

# E-Commerce Microservices setup Using GRADLE

```
Activities Workstation Master Worker1 Worker2
master@master-vm: ~/ecommerce-microservices/k8s

BUILD SUCCESSFUL in 3m 14s
8 actionable tasks: 7 executed, 1 up-to-date
master@master-vm:~/ecommerce-microservices/payment-service$ cd ..
master@master-vm:~/ecommerce-microservices$ ls
build      k8s      payment-service  settings.gradle
docker-compose.yml  microservices.docx  product-service  user-service
error.txt  order-service  README.md

master@master-vm:~/ecommerce-microservices$ cd product-service/
master@master-vm:~/ecommerce-microservices/product-service$ gradle clean build
OpenJDK 64-Bit Server VM warning: Sharing is only supported for boot loader classes because bootstrap classpath has been appended
2025-03-22T12:56:01.863+05:30 INFO 16028 --- [onShutdownHook] j.LocalContainerEntityManagerFactoryBean : Closing JPA EntityManager
Factory for persistence unit 'default'
2025-03-22T12:56:01.868+05:30 INFO 16028 --- [onShutdownHook] con.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown i
nitted...
2025-03-22T12:56:01.879+05:30 INFO 16028 --- [onShutdownHook] con.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown c
ompleted.

BUILD SUCCESSFUL in 41s
9 actionable tasks: 8 executed, 1 up-to-date
master@master-vm:~/ecommerce-microservices/product-service$ cd ..
master@master-vm:~/ecommerce-microservices$ cd user-service/
master@master-vm:~/ecommerce-microservices/user-service$ gradle clean build
Path for java installation '/usr/lib/jvm/openjdk-21' (Common Linux Locations) does not contain a java executable
OpenJDK 64-Bit Server VM warning: Sharing is only supported for boot loader classes because bootstrap classpath has been appended
2025-03-22T12:59:13.415+05:30 INFO 18389 --- [onShutdownHook] j.LocalContainerEntityManagerFactoryBean : Closing JPA EntityManager
Factory for persistence unit 'default'
2025-03-22T12:59:13.422+05:30 INFO 18389 --- [onShutdownHook] con.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown i
nitted...
2025-03-22T12:59:13.430+05:30 INFO 18389 --- [onShutdownHook] con.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown c
ompleted.

BUILD SUCCESSFUL in 30s
9 actionable tasks: 8 executed, 1 up-to-date
master@master-vm:~/ecommerce-microservices/user-service$ cd ..
master@master-vm:~/ecommerce-microservices$ ls
build      k8s      payment-service  settings.gradle
docker-compose.yml  microservices.docx  product-service  user-service
error.txt  order-service  README.md
```

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failed to solve: failed to compute cache key: failed to calculate checksum of ref 3e00ad75-fbb9-42fb-a153-a6c5fd327377::id1zudb0vbyz
8e5hvyzysow9g: failed to walk /var/lib/docker/tmp/buildkit-mount3825473971/build/libfs: lstat /var/lib/docker/tmp/buildkit-mount38254
73971/build/libfs: no such file or directory
master@master-vm:~/ecommerce-microservices/product-service$ cd product-service/
master@master-vm:~/ecommerce-microservices/product-service$ gradle clean build
OpenJDK 64-Bit Server VM warning: Sharing is only supported for boot loader classes because bootstrap classpath has been appended
2025-03-22T13:05:00.136+05:30 INFO 20851 --- [onShutdownHook] j.LocalContainerEntityManagerFactoryBean : Closing JPA EntityManager
Factory for persistence unit 'default'
2025-03-22T13:05:00.143+05:30 INFO 20851 --- [onShutdownHook] con.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown i
nitted...
2025-03-22T13:05:00.198+05:30 INFO 20851 --- [onShutdownHook] con.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown c
ompleted.

BUILD SUCCESSFUL in 26s
9 actionable tasks: 9 executed
master@master-vm:~/ecommerce-microservices/product-service$ gradle clean build -x test

