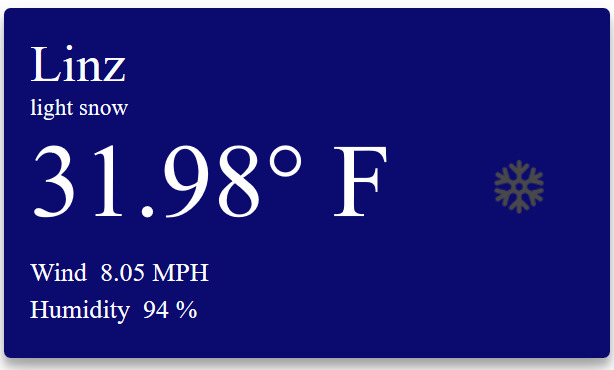
Tutorial CD with Keptn tested by Hey

This is a tutorial for setting up a continuous delivery with Keptn (<https://keptn.sh/>) for an example application that is tested by Hey (<https://github.com/rakyll/hey>) and monitored by Dynatrace (<https://www.dynatrace.com/>).

Keptn is a tool for an event-based control plane for continuous delivery and automated operations for cloud-native applications. Hey is a load generator for web applications. Dynatrace is used in this tutorial for production monitoring.

## Create and deploy an application

* Implement your own web application:
  + For this tutorial an angular weather-app was implemented, which displays the requested weather data from the open weather API (<https://openweathermap.org/api>) and displays the results.



* + Make sure that the application has a */health* endpoint which returns a 200 http status code for the liveness and readiness probe for the helm chart in section *onboard first microservice.*
* Create a Docker image for your application. For example to dockerize an angular app use the following Dockerfile:



* Push the created Docker image to your Dockerhub account with the following command:

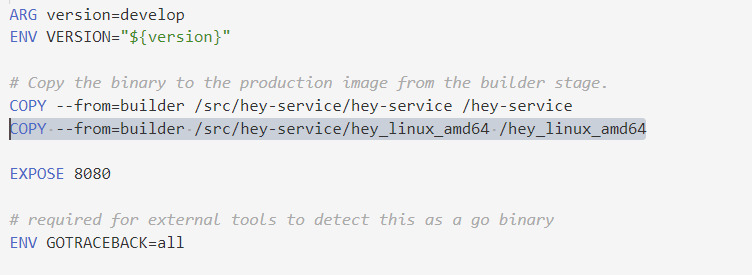
*docker push YOUR-ACCOUNT/YOUR-APPLICATION*

## Hey Service

* Create a Hey service for testing the response time of your application.
* Start off with the following go-template <https://github.com/keptn-sandbox/keptn-service-template-go> and execute the following steps:
  + Replace every occurrence of “keptn-service-template-go” with “hey-service”.
  + Replace every occurrence of (Docker) image names and tags from keptnsandbox/keptn-service-template-go to your Docker organization and image name (e.g., YOUR-ACCOUNT/hey-service).
  + Download the Linux version of Hey (<https://hey-release.s3.us-east-2.amazonaws.com/hey_linux_amd64>) and save it in the root directory of the Hey service for executing the Hey test.
  + Change the HandleDeploymentFinishedEvent function in the eventhandlers.go file to send 200 requests and test the availability of the application:

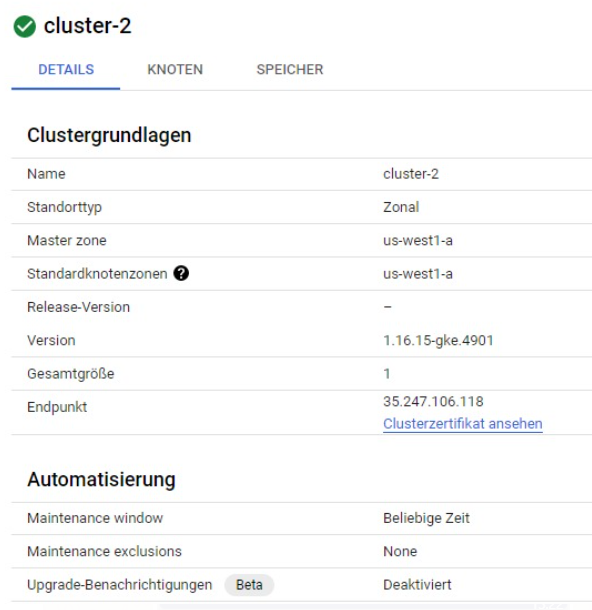


* Insert the highlighted line into the Dockerfile to include the Hey binary:



## Setup Google Cluster:

* At first create a big enough cluster in the Google Kubernetes Engine with the following settings:
  + Nodes: 1
  + Image Type: ubuntu
  + VM: 8v 32GB



* Create a connection with the cluster in the cloudshell.

## Setup Keptn:

* For easier execution use the Linux subsystem for Windows or Linux.
* For the following steps follow the instructions in <https://tutorials.keptn.sh/tutorials/keptn-upscaling-dynatrace-07/index.html#2>
  + Download and install Istio (Step 3).

Istio creates the connection between your Google Cluster and Keptn.

* + Download and install Keptn (Step 4-5).
  + Configure Keptn and Istio (Step 6).

Istio will be configured for traffic routing and as an ingress to the Google cluster.

* + Connect your Keptn CLI to the Keptn installation (Step 7)
* Setup Dynatrace for monitoring the application:
  + Create an account at <https://www.dynatrace.com>.
  + Execute the steps 9-11 in <https://tutorials.keptn.sh/tutorials/keptn-upscaling-dynatrace-07/index.html#8>

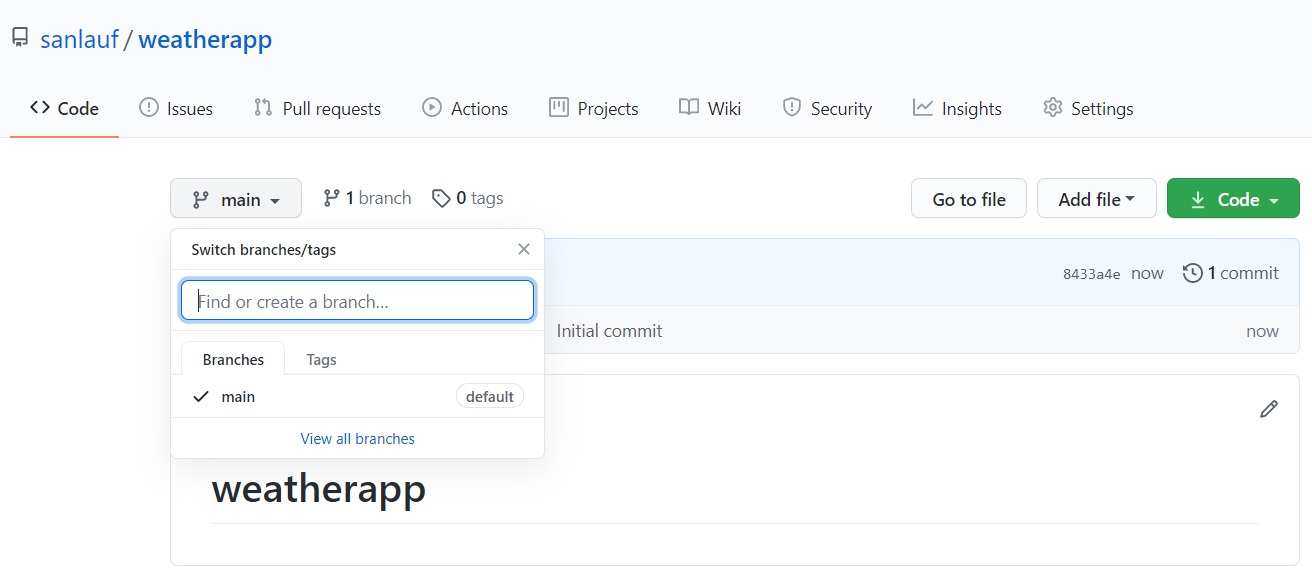
## Deploy and Test the Application

* At first deploy the Hey service with the following commands executed in the Hey service directory:

