



**Develop / Debug .NET Core with
Microsoft Bridge to Kubernetes**

Instructors



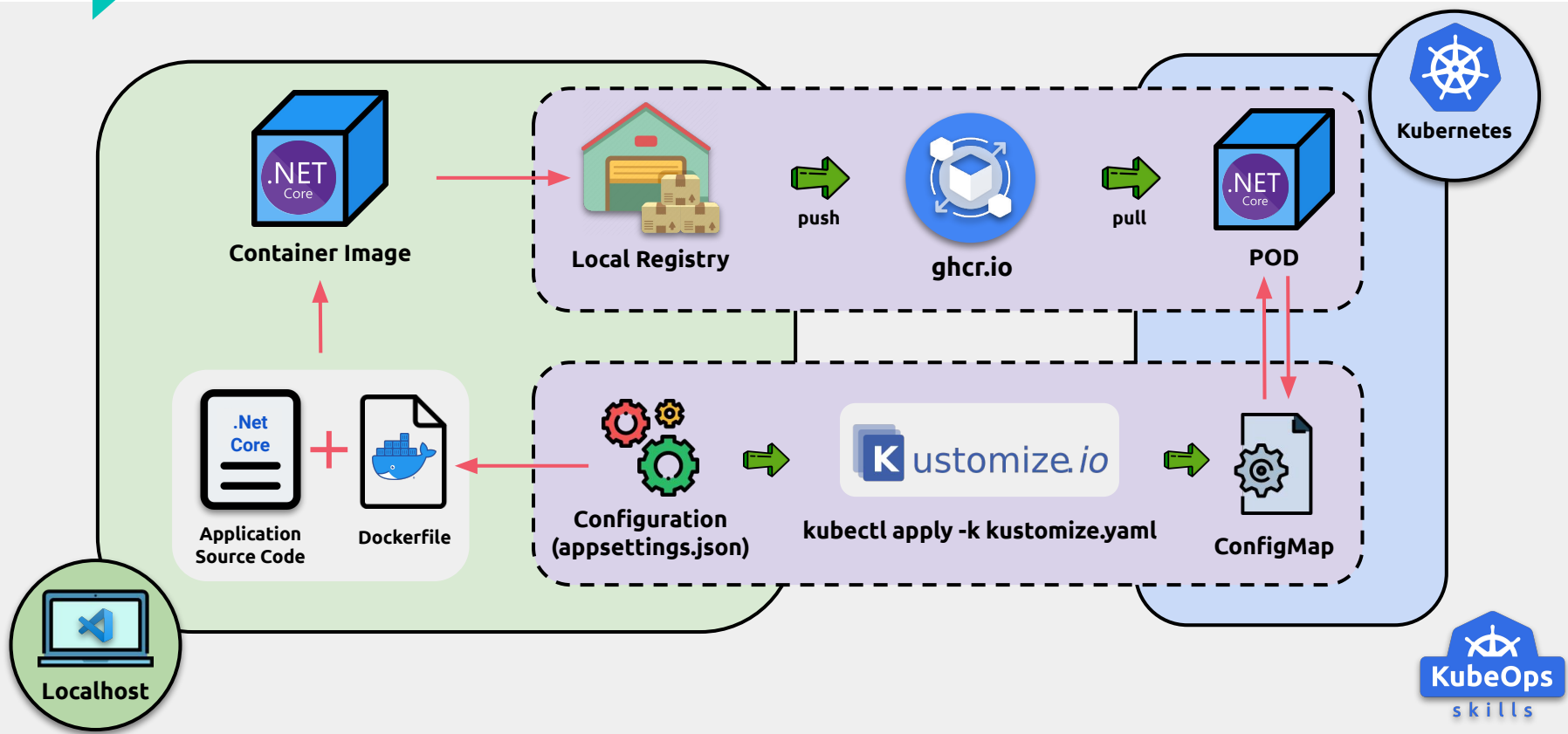
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Co-Founder @ KubeOps Skills