BUILD SUCCESSFUL in 4s
6 actionable tasks: 6 executed
master@master-vm:~/ecommerce-microservices/product-service$ cd ..
master@master-vm:~/ecommerce-microservices$ ls
build      k8s      payment-service  settings.gradle
docker-compose.yml  microservices.docx  product-service  user-service
error.txt  order-service  README.md

master@master-vm:~/ecommerce-microservices$ cd payment-service/
master@master-vm:~/ecommerce-microservices/payment-service$ gradle clean build
OpenJDK 64-Bit Server VM warning: Sharing is only supported for boot loader classes because bootstrap classpath has been appended
2025-03-22T13:06:02.908+05:30 INFO 21389 --- [ntainer#0-0-C-1] org.apache.kafka.clients.NetworkClient : [Consumer clientId=consum
er-payment-group-1, groupId=payment-group] Node 1 disconnected.
2025-03-22T13:06:02.918+05:30 INFO 21389 --- [ntainer#0-0-C-1] org.apache.kafka.clients.NetworkClient : [Consumer clientId=consum
er-payment-group-1, groupId=payment-group] Cancelled in-flight METADATA request with correlation id 11 due to node 1 being disconnect
ed (elapsed time since creation: 4ms, elapsed time since send: 4ms, throttle time: 0ms, request timeout: 30000ms)
2025-03-22T13:06:02.954+05:30 INFO 21389 --- [ntainer#0-0-C-1] org.apache.kafka.clients.NetworkClient : [Consumer clientId=consum
```

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Activities Workstation Master Worker1 Worker2
master@master-vm: ~/ecommerce-microservices/k8s

topped
BUILD SUCCESSFUL in 30s
8 actionable tasks: 8 executed
master@master-vm:~/ecommerce-microservices/payment-service$ gradle clean build -x test

BUILD SUCCESSFUL in 3s
6 actionable tasks: 6 executed
master@master-vm:~/ecommerce-microservices/payment-service$ cd ..
master@master-vm:~/ecommerce-microservices$ cd user-service/
master@master-vm:~/ecommerce-microservices/user-service$ gradle clean build
Path for java installation '/usr/lib/jvm/openjdk-21' (Common Linux Locations) does not contain a java executable
OpenJDK 64-Bit Server VM warning: Sharing is only supported for boot loader classes because bootstrap classpath has been appended
2025-03-22T13:06:49.202+05:30 INFO 22471 --- [onShutdownHook] j.LocalContainerEntityManagerFactoryBean : Closing JPA EntityManager
Factory for persistence unit 'default'
2025-03-22T13:06:49.206+05:30 INFO 22471 --- [onShutdownHook] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown i
nitiated...
2025-03-22T13:06:49.210+05:30 INFO 22471 --- [onShutdownHook] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Shutdown c
ompleted.

BUILD SUCCESSFUL in 15s
9 actionable tasks: 9 executed
master@master-vm:~/ecommerce-microservices/user-service$ gradle clean build -x test

Path for java installation '/usr/lib/jvm/openjdk-21' (Common Linux Locations) does not contain a java executable

BUILD SUCCESSFUL in 4s
6 actionable tasks: 6 executed
master@master-vm:~/ecommerce-microservices/user-service$ cd ..
master@master-vm:~/ecommerce-microservices$ docker-compose up -d --build
WARN[0000] /home/master/ecommerce-microservices/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please
remove it to avoid potential confusion
Compose can now delegate builds to bake for better performance.
To do so, set COMPOSE_BAKE=true.
[+] Building 1.7s (12/15) docker:default
```

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Activities Workstation Master Worker1 Worker2
master@master-vm: ~/ecommerce-microservices/k8s

master@master-vm:~/ecommerce-microservices$ ls build/libs/
ls: cannot access 'build/libs/': No such file or directory
master@master-vm:~/ecommerce-microservices$ cd order-service/
master@master-vm:~/ecommerce-microservices/order-service$ LS
LS: command not found
master@master-vm:~/ecommerce-microservices/order-service$ ls
build.gradle Dockerfile gradle gradlew gradlew.bat src
master@master-vm:~/ecommerce-microservices/order-service$ ls -la
.. build.gradle .gitattributes gradle gradlew.bat
.. Dockerfile .gitignore gradlew src
master@master-vm:~/ecommerce-microservices/order-service$ gradle clean build

BUILD SUCCESSFUL in 10s
7 actionable tasks: 6 executed, 1 up-to-date
master@master-vm:~/ecommerce-microservices/order-service$ docker-compose up -d --build

