



Politecnico
di Bari

CONTROL OF NETWORK SYSTEMS

Sviluppo app web di Video streaming:

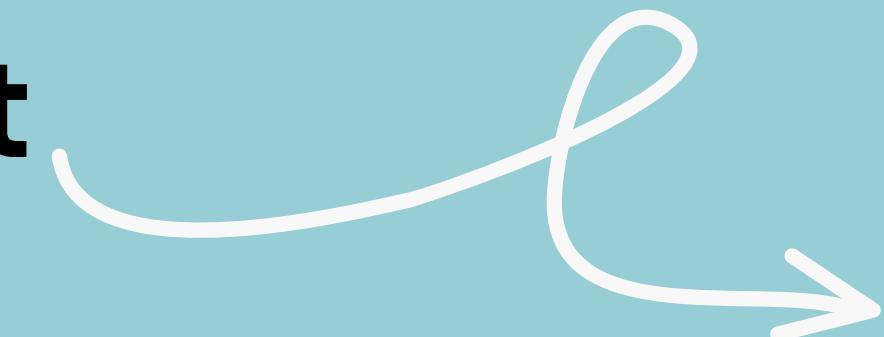
LiveLink

Prof. Saverio Mascolo
Dott. Marco Croce

GRUPPO:
Cristiano Marzano
Nicolò Silvestri

LiveLink

**LiveLink è un'applicazione web
che permette agli utenti di
effettuare
videochiamate in tempo reale
offrendo anche una sezione
relativa alla chat**





WELCOME TO LiveLink

Enter your username to join the call !

Submit



INVITE NEW PEOPLE



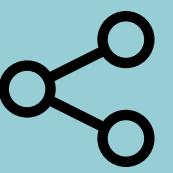
LiveLink

Send this link to people you want to meet with

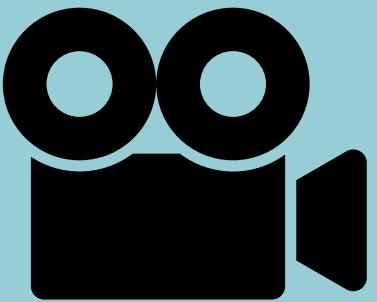
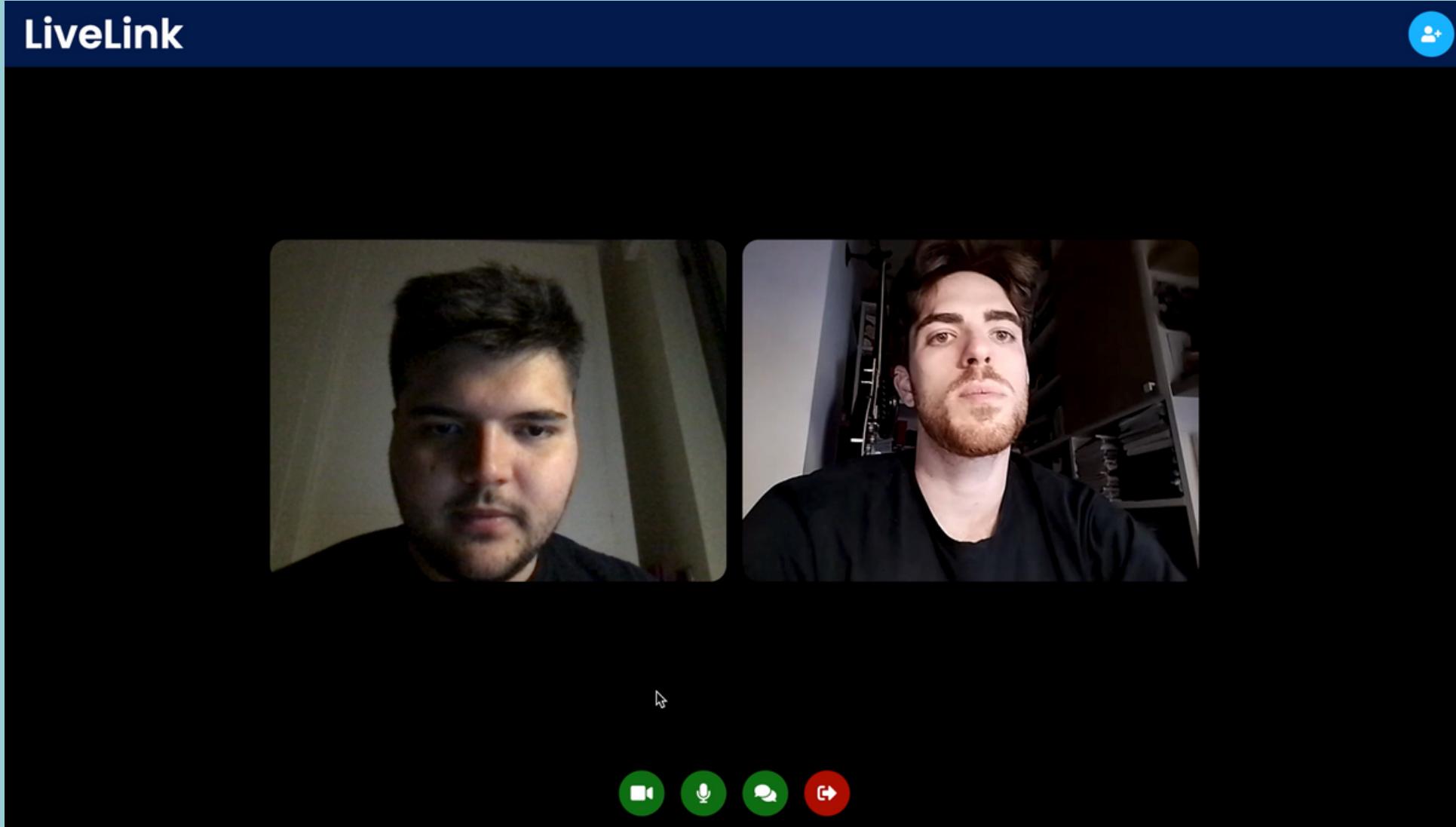
<http://localhost:3030/5f9699b8-d584-4cf4-928bf3a632530528>

OK

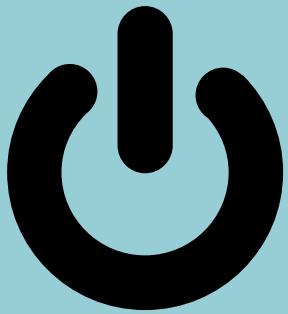
VIDEO CALL MICROPHONE SPEAKER SHARING

A screenshot of a mobile application window titled "LiveLink". In the center is a white rectangular box containing a blue circular info icon and the text "Send this link to people you want to meet with". Below this is a URL: "http://localhost:3030/5f9699b8-d584-4cf4-928bf3a632530528". At the bottom of the white box is a dark blue "OK" button. At the very bottom of the screen, there are four small circular icons: a video camera, a microphone, a speaker, and a red sharing symbol. The background of the app window is black.

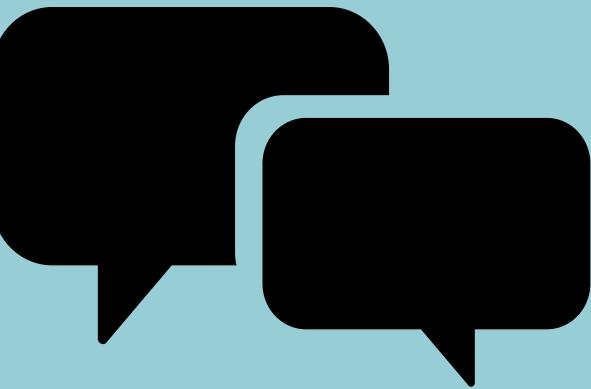
FUNZIONALITA'



ESEMPIO VIDEOCALL



ESEMPIO CHAT



LiveLink

Me

Ciao !

Nicolò

Ciao

Me

Ciao come stao ? piacere io son
Cristiano !!

