Joget on Azure Kubernetes Service

This article provides a tutorial on deploying, running and scaling Joget on Azure Kubernetes Service (AKS). AKS is a managed Kubernetes service offered by Azure.

If you are no	ot familiar with Kubernetes, refer to <u>loget on Kubernetes</u> for a quick introduction.
 Deploy Jog 	et on Azure Kubernetes Service
0	1. Create Kubernetes cluster in AKS
0	2.Deploy MySQL Database
0	3.Deploy shared storage in AKS
0	4.Deploy Joget DX
0	5.Deploy Ingress for external connections
0	6.Setup cert-manager for TLS termination
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0	8.Additional Note :- Configure Joget in AKS with Azure Database for MySQL
	8.1 Deploy Azure MySQL Flexible Server
	8.2 Deploy AKS Cluster and Joget
Deploy Joget o	n Azure Kubernetes Service
1. Create Kuberne	etes cluster in AKS

This guide will go through creation process with the Azure portal, if you want to create a cluster through Azure CLI please refer to the article Azure CLI.

From the Azure portal, go to the Kubernetes services then Create a Kubernetes cluster.

Home >				
Kubernetes services ☆ Default Directory				
🕂 Create 🗸 🔯 Manage view 🗸 💍	Refresh 🞍 Export to CSV 😽 Op	en query 🛛 🧔 Assign tags		
 Create a Kubernetes cluster Add a Kubernetes cluster with Azure Arc 	quals all Type equals all	Resource group equals all \times	Location equals all \times	⁺ _▼ Add filter

In the Basics page, choose the Subscription, Resource Group and input the Kubernetes cluster name. Adjust the other configuration settings as desired, or leave as default.

Home > Kubernetes services >							
Create Kubernetes cluster							
Basics Node pools Acces	s Networking Integrations Advanced Tags Review + create						
Azure Kubernetes Service (AKS) ma containerized applications without maintenance by provisioning, upgra Learn more about Azure Kubernet	inages your hosted Kubernetes environment, making it quick and easy to deploy and manage container orchestration expertise. It also eliminates the burden of ongoing operations and iding, and scaling resources on demand, without taking your applications offline. es Service						
Project details							
Select a subscription to manage de resources.	ployed resources and costs. Use resource groups like folders to organize and manage all your						
Subscription * 🕕							
Resource group * ①	(New) Resource group						
	Create new						
Cluster details							
Cluster preset configuration	Standard (\$\$)						
	To quickly customize your Kubernetes cluster, choose one of the preset configurations above. You can modify these configurations at any time.						
Kubernetes cluster name * 🕕							
Region * 🛈	(US) West US 2 V						
Availability zones 🕕	Zones 1,2,3 V						
	High availability is recommended for standard configuration.						
Kubernetes version *	1.23.12 (default) V						
API server availability ①	99.95% Optimize for availability.						
	99.5% Ontimize for cost						
	99.95% API server availability is recommended for standard configuration.						
Primary node pool							
The number and size of nodes in th recommended for resiliency. For de node pools or to see additional con additional node pools after creating	e primary node pool in your cluster. For production workloads, at least 3 nodes are velopment or test workloads, only one node is required. If you would like to add additional figuration options for this node pool, go to the 'Node pools' tab above. You will be able to add 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 * 🕕	O Manual						
	 Autoscale 						
	Autoscaling is recommended for standard configuration.						
Node count range * (i)	1 0 5						
Review + create	< Previous Next: Node pools >						

In the Node pools tab, you can configure to add node pools into the cluster. Read on multiple node pools in AKS. For this guide, we will use a single node configuration.

Home > Kul	lome > Kubernetes services >								
Create	Create Kubernetes cluster								
Basics N	lode pools	Access	Networking	Integrations	Advanced Tags	Review + create			
Node pools	3								
In addition t	the required	d primary n	ode pool config	ured on the Basic	s tab, you can also add o	optional node pools to handle a			
vallety of we			at houe pools e	,					
+ Add no	ode pool 📋	Delete							
Name		Mode		OS type	Node count	Node size			
agentp	looc	Syster	n	Linux	1-5	Standard_DS2_v2			
Enable virte	ual nodas								
Virtual node	allow bursta	ble scaling	backed by serve	erless Azure Conta	iner Instances. Learn mo	ore about virtual nodes r₹			
intaa nooc	5 dilott balsta	iore searing		inebs / izare conta					
Enable virtu	al nodes 🕕								
Node pool By default, a supply your the OS disks	OS disk encr III disks in AKS own keys usin for all node p	yption 5 are encryp g a disk en pools in the	oted at rest with cryption set bacl cluster. Learn m	Microsoft-manag ked by an Azure K lore c ⁷	ed keys. For additional c ey Vault. The disk encryp	control over encryption, you can otion set will be used to encrypt			
Encryption t									

For other tab options - Access, Networking, Integrations, Advanced and Tags, you can leave the default options or make adjustments/changes as necessary. After that, you can click on the Review + create and deploy the Kubernetes cluster.

