

# [DevOps] Jenkins, Docker CI/CD 서버 환경 구축

☰ 태그

작성 완료

## 개요

- Docker, Jenkins를 이용하여 CI/CD 배포 환경을 구축한다.

## 구축

### Docker 설치

Docker 설치 방법 세가지

### Jenkins Docker로 설치

```
docker run --name jenkins -d -p 8080:8080 -p 50000:50000 -v /usr/bin/docker:/usr/bin/docker -v /home/ubuntu/volumes/jenkins:/var/jenkins_home -v /var/run/docker.sock:/var/run/docker.sock -e TZ=Asia/Seoul -u root jenkins/jenkins:lts
```

### Jenkins 컨테이너 실행

```
docker start jenkins
```

### Jenkins 접속

```
[도메인명]:[jenkins 포트번호]
```

## 초기화 비밀번호 확인

### 방법 1. 로그 확인

실행시 초기 관리자 비밀번호가 log로 출력된다.

```
docker logs jenkins
```

### 방법 2. jenkins 접속 후 초기화 관리자 비밀번호 확인

```
# docker로 실행한 docker에 접속한다.
docker exec -it jenkins bin/bash

# 초기 관리자 비밀번호가 있는 폴더로 들어가서 출력한다.
cd /var/jenkins_home/secrets
cat initialAdminPassword
```

## Jenkins 초기 설정

### Unlock Jenkins

위의 과정에서 얻은 Jenkins 비밀번호 입력

### Customize Jenkins

여러가지 사용을 위해서는 plugin이 필요하다. 보통 쓰는 플러그인을 설치할지 물어보는 것이기 때문에 `install suggested plugins` 선택