Type message here

Send message icon

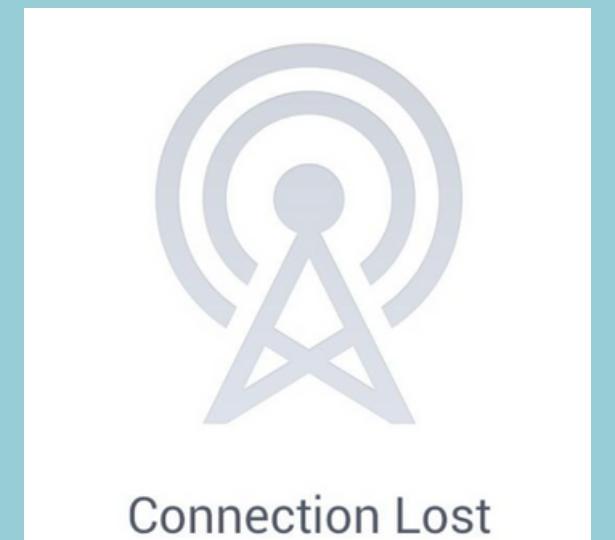
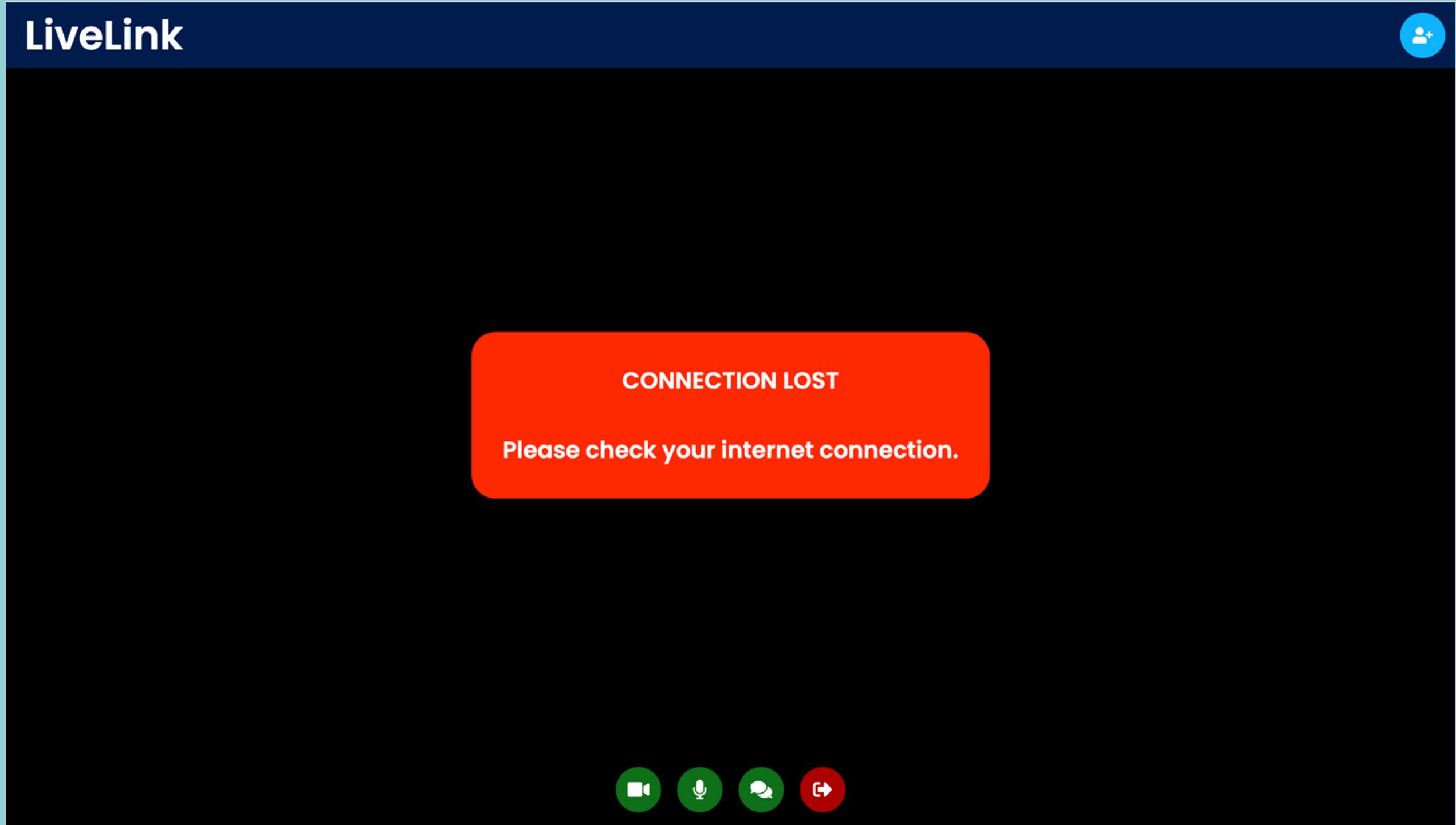
Video camera icon

Microphone icon

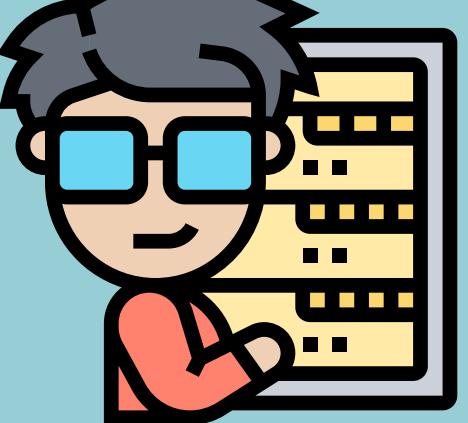
Chat icon

Share icon

CONNESSIONE PERSA



IMPLEMENTAZIONE SERVER.JS



JS server.js > ...

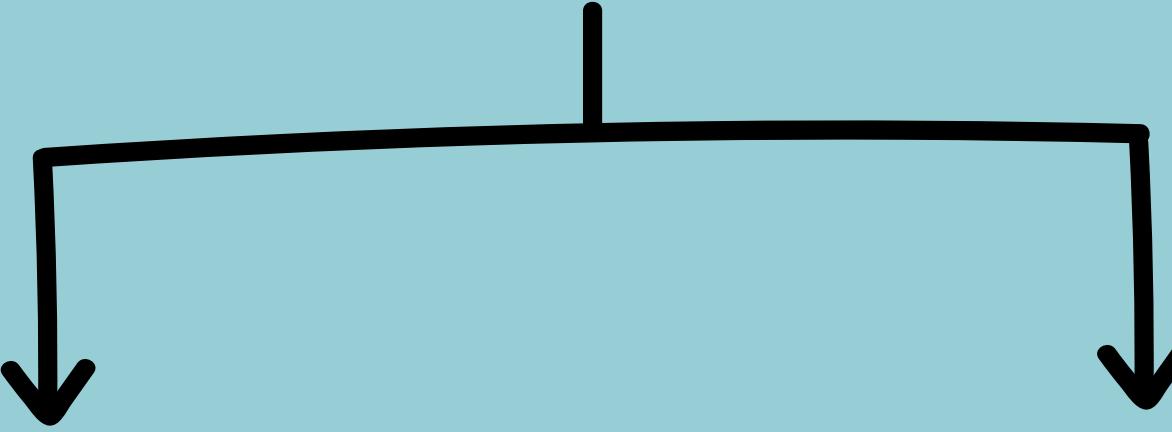
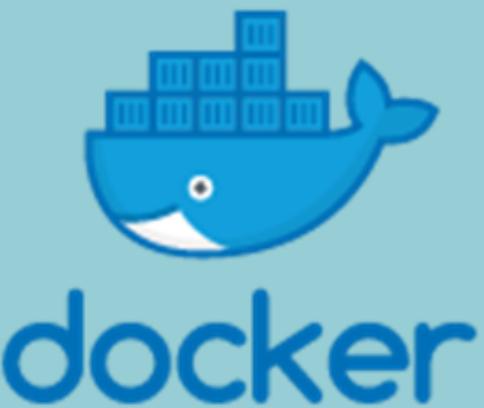
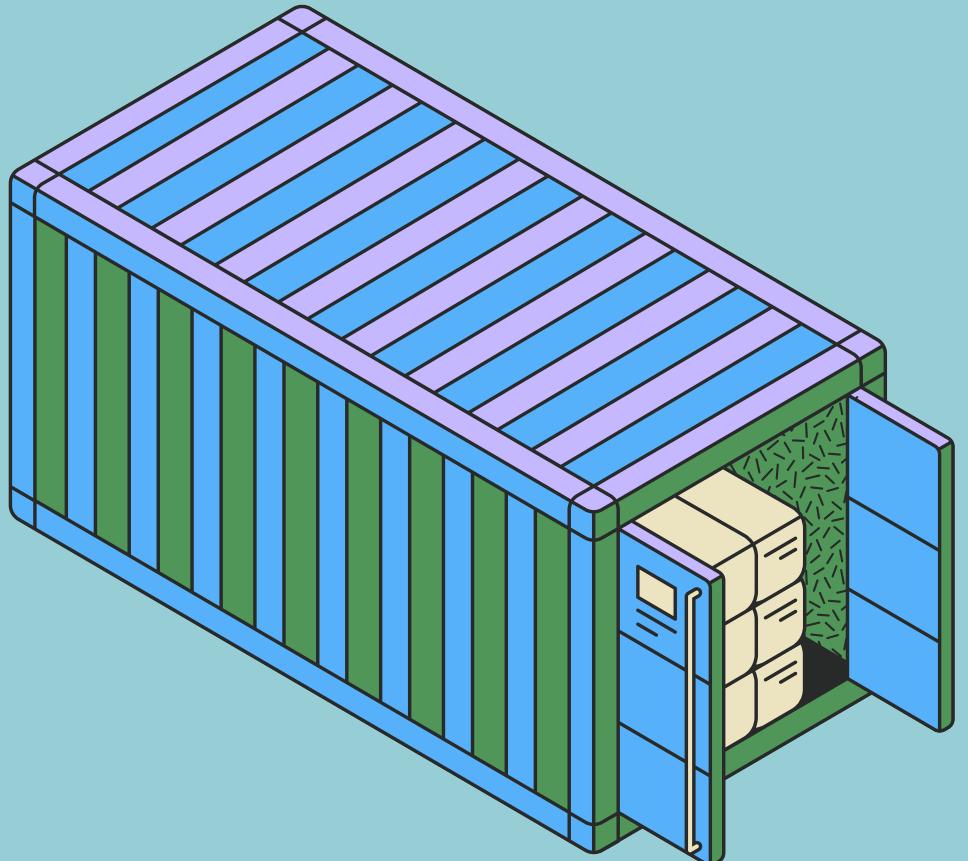
cristiano, 4 weeks ago | 1 author (cristiano)

```
1 const express = require("express");
2 const app = express();
3 const server = require("http").Server(app);
4 const { v4: uuidv4 } = require("uuid");
5 app.set("view engine", "ejs");
6 const io = require("socket.io")(server, {
7   cors: {
8     origin: "*",
9   },
10 });
11 const { ExpressPeerServer } = require("peer");
12 const opinions = {
13   debug: true,
14 };
```