Home > Kubernetes services >	Home > Kubernetes services >							
Create Kubernetes cl	uster							
✓ Validation passed								
Basics Node pools Access	Networking Integrations Advanced Tags Review + create							
Basics								
Subscription								
Resource group	(new) azureaks-resourcegroup							
Region	West US 2							
Kubernetes cluster name	jogetakscluster							
Kubernetes version	1.23.12							
Enable automatic upgrades	False							
Node pools								
Node pools	1							
Enable virtual nodes	Disabled							
Access								
Resource identity	System-assigned managed identity							
Local accounts Enabled								
Authentication and Authorization	Local accounts with Kubernetes RBAC							
Encryption type	Encryption type (Default) Encryption at-rest with a platform-managed key							
Create	Previous Next > Download a template for automation							

When the resource has completed their deployment, you can then connect to the cluster (read here) using Azure CLI/Azure Cloud Shell.

Connect to jogetakscluster	×
Connect to your cluster using command line tooling to interact directly with cluster using kubectl, the command line tool for Kubernetes. Kubectl is available within the Azure Clo Shell by default and can also be installed locally. Learn more of	g oud
1. Open Cloud Shell or the Azure CLI	
az account setsubscription	Ď
az aks get-credentialsresource-groupname jogetaksclus	🗅

2.Deploy MySQL Database

Once we have a running cluster, you will need to deploy a database to be used by the Joget platform. You can pretty much follow the same method of deploying MySQL DB as in the Joget Kubernetes page.

Create persistent storage using PersistentVolume and PersistentVolumeClaim

kubectl apply -f https://k8s.io/examples/application/mysql/mysql-pv.yaml

Deploy the MySQL image

kubectl apply -f https://k8s.io/examples/application/mysql/mysql-deployment.yaml

Inspect the deployment

kubectl	describe	deployment mysql
kubectl	get pods	-l app=mysql
kubectl	describe	pvc mysql-pv-claim

+ Create ∨ 🗊 Delete 💍 Refresh	胧 Show labels 🛛 🖗 Give feedback			
Deployments Pods Replica sets	Stateful sets Daemon sets Jobs	Cron jobs		
Filter by deployment name	Filter by label selector 🛈	Filter by namespace		
Enter the full deployment name	foo=bar,key!=value	default	\checkmark	
Name	Namespace	Ready	Up-to-date	Available
mysql	default	♥ 1/1	1	1

You need to modify the original yaml files for production usage (eg. using different version of MySQL image and setting up secret instead of plain password in the yaml).

3.Deploy shared storage in AKS

If you are running a multiple node Kubernetes cluster, you will need to allocate shared persistent storage with read write access by multiple nodes. In Azure, you can set up Azure NFS volume to be used in the Azure Kubernetes cluster. Refer to the official documentation here for detailed info and steps. You can also read more on other options for storage in Azure Kubernetes here.

- Create an Azure Ubuntu VM at the same Virtual Network as the AKS cluster.
- Setup NFS server into the VM.

From the link, you can use this script to set up the NFS server (edit the variables as necessary especially the AKS_SUBNET).

```
#!/bin/bash
# This script should be executed on Linux Ubuntu Virtual Machine
EXPORT_DIRECTORY=${1:-/export/data}
DATA_DIRECTORY=${2:-/data}
AKS_SUBNET=${3:-*}
echo "Updating packages"
apt-get -y update
echo "Installing NFS kernel server"
apt-get -y install nfs-kernel-server
echo "Making data directory ${DATA_DIRECTORY}"
mkdir -p ${DATA_DIRECTORY}
echo "Making new directory to be exported and linked to data directory: ${EXPORT_DIRECTORY}"
mkdir -p ${EXPORT_DIRECTORY}
echo "Mount binding ${DATA_DIRECTORY} to ${EXPORT_DIRECTORY}"
mount --bind ${DATA_DIRECTORY} ${EXPORT_DIRECTORY}
echo "Giving 777 permissions to ${EXPORT_DIRECTORY} directory"
chmod 777 ${EXPORT_DIRECTORY}
parentdir="$(dirname "$EXPORT_DIRECTORY")"
echo "Giving 777 permissions to parent: ${parentdir} directory"
chmod 777 $parentdir
echo "Appending bound directories into fstab"
                        ${EXPORT_DIRECTORY} none bind 0 0" >> /etc/fstab
echo "${DATA_DIRECTORY}
echo "Appending localhost and Kubernetes subnet address ${AKS_SUBNET} to exports configuration file"
echo "/export ${AKS_SUBNET}(rw,async,insecure,fsid=1000,crossmnt,no_subtree_check)" >> /etc/exports
echo "/export
                    localhost(rw,async,insecure,fsid=1000,crossmnt,no_subtree_check)" >> /etc/exports
nohup service nfs-kernel-server restart
```

After the NFS server has been set up, you can then create the PersistentVolume and PersistentVolumeClaim.

