오픈소스 라이브러리 배포 이야기

(feat. Maven Central Repository)

표준프레임워크 오픈커뮤니티
딸기아빠

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- Open Source Library 소개
- Maven Central Repository 개요
- OSS Repository Hosting 활용
- CI(Continuous Integration) 적용

Open Source Library 소개

Code Analyst

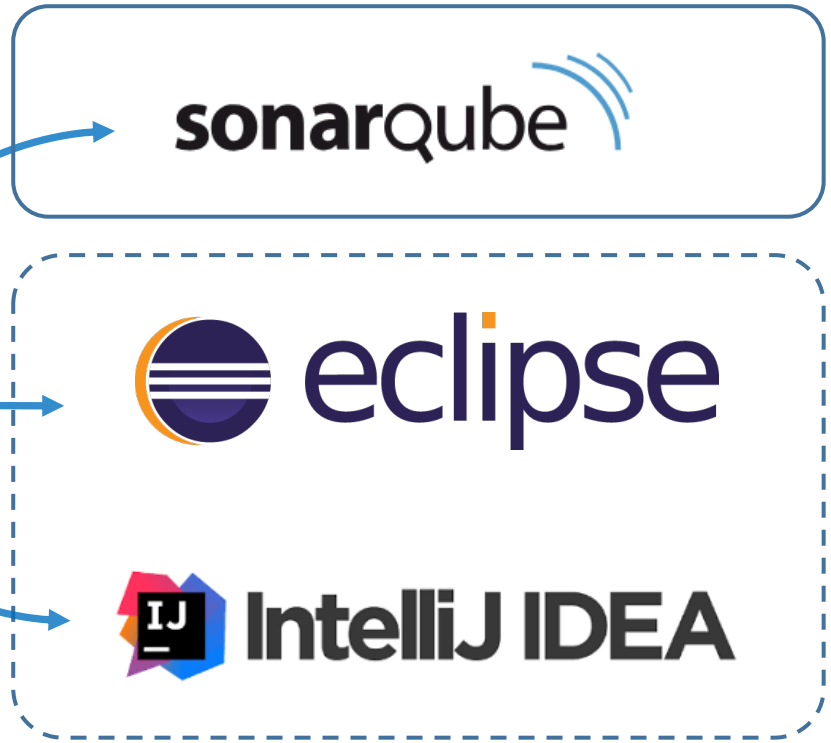
'17년 5월부터 개발,

'18년 10월 및 11월 오픈소스 버전 릴리즈

Code Analyst Project

release v2.8.0 | build passing | license Apache-2.0

https://github.com/RedCA-Family/code-analyst



범례

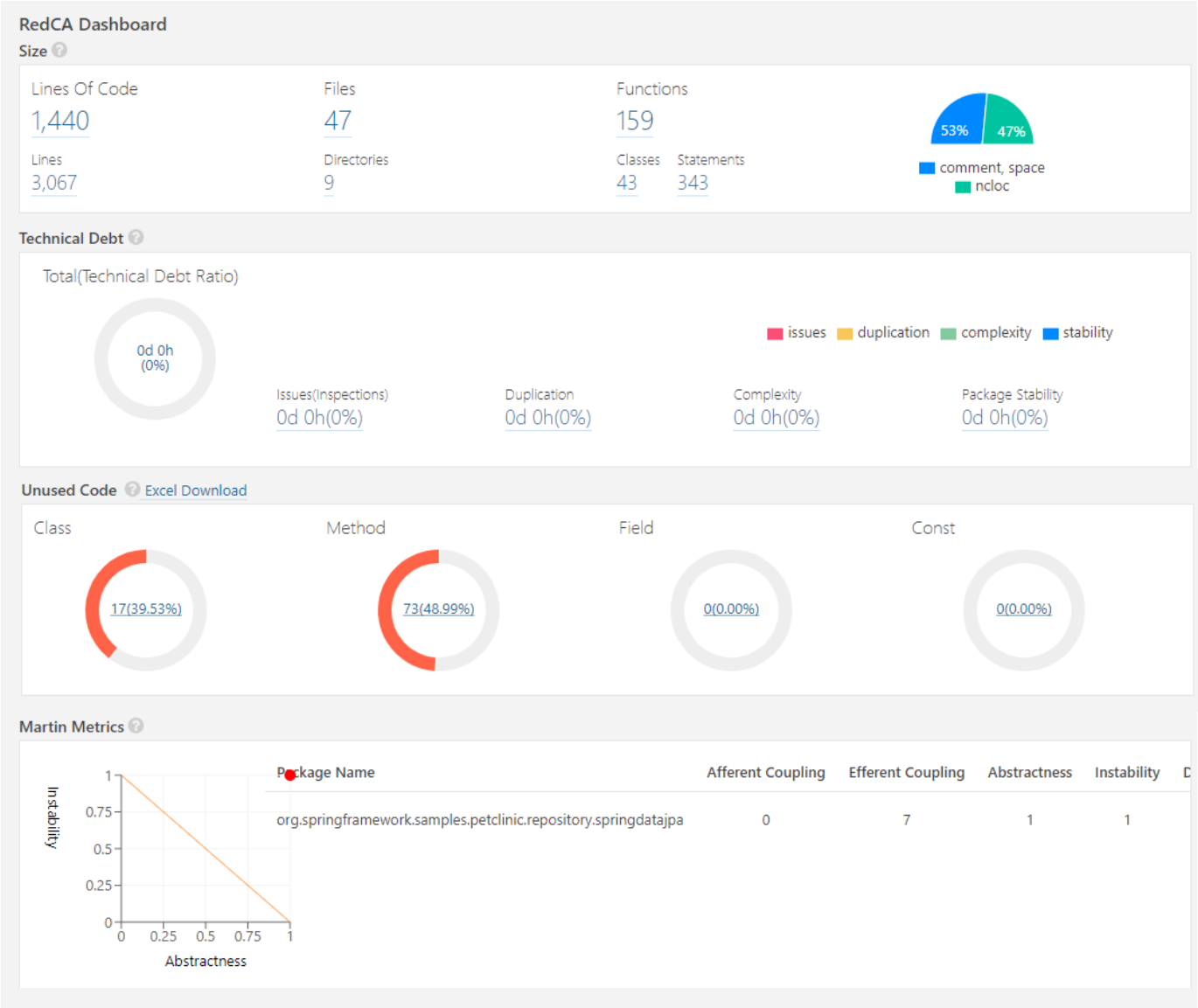
오픈소스 공개

오픈소스 준비중

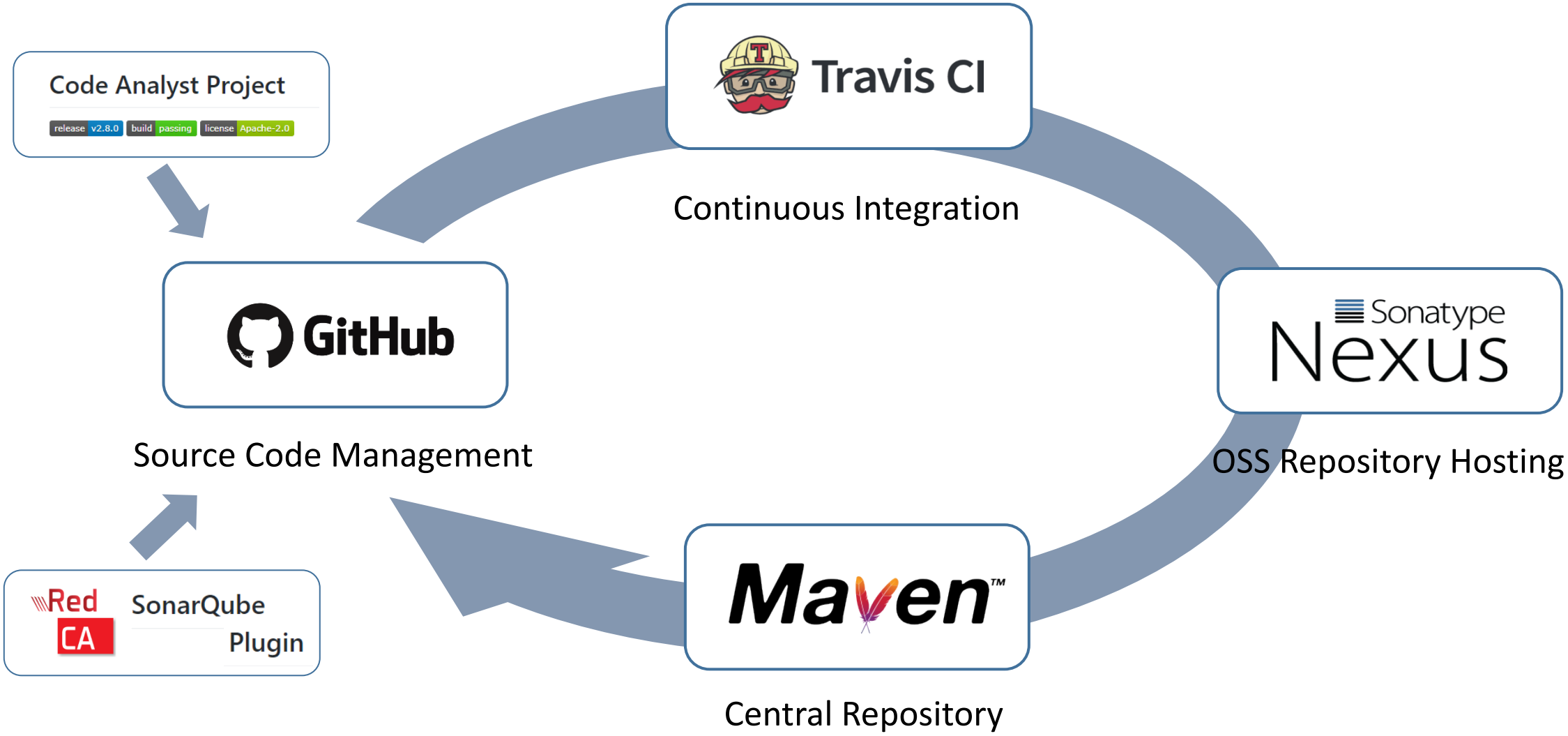
- 다양한 코드품질 관련 지표를 통합적으로 측정 및 제공 (CLI 및 API)
  - 코드 규모, 중복도, 복잡도, 잠재적 결함, 응집도, 결합도, 개발표준 등
- 현재 Java, JavaScript(Node.js), C# 및 Python 언어 지원

Code Analyst – examples

```
14:28:28.929 INFO  c.s.a.c.m.App - Project Directory : C:\Workspace\Project
14:28:28.935 INFO  c.s.a.c.m.App - Code Size Analysis start...
...
==============================================================================
              ______    _______  _______  __    __  ___      _______
             |    _ |  |       ||       ||  | |  ||   |    |       |
             |   | ||  |    ___||  _____||  | |  ||   |    |_     _|
             |   |_||_ |   |___ | |_____ |  |_|  ||   |      |   |
             |    __  ||    ___||_____  ||       ||   |___   |   |
             |   |  | ||   |___  _____| ||       ||       |  |   |
             |___|  |_||_______||_______||_______||_______|  |___|
==============================================================================
Files : 60
Dir. : 13
Classes : 66
Functions : 540
lines : 6,703
Comment Lines : 384
Ncloc : 4,633
Statements : 2,210

Duplicated Blocks : 40
Duplicated lines : 50
Duplication % : 0.75%

Complexity functions : 524
Complexity Total : 932
Complexity Over 10(%) : 0.76% (4)
Complexity Over 15(%) : 0.38% (2)
Complexity Over 20(%) : 0.00% (0)
Complexity Equal Or Over 50(%) : 0.00% (0)
- The complexity is calculated by PMD's Modified Cyclomatic Complexity method

SonarJava violations : 447
SonarJava 1 priority : 3
SonarJava 2 priority : 43
SonarJava 3 priority : 339
SonarJava 4 priority : 62
SonarJava 5 priority : 0
```