JS

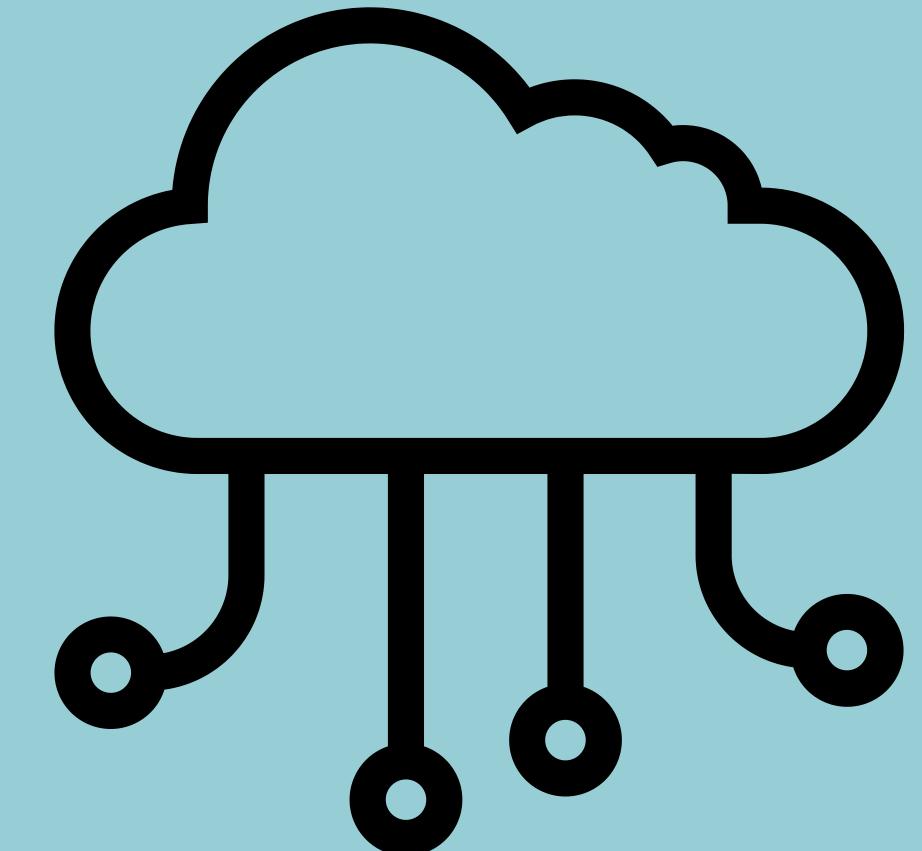
```
16   app.use("/peerjs", ExpressPeerServer(server, opinions));
17   app.use(express.static("public"));
18
19   app.get("/", (req, res) => {
20     res.redirect(`/${uuidv4()}`);
21   });
22
23   app.get("/:room", (req, res) => {
24     res.render("room", { roomId: req.params.room });
25   });
26
27   io.on("connection", (socket) => {
28     socket.on("join-room", (roomId, userId, userName) => {
29       socket.join(roomId);
30       setTimeout(() => {
31         socket.to(roomId).broadcast.emit("user-connected", userId);
32       }, 1000);
33       socket.on("message", (message) => {
34         io.to(roomId).emit("createMessage", message, userName);
35       });
36     });
37   });
38
39   server.listen(process.env.PORT || 3030);
```

IMPLEMENTAZIONE DOCKER

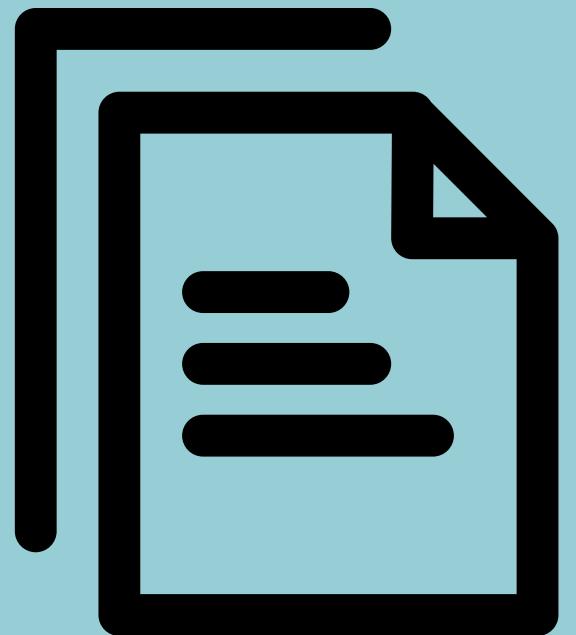


Docker è una piattaforma open-source che permette di creare, distribuire e gestire applicazioni in modo isolato utilizzando i container

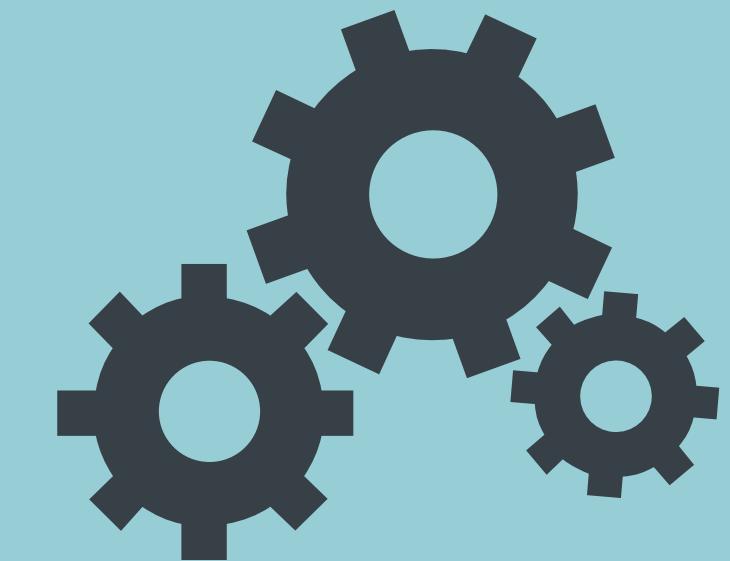
- Docker Engine
- Docker Image
- Docker Container
- Docker Hub



DOCKERFILE



```
⌚ dockerfile > ...
Cristiano Marzano, 3 weeks ago | 1 author (Cristiano Marzano)
1 # Start your image with a node base image
2 FROM node:14
3
4 # The /app directory should act as the main application directory
5 WORKDIR /app
6
7 # Copy the app package and package-lock.json file
8 COPY package*.json ./
9
10 # Install node packages
11 RUN npm install
12
13 # Copy local directories to the current local directory of our docker image (/app)
14 COPY ./views ./views
15 COPY ./public ./public
16 COPY server.js .
17
18 EXPOSE 3030
19
20 # Start the app using serve command
21 CMD ["npm", "start"]
```



COSTRUZIONE IMMAGINE E AVVIO CONTAINER



Run su shell

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL GITLENS

● cristiano@MacBook-Air-di-Cristiano LiveLink % docker build -t livelink:v1.0 .
[+] Building 2.3s (13/13) FINISHED
=> [internal] load build definition from dockerfile
=> => transferring dockerfile: 540B
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load metadata for docker.io/library/node:14
=> [auth] library/node:pull token for registry-1.docker.io
=> [1/7] FROM docker.io/library/node:14@sha256:a158d3b9b4e3fa813fa6c8c590b8f0a860e015ad4e59bbce5744d2f6fd8461aa
=> [internal] load build context
=> => transferring context: 18.54kB
=> CACHED [2/7] WORKDIR /app
=> CACHED [3/7] COPY package*.json .
=> CACHED [4/7] RUN npm install
=> CACHED [5/7] COPY ./views ./views
=> CACHED [6/7] COPY ./public ./public
=> [7/7] COPY server.js .
=> exporting to image
=> => exporting layers
=> => writing image sha256:83d9e71647c03e04e232f3b1491c12b2aff5cd095f979b1b64860baab9c5934d
=> => naming to docker.io/library/livelink:v1.0
○ cristiano@MacBook-Air-di-Cristiano LiveLink % █
```

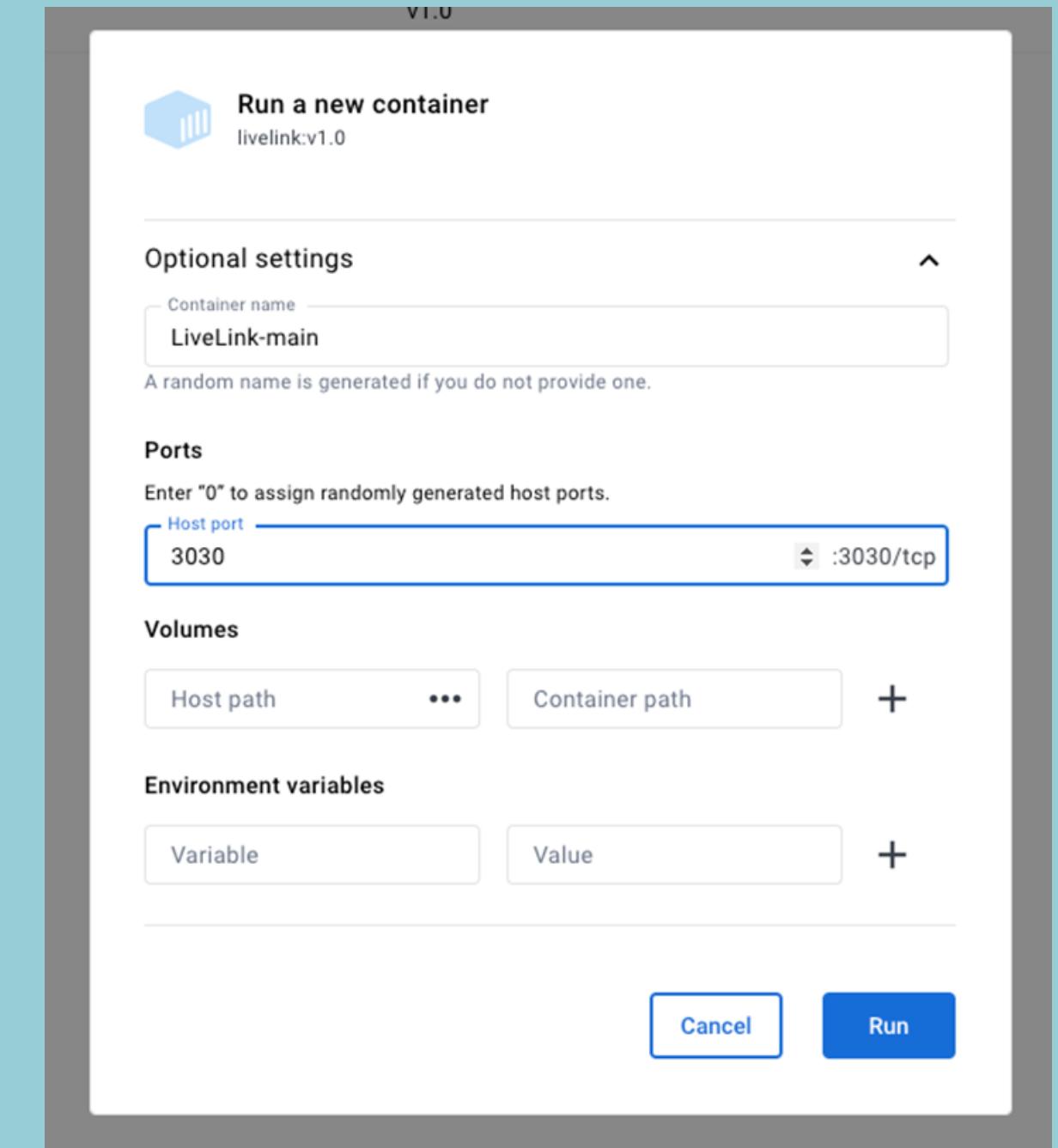