CNCF Certified Kubernetes Application Developer (CKAD)

CNCF Certified Kubernetes Administrator (CKA)

Development Process Overview



Kustomize - Generate ConfigMap from appsettings



Configuration
(appsettings.json)



kubectl apply -k [config]



ConfigMap

```
{
  "Logging": {
    "LogLevel": {
      "Default": "Information",
      "Microsoft": "Warning",
      "Microsoft.Hosting.Lifetime": "Information"
    }
  },
  "AllowedHosts": "*",
  "DatabaseConfig": {
    "DBURL": "10.0.0.2",
    "DBUserName": "admin",
    "DBPassword": "password"
  }
}
```

```
apiVersion: kustomize.config.k8s.io/v1beta1
kind: Kustomization
namespace: demo-prod
configMapGenerator:
- name: appsettings
  files:
  - appsettings.Production.json
generatorOptions:
  disableNameSuffixHash: true
```

.Net Core Dockerfile



Dockerfile



 Dockerfile ✕

 Dockerfile > ...

You, 8 minutes ago | 2 authors (sikiry1 and others)

```
1 FROM mcr.microsoft.com/dotnet/sdk:5.0 AS build-env
2 WORKDIR /app
3
4 # Copy csproj and restore as distinct layers
5 COPY *.csproj ./
6 RUN dotnet restore
7
8 # Copy everything else and build
9 COPY . ./`
10 RUN dotnet publish -c Release -o out
11
12 # Build runtime image
13 FROM mcr.microsoft.com/dotnet/aspnet:5.0
14 WORKDIR /app
15 COPY --from=build-env /app/out .
16 EXPOSE 8090
17 ENTRYPOINT ["dotnet", "dotnet-core-web-api.dll"]
```

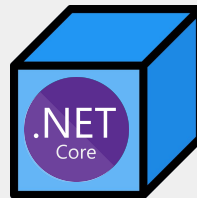
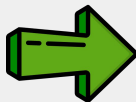
Building .Net Core to Docker Image - 1/2



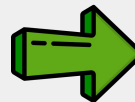
Application
Source Code



Dockerfile



Container Image

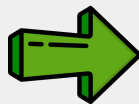


Local Registry

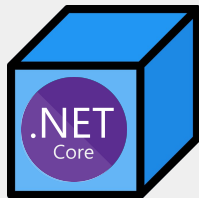
Building .Net Core to Docker Image - 2/2