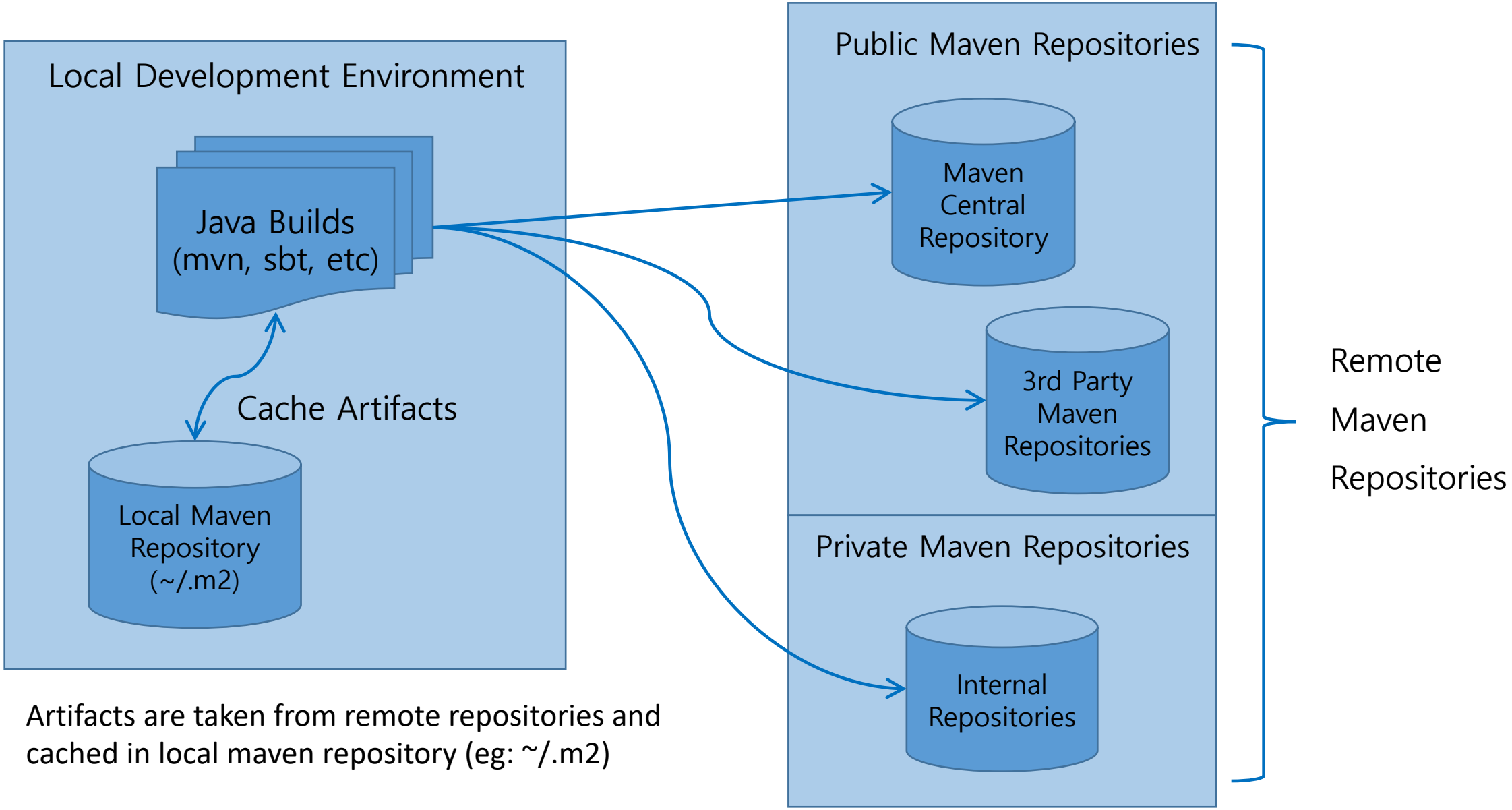


Code Analyst - configuration



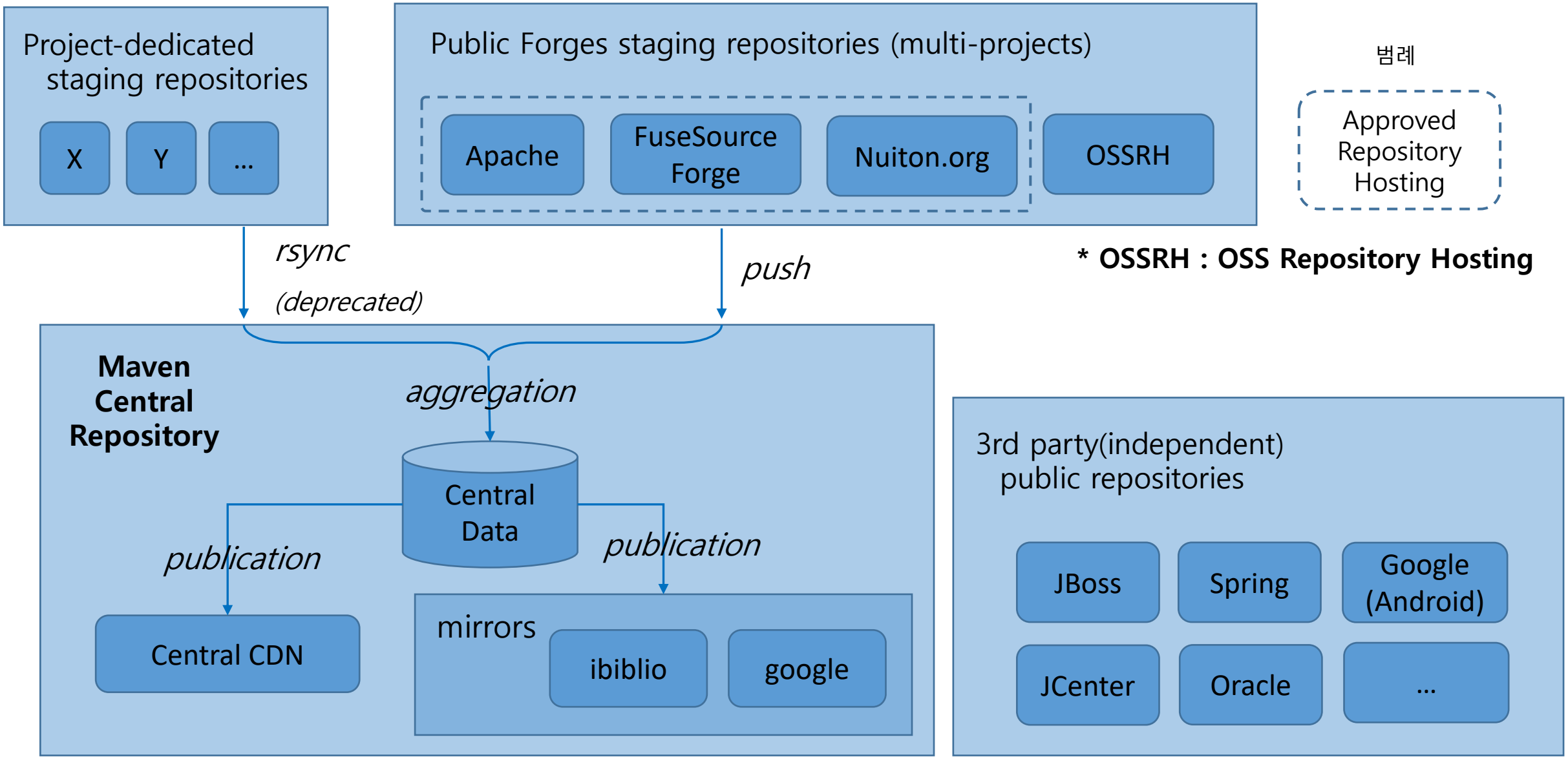
Maven Central Repository 개요

Maven Repositories



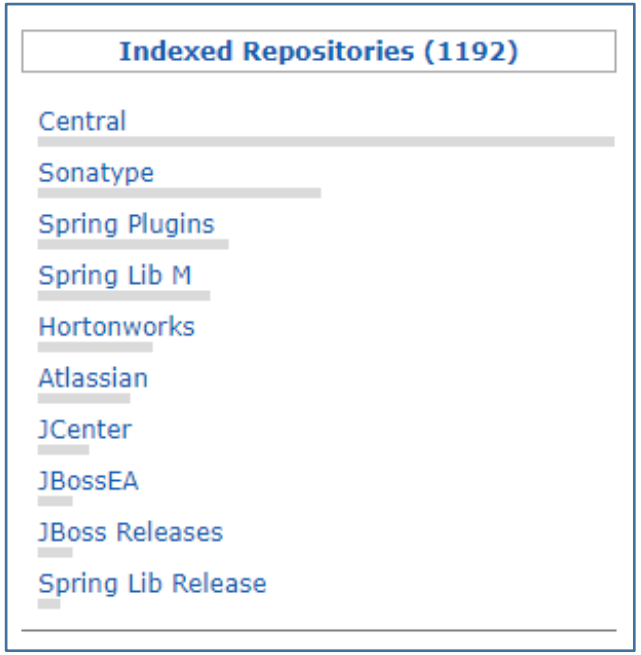
Artifacts are taken from remote repositories and cached in local maven repository (eg: ~/.m2)

Maven Central Repository



Maven Central Repository – cont'd

- URL : https://repo1.maven.org/maven2/
- 2019년 현재 약 4M Artifacts(GAV), 300K Unique Artifacts(GA) 제공
- Artifacts 검색 : https://search.maven.org/ 또는 MvnRepository (https://mvnrepository.com/, 1K 이상 repositories 통합 검색 및 부가 정보 제공)
- sonatype 에서 운영
  - Apache Maven 프로젝트 핵심 Contributor
  - Repository Manager 소프트웨어 Nexus 제공 (Open Source / Commercial ver.)
  - OSSRH 서비스도 제공



<MvnRepository>

Requirements for artifacts upload to the central

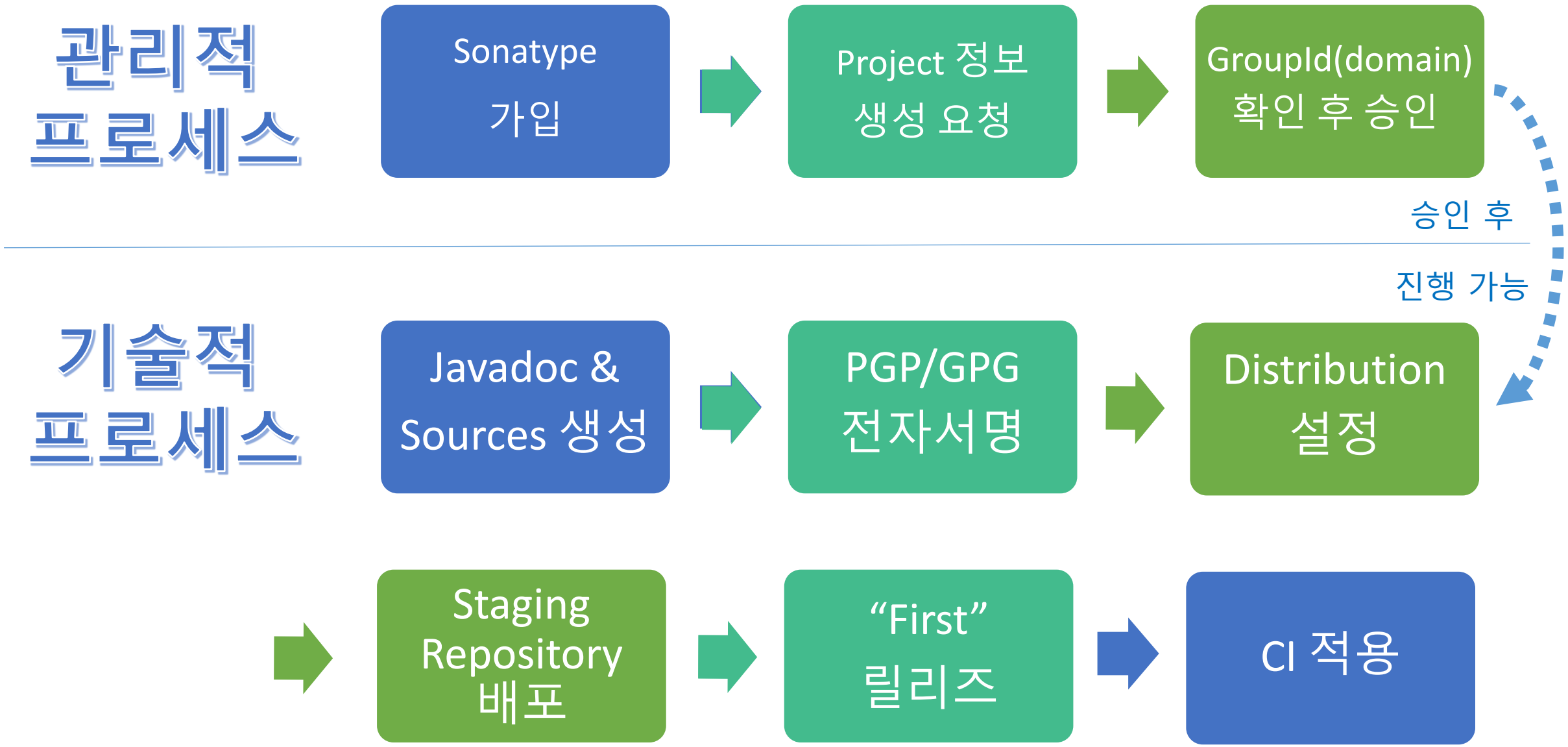
- Releases : 릴리즈 버전 (삭제 및 변경 불가)
- Javadoc & sources : IDE 연계 지원
- PGP signature : 변조 방지 등
- Minimum POM information : 최소 정보 (license, developers, scm 등)
- Coordinates : groupId 정책 (domain 소유 등)
  - groupId 가이드라인 eg) samsungsds.com -> com.samsungsds, github.com/*username* -> io.github.*username*
  - artifactId 가이드라인 eg) maven-core, commons-math
  - version 가이드 : Semantic Versioning (참고 : https://semver.org/lang/ko/)