```
○ cristiano@MacBook-Air-di-Cristiano LiveLink % docker run livelink:v1.0

> zoom@1.0.0 start /app
> node server.js

█
```

Run su Docker Desktop

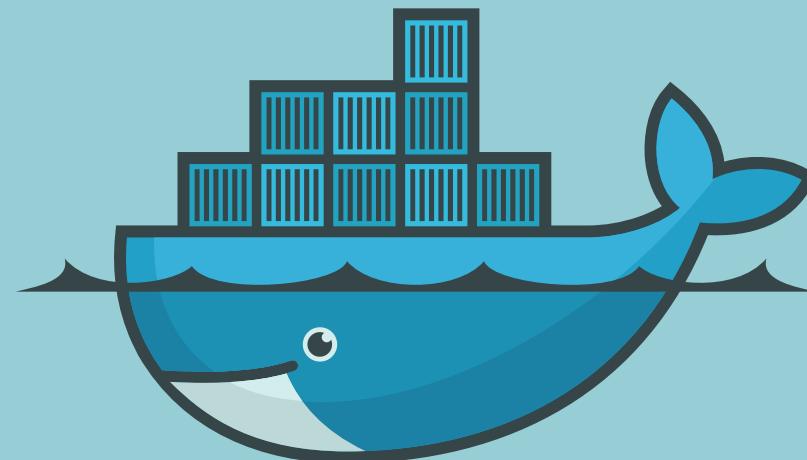


PUBBLICAZIONE IMMAGINE SU DOCKERHUB

```
cristiano@MacBook-Air-di-Cristiano LiveLink % docker images
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE
livelink        logs     83d9e71647c0  18 minutes ago  923MB
livelink        v1.0     83d9e71647c0  18 minutes ago  923MB
livelink        interface 8c88444417c5  24 hours ago   923MB
cristiano@MacBook-Air-di-Cristiano LiveLink % docker tag livelink:v1.0 cristiano0121/livelink:v1.0
cristiano@MacBook-Air-di-Cristiano LiveLink % docker push cristiano0121/livelink:v1.0
The push refers to repository [docker.io/cristiano0121/livelink]
1cc75c17977a: Pushed
b51827080995: Pushed
b663a9462c7c: Pushed
4e149338e0ff: Mounted from cristiano0121/livelink-app
fa381da7e54e: Mounted from cristiano0121/livelink-app
897fd94fa93b: Mounted from cristiano0121/livelink-app
0d5f5a015e5d: Mounted from cristiano0121/livelink-app
3c777d951de2: Mounted from cristiano0121/livelink-app
f8a91dd5fc84: Mounted from cristiano0121/livelink-app
cb81227abde5: Mounted from cristiano0121/livelink-app
e01a454893a9: Mounted from cristiano0121/livelink-app
c45660adde37: Mounted from cristiano0121/livelink-app
fe0fb3ab4a0f: Mounted from cristiano0121/livelink-app
f1186e5061f2: Mounted from cristiano0121/livelink-app
b2dba7477754: Mounted from cristiano0121/livelink-app
v1.0: digest: sha256:1c785106e94bd31454936109515cf624a0fe615c499d1129073ae54e9754d8ad size: 3463
cristiano@MacBook-Air-di-Cristiano LiveLink %
```

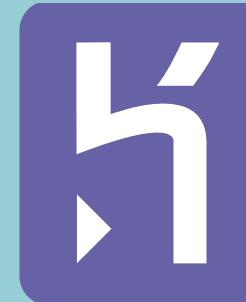
3. **docker tag livelink:v1.0 cristiano0121/livelink:v1.0**

4. **docker push cristiano0121/livelink:v1.0**

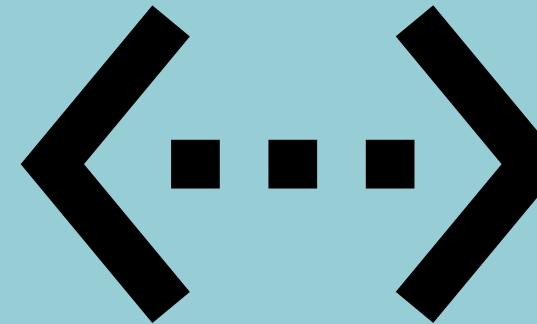


docker

COLLEGAMENTO HEROKU - DOCKER



heroku



1: heroku login

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    GITLENS

● cristiano@MacBook-Air-di-Cristiano LiveLink % heroku login
  > Warning: heroku update available from 7.68.2 to 8.1.7.
heroku: Press any key to open up the browser to login or q to exit:
Opening browser to https://cli-auth.herokuapp.com/auth/cli/browser/04ed79cc-8896-4730-b0a9-79a3191ee65d?requestor=SFMyNTY.g2gDbQAAAw5My40Ni45Ni4xNjduBgCg7SmHiAFiAAFRgA.AhMn2znfPv0tNsKT1wE30XwB4NltOUwE2GwktqcoKQ
Logging in... done
Logged in as c.marzano1@studenti.poliba.it
○ cristiano@MacBook-Air-di-Cristiano LiveLink %
```

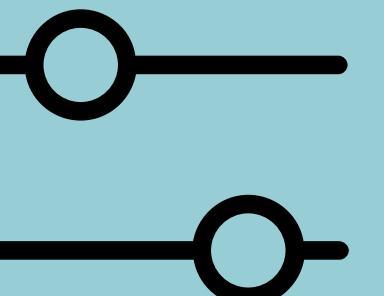
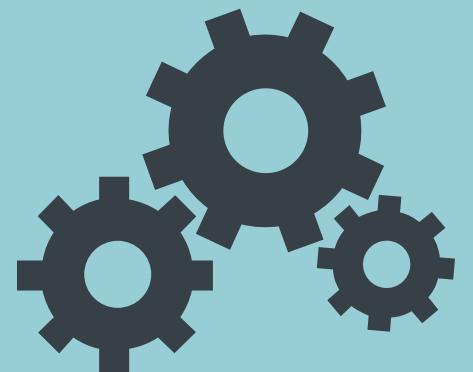
2: heroku git: remote -a livelink-docker

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    GITLENS

● cristiano@MacBook-Air-di-Cristiano LiveLink % heroku git:remote -a livelink-docker
set git remote heroku to https://git.heroku.com/livelink-docker.git
○ cristiano@MacBook-Air-di-Cristiano LiveLink %
```

COLLEGAMENTO HEROKU - DOCKER