WARN[0000] /home/master/ecommerce-microservices/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please
remove it to avoid potential confusion
Compose can now delegate builds to bake for better performance.
To do so, set COMPOSE_BAKE=true.
[+] Building 32.0s (11/16) docker:default
=> => transferring context: 2B 0.0s
=> [product-service internal] load .dockerignore 0.0s
=> => transferring context: 2B 0.0s
=> [order-service internal] load .dockerignore 0.0s
=> => transferring context: 2B 0.0s
=> [order-service 1/3] FROM docker.io/library/openjdk:21-jdk-slim@sha25 29.5s
[+] Building 32.1s (11/16) docker:default
=> [order-service 1/3] FROM docker.io/library/openjdk:21-jdk-slim@sha25 29.6s
=> => sha256:a40f4cb737303e18b873b859fa7b779610ae7a01e2d 4.77kB / 4.77kB 0.0s
=> => sha256:a803e7c4b030119420574a882a52b6431e160fceb 29.12MB / 29.12MB 4.1s
=> => sha256:b4972576c83dad66aa1e4f6d88e74f9e551e721a7cb 4.01MB / 4.01MB 1.9s
=> => sha256:af00ecd8441e394f9ec3832393ff933c52e165 204.31MB / 204.31MB 15.9s
=> => sha256:7072053847a8a05d7f3a14ebc778a90b38c50ce7e8f1993 547B / 547B 0.0s
[+] Building 44.3s (28/28) FINISHED docker:default
=> [order-service internal] load build definition from Dockerfile 0.0s
```



```
Activities Workstation Master Worker1 Worker2
master@master-vm: ~/ecommerce-microservices/k8s

Container order-service Running 0.0s
Container payment-service Running 0.0s
Container user-service Running 0.0s
master@master-vm: ~/ecommerce-microservices/order-service$ docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS
d35967e9a3db bhargavakulla/payment-service "java -jar app.jar" 55 seconds ago Up 36 seconds 8083/tcp, 0.0.0.0
8a92344505f4 bhargavakulla/order-service "java -jar app.jar" 55 seconds ago Up 39 seconds 8084/tcp, 0.0.0.0
1c9786113c20 bhargavakulla/product-service "java -jar app.jar" 56 seconds ago Up 45 seconds 8082/tcp, 0.0.0.0
8082->8080/tcp, ::8082->8080/tcp
494a2b3684e7 bhargavakulla/user-service "java -jar app.jar" 56 seconds ago Up 45 seconds 8081/tcp, 0.0.0.0
8081->8080/tcp, ::8081->8080/tcp
de3d3957f84d confluentinc/cp-kafka "/etc/confluent/dock..." 56 seconds ago Up 45 seconds 0.0.0.0:9092->909
2/tcp, ::9092->9092/tcp
0af7a45528c6 postgres "docker-entrypoint.s..." 56 seconds ago Up 52 seconds (healthy) 0.0.0.0:5432->543
2/tcp, ::5432->5432/tcp
f0605194f877 confluentinc/cp-zookeeper "/etc/confluent/dock..." 56 seconds ago Up 51 seconds 2888/tcp, 0.0.0.0
:2181->2181/tcp, ::2181->2181/tcp, 3888/tcp
zookeeper
master@master-vm: ~/ecommerce-microservices/order-service$ docker logs order-service

:: Spring Boot :: (v3.4.3)

