

Azure Kubernetes Service (AKS)



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Agenda

- Introduction to AKS
- Azure Kubernetes Service (AKS) Benefits
- AKS Use Cases
- Accessing AKS Cluster
- AKS Deployment Using CLI
- Accessing AKS Application
- CI/CD Pipeline Using Azure DevOps and AKS
- CI/CD Pipeline For Microservices

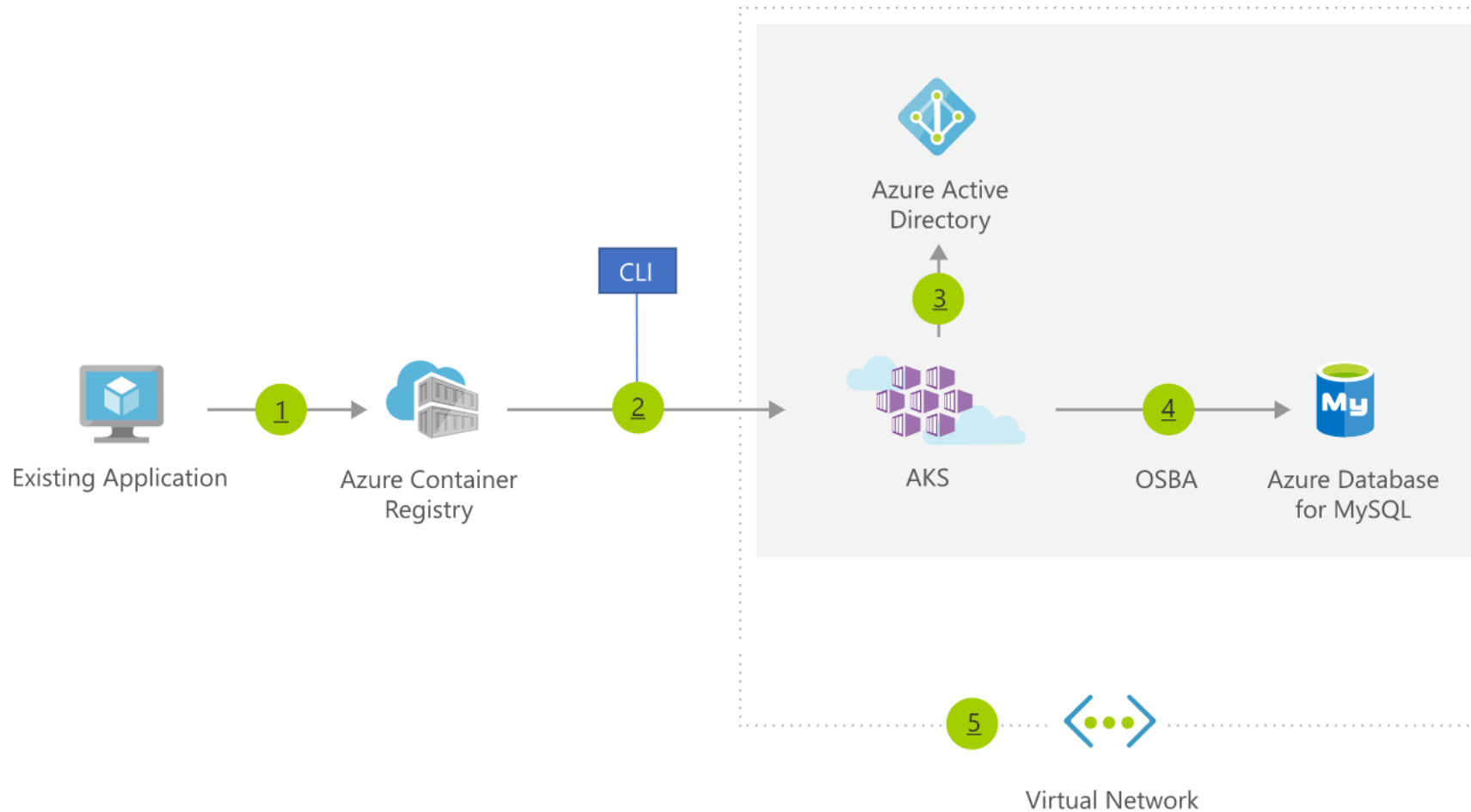
Azure Kubernetes Service (AKS)