OSS Repository Hosting 활용

OSSRH overview

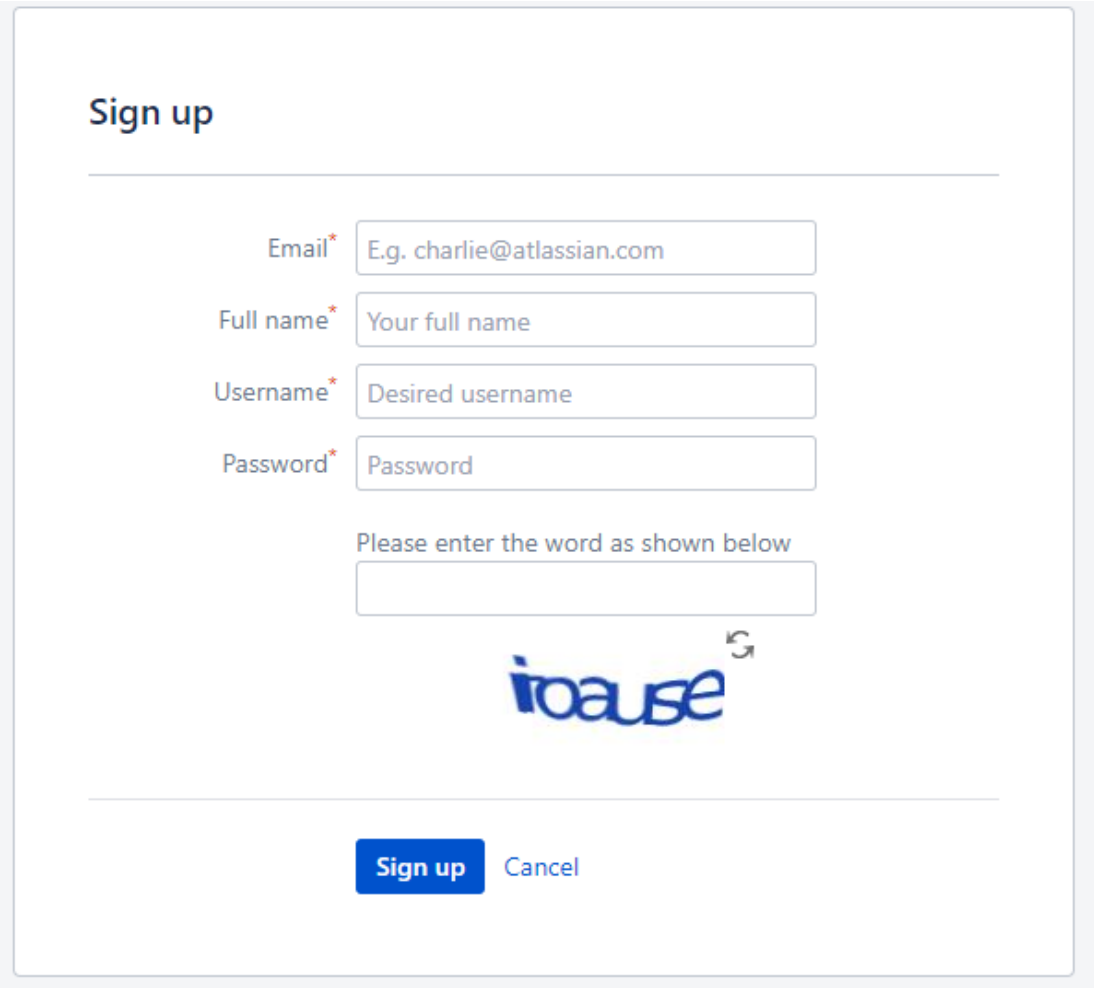
- Sonatype Nexus Repository Manager (https://oss.sonatype.org/)
- 오픈소스 프로젝트 바이너리 호스팅 서비스 (무료)
- Maven repository 표준 지원 및 다음과 같은 서비스 제공
  - 개발 버전(snapshots) 배포
  - 최종 릴리즈 버전 스테이징
  - 릴리즈 승인 및 Maven Central Repository 동기화

Overall flow



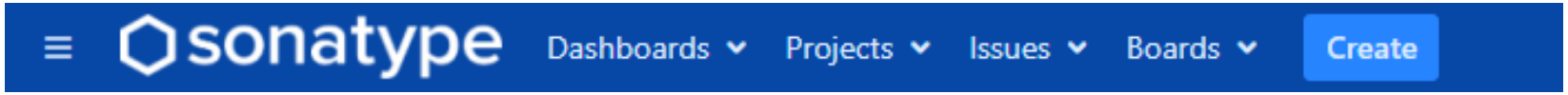
Sonatype signup

- JIRA 가입 (https://issues.sonatype.org/secure/Signup!default.jspa)

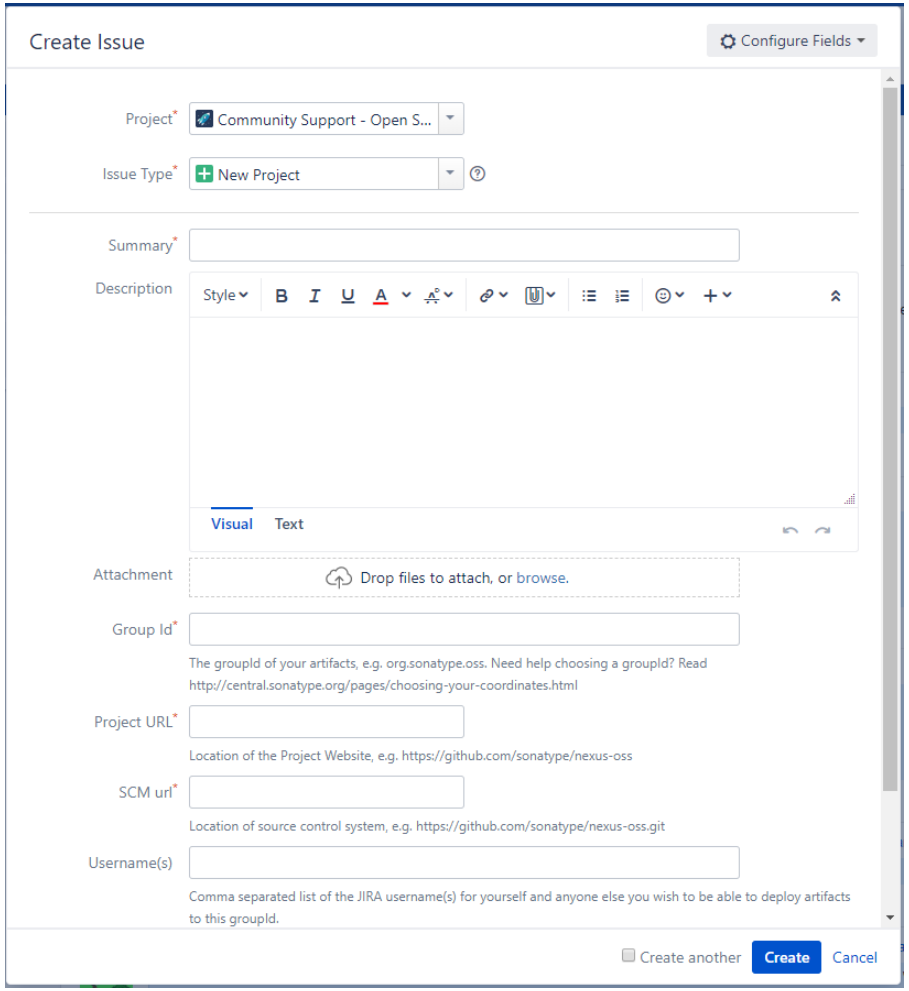


Create a new project ticket

- JIRA Issue 생성



  - Issue Type : New Project
  - Summary : 프로젝트 또는 라이브러리 이름
  - Description & Attachment : 상세 설명 및 관련 파일
  - Group Id : 사용하고자 하는 GroupId
  - Project URL : 프로젝트 사이트 주소
  - SCM URL : 형상서버 주소
  - Username(s) : JIRA 계정 (여러 명 지정 가능)



Prove the ownership of domain (3/9)

- Issue Comments 확인 및 조치

Central OSSRH added a comment - 11/27/18 02:28 AM

Do you own the domain samsungsds.com? If so, please verify ownership via one of the following methods:

- Add a TXT record to your DNS referencing this issue (Fastest)
- Setup a redirect to your Github page (if it does not already exist)
- Send an email to central@sonatype.com referencing this issue from a samsungsds.com email address

If you do not own this domain, please read:
http://central.sonatype.org/pages/choosing-your-coordinates.html
You may also choose a groupId that reflects your project hosting, in this case, something like io.github.redca-family or com.github.redca-family

- DNS 상에 TXT record 등록 (Issue 참고 URL 등)
- 홈페이지 Redirect 지정 (해당 도메인 주소)
- 도메인 주소 사용 이메일로 메일 전송 (to central@sonatype.com)
- “io.github.[username]” or “com.github.[username]” 요청 시 “TICKET ID” Public Repo 생성 확인

[참고] Maven : phase vs lifecycle vs goal (1/2)

- **Phase** : 최소 수행 단위
  - eg: compile, test, package, clean, …
- **Lifecycle** : 관련 있는 phase들의 순서가 있는 단계
  - default : 빌드 수행 (23개 phases로 구성, validate → .. → generate-sources → .. → compile → .. → test → .. → package → .. → verify → install → deploy)
  - clean : 생성된 파일 삭제 (3개 phases로 구성, pre-clean → clean → post-clean)
  - site : 문서 생성 (4개 phases로 구성, pre-site → site → post-site → site-deploy)

※ mvn <phase> : lifecycle 상 앞에 있는 모든 phase들을 순서대로 모두 실행 (특정 phase만 실행 불가)

[참고] Maven : phase vs lifecycle vs goal (2/2)

- **Goal** : plugin의 단위 기능
  - Phase들은 ”plugin:goal”에 지정됨
  - eg: compile → compiler:compile, test-compile → compiler:testCompile, test → surefire:test, package → jar:jar or war:war, …
- Phase가 없는 goal 실행 방법 : mvn <plugin>:<goal>
  - eg: mvn eclipse:eclipse
- Goal이 없는 phase? eg: validate, initialize, verify, …

※ 참고 : http://maven.apache.org/guides/introduction/introduction-to-the-lifecycle.html

Generate Javadoc & source jar

- Maven Javadoc plugin
  - Goal : jar → creates an archive file of the generated Javadocs
  - Phase : package

Tip) "-Xdoclint:none" : "Doc Lint" 점검 해제

```
<plugin>
    <artifactId>maven-javadoc-plugin</artifactId>
    <version>3.0.1</version>
    <configuration>
        <additionalJOption>-Xdoclint:none</additionalJOption>
    </configuration>
    <executions>
        <execution>
            <id>attach-javadocs</id>
            <goals>
                <goal>jar</goal>
            </goals>
        </execution>
    </executions>
</plugin>
```

Generate Javadoc & source jar – cont'd

- Maven Source plugin

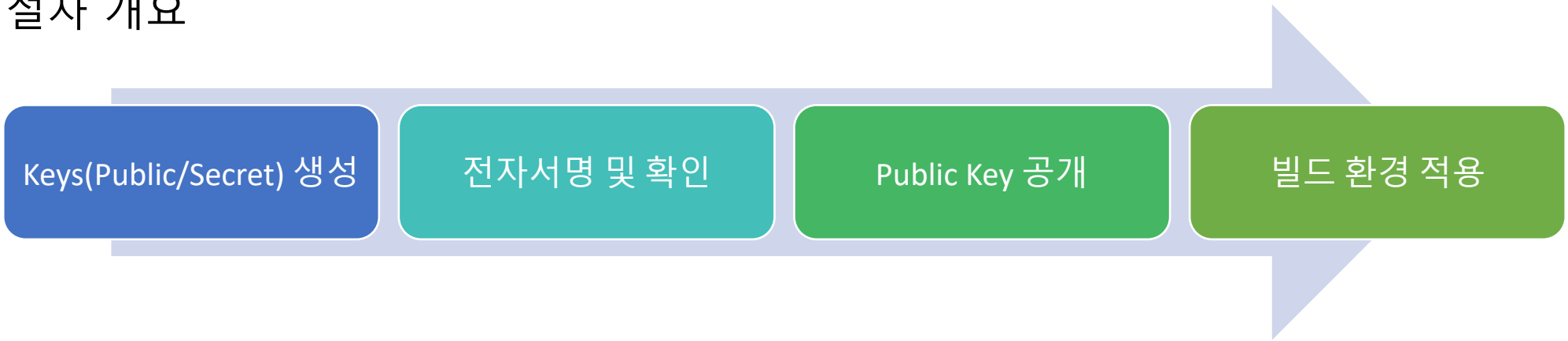
```
<plugin>
    <artifactId>maven-source-plugin</artifactId>
    <version>3.0.1</version>
    <executions>
        <execution>
            <id>attach-sources</id>
            <goals>
                <goal>jar-no-fork</goal>
            </goals>
        </execution>
    </executions>
</plugin>
```

- Goal : jar-no-fork → bundle the main sources of the project into a jar archive (without fork)
- Phase : package

