

## Team 2

차희수 201711431

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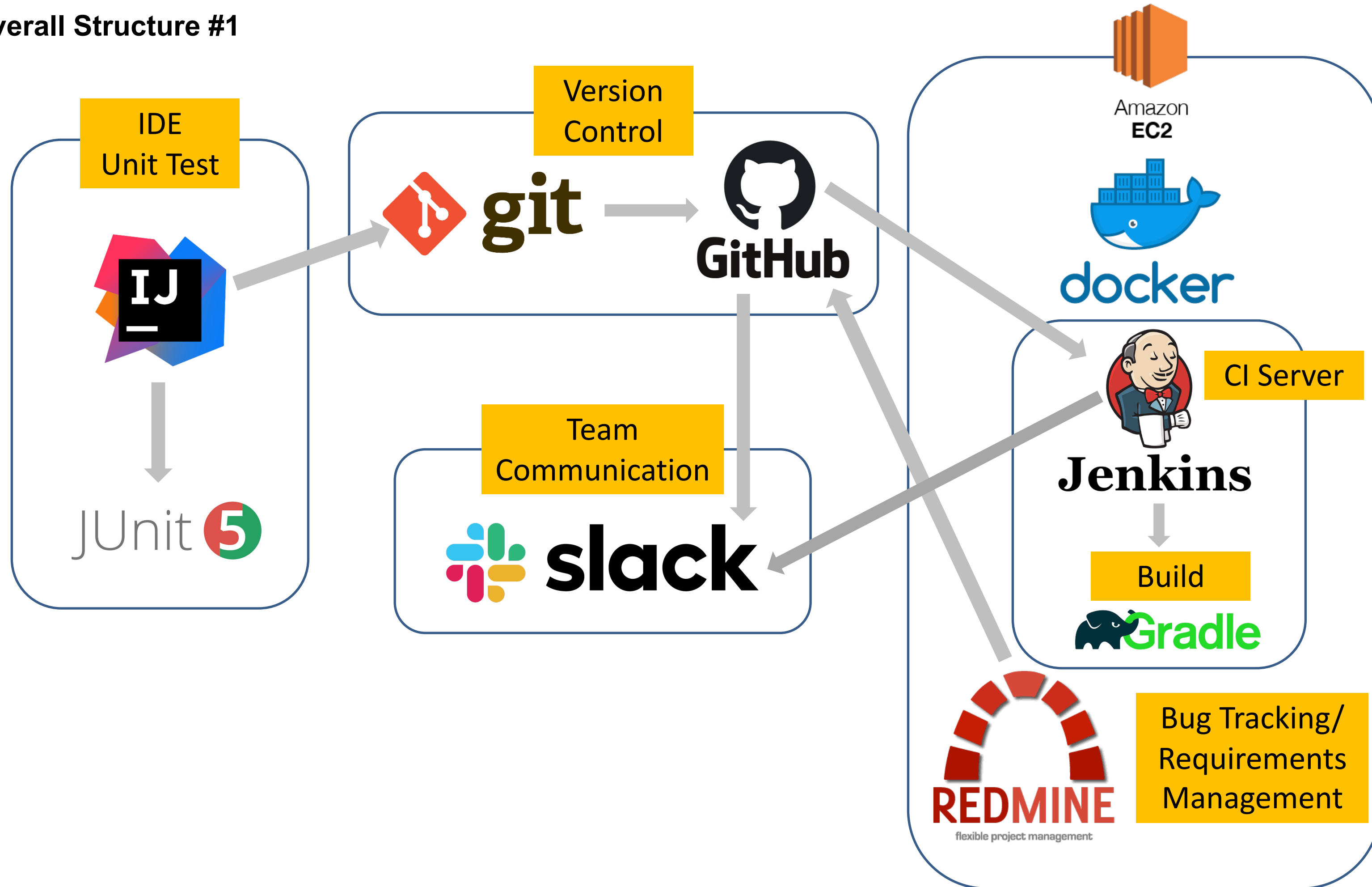
주윤지 201811297