2025-03-22T09:16:32.926Z INFO 1 --- [ main] com.example.order.OrderApplication : Starting OrderApplication using Ja
va 21 with PID 1 (/app/app.jar started by root in /app)
2025-03-22T09:16:33.131Z INFO 1 --- [ main] com.example.order.OrderApplication : No active profile set, falling bac
k to 1 default profile: "default"
master@master-vm: ~/ecommerce-microservices/order-service$ docker-compose down
```

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Activities Workstation Master Worker1 Worker2
master@master-vm: ~/ecommerce-microservices/k8s

va 21 with PID 1 (/app/app.jar started by root in /app)
2025-03-22T09:16:33.131Z INFO 1 --- [ main] com.example.order.OrderApplication : No active profile set, falling bac
k to 1 default profile: "default"
master@master-vm: ~/ecommerce-microservices/order-service$ docker-compose down
WARN[0000] /home/master/ecommerce-microservices/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please
remove it to avoid potential confusion
[+] Running 8/8
Container payment-service Removed 12.4s
Container user-service Removed 11.4s
Container product-service Removed 12.1s
Container order-service Removed 9.4s
Container ecommerce-microservices-postgres-1 Removed 0.6s
Container kafka Removed 1.8s
Container zookeeper Removed 0.8s
Network ecommerce-microservices_default Removed 0.3s
master@master-vm: ~/ecommerce-microservices/order-service$ docker-compose up -d
WARN[0000] /home/master/ecommerce-microservices/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please
remove it to avoid potential confusion
[+] Running 8/8
Network ecommerce-microservices_default Created 0.2s
Container zookeeper Started 3.9s
Container ecommerce-microservices-postgres-1 Started 3.7s
Container product-service Started 8.5s
Container user-service Started 9.2s
Container kafka Started 9.2s
Container order-service Started 12.5s
Container payment-service Started 14.8s
master@master-vm: ~/ecommerce-microservices/order-service$ docker-compose up -d --build
WARN[0000] /home/master/ecommerce-microservices/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please
remove it to avoid potential confusion
Compose can now delegate builds to bake for better performance.
To do so, set COMPOSE_BAKE=true.
[+] Building 4.5s (27/27) FINISHED docker:default
=> [order-service internal] load build definition from Dockerfile 0.1s
=> => transferring dockerfile: 334B 0.0s
=> [payment-service internal] load metadata for docker.io/library/postgres 1.8s
```

```
Activities Workstation Master Worker1 Worker2
master@master-vm: ~/ecommerce-microservices/k8s
master@master-vm:~/ecommerce-microservices/order-service$ docker exec -it ecommerce-microservices-postgres-1 psql -U postgres
psql (17.4 (Debian 17.4-1.pgdg120+2))
Type "help" for help.

postgres=# \l
postgres=# CREATE DATABASE ecommerce;
CREATE DATABASE
postgres=# \dt
      List of relations
Schema | Name  | Type  | Owner
-----+-----+-----+-----
public | products | table | postgres
public | users   | table | postgres
(2 rows)

postgres=# exit
master@master-vm:~/ecommerce-microservices/order-service$ cd ..
master@master-vm:~/ecommerce-microservices$ ls
build      error.txt  microservices.docx  payment-service  README.md  user-service
docker-compose.yml  k8s        order-service       product-service  settings.gradle

master@master-vm:~/ecommerce-microservices$ docker ps
CONTAINER ID   IMAGE                                COMMAND                  CREATED        STATUS        PORTS
d7ddf36260c   bhargavakulla/payment-service       "java -jar app.jar"     About an hour ago   Up About an hour   8083/tcp, 0
0.0.0.0:8083->8080/tcp, :::8083->8080/tcp
77b740440522   confluentinc/cp-kafka               "/etc/confluent/dock..." About an hour ago   Up About an hour   0.0.0.0:909
2->9092/tcp, :::9092->9092/tcp
6781574b2035   bhargavakulla/user-service          "java -jar app.jar"     About an hour ago   Up About an hour   8081/tcp, 0
0.0.0.0:8081->8080/tcp, :::8081->8080/tcp
df5636338547   bhargavakulla/product-service        "java -jar app.jar"     About an hour ago   Up About an hour   8082/tcp, 0
0.0.0.0:8082->8080/tcp, :::8082->8080/tcp
03b608ad2bc3   confluentinc/cp-zookeeper           "/etc/confluent/dock..." About an hour ago   Up About an hour   2888/tcp, 0
0.0.0.0:2181->2181/tcp, :::2181->2181/tcp, 3888/tcp
1da762e07fc9   postgres                             "docker-entrypoint.s..." About an hour ago   Up About an hour (healthy) 0.0.0.0:543
2->5432/tcp, :::5432->5432/tcp
master@master-vm:~/ecommerce-microservices$ docker-compose build
```

```
Activities Workstation Master Worker1 Worker2
master@master-vm: ~/ecommerce-microservices/k8s
✓ Pushing bhargavakulla/order-service: aa799bd56231 Layer already exists 8.3s
✓ Pushing bhargavakulla/order-service: 659a8c4ba776 Layer already exists 8.3s
✓ Pushing bhargavakulla/order-service: 0ac7ecf8a41c Layer already exists 8.2s
✓ Pushing bhargavakulla/order-service: d310e774110a Layer already exists 8.2s
master@master-vm:~/ecommerce-microservices$ ls
