

Learn Docker , Kubernetes, AWS

Docker-compose to Kubernetes deployment object

<https://kubernetes.io/docs/tasks/configure-pod-container/translate-compose-kubernetes/>
<https://medium.com/skillshare-team/from-docker-compose-to-minikube-d94cbe97acda>

Deploy spring boot application in kubernetes

<https://www.kindsonthegenius.com/deploy-springboot-with-mysql-to-kubernetes-minikube-step-by-step-tutorial/>

Steps to install minikube

<https://www.kindsonthegenius.com/setup-kubernetes-locally-deploy-springboot-application-step-by-step-tutorial/>

//Deploy Spring Boot in EKS

<https://katharharshal1.medium.com/deploy-spring-boot-application-into-aws-eks-using-jenkins-ci-cd-2ced0e0d894c>

//K8S basic

[https://www.checkpoint.com/cyber-hub/cloud-security/what-is-kubernetes/what-is-a-kubernetes-cluster/#:~:text=A%20Kubernetes%20\(K8s\)%20cluster%20is,%2C%20virtual%2C%20and%20cloud%20servers.](https://www.checkpoint.com/cyber-hub/cloud-security/what-is-kubernetes/what-is-a-kubernetes-cluster/#:~:text=A%20Kubernetes%20(K8s)%20cluster%20is,%2C%20virtual%2C%20and%20cloud%20servers.)

<https://enterprisersproject.com/article/2020/9/pod-cluster-container-what-is-difference>

<https://www.theserverside.com/answer/Kubectl-apply-vs-create-Whats-the-difference>

<https://www.nginx.com/blog/deploying-nginx-nginx-plus-docker/>

<https://www.kubermatic.com/blog/introduction-to-kubernetes-replicasets/>

<https://www.containiq.com/post/kubectl-delete>

<https://www.stacksimplify.com/aws-eks/kubernetes-for-absolute-beginners/create-kubernetes-pods-with-kubect/>

Convert any docker compose to kubernetes deployment file

command :kompose -f docker-compose.yml convert

```
C:\Users\Dhruva's PC>kompose -f docker-compose.yml convert
INFO Kubernetes file "mysql-db-service.yaml" created
INFO Kubernetes file "springboot-docker-container-service.yaml" created
INFO Kubernetes file "mysql-db-deployment.yaml" created
INFO Kubernetes file "springboot-docker-container-deployment.yaml" created
C:\Users\Dhruva's PC>
```

//RDS

<https://www.stacksimplify.com/aws-eks/kubernetes-storage/aws-eks-storage-with-aws-rds-database/>

//EKS

<https://www.stacksimplify.com/aws-eks/eks-cluster/install-aws-eksctl-kubectl-cli/>

Command to run the docker compose

docker-compose up

For running docker the updated Java file

docker-compose up --build

<https://stackoverflow.com/questions/62193878/docker-container-not-updating-on-code-change>

Steps to push images in docker hub

<https://www.section.io/engineering-education/docker-push-for-publishing-images-to-docker-hub/>

Command to start the minikube

minikube start

INFORMATION ABOUT AWS:

<https://pilotcoresystems.com/insights/aws-fargate-vs-ecs-which-one-is-best-for-my-workload/>

<https://www.quora.com/p/50544/run-your-application-with-docker-compose-on-aws-ec2/>

1. go to ec2
2. launch instances
3. create a key value pair to generate ssh

sudo chmod 666 /var/run/docker.sock

chmod 777 /var/run/docker.sock - when login failed

sudo service docker start

docker-compose --version

<https://www.edureka.co/community/50699/how-do-i-install-docker-compose-on-linux>

