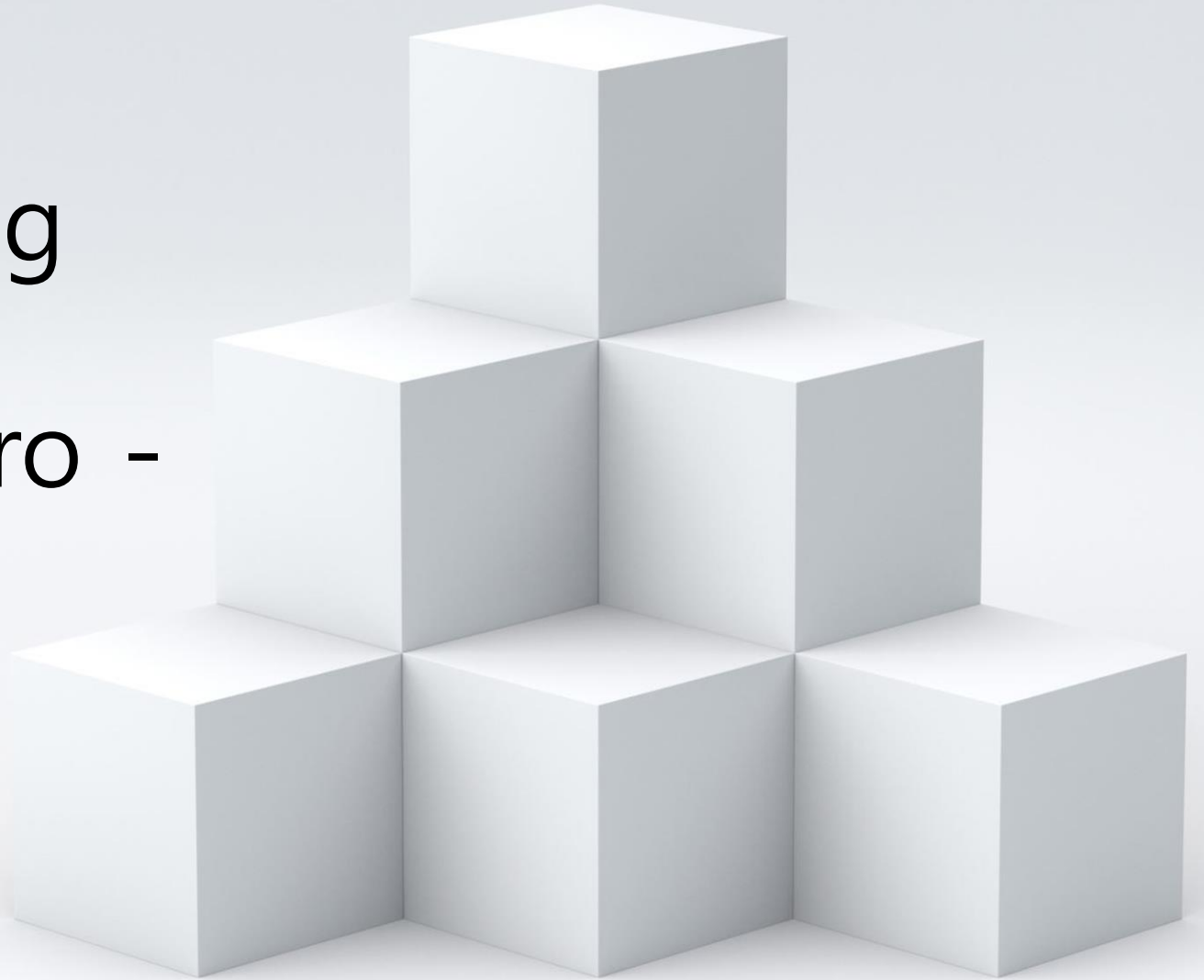


Software Engineering

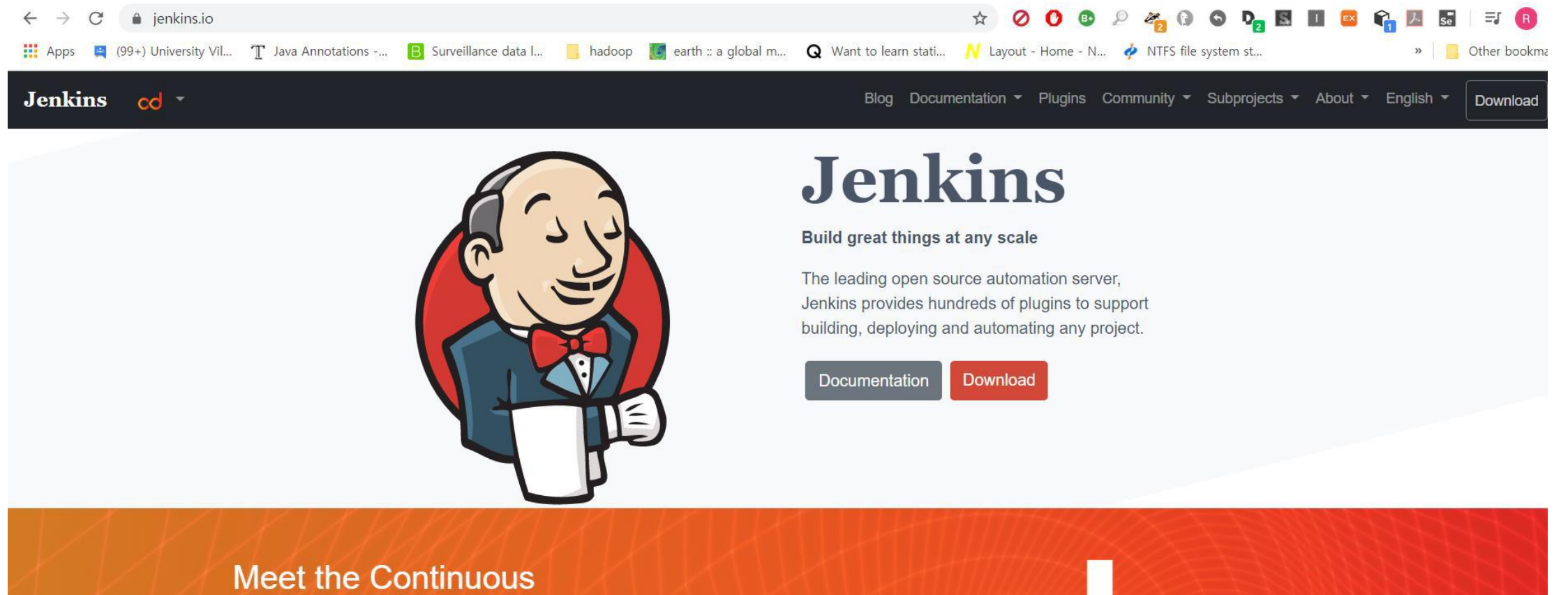
- Jenkins intro -

Professor Han-gyoo Kim

2022



https://www.jenkins.io/



The screenshot shows the Jenkins homepage in a web browser. The browser's address bar displays 'jenkins.io'. The page features a dark navigation bar with the Jenkins logo and a 'cd' dropdown menu. The main content area includes the Jenkins mascot, a cartoon man in a tuxedo, and the heading 'Jenkins' followed by the tagline 'Build great things at any scale'. Below this, a paragraph describes Jenkins as the leading open source automation server. Two buttons, 'Documentation' and 'Download', are provided. The footer has an orange background with the text 'Meet the Continuous'.

Jenkins cd

Blog Documentation Plugins Community Subprojects About English Download

Jenkins

Build great things at any scale

The leading open source automation server, Jenkins provides hundreds of plugins to support building, deploying and automating any project.

