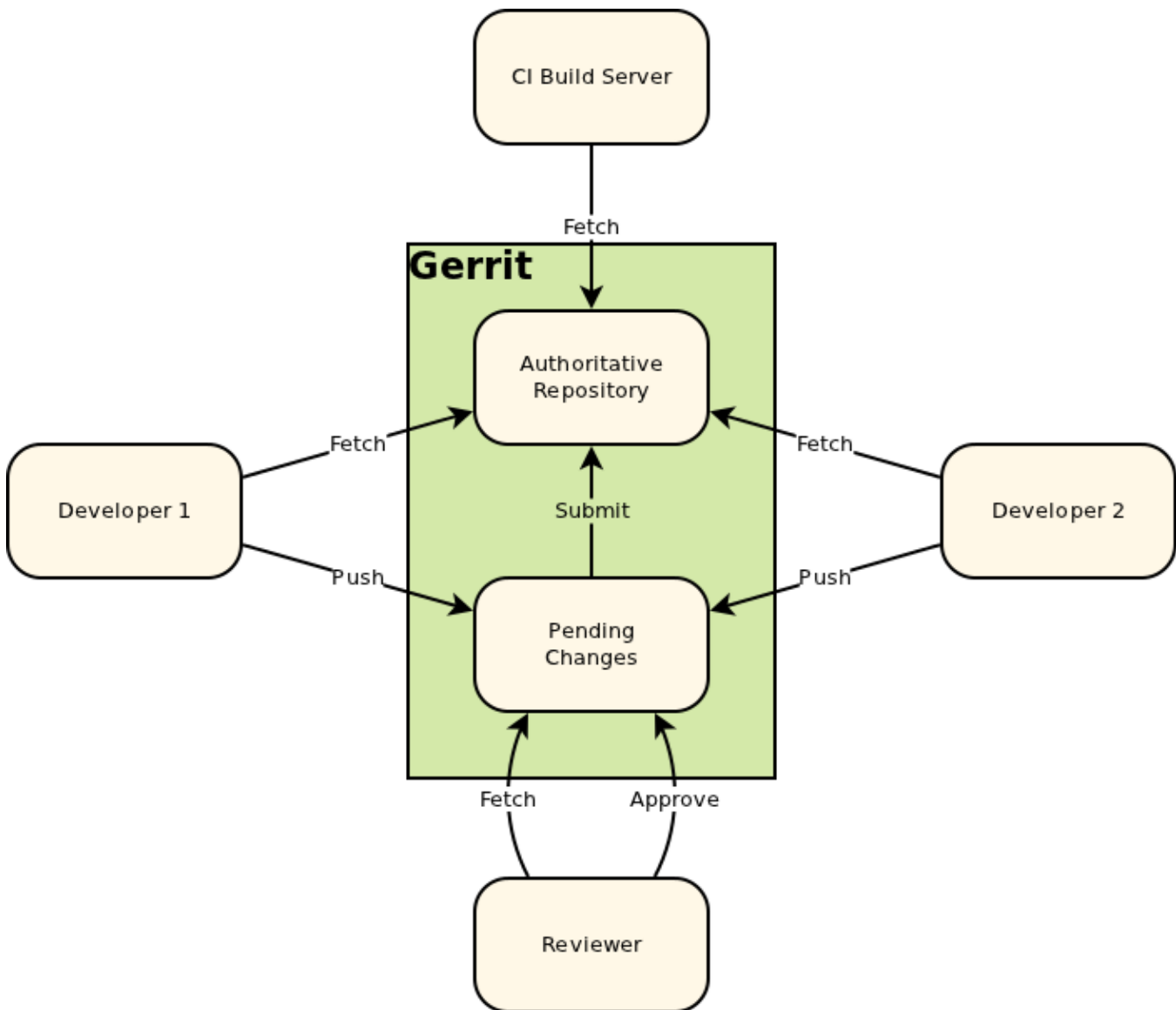


Introduce to Gerrit & How to setup

Introduce to Gerrit

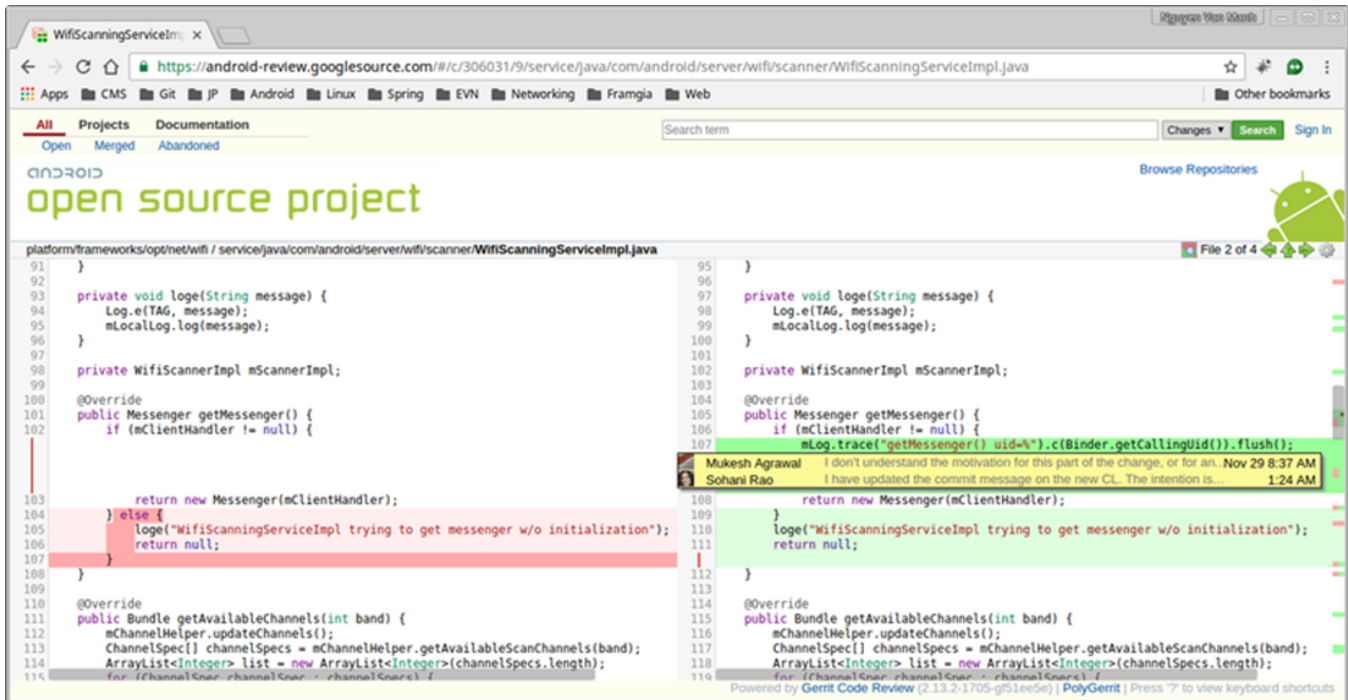
- Gerrit is a support tool for reviewing source code on Web platform, using Git as Version Control.
- Gerrit is a [fork](#) of [Rietveld](#), another code review tool.
- Originally written in [Python](#) like Rietveld, it is now written in [Java](#) ([Java EE Servlet](#)) with [SQL](#) since version 2 and a custom-made git-based db (NoteDb) since version 3. Gerrit uses either [Polymer](#) or [Google Web Toolkit](#) for its browser-based front-end.
- Gerrit is a commit review tool. Developers amend their commits all along the development. That is in direct conflict with git (feature branch) workflow, where development is a series of commits on a feature branch. In git workflow people usually push their commit to a repository where it is available for the other developers to pull or cherry-pick specific commits. These are not available when using Gerrit and individual changes cannot have their own commit messages, as all the changes end up in one commit.
- [Official website](#)

How it works



- Gerrit builds a repository (Green part) as location to store the main source **[Authoritative Repository]** and commits need to be reviewed **[Pending Changes]**.
- Developers fetch source code from **[Authoritative Repository]** then work on it. After completing a task, instead of pushing back to this repository, all changes are pushed to **[Pending Changes]**. This mechanic ensures that every commits need at least 1 **[Approve]** from **[Reviewer]**. Once the **[Change]** has been approved, the **[Reviewer]** can submit request merge this **[Change]** to **[Authoritative Repository]**.

Review in Gerrit



- Label verify (auto verify/compile, passes basic unit tests):
 - -1: Fail - Compile error/Unit test fail.
 - 0: No Score - Verification is not executed.
 - +1: Pass
- Code Review:
 - -2: Not Acceptable.
 - -1: Small/Medium mistake.
 - 0: No Score.
 - +1: Acceptable.
 - +2: Good, ready to merge.

