

**o. Deploy their software in a container (i.e., utilized operating-system-level virtualization)**

BE has made the BE Safe prototype application available as a Docker container. The application is therefore completely self-contained and deployable on any system capable of running the Docker software (i.e., Boot2Docker or Docker).

BE made the Docker container available on Docker Hub due to GitHub having a hard 100MB limit on individual files and a soft 1GB limit on repositories. Instructions for deploying the Docker container on another machine are contained within BE's GitHub repository.

The BE Safe Docker container is built as a step during the continuous integration process executed by Circle CI. Circle CI runs unit tests and if they pass, the container is built again from the most current code checked into GitHub. This Docker container is pushed to a public Docker Hub repository where it is available for anyone to download. The update container is automatically pushed to Elastic Beanstalk and deployed as the production website.

**Figure 1** shows the BE Safe application running inside of a Docker container.

```
10439c870f52: Bind for 0.0.0.0:8080 failed: port is already allocated
bash-3.2$ docker run -p 8000:3000 buchananedwards/be-safe

> rppr.pdip@2.3.0 start /usr/src/app
> node ./server | bunyan -o short

18:24:53.631Z INFO server: Listening on port 3000
```

**Figure 1. BE Safe running inside of a Docker container.**

**Figure 2** shows a Docker container being built by the Circle CI tool and being pushed to Docker Hub.

deploy	
Checking deployment	config 00:00
✓ \$ docker info	config 00:00
✓ \$ docker login -e \$DOCKER_EMAIL -u \$DOCKER_USER -p \$DOCKER_PASS	config 00:01
✓ \$ docker build -t buchananedwards/be-safe:\$CIRCLE_SHA1 .	config 02:31
✓ \$ docker push buchananedwards/be-safe	config 01:10
✓ \$ ./merge_to_master.sh	config 00:00

**Figure 2. A Docker container being built by the Circle CI tool and pushed to Docker Hub.**

**Figure 3** shows what a user executing a pull request of the BE Safe application from Docker Hub would see.

```
bash-3.2$ docker pull buchananedwards/be-safe
latest: Pulling from buchananedwards/be-safe
dd78240a268c: Pull complete
f75629730eb8: Pull complete
49069d901a3a: Pull complete
0f286847afa5: Pull complete
7c3487f8319c: Pull complete
795d1ddb2c39: Already exists
64e5325c0d9d: Already exists
bf84c1d84a8f: Already exists
87de57de6955: Already exists
6a974bea7c0d: Already exists
4b708e6c0f6c: Already exists
313c5b9e573c: Already exists
0eadecf54aa9: Already exists
969dff08c430: Already exists
d208a9e3a36a: Already exists
ab69da0f8343: Already exists
5dd609b59c74: Already exists
28f339eb853c: Already exists
383acc0f7b1d: Already exists
9e046248afbc: Already exists
b156c417d3d7: Already exists
d2afb8e41640: Already exists
Digest: sha256:a2803f774747e31698c34497410fe49bf017acacf59c1e2f10e0eb325e5f90eb
Status: Downloaded newer image for buchananedwards/be-safe:latest
```


**Figure 3. Pull Request of the BE Safe application from Docker Hub.**

Figure 4 shows the Docker container running in Elastic Beanstalk


be-safe-docker ▶ beSafeDocker-envii (besafedocker-envii.elasticbeanstalk.com) Actions

Dashboard  
Configuration  
Logs  
Monitoring  
Alarms  
Events  
Tags

Overview Refresh

 **Health**  
Green  
Monitor

**Running Version**  
cd5cd09f138b492c7c23093d09c  
444df5914768  
Upload and Deploy

 **Configuration**  
64bit Amazon Linux 2015.03  
v1.4.3 running Docker 1.6.2  
Change

Recent Events Show All

Time	Type	Details
2015-07-06 09:47:24 UTC-0400	INFO	Deleted log fragments for this environment.
2015-07-06 09:32:31 UTC-0400	INFO	Pulled logs for environment instances.
2015-07-06 09:32:26 UTC-0400	INFO	[Instance: i-93fc6d40] Successfully finished tailing 16 log(s)
2015-07-06 09:32:23 UTC-0400	INFO	requestEnvironmentInfo is starting.

**Figure 4. Docker running on Elastic Beanstalk**