AWS EC2 instance Screenshots

```

# Using username "ec2-user".
# Authenticating with public key "imported-openssh-key"
Last login: Tue Nov 29 17:18:02 2022 from 45.112.30.212

 _ _ _ _ _
| | | | |   Amazon Linux 2 AMI
|_|_|_|_|_|

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-84-68 ~]$ docker -v
Docker version 20.10.17, build 100c701
[ec2-user@ip-172-31-84-68 ~]$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't
have a Docker ID, head over to https://hub.docker.com to create one.
Username: docker login -u javatechie01
Password:
[ec2-user@ip-172-31-84-68 ~]$ docker login -u javatechie01
Password:
WARNING! Your password will be stored unencrypted in /home/ec2-user/.docker/conf
ig.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
[ec2-user@ip-172-31-84-68 ~]$ docker pull javatechie/capstone-project:2
Cannot connect to the Docker daemon at unix:///var/run/docker.sock. Is the docke
r daemon running?
[ec2-user@ip-172-31-84-68 ~]$ docker pull javatechie/capstone-project:2
Cannot connect to the Docker daemon at unix:///var/run/docker.sock. Is the docke
r daemon running?
[ec2-user@ip-172-31-84-68 ~]$ sudo chmod 666 /var/run/docker.sock
chmod: cannot access '/var/run/docker.sock': No such file or directory
[ec2-user@ip-172-31-84-68 ~]$ sudo service docker start
Redirecting to /bin/systemctl start docker.service
[ec2-user@ip-172-31-84-68 ~]$ sudo service docker status
Redirecting to /bin/systemctl status docker.service
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; disabled; vendor pres
et; disabled)
   Active: active (running) since Fri 2022-12-02 14:59:31 UTC; 28s ago
     Docs: https://docs.docker.com
   Process: 3308 ExecStartPre=usr/libexec/docker/docker-setup-runtimes.sh (code=
exited, status=0/SUCCESS)
   Process: 3307 ExecStartPre=/bin/mkdir -p /run/docker (code=exited, status=0/SU
CCESS)
  Main PID: 3311 (dockerd)
    Tasks: 7
   Memory: 87.3M
   CGroup: /system.slice/docker.service
```

```

[CESS]
Main PID: 3311 (dockerd)
Tasks: 7
Memory: 87.3M
CGroup: /system.slice/docker.service
└─3311 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/cont...

Dec 02 14:59:30 ip-172-31-84-68.ec2.internal dockerd[3311]: time="2022-12-02T...
Dec 02 14:59:30 ip-172-31-84-68.ec2.internal dockerd[3311]: time="2022-12-02T...
Dec 02 14:59:30 ip-172-31-84-68.ec2.internal dockerd[3311]: time="2022-12-02T...
Dec 02 14:59:30 ip-172-31-84-68.ec2.internal dockerd[3311]: time="2022-12-02T...
Dec 02 14:59:31 ip-172-31-84-68.ec2.internal dockerd[3311]: time="2022-12-02T...
Dec 02 14:59:31 ip-172-31-84-68.ec2.internal dockerd[3311]: time="2022-12-02T...
Dec 02 14:59:31 ip-172-31-84-68.ec2.internal dockerd[3311]: time="2022-12-02T...
Dec 02 14:59:31 ip-172-31-84-68.ec2.internal dockerd[3311]: time="2022-12-02T...
Dec 02 14:59:31 ip-172-31-84-68.ec2.internal system[1]: Started Docker Appli...
Dec 02 14:59:31 ip-172-31-84-68.ec2.internal dockerd[3311]: time="2022-12-02T...
Hint: Some lines were ellipsized, use -l to show in full.
[ec2-user@ip-172-31-84-68 ~]$ sudo chmod 666 /var/run/docker.sock
[ec2-user@ip-172-31-84-68 ~]$ docker pull javatechie/capstone-project:2
Error response from daemon: pull access denied for javatechie/capstone-project,
repository does not exist or may require 'docker login': denied: requested acces
s to the resource is denied
[ec2-user@ip-172-31-84-68 ~]$ docker login -u javatechie01
Password:
WARNING! Your password will be stored unencrypted in /home/ec2-user/.docker/conf
ig.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
[ec2-user@ip-172-31-84-68 ~]$ docker pull javatechie/capstone-project:2
Error response from daemon: pull access denied for javatechie/capstone-project,
repository does not exist or may require 'docker login': denied: requested acces
s to the resource is denied
[ec2-user@ip-172-31-84-68 ~]$ docker pull javatechie01/capstone-project:2
2: Pulling from javatechie01/capstone-project
9a0b9cd2dfe6: Pull complete
c637408ee7df: Pull complete
4c517093c276: Pull complete
301cc7d68c2a: Pull complete
17ca9bf9231a: Pull complete
9ae101e5c786: Pull complete
04baa409344e: Pull complete
f0b6015bf853: Pull complete
6005bb052ef8: Pull complete
99f303d57050: Pull complete
307a9a0c1df: Pull complete
Digest: sha256:55d2f4aa17fd27821a7fc575d2921485681a8aa5ac8411b75d7a163d895dfba1
Status: Downloaded newer image for javatechie01/capstone-project:2
docker.io/javatechie01/capstone-project:2
[ec2-user@ip-172-31-84-68 ~]$ docker pull javatechie01/capstone-project:1
1: Pulling from javatechie01/capstone-project
001e52e26ad5: Pull complete
d9d4b9b6e9e4: Pull complete
2068746827ec: Pull complete
9daeef329d350: Pull complete
d85151f15b66: Pull complete
32a8e4f26d30b: Pull complete
8754a66e0050: Pull complete
09fbf4ff9ffc: Pull complete
Digest: sha256:6555cde68b86066955ad0911677cf47fe949d00b567677499e432072aea77f7
Status: Downloaded newer image for javatechie01/capstone-project:1
docker.io/javatechie01/capstone-project:1
[ec2-user@ip-172-31-84-68 ~]$ vim docker-compose.yml
[ec2-user@ip-172-31-84-68 ~]$ docker compose up
docker: 'compose' is not a docker command.
See 'docker --help'
[ec2-user@ip-172-31-84-68 ~]$ docker-compose --version
-bash: docker-compose: command not found
[ec2-user@ip-172-31-84-68 ~]$