Setup Gerrit

- Gerrit uses Jetty as Web Server and runs on J2EE structure, to run the Gerrit service, the following requirements must be met on the host:
 - JRE, minimum version 1.8 [Download](#)
- Requirements:
 - Java 8 (or OpenJDK)
 - Gerrit
 - Apache2 (used as proxy server)
 - Database
- OpenJDK
 - Update apt package index:
`sudo apt update`
 - Install Java OpenJDK package:
`sudo apt install default-jdk`
 - Verify the JDK version:
`java -version`
- Database Setup
 - The following databases are supported:
 - H2
 - This is the default option for Gerrit, if you choose H2, Gerrit will automatically set up the embedded H2 database as backend so no set up or configuration is necessary.
 - Apache Derby
 - If Derby is selected, Gerrit will automatically set up the embedded Derby database as backend so no set up or configuration is necessary.

- PostgreSQL

- This option is more complicated than the H2 option but is recommended for larger installations. It's the database back-end with the largest user-base in the Gerrit community.
- Create a user for the web application within PostgreSQL, assign it a password, create a database to store the metadata, and grant the user full rights on the newly created database:

```
$ createuser --username=postgres -RDIe1PS gerrit
$ createdb --username=postgres -E UTF-8 -O gerrit reviewdb
```

- MySQL

- Create a user for the web application within the database, assign it a password, create a database, and give the newly created user full rights on it:

```
mysql
CREATE USER 'gerrit'@'localhost' IDENTIFIED BY 'secret';
CREATE DATABASE reviewdb;
GRANT ALL ON reviewdb.* TO 'gerrit'@'localhost';
FLUSH PRIVILEGES;
```

- MariaDB

- Requirements: MariaDB version 5.5 or later.
- Visit MariaDB's [documentation](#) for further information regarding using MariaDB.

- Oracle

- Create a user for the web application within sqlplus, assign it a password, and grant the user full rights on the newly created database:
- ```
$ SQL> create user gerrit identified by secret_password default tablespace users;
```

```
SQL> grant connect, resources to gerrit;
```

- JDBC driver ojdbc6.jar must be obtained from your Oracle distribution. Gerrit initialization process tries to copy it from a known location:
- If this file can not be located at this place, then the alternative location can be provided.
- Instance name is the Oracle SID. Sample database section in \$site\_path/etc/gerrit.config:
- /u01/app/oracle/product/11.2.0/xe/jdbc/lib/ojdbc6.jar

```
$ [database]
$ type = oracle
$ instance = xe
$ hostname = localhost
$ username = gerrit
$ port = 1521
```

- Sample database section in \$site\_path/etc/secure.config:

```
$ [database]
$ password = secret_password
```

- SAP MaxDB

- In the MaxDB studio or using the SQLCLI command line interface create a user *gerrit* with the user class *RESOURCE* and a password <secret password>. This will also create an associated schema on the database.  
To run Gerrit on MaxDB, you need to obtain the MaxDB JDBC driver. It can be found in your MaxDB installation at the following location:  
on Windows 64bit at "C:\Program Files\sdb\MaxDB\runtime\jar\sapdbc.jar"  
on Linux at "/opt/sdb/MaxDB/runtime/jar/sapdbc.jar"
- It needs to be stored in the *lib* folder of the review site.  
In the following sample database section it is assumed that the database name is *reviewdb* and the database is installed on localhost:  
In \$site\_path/etc/gerrit.config:

```
$ [database]
```

```
$ type = maxdb
$ database = reviewdb
$ hostname = localhost
 username = gerrit
```

- In `$site_path/etc/secure.config`:

```
$ [database]
 password = <secret password>
```

- **DB2**

- Create a system wide user for the Gerrit application, and grant the user full rights on the newly created database
 

```
$ db2 => create database gerrit
$ db2 => connect to gerrit
db2 => grant connect,accessctrl,dataaccess,dbadm,secadm on database to gerrit;
```
- JDBC driver `db2jcc4.jar` and `db2jcc_license_cu.jar` must be obtained from your DB2 distribution. Gerrit initialization process tries to copy it from a known location:

```
$ /opt/ibm/db2/V10.5/java/db2jcc4.jar
/opt/ibm/db2/V10.5/java/db2jcc_license_cu.jar
```

- If these files cannot be located at this place, then an alternative location can be provided during init step execution.