Example azurenfsstorage.yaml;

apiVersion: v1 kind: PersistentVolume metadata: name: aks-nfs labels: type: nfs spec: capacity: storage: 1Gi accessModes: - ReadWriteMany nfs: server: NFS_INTERNAL_IP path: NFS_EXPORT_FILE_PATH ___ apiVersion: v1 kind: PersistentVolumeClaim metadata: name: aks-nfs spec: accessModes: - ReadWriteMany storageClassName: "" resources: requests: storage: 1Gi selector: matchLabels: type: nfs

Replace the values for NFS_INTERNAL_IP, NFS_NAME and NFS_EXPORT_FILE_PATH with the actual settings from your NFS Server.

kubectl apply -f azurenfsstorage.yaml 🚹 jogetakscluster | Storage ₽ Search Overview Persistent volume claims Persistent volumes Storage classes Activity log
 Filter by persistent volume name
 Filter by label selector O

 aks-nfs
 foo-bar,keyl=value
 Access control (IAM) 🥔 Taqs Diagnose and solve problems Name Capacity Access modes Reclaim policy Status Claim Storage class Reason Age ↓ Microsoft Defender for Cloud Retain Bound aks-nfs aks-nfs ReadWriteMany 1Gi 1 hour Kubernetes resources Namespaces Workloads Services and ingresses 1 Storage Configuration jogetakscluster | Storage
 P Search
 «
 + Create ∨
 III Delete
 O Refresh
 III Show labels
 R
 Give feedback
 🔆 Overview Persistent volume claims Persistent volumes Storage classes Activity log Filter by namespace
 Filter by persistent volume daim name
 Filter by label selector ③
 Filter by namespace

 aks-nfs
 foo=bar,kcy(=value)
 [All namespaces]
 Access control (IAM) 🧳 Tags Diagnose and solve problems

Capacity Name Status Sound aks-nfs Status Namespace Access modes Storage class Age ↓ Microsoft Defender for Cloud aks-nfs default 1Gi ReadWriteMany 1 hour Kubernetes resources Namespaces workloads Services and ingresses 🚺 Storage Configuration

4.Deploy Joget DX

With the prerequisite database and persistent storage available, you can now deploy Joget. You can apply the example joget-dx7-tomcat9-aks.yaml file to deploy.

Example joget-dx7-tomcat9-aks.yaml;

```
apiVersion: apps/v1
kind: Deployment
metadata:
 name: joget-dx7-tomcat9
 labels:
   app: joget-dx7-tomcat9
spec:
  replicas: 1
  selector:
   matchLabels:
     app: joget-dx7-tomcat9
  template:
   metadata:
     labels:
       app: joget-dx7-tomcat9
    spec:
      initContainers:
       - name: init-volume
         image: busybox:1.28
        command: ['sh', '-c', 'chmod -f -R g+w /opt/joget/wflow; exit 0']
        volumeMounts:
          - name: joget-dx7-tomcat9-volume
            mountPath: "/opt/joget/wflow"
      volumes:
        - name: joget-dx7-tomcat9-volume
         persistentVolumeClaim:
           claimName: aks-nfs
      securityContext:
       runAsUser: 1000
       fsGroup: 0
      containers:
        - name: joget-dx7-tomcat9
         image: jogetworkflow/joget-dx7-tomcat9:latest
         ports:
           - containerPort: 8080
            - containerPort: 9080
         volumeMounts:
            - name: joget-dx7-tomcat9-volume
             mountPath: /opt/joget/wflow
          env:
            - name: KUBERNETES_NAMESPACE
             valueFrom:
               fieldRef:
                   fieldPath: metadata.namespace
___
apiVersion: v1
kind: Service
metadata:
 name: joget-dx7-tomcat9
 labels:
   app: joget-dx7-tomcat9
spec:
 ports:
  - name: http
   port: 8080
   targetPort: 8080
  - name: https
   port: 9080
   targetPort: 9080
  selector:
   app: joget-dx7-tomcat9
  type: ClusterIP
- -
apiVersion: rbac.authorization.k8s.io/v1
kind: ClusterRoleBinding
metadata:
 name: joget-dx7-tomcat9-clusterrolebinding
roleRef:
```

```
apiGroup: rbac.authorization.k8s.io
kind: ClusterRole
name: view
subjects:
    - kind: ServiceAccount
    name: default
    namespace: default
```