```

```

Login Succeeded
[ec2-user@ip-172-31-84-68 ~]$ docker pull javatechie/capstone-project:2
Error response from daemon: pull access denied for javatechie/capstone-project,
repository does not exist or may require 'docker login': denied: requested acces
s to the resource is denied
[ec2-user@ip-172-31-84-68 ~]$ docker pull javatechie01/capstone-project:2
2: Pulling from javatechie01/capstone-project
9a0b9cd2dfe6: Pull complete
c637408ee7df: Pull complete
4c517093c276: Pull complete
301cc7d68c2a: Pull complete
17ca9bf9231a: Pull complete
9ae101e5c786: Pull complete
04baa409344e: Pull complete
f0b6015bf853: Pull complete
6005bb052ef8: Pull complete
99f303d57050: Pull complete
307a9a0c1df: Pull complete
Digest: sha256:55d2f4aa17fd27821a7fc575d2921485681a8aa5ac8411b75d7a163d895dfba1
Status: Downloaded newer image for javatechie01/capstone-project:2
docker.io/javatechie01/capstone-project:2
[ec2-user@ip-172-31-84-68 ~]$ docker pull javatechie01/capstone-project:1
1: Pulling from javatechie01/capstone-project
001e52e26ad5: Pull complete
d9d4b9b6e9e4: Pull complete
2068746827ec: Pull complete
9daeef329d350: Pull complete
d85151f15b66: Pull complete
32a8e4f26d30b: Pull complete
8754a66e0050: Pull complete
09fbf4ff9ffc: Pull complete
Digest: sha256:6555cde68b86066955ad0911677cf47fe949d00b567677499e432072aea77f7
Status: Downloaded newer image for javatechie01/capstone-project:1
docker.io/javatechie01/capstone-project:1
[ec2-user@ip-172-31-84-68 ~]$ vim docker-compose.yml
[ec2-user@ip-172-31-84-68 ~]$ docker compose up
docker: 'compose' is not a docker command.
See 'docker --help'
[ec2-user@ip-172-31-84-68 ~]$ docker-compose --version
-bash: docker-compose: command not found
[ec2-user@ip-172-31-84-68 ~]$