Sample database section in `$site_path/etc/gerrit.config`

```
$ [database]
$ type = db2
$ database = gerrit
$ hostname = localhost
$ username = gerrit
 port = 50001
```

- Sample database section in `$site_path/etc/secure.config`:

```
$ [database]
 password = secret_password
```

- **SAP HANA**

- In the HANA studio or the SAP HANA Web-based Development Workbench create a user `GERRIT2` with the role `RESTRICTED_USER_JDBC_ACCESS` and a password `<secret password>`. This will also create an associated schema on the database. As this user would be required to change the password upon first login you might want to disable the password lifetime check by executing `ALTER USER GERRIT2 DISABLE PASSWORD LIFETIME`.
- To run Gerrit on HANA, you need to obtain the HANA JDBC driver. It can be found as described [here](#). It needs to be stored in the `lib` folder of the review site.
- In the following sample database section it is assumed that HANA is running on the host `hana.host` and listening on port `4242` where a schema/user `GERRIT2` was created.
- Visit SAP HANA's [documentation](#) for further information regarding using SAP HANA.

- **Apache2 Setup**

- Install Apache2:

```
sudo apt-get install apache2
```

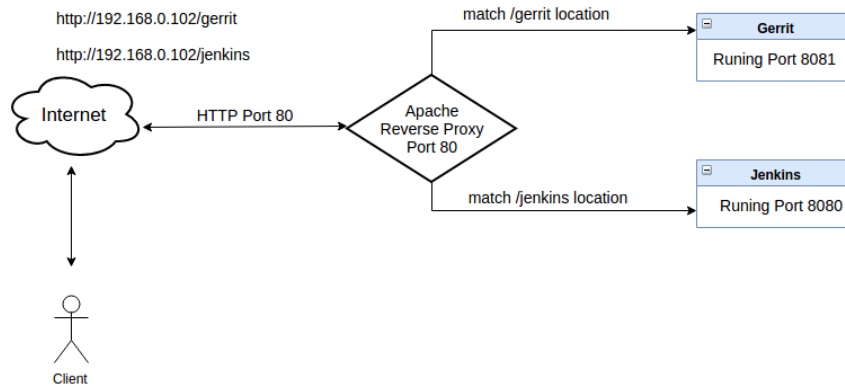
- Install proxy module & dependency

```
sudo apt-get install libapache2-mod-proxy-html libxml2-dev
```

- Initiate module

```
sudo a2enmod proxy proxy_http rewrite
```

- **NOTICE:** Below here is the steps to configure **IF YOU NEED APACHE TO ACT AS A REVERSE PROXY:**



- Create [gerrit.htpasswd] file under /etc/apache2/gerrit.htpasswd (This file is used to store login account session):  
`sudo htpasswd -c /etc/apache2/gerrit.htpasswd admin`

**Example:**

```
manhvn@manhvn-pc ~
File Edit View Search Terminal Help
manhvn@manhvn-pc ~ $ sudo htpasswd -c /etc/apache2/gerrit.htpasswd admin
New password:
Re-type new password:
Adding password for user admin
manhvn@manhvn-pc ~ $
```

- Create [gerrit.conf] file under /etc/apache2/sites-enabled/gerrit.conf:  
`cd /etc/apache2/sites-enabled`  
`sudo touch gerrit.conf`  
`sudo vi gerrit.conf`  
**Edit the gerrit.conf file:**

```

<VirtualHost *:80>
 ProxyRequests Off
 ProxyVia Off
 ProxyPreserveHost On

 <Proxy *>
 Order deny,allow
 Allow from all
 </Proxy>

 <Location /gerrit/login/>
 AuthType Basic
 AuthName "Gerrit Code Review"
 Require valid-user
 AuthUserFile /etc/apache2/gerrit.htpasswd
 Order Deny,Allow
 Allow from all
 </Location>

 AllowEncodedSlashes On
 ProxyPass /gerrit/ http://localhost:8081/gerrit/
</VirtualHost>

```

Explanation:

- At first declare a VirtualHost to handle all requests to port 80.
- Each HTTP request goes to /gerrit/login/ and being responded i <Location> tag.
- The Authentication Type is declared as Basic (Change it to whatever type you want).
- Finally, Apache will redirect all HTTP response headers to Gerrit on the port (8081 in this case).
- Restart Apache to active the configuration after completing:

```
sudo service apache2 restart
```