You can then check the deployment progress from the Azure portal. (Or use kubectl commands eg. kubectl get deployment joget-dx7-tomcat9)

ioget-dx7-tomcat9	Overview					
🔎 Search 🛛 «	🕐 Refresh 🛛 🖗 Give feedback					
Overview	Namespace		Creation tim 2022-11-08T	e 03-27-17 0007		
 Fvents Insights Live logs Changelogs 	Labels app : joget-dx7-tomcat9 Selector app=joget-dx7-tomcat9		Replicas 1 desired, 1 d Revision hist 10 Min ready se 0	updated, 1 total, 0 available, 1 unar ory limit conds	vailable	
	See more		Strategy type RollingUpda Rolling upda 25% max una	e te te strategy available, 25% max surge		
	Pods Replica sets Image: Delete Image: Delete Name	Ready	Status	Restart count	Age ↓	Pod IP
	joget-dx7-tomcat9-6fc4fc9857-qw5ns	A 0/1	ContainerCreating	0	11 seconds	

iogetakscluster Wo	orkloads					×
P Search «	🕂 Create 🗸 📋 Delete 💍 Refresh	膠 Show labels 🛛 🖗 Give feedback				
OverviewActivity log	Deployments Pods Replica sets	Stateful sets Daemon sets Jobs	Cron jobs			
Access control (IAM)	Filter by deployment name	Filter by label selector ①	Filter by namespace			
🗳 Tags	joget-dx7-tomcat9	foo=bar,key!=value	default	\checkmark		
 Diagnose and solve problems Microsoft Defender for Cloud 	Name	Namespace	Ready	Up-to-date	Available	Age ↓
Kubernetes resources	joget-dx7-tomcat9	default	♥ 1/1	1	1	3 minutes
Namespaces						
n Workloads						
Revices and ingresses						
📔 Storage						
E Configuration						

5.Deploy Ingress for external connections

You can then expose the application for external access through Ingress. You can read more regarding Ingress in Kubernetes here. In this guide, we will use Nginx Ingress Controller as an example to access Joget.

Deploy Nginx Ingress Controller to AKS cluster

You can refer to the AKS documentation regarding creating ingress-nginx and also the nginx-ingress document.

There are 2 known methods of deploying the Nginx Ingress Controller to the AKS cluster;

- 1. Deploy through Helm
- 2. Use yaml file from the Nginx Ingress Controller Github

Install using Helm

Using Azure CLI/Cloud shell, set up the Helm for Nginx Ingress

helm repo add ingress-nginx https://kubernetes.github.io/ingress-nginx helm repo update

helm install ingress-nginx ingress-nginx/ingress-nginx --create-namespace --namespace nginx-ingress

Install using yaml file

You can use kubectl apply command.

kubectl apply -f https://raw.githubusercontent.com/kubernetes/ingress-nginx/controller-v1.4.0/deploy/static /provider/cloud/deploy.yaml

iogetakscluster Wc	orkloads				
₽ Search «	🕂 Create 🗸 📋 Delete 💍 Refresh	💖 Show labels 🛛 🔗 Give feedback			
Overview	Deployments Pods Replica sets	Stateful sets Daemon sets Jobs	Cron jobs		
Activity log			,		
Access control (IAM)	Filter by deployment name	Filter by label selector ①	Filter by namespace		
🗳 Tags	ingress-nginx-controller	foo=bar,key!=value	All namespaces	\sim	
Diagnose and solve problems					
Ø Microsoft Defender for Cloud	Name	Namespace	Ready	Up-to-date	Available
Kubernetes resources	ingress-nginx-controller	ingress-nginx	✔ 1/1	1	1
Namespaces					
🔖 Workloads					
Services and ingresses					
Storage					
Configuration					

After the Ingress Controller has been deployed, we can then apply the Ingress yaml so that we can access the Joget application externally.

Example joget-ingress.yaml;

```
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
 name: joget-dx7-tomcat9-ingress
 annotations:
   nginx.ingress.kubernetes.io/affinity: cookie
   nginx.ingress.kubernetes.io/ssl-redirect: "false"
spec:
  ingressClassName: nginx
 rules:
    - http:
       paths:
          - path: /jw
           pathType: Prefix
            backend:
               service:
                 name: joget-dx7-tomcat9
                 port:
                   number: 8080
```

After the Ingress deployment is completed, you can get the public IP from the Kubernetes resources > Services and Ingresses pane in the Azure portal (eg. http://<external-ip>/jw).

jogetakscluster Services and ingresses								×
♀ Search «	+ Create 🗸 📋 Delete 💍 Re	efresh 🛯 🕅 Show labels	Give feedback					
🎂 Overview	Services Ingresses							
Activity log								
Access control (IAM)	Filter by service name	Filter by service name Filter by namespace						
🗳 Tags	Enter the full service name	ingress-nginx		\sim				
Diagnose and solve problems								
Microsoft Defender for Cloud	Name	Namespace	Status	Туре	Cluster IP	External IP	Ports	Age ↓
Kubernetes resources	ingress-nginx-controller	ingress-nginx	🕑 Ok	LoadBalancer	10.0.137.101	20	80:31032/TCP,4	5 minutes
Namespaces	ingress-nginx-controller	ingress-nginx	💙 Ok	ClusterIP	10.0.188.71		443/TCP	5 minutes
🎭 Workloads								
A Services and ingresses								
te Storage								
Configuration								

Setup Database

To complete the Joget deployment, you need to perform a one-time Database Setup. Key in the MySQL service name and the Database Username and Password. Click on Save.