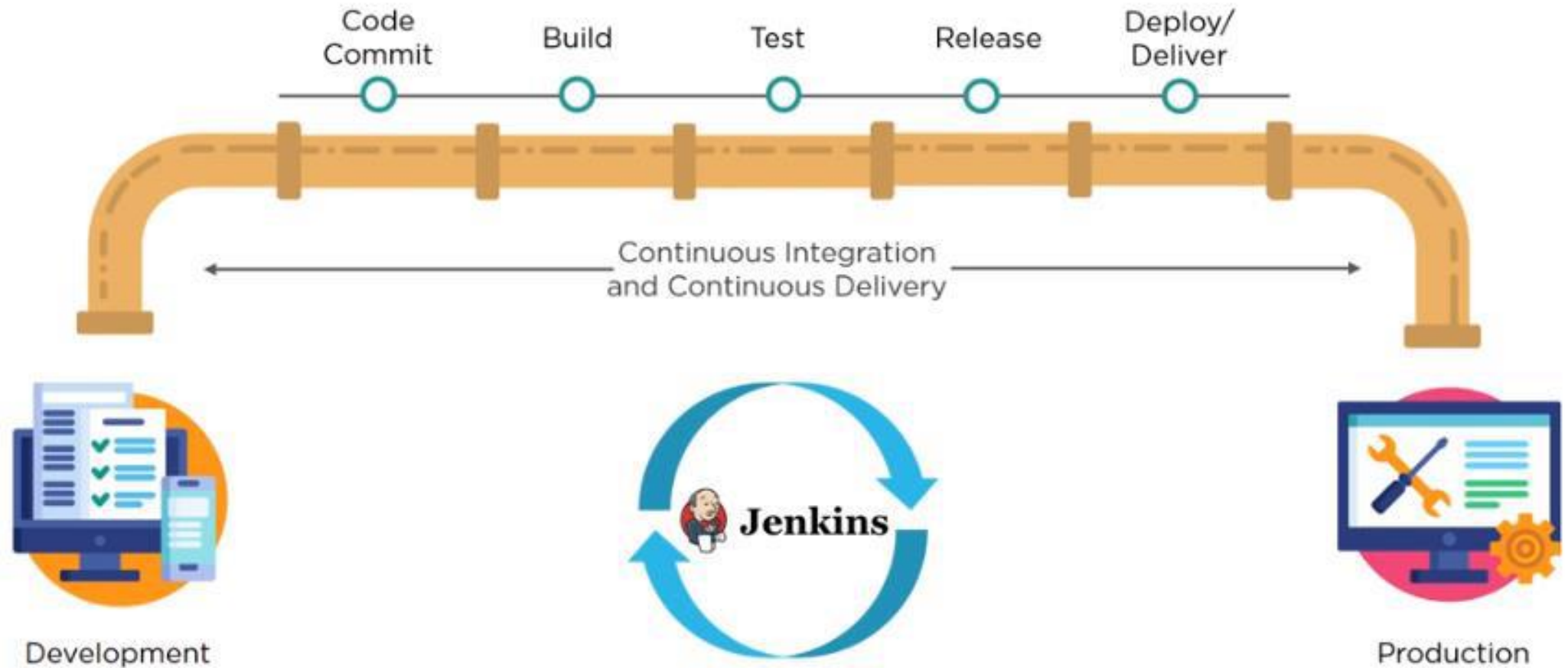
Documentation Download

Meet the Continuous

Jenkins

- Open source automation server (controller, master)
- Automated CI/(CD) tool : Integrator of DevOps
- 1000+ plug-ins
- Successor of Hudson project (2005)
- Kohsuke Kawaguchi, Sun Microsystems
- Released in 2011 as Jenkins
- Written in Java
- Historucally fit in maven/java projects
- CloudBees platform for enterprises (days to hour for build jobs)
- cf) github, gitlab

Jenkins Pipeline



Benefits

- fast feedback to developers
- easy for developers to find and fix issues
- improves developers productivity
- improves code quality
- automates integration flow
- automates SW release process
- release SW updates faster

(1) Jenkins (master)