- **Install Gerrit**

- Gerrit uses Git to manage version source. Therefore, Git is required:  

```
sudo apt-get update
sudo apt-get install git git-core git-review gitweb
git version
```
- Create Gerrit user on Ubuntu:  

```
sudo adduser gerrit2
```
- Change to Gerrit user, download Gerrit then start:  

```
sudo su - gerrit2
wget https://gerrit-releases.storage.googleapis.com/gerrit-3.0.3.war
java -jar [Gerrit.war] init -d [PATH TO YOUR GERRIT SITE]
```

- The Configuration Wizard will now initiated:

```

gerit2@gerrit-VM: ~
gerit2@gerrit-VM:~$ java -jar gerrit-3.0.3.war init -d home/gerrit2/review_site/
Using secure store: com.google.gerrit.server.securestore.DefaultSecureStore

*** Gerrit Code Review 3.0.3

*** Git Repositories

Location of Git repositories [git]:

*** Index

Type [lucene/?]:

The index must be rebuilt before starting Gerrit:
 java -jar gerrit.war reindex -d site_path

*** User Authentication

Authentication method [ldap/?]:
Git/HTTP authentication [http/?]:
LDAP server [ldap://hera.humaxdigital.com]:
LDAP username [buildadmin]:
Change buildadmin's password [y/N]? N
Account BaseDN [DC=humaxdigital,DC=com]:
Group BaseDN [OU=Group,DC=humaxdigital,DC=com]:
Enable signed push support [y/N]?

*** Review Labels

Install Verified label [y/N]? N

*** Email Delivery

SMTP server hostname [email.humaxdigital.com]:
SMTP server port [(default)]:
SMTP encryption [none/?]:
SMTP username [buildadmin]:
Change buildadmin's password [y/N]? N

*** Container Process

Run as [gerrit2]:
Java runtime [/usr/lib/jvm/java-8-openjdk-amd64/jre]:
Upgrade home/gerrit2/review_site/bin/gerrit.war [Y/n]? Y
Copying gerrit-3.0.3.war to home/gerrit2/review_site/bin/gerrit.war

*** SSH Daemon

Listen on address [*]:
Listen on port [29418]:

*** HTTP Daemon

Behind reverse proxy [y/N]? N
Use SSL (https://) [y/N]? N
Listen on address [*]:
Listen on port [8080]:
Canonical URL [http://gerrit-hvn.humaxdigital.com:8080]: http://gerrit-hvn.humaxdigital.com:8080

*** Cache

Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/mergeability.h2.db [y/N]? N
Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/web_sessions.h2.db [y/N]? N
Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/diff.h2.db [y/N]? N
Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/conflicts.h2.db [y/N]? N
Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/change_kind.h2.db [y/N]? N
Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/git_tags.h2.db [y/N]? N
Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/diff_summary.h2.db [y/N]? N
Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/pure_revert.h2.db [y/N]? N
Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/oauth_tokens.h2.db [y/N]? N
Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/diff_intraline.h2.db [y/N]? N
Delete cache file /home/gerrit2/home/gerrit2/review_site/cache/web_sessions.trace.db [y/N]? N

*** Plugins

Installing plugins.
Install plugin codemirror-editor version v3.0.3 [Y/n]? Y
codemirror-editor v3.0.3 is already installed, overwrite it [Y/n]? Y
Updated codemirror-editor to v3.0.3
Install plugin commit-message-length-validator version v3.0.3 [Y/n]? Y
commit-message-length-validator v3.0.3 is already installed, overwrite it [Y/n]? Y
Updated commit-message-length-validator to v3.0.3
Install plugin delete-project version v3.0.3 [Y/n]? Y
delete-project v3.0.3 is already installed, overwrite it [Y/n]? Y
Updated delete-project to v3.0.3
Install plugin download-commands version v3.0.3 [Y/n]? Y
download-commands v3.0.3 is already installed, overwrite it [Y/n]? Y
Updated download-commands to v3.0.3
Install plugin gitiles version v3.0.3 [Y/n]? Y
gitiles v3.0.3 is already installed, overwrite it [Y/n]? Y
Updated gitiles to v3.0.3
Install plugin hooks version v3.0.3 [Y/n]? Y
hooks v3.0.3 is already installed, overwrite it [Y/n]? Y
Updated hooks to v3.0.3
Install plugin plugin-manager version v3.0.3 [Y/n]? Y
plugin-manager v3.0.3 is already installed, overwrite it [Y/n]? Y
Updated plugin-manager to v3.0.3
Install plugin replication version v3.0.3 [Y/n]? Y
replication v3.0.3 is already installed, overwrite it [Y/n]? Y
Updated replication to v3.0.3
Install plugin reviewnotes version v3.0.3 [Y/n]? Y
reviewnotes v3.0.3 is already installed, overwrite it [Y/n]? Y

```

Git local folder

If using HTTP Authen, setup Apache2 as before.