김민혁 201510621

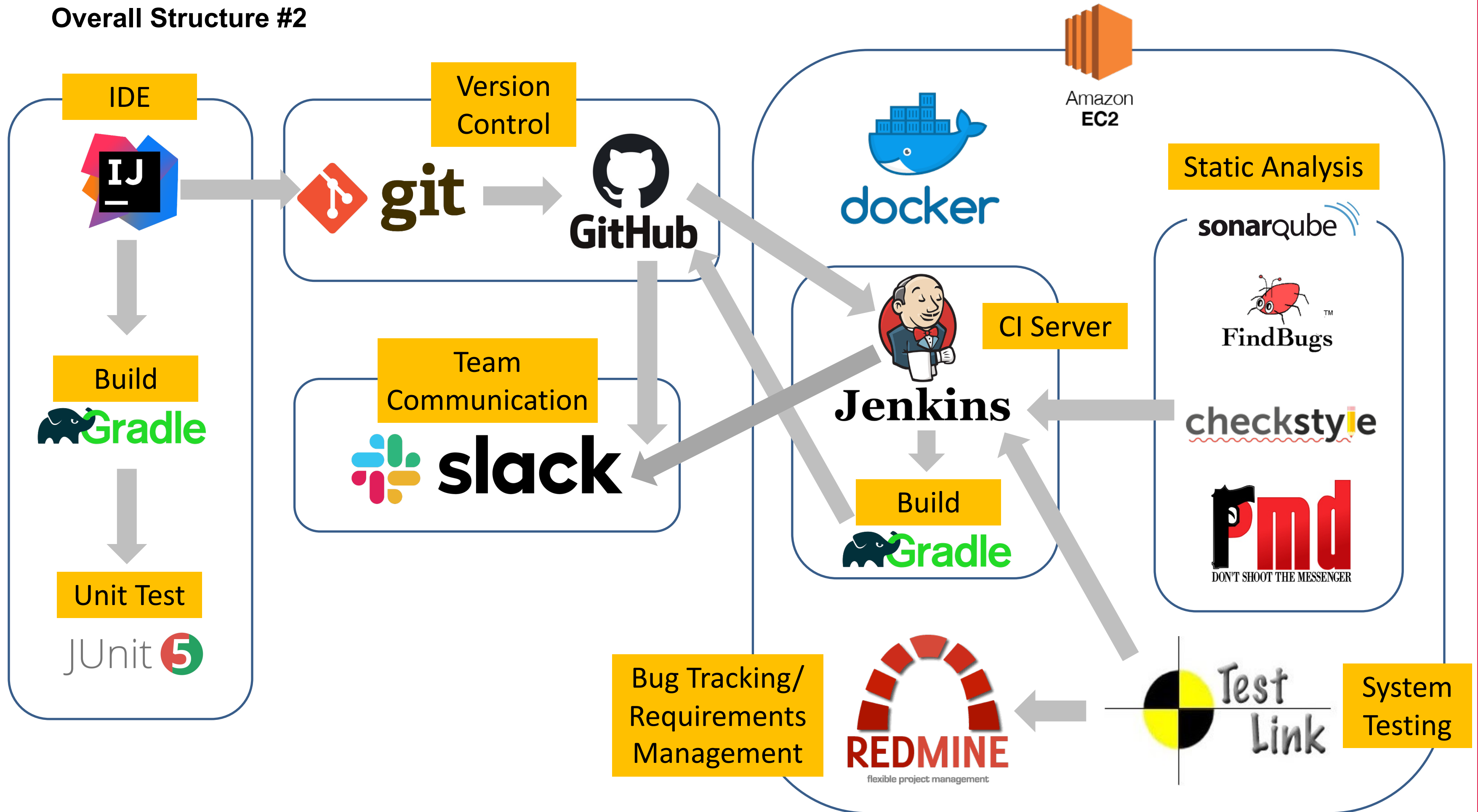
CTIP  
환경 구축

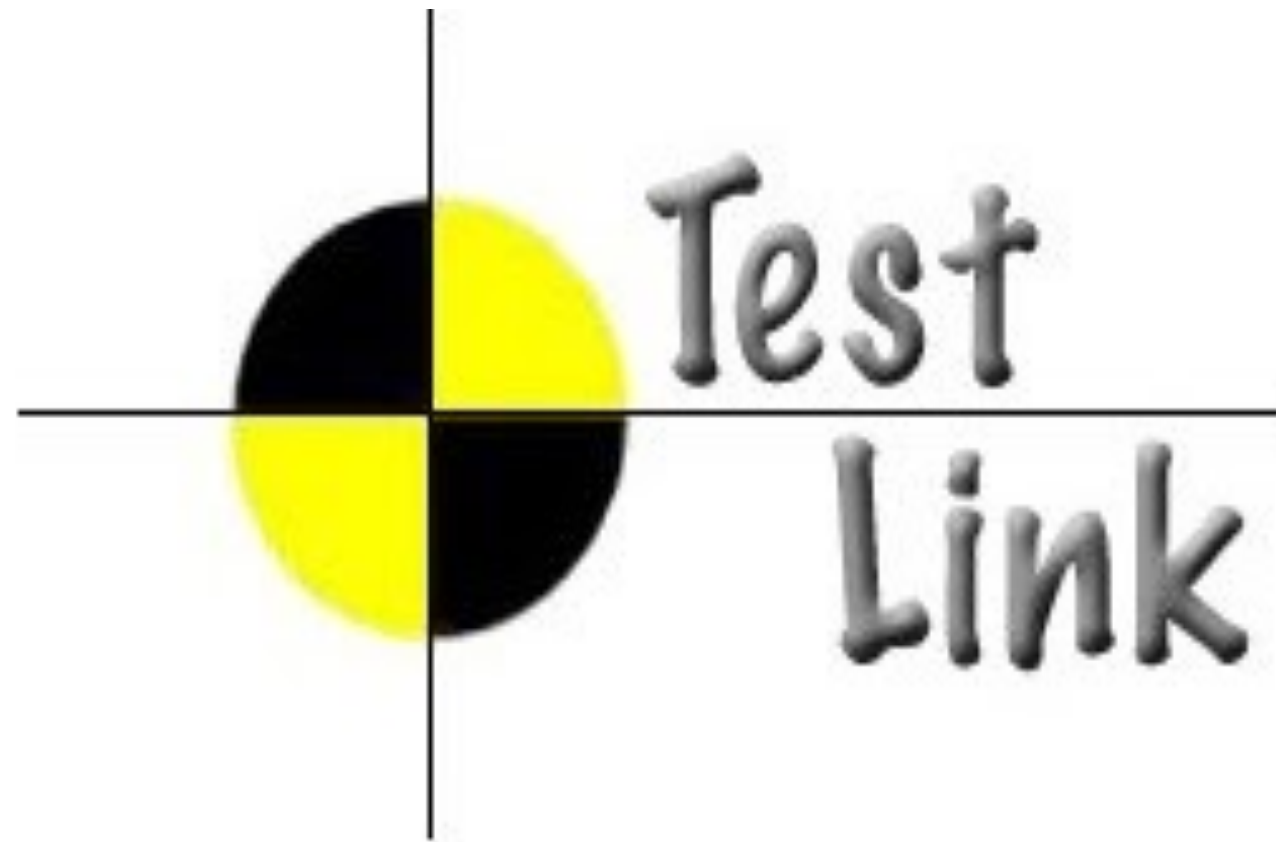
- 1 Overall Structure**
- 2 System Testing Tool**
- 3 Static Analysis Tool**
- 4 Setting Process**
- 5 Setting Issue**