- Default port# 8080
- Tomcat default port# 8080 (Jenkins runs in Java Servlet in a server like Tomcat)
- Jenkins Blue Ocean (2.7판 이후의 UI)
- Master/Slave vs Standalone

(2) Jenkins Dashboard

- Jenkins 사용법
- Jenkins.io
- 1,000 개 이상의 plug-ins (어렵지 않으나 도구 숙련에 시간 소
- Jenkins, The definitive guide, O'Reily, 2011

(3) Github 연동 pipeline trigger build

- Push vs Poll



(4) Pipeline 설정

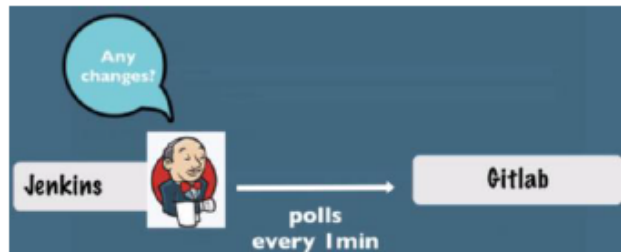
- Dependency가 있는 event/job의 연속적 연결

(5) Jenkinsfile

- Pipeline as code
- Pipeline syntax : Apache Groovy script vs declarative

<https://www.jenkins.io/doc/>

<https://www.jenkins.io/solutions/pipeline/>



Jenkins

Github webhook, multi-branch

Maven 등과 같은 Build tool 연동 (cf. Cmake for C/C++)

Selenium 등과 같은 Test tool 연동

최종 service deploy는 container로 만들어 kubernetes deploy

Jenkins 자체도 Apache Tomcat과 함께 container 로 서비스 수행

수백 개 이상의 parallel builders, testers

다양한 notification to literally EVERYBODY in the team

=> from nightly build to no sleep CI/CD

Jenkins notification

- Jabber, IRC, Desktop notification, Notifo, mobile phone, SMS, CATLIGHT, etc.

Jenkins installation for windows

1) Java 설치 – Caution!!! – Not all Java versions are supported by Jenkins

=> JDK 8 or JDK 11 only

=> OpenJDK 11 <https://www.openlogic.com/openjdk-downloads>

=> <https://www.oracle.com/kr/java/technologies/javase/jdk11-archive-downloads.html> (오라클 JDK/JRE 는 Linux 에서 package로 설치하지 못하는 License 제약 있음)

=> Jenkins manual 에는 version 만 같으면 어떤 jdk/jre 배포판도 무관하다고 명기되어 있으나 여러 agent를 사용할 때 동일 배포판을 설치할 것이 권장됨

2) Jenkins 설치

=> <https://www.jenkins.io/download/>

=> Download Generic Java package, Jenkins.war

=> cmd에서 `java -jar Jenkins.war (--httpPort=<적당한 포트번호>)` 명령 실행

Jenkins installation for Mac

- Similarly to installation on windows
- 또 는 homebrew 이용

Jenkins on Windows

Getting Started


Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log ([not sure where to find it?](#)) and this file on the server:

```
C:\Users\USER\.jenkins\secrets\initialAdminPassword
```

Please copy the password from either location and paste it below.

Administrator password



[Continue](#)

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log (**not sure where to find it?**) and this file on the server:

`C:\Users\USER\.jenkins\secrets\initialAdminPassword`

Please copy the password from either location and paste it below.