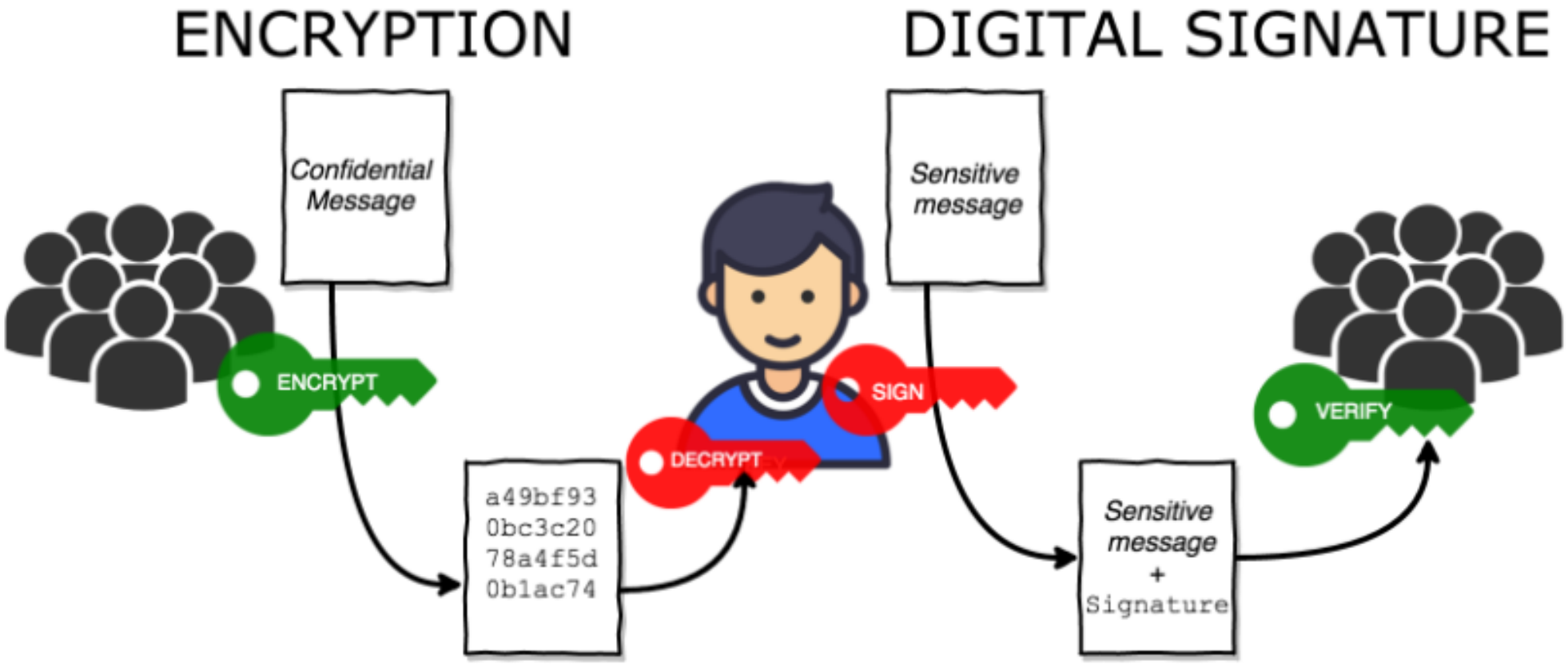
Tip) "jar"가 아닌 "jar-no-fork" goal 사용 : 빌드 라이프사이클 상에 포함

Signature artifacts with PGP/GPG

- PGP(Pretty Good Privacy) 전자서명 필요
  - GnuPG(GPG, GNU Privacy Guard) 또는 Gpg4Win 사용
    - OpenPGP(RFC4880) 표준 지원
  - 공개키 기반으로 Public Key에 대한 공개 필요 (전사서명 검증 또는 암호화 전송)
  - 절차 개요



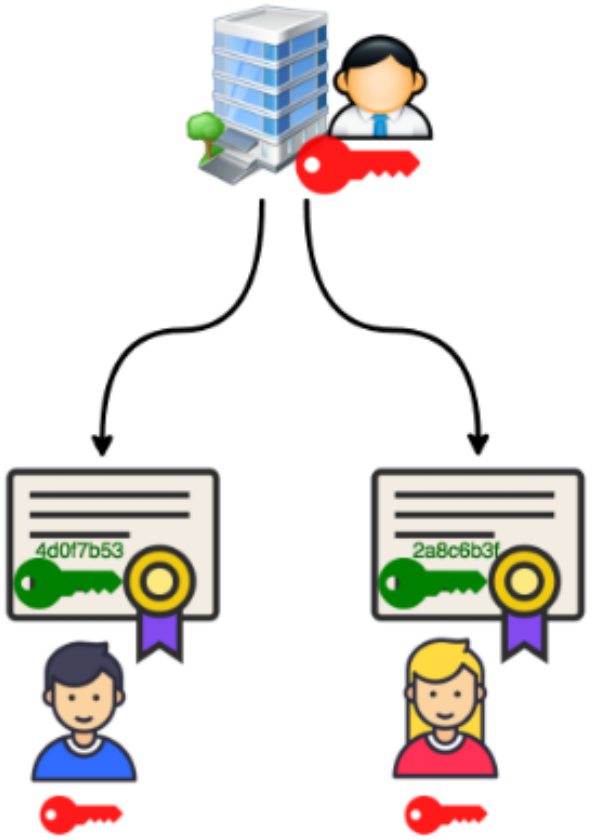
[참고] Encryption & Digital Signature



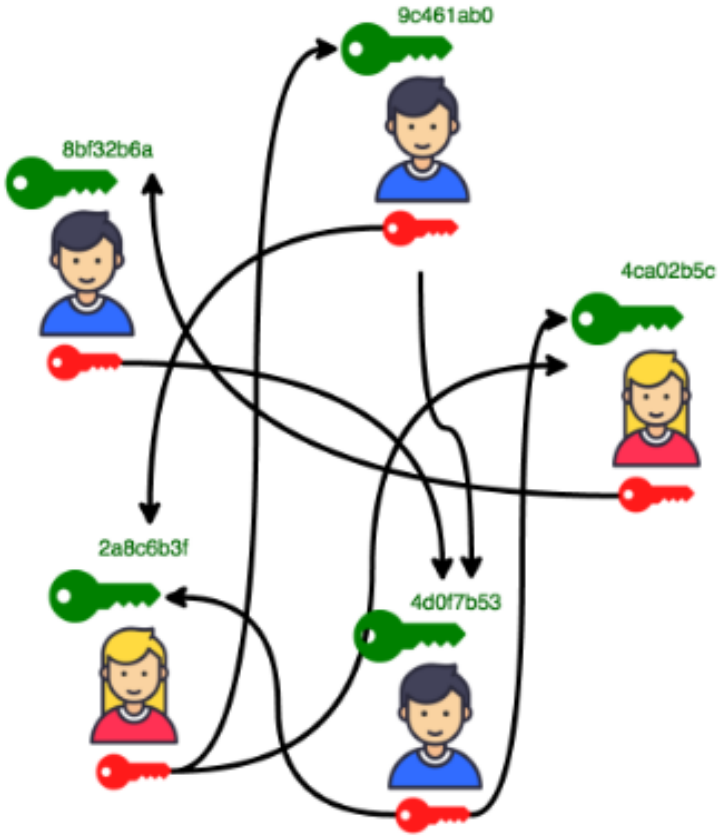
<이미지 출처: Jeroen Ooms, *Encryption and Digital Signatures using GPG* (https://cran.r-project.org/web/packages/gpg/vignettes/intro.html)>

[참고] PKI vs PGP

CERTIFICATE AUTHORITY



PGP / WEB OF TRUST



With PGP KeyServer

- https://pgp.mit.edu
- https://keyserver.ubuntu.com
- https://sks-keyservers.net/ 등

<이미지 출처: Jeroen Ooms, *Encryption and Digital Signatures using GPG* (https://cran.r-project.org/web/packages/gpg/vignettes/intro.html)>

<0. GPG 설치 및 확인>

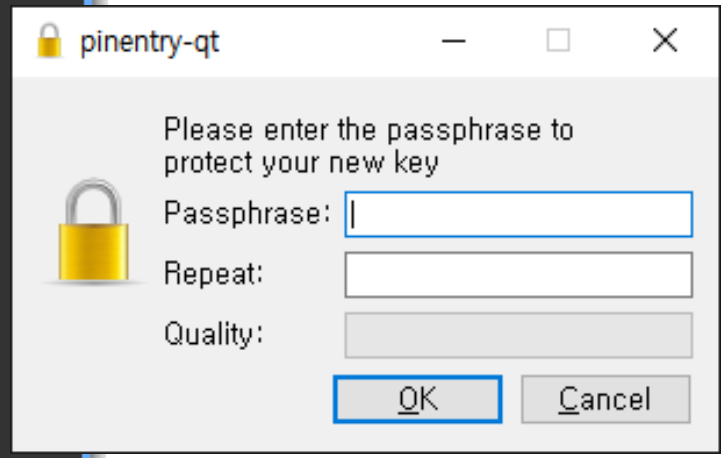
Terminal: ~

```
$ gpg --version
gpg (GnuPG) 2.2.17
libgcrypt 1.8.4
Copyright (C) 2019 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <https://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

Home: ~/.gnupg
Supported algorithms:
Pubkey: RSA, ELG, DSA, ECDH, ECDSA, EDDSA
Cipher: IDEA, 3DES, CAST5, BLOWFISH, AES, AES192, AES256, TWOFISH,
        CAMELLIA128, CAMELLIA192, CAMELLIA256
Hash: SHA1, RIPEMD160, SHA256, SHA384, SHA512, SHA224
Compression: Uncompressed, ZIP, ZLIB, BZIP2
```

<1. Key Pair 생성>

Terminal: ~

```
$ gpg --gen-key
gpg (GnuPG) 2.2.17; Copyright (C) 2019 Free Software Foundation, Inc.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.
GnuPG needs to construct a user ID to identify your key.

Real name: Vincent Han
Email address: switchover@gmail.com
You selected this USER-ID:
    "Vincent Han <switchover@gmail.com>"

Change (N)ame, (E)mail, or (O)kay/(Q)uit? O
We need to generate a lot of random bytes. It is a good idea to perform
some other action (type on the keyboard, move the mouse, utilize the
disks) during the prime generation; this gives the random number
generator a better chance to gain enough entropy.
```



<1. Key Pair 생성 – cont'd>

Terminal: ~

```
We need to generate a lot of random bytes. It is a good idea to perform some other action
(type on the keyboard, move the mouse, utilize the disks) during the prime generation; this
gives the random number generator a better chance to gain enough entropy.
gpg: key FD76895355C6092D marked as ultimately trusted
gpg: revocation certificate stored as 'C:/Users/SDS/AppData/Roaming/gnupg/openpgp-
revocs.d\0B39DBE946ADB31AD2B5B369FD76895355C6092D.rev'
public and secret key created and signed.

pub   rsa2048 2019-09-20 [SC] [expires: 2021-09-19]
      ABCDEF0123456789
uid                      Vincent Han <switchover@gmail.com>
sub   rsa2048 2019-09-20 [E] [expires: 2021-09-19]
```

<2. 전자서명 및 확인>

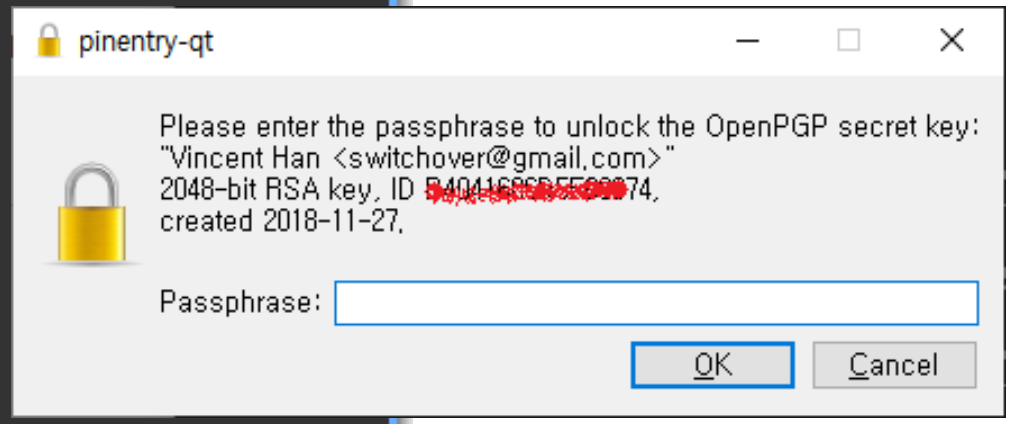
Terminal: ~

```
$ gpg --list-keys
-----------------------------------------
pub   rsa2048 2019-09-20 [SC] [expires: 2021-09-19]
      ABCDEF0123456789
uid         [ultimate] Vincent Han <switchover@gmail.com>
sub   rsa2048 2019-09-20 [E] [expires: 2021-09-19]

$ gpg --list-secret-keys
sec   rsa2048 2019-09-20 [SC] [expires: 2021-09-19]
      ABCDEF0123456789
uid         [ultimate] Vincent Han <switchover@gmail.com>
ssb   rsa2048 2019-09-20 [E] [expires: 2021-09-19]
```

