
adrian [ ~ ]$ kubectl delete deployment nginx-deployment
deployment.apps "nginx-deployment" deleted
```

Y terminamos limpiando los recursos creados en esta práctica.

```
adrian [ ~ ]$ az group list --query "[?starts_with(name,'az104-09c')].name" --output tsv
az104-09c-rg1
adrian [ ~ ]$ az group list --query "[?starts_with(name,'az104-09c')].name" --output tsv | xargs -L1 bash -c 'az group delete --name $0 --no-wait --yes'
```