G JOGET DX SETUP		
DATABASE SETUP		
No database configuration w Please ensure that the datat	vas detected, so please configure your database settings below. base server is installed and running first. <u>More Information</u>	
Database Type	MySQL ~	
Database Host	mysql	
Database Port	3306	
Database Name	jwdb	
Database User	root	
Database Password	•••••	
Include Sample Apps	0	
Include Sample Users		
Save		

Once the setup is complete, click on Done and you will be brought to the Joget App Center.



6.Setup cert-manager for TLS termination

Before starting the TLS setup, you need to set 'enable-underscores-in-headers' as true for Ingress by using configmap.

Example ingress-configmap.yaml;

```
apiVersion: v1
kind: ConfigMap
metadata:
    name: ingress-nginx-controller
    namespace: ingress-nginx
data:
    enable-underscores-in-headers: "true"
    allow-snippet-annotations: "true"
```

Update the Ingress configuration with kubectl apply -f ingress-configmap.yaml

Install cert-manager into the cluster

Similar to installing the ingress controller, you can install cert-manager either through Helm or through yaml file. Refer to the cert-manager official documentation here for detail. For this guide we will be using the yaml file method.

**Before going further with these steps, make sure that you have set up DNS to the public IP of the ingress that has been generated by AKS earlier.

kubectl apply -f https://github.com/cert-manager/cert-manager/releases/download/v1.10.0/cert-manager.yaml

Configure Let's Encrypt issuer

Example stagingissuer.yaml file;

```
apiVersion: cert-manager.io/v1
kind: ClusterIssuer
metadata:
 name: letsencrypt-staging
spec:
  acme:
    # The ACME server URL
    server: https://acme-staging-v02.api.letsencrypt.org/directory
    \ensuremath{\texttt{\#}} Email address used for ACME registration
    email: [update email here]
    # Name of a secret used to store the ACME account private key
    privateKeySecretRef:
     name: letsencrypt-staging
    # Enable the HTTP-01 challenge provider
    solvers:
      - http01:
          ingress:
            class: nginx
```

kubectl apply -f stagingissuer.yaml

You can check on the status of the issuer resource after you have deployed it

kubectl describe issuer letsencrypt-staging

Deploy/Update the Ingress with TLS configuration

As we have previously deploy the Ingress without TLS configuration, we can update the Ingress yaml file to include the TLS configuration.

Example Ingress yaml with TLS;

```
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: joget-dx7-tomcat9-ingress
  annotations:
   nginx.ingress.kubernetes.io/affinity: cookie
   nginx.ingress.kubernetes.io/ssl-redirect: "true"
   cert-manager.io/cluster-issuer: "letsencrypt-staging"
spec:
  ingressClassName: nginx
  tls:
  - hosts:
   - exampledomain.com
   secretName : aks-jogetworkflow
  rules:
    - host: exampledomain.com
     http:
       paths:
          - path: /jw
           pathType: Prefix
            backend:
             service:
               name: joget-dx7-tomcat9
               port:
                 number: 9080
```

This staging procedure is to ensure that the certificate is generated correctly before we setup the Issuer with Let's Encrypt production.

kubectl get certificate

[~/jogetaks]\$ kub	ectl get	certificate	
NAME	READY	SECRET	AGE
aks-jogetworkflow	True	aks-jogetworkflow	30s

kubectl describe certificate aks-jogetworkflow

If the certificate is generated correctly then we can set up the production Issuer.

Example productionissuer.yaml file;

```
apiVersion: cert-manager.io/v1
kind: ClusterIssuer
metadata:
 name: letsencrypt-prod
spec:
  acme:
    # The ACME server URL
   server: https://acme-v02.api.letsencrypt.org/directory
    # Email address used for ACME registration
    email: [update email here]
    # Name of a secret used to store the ACME account private key
   privateKeySecretRef:
     name: letsencrypt-prod
    # Enable the HTTP-01 challenge provider
    solvers:
    - http01:
       ingress:
         class: nginx
```

Update the ingress yaml file with the production annotation.

```
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
 name: joget-dx7-tomcat9-ingress
  annotations:
   nginx.ingress.kubernetes.io/affinity: cookie
   nginx.ingress.kubernetes.io/ssl-redirect: "true"
   cert-manager.io/cluster-issuer: "letsencrypt-prod"
spec:
  ingressClassName: nginx
  tls:
  - hosts:
    - exampledomain.com
   secretName : aks-jogetworkflow
  rules:
    - host: exampledomain.com
     http:
       paths:
          - path: /jw
           pathType: Prefix
            backend:
              service:
               name: joget-dx7-tomcat9
               port:
                  number: 9080
```

After applying the updated ingress yaml, you need to delete the previous secret so that the new certificate can be generated for the production.

```
kubectl delete secret aks-jogetworkflow
```

Then run back the describe command to check on the cert status

```
kubectl describe certificate aks-jogetworkflow
```

After the new certificate has been issued, you can then access the Joget domain with https to ensure that everything is working properly.