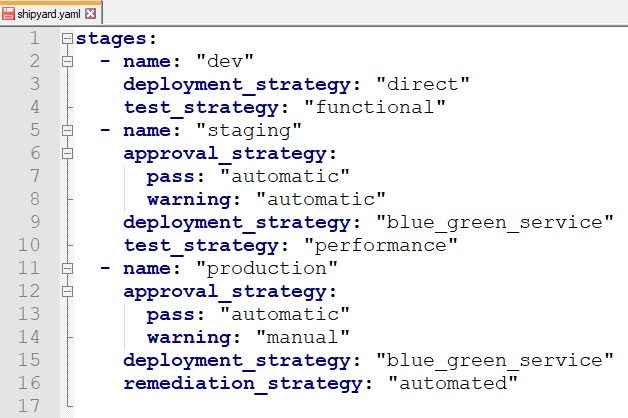
*kubectl apply -f deploy/service.yaml*

*kubectl -n keptn set image deployment/hey-service hey-service=YOUR-DOCKER-ACCOUNT/hey-service:$VERSION –record*

* Create a Git repository.



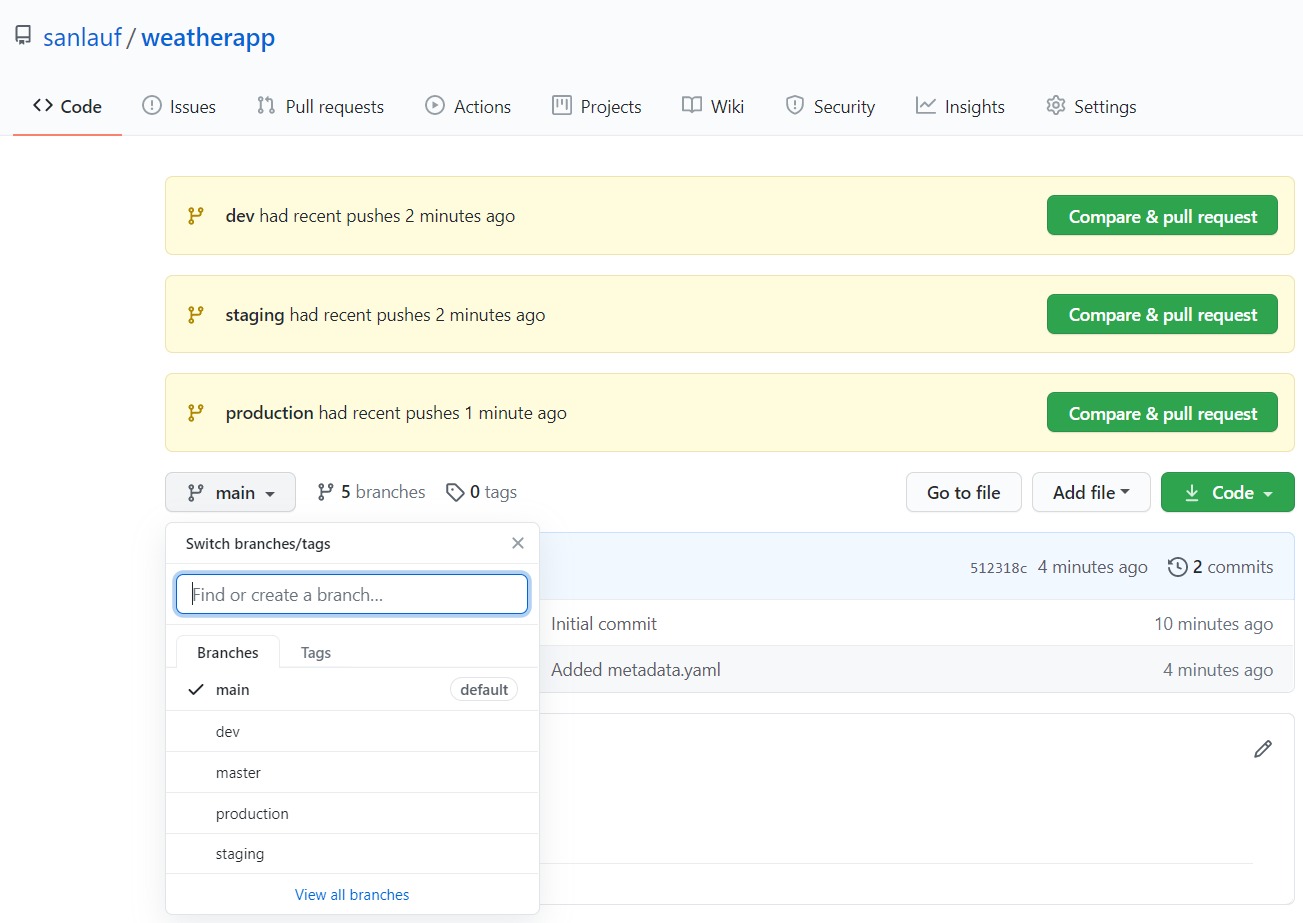
* Create a shipyard.yaml file for defining the stages and their test/deployment strategies. In our example we have three stages. For the dev stage direct deployment is used and for staging and production the blue\_green deployment strategy.