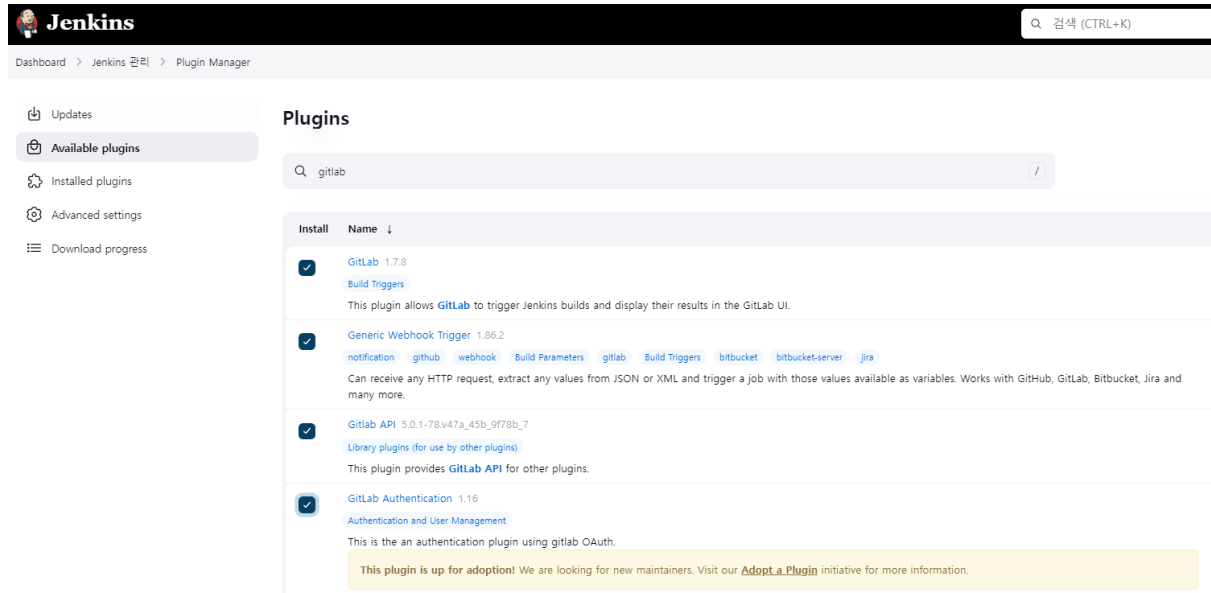
### Create First Admin User

계정 생성 후 `Save and Continue`

### Instance Configuration

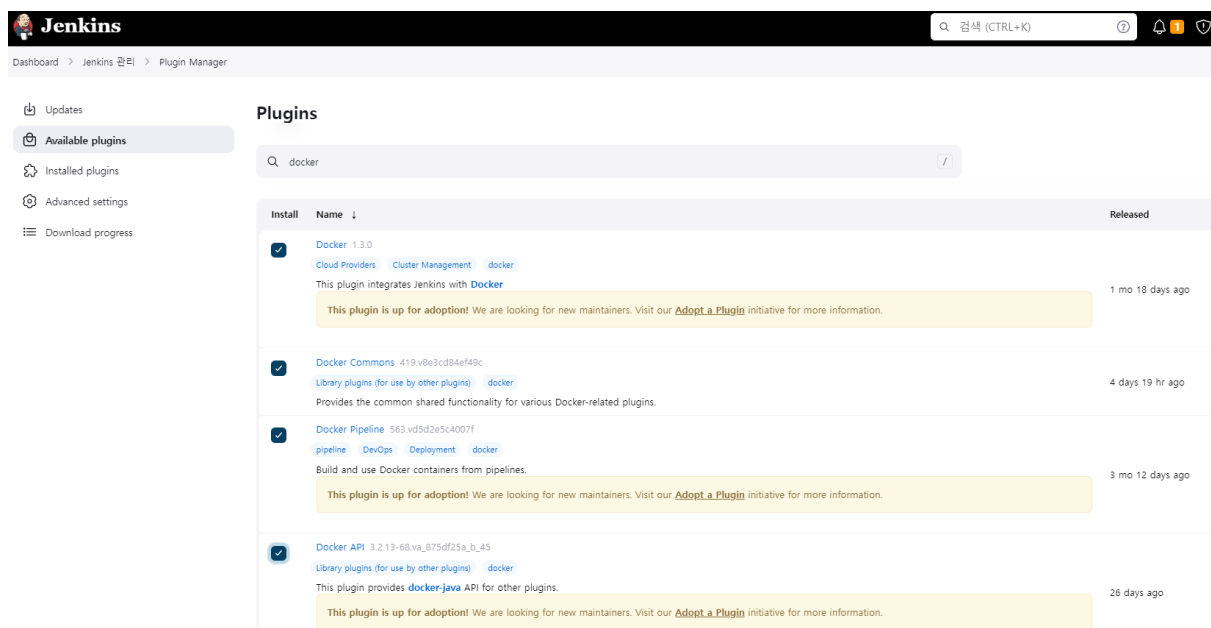
접근 Url 설정이라는 듯. `Not now` 선택

# 플러그인 설치 - gitlab, docker, SSH



The screenshot shows the Jenkins Plugin Manager interface. The left sidebar contains links for Updates, Available plugins, Installed plugins, Advanced settings, and Download progress. The main area is titled 'Plugins' and has a search bar with 'gitlab' entered. Below the search bar, a table lists installed plugins:

Install	Name
<input checked="" type="checkbox"/>	GitLab 1.7.8 Build Triggers This plugin allows <b>GitLab</b> to trigger Jenkins builds and display their results in the GitLab UI.
<input checked="" type="checkbox"/>	Generic Webhook Trigger 1.86.2 notification github webhook Build Parameters gitlab Build Triggers bitbucket bitbucket-server jira Can receive any HTTP request, extract any values from JSON or XML and trigger a job with those values available as variables. Works with GitHub, GitLab, Bitbucket, Jira and many more.
<input checked="" type="checkbox"/>	GitLab API 5.0.1-78.v47a_45b_9f78b_7 Library plugins (for use by other plugins) This plugin provides <b>GitLab API</b> for other plugins.
<input checked="" type="checkbox"/>	GitLab Authentication 1.16 Authentication and User Management This is the an authentication plugin using gitlab OAuth.  This plugin is up for adoption! We are looking for new maintainers. Visit our <a href="#">Adopt a Plugin</a> initiative for more information.