build      error.txt  microservices.docx  payment-service  README.md  user-service
docker-compose.yml  k8s        order-service       product-service  settings.gradle

master@master-vm:~/ecommerce-microservices/k8s$ cd k8s/
master@master-vm:~/ecommerce-microservices/k8s$ ls
order-service-deployment.yaml  payment-service-deployment.yaml  product-service-deployment.yaml  user-service-deployment.yaml
order-service-service.yaml      payment-service-service.yaml      product-service-service.yaml      user-service-service.yaml

master@master-vm:~/ecommerce-microservices/k8s$ nano order-service-deployment.yaml
master@master-vm:~/ecommerce-microservices/k8s$ nano payment-service-deployment.yaml
master@master-vm:~/ecommerce-microservices/k8s$ nano product-service-deployment.yaml
master@master-vm:~/ecommerce-microservices/k8s$ nano user-service-deployment.yaml
master@master-vm:~/ecommerce-microservices/k8s$ nano order-service-service.yaml
master@master-vm:~/ecommerce-microservices/k8s$ kubectl apply -f .
deployment.apps/order-service created
service/order-service created
deployment.apps/payment-service created
service/payment-service created
deployment.apps/product-service created
service/product-service created
deployment.apps/user-service created
service/user-service created
master@master-vm:~/ecommerce-microservices/k8s$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
flask-app-694d959f47-65blr          1/1     Running   0           3h17m
flask-app-694d959f47-7sqrg          1/1     Running   0           3h17m
flask-app-694d959f47-bvk8f          1/1     Terminating   0           4d5h
flask-app-694d959f47-fs2c6          1/1     Terminating   0           4d5h
flask-app-694d959f47-flccq          1/1     Running        1 (3h2m ago)  4d5h
flask-app-694d959f47-rwdt5          1/1     Running        1 (3h2m ago)  4d5h
mysql-66d468f74c-6ggzz             1/1     Terminating   0           4d5h
mysql-66d468f74c-bws29             1/1     Running        0           3h17m
nginx-78b5h78h99-7nwnk             1/1     Terminating   0           4d5h
```



```
master@master-vm: ~/ecommerce-microservices/k8s$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
flask-app-694d959f47-6sblr          1/1     Running   0           3h18m
flask-app-694d959f47-7sqrg          1/1     Running   0           3h18m
flask-app-694d959f47-bvk8f          1/1     Terminating 0           4d5h
flask-app-694d959f47-fs2c6          1/1     Terminating 0           4d5h
flask-app-694d959f47-rlccq          1/1     Running   1 (3h3m ago) 4d5h
flask-app-694d959f47-rwdt5          1/1     Running   1 (3h3m ago) 4d5h
mysql-66d468f74c-6ggzz             1/1     Terminating 0           4d5h
mysql-66d468f74c-bws29             1/1     Running   0           3h18m
nginx-78b5b78b99-7nwgk             1/1     Terminating 0           4d5h
nginx-78b5b78b99-shswf             1/1     Running   0           3h18m
order-service-646676ccbf-m9cx9      0/1     Running   0           75s
payment-service-5bf96544b8-15v2m    0/1     Running   0           75s
product-service-6f9459ff7-4svvr     0/1     Running   0           75s
user-service-67fd4d9c47-5p4q9       1/1     Running   0           74s

master@master-vm: ~/ecommerce-microservices/k8s$ kubectl get all -o wide
NAME                                READY   STATUS    RESTARTS   AGE   IP              NODE              NOMINATED NODE   RE
ADINESS GATES
pod/flask-app-694d959f47-6sblr      1/1     Running   0           3h18m  172.16.94.236   worker1-vn        <none>           <n
one>
pod/flask-app-694d959f47-7sqrg      1/1     Running   0           3h18m  172.16.94.238   worker1-vn        <none>           <n
one>
pod/flask-app-694d959f47-bvk8f      1/1     Terminating 0           4d5h   172.16.114.92   worker2-vn        <none>           <n
one>
pod/flask-app-694d959f47-fs2c6      1/1     Terminating 0           4d5h   172.16.114.91   worker2-vn        <none>           <n
one>
pod/flask-app-694d959f47-rlccq      1/1     Running   1 (3h3m ago) 4d5h   172.16.94.233   worker1-vn        <none>           <n
one>
pod/flask-app-694d959f47-rwdt5      1/1     Running   1 (3h3m ago) 4d5h   172.16.94.229   worker1-vn        <none>           <n
one>
pod/mysql-66d468f74c-6ggzz         1/1     Terminating 0           4d5h   172.16.114.93   worker2-vn        <none>           <n
one>
```

```
master@master-vm: ~/ecommerce-microservices/order-service$ psql
psql (13.10)
Type "help" for help.

order-service=# \d
List of databases
-+-----+
Name | Owner  | Encoding | Locale Provider | Collate | Ctype | Locale | ICU Rules | Access privileges
-+-----+
postgres | postgres | UTF8     | libc             | en_US.utf8 | en_US.utf8 |          |           | =c/postgres
template0 | postgres | UTF8     | libc             | en_US.utf8 | en_US.utf8 |          |           | postgres=Ctc/postgres
template1 | postgres | UTF8     | libc             | en_US.utf8 | en_US.utf8 |          |           | =c/postgres
          |          |          |                  |           |           |          |           | postgres=Ctc/postgres
(3 rows)
```

## OUTPUT