```
● cristiano@MacBook-Air-di-Cristiano LiveLink % docker tag cristiano0121/livelink:v1.0 registry.heroku.com/livelink-docker/web
● cristiano@MacBook-Air-di-Cristiano LiveLink % docker images
REPOSITORY          TAG      IMAGE ID      CREATED       SIZE
cristiano0121/livelink    logs     83d9e71647c0  7 hours ago   923MB
cristiano0121/livelink    v1.0     83d9e71647c0  7 hours ago   923MB
livelink              logs     83d9e71647c0  7 hours ago   923MB
livelink              v1.0     83d9e71647c0  7 hours ago   923MB
registry.heroku.com/livelink-docker/web  latest    83d9e71647c0  7 hours ago   923MB
registry.heroku.com/livelink/web           latest    83d9e71647c0  7 hours ago   923MB
livelink              interface  8c88444417c5  31 hours ago  923MB
● cristiano@MacBook-Air-di-Cristiano LiveLink % docker push registry.heroku.com/livelink-docker/web
Using default tag: latest
The push refers to repository [registry.heroku.com/livelink-docker/web]
1cc75c17977a: Mounted from livelink/web
b51827080995: Mounted from livelink/web
b663a9462c7c: Mounted from livelink/web
4e149338e0ff: Mounted from livelink/web
fa381da7e54e: Mounted from livelink/web
897fd94fa93b: Mounted from livelink/web
0d5f5a015e5d: Mounted from livelink/web
3c777d951de2: Mounted from livelink/web
f8a91dd5fc84: Mounted from livelink/web
cb81227abde5: Mounted from livelink/web
e01a454893a9: Mounted from livelink/web
c45660adde37: Mounted from livelink/web
fe0fb3ab4a0f: Mounted from livelink/web
f1186e5061f2: Mounted from livelink/web
b2dba7477754: Mounted from livelink/web
latest: digest: sha256:1c785106e94bd31454936109515cf624a0fe615c499d1129073ae54e9754d8ad size: 3463
● cristiano@MacBook-Air-di-Cristiano LiveLink % heroku container:release web --app livelink-docker
Releasing images web to livelink-docker... done
● cristiano@MacBook-Air-di-Cristiano LiveLink % heroku open --app livelink-docker
```



**3: docker tag
cristiano0121/livelink:v1.0
registry.heroku.com/livelink-docker/web**

4: docker images (facoltativo)

**5: docker push
registry.heroku.com/livelink-docker/web**

6: heroku container:release web --app livelink-docker

7: heroku open --app livelink-docker

CONFIGURAZIONE HEROKU EFFETTUATA

HEROKU

Jump to Favorites, Apps, Pipelines, Spaces...

Metrics (last 24hrs) [All Metrics](#)

No Metrics data in the last 24 hours

Installed add-ons **\$0.00/month** [Configure Add-ons](#)

There are no add-ons for this app
You can add add-ons to this app and they will show here. [Learn more](#)

Dyno formation **\$7.00/month** [Configure Dynos](#)

This app is using **basic** dynos

web npm start **ON**

Collaborator activity [Manage Access](#)

c.marzano1@studenti.poliba.it **24** deploys

Latest activity [All Activity](#)

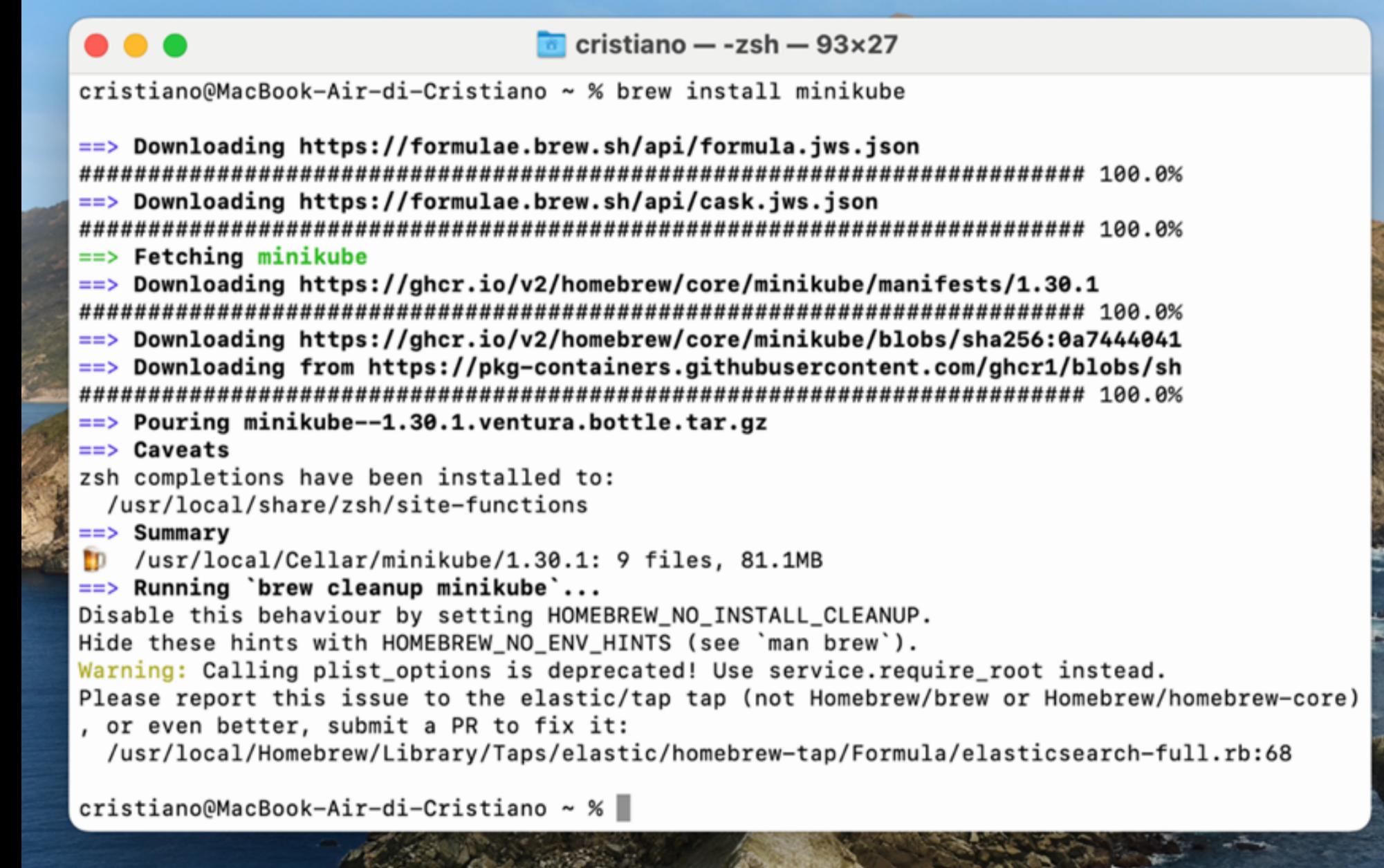
- c.marzano1@studenti.poliba.it:** Deployed web (943c182b2c2d)
Jun 22 at 11:15 PM · v31
- c.marzano1@studenti.poliba.it:** Deployed web (c1c90328a7d2)
Jun 22 at 11:08 PM · v30
- c.marzano1@studenti.poliba.it:** Deployed web (995364f21b62)
Jun 22 at 10:58 PM · v29
- c.marzano1@studenti.poliba.it:** Deployed web (e885014bd821)
Jun 22 at 10:49 PM · v28
- c.marzano1@studenti.poliba.it:** Deployed web (d13bbb5453ed)
Jun 22 at 10:44 PM · v27
- c.marzano1@studenti.poliba.it:** Deployed web (7f9e88a12777)
Jun 21 at 8:35 PM · v26
- c.marzano1@studenti.poliba.it:** Deployed web (6c027ef87443)
Jun 21 at 8:27 PM · v25
- c.marzano1@studenti.poliba.it:** Deployed web (34475dc51df2)
Jun 21 at 8:00 PM · v24



kubernetes

Primi step da eseguire

1°:
BREW INSTALL
MINIKUBE



```
cristiano@MacBook-Air-di-Cristiano ~ % brew install minikube

==> Downloading https://formulae.brew.sh/api/formula.jws.json
#####
==> Downloading https://formulae.brew.sh/api/cask.jws.json
#####
==> Fetching minikube
==> Downloading https://ghcr.io/v2/homebrew/core/minikube/manifests/1.30.1
#####
==> Downloading https://ghcr.io/v2/homebrew/core/minikube/blobs/sha256:0a7444041
==> Downloading from https://pkg-containers.githubusercontent.com/ghcr1/blobs/sh
#####
==> Pouring minikube--1.30.1.ventura.bottle.tar.gz
==> Caveats
zsh completions have been installed to:
  /usr/local/share/zsh/site-functions
==> Summary
🍺 /usr/local/Cellar/minikube/1.30.1: 9 files, 81.1MB
==> Running `brew cleanup minikube`...
Disable this behaviour by setting HOMEBREW_NO_INSTALL_CLEANUP.
Hide these hints with HOMEBREW_NO_ENV_HINTS (see `man brew`).
Warning: Calling plist_options is deprecated! Use service.require_root instead.
Please report this issue to the elastic/tap tap (not Homebrew/brew or Homebrew/homebrew-core)
, or even better, submit a PR to fix it:
  /usr/local/Homebrew/Library/Taps/elastic/homebrew-tap/Formula/elasticsearch-full.rb:68

cristiano@MacBook-Air-di-Cristiano ~ %
```

```
>Last login: Sun Jun 18 03:19:27 on ttys005
[cristiano@MacBook-Air-di-Cristiano ~ % minikube start
    minikube v1.30.1 on Darwin 13.2.1
    Using the docker driver based on existing profile
    Starting control plane node minikube in cluster minikube
    Pulling base image ...
    Restarting existing docker container for "minikube" ...
    Preparing Kubernetes v1.26.3 on Docker 23.0.2 ...
    Configuring bridge CNI (Container Networking Interface) ...
    Verifying Kubernetes components...
    ■ Using image gcr.io/k8s-minikube/storage-provisioner:v5
    Enabled addons: storage-provisioner, default-storageclass
    Done! kubectl is now configured to use "minikube" cluster and "default" name
space by default
cristiano@MacBook-Air-di-Cristiano ~ %