The screenshot shows the Jenkins Plugin Manager interface with the search bar set to 'docker'. The table lists installed Docker-related plugins:

Install	Name	Released
<input checked="" type="checkbox"/>	Docker 1.3.0 Cloud Providers Cluster Management docker This plugin integrates Jenkins with <b>Docker</b> .  This plugin is up for adoption! We are looking for new maintainers. Visit our <a href="#">Adopt a Plugin</a> initiative for more information.	1 mo 18 days ago
<input checked="" type="checkbox"/>	Docker Commons 419.v8e3cd84ef49c Library plugins (for use by other plugins) docker Provides the common shared functionality for various Docker-related plugins.	4 days 19 hr ago
<input checked="" type="checkbox"/>	Docker Pipeline 563.vd5d2e5c4007f pipeline DevOps Deployment docker Build and use Docker containers from pipelines.  This plugin is up for adoption! We are looking for new maintainers. Visit our <a href="#">Adopt a Plugin</a> initiative for more information.	3 mo 12 days ago
<input checked="" type="checkbox"/>	Docker API 3.2.13-68.va_875df25a_b_45 Library plugins (for use by other plugins) docker This plugin provides <b>docker-java</b> API for other plugins.  This plugin is up for adoption! We are looking for new maintainers. Visit our <a href="#">Adopt a Plugin</a> initiative for more information.	26 days ago

## Jenkins Item 생성


item name을 입력하고 Pipeline 선택, ok를 누른다.


**Enter an item name**


project\_deploy


» Required field


---


 **Freestyle project**  
이것은 Jenkins의 주요 기능입니다. Jenkins은 어느 빌드 시스템과 어떤 SCM(형상관리)으로 묶인 당신의 프로젝트를 빌드할 것이고, 소프트웨어 빌드보다 다른 어떤 것에 자주 사용될 수 있습니다.

 **Maven project**  
Maven 프로젝트를 빌드합니다. Jenkins은 POM 파일의 이점을 가지고 있고 급격히 설정을 줄입니다.

 **Pipeline**  
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

 **Multi-configuration project**  
다양한 환경에서의 테스트, 플러그인 특성 빌드, 기타 등등 처럼 다수의 서로다른 환경설정이 필요한 프로젝트에 적합함.

 **Folder**  
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

 **Multibranch Pipeline**  
Creates a set of Pipeline projects according to detected branches in one SCM repository.

**OK**

## Build Triggers

item 생성 후 나오는 구성창에서 Build Triggers - Build when a changes .. 선택

### Configure

General

Advanced Project Options

Pipeline

#### Build Triggers

- ☐ Build after other projects are built ?
  - ☐ Build periodically ?
  - ☒ Build when a change is pushed to GitLab. GitLab webhook URL: [http://j8c205.p.ssafy.io:8080/project/project\\_deploy](http://j8c205.p.ssafy.io:8080/project/project_deploy) ?
- Enabled GitLab triggers
- ☒ Push Events
  - ☐ Push Events in case of branch delete
  - ☒ Opened Merge Request Events
  - ☐ Build only if new commits were pushed to Merge Request ?
  - ☐ Accepted Merge Request Events
  - ☐ Closed Merge Request Events
- Rebuild open Merge Requests
- Never
- ☒ Approved Merge Requests (EE-only)
  - ☒ Comments

스크롤을 내려서 Build Triggers의 맨 마지막으로 이동한다.

이후에 Gitlab webhook으로 연결하기 위해 Generate버튼을 눌러 Secret token을 받는다.

The screenshot shows the 'Configure' page in Jenkins. On the left, there is a sidebar with 'General', 'Advanced Project Options', and 'Pipeline'. The 'General' tab is selected. In the main area, there is a 'Secret token' field with a question mark icon. The field contains the text 'de9c16dcdb39429df083bbe4a8fb215b'. To the right of the field is a blue 'Generate' button. Below the field is a 'Clear' button.

## Pipeline

스크롤을 더 내려서 Pipeline 단락으로 이동

Definition - Pipeline script form SCM 선택

SCM - Git 선택. 이걸 선택하고 나면 연결할 프로젝트의 Gitlab 정보를 입력할 칸이 나타난다.

Repository URL에 gitlab URL을 넣고, Credential에서 Add - Jenkins를 눌러 Gitlab Username에 아이디, Password에 비밀번호를 입력한다. ID는 아무거나 넣는다.