Administrator password



Continue



Customize Jenkins

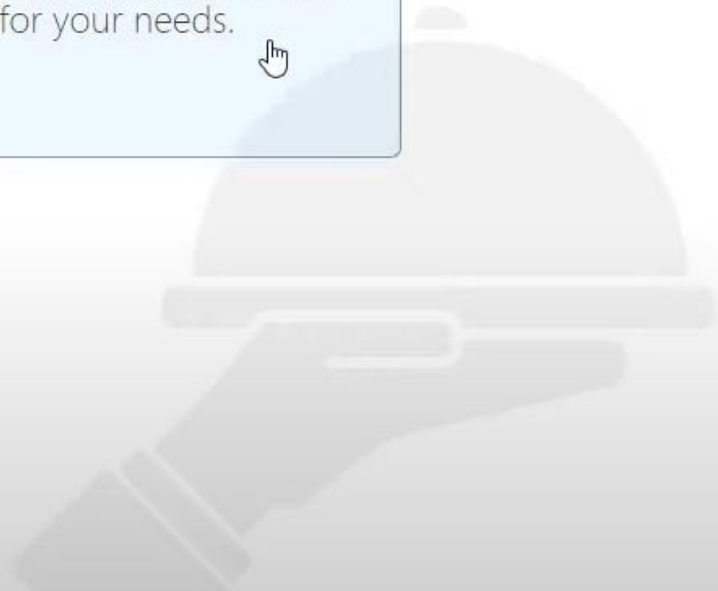
Plugins extend Jenkins with additional features to support many different needs.

Install suggested plugins

Install plugins the Jenkins community finds most useful.

Select plugins to install

Select and install plugins most suitable for your needs.



Getting Started

✓ JavaScript GUI Lib: ACE Editor bundle	✓ Pipeline: SCM Step	✓ Pipeline: Groovy	✓ Pipeline: Job	<ul style="list-style-type: none"> Pipeline: Stage Tags Metadata Pipeline: Declarative Lockable Resources Pipeline Java JSON Web Token (JWT) OkHttp GitHub API Git Token Macro Plain Credentials GitHub GitHub Branch Source Pipeline: GitHub Groovy Libraries Pipeline: Stage View Git SSH Build Agents Matrix Authorization Strategy PAM Authentication LDAP Email Extension Mailer Folders Trilead API OWASP Markup Formatter Structs Pipeline: Step API
✓ Mailer	✓ Apache HttpComponents Client 4.x API	✓ Pipeline: Basic Steps	✓ Gradle	
✓ Pipeline: Milestone Step	✓ Pipeline: Input Step	✓ Pipeline: Stage Step	✓ Pipeline Graph Analysis	
✓ Pipeline: REST API	✓ JavaScript GUI Lib: Handlebars bundle	✓ JavaScript GUI Lib: Moment.js bundle	✓ Pipeline: Stage View	
✓ Pipeline: Build Step	✓ Pipeline: Model API	✓ Pipeline: Declarative Extension Points API	✓ JSch dependency	
✓ Git client	✓ GIT server	✓ Pipeline: Shared Groovy Libraries	✓ Branch API	
✓ Pipeline: Multibranch	✓ Pipeline: Stage Tags Metadata	✓ Pipeline: Declarative	✓ Lockable Resources	
✓ Pipeline	✓ Java JSON Web Token (JWT)	✓ OkHttp	✓ GitHub API	
✓ Git	✓ GitHub	✓ GitHub Branch Source	✓ Pipeline: GitHub Groovy Libraries	
✓ SSH Build Agents	✓ Matrix Authorization Strategy	✓ PAM Authentication	⚙️ LDAP	

Create First Admin User

Username:

Password:

Confirm password:

Full name:

E-mail address:

Instance Configuration

Jenkins URL:

The Jenkins URL is used to provide the root URL for absolute links to various *Jenkins* resources. That means this value is required for proper operation of many *Jenkins* features including email notifications, PR status updates, and the `BUILD_URL` environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

Getting Started









Jenkins is ready!

Your Jenkins setup is complete.

Start using Jenkins




Dashboard ▾

-  **New Item**
-  **People**
-  **Build History**
-  **Project Relationship**
-  **Check File Fingerprint**
-  **Manage Jenkins**
-  **My Views**
-  **New View**
- Build Queue**

^

No builds in the queue.
- Build Executor Status**


^

 **Built-In Node**

1 Idle

All

+

 [Add description](#)

S	W	Name ↓	Last Success	Last Failure	Last Duration	
		simplePipelineDemo	2 hr 9 min #1	N/A	6.2 sec	

Jenkins Tour

- Manage Jenkins
- New item
- And much more