# Overall Structure #1



# Overall Structure #2





- 웹 기반 테스트를 관리하므로 접근성이 좋음
- 테스트 우선순위 부여 기능 존재
- 트리구조를 이용한 테스트 케이스 작성 가능
- 사용자의 활동영역 정의 가능
- Jenkins와 플러그인으로 손쉽게 연동 가능
- 다양한 종류의 DB지원(MySQL, PostgreSQL)



- 복잡도 확인, 코드 중복 검출, 잠재적 버그 검출, 단위 테스트, 커버리지 가능
- 웹 기반으로 항목 분석 결과 쉽게 접근 가능
- 분석 결과에 대한 높은 가시성의 시각화 제공
- 원하는 정적 분석 도구(FindBugs, checkstyle, PMD)를 플러그인으로 추가 가능
- Jenkins와 플러그인으로 손쉽게 연동 가능



➤ 바이트 코드를 이용하여 잠재적 결함 체크

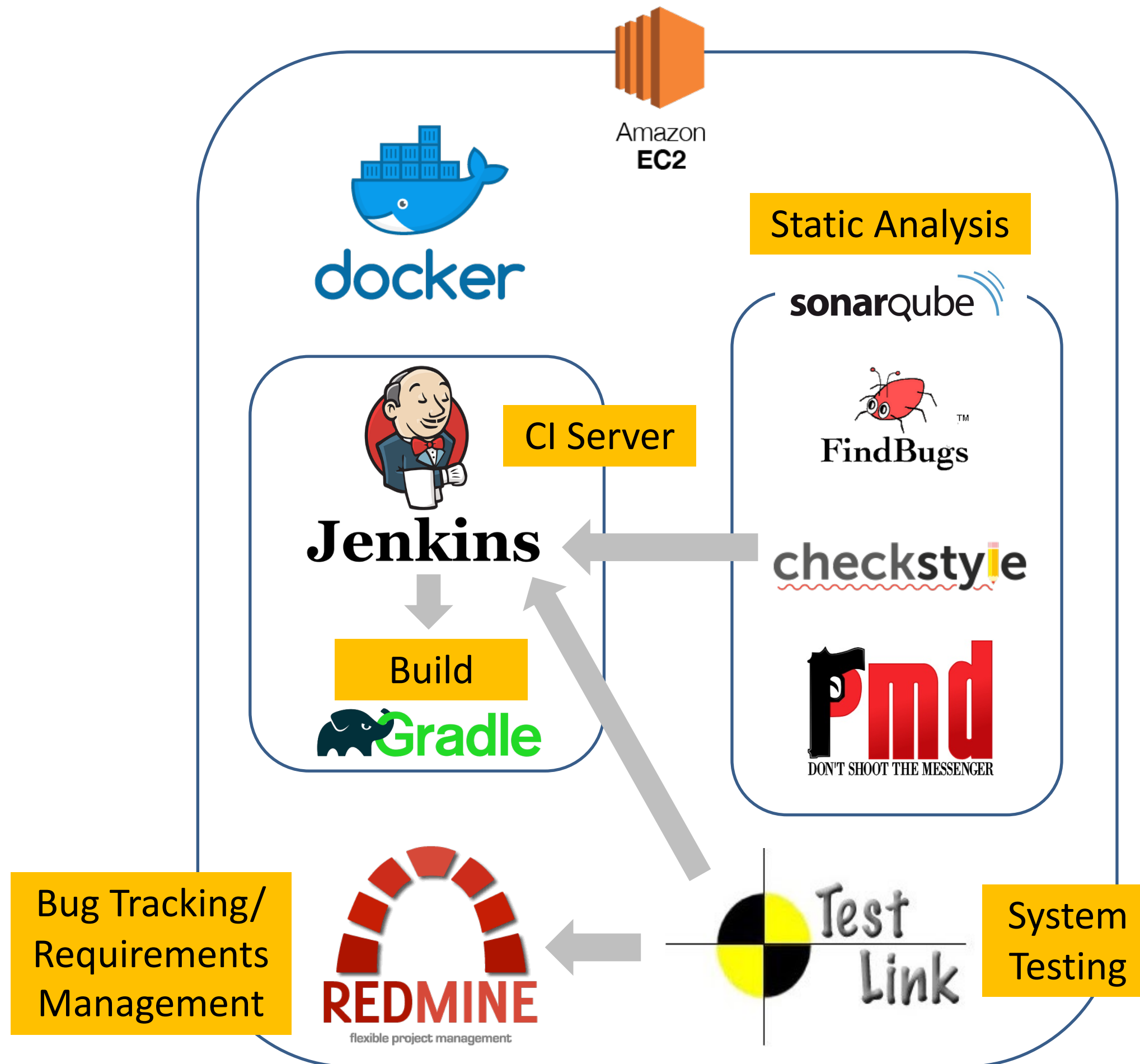


➤ 코딩 스타일 규칙을 정의하여 체크



➤ 문법적으로 오류 가능성이 높은 항목들을 체크

# Setting





# Setting Process

# Jenkins - Gradle 연동

General   소스 코드 관리   빌드 유발   빌드 환경   **Build**   빌드 후 조치

## Build

**Invoke Gradle script**

Invoke Gradle ?