7.Scale Deployment

While you can set the nodes or pods to autoscale in AKS (read here), you can also scale the number of nodes or pods manually. To scale the number of pods running Joget, you can use the kubectl command.

kubectl scale --replicas=3 deployment/joget-dx7-tomcat9

Adjust the replica number as you desired and the desired number of pods will initialize and startup.

```
Home > jogetakscluster | Workloads >
ioget-dx7-tomcat9 | Overview
                                                                                                                                                                                            ×
      Deployment
                                        🕐 Refresh 🛛 🔗 Give feedback
₽ Search
Overview
                                       Namespace
                                                                                                                   Creation time
                                       default
                                                                                                                   2022-11-08T06:16:53.000Z
MAML
                                      Labels
                                                                                                                   Replicas
Events
                                                                                                                   3 desired, 3 updated, 3 total, 3 available, 0 unavailable
                                       app : joget-dx7-tomcat9 🚺
Insights
                                                                                                                   Revision history limit
                                      Selector
🚇 Live logs
                                                                                                                   10
                                       app=joget-dx7-tomcat9
                                                                                                                   Min ready seconds
6 Changelogs
                                                                                                                   0
                                                                                                                   Strategy type
                                                                                                                   RollingUpdate
                                                                                                                   Rolling update strategy
                                                                                                                   25% max unavailable, 25% max surge
                                       See more
                                       Pods Replica sets
                                        📋 Delete 🛛 🗗 Show labels
                                               Name
                                                                        Ready
                                                                                          Status
                                                                                                                   Restart count
                                                                                                                                    Age ↓
                                                                                                                                                      Pod IP
                                                                                                                                                                        Node
                                               joget-dx7-tomcat9-777...
                                                                        1/1
                                                                                                                   0
                                                                                                                                                      10.244.1.43
                                                                                                                                                                        aks-agentpool-3925129..
                                                                                          Running
                                                                                                                                    1 day
                                               joget-dx7-tomcat9-777...
                                                                        V 1/1
                                                                                          Running
                                                                                                                   0
                                                                                                                                    11 seconds
                                                                                                                                                      10.244.1.44
                                                                                                                                                                        aks-agentpool-3925129..
                                                                                                                                                      10.244.1.45
                                               joget-dx7-tomcat9-777...
                                                                        🕑 1/1
                                                                                          Running
                                                                                                                   0
                                                                                                                                     11 seconds
                                                                                                                                                                        aks-agentpool-3925129..
```

As for the node, you can scale the node count of the node pool from the Azure portal. Go to the Cluster in the Kubernetes service (in this guide example jogetakscluster) > Settings > Node pools. Select the node pool and then click on the Scale node pool. Choose Manual as the Scale method and input the desired node count (maximum available resource is based on the VM size that you have chosen).

Home > jogetakscluster								
jogetakscluster Noc Kubernetes service	le pools							×
	+ Add node po	ol 🕐 Refresh 个 Upgrad	de Kubernetes 🔺 Upo	date image 🛛 Scal	le node pool [🕽 Delete 🧷 Troubleshoot		
🌼 Overview	Node pools	lodes						
Activity log								
Access control (IAM)	Access control (IAM) Node pools provide space for applications to run. Node pools of different types can be added to the cluster to handle a							
🗳 Tags	deleted. Each not	de pool will contain nodes bac	ked by virtual machines.	Learn more about no	de pools 🖉	eu can be		
Diagnose and solve problems	Node pool	Provisioning state ①	Power state i	Node count	Mode	Kubernetes version	Node size	Operating
Ø Microsoft Defender for Cloud	agentpool	Succeeded	Running	🖸 1/1 readv	System	1 23 12	Standard DS2 v2	Linux
Kubernetes resources	ugentpoor	ouccould		• I, Freddy	ojstem	income.	standard_bot_tt	Linday
Namespaces								
Workloads								
Services and ingresses								
Te Storage								
E Configuration								
Settings								
🔊 Node pools								

Scale node poe	ol	×
You can scale the number o total amount of cores and n applications. Learn more d	f nodes in your cluster to increase the nemory available for your container	
Scale method 🛈	 Manual 	
	O Autoscale - Recommended	
	This option is recommended so that the cluster is automatically sized correctly for the current running workloads.	
Node count (i)	02	
Node pool capacity		
Virtual machine size	Standard DS2 v2 (2 vcpus, 7 GiB memory)	
Cores	4 vCPUs	
Memory	14 GiB	

8.Additional Note :- Configure Joget in AKS with Azure Database for MySQL

This additional note is to guide on how to configure Joget in AKS connecting to the Azure Database for MySQL. It is based on the Azure guide here which has been modified to use the Joget application. This guide uses the Azure portal as to assist in visual guidance.