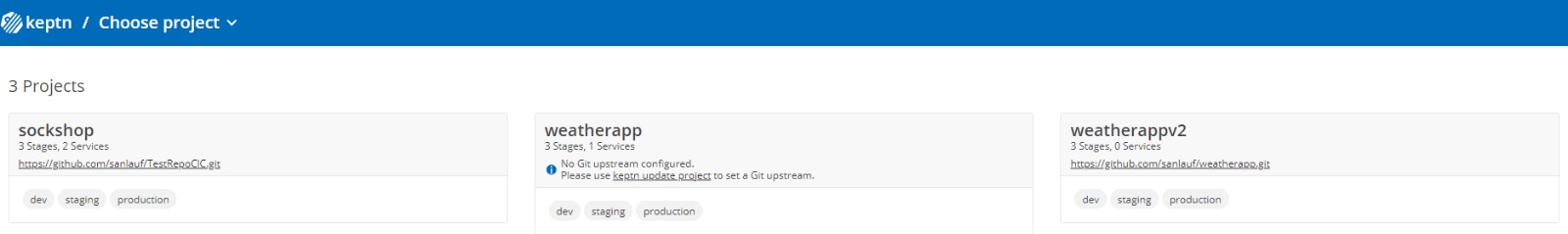


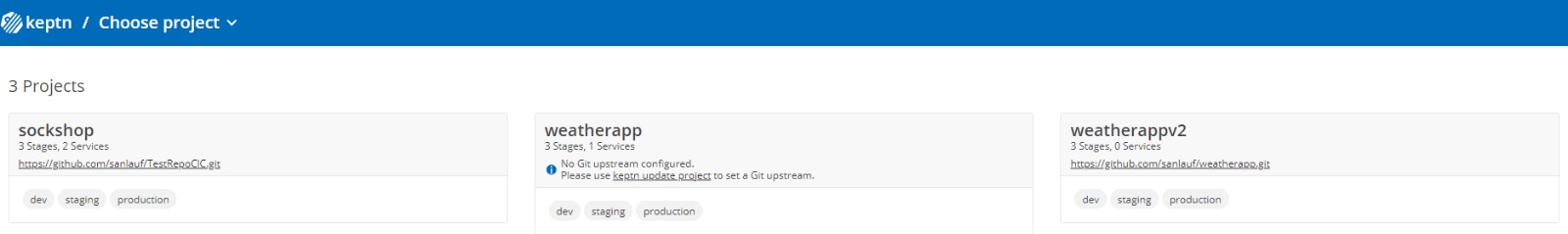
* Create a Keptn project with the following command:

*keptn create project YOUR-PROJECT --shipyard=./shipyard.yaml --git-user=YOUR-USER --git-token=YOUR-GITTOKEN --git-remote-url=YOUR-REPOSITORY-URL*

In the following screenshots the created stages are shown on Github and Keptn:



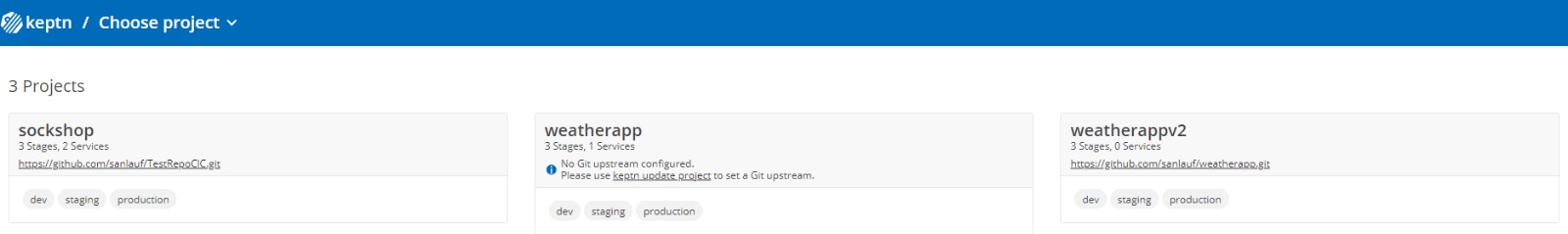


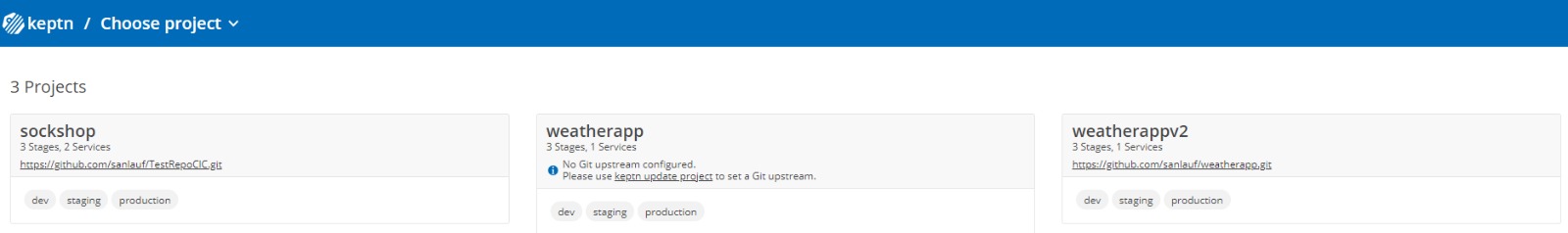


* To onboard your first microservice download a template helm chart from <https://github.com/keptn/examples/tree/master/onboarding-carts/carts> and adapt it for your service. Then execute the following command:

*keptn onboard service YOUR-SERVICE --project=YOUR-PROEJCT --chart=./YOUR-SERVICE*

You can now detect the change of the number of services:

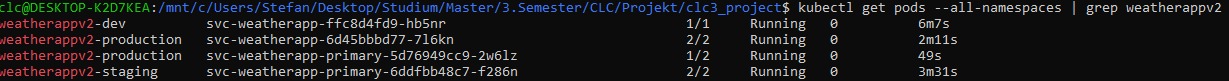




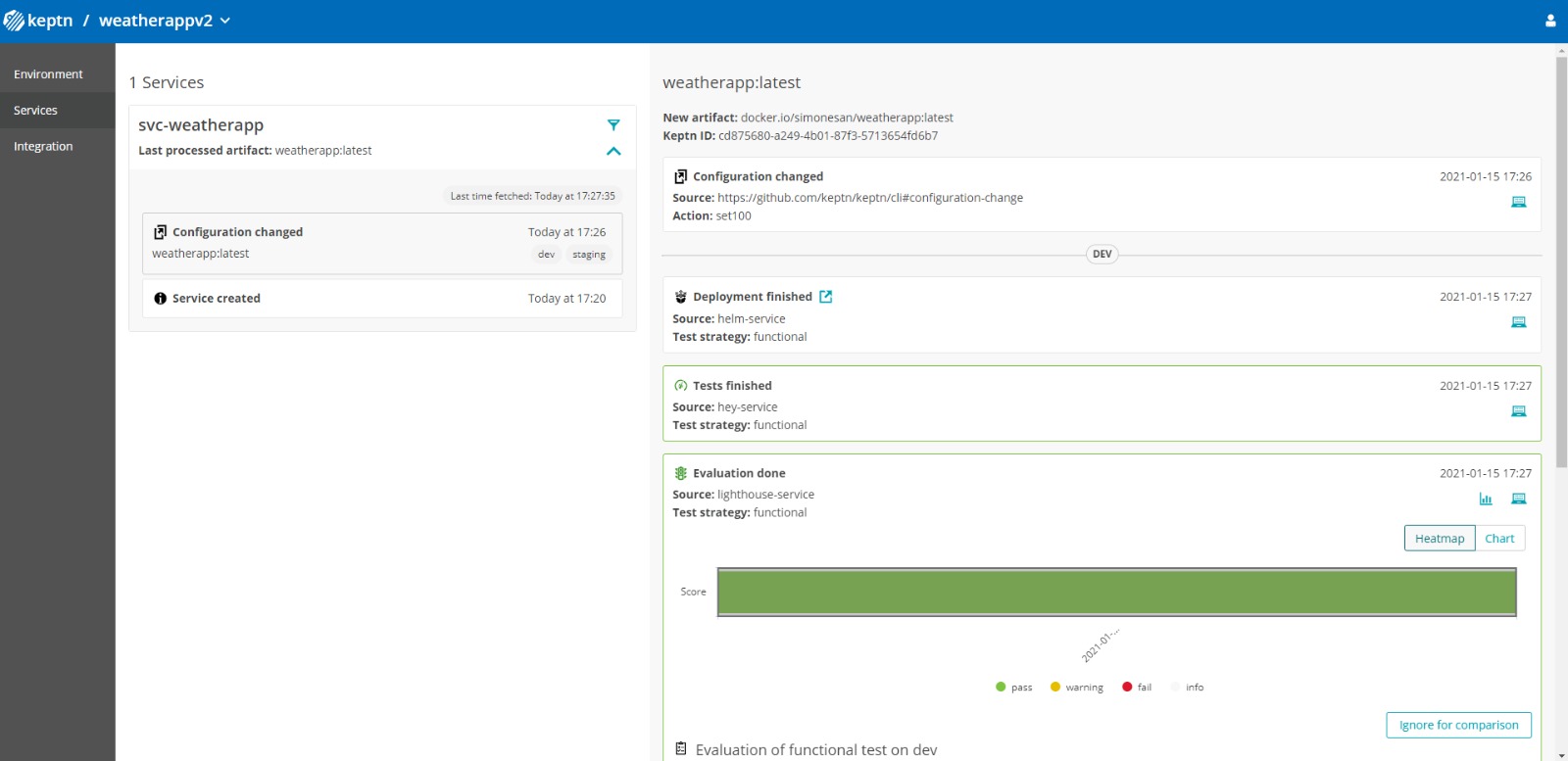
* To deploy your first build or a new version with Keptn send a new artefact of your project with the following command:

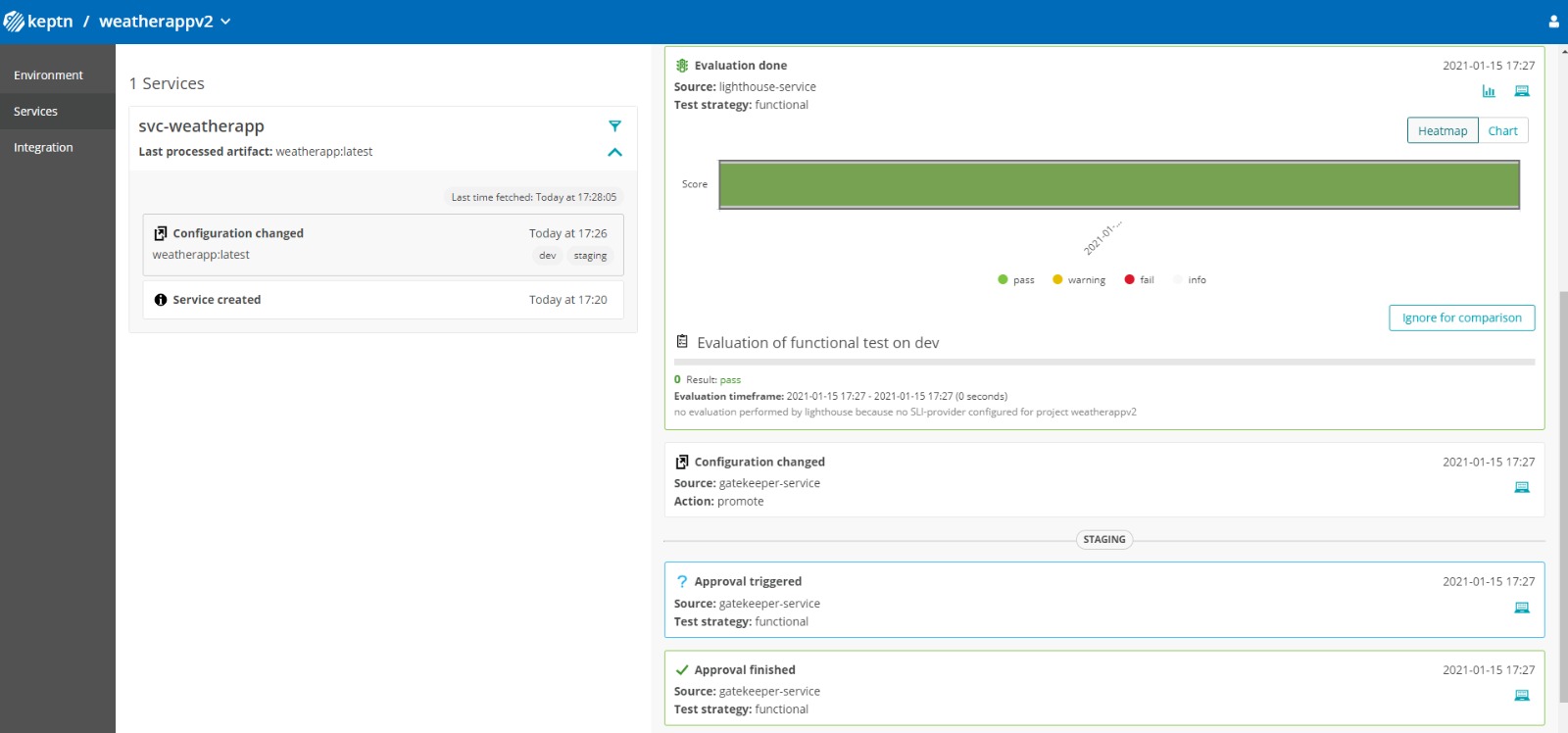
*keptn send event new-artifact --project=YOUR-PROJECT --service=YOUR-SERVICE --image=YOUR-DOCKERIMAGE-URL*

Verify the pods that should have been created for the service execute the following command:



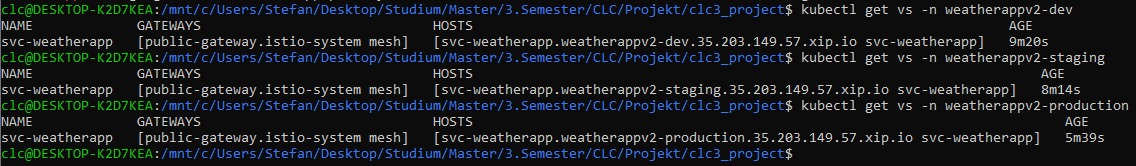
In the following screenshots you can notice the triggered events:





* To view your application execute the following command to get the URLs of your application in the different stages:

*kubectl get vs –n YOUR-PROJECT-STAGE*





* To connect your project with Dynatrace execute the following commands:

*kubectl apply -f https://raw.githubusercontent.com/keptn-contrib/dynatrace-sli-service/0.7.1/deploy/service.yaml -n keptn*

*keptn add-resource --project=YOUR-PROJECT --resource=sli-config-dynatrace.yaml --resourceUri=dynatrace/sli.yaml*

*keptn configure monitoring dynatrace --project=YOUR-PROJECT*

On your Dynatrace Dashboard you can now monitor your application.