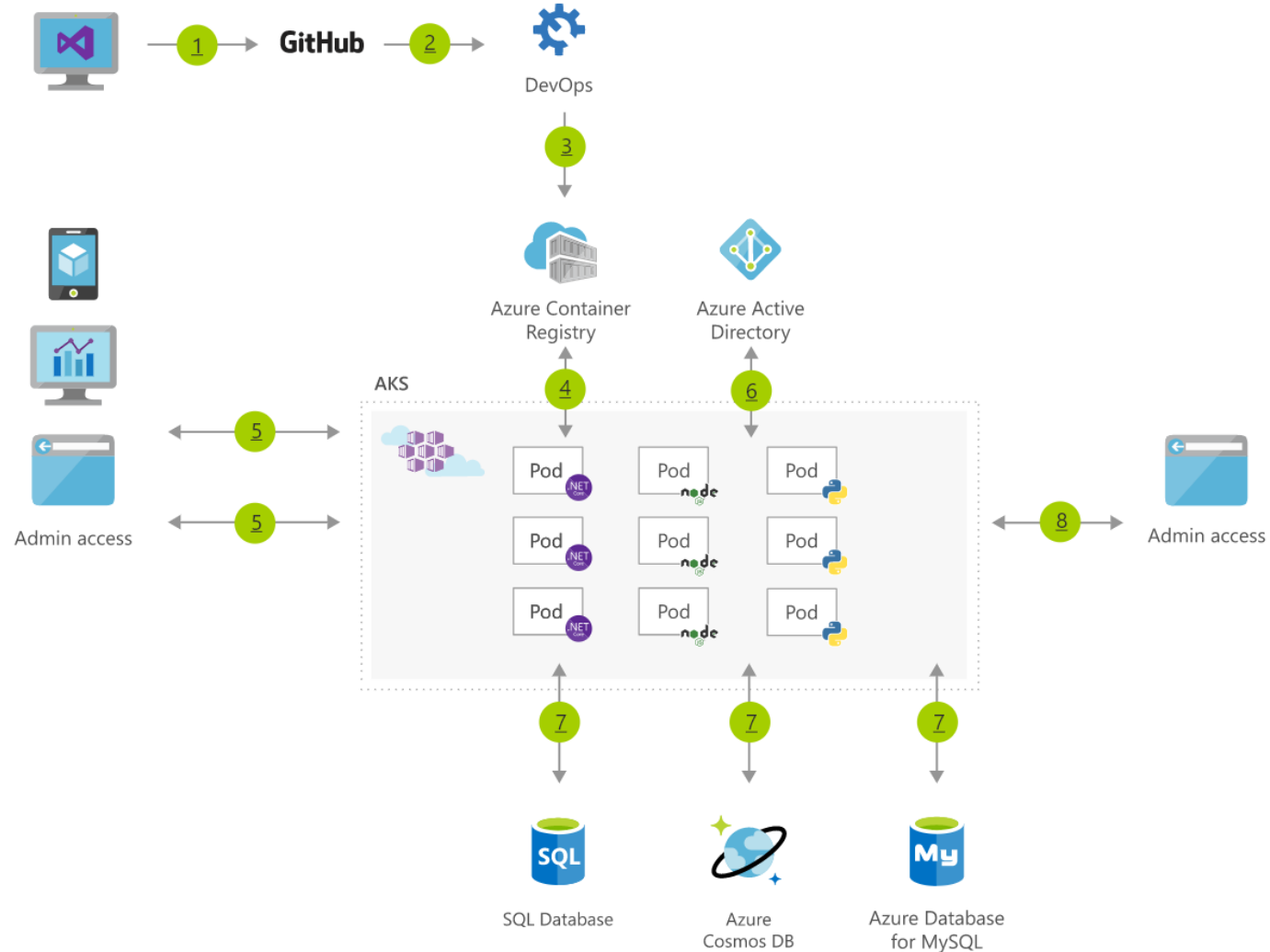
Azure Kubernetes Service Benefits

- A fully managed Kubernetes service
- Offers serverless Kubernetes, an integrated continuous integration and continuous delivery (CI/CD) experience
- Offers enterprise-grade security and governance.
- Paying for only the virtual machines and associated storage and networking resources.
- There is no charge for cluster management.

Use Case : Migrate an existing Application



Use Case: Microservices Deployment



Accessing AKS Using CLI

```
> az aks install-cli  
> az aks get-credentials -g <DNTRg> -n <DNTAKS>  
> kubectl get nodes
```

| NAME | STATUS | ROLES | AGE | VERSION |
|-----------------------------------|--------|-------|-------|----------|
| aks-agentpool-28305802-vmss000000 | Ready | agent | 3h11m | v1.17.11 |
| aks-agentpool-28305802-vmss000001 | Ready | agent | 3h11m | v1.17.11 |
| aks-agentpool-28305802-vmss000002 | Ready | agent | 3h11m | v1.17.11 |

Dashboard > DNTRg > DNTAKS

DNTAKS | Services and ingresses (preview)

Kubernetes service

Search (Ctrl+/) << + Add Delete Refresh Show labels

Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Security

Kubernetes resources

- Namespaces (preview)
- Workloads (preview)
- Services and ingresses (previe...)
- Storage (preview)

Services Ingresses

Filter by service name: Enter the full service name

Filter by namespace: All namespaces

| <input type="checkbox"/> | Name | Namespace | Status |
|--------------------------|----------------------------|-------------|--------|
| <input type="checkbox"/> | kubernetes | default | Ok |
| <input type="checkbox"/> | healthmodel-replicaset-... | kube-system | Ok |
| <input type="checkbox"/> | kube-dns | kube-system | Ok |
| <input type="checkbox"/> | metrics-server | kube-system | Ok |
| <input type="checkbox"/> | dashboard-metrics-scr... | kube-system | Ok |

AKS Deployment Using CLI

```
> az acr login --name myregistry
```

```
> kubectl create secret docker-registry <secret-name> --docker-server=<container-registry-name>.azurecr.io --docker-username=<aks-username> --docker-password=<aks-password>
```

```
> kubectl apply -f catalog-deployment.yaml
```

Microsoft Azure Search resources, services, and docs (G+/)

