Lab 6

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Installing Knative Functions

Installing the kn func CLI plugin

```
qadeer@QHVictus:~$ curl -L https://github.com/knative/client/releases/latest/download/kn-linux-amd64 -o kn
chmod +x kn
sudo mv kn /usr/local/bin
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
    0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
    0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
100 84.7M  100 84.7M    0     0  33.5M      0  0:00:02  0:00:02 --:--:-- 55.4M
qadeer@QHVictus:~$ kn version
kn func version
Version:     v1.18.0
Build Date:  2025-04-23 19:42:52
Git Revision: 96721e59
Supported APIs:
* Serving
  - serving.knative.dev/v1 (knative-serving v1.18.0)
* Eventing
  - sources.knative.dev/v1 (knative-eventing v1.18.0)
  - eventing.knative.dev/v1 (knative-eventing v1.18.0)
v0.45.1
```

Creating a function

```
qadeer@QHVictus:~$ kn func create -l go hello
Created go function in /home/qadeer/hello
```

Deploying a Knative Service

```
qadeer@QHVictus:~$ kn service create hello \
  --image ghcr.io/knative/helloworld-go:latest \
  --port 8080 \
  --env TARGET=World
Warning: Kubernetes default value is insecure, Knative may default this to secure in a future release: spec.template.spec.containers[0].securityContext.allowPrivilegeEscalation, spec.template.spec.containers[0].securityContext.capabilities, spec.template.spec.containers[0].securityContext.runAsNonRoot, spec.template.spec.containers[0].securityContext.seccompProfile
Creating service 'hello' in namespace 'default':

  0.047s The Route is still working to reflect the latest desired specification.
  0.104s ...
  0.114s Configuration "hello" is waiting for a Revision to become ready.
  7.502s ...
  7.598s Ingress has not yet been reconciled.
 17.917s Waiting for load balancer to be ready
 18.126s Ready to serve.

Service 'hello' created to latest revision 'hello-00001' is available at URL:
http://hello.default.192.168.49.2.nip.io
```

Autoscaling

List your Knative Service

```
qadeer@QHVictus:~$ kn service list
NAME    URL                                         LATEST       AGE   CONDITIONS   READY   REASON
hello   http://hello.default.192.168.49.2.nip.io    hello-00001  23m   3 OK / 3     True
```

Access your Knative Service

```
qadeer@QHVictus:~$ curl -H "Host: hello.default.192.168.49.2.nip.io" http://localhost:8080
Hello World!
```

Observe autoscaling

```
qadeer@QHVictus:~$ kubectl get pod -l serving.knative.dev/service=hello -w
NAME                                        READY   STATUS        RESTARTS   AGE
hello-00001-deployment-5b65667d66-l5ct6     2/2     Running       0          40s
hello-00001-deployment-5b65667d66-l5ct6     2/2     Terminating   0          62s
hello-00001-deployment-5b65667d66-l5ct6     1/2     Terminating   0          88s
hello-00001-deployment-5b65667d66-l5ct6     0/2     Completed     0          91s
hello-00001-deployment-5b65667d66-l5ct6     0/2     Completed     0          92s
hello-00001-deployment-5b65667d66-l5ct6     0/2     Completed     0          92s
```

Scale up your Knative Service

```
qadeer@QHVictus:~$ kubectl get pods -n default -w
NAME                                        READY   STATUS        RESTARTS   AGE
hello-00001-deployment-5b65667d66-7vqmj     1/2     Terminating   0          100s
hello-00001-deployment-5b65667d66-7vqmj     0/2     Completed     0          103s
hello-00001-deployment-5b65667d66-7vqmj     0/2     Completed     0          104s
hello-00001-deployment-5b65667d66-7vqmj     0/2     Completed     0          104s
```

Traffic splitting

Creating a new Revision

```
^Cqadeer@QHVictus:~kn service update hello \
--env TARGET=Knative
Warning: Kubernetes default value is insecure, Knative may default this to secure in a future release: spec.template.spe
c.containers[0].securityContext.allowPrivilegeEscalation, spec.template.spec.containers[0].securityContext.capabilities,
 spec.template.spec.containers[0].securityContext.runAsNonRoot, spec.template.spec.containers[0].securityContext.seccomp
Profile
Updating Service 'hello' in namespace 'default':

  0.034s The Configuration is still working to reflect the latest desired specification.
  1.398s Traffic is not yet migrated to the latest revision.
  1.479s Ingress has not yet been reconciled.
  1.510s Waiting for load balancer to be ready
  1.713s Ready to serve.

Service 'hello' updated to latest revision 'hello-00002' is available at URL:
http://hello.default.192.168.49.2.nip.io
```

