Tools used:

1. Minikube Version: v1.4.0
2. Kubectl Client/Server Version: 1.16.2/1.16.0
3. Docker Client/Server Version: 19.03.2/18.09.9

I had used minikube cluster and docker desktop for my local development.

Attachments:

- Two docker files for building images.
- One Deployment YAML for kubernetes deployment.
- README

Docker Images:

- I have created two separate docker files for both the apps.
- To build image use below command
    - : docker build -t name:tag <path to directory which has both binary and dockerfile>

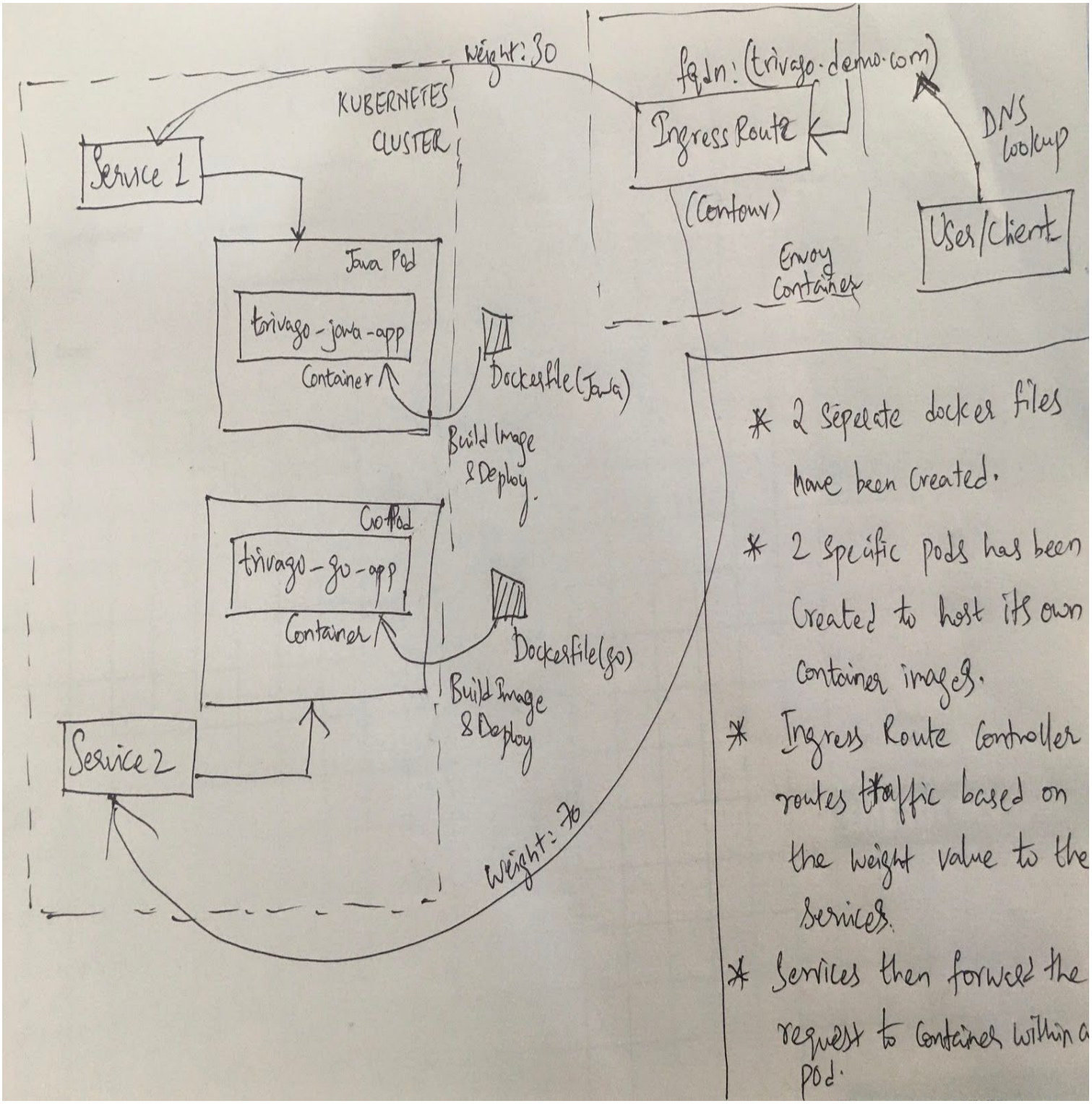
Deployment Steps:

- kubectl apply -f https://projectcontour.io/quickstart/contour.yaml
- kubectl apply -f deployment_new.yml
- I have commented out image placeholders as I did not upload my images to registry, but have set local docker desktop by using below commands:
    - eval $(minikube docker-env)
    - kubectl run <app name> --image=<image name>
- Please replace the comments with valid registry URL's of images/set them manually like specified above.
- Also, please alter TLS and hostname if there are any network restrictions from your end.