**Gradle Version**

gradle

Use Gradle Wrapper ?

**Tasks ?**

clean  
build

**Jenkins**   검색   ?   1

Dashboard > jenkins\_test > #30

프로젝트로 돌아가기  
상태  
바뀐점  
Console Output  
View as plain text  
빌드 정보 수정  
Delete build '#30'  
Git Build  
이전 빌드

## 콘솔 출력

Started by user kihyun  
Running as SYSTEM  
Building in workspace /var/lib/jenkins/workspace/jenkins\_test  
The recommended git tool is: NONE  
using credential developer

```
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/jenkins_test/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/V-V-Team-2nd/Test_Project # timeout=10
Fetching upstream changes from https://github.com/V-V-Team-2nd/Test_Project
> git --version # timeout=10
> git --version # 'git version 2.23.4'
using GIT_ASKPASS to set credentials
> git fetch --tags --force --progress -- https://github.com/V-V-Team-2nd/Test_Project +refs/heads/*:refs/remotes/origin/* # timeout=10
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision bc5bf91bf76f9646ed73077afc7c27e9bb585e6c (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
```

Commit message: "gradle test"

```
> git rev-list --no-walk 43f4de9a62ece1a977c9bedf5dea9500af0a9e6b # timeout=10
[Gradle] - Launching build.
[jenkins_test] $ /opt/gradle/gradle-5.2.1/bin/gradle clean build -b build.gradle
```

**Executed Gradle Tasks**

- Task :clean
- Task :compileJava
- Task :processTestResources
- Task :testClasses
- Task :test
- Task :check
- Task :build

> Task :clean  
> Task :compileJava  
> Task :processTestResources NO-SOURCE  
> Task :testClasses UP-TO-DATE  
> Task :test NO-SOURCE  
> Task :check UP-TO-DATE  
> Task :build

BUILD SUCCESSFUL in 10s  
3 actionable tasks: 3 executed  
Build step 'Invoke Gradle script' changed build result to SUCCESS  
[Slack Notifications] found #29 as previous completed, non-aborted build  
[Slack Notifications] will send OnBackToNormalNotification because build matches and user preferences allow it  
Finished: SUCCESS

```
[ec2-user@ip-172-31-36-48 ~]$ sudo yum install docker -y  
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd  
Resolving Dependencies
```

```
[ec2-user@ip-172-31-36-48 ~]$ sudo service docker start  
Redirecting to /bin/systemctl start docker.service
```

```
[ec2-user@ip-172-31-36-48 ~]$ sudo docker pull sonarqube  
Using default tag: latest  
latest: Pulling from library/sonarqube
```

```
[ec2-user@ip-172-31-36-48 ~]$ sudo docker run --name sonarqube -p 9000:9000 sonarqube  
2021.04.23 23:38:57 INFO app[][o.s.a.AppFileSystem] Cleaning or creating temp directory /opt  
/sonarqube/temp
```

# Setting Process

## SonarQube 플러그인 설치

### SonarQube Scanner

SonarQube Scanner installations

[Add SonarQube Scanner](#)

SonarQube Scanner

Name

sonarqubescanner

Install automatically ?

**Install from Maven Central**

Version

SonarQube Scanner 4.6.0.2311 ▼

[Add Installer](#) ▼

[Delete Installer](#)

[Delete SonarQube Scanner](#)

### Sonar Quality Gates Plugin

Fails the build whenever the Quality Gates criteria in the Sonar 5.6+ analysis aren't met (the project Quality Gates status is different than "Passed")

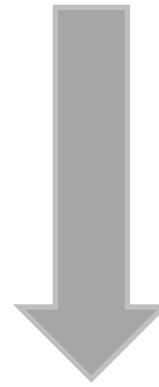
Warning: The currently installed plugin version may not be safe to use. Please review the following security notices: 1.3.1

- [Credentials transmitted in plain text](#)

## Setting Issue

SonarQube 설치 중 아무런 에러 메시지 없이 멈춤 현상 발생

```
ay)]]], net usable_space [5.6gb], net total_space [7.9gb], types [overlay]
2021.04.23 23:39:05 INFO es[][o.e.e.NodeEnvironment] heap size [503.6mb], compressed ordinary object pointers [true]
2021.04.23 23:39:05 INFO es[][o.e.n.Node] node name [sonarqube], node ID [Mwj1zeitTf2vnGLDHjrWmw], cluster name [sonarqube], roles [master, remote_cluster_client, data, ingest]
```



메모리 부족으로  
Swap 파일 생성

```
[ec2-user@ip-172-31-36-48 ~]$ sudo dd if=/dev/zero of=/mnt/swap.0 bs=1024 count=1048576
1048576+0 records in
1048576+0 records out
1073741824 bytes (1.1 GB) copied, 6.61619 s, 162 MB/s
[ec2-user@ip-172-31-36-48 ~]$ sudo mkswap /mnt/swap.0
mkswap: /mnt/swap.0: insecure permissions 0644, 0600 suggested.
Setting up swapspace version 1, size = 1024 MiB (1073737728 bytes)
no label, UUID=c56669d4-06f0-4594-8d5b-7678f42c421d
[ec2-user@ip-172-31-36-48 ~]$ sudo su
[root@ip-172-31-36-48 ec2-user]# echo "/mnt/swap.0 swap swap defaults 0 0" >> /etc/fstab
[root@ip-172-31-36-48 ec2-user]# swapon /mnt/swap.0
swapon: /mnt/swap.0: insecure permissions 0644, 0600 suggested.
[root@ip-172-31-36-48 ec2-user]# sudo swapon -s
Filename                                Type              Size      Used      Priority
/mnt/swap.0                            file              1048572  0         -2
```

# Setting Process

## Jenkins - SonarQube 연동

**Generate Tokens**

Enter Token Name

Name	Last use	Created	
sonar-jenkins	Never	April 23, 2021	<input type="button" value="Revoke"/>

**SonarQube Scanner for Jenkins** 2.13

This plugin allows an easy integration of [SonarQube](#), the open source platform for Continuous Inspection of code quality.