[cristiano@MacBook-Air-di-Cristiano ~ % minikube status
minikube
type: Control Plane
host: Running
kubelet: Running
apiserver: Running
kubecfg: Configured

cristiano@MacBook-Air-di-Cristiano ~ %
```

Comando per lo start di minikube

2°: minikube start

Controllo dello stato di minikube tramite il comando

3°: minikube status

IMPLEMENTAZIONE KUBERNETES SU DOCKER

The image shows a screenshot of the Docker Desktop preferences window on a Mac OS X interface. On the left, under the 'General' tab, several configuration options are listed:

- Start Docker Desktop when you log in
- Choose theme for Docker Desktop:
 - Light
 - Dark
 - Use system settings
- Choose container terminal:
 - Integrated
 - System default

Determines which terminal is launched when opening the terminal from a container.
- Include VM in Time Machine backups
- Use Virtualization framework

Uses Virtualization framework for creating and managing Docker Desktop Linux VM in macOS 12.5 and above.
- Choose file sharing implementation for your containers:
 - gRPC FUSE
 - VirtioFS
 - osxfs (Legacy)

VirtioFS brings improved I/O performance for operations on bind mounts. Enabling VirtioFS will automatically enable Virtualization framework.
- Send usage statistics

Send error reports, system version and language as well as Docker Desktop lifecycle information (e.g., starts, stops, resets).
- Open Docker Dashboard at startup
- Use Docker Compose V2

Enables the docker-compose command to use Docker Compose V2.

A large white arrow points from the 'General' section to the 'Kubernetes' section on the right. The 'Kubernetes' section is titled 'v1.25.9' and contains the following options:

- Enable Kubernetes

Start a Kubernetes single-node cluster when starting Docker Desktop.
- Show system containers (advanced)

Show Kubernetes internal containers when using Docker commands.

A red rectangular button labeled 'Reset Kubernetes Cluster' is visible. Below it, a note states: 'All stacks and Kubernetes resources will be deleted.' Two yellow arrows point downwards towards the 'Kubernetes Cluster Installation' dialog box.

Kubernetes Cluster Installation

Installation takes a few minutes and requires an internet connection.

The Docker logo (a blue whale icon) and the Kubernetes logo (a blue hexagon with a white steering wheel icon) are located at the bottom left of the slide.

FILE DI CONFIGURAZIONE



```
File Edit Selection View Go Run Terminal X

deployment.yaml
1 apiVersion: apps/v1
2 kind: Deployment
3 metadata:
4   name: livelink-deployment
5 spec:
6   replicas: 3
7   selector:
8     matchLabels:
9       app: livelink
10  template:
11    metadata:
12      labels:
13        app: livelink
14  spec:
15    containers:
16      - name: livelink-container
17        image: livelink:v1.0
18        ports:
19          - containerPort: 3030

service.yaml
1 apiVersion: v1
2 kind: Service
3 metadata:
4   name: livelink-service
5 spec:
6   selector:
7     app: livelink
8   ports:
9     - protocol: TCP
10    port: 80
11    targetPort: 3030
12    type: LoadBalancer
```

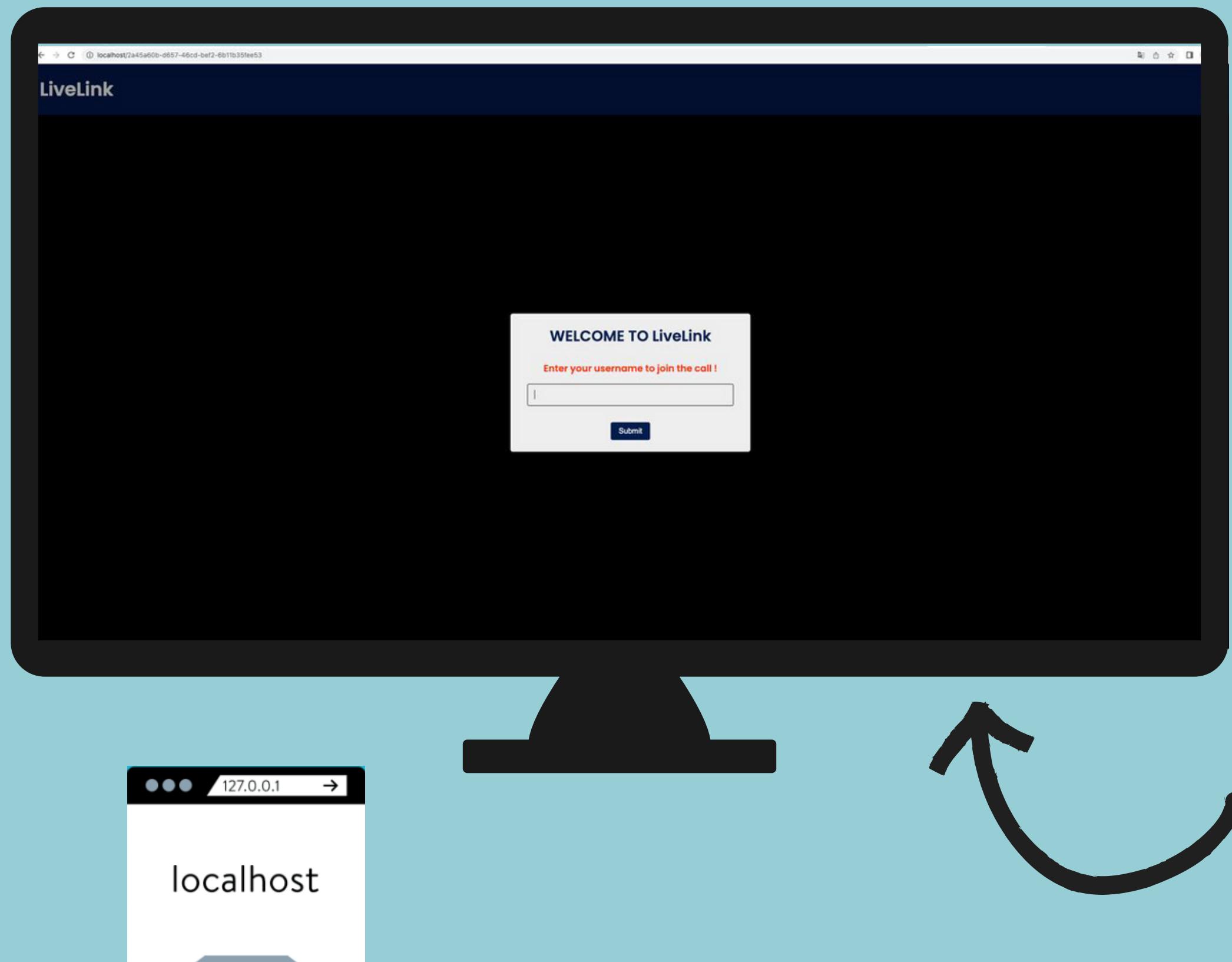
**Creazione file utili a
Kubernetes**

CONFIGURATION

service.yaml

deployment.yaml

CREAZIONE RISORSE CON KUBECTL E CONSEGUENTE LANCIO APP SULLA PORTA 80 IN LOCALE



```
[cristiano@MacBook-Air-di-Cristiano LiveLink % kubectl apply -f deployment.yaml
deployment.apps/livelink-deployment created
cristiano@MacBook-Air-di-Cristiano LiveLink % ]
```

```
cristiano@MacBook-Air-di-Cristiano LiveLink % kubectl apply -f service.yaml
service/livelink-service created
cristiano@MacBook-Air-di-Cristiano LiveLink % ]
```

```
[cristiano@MacBook-Air-di-Cristiano LiveLink % kubectl get all
NAME                               READY   STATUS    RESTARTS   AGE
pod/livelink-deployment-778c49c95f-5slh4   1/1     Running   0          6m30s
pod/livelink-deployment-778c49c95f-kcvzs   1/1     Running   0          6m30s
pod/livelink-deployment-778c49c95f-qsz4n   1/1     Running   0          6m30s
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
service/kubernetes	ClusterIP	10.96.0.1	<none>	443/TCP	32m
service/livelink-service	LoadBalancer	10.98.5.159	localhost	80:31599/TCP	2m11s

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
deployment.apps/livelink-deployment	3/3	3	3	6m30s

NAME	DESIRED	CURRENT	READY	AGE
replicaset.apps/livelink-deployment-778c49c95f	3	3	3	6m30s



IMPLEMENTAZIONE LOG

```
198  
199 function logVideoStreamInfo(stream) {  
200   const logs = [];  
201  
202   const videoResolution = stream.getVideoTracks()[0].getSettings().width + "x" + stream.getSettings().height;  
203   if (videoResolution !== "undefinedxundefined") {  
204     logs.push("Video resolution: " + videoResolution);  
205   }  
206  
207   const frameRate = stream.getVideoTracks()[0].getSettings().frameRate;  
208   if (frameRate !== undefined) {  
209     logs.push("Frame rate: " + frameRate);  
210   }  
211  
212   const audioLatency = stream.getAudioTracks()[0].getSettings().latency;  
213   if (audioLatency !== undefined) {  
214     logs.push("Audio Latency: " + audioLatency + " seconds");  
215   }  
216  
217   const noiseSuppression = stream.getAudioTracks()[0].getSettings().noiseSuppression;  
218   if (noiseSuppression !== undefined) {  
219     logs.push("Noise suppression: " + noiseSuppression);  
220   }  
221 }
```

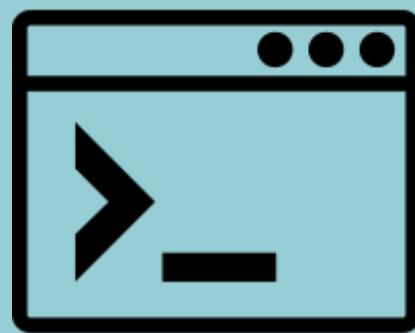
CREAZIONE LOG PER LA CONSERVAZIONE DELLE METRICHE VIDEO E AUDIO

Video resolution

Frame rate

Audio Latency

Noise suppression



SOVRASCRIZIONE LOG SU CONSOLE

```
244 const logText = logs.join("\n");
245 console.log(logText);
246
247 // Write logs to a text file
248 if (logs.length > 0) {
249   const filename = "log.txt";
250   const element = document.createElement("a");
251   element.setAttribute(
252     "href",
253     "data:text/plain;charset=utf-8," + encodeURIComponent(logText)
254   );
255   element.setAttribute("download", filename);
256   element.style.display = "none";
257   document.body.appendChild(element);
258   element.click();
259   document.body.removeChild(element);
260 }
261 }
```

1: Creazione stringa di log e stampa sulla console del browser

2: Creazione elemento <a> nel documento HTML. Simulazione di un click sull'elemento per avviare il download e infine rimozione dal documento per il download sul browser dell'utente

CONFIGURAZIONE DI ELASTICSEARCH & KIBANA

```
elasticsearch-8.8.1 — controller < java -Xms4m -Xmx64m -XX:+UseSerialGC -Dcli.name=server -Dcli.s...
...li-launcher/* org.elasticsearch.launcher.CliToolLauncher ~/Desktop/kibana-8.8.1 — node ./bin/../src/cli/dist +
```

✓ Elasticsearch security features have been automatically configured!
✓ Authentication is enabled and cluster connections are encrypted.