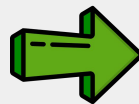
Local Registry



tag



`ghcr.io/kubeopsskills/dotnet-core-web-api:1.0.0`



push

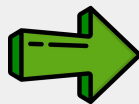


Local Registry

Pushing .Net Core Docker Image to Container Registry



Local Registry

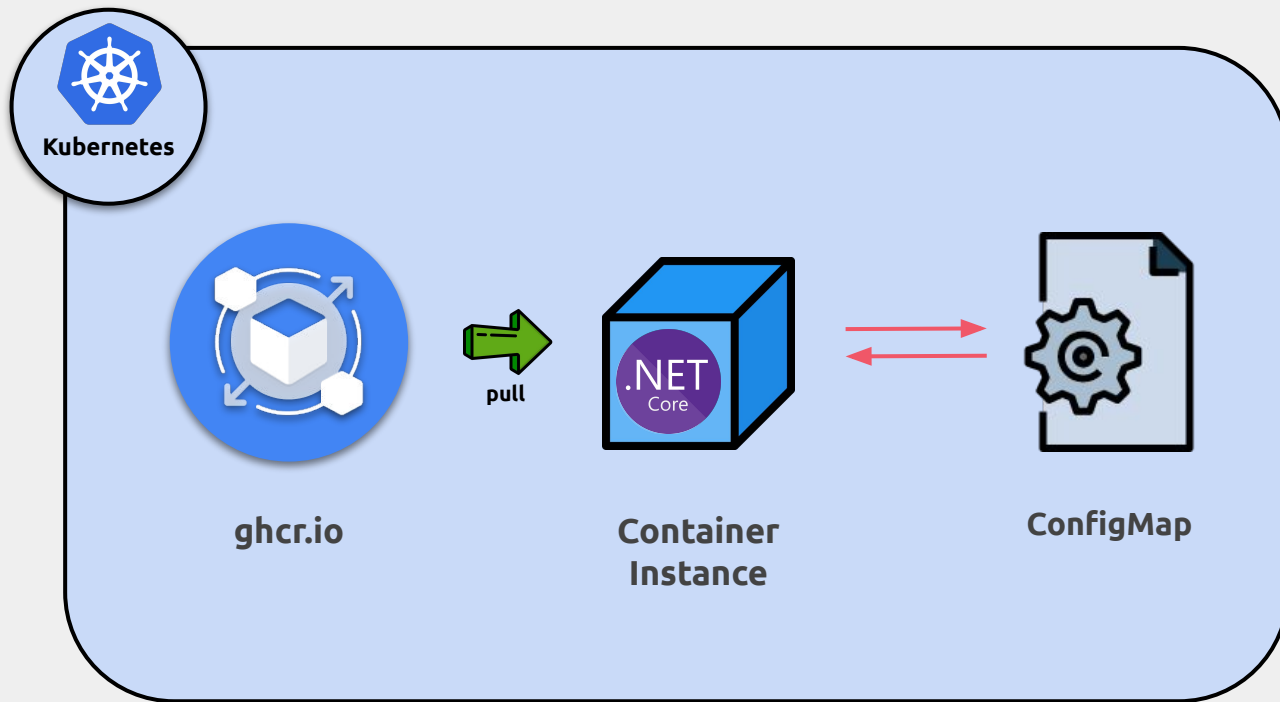


push

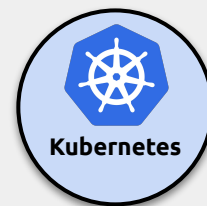
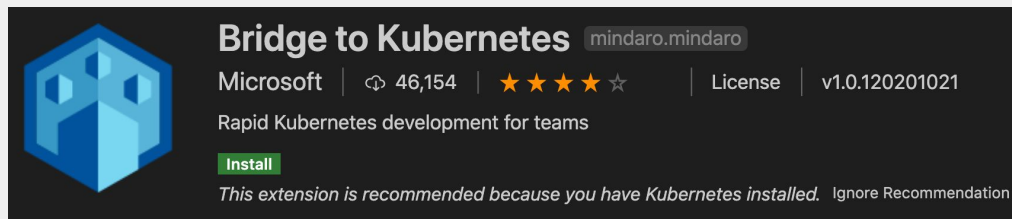