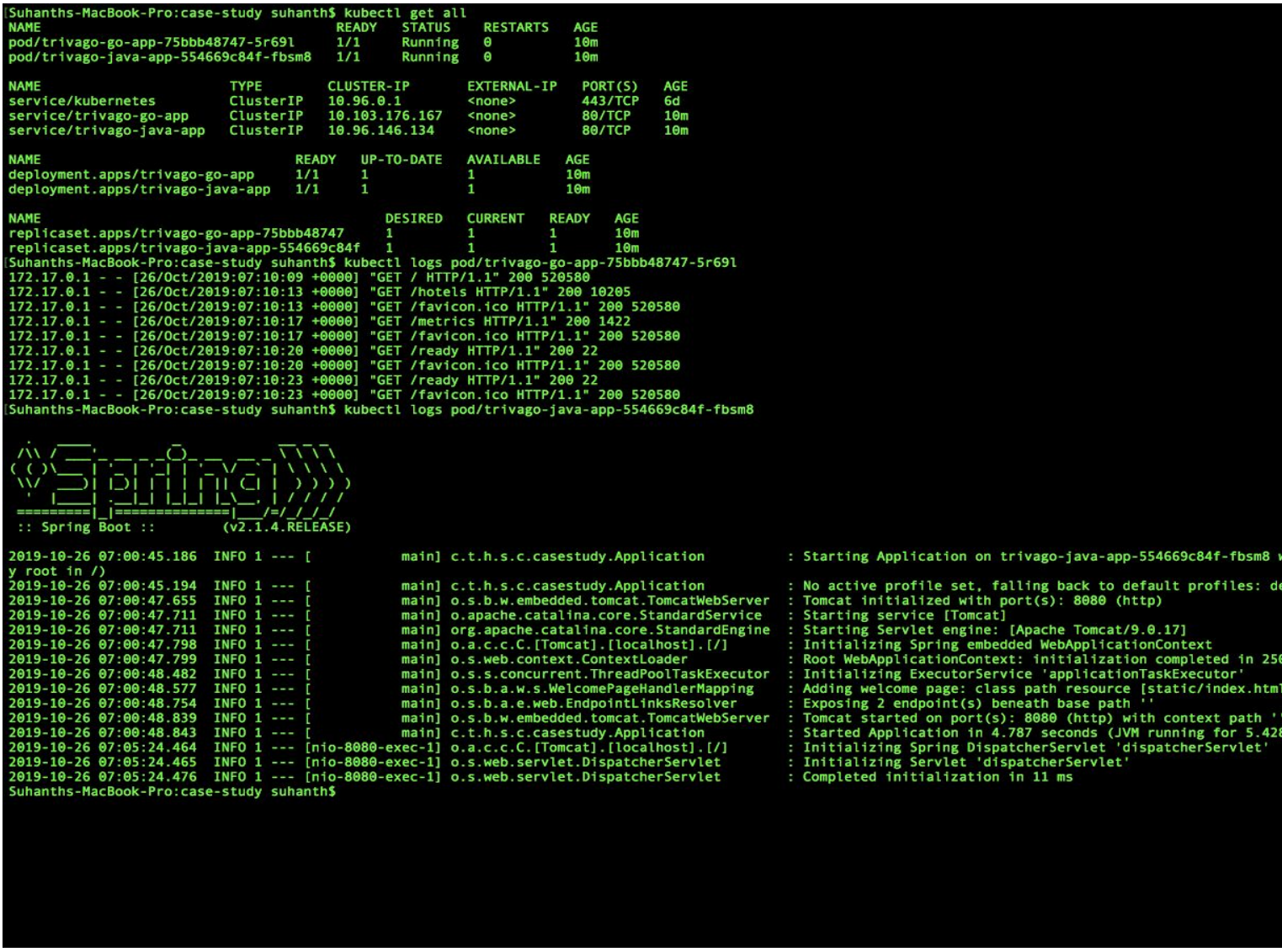
Design:

- Each application should be independent and hence separate docker images are built for each app.
- Both the applications/containers are running on 8080 and we cannot have them hosted on same pod as it is not required and the services are unrelated and hence separate pods have been chosen to host each container.
- Ingress controller from contour is used as a load balancer to route traffic based on the weights specified for each service.
- Please find below is the architecture diagram and few screens from my terminal when the deployment is in running status.