Otherwise, using LDAP will automatically access to Humax email database

Email setup

Setup URL for the Gerrit site



Updated reviewnotes to v3.0.3

- After installing, run REINDEX command:  
`java -jar gerrit.war reindex -d [PATH TO YOUR GERRIT SITE]`

```
gerrit2@gerrit-VM: ~/home/gerrit2/review_site/bin
gerrit2@gerrit-VM:~/home/gerrit2/review_site/bin$ java -jar gerrit.war reindex -d /home/gerrit2/home/gerrit2/review_site
[2019-10-24 14:57:47,183] [main] INFO com.google.gerrit.server.git.LocalDiskRepositoryManager : Defaulting core.streamF
ileThreshold to 191m
[2019-10-24 14:57:48,146] [main] INFO com.google.gerrit.server.cache.h2.H2CacheFactory : Enabling disk cache /home/gerri
t2/home/gerrit2/review_site/cache
[2019-10-24 14:57:48,274] [main] INFO com.google.gerrit.server.git.WorkQueue : Adding metrics for 'WorkQueue' queue
[2019-10-24 14:57:48,285] [main] INFO com.google.gerrit.server.git.WorkQueue : Adding metrics for 'Index-Interactive' q
ueue
[2019-10-24 14:57:48,290] [main] INFO com.google.gerrit.server.git.WorkQueue : Adding metrics for 'Index-Batch' queue
[2019-10-24 14:57:48,324] [main] INFO com.google.gerrit.server.git.WorkQueue : Adding metrics for 'ReceiveCommits' queu
e
[2019-10-24 14:57:48,325] [main] INFO com.google.gerrit.server.git.WorkQueue : Adding metrics for 'SendEmail' queue
[2019-10-24 14:57:48,432] [main] INFO com.google.gerrit.server.rules.PrologEnvironment : reductionLimit: 100000, compil
eLimit: 1000000
[2019-10-24 14:57:49,300] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loading plugins from /home/gerrit
2/home/gerrit2/review_site/plugins
[2019-10-24 14:57:49,416] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin codemirror-editor,
version v3.0.3
[2019-10-24 14:57:49,444] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin commit-message-leng
th-validator, version v3.0.3
[2019-10-24 14:57:49,475] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin delete-project, ver
sion v3.0.3
[2019-10-24 14:57:49,502] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin download-commands,
version v3.0.3
[2019-10-24 14:57:49,536] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin gitiles, version v3
.0.3
[2019-10-24 14:57:49,563] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin hooks, version v3.0
.3
[2019-10-24 14:57:49,590] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin plugin-manager, ver
sion v3.0.3
[2019-10-24 14:57:49,619] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin replication, versio
n v3.0.3
[2019-10-24 14:57:49,645] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin reviewnotes, versio
n v3.0.3
[2019-10-24 14:57:49,668] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin singleusergroup, ve
rsion v3.0.3
[2019-10-24 14:57:49,689] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Loaded plugin webhooks, version v
3.0.3
Collecting accounts: 5
Reindexing accounts: 100% (5/5)
Reindexed 5 documents in accounts index in 0.5s (10.5/s)
Reindexing groups: 100% (3/3)
Reindexed 3 documents in groups index in 0.1s (29.7/s)
Collecting projects: 7
Reindexing changes: projects: 100% (7/7), 100% (4/4), done
Reindexed 4 documents in changes index in 0.7s (5.7/s)
Reindexing projects: 100% (7/7)
Reindexed 7 documents in projects index in 0.1s (65.4/s)
[2019-10-24 14:57:51,328] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Unloading plugin replication, ver
sion v3.0.3
[2019-10-24 14:57:51,328] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Unloading plugin codemirror-edi
tor, version v3.0.3
[2019-10-24 14:57:51,329] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Unloading plugin commit-message-l
ength-validator, version v3.0.3
[2019-10-24 14:57:51,329] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Unloading plugin gitiles, versio
n v3.0.3
[2019-10-24 14:57:51,329] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Unloading plugin webhooks, versio
n v3.0.3
[2019-10-24 14:57:51,330] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Unloading plugin reviewnotes, ver
sion v3.0.3
[2019-10-24 14:57:51,330] [main] INFO com.google.