**Execute SonarQube Scanner** X

Task to run ?

JDK ?

(Inherit From Job) ▼

JDK to be used for this SonarQube analysis

Path to project properties ?

Analysis properties ?

```
sonar.projectKey=sonarqube
sonar.exclusions=vendor/**,storage/**,resources/**,**/*.java
```

Additional arguments ?

▼

JVM Options ?

▼

# Setting Process

## Jenkins - SonarQube 연동

### SonarQube servers

**Environment variables** Enable injection of SonarQube server configuration as build environment variables

If checked, job administrators will be able to inject a SonarQube server configuration as environment variables in the build.

### SonarQube installations

#### Name

sonarqube

#### Server URL

http://13.125.107.216:9000/

Default is http://localhost:9000

#### Server authentication token

sonar-jenkins

[Add](#)

SonarQube authentication token. Mandatory when anonymous access is disabled.

[고급...](#)

Delete SonarQube

☆ **sonarqube**

Passed

Last analysis: 21 seconds ago

🐛 Bugs

0 **A**

🔒 Vulnerabilities

0 **A**

🔥 Hotspots Reviewed

– **A**

☢️ Code Smells

2 **C**

Coverage

0.0% **F**

Duplications

0.0% **G**

Lines

5 **XS** Java

## Setting Issue

## Jenkins에서 SonarQube Credential Add 버튼 비활성화 Issue

**SonarQube servers**

**Environment variables** Enable injection of SonarQube server configuration as build environment variables  
If checked, job administrators will be able to inject a SonarQube server configuration as environment variables in the build.

**SonarQube installations**

Name  
sonarqube

Server URL  
http://13.125.107.216:9000/  
Default is http://localhost:9000

Server authentication token  
sonar-jenkins **Add**

SonarQube authentication token. Mandatory when anonymous access is disabled.

고급...

Delete SonarQube



Credential을 추가하지 않고 저장한 상태에서 재접속 하였더니 버튼 활성화됨

## Setting Issue

## Build 시 FindBugs가 디렉토리를 찾지 못하는 에러 발생

```
ERROR: Error during SonarScanner execution
java.lang.IllegalStateException: Can not execute Findbugs
    at org.sonar.plugins.findbugs.FindbugsExecutor.execute(FindbugsExecutor.java:188)
    at org.sonar.plugins.findbugs.FindbugsSensor.execute(FindbugsSensor.java:114)
    at org.sonar.scanner.sensor.AbstractSensorWrapper.analyse(AbstractSensorWrapper.java:48)
    at org.sonar.scanner.sensor.ModuleSensorsExecutor.execute(ModuleSensorsExecutor.java:85)
    at org.sonar.scanner.sensor.ModuleSensorsExecutor.lambda$execute$1(ModuleSensorsExecutor.java:59)
    at org.sonar.scanner.sensor.ModuleSensorsExecutor.withModuleStrategy(ModuleSensorsExecutor.java:77)
    at org.sonar.scanner.sensor.ModuleSensorsExecutor.execute(ModuleSensorsExecutor.java:59)
    at org.sonar.scanner.scan.ModuleScanContainer.doAfterStart(ModuleScanContainer.java:82)
    at org.sonar.core.platform.ComponentContainer.startComponents(ComponentContainer.java:137)
    at org.sonar.core.platform.ComponentContainer.execute(ComponentContainer.java:123)
    at org.sonar.scanner.scan.ProjectScanContainer.scan(ProjectScanContainer.java:392)
    at org.sonar.scanner.scan.ProjectScanContainer.scanRecursively(ProjectScanContainer.java:388)
    at org.sonar.scanner.scan.ProjectScanContainer.doAfterStart(ProjectScanContainer.java:357)
    at org.sonar.core.platform.ComponentContainer.startComponents(ComponentContainer.java:137)
    at org.sonar.core.platform.ComponentContainer.execute(ComponentContainer.java:123)
    at org.sonar.scanner.bootstrap.GlobalContainer.doAfterStart(GlobalContainer.java:149)
    at org.sonar.core.platform.ComponentContainer.startComponents(ComponentContainer.java:137)
    at org.sonar.core.platform.ComponentContainer.execute(ComponentContainer.java:123)
    at org.sonar.batch.bootstrapper.Batch.doExecute(Batch.java:72)
    at org.sonar.batch.bootstrapper.Batch.execute(Batch.java:66)
    at org.sonarsource.scanner.api.internal.batch.BatchIsolatedLauncher.execute(BatchIsolatedLauncher.java:46)
    at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
    at sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:62)
    at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:43)
    at java.lang.reflect.Method.invoke(Method.java:498)
    at org.sonarsource.scanner.api.internal.IsolatedLauncherProxy.invoke(IsolatedLauncherProxy.java:60)
    at com.sun.proxy.$Proxy0.execute(Unknown Source)
    at org.sonarsource.scanner.api.EmbeddedScanner.doExecute(EmbeddedScanner.java:189)
    at org.sonarsource.scanner.api.EmbeddedScanner.execute(EmbeddedScanner.java:138)
    at org.sonarsource.scanner.cli.Main.execute(Main.java:112)
    at org.sonarsource.scanner.cli.Main.execute(Main.java:75)
    at org.sonarsource.scanner.cli.Main.main(Main.java:61)
Caused by: java.lang.IllegalStateException: One (sub)project contains Java source files that are not compiled (/var/lib/jenkins/workspace/jenkins_test).
    at org.sonar.plugins.findbugs.FindbugsConfiguration.getFindbugsProject(FindbugsConfiguration.java:123)
    at org.sonar.plugins.findbugs.FindbugsExecutor.execute(FindbugsExecutor.java:119)
    ... 31 more
```