<2. 전자서명 및 확인 – cont'd>

Terminal: ~

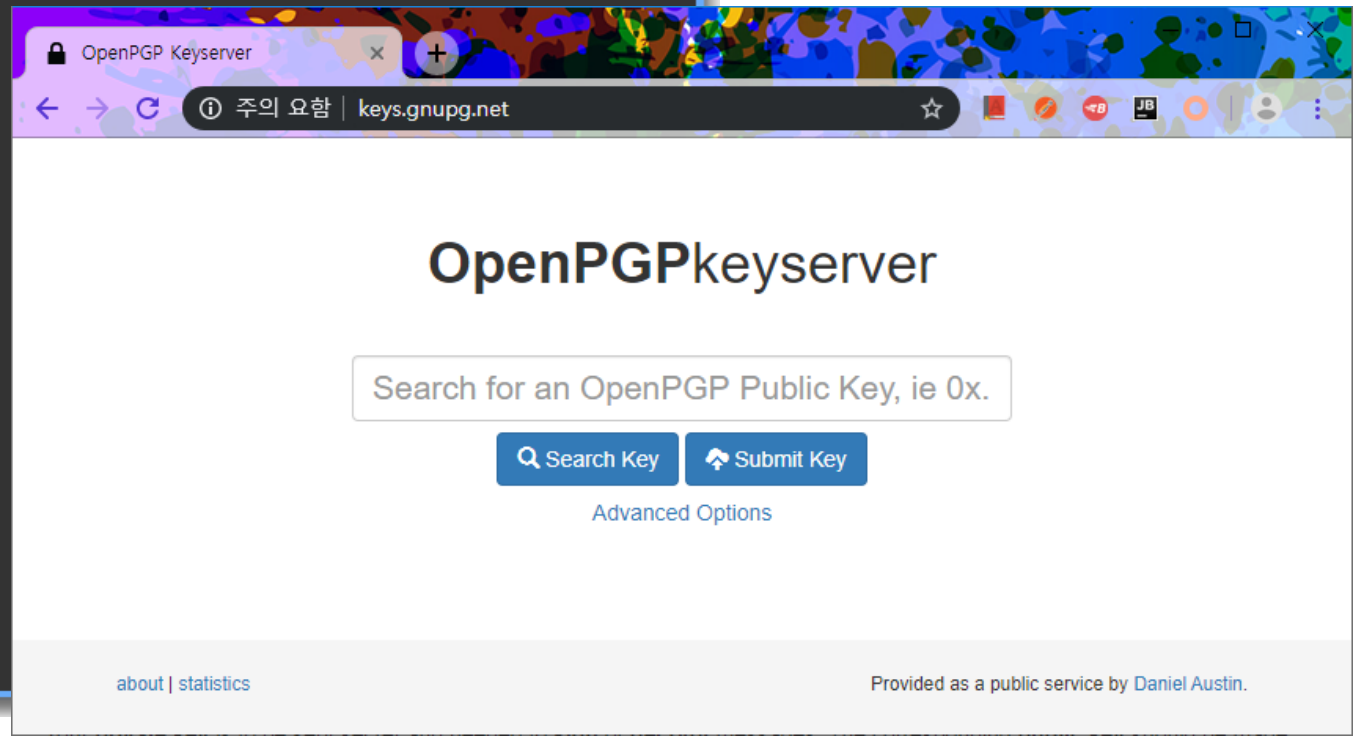
```
$ gpg -ab test.txt

$ ls test.txt.*
test.txt      test.txt.asc

$ gpg --verify test.txt.asc
gpg: assuming signed data in 'test.txt'
gpg: Signature made 09/20/19 14:07:34 대한민국 표준시
gpg:                using RSA key ABCDEF0123456789
gpg: Good signature from "Vincent Han <switchover@gmail.com>" [ultimate]
```



<3. Public Key 공개 및 검색>

Terminal: ~

```
$ gpg  --keyserver hkp://pool.sks-keyservers.net --send-keys ABCDEF0123456789
```



<4. Maven 적용>

- Maven GPG plugin

```
<plugin>
    <groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-gpg-plugin</artifactId>
    <version>1.6</version>
    <executions>
        <execution>
            <id>sign-artifacts</id>
            <phase>verify</phase>
            <goals>
                <goal>sign</goal>
            </goals>
        </execution>
    </executions>
</plugin>
```

- Goal : sign
- Phase : verify

```
<profiles>
    <profile>
        <properties>
            <gpg.executable>gpg</gpg.executable>
            <gpg.passphrase>${env.MAVEN_GPG_PASSPHRASE}</gpg.passphrase>
        </properties>
    </profile>
</profiles>
```

➔ settings.xml 설정 (환경 변수 지정 또는 직접 지정)

Distribution Management

- Sonatype 설정 완료 comments 확인

Terry Yanko added a comment - 11/27/18 02:07 PM

Configuration has been prepared, now you can:

- Deploy snapshot artifacts into repository https://oss.sonatype.org/content/repositories/snapshots
- Deploy release artifacts into the staging repository https://oss.sonatype.org/service/local/staging/deploy/maven2
- Promote staged artifacts into repository 'Releases'
- Download snapshot and release artifacts from group https://oss.sonatype.org/content/groups/public
- Download snapshot, release and staged artifacts from staging group https://oss.sonatype.org/content/groups/staging

please comment on this ticket when you promoted your first release, thanks

Distribution Management – cont'd

- Maven Distribution Management 설정 (#1 Maven deploy plugin)

```
<distributionManagement>
    <snapshotRepository>
        <id>ossrh</id>
        <url>https://oss.sonatype.org/content/repositories/snapshots</url>
    </snapshotRepository>
    <repository>
        <id>ossrh</id>
        <url>https://oss.sonatype.org/service/local/staging/deploy/maven2/</url>
    </repository>
</distributionManagement>
```

- Phase : deploy

```
<servers>
    <server>
        <id>ossrh</id>
        <username>${env.MAVEN_REPO_USERNAME}</username>
        <password>${env.MAVEN_REPO_PASSWORD}</password>
    </server>
</servers>
```

➔ settings.xml 설정 (환경 변수 지정 또는 직접 지정)

Distribution Management – cont'd

- Maven Distribution Management 설정 (#2 Nexus Staging Maven Plugin)

```
<plugin>
    <groupId>org.sonatype.plugins</groupId>
    <artifactId>nexus-staging-maven-plugin</artifactId>
    <version>1.6.8</version>
    <extensions>true</extensions>
    <configuration>
        <serverId>ossrh</serverId>
        <nexusUrl>https://oss.sonatype.org/</nexusUrl>
        <autoReleaseAfterClose>true</autoReleaseAfterClose>
    </configuration>
</plugin>
```

- Phase : verify

```
<servers>
    <server>
        <id>ossrh</id>
        <username>${env.MAVEN_REPO_USERNAME}</username>
        <password>${env.MAVEN_REPO_PASSWORD}</password>
    </server>
</servers>
```

Tip) Nexus Staging Maven Plugin 사용 권고

➔ 일부 CI 환경에서 문제 발생 (Artifact들이 push될 때마다 분산 처리에 의해 IP가 달라지며, 이에 따라 artifact들이 분산 등록됨)

➔ settings.xml 설정

(환경 변수 지정 또는 직접 지정)

OSSRH Staging Repository deploy

- deploy 실행 (성공 시)

```
Terminal: ~
$ mvn clean deploy
[INFO]  + Using server credentials "ossrh" from Maven settings.
...
[INFO] Performing remote staging...
[INFO]  * Remote staging into staging profile ID "abcdef"
[INFO]  * Created staging repository with ID "comsamsungsds[secure]-1000".
[INFO]  * Staging repository at
https://oss.sonatype.org:443/service/local/staging/deployByRepositoryId/comsamsungsds[se
cure]-1000
[INFO]  * Uploading locally staged artifacts to profile io.github.[secure]
...
[INFO]  * Upload of locally staged artifacts finished.
[INFO]  * Closing staging repository with ID “comsamsungsds[secure]-1000".
```

OSSRH Staging Repository deploy – cont'd

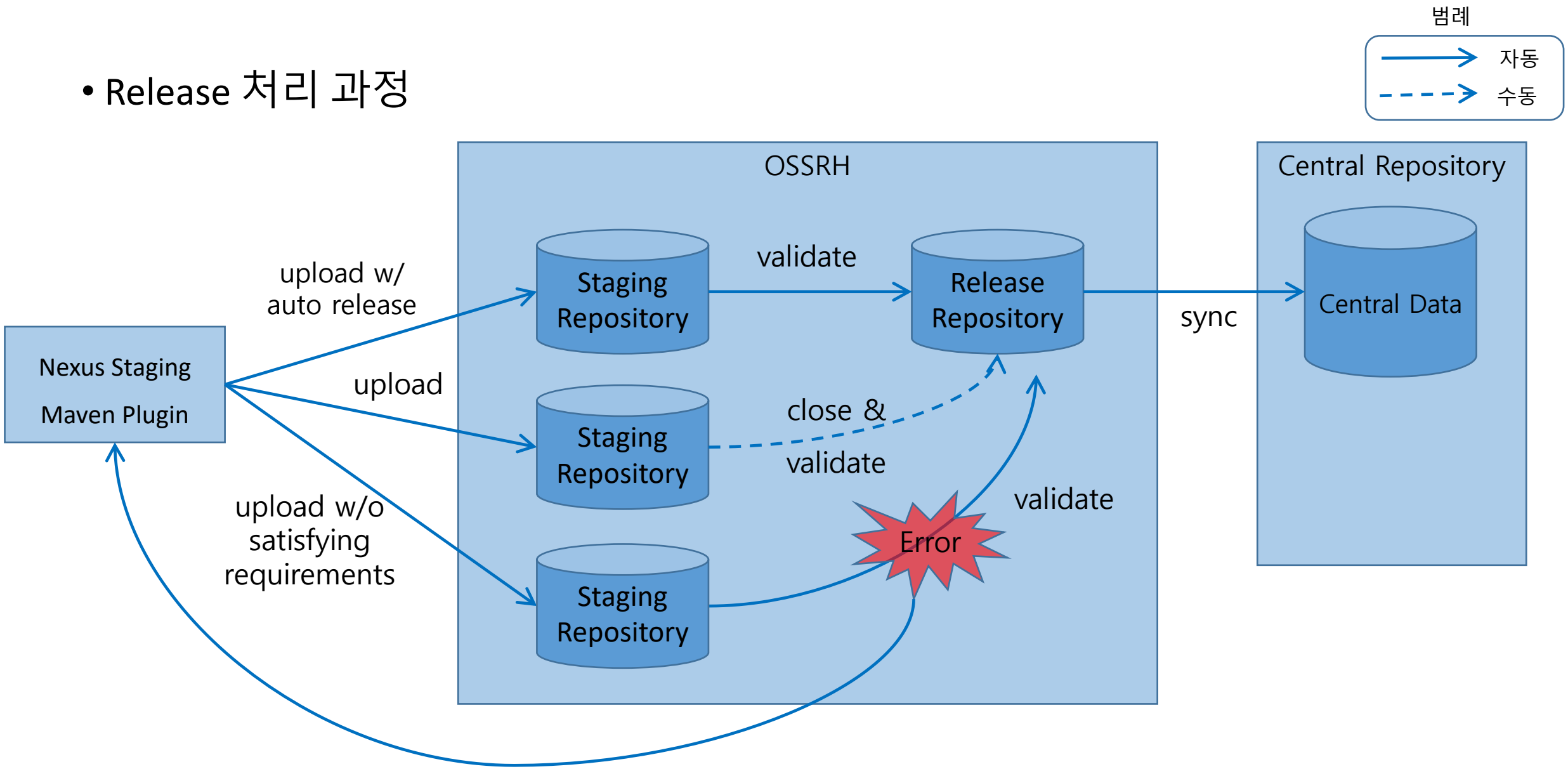
- deploy 실행 (실패 시)

```
Terminal: ~
$ mvn clean deploy
[INFO]  + Using server credentials "ossrh" from Maven settings.
...
[ERROR] Error while trying to close staging repository with ID "comsamsungsds-1000".
[ERROR]
[ERROR] Nexus Staging Rules Failure Report
[ERROR] ==================================
[ERROR]
[ERROR] Repository "comsamsungsds-1000" failures
[ERROR]   Rule "signature-staging" failures
[ERROR]    * Invalid POM: /io/github/switchover/code-analysis/1.0.0/code-analysis-1.0.0.pom:
Project description missing, Project URL missing.

$ mvn nexus-staging:drop
```

➔ 오류 artifact 삭제

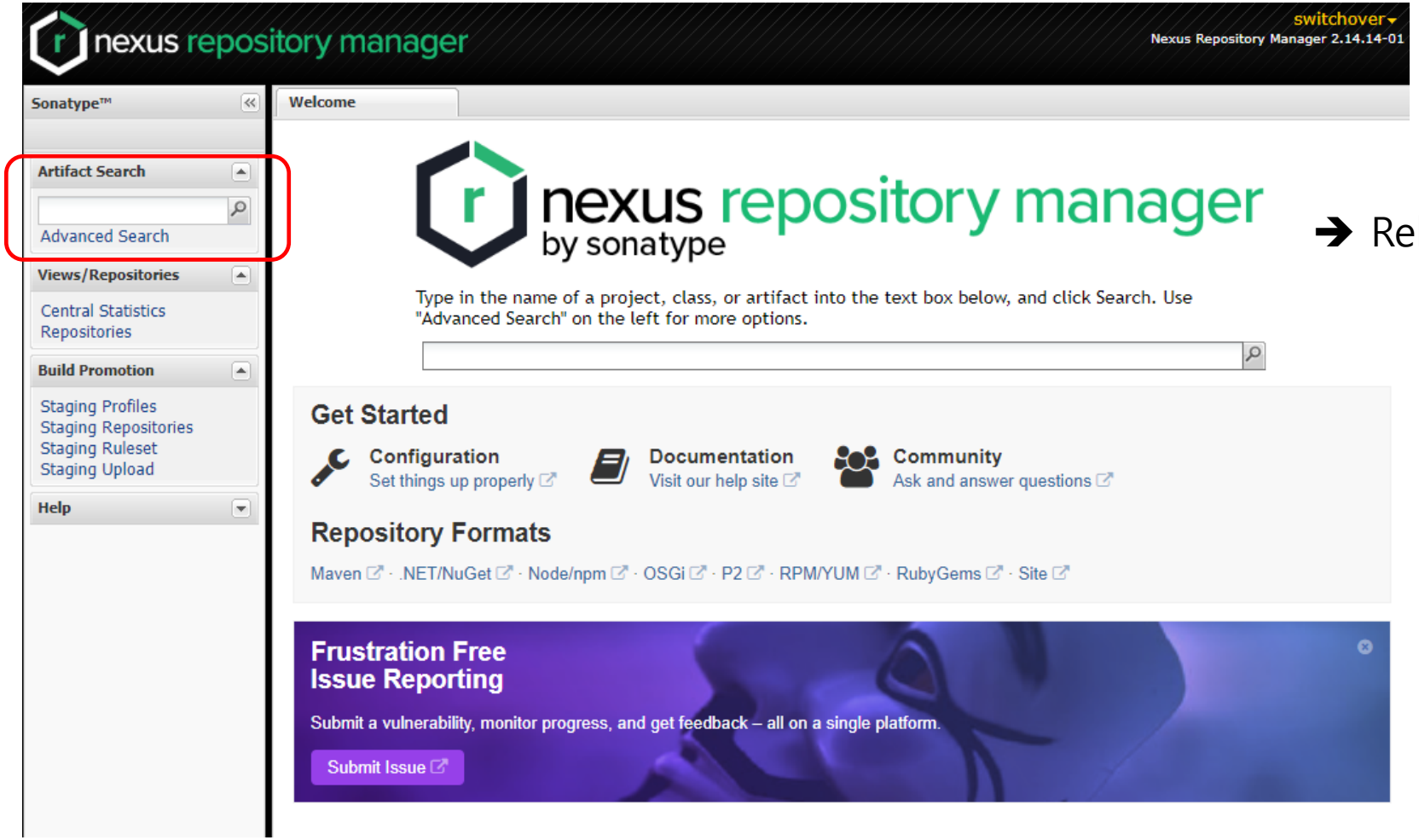
OSSRH Staging Repository deploy – cont'd (7/9)