ℹ️ Password for the elastic user (reset with `bin/elasticsearch-reset-password -u elastic`):
`_CQwoL6lkSjnWsVt08Q8`

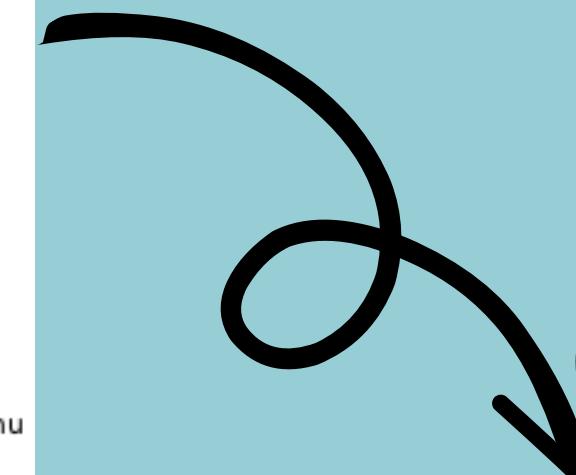
ℹ️ HTTP CA certificate SHA-256 fingerprint:
`62149307c18e67a7190df49e79c80fc284d09dff12a6cce50e401d2249cf8e2`

ℹ️ Configure Kibana to use this cluster:
• Run Kibana and click the configuration link in the terminal when Kibana starts.
• Copy the following enrollment token and paste it into Kibana in your browser (valid for the next 30 minutes):
`eyJ2ZXIiOiI4LjguMSIsImFkcI6WyIxOTIuMTY4LjEuNzk6OTIwMCJdLCJmZ3IiOii2MjE0OTMwN2MxOGU2N2E3MTkwZGY0OWU30WM4MGZjMjg0ZDA5ZGZmMTJhNmNjZWY1MGU0MDFKMjI0OWNmOGUyIiwia2V5Ijoia1lQM3k0Z0JJZzJVaV1VeXVYb1A6U18wb01jaUZSSkNkVU56bS1aOGNpdj9`

ℹ️ Configure other nodes to join this cluster:
• On this node:
- Create an enrollment token with `bin/elasticsearch-create-enrollment-token -s node`.
- Uncomment the `transport.host` setting at the end of `config/elasticsearch.yml`.
- Restart Elasticsearch.
• On other nodes:
- Start Elasticsearch with `bin/elasticsearch --enrollment-token <token>`, using the enrollment token that you generated.



elasticsearch



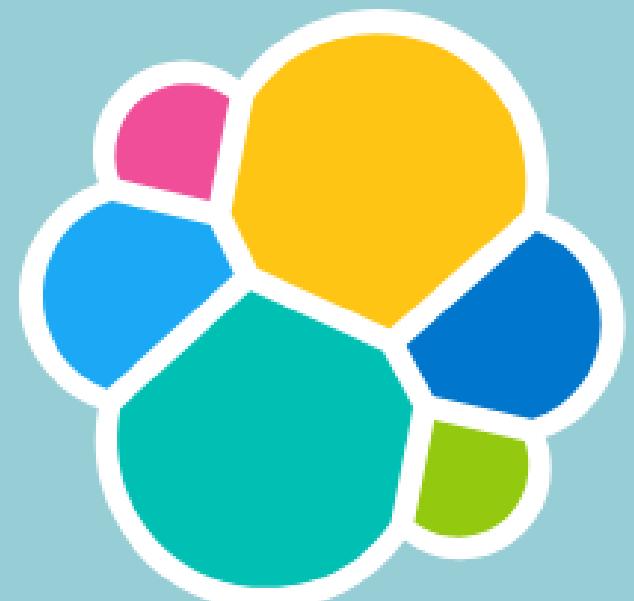
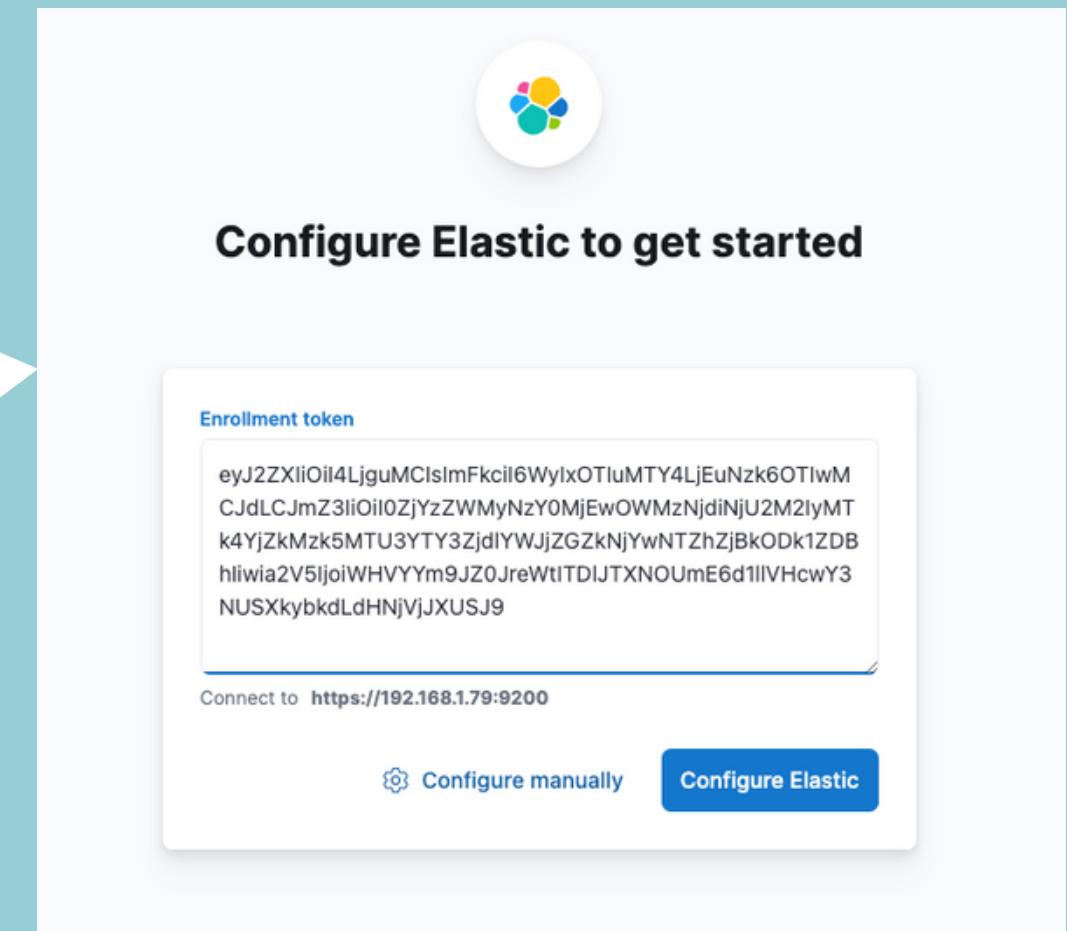
```
← → ⌂ Non sicuro | https://localhost:9200
```

```
{  
  "name" : "MacBook-Air-di-Cristiano.local",  
  "cluster_name" : "elasticsearch",  
  "cluster_uuid" : "wiUxdcz5T2CeShqXlo1VYQ",  
  "version" : {  
    "number" : "8.8.1",  
    "build_flavor" : "default",  
    "build_type" : "tar",  
    "build_hash" : "f8edfccba429b6477927a7c1celbc6729521305e",  
    "build_date" : "2023-06-05T21:32:25.188464208Z",  
    "build_snapshot" : false,  
    "lucene_version" : "9.6.0",  
    "minimum_wire_compatibility_version" : "7.17.0",  
    "minimum_index_compatibility_version" : "7.0.0"  
  },  
  "tagline" : "You Know, for Search"  
}
```



KIBANA

```
....elasticsearch.launcher.CliToolLauncher ...ana-8.8.1 — node bin/..src/cli/dist — 80x24  
[2023-06-12T10:28:36.345+02:00][INFO ][plugins-service] Plugin "cloudExperiments" is disabled.  
[2023-06-12T10:28:36.346+02:00][INFO ][plugins-service] Plugin "cloudFullStory" is disabled.  
[2023-06-12T10:28:36.346+02:00][INFO ][plugins-service] Plugin "cloudGainsight" is disabled.  
[2023-06-12T10:28:36.379+02:00][INFO ][plugins-service] Plugin "profiling" is disabled.  
[2023-06-12T10:28:36.483+02:00][INFO ][http.server.Preboot] http server running at http://localhost:5601  
[2023-06-12T10:28:36.637+02:00][INFO ][plugins-system.preboot] Setting up [1] plugins: [interactiveSetup]  
[2023-06-12T10:28:36.641+02:00][INFO ][preboot] "interactiveSetup" plugin is holding setup: Validating Elasticsearch connection configuration...  
[2023-06-12T10:28:36.691+02:00][INFO ][root] Holding setup until preboot stage is completed.  
  
i Kibana has not been configured.  
Go to http://localhost:5601/?code=554808 to get started.
```



KIBANA

The image displays two side-by-side screenshots of the Kibana setup process. On the left, the 'Welcome to Elastic' screen shows a logo, a 'Welcome to Elastic' heading, and a login form with fields for 'Username' and 'Password'. The 'Password' field includes a lock icon and an eye icon. A blue 'Log in' button is at the bottom. On the right, the 'Configure Elastic to get started' screen shows a logo, the same heading, and a progress bar with three items: 'Saving settings' (checkmark), 'Starting Elastic' (checkmark), and 'Completing setup' (circle). A large red 'X' is positioned in the top right corner of the overall image, and a thick orange vertical bar is on the right edge.