### Analysis properties ?

```
sonar.projectKey=sonarqube
sonar.java.binaries=build/classes
```

Dir 경로 수동 설정



## Setting Process

## TestLink 설치

```
[ec2-user@ip-172-31-9-240 ~]$ curl -sSL https://raw.githubusercontent.com/bitnami/bitnami-docker-testlink/master/docker-compose.yml > docker-compose.yml
[ec2-user@ip-172-31-9-240 ~]$ docker-compose up -d
-bash: docker-compose: command not found
[ec2-user@ip-172-31-9-240 ~]$ sudo curl -L https://github.com/docker/compose/releases/download/1.21.0/docker-compose-`uname -s`-`uname -m` | sudo tee /usr/local/bin/docker-compose > /dev/null
```

```
[ec2-user@ip-172-31-9-240 ~]$ docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS
d5e393cc397a	bitnami/testlink:1	"/opt/bitnami/script..."	19 minutes ago	Up 15 minutes
2fb383d81fda	bitnami/mariadb:10.3	"/opt/bitnami/script..."	19 minutes ago	Up 19 minutes

ip주소:포트번호로 접속

TestLink

1.9.20 [DEV]

Login Name

Password

Login

New User? Lost Password?

## Setting Issue

## TestLink 설치 시 docker-compose 에러 및 포트번호 중복 Issue

```
[ec2-user@ip-172-31-9-240 ~]$ curl -sSL https://raw.githubusercontent.com/bitnami/bitnami-docker-testlink/master/docker-compose.yml > docker-compose.yml
[ec2-user@ip-172-31-9-240 ~]$ docker-compose up -d
-bash: docker-compose: command not found
[ec2-user@ip-172-31-9-240 ~]$ sudo curl -L https://github.com/docker/compose/releases/download/1.21.0/docker-compose-`uname -s`-`uname -m` | sudo tee /usr/local/bin/docker-compose > /dev/null
```