Assuming that a resource group has been created, then from the Azure portal, go to the Virtual network services then Create virtual network and also the subnets for the MySQL and AKS resources.

Based on the Microsoft recommendations of using	Azure CNI to setup the configuration of AKS and Azure DB. You can read more on the AKS networking best practises	here.
Home > Virtual networks > Create virtual network	(
Basics Security IP addresses	Tags Review + create	
Azure Virtual Network (VNet) is the func Azure resources, such as Azure Virtual M networks. VNet is similar to a traditional benefits of Azure's infrastructure such as	lamental building block for your private network in Azure. VNet enables many t fachines (VM), to securely communicate with each other, the internet, and on-p network that you'd operate in your own data center, but brings with it addition s scale, availability, and isolation. Learn more.	types of premises nal
Project details		
Select the subscription to manage deplo your resources.	yed resources and costs. Use resource groups like folders to organize and man	age all
Subscription *	Joget Inc	\sim
Resource group *	faiztest-rg Create new	~
Instance details		
Virtual network name *	mysqlaksdemo	
Region (i) *	(US) East US	\sim
	Deploy to an edge zone	

Then add the IP address space for the Virtual network.

Add an IP address sp	ace	\times
The address space for a virtual network shared (RFC 6598), or local (RFC 4193) a	has one or more non-overlapping address ranges. It is recommended to use private (RFC 1918), ddress ranges. Learn more. a	
Address space type 🛈	IPv4	
	О ІРиб	
Starting address ① *	155.55.0.0	
Address space size ① *	/16 (65536 addresses) ∨	
IP address space (i)	155.55.0.0 - 155.55.255.255 (65536 addresses)	

After that create 2 subnets for the MySQL resource and also the AKS cluster.

Add a subnet	X
Select an address space and configure you select services later. Learn more 🖒	r subnet. You can customize a default subnet or select from subnet templates if you plan to add
IP address space ()	155.55.0.0/16
	155.55.0.0 - 155.55.255.255 (65536 addresses)
Subnet details	
Subnet template ①	Default
Name * 🛈	mysql
Starting address * ()	155.55.1.0
Subnet size (i)	│/24 (256 addresses)
IP address space (i)	155.55.1.0 - 155.55.1.255 (256 addresses)

Add a subnet

Select an address space and configure your subnet. You can customize a default subnet or select from subnet templates if you plan to add select services later. Learn more 🖒

 \times

IP address space (i)	155.55.0.0/16	\sim
	155.55.0.0 - 155.55.255.255 (65536 addresses)	
Subnet details		
Subnet template (i)	Default	\checkmark
Name * 🛈	aks	
Starting address * (i)	155.55.2.0	
Subnet size ()	/24 (256 addresses)	\sim
IP address space (i)	155.55.2.0 - 155.55.2.255 (256 addresses)	

We can then create the Virtual network resource.

8.1 Deploy Azure MySQL Flexible Server

Search for resource Azure Database for MySQL flexible servers. Then click on Create Flexible server.

In the Basics tab, we configured as below since we are testing the resource. Modify as needed (also note in the screenshot the MySQL version is 5.7, we have tested with version 8 also).

A Server names, networking connectivity i	nethod, zone redundant HA and backup redundancy cannot be changed after serv	/er
Project details		
Select the subscription to manage deploye manage all your resources.	ed resources and costs. Use resource groups like folders to organize and	
Subscription * 🛈	Joget Inc	/
Resource group * ①	faiztest-rg	/
	Create new	
Server details		
Enter required settings for this server, inclu	uding picking a location and configuring the compute and storage resources	
Server name * 🛈	mysqlaksdemo	~
Region * 🕕	East US 🔊	/
MySQL version * 🛈	5.7	/
Workload type ①	○ For small or medium size databases	
	Tier 1 Business Critical Workloads	
	For development or hobby projects	
Compute + storage 🕕	Burstable, B1ms 1 vCores. 2 GiB RAM, 20 GiB storage, 360 IOPS	
	Geo-redundancy : Disabled	
		_
Availability zone ①	No preference	
High availability		
Same zone and zone redundant high avail	ability provide additional server resilience in the event of a failure. You can al	lso
Enable high availability ①		
Authentication		
Select the authentication methods you wo authentication allows you to create and us Enabling Azure Active Directory authentica accounts and generate an authentication t	uld like to support for accessing this MySQL server. MySQL password e a ROLEs (usernames) and use a password to authenticate. ation allows you to create ROLEs based on your Azure Active Directory oken with which to authenticate. Learn more 더	
Authentication method	MySQL authentication only	
	Azure Active Directory authentication only	
	MySQL and Azure Active Directory authentication	
Admin username * ①	joget	~

Password * 🕕	•••••	\checkmark
Confirm password *		~

Then in the Networking tab, we need configure the resource to use the Virtual network that we created earlier.