Architecture:



Terminal Screens:



```
Suhanths-MacBook-Pro:case-study suhanth$ kubectl get all
NAME                                    READY   STATUS    RESTARTS   AGE
pod/trivago-go-app-75bbb48747-5r69l     1/1     Running   0          10m
pod/trivago-java-app-554669c84f-fbsm8   1/1     Running   0          10m

NAME                       TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)   AGE
service/kubernetes         ClusterIP   10.96.0.1        <none>        443/TCP   6d
service/trivago-go-app     ClusterIP   10.103.176.167   <none>        80/TCP    10m
service/trivago-java-app   ClusterIP   10.96.146.134    <none>        80/TCP    10m

NAME                                READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/trivago-go-app      1/1     1            1           10m
deployment.apps/trivago-java-app    1/1     1            1           10m

NAME                                           DESIRED   CURRENT   READY   AGE
replicaset.apps/trivago-go-app-75bbb48747      1         1         1       10m
replicaset.apps/trivago-java-app-554669c84f    1         1         1       10m
Suhanths-MacBook-Pro:case-study suhanth$ kubectl logs pod/trivago-go-app-75bbb48747-5r69l
172.17.0.1 - - [26/Oct/2019:07:10:09 +0000] "GET / HTTP/1.1" 200 520580
172.17.0.1 - - [26/Oct/2019:07:10:13 +0000] "GET /hotels HTTP/1.1" 200 10205
172.17.0.1 - - [26/Oct/2019:07:10:13 +0000] "GET /favicon.ico HTTP/1.1" 200 520580
172.17.0.1 - - [26/Oct/2019:07:10:17 +0000] "GET /metrics HTTP/1.1" 200 1422
172.17.0.1 - - [26/Oct/2019:07:10:17 +0000] "GET /favicon.ico HTTP/1.1" 200 520580
172.17.0.1 - - [26/Oct/2019:07:10:20 +0000] "GET /ready HTTP/1.1" 200 22
172.17.0.1 - - [26/Oct/2019:07:10:20 +0000] "GET /favicon.ico HTTP/1.1" 200 520580
172.17.0.1 - - [26/Oct/2019:07:10:23 +0000] "GET /ready HTTP/1.1" 200 22
172.17.0.1 - - [26/Oct/2019:07:10:23 +0000] "GET /favicon.ico HTTP/1.1" 200 520580
Suhanths-MacBook-Pro:case-study suhanth$ kubectl logs pod/trivago-java-app-554669c84f-fbsm8

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 :: Spring Boot ::        (v2.1.4.RELEASE)

2019-10-26 07:00:45.186  INFO 1 --- [           main] c.t.h.s.c.casestudy.Application          : Starting Application on trivago-java-app-554669c84f-fbsm8 w
y root in /)
2019-10-26 07:00:45.194  INFO 1 --- [           main] c.t.h.s.c.casestudy.Application          : No active profile set, falling back to default profiles: de
2019-10-26 07:00:47.655  INFO 1 --- [           main] o.s.b.w.embedded.tomcat.TomcatWebServer  : Tomcat initialized with port(s): 8080 (http)
2019-10-26 07:00:47.711  INFO 1 --- [           main] o.apache.catalina.core.StandardService   : Starting service [Tomcat]
2019-10-26 07:00:47.711  INFO 1 --- [           main] org.apache.catalina.core.StandardEngine  : Starting Servlet engine: [Apache Tomcat/9.0.17]
2019-10-26 07:00:47.798  INFO 1 --- [           main] o.a.c.c.C.[Tomcat].[localhost].[/]       : Initializing Spring embedded WebApplicationContext
2019-10-26 07:00:47.799  INFO 1 --- [           main] o.s.web.context.ContextLoader            : Root WebApplicationContext: initialization completed in 256
2019-10-26 07:00:48.482  INFO 1 --- [           main] o.s.s.concurrent.ThreadPoolTaskExecutor  : Initializing ExecutorService 'applicationTaskExecutor'
2019-10-26 07:00:48.577  INFO 1 --- [           main] o.s.b.a.w.s.WelcomePageHandlerMapping    : Adding welcome page: class path resource [static/index.html
2019-10-26 07:00:48.754  INFO 1 --- [           main] o.s.b.a.e.web.EndpointLinksResolver      : Exposing 2 endpoint(s) beneath base path ''
2019-10-26 07:00:48.839  INFO 1 --- [           main] o.s.b.w.embedded.tomcat.TomcatWebServer  : Tomcat started on port(s): 8080 (http) with context path ''
2019-10-26 07:00:48.843  INFO 1 --- [           main] c.t.h.s.c.casestudy.Application          : Started Application in 4.787 seconds (JVM running for 5.428
2019-10-26 07:05:24.464  INFO 1 --- [nio-8080-exec-1] o.a.c.c.C.[Tomcat].[localhost].[/]       : Initializing Spring DispatcherServlet 'dispatcherServlet'
2019-10-26 07:05:24.465  INFO 1 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet        : Initializing Servlet 'dispatcherServlet'
2019-10-26 07:05:24.476  INFO 1 --- [nio-8080-exec-1] o.s.web.servlet.DispatcherServlet        : Completed initialization in 11 ms
Suhanths-MacBook-Pro:case-study suhanth$
```