```

Docker Compose 👍


```
1 version: '3'
2 services:
3   mysql:
4     image: 'mysql:5.7'
5     environment:
6       MYSQL_ROOT_PASSWORD: [REDACTED]
7       MYSQL_DATABASE: springjdbc
8       MYSQL_ROOT_USER : root
9       MYSQL_PASSWORD: [REDACTED]
10    ports:
11      - "3307:3306"
12  springboot-docker-container:
13    image: springboot-docker-container
14    ports:
15      - "8080:8080"
16    environment:
17      SPRING_DATASOURCE_URL: jdbc:mysql://mysql:3306/springjdbc?autoReconnect=true&useSSL=false
18      SPRING_DATASOURCE_USERNAME: "root"
19      SPRING_DATASOURCE_PASSWORD: "[REDACTED]"
20    build:
21      context: "./"
22      dockerfile: "Dockerfile"
23    depends_on:
24      - mysql
```


```
1 FROM openjdk:8
2 EXPOSE 8080
3 ADD target/spring-boot-docker.jar spring-boot-docker.jar
4 ENTRYPOINT ["java","-jar","/spring-boot-docker.jar"]
5
```

Docker Hub with the list of Images pushed in a repository


javatechie01 / capstone-project

Description

This repository does not have a description 

 Last pushed: 2 months ago

Tags

 VULNERABILITY SCANNING - DISABLED
[Enable](#)










This repository contains 2 tag(s).

Tag	OS	Type	Pulled	Pushed
 2		Image	---	2 months ago
 1		Image	a month ago	2 months ago

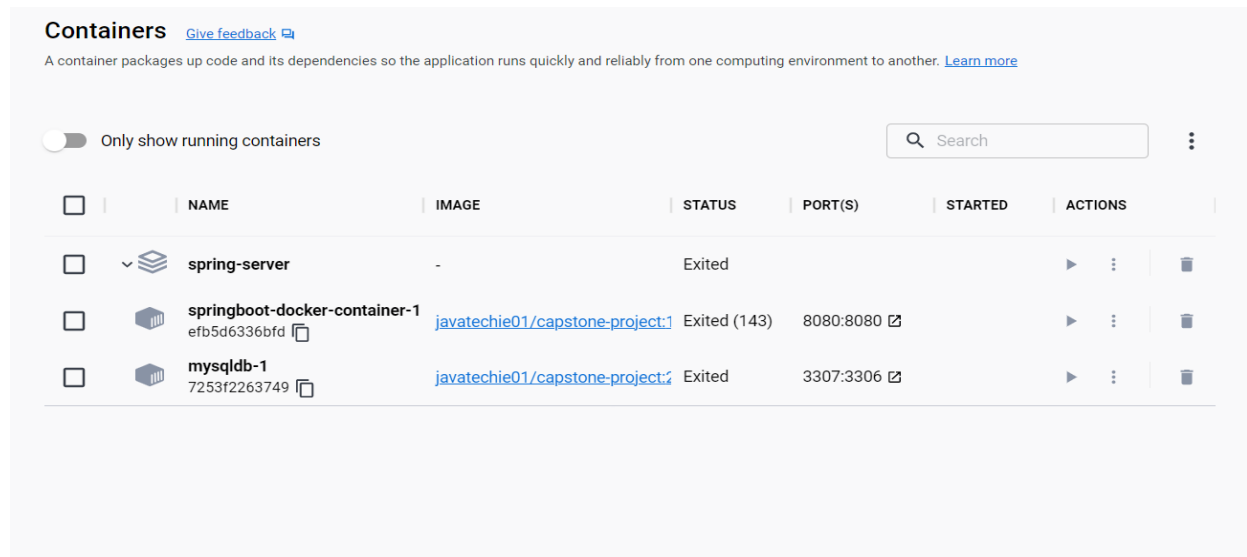
[See all](#)

[Go to Advanced Image Management](#)

Docker Images

LOCAL							REMOTE REPOSITORIES		
<div><div></div><div>1.06 GB / 2.18 GB in use</div><div>2 images</div></div>							Last refresh: 3 minutes ago 		
							<input type="text" value="Search"/>		
<input type="checkbox"/>	NAME	TAG	STATUS	CREATED	SIZE	ACTIONS			
<input type="checkbox"/>	javatechie01/capstone-project 013ae224da64 	1	In use	about 2 months ago	566.34 MB	 			
<input type="checkbox"/>	javatechie01/capstone-project eef0fab001e8 	2	In use	2 months ago	494.71 MB	 			