- Release 처리 과정



OSSRH Staging Repository deploy – cont'd (7/9)

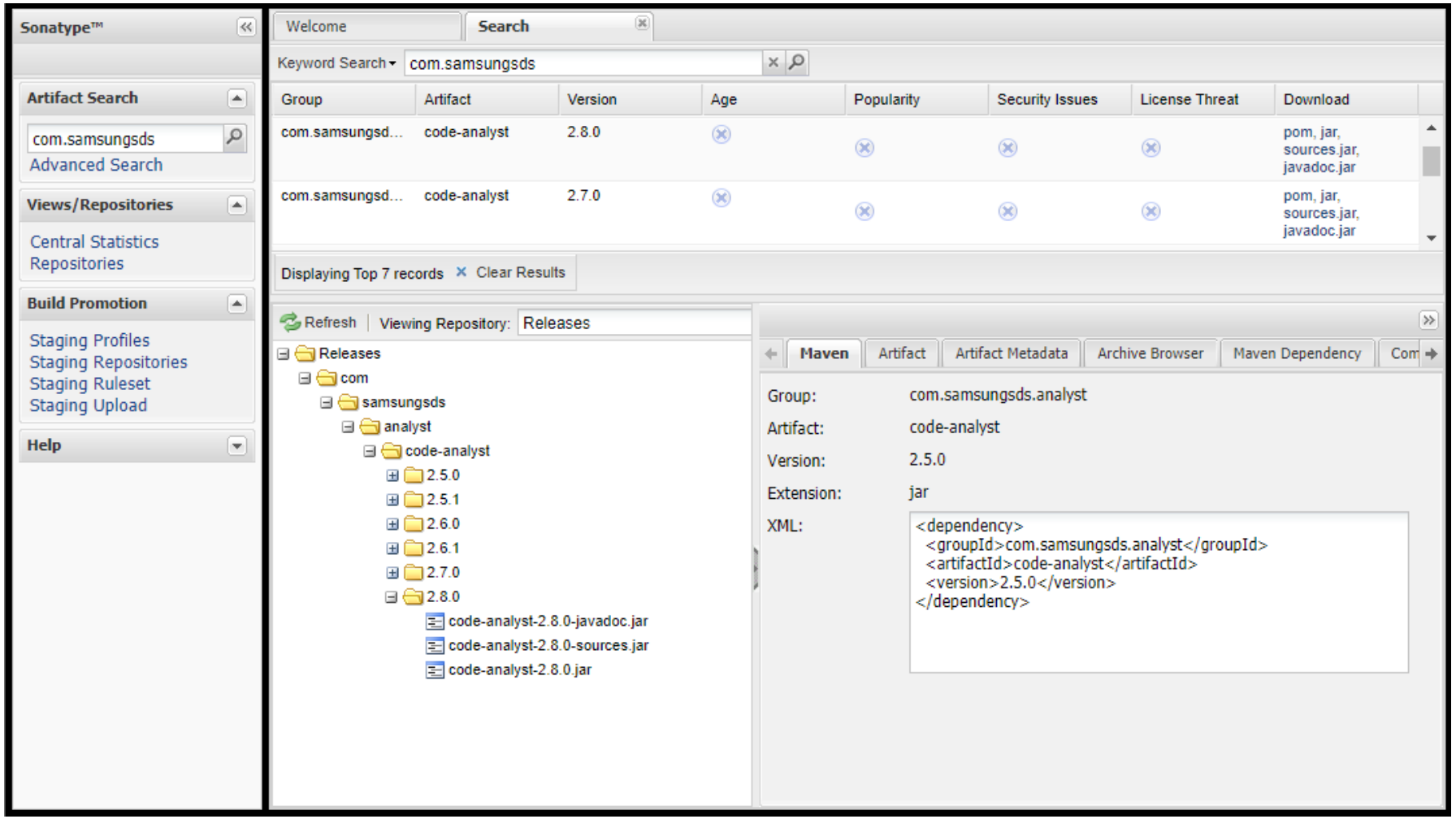
- Artifacts 확인 (https://oss.sonatype.org/)



➔ Release repository 조회

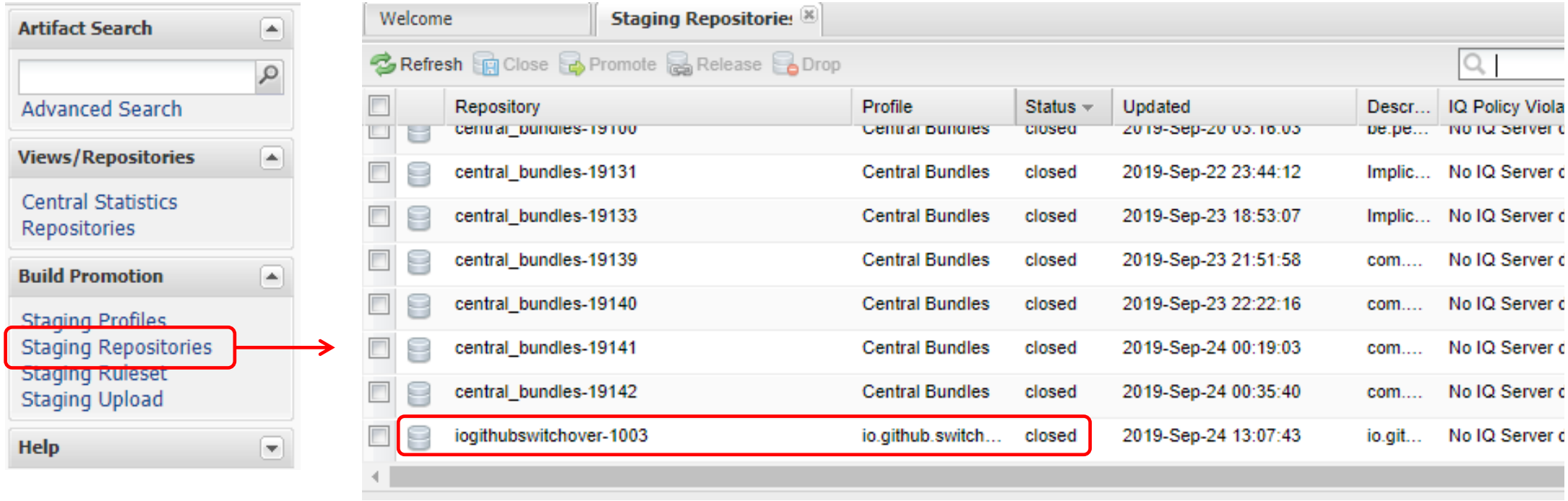
OSSRH Staging Repository deploy – cont'd

- Artifacts 확인 (https://oss.sonatype.org/) – cont'd



OSSRH Staging Repository deploy – cont'd (7/9)

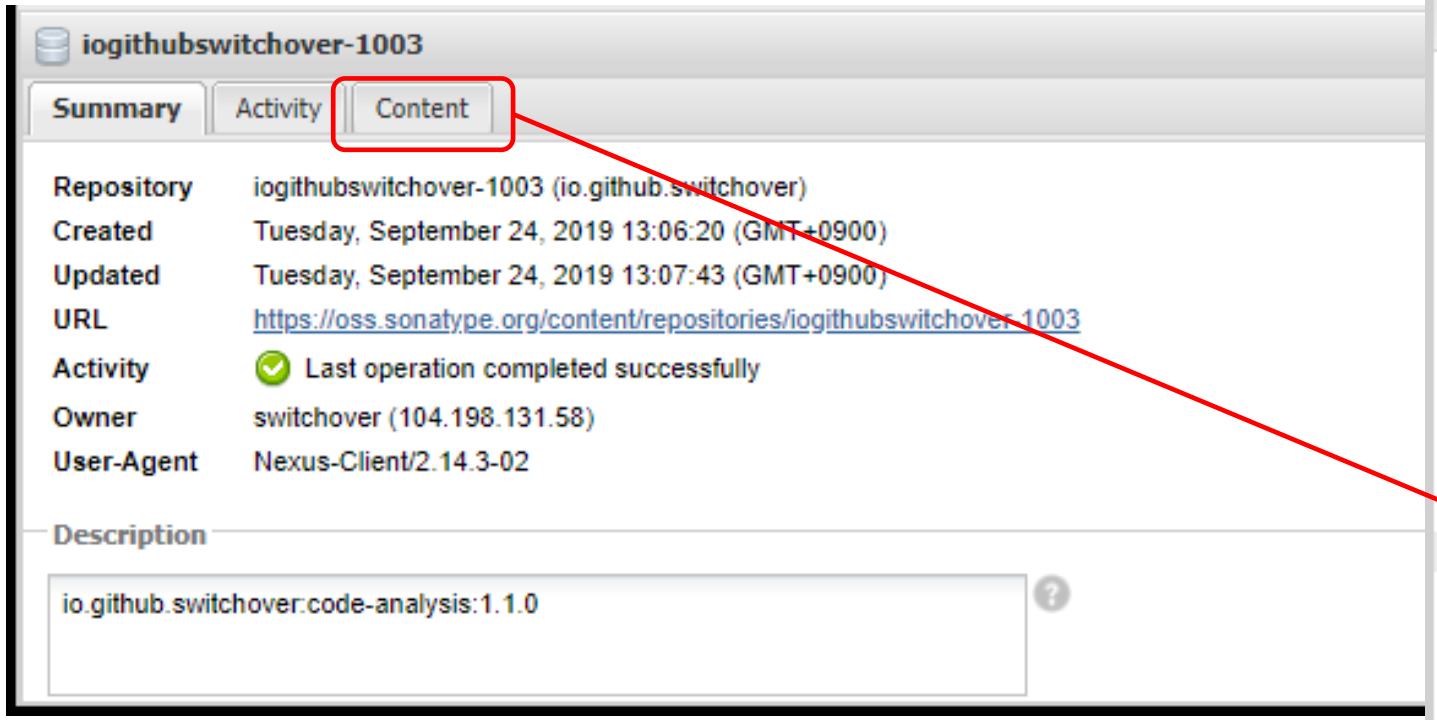
- Artifacts 확인 (w/o autoReleaseAfterClose)