Configure networking access and security for	or your server.	
Network connectivity		
You can connect to your server by specifyin network.	g a public IP address specified below or from within a selected virtual	
Connectivity method ①	Public access (allowed IP addresses)	
	Private access (VNet Integration)	
	Connections from within the virtual network configured below will have access to this server. <u>Learn more</u> ☑	
Virtual network	each athar in Azura Virtual patwark gives you a highly secure environme	at to
run your MySQL Flexible Server and other t	each other in Azure. Virtual network gives you a nignly secure environmel ypes of Azure resources	nt to
Subscription * 🕕	Joget Inc	\sim
Virtual network * ①	mysqlaksdemo	\sim
	Manage selected virtual network Create virtual network	
Subnet * ①	mysqlaksdemo/mysql (155.55.1.0/24) (Delegation required to service	\sim
	This subnet will be delegated for use only with MySQL Flexible Server (Microsoft.DBforMySQL/flexibleServers).	
	() Your current subnet selection has 251 addresses available.	
Private DNS integration		
Private DNS zone integration is required to qualified domain name). A new private DNS zone will be created or network. With private DNS zone integration the IP address of your Flexible Server change	connect to your Flexible Server in virtual network using server name (fully you can optionally choose an existing one linked to the selected virtual n, the DNS records for the server name will be updated automatically in ca ges. Learn more d	v
Subscription *	Joget Inc	\checkmark
Private DNS zone *	(New) mysqlaksdemo.private.mysql.database.azure.com	\sim
Encrypted connections This server supports encrypted connections	s using Transport Layer Security (TLS 1.2). For information on downloading	the
ceruncate, refer to connecting with TLS/SSL	Learn more B	

For testing purpose, after the MySQL resource has been created, we turned off the *require_secure_transport* parameter. This is so that we will be able to initialise through the Joget setup page. Should you need this parameter to be enabled, you can then edit the *app_datasource-cprofile>*, properties file. Example of the workflowUrl parameter with the *require_secure_transport* parameter turned on;

For Security and Tags tabs we can leave as default or make changes as necessary. After done we can create the resource.

workflowUrl=jdbc\:mysql\://<azuredburlhere>\:3306/jwdb?characterEncoding\=UTF-8&useSSL\=true&allowPublicKeyRetrieval\=true

8.2 Deploy AKS Cluster and Joget

As to deploying the AKS cluster and Joget itself, the steps are similar as above in this KB page. The only different part is when setting up the AKS cluster, in the Networking tab, we need to specify to use Azure CNI and associate the virtual network and subnet that we have created earlier.

You can change networking settings for your cluster, including enabling HTTP application routing and configuring your network using either the 'Kubenet' or 'Azure CNI' options:

- The kubenet networking plug-in creates a new VNet for your cluster using default values.
- The Azure CNI networking plug-in allows clusters to use a new or existing VNet with customizable addresses. Application
 pods are connected directly to the VNet, which allows for native integration with VNet features.

Learn more about networking in Azure Ku	bernetes Service	
Network configuration ①	O Kubenet	
	Azure CNI	
	The Azure CNI plugin requires an IP address from the subnet below on a node, which can more quickly exhaust available IP addresses it set for pods per node. Consider modifying the default values for pod for each node pool on the "Node pools" tab. Learn more ♂	r for each pod a high value ods per node
Virtual network * 🕕	mysqlaksdemo	\sim
	Create new	
Cluster subnet * 🕕	aks (155.55.2.0/24)	\sim
	Manage subnet configuration	
Kubernetes service address range * \square	10.2.4.0/24	~
Kubernetes DNS service IP address * ①	10.2.4.10	\checkmark
Docker Bridge address * 🕕	172.17.0.1/16	~
DNS name prefix * ①	mysqlaksdemo	~
Traffic routing		
Load balancer ①	Standard	
Enable HTTP application routing ①		
Security		
Enable private cluster ①		
Set authorized IP ranges ①		
Network policy ①	None	
	O Calico	
	O Azure	

After AKS and Joget have been deployed, we will be able to do the DB setup on Joget.

DATABASE SETUP

No database configuration was detected, so please configure your database settings below. Please ensure that the database server is installed and running first. <u>More Information</u>

Database Type	MySQL	~
Database Host	mysqlaksdemo.mysql.database.azure.com	
Database Port	3306	
Database Name	jwdb	
Database User	joget	
Database Password	•••••	
Include Sample Apps		
Include Sample Users		
Save		