Docker Container



Kubernetes Deployment Commands:

1. Enable the kubernetes from docker desktop settings.
2. For Minikube to start : **minikube start.**
3. **kubectl apply -f mysqldb-deployment.yaml , kubectl apply -f mysqldb-service.yaml,**
kubectl apply -f springboot-docker-container-deployment.yaml , kubectl apply -f springboot-docker-container-service.yaml
4. Once the deployment objects are created , write : **kubectl get pods**
5. To delete a pod : **kubectl delete -f mysqldb-deployment.yaml**


```
D:\WorkspaceJava\spring-server>kubectl get pods
NAME                                READY   STATUS             RESTARTS   AGE
mysqlb-7f8dd9b57c-qfztl            0/1     ContainerCreating   0           60s

D:\WorkspaceJava\spring-server>kubectl apply -f mysqlb-service.yaml
service/mysqlb created

D:\WorkspaceJava\spring-server>kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
mysqlb-7f8dd9b57c-qfztl            1/1     Running   0           91s

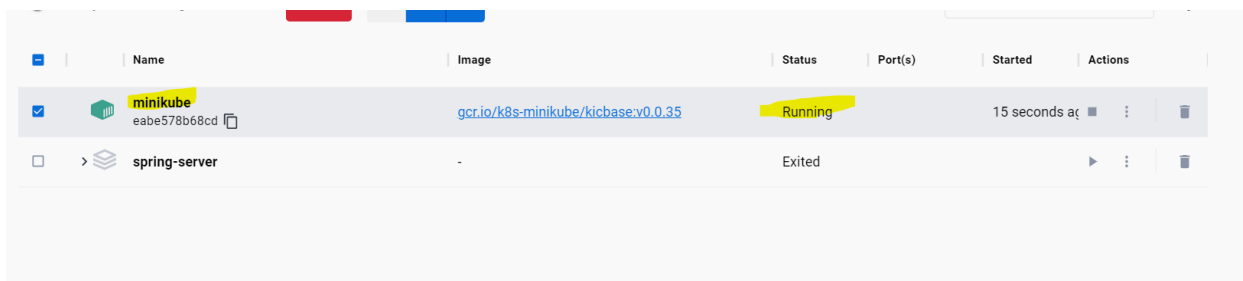
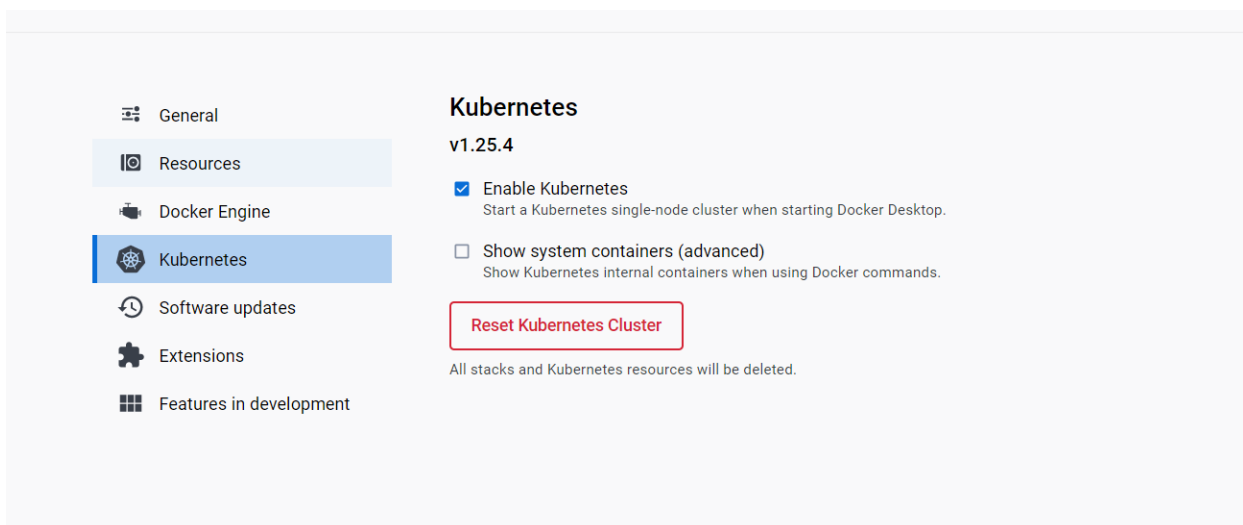
D:\WorkspaceJava\spring-server>kubectl apply -f springboot-docker-container-deployment.yaml
deployment.apps/springboot-docker-container created

D:\WorkspaceJava\spring-server>kubectl apply -f springboot-docker-container-service.yaml
service/springboot-docker-container created

D:\WorkspaceJava\spring-server>kubectl get pods
NAME                                READY   STATUS             RESTARTS   AGE
mysqlb-7f8dd9b57c-qfztl            1/1     Running            0           2m7s
springboot-docker-container-699b4cc78b-hdwjg  0/1     ContainerCreating   0           18s

D:\WorkspaceJava\spring-server>kubectl get pods
NAME                                READY   STATUS             RESTARTS   AGE
mysqlb-7f8dd9b57c-qfztl            1/1     Running            0           2m41s
springboot-docker-container-699b4cc78b-hdwjg  0/1     ContainerCreating   0           52s
```

```
D:\WorkspaceJava\spring-server>kubectl delete -f springboot-docker-container-deployment.yaml
deployment.apps "springboot-docker-container" deleted
```