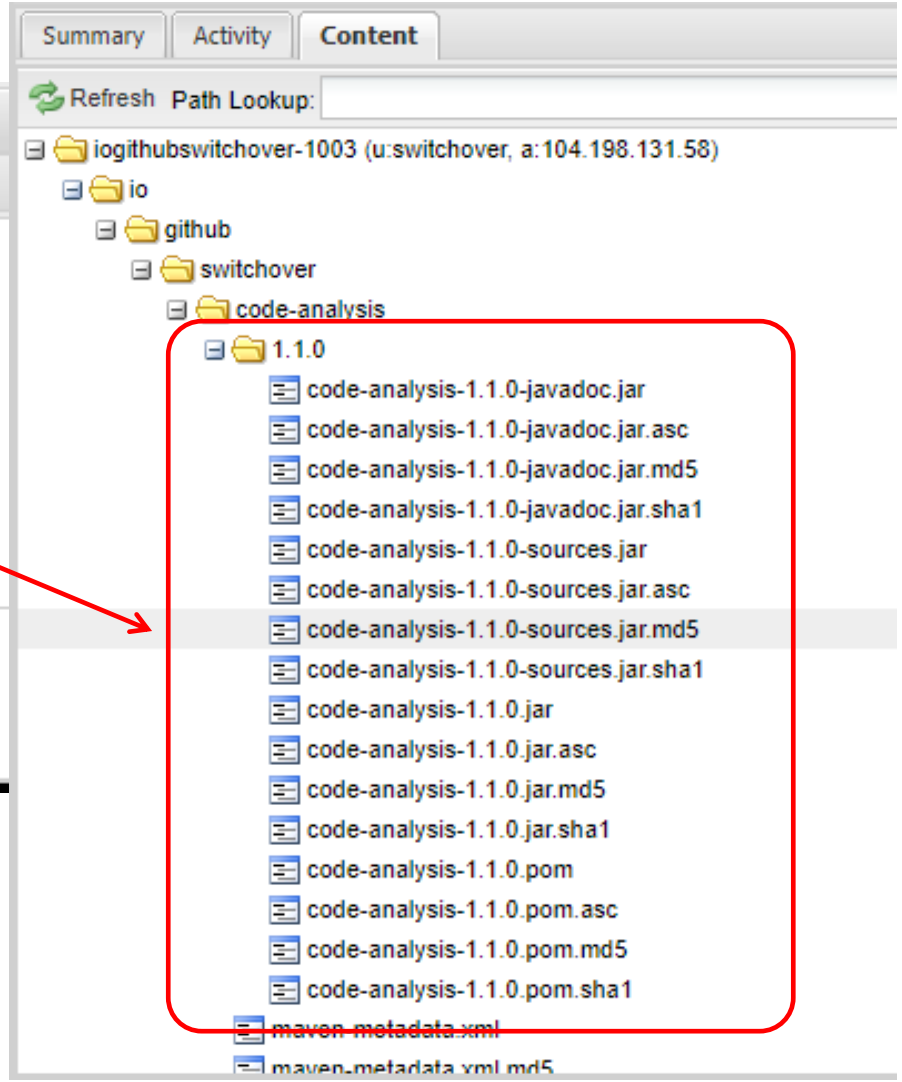


➔ Staging repository 조회

OSSRH Staging Repository deploy – cont'd

- Artifacts 확인 (w/o autoReleaseAfterClose) – cont'd

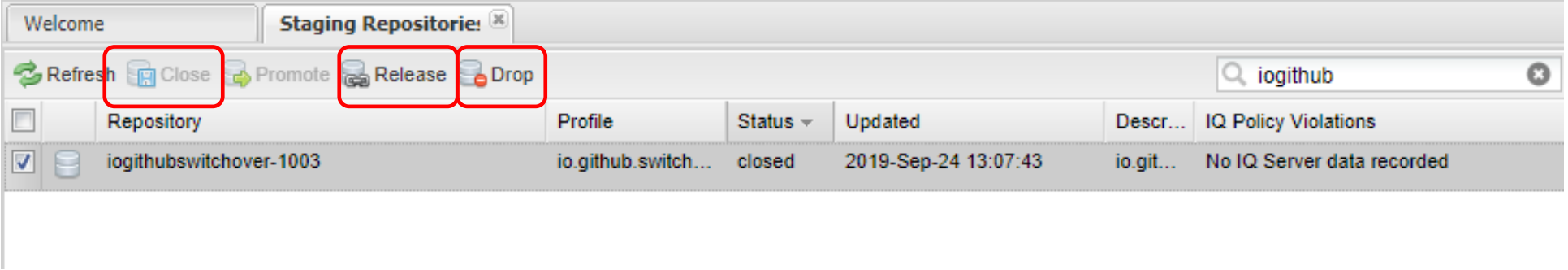




➔ Content 확인

OSSRH Staging Repository deploy – cont'd (7/9)

- Close & Release



➔ "Close" : artifacts 필요 요건 점검 (requirements)

➔ "Release" : Central Repository와 동기화를 위해 release repository로 릴리즈

➔ "Drop" : "Close" 시 오류가 발생하면, 삭제 처리

“First” release

- Sonatype JIRA issue(ticket) comment 확인 또는 등록

➔ 자동 release 적용 시

Central OSSRH added a comment - 1 hour ago

Central sync is activated for io.github.switchover. After you successfully release, your component will be published to Central, typically within 10 minutes, though updates to search.maven.org can take up to two hours.

➔ 수동 release 적용 시

Vincent Han added a comment - 12/03/18 12:56 AM

First release is promoted!

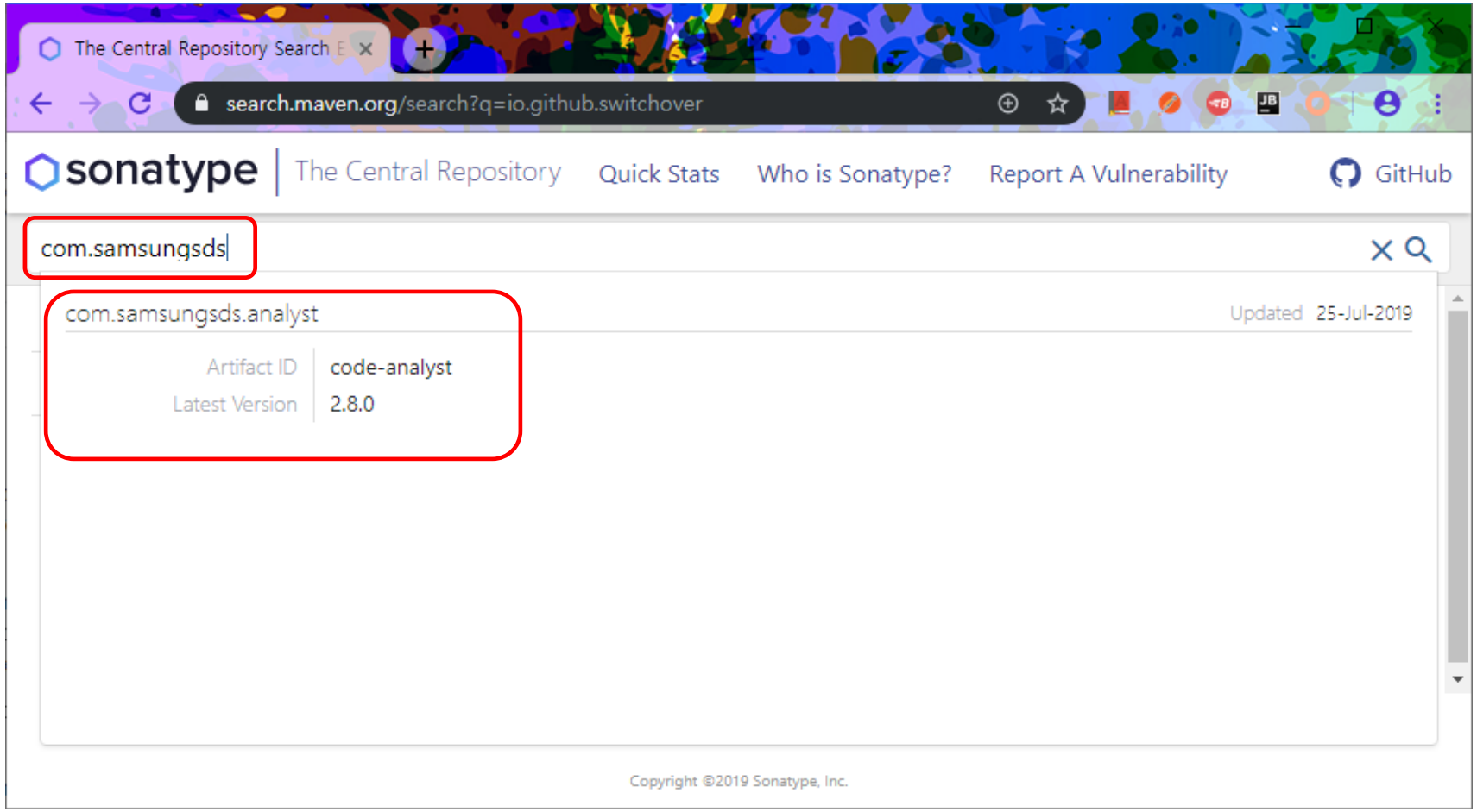
(.../com/samsungsds/analyst/code-analyst)

Thank you so much

And have a nice day!!

"First" release – cont'd

- Search in Maven Central Repository (https://search.maven.org)



➔ 조회되기 까지 10분에서 2시간까지 소요

Apply Continuous Integration (9/9)

- CI 적용 시 고려사항
  - 실제 배포가 아닌 경우에도 불필요한 Maven plugin들이 실행됨 (속도 문제)

    ➔ Maven Profile 사용
  - GPG 보안 키(Secret Key) 대한 패스워드(passphrase) 및 Sonatype 인증 정보 노출 문제

    ➔ 각 CI 환경에서 제공하는 변수 암호화 적용

Apply Continuous Integration – cont'd

- Maven Profile 적용

```
<!-- Profiles -->
<profiles>
    <profile>
        <id>release</id>
        <build>
            <finalName>${project.artifactId}-${project.version}</finalName>
            <plugins>
                <!--
                plugins
                *  maven-source-plugin
                *  maven-javadoc-plugin
                *  maven-gpg-plugin
                * nexus-staging-maven-plugin
                -->
            </plugins>
        </build>
    </profile>
</profiles>
```

➔ settings.xml 설정

```
<profiles>
    <profile>
        <id>release</id>
        <activation>
            <activeByDefault>true</activeByDefault>
        </activation>
        <properties>
            <gpg.executable>gpg</gpg.executable>
            <gpg.passphrase>${env.MAVEN_GPG_PASSPHRASE}</gpg.passphrase>
        </properties>
    </profile>
</profiles>
```

CI(Continuous Integration) 적용

Travis CI 적용 사례

Considerations when applying CI

- GPG 적용을 위해서는 Secure Key 파일 형상 등록 필요
  - ➔ 파일 암호화 후 형상서버 등록
- OSSRH deploy를 위한 인증 정보 필요
  - ➔ 인증 정보 암호화 후 형상서버 등록 (settings.xml)

➡ CI 환경에 따른 파일 및 데이터 암호화 적용

- Maven Profile 분리 실행 필요

➡ 조건별 릴리즈(Conditional release) 적용

Encrypting Files & Data

- File Encryption (AES-256 w/ openssl)

Terminal: ~

```
$ gpg –export-secret-keys ABCDEF0123456789 > secretkey.gpg

$ openssl enc -e -in secretkey.gpg -out secretkey.gpg.enc -aes256 -pass "pass:password!!!"

$ rm secretkey.gpg
```

➔ 형상서버에 암호화된 secretkey.pgp.enc 파일 등록

Tip) openssl 1.0.X 버전으로 암호화해야 함 (Travis CI 현재 1.0.2g 버전 적용 중)

Encrypting Files & Data – cont'd

- File Decryption
  - "secretkey.gpg.enc" 파일을 복호화하는 스크립트 구성 및 적용 (eg: setup_deploy.sh)

setup_deploy.sh

```
#!/bin/sh
openssl enc -d -in secretkey.gpg.enc -out secretkey.gpg -aes256 -pass "pass:$SECRET_KEY_DEC_KEY"
```

  - Travis CI 설정 파일 적용 (.travis.yml)

.travis.yml

```
before_install:
  - chmod +x mvnw
  - chmod +x setup_deploy.sh
  - ./setup_deploy.sh
  - gpg --import secretkey.gpg
```

Tip) before_install step은 기본 인프라 관련 패키지 설치 등에 사용 (추가 language 설치 등)

Encrypting Files & Data – cont'd

- Data Encryption (RSA w/ Travis CLI)

```
Terminal: ~
$ gem install travis

$ travis encrypt NAME="value" –r owner/project
Secure: "... encrypted data ..."
```

- 암호화 대상 (4개)
  - OSSRH user / password
  - GPG 보안키(securekey) passphrase
  - GPG 보안키 복호화 키 (AES 256 키)

또는 http://rkh.github.io/travis-encrypt/public/
에서도 암호화 가능
(JavaScript를 통한 암호화 지원)

Encrypting Files & Data – cont'd

- Data Decryption
  - Travis CI 설정 파일 적용 (.travis.yml)

```
.travis.yml
env:
  global:
    - secure: TvM6J68bkn9hKqW3rRk1G
    - secure: qnXWac2cDKS1ddUYh0LML
    - secure: ORlcDlXR8/cKg3vvVGV2j
    - secure: Me96ZJNZLUAtgvgOy3WdE
```

- MAVEN_REPO_USERNAME (Maven settings.xml)
- MAVEN_REPO_PASSWORD (〃)
- MAVEN_GPG_PASSPHRASE (〃)
- SECRET_KEY_DEC_KEY (setup_deploy.sh)

Encrypting Files & Data – cont'd

- Data Decryption – cont'd
  - Maven settings.xml 파일
    - OSSRH server 정보
    - Maven gpg plugin 관련 설정

  ➔ 형상서버에 settings.xml 파일 등록

```xml
<servers>
    <server>
        <id>ossrh</id>
        <username>${env.MAVEN_REPO_USERNAME}</username>
        <password>${env.MAVEN_REPO_PASSWORD}</password>
    </server>
</servers>

<profiles>
    <profile>
        <id>release</id>
        <activation>
            <activeByDefault>true</activeByDefault>
        </activation>
        <properties>
            <gpg.executable>gpg</gpg.executable>
            <gpg.passphrase>${env.MAVEN_GPG_PASSPHRASE}</gpg.passphrase>
        </properties>
    </profile>
</profiles>
```

  - setup_deploy.sh (before_install 스크립트

```bash
#!/bin/sh
openssl enc -d -in secretkey.gpg.enc -out secretkey.gpg -aes256 -pass "pass:$SECRET_KEY_DEC_KEY"
```

Conditional release

- Travis Job Lifecycle
  - 0. VM 생성 / Repository clone
  - 1. (optional) “apt addons” (참고 : OS Ubuntu 16.04.6 LTS, Docker 18.06)
  - 2. (optional) “cache components”
  - 3. “before_install”
  - **4. “install” : install any dependencies required (eg: mvn install)**
  - 5. “before_script”
  - **6. “script” : run the build script (eg: mvn test)**
  - 7. (optional) “before_cache”
  - 8. “after_success” or “after_failure”
  - 9. (optional) “before_deploy”
  - **10. (optional) “deploy”**
  - 11. (optional) “after_deploy”
  - 12. “after_script”

Conditional release

- Travis 설정 (.travis.yml)

```yaml
# .travis.yml
language: java
jdk:
  - openjdk8
env:
  global:
    - secure: TvM6J68bkn9hKqW3rRk1GoTFt6w/O2iZteBVS8XnM+Jff1YPZ1nF2Df8GK/m1eJ3o8EtqYh1
    - secure: qnXWac2cDKS1ddUYh0LMLDdpMZJBVWWQsr/V1JpvRBK1STFkQ3K0OO0FBGMAHFV+pqP3zFk5
    - secure: ORlcDlXR8/cKg3vvVGV2j/QdI7e7i0qOjnfxzBcWIMn7drL0faWE2mNZFoAxMAode/7/pKZy
    - secure: Me96ZJNZLUAtgvgOy3WdBS70cyAcQeL/s7hYfqUUsG9WvPzoXC96gGGGuA4EQgiR/fSXXQRy
before_install:
  - chmod +x mvnw
  - chmod +x setup_deploy.sh
  - ./setup_deploy.sh
  - gpg --import secretkey.gpg
deploy:
  provider: script
  script: "./mvnw clean deploy -DskipTests=true -P release --settings settings.xml"
  skip_cleanup: true
  on:
    branch: master
```