`ghcr.io/kubeopsskills/dotnet-core-web-api:1.0.0`

Deploying .Net Core Docker Image to Kubernetes

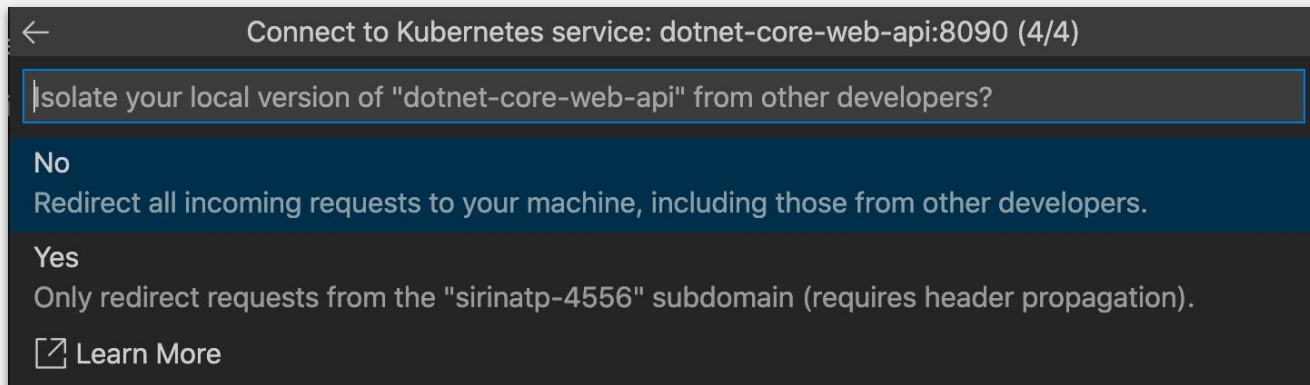


Developing on the fly with Bridge to Kubernetes



```
PROBLEMS 3 OUTPUT DEBUG CONSOLE TERMINAL COMMENTS Filter (e.g. text, exclude)
ed and the debugger option 'Just My Code' is enabled.
Loaded '/usr/local/share/dotnet/shared/Microsoft.NETCore.App/3.1.9/System.Security.Principal.dll'. Skipped loading symbols. Module is
optimized and the debugger option 'Just My Code' is enabled.
Loaded '/usr/local/share/dotnet/shared/Microsoft.NETCore.App/3.1.9/System.ComponentModel.Annotations.dll'. Skipped loading symbols. Module is
optimized and the debugger option 'Just My Code' is enabled.
Loaded '/usr/local/share/dotnet/shared/Microsoft.AspNetCore.App/3.1.9/Microsoft.AspNetCore.Metadata.dll'. Skipped loading symbols. Module is
optimized and the debugger option 'Just My Code' is enabled.
Loaded '/usr/local/share/dotnet/shared/Microsoft.AspNetCore.App/3.1.9/Microsoft.Extensions.Diagnostics.HealthChecks.Abstractions.dll'. Skipped
loading symbols. Module is optimized and the debugger option 'Just My Code' is enabled.
Loaded '/usr/local/share/dotnet/shared/Microsoft.NETCore.App/3.1.9/System.Security.Cryptography.X509Certificates.dll'. Skipped loading
symbols. Module is optimized and the debugger option 'Just My Code' is enabled.
Loaded '/usr/local/share/dotnet/shared/Microsoft.NETCore.App/3.1.9/System.Net.Sockets.dll'. Skipped loading symbols. Module is optimized
and the debugger option 'Just My Code' is enabled.
Hosting environment: Production
Content root path: /Users/saritrat/Workspaces/kubeops/dotnet-core-web-api
Now listening on: http://[::]:8090
Application started. Press Ctrl+C to shut down.
```

Bridge to Kubernetes - Mode



- **(No): Non-Isolate Mode**
- **(Yes): Isolate Mode**

Bridge to Kubernetes - (No) Non-Isolate mode

```
saritrat@sikiry:~  
~$ kubectl get pod  
NAME                                READY   STATUS    RESTARTS   AGE  
dotnet-core-web-api-566696b4b5-b4zjd 1/1     Running   0           6m37s  
dotnet-core-web-api-restore-24d1a-mqw28 1/1     Running   0           6m34s  
~$
```

Bridge to Kubernetes - (Yes) Isolate mode

```
saritrat@sikiry!::~~  
🐙 ~ kubectl get pod  
NAME                                     READY   STATUS    RESTARTS   AGE  
dotnet-core-web-api-7dcfc4b7c6-xd44d    1/1     Running   0           2m  
dotnet-core-web-api-envoy-routing-deploy-6685d98b4d-9bjdh  1/1     Running   0           60s  
dotnet-core-web-api-envoy-routing-deploy-6685d98b4d-j9wzm  1/1     Running   0           60s  
routingmanager-deployment-d5d78cd5b-kxf9s  1/1     Running   0           90s  
saritrat-dotnet-core-web-api-7dcfc4b7c6-xd44d  1/1     Running   0           88s  
saritrat-dotnet-core-web-api-7dcfc4b7c6-xd44d-restore-e02dmbfgf  1/1     Running   0           87s  
🐙 ~ █
```

.Net Core Development

With Real Action on Local



Minikube

Q & A