Once the pods are running properly,

1. kubectl get service --all-namespaces (to check the services running)

```
D:\WorkspaceJava\spring-server>kubectl get service --all-namespaces
NAMESPACE   NAME             TYPE          CLUSTER-IP      EXTERNAL-IP   PORT(S)          AGE
default     kubernetes       ClusterIP      10.96.0.1        <none>        443/TCP          29d
default     mysqlldb         ClusterIP      10.103.246.243   <none>        3307/TCP         23m
default     springboot-docker-container   ClusterIP      10.105.39.243    <none>        8080/TCP         20m
kube-system  kube-dns         ClusterIP      10.96.0.10       <none>        53/UDP,53/TCP,9153/TCP 29d

D:\WorkspaceJava\spring-server>
```

2. To check the service logs

```
D:\WorkspaceJava\spring-server>kubectl get pods springboot-docker-container-6dc5879cb7-xxtl5
NAME                                READY   STATUS    RESTARTS   AGE
springboot-docker-container-6dc5879cb7-xxtl5  1/1     Running   0          19m

D:\WorkspaceJava\spring-server>kubectl logs springboot-docker-container-6dc5879cb7-xxtl5

:: Spring Boot ::
      (v1.5.9.RELEASE)

2023-02-14 03:41:39.240 INFO 1 --- [main] io.swagger.Swagger2SpringBoot : Starting Swagger2SpringBoot v1.0.0 on springboot-docker-con
tainer-6dc5879cb7-xxtl5 with PID 1 (/spring-boot-docker.jar started by root in /)
2023-02-14 03:41:39.256 INFO 1 --- [main] io.swagger.Swagger2SpringBoot : No active profile set, falling back to default profiles: de
fault
2023-02-14 03:41:40.748 INFO 1 --- [main] ationConfigEmbeddedWebApplicationContext : Refreshing org.springframework.boot.context.embedded.Annota
tionConfigEmbeddedWebApplicationContext@2cdf8d8a: startup date [Tue Feb 14 03:41:40 UTC 2023]; root of context hierarchy
2023-02-14 03:42:09.249 INFO 1 --- [main] trationDelegate$BeanPostProcessorChecker : Bean 'org.springframework.transaction.annotation.ProxyTrans
actionManagementConfiguration' of type [org.springframework.transaction.annotation.ProxyTransactionManagementConfiguration$$EnhancerBySpringCGLIB$$b1773e5b]
is not eligible for getting processed by all BeanPostProcessors (for example: not eligible for auto-proxying)
```

3. Test the application to verify the proper response , Kubectl port-forward <pod-name> 8080:8080 (example)

```
D:\WorkspaceJava\spring-server>kubectl port-forward springboot-docker-container-6dc5879cb7-sfnkc 8080:8080
Forwarding from 127.0.0.1:8080 -> 8080
Forwarding from [::1]:8080 -> 8080
Handling connection for 8080
Handling connection for 8080
Handling connection for 8080
Handling connection for 8080
Handling connection for 8080
```