Dashboard > mydntaks

mydntaks | Access keys

Container registry

Search (Ctrl+/) <<

- Overview
- Activity log
- Access control (IAM)
- Tags
- Quick start

Registry name: mydntaks

Login server: mydntaks.azurecr.io

Admin user ⓘ

Enable Disable

Username: mydntaks

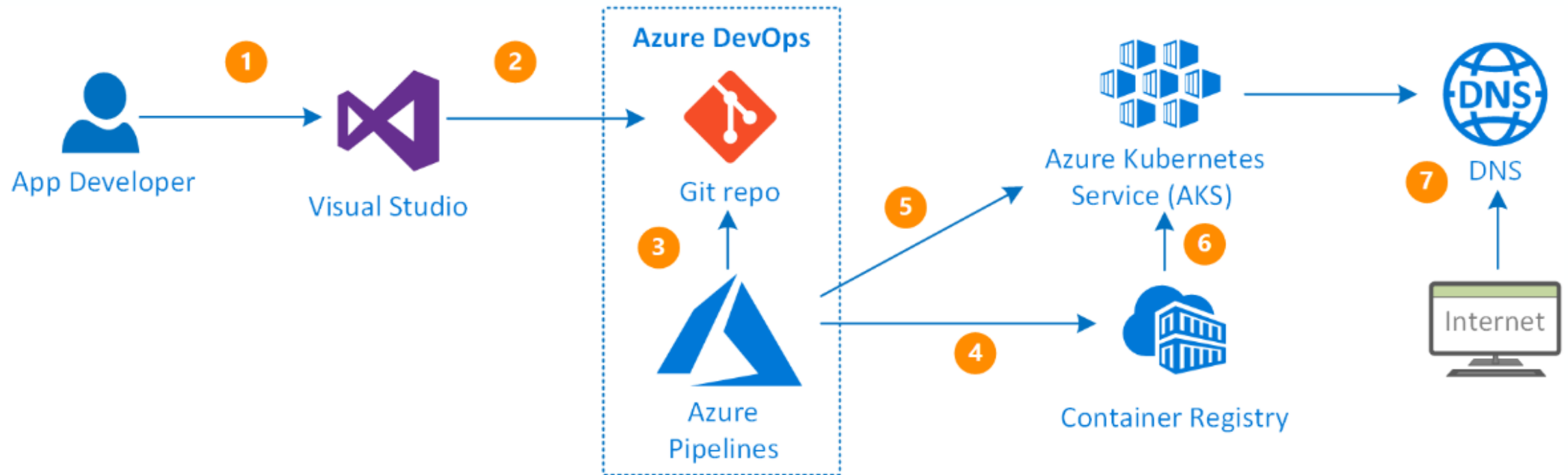
| Name | Password |
|-----------|----------------------------------|
| password | THcUU/yUAyKNGUjQQqK2tXLNFmJFrXV |
| password2 | g1FM5/n4MsfMNqaw+WTKpk/ygZRnfd8Y |

| <input type="checkbox"/> | Name | Namespace | Status | Type | Cluster IP | External IP | Ports |
|--------------------------|----------------------------|-------------|--------|--------------|--------------|---------------------------------|---------------|
| <input type="checkbox"/> | kubernetes | default | ✔ Ok | ClusterIP | 10.0.0.1 | | 443/TCP |
| <input type="checkbox"/> | healthmodel-replicaset-... | kube-system | ✔ Ok | ClusterIP | 10.0.3.61 | | 25227/TCP |
| <input type="checkbox"/> | kube-dns | kube-system | ✔ Ok | ClusterIP | 10.0.0.10 | | 53/UDP,53/TCP |
| <input type="checkbox"/> | metrics-server | kube-system | ✔ Ok | ClusterIP | 10.0.81.42 | | 443/TCP |
| <input type="checkbox"/> | dashboard-metrics-scr... | kube-system | ✔ Ok | ClusterIP | 10.0.30.33 | | 8000/TCP |
| <input type="checkbox"/> | kubernetes-dashboard | kube-system | ✔ Ok | ClusterIP | 10.0.141.160 | | 443/TCP |
| <input type="checkbox"/> | catalog-service | default | ✔ Ok | LoadBalancer | 10.0.98.49 | 40.89.244.8 🔗 | 80:30340/TCP |
| <input type="checkbox"/> | authentication-service | default | ✔ Ok | LoadBalancer | 10.0.174.28 | 52.143.247.97 🔗 | 80:30082/TCP |

Steps For Deployment

- **Step1:** Create Application Using ASP.NET Core.
- **Step2:** Add Docker Support using Visual Studio.
- **Step3:** Create ACR and Push Docker Images to ACR using VS.
- **Step4:** Create AKS Cluster and Configure it to Access Locally.
- **Step5:** Create Kubernetes Deployment Files.
- **Step6:** Deploy Application to AKS using CLI.
- **Step7:** Verify and Test Your Deployments.

CI/CD Pipeline Using Azure DevOps and AKS



CI/CD Pipeline for Microservices