② "release" profile을 적용하여 maven deploy 실행 ←

① master 빌드 시에 ←

Build examples

RedCA-Family / code-analyst build passing

Current Branches Build History Pull Requests > Build #133 More options

development CRON Merge pull request #13 from switchover/patch-duplication-app

DuplicationApp csv parsing error fixed

Commit 09223f2

Branch development

Vincent Han authored GitHub committed

#133 passed

Ran for 3 min 21 sec

7 days ago

Restart build

JDK: openjdk8 Java

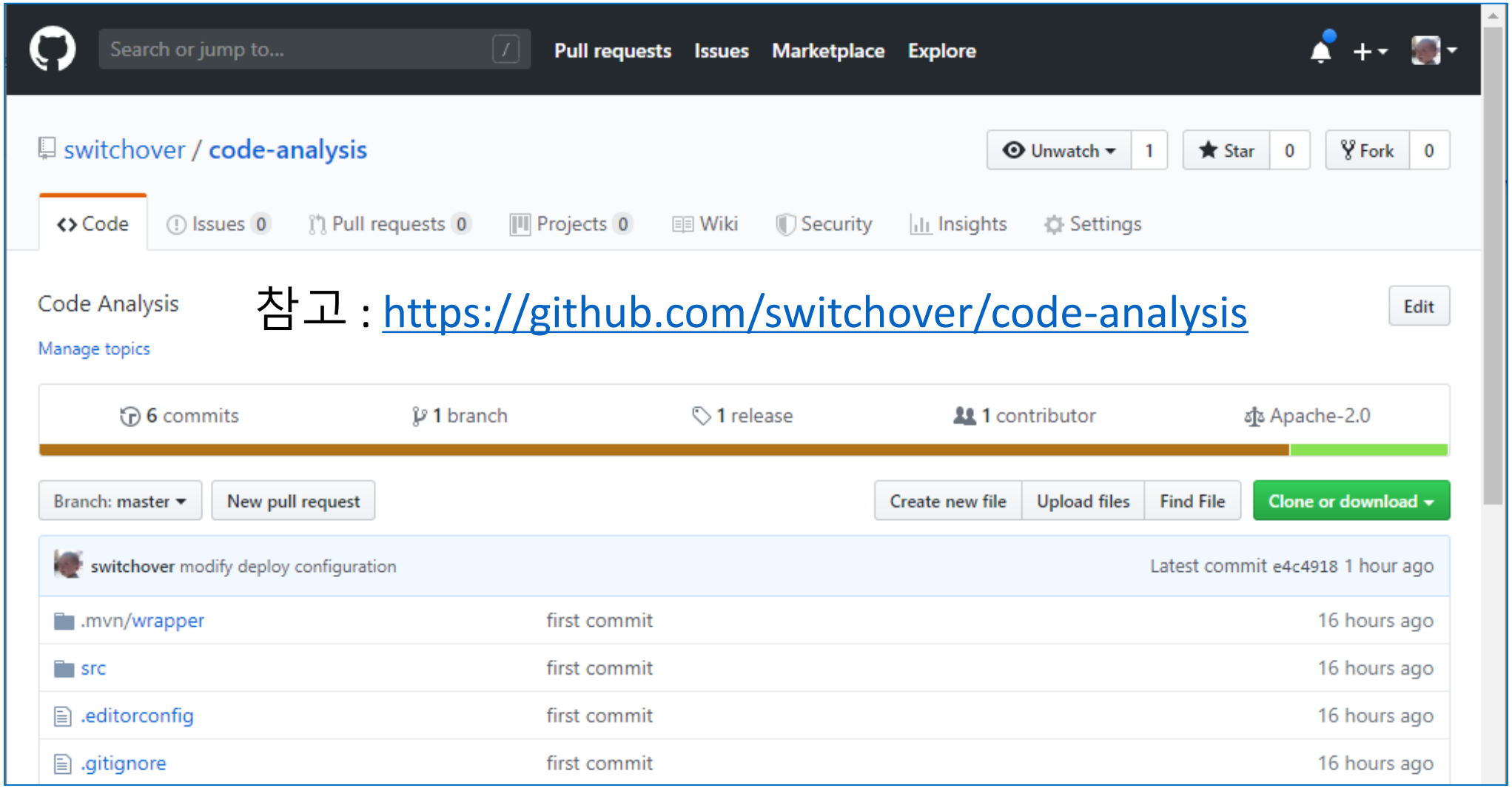
참고 : https://travis-ci.org/RedCA-Family/code-analyst

Job log View config

Remove log Raw log

```
1   Worker information                                                    worker_info   0.11s
6                                                                                       0.01s
7   Build system information                                              system_info
161
162                                                                                     3.09s
                                                                          docker_mtu
                                                                          resolvconf
163 Installing openjdk8                                                   install_jdk
164                                                                                     0.00s
165 $ git clone --depth=50 --branch=development https://github.com/RedCA-Family/code-analyst.git RedCA-Family/code-analyst   git.checkout   4.42s
169
170                                                                                     0.01s
```

Reference Project



참고 : https://github.com/switchover/code-analysis

고맙습니다.

Q&A

References

- Maven Central Repository
  - https://maven.apache.org/repository/index.html
- Guide to uploading artifacts to the Central Repository
  - https://maven.apache.org/repository/guide-central-repository-upload.html
- OSSRH Guide
  - https://central.sonatype.org/pages/ossrh-guide.html
- Encryption and Digital Signatures using GPG
  - https://cran.r-project.org/web/packages/gpg/vignettes/intro.html
- Travis CI Guide
  - https://docs.travis-ci.com/

[참조] Gradle 적용 시

- Metadata & signing (build.gradle)
  - OSSRH 적용시 pom.xml 파일 필요
  - Javadoc 및 source jar 생성
  - GPG 전자서명

```
signing.keyId=KeyId
signing.password=Password
signing.secretKeyRingFile=PathToGPGFile

ossrhUsername=jira-username
ossrhPassword=jira-password
```

➔ gradle.properties 설정

```
apply plugin: 'maven'
apply plugin: 'signing'

group = "com.samsungsds.analyst"
archivesBaseName = "code-analyst"
version = "2.9.0"

task javadocJar(type: Jar) {
    classifier = 'javadoc'
    from javadoc
}

task sourcesJar(type: Jar) {
    classifier = 'sources'
    from sourceSets.main.allSource
}

artifacts {
    archives javadocJar, sourcesJar
}
```

[참조] Gradle 적용 시 – cont'd

- uploadArchives 설정

```
uploadArchives {
    repositories {
        mavenDeployer {
            beforeDeployment { MavenDeployment deployment -> signing.signPom(deployment) }

            repository(url: "https://oss.sonatype.org/service/local/staging/deploy/maven2/") {
                authentication(userName: ossrhUsername, password: ossrhPassword)
            }

            snapshotRepository(url: "https://oss.sonatype.org/content/repositories/snapshots/") {
                authentication(userName: ossrhUsername, password: ossrhPassword)
            }

            pom.project {
                name 'Code-Analyst'
                packaging 'jar'
                // optionally artifactId can be defined here
                description 'Code Analyst to measure various code metrics'
                url 'https://github.com/RedCA-Family/code-analyst'
```

[참조] Gradle 적용 시 – cont'd

- uploadArchives 설정 – cont'd

```
scm {
    connection 'scm:git:https://github.com/RedCA-Family/code-analyst.git'
    developerConnection 'scm:git:https://switchover@github.com/RedCA-Family/code-analyst.git'
    url 'https://github.com/RedCA-Family/code-analyst'
}

licenses {
    license {
        name 'The Apache License, Version 2.0'
        url 'http://www.apache.org/licenses/LICENSE-2.0.txt'
    }
}

developers {
    developer {
        name 'Vincent Han'
        email 'switchover@gmail.com'
    }
}
```

[참조] Gradle 적용 시 – cont'd

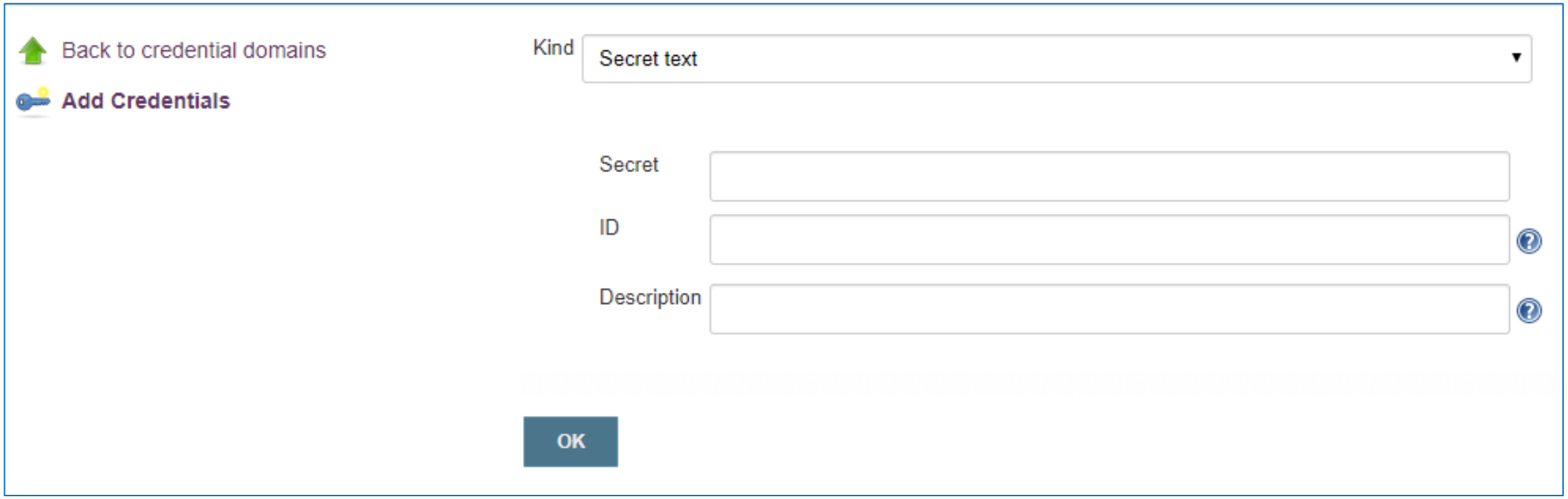
- uploadArchives 설정 – cont'd

Terminal: ~

```
$ gradle uploadArchives -PossrhUsername="${USERNAME}" –PossrhPassword="${PASSWORD}“ …
```

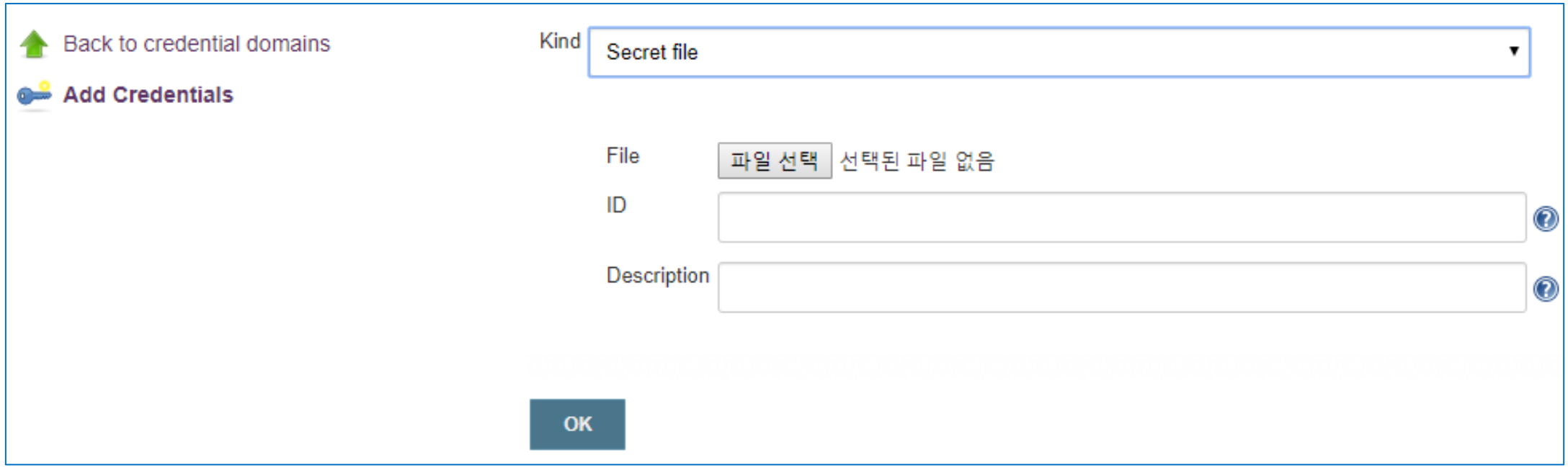
[참조] Jenkins 암호화 처리

- Credential Plugin 사용 – secret text



[참조] Jenkins 암호화 처리 – cont'd

- Credential Plugin 사용 – secret file



[참조] Jenkins 암호화 처리 – cont'd

- <사용> Credential Binding Plugin 사용