Kubernetes test data screenshots:

SME_TechnicalPath / POST

Save



POST localhost:8080/tmf-api/customerManagement/v4/customer

Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings

Cookies

</>

none form-data x-www-form-urlencoded raw binary GraphQL JSON

Beautify

⌕

1

```
1 {
2   "id": "27862162",
3   "name": "Abdul majid",
4   "status": "Active",
5   "accountNumber": "70119203465",
6   "phoneNumber": "9139201583",
7   "emailId": "majid.abdul@outlook.com",
8   "address": "Kolkata"
9 }
```

Body Cookies Headers (3) Test Results

Status: 201 Created Time: 1767 ms Size: 302 B

Save Response

Pretty Raw Preview Visualize JSON

⌕

```
1 {
2   "id": 27862162,
3   "name": "Abdul majid",
4   "status": "Active",
5   "accountNumber": "70119203465",
6   "phoneNumber": "9139201583",
7   "emailId": "majid.abdul@outlook.com",
8   "address": "Kolkata"
9 }
```

Cookies Capture requests Runner Trash

```
WHERE
x.id = :id */ select
count(*) as col_0_0_
from
customer customer0_
where
customer0_.id=?
2023-02-18 14:55:43.944 TRACE 1 --- [nio-8080-exec-3] o.h.type.descriptor.sql.BasicBinder : binding parameter [1] as [BIGINT] - [27862162]
2023-02-18 14:55:43.962 TRACE 1 --- [nio-8080-exec-3] o.h.type.descriptor.sql.BasicExtractor : extracted value ([col_0_0_] : [BIGINT]) - [0]
Hibernate:
/* load io.swagger.model.Customer */ select
customer0_.id as id1_0_0_,
customer0_.account_number as account_2_0_0_,
customer0_.address as address3_0_0_,
customer0_.email_id as email_id4_0_0_,
customer0_.name as name5_0_0_,
customer0_.phone_number as phone_nu6_0_0_,
customer0_.status as status7_0_0_
from
customer customer0_
where
customer0_.id=?
2023-02-18 14:55:44.049 TRACE 1 --- [nio-8080-exec-3] o.h.type.descriptor.sql.BasicBinder : binding parameter [1] as [BIGINT] - [27862162]
Hibernate:
/* insert io.swagger.model.Customer
*/ insert
into
customer
(account_number, address, email_id, name, phone_number, status, id)
values
(?, ?, ?, ?, ?, ?, ?)
2023-02-18 14:55:44.279 TRACE 1 --- [nio-8080-exec-3] o.h.type.descriptor.sql.BasicBinder : binding parameter [1] as [VARCHAR] - [70119203465]
2023-02-18 14:55:44.280 TRACE 1 --- [nio-8080-exec-3] o.h.type.descriptor.sql.BasicBinder : binding parameter [2] as [VARCHAR] - [Kolkata]
2023-02-18 14:55:44.281 TRACE 1 --- [nio-8080-exec-3] o.h.type.descriptor.sql.BasicBinder : binding parameter [3] as [VARCHAR] - [majid.abdul@outlook.c
om]
2023-02-18 14:55:44.281 TRACE 1 --- [nio-8080-exec-3] o.h.type.descriptor.sql.BasicBinder : binding parameter [4] as [VARCHAR] - [Abdul majid]
2023-02-18 14:55:44.282 TRACE 1 --- [nio-8080-exec-3] o.h.type.descriptor.sql.BasicBinder : binding parameter [5] as [VARCHAR] - [9139201583]
2023-02-18 14:55:44.282 TRACE 1 --- [nio-8080-exec-3] o.h.type.descriptor.sql.BasicBinder : binding parameter [6] as [VARCHAR] - [Active]
2023-02-18 14:55:44.282 TRACE 1 --- [nio-8080-exec-3] o.h.type.descriptor.sql.BasicBinder : binding parameter [7] as [BIGINT] - [27862162]
Hibernate:
```