```
[ec2-user@ip-172-31-9-240 ~]$ docker ps
CONTAINER ID   IMAGE                                COMMAND
PORTS         NAMES
d5e393cc397a   bitnami/testlink:1                 "/opt/bitnami/script..."
0.0.0.0:80->8080/tcp, 0.0.0.0:443->8443/tcp   ec2-user_testlink_1
2fb585d811da   bitnami/mariadb:10.5               "/opt/bitnami/script..."
3306/tcp      ec2-user_mariadb_1
```

testlink:

- image: docker.io/bitnami/testlink:1
- ports:
  - '800:8080'
  - '443:8443'

# Setting Process

## Jenkins - TestLink 연동

### TestLink

TestLink Installation

추가

List of TestLink installations in this system

### TestLink

TestLink Installation

Name

chromeAutomation

URL

http://13.125.252.247:800/testlink/lib/api/xmlrpc/v1/xmlrpc.php

Developer Key

e#

Add build step ^

- Execute SonarQube Scanner
- Execute Windows batch command
- Execute shell
- GitHub PR: set 'pending' status
- Invoke Ant
- Invoke Gradle script
- Invoke TestLink**
- Invoke top-level Maven targets
- Quality Gates Sonarqube Plugin
- Run with timeout
- Set build status to "pending" on GitHub com
- SonarScanner for MSBuild - Begin Analysis
- SonarScanner for MSBuild - End Analysis

Notify Every Failure

Notify Back To Normal

저장 Apply

General 소스 코드 관리 빌드 유발 빌드 환경 **Build** 빌드 후 조치

### Invoke TestLink

#### TestLink Configuration

TestLink Version ?

chromeAutomation

Test Project Name ?

Java\_Test\_Project

Test Plan Name ?

demo

Build Name ?

AUTOMATION\_\${BUILD\_ID}

Custom Fields ?

RunClass

## Setting Issue

## TestLink URL Not Found 에러

Dashboard > jenkins\_test > #41

- Task :classes
- Task :jar
- Task :assemble
- Task :compileTestJava
- Task :processTestResources
- Task :testClasses
- Task :test
- Task :check
- Task :build

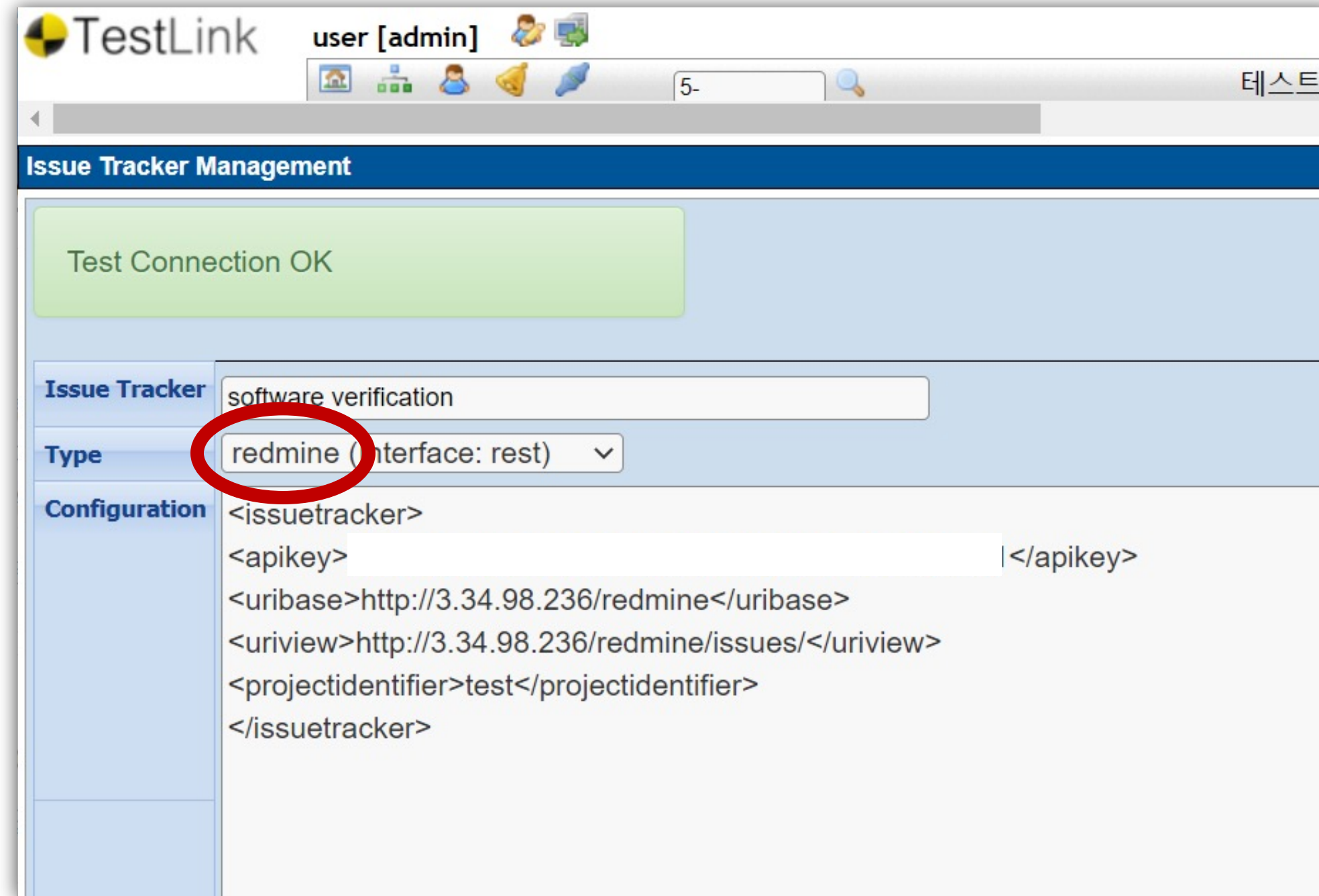
```
[Gradle] - Launching build.
[jenkins_test] $ /opt/gradle/gradle-5.2.1/bin/gradle clean build -b build.gradle
> Task :clean
> Task :compileJava
> Task :processResources NO-SOURCE
> Task :classes
> Task :jar
> Task :assemble
> Task :compileTestJava NO-SOURCE
> Task :processTestResources NO-SOURCE
> Task :testClasses UP-TO-DATE
> Task :test NO-SOURCE
> Task :check UP-TO-DATE
> Task :build

BUILD SUCCESSFUL in 2s
3 actionable tasks: 3 executed
Build step 'Invoke Gradle script' changed build result to SUCCESS
Preparing TestLink client API.
Using TestLink URL: http://13.125.252.247:800/testlink/lib/api/xmlrpc/v1/xmlrpc.php

FATAL: Error verifying developer key: HTTP server returned unexpected status: Not Found
br.eti.kinoshita.testlinkjavaapi.util.TestLinkAPIException: Error verifying developer key: HTTP server returned unexpected status: Not Found
    at br.eti.kinoshita.testlinkjavaapi.TestLinkAPI.<init>(TestLinkAPI.java:149)
    at hudson.plugins.testlink.TestLinkBuilder.getTestLinkSite(TestLinkBuilder.java:331)
    at hudson.plugins.testlink.TestLinkBuilder.perform(TestLinkBuilder.java:206)
    at hudson.tasks.BuildStepMonitor$1.perform(BuildStepMonitor.java:20)
    at hudson.model.AbstractBuild$AbstractBuildExecution.perform(AbstractBuild.java:803)
    at hudson.model.Build$BuildExecution.build(Build.java:197)
    at hudson.model.Build$BuildExecution.doRun(Build.java:163)
    at hudson.model.AbstractBuild$AbstractBuildExecution.run(AbstractBuild.java:513)
    at hudson.model.Run.execute(Run.java:1907)
    at hudson.model.FreeStyleBuild.run(FreeStyleBuild.java:43)
    at hudson.model.ResourceController.execute(ResourceController.java:97)
    at hudson.model.Executor.run(Executor.java:429)
Caused by: org.apache.xmlrpc.client.XmlRpcHttpTransportException: HTTP server returned unexpected status: Not Found
    at org.apache.xmlrpc.client.XmlRpcHttpTransport.configureOutputStream(XmlRpcHttpTransport.java:144)
```

## Setting Process

## RedMine - TestLink 연동



The screenshot shows the TestLink web interface. At the top, the TestLink logo is on the left, and the user is identified as 'user [admin]'. Below the header, there is a navigation bar with icons and a search box containing '5-'. The main content area is titled 'Issue Tracker Management' and features a green box indicating 'Test Connection OK'.

The configuration section is divided into three parts:

- Issue Tracker:** A text input field containing 'software verification'.
- Type:** A dropdown menu with 'redmine (interface: rest)' selected. This dropdown is circled in red.
- Configuration:** A text area containing XML configuration data:

```
<issuetracker>
<apikey>
|</apikey>
<uribase>http://3.34.98.236/redmine</uribase>
<uriview>http://3.34.98.236/redmine/issues/</uriview>
<projectidentifier>test</projectidentifier>
</issuetracker>
```

# Setting Issue

## RedMine - TestLink 연동시 uri 관련 Issue

The screenshot shows the TestLink interface with the user 'admin'. Under 'Issue Tracker Management', a red box indicates 'Test Connection KO'. The configuration fields are:

- Issue Tracker: software verification
- Type: redmine (Interface: rest)
- Configuration: (empty)

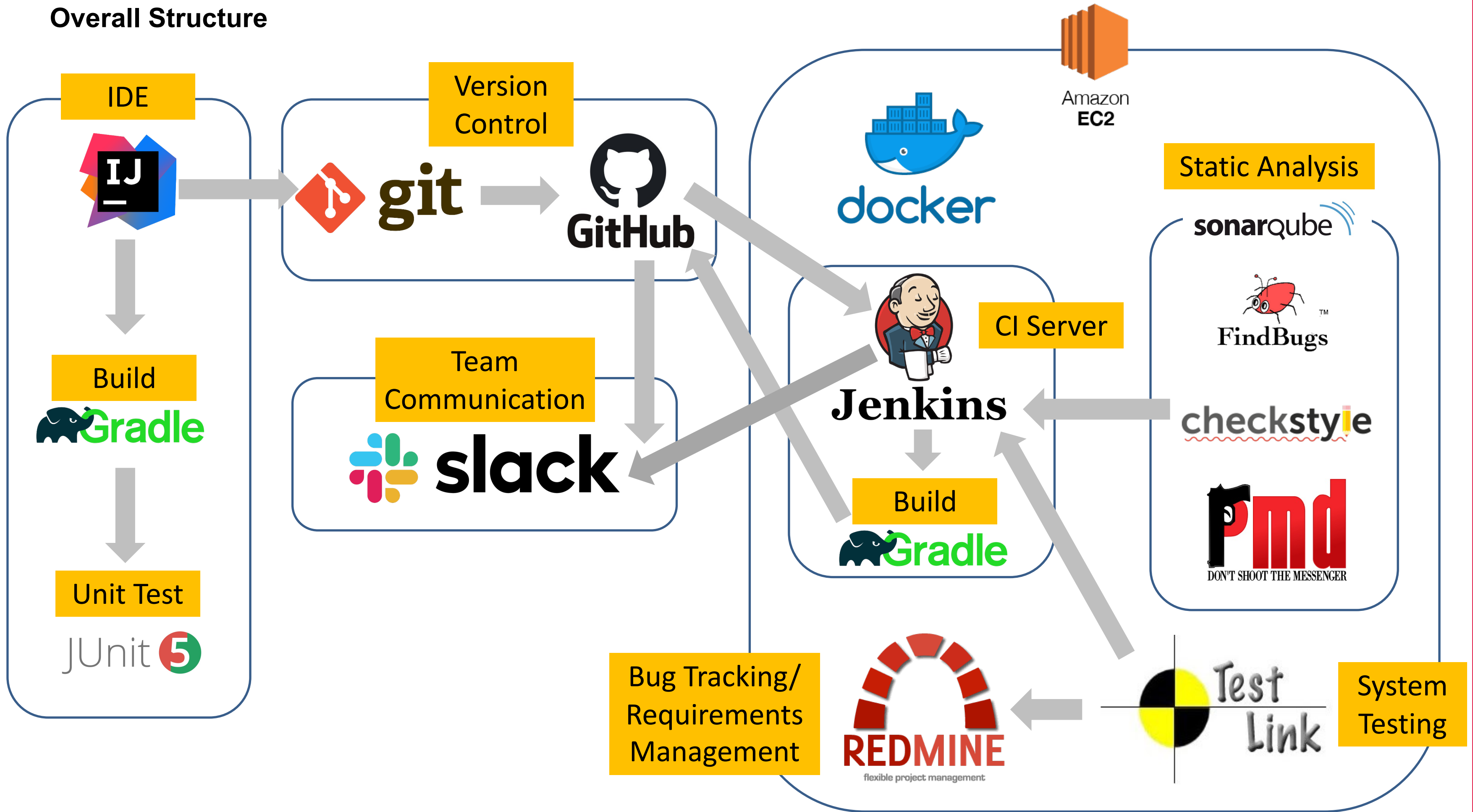
The screenshot shows the TestLink interface with the user 'admin'. Under 'Issue Tracker Management', a green box indicates 'Test Connection OK'. The configuration fields are:

- Issue Tracker: software verification
- Type: redmine (Interface: rest)
- Configuration: 

```
<issuetracker>  
<apikey> | </apikey>  
<uribase>http://3.34.98.236/redmine</uribase>  
<uriview>http://3.34.98.236/redmine/issues/</uriview>  
<projectidentifier>test</projectidentifier>  
</issuetracker>
```

The XML configuration for `<uribase>` and `<uriview>` is highlighted with a red box.

# Overall Structure



**THANK  
YOU**