Welcome to Elastic

Configure Elastic to get started

Username

Password

Log in

Saving settings

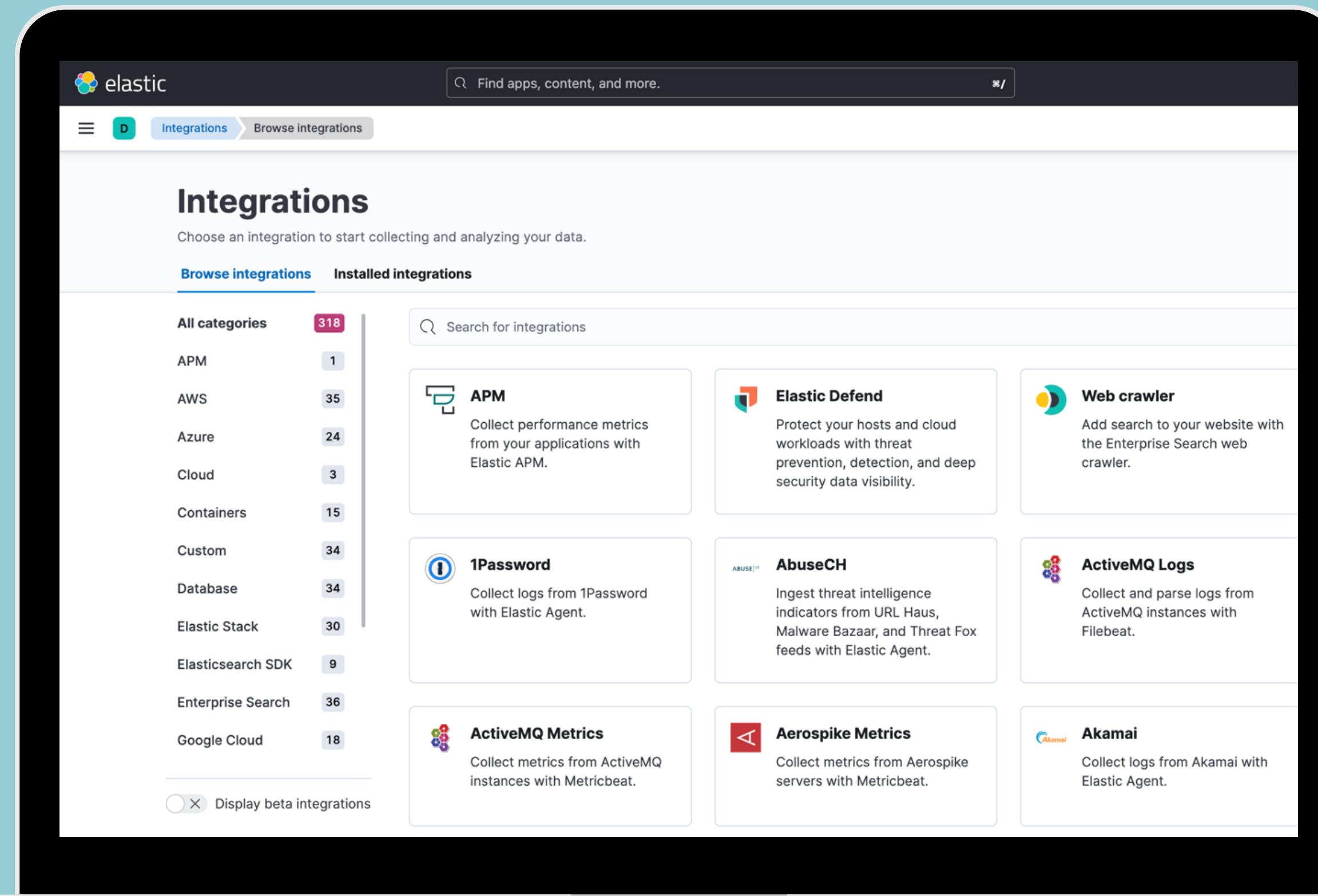
Starting Elastic

Completing setup

X

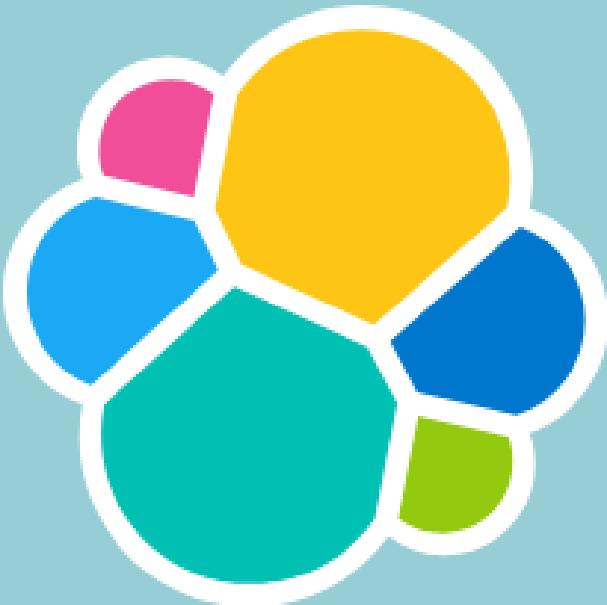
Orange Bar

WELCOME TO KIBANA



The image shows a smartphone screen displaying the Elastic App Store. The title bar says "elastic" and has a search bar with "Find apps, content, and more." Below the title bar, there are navigation links: a menu icon, "D", "Integrations", and "Browse integrations". The main heading is "Integrations" with the sub-instruction "Choose an integration to start collecting and analyzing your data." There are two tabs: "Browse integrations" (which is selected) and "Installed integrations". A sidebar on the left lists "All categories" with a count of 318, including APM (1), AWS (35), Azure (24), Cloud (3), Containers (15), Custom (34), Database (34), Elastic Stack (30), Elasticsearch SDK (9), Enterprise Search (36), and Google Cloud (18). Below this is a "Display beta integrations" button. The main content area shows a grid of nine integration cards:

- APM**: Collect performance metrics from your applications with Elastic APM.
- Elastic Defend**: Protect your hosts and cloud workloads with threat prevention, detection, and deep security data visibility.
- Web crawler**: Add search to your website with the Enterprise Search web crawler.
- 1Password**: Collect logs from 1Password with Elastic Agent.
- AbuseCH**: Ingest threat intelligence indicators from URL Haus, Malware Bazaar, and Threat Fox feeds with Elastic Agent.
- ActiveMQ Logs**: Collect and parse logs from ActiveMQ instances with Filebeat.
- ActiveMQ Metrics**: Collect metrics from ActiveMQ instances with Metricbeat.
- Aerospike Metrics**: Collect metrics from Aerospike servers with Metricbeat.
- Akamai**: Collect logs from Akamai with Elastic Agent.



TD-AGENT



X

```
cristiano@MacBook-Air-di-Cristiano ~ % brew install td-agent

==> Downloading https://s3.amazonaws.com/packages.treasuredata.com/4/macosx/td-a
#####
# 100.0%
==> Installing Cask td-agent
==> Running installer for td-agent; your password may be necessary.
Package installers may write to any location; options such as '--appdir' are ignored.
installer: Package name is Td-agent v4.4.1
installer: Upgrading at base path /
installer: The upgrade was successful.
🍺 td-agent was successfully installed!
cristiano@MacBook-Air-di-Cristiano ~ %
```

```
cristiano@MacBook-Air-di-Cristiano ~ % sudo fluent-gem install fluent-plugin-elasticsearch
```

```
[Password: ]  
Successfully installed fluent-plugin-elasticsearch-5.3.0  
Parsing documentation for fluent-plugin-elasticsearch-5.3.0  
Done installing documentation for fluent-plugin-elasticsearch after 0 seconds  
1 gem installed
cristiano@MacBook-Air-di-Cristiano ~ %
```

TD-AGENT.CONF

INPUT



```
84 #####  
85 ## Source descriptions:  
86 ##  
87 <source>  
88   @type tail  
89   path /Users/cristiano/Downloads/*.txt  
90   pos_file /var/log/td-agent/td-agent.log.pos  
91   format json  
92   time_format %Y-%m-%d %H:%M:%S  
93   tag log  
94 </source>
```

OUTPUT



```
70 #####  
71 ## Output descriptions:  
72 ##  
73 <match *log*>  
74   @type elasticsearch  
75   hosts localhost  
76   port 9200  
77   username elastic  
78   password _CQwoL6lkSjnWsVt08Q8  
79   index_name video  
80   type_name log  
81   verify_certificate false  
82 </match>
```



Politecnico
di Bari

Grazie per
l'attenzione

LiveLink

Presented by:
Cristiano & Nicolò