

Revised Project Proposal

Do-ploy: The Docker approach to a reproducible deployment

Zhufeng Xu (zx2245) / Mengyu Han (mh3881)

What

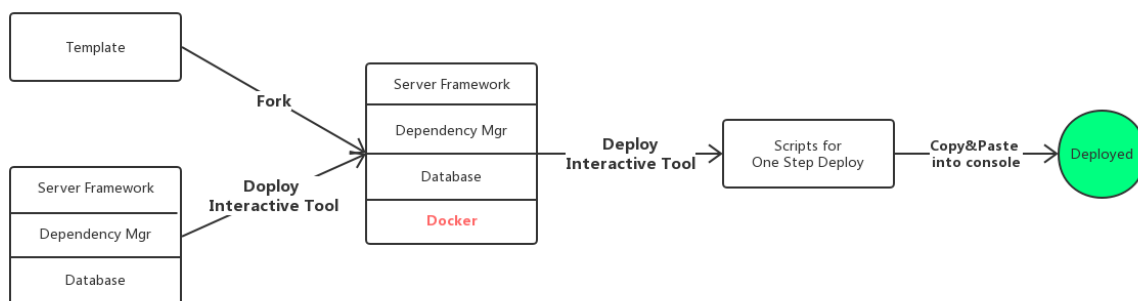
The project is the implementation of the midterm paper. The ultimate goal is to build a Docker-based configuration tool that helps set up a deployment pipeline of the backend server for a web application in a faster and simpler way.

Our core value is simple and efficient deployment. It will encapsulate a traditional web-backend code base into a product that can be deployed to any machine within one step.

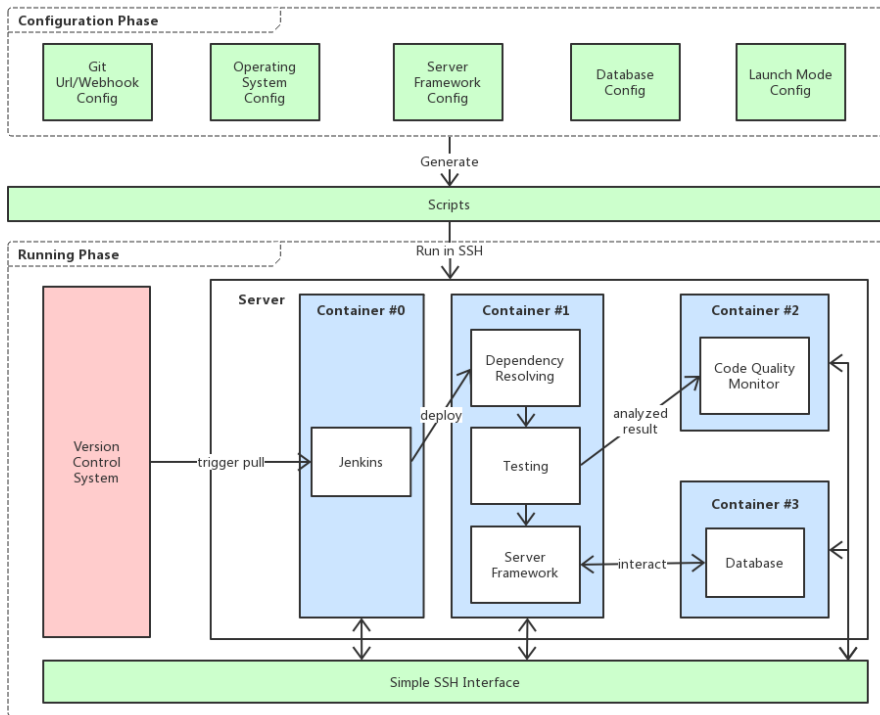
Comparing with what we have on the market, like “[deployment pipeline best practice](#)” and “[Jenkins-Docker](#)”, they’re tools with learning barriers. It’s not solving the problem of easy deployment which is the core value of our tool. For those comprehensive platforms like [AWS CodePipeline](#), it may not be suitable for everyone to understand the whole ecosystem of an AWS deployment pipeline.

Do-ploy will support typical backend server with the following architecture:

- Server framework (SpringBoot, Express, Flask)
- Dependency management (maven, npm)
- Databases (MySQL, PostgreSQL)
- (optional) Continuous integration framework (Jenkins)
- (optional) Code quality monitor (SonarQube)



General workflow of Do-ploy



Detailed construction

Users first select their favored configuration on the interactive website and then the tool will generate scripts that help build the environment. Further, the users only need to run the scripts at any server from any online server providers (AWS, Azure, Google Cloud, etc.) or local machines with a Docker platform, and they will get the environment they want within minutes.

Note that the tool is not aimed at building an online platform that holds management of users' projects. Instead, this is for the initialization of the project. Once the environment is set up, the tool will give users full control of all features through a simple SSH interface (like launch the quality check, connect to database, etc.).

To evaluate our tool, we will conduct a survey inviting students in our department to use our tool. Feedbacks will be collected to evaluate Do-ploy.

How

Docker, as one of the most popular topics in scalable software engineering, is used to empower the tool. From the industrial perspective, 'Docker + Kuburnetes' is one of the mainstream solutions for distributed system. Do-ploy will produce several Docker containers, and it can be technically integrated with new techniques like Kuburnetes.

Why

Zhufeng Xu: During my undergraduate and the first semester in Columbia, I ran into several similar cases where we were required to build a backend server with a database, and the configuration of deployment normally took a lot of time. Consequently, I started from building a Springboot template, which works pretty among junior students of my undergraduate school. Nowadays, I'm transforming it into a tool with easier usage and better compatibility with Docker techniques.

Mengyu Han: I decided not to implement the research topic in the midterm paper, and start a new topic with my teammate for two reasons. First, I learn about containers like Docker in another course this semester, I find it interesting and want to learn more about the Docker. Second, I used to do front-end development before, so I sometimes find it hard to carry out backend development setup work in projects, I hope to learn more about backend server architecture by doing this project.