The screenshot shows the 'Configure' page in Jenkins. On the left, there is a sidebar with 'General', 'Advanced Project Options', and 'Pipeline'. The 'Advanced Project Options' tab is selected. In the main area, there is a 'Pipeline' section. Under 'Definition', there is a dropdown menu with 'Pipeline script from SCM' selected. Below this, there is an 'SCM' dropdown menu with 'Git' selected. Under 'Repositories', there is a 'Repository URL' field with a question mark icon and a red 'x' icon. Below the field is a red error message: 'Please enter Git repository.' Under 'Credentials', there is a dropdown menu with '- none -' selected. Below the dropdown is an 'Add' button. At the bottom, there is a '그룹' dropdown menu.

Domain

Global credentials (unrestricted) ▼

Kind

Username with password ▼

Scope ?

Global (Jenkins, nodes, items, all child items, etc) ▼

Username ?

☐ Treat username as secret ?

Password ?

ID ?

스크롤을 조금 더 내린다. 빌드할 브랜치 경로를 입력하고 저장을 누른다.

## Configure

General

Advanced Project Options

Pipeline

Add Repository

Branches to build ?

Branch Specifier (blank for 'any') ?

\*/develop

Add Branch

Repository browser ?

(자동)

Additional Behaviours

Add ▼

Script Path ?

Jenkinsfile

☒ Lightweight checkout ?

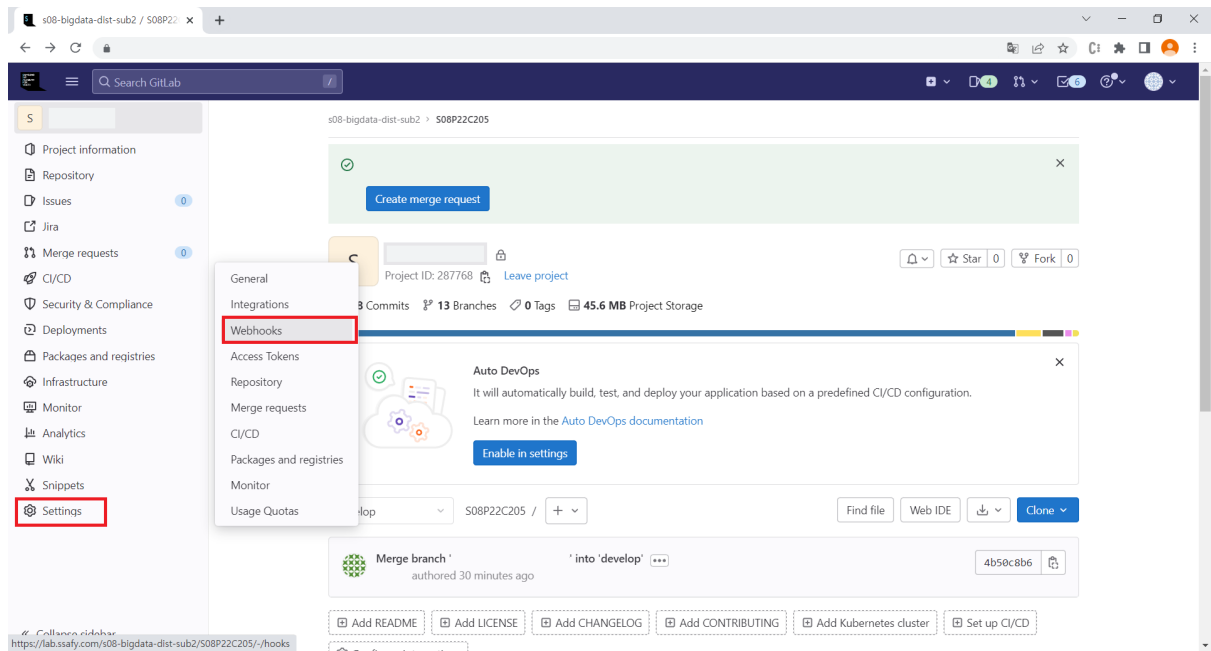
Pipeline Syntax

저장

Apply

## Webhook 연결

연결할 프로젝트 Gitlab 접속 Settings - Webhooks 클릭



Secret token에 Jenkins - Configuration - Build Trigger에서 발급받은 token을 넣고, 알림 받을 옵션을 적당히 선택한 뒤 Add Webhook 버튼을 클릭한다.

Search page

## Webhooks

Webhooks enable you to send notifications to web applications in response to events in a group or project. We recommend using an integration in preference to a webhook.

### URL

 http://example.com/trigger-ci.json

URL must be percent-encoded if it contains one or more special characters.

### Secret token

Used to validate received payloads. Sent with the request in the `X-Gitlab-Token` HTTP header.

### Trigger

☒ Push events

Push to the repository.

☐ Tag push events

A new tag is pushed to the repository.

☐ Comments

A comment is added to an issue or merge request.

☐ Confidential comments

A comment is added to a confidential issue.

☐ Issues events

An issue is created, updated, closed, or reopened.

☐ Confidential issues events

A confidential issue is created, updated, closed, or reopened.

☒ Merge request events

A merge request is created, updated, or merged.

☐ Job events

A job's status changes.

☐ Pipeline events

A pipeline's status changes.

☐ Wiki page events

A wiki page is created or updated.

☐ Deployment events

A deployment starts, finishes, fails, or is canceled.

☐ Feature flag events

A feature flag is turned on or off.

☐ Releases events

A release is created or updated.

### SSL verification

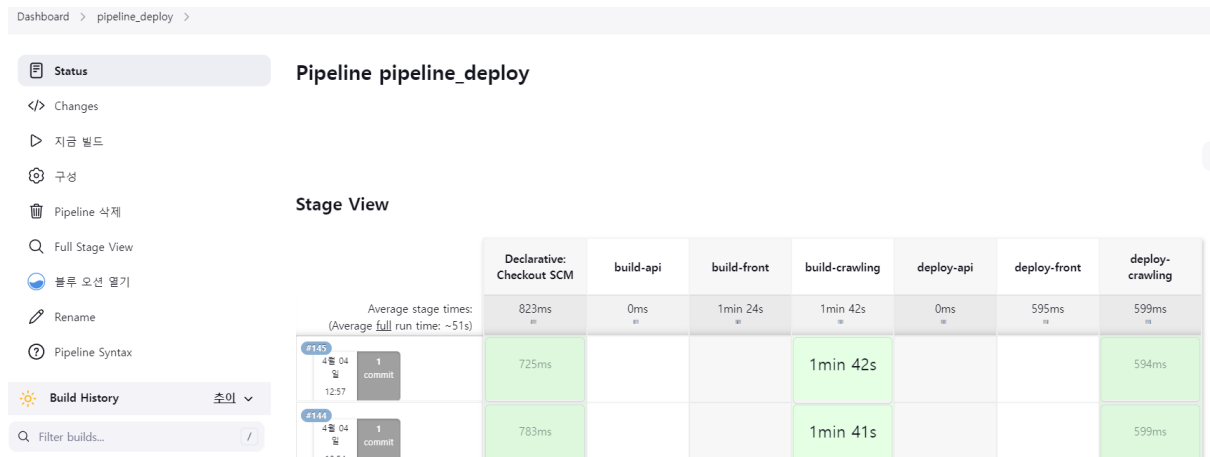
☒ Enable SSL verification

## 결과 확인

Dashboard에서 item이름을 클릭하면 각 stage에 대한 빌드 기록을 확인 할 수 있다.

우측의 지금 빌드를 누르면 새로 빌드가 된다.





## 참고

[https://github.com/hjs101/CICD\\_manual/tree/main/매뉴얼](https://github.com/hjs101/CICD_manual/tree/main/매뉴얼)

### GitLab-Jenkins 연동 및 Pipeline을 이용한 CI 구축

사실 GitLab을 구축하고 k8s cluster에 jenkins 설치까지 되었다면, 이제 본격적으로 CI를 위한 GitLab-Jenkins간 연동을 진행해보도록 하겠습니다. 요건 - GitLab에서 Application code push 시 자동으로

 <https://enginnersnack.tistory.com/11>

New project > Create blank project

**blank project**  
Use project to store your files, code, and collaborate on code, or things.

Project name:

Project URL:  Project slug:

Want to organize several dependent projects under the same namespace? [Create a group.](#)

Visibility Level

☒ @ Private  
Project access must be granted explicitly to each user. If this project is part of a group, access is granted to members of the group.

☐ @ Internal  
The project can be accessed by any logged in user except external users.

☐ @ Public  
The project can be accessed without any authentication.

Project Configuration

☒ Initialize repository with a README  
Allows you to immediately clone this project's repository. Skip this if you plan to push up an existing repository.

☐ Enable Static Application Security Testing (SAST)  
Analyze your source code for known security vulnerabilities. [Learn more.](#)