Accessing the new Revision

```
qadeer@QHVictus:~$ curl -H "Host: hello.default.192.168.49.2.nip.io" http://localhost:8080
Hello Knative!
```

View existing Revisions

```
qadeer@QHVictus:~$ kn revisions list
NAME           SERVICE   TRAFFIC   TAGS   GENERATION   AGE    CONDITIONS   READY   REASON
hello-00002    hello     100%             2            89s    4 OK / 4     True
hello-00001    hello                      1            41m    3 OK / 4     True
```

Splitting traffic between Revisions

```
qadeer@QHVictus:~$ kn service update hello \
--traffic hello-00001=50 \
--traffic @latest=50
#Warning: Kubernetes default value is insecure, Knative may default this to secure in a future release: spec.template.sp
ec.containers[0].securityContext.allowPrivilegeEscalation, spec.template.spec.containers[0].securityContext.capabilities
, spec.template.spec.containers[0].securityContext.runAsNonRoot, spec.template.spec.containers[0].securityContext.seccom
pProfile
Updating Service 'hello' in namespace 'default':

  0.022s The Route is still working to reflect the latest desired specification.
  0.053s Ingress has not yet been reconciled.
  0.069s Waiting for load balancer to be ready
  0.274s Ready to serve.

Service 'hello' with latest revision 'hello-00002' (unchanged) is available at URL:
http://hello.default.192.168.49.2.nip.io
```

Verify the traffic split

```
qadeer@QHVictus:~$ kn revisions list
NAME           SERVICE    TRAFFIC    TAGS    GENERATION    AGE      CONDITIONS    READY    REASON
hello-00002    hello      50%                2             2m33s    3 OK / 4      True
hello-00001    hello      50%                1             42m      3 OK / 4      True
```

```
qadeer@QHVictus:~$ curl -H "Host: hello.default.192.168.49.2.nip.io" http://localhost:8080
curl -H "Host: hello.default.192.168.49.2.nip.io" http://localhost:8080
curl -H "Host: hello.default.192.168.49.2.nip.io" http://localhost:8080
curl -H "Host: hello.default.192.168.49.2.nip.io" http://localhost:8080
Hello World!
Hello Knative!
Hello Knative!
Hello World!
```

Sources, Brokers, and Triggers

```
qadeer@QHVictus:~/hello$ kn broker list
NAME             URL                                                                                     AGE    CONDITIONS    READY    REASON
example-broker   http://broker-ingress.knative-eventing.svc.cluster.local/default/example-broker        4s     7 OK / 7      True
```

Using a Knative Service as a source

Creating your first source

```
qadeer@QHVictus:~/hello$ kn service create cloudevents-player \
--image quay.io/ruben/cloudevents-player:latest
Warning: Kubernetes default value is insecure, Knative may default this to secure in a future release: spec.template.spec.containers[0].securityContext
.allowPrivilegeEscalation, spec.template.spec.containers[0].securityContext.capabilities, spec.template.spec.containers[0].securityContext.runAsNonRoot
, spec.template.spec.containers[0].securityContext.seccompProfile
Creating service 'cloudevents-player' in namespace 'default':

  0.044s The Route is still working to reflect the latest desired specification.
  0.088s ...
  0.099s Configuration "cloudevents-player" is waiting for a Revision to become ready.
 10.312s ...
 10.400s Ingress has not yet been reconciled.
 10.505s Waiting for load balancer to be ready
 10.636s Ready to serve.

Service 'cloudevents-player' created to latest revision 'cloudevents-player-00001' is available at URL:
http://cloudevents-player.default.192.168.49.2.nip.io
```

```
qadeer@QHVictus:~/hello$ kn source binding create ce-player-binding --subject "Service:serving.knative.dev/v1:cloudevents-player" --sink broker:example
-broker
Sink binding 'ce-player-binding' created in namespace 'default'.
```

Examining the CloudEvents Player

CloudEvents player

Create event

Event ID *

This field is mandatory

Event Type *

This field is mandatory

Event Subject

Event Source *
player

Specversion
1.0

Message *
{
  "message": "Hello CloudEvents!"
}

ADD EXTENSION ATTRIBUTE   SEND EVENT

Activity

ID	Type	Subject	Source	Status	Local Time	Message

CLEAR EVENTS

CloudEvents player

Create event

Event ID *
2

Event Type *
Testing

Event Subject
Cloud Data Centres

Event Source *
player

Specversion
1.0

Message *
{
  "message": "Hello CloudEvents!"
}

ADD EXTENSION ATTRIBUTE   SEND EVENT

Activity

ID	Type	Subject	Source	Status	Local Time	Message
2	Testing	Cloud Data Centres	player	➤	17/5/2025 13:15:43	✉

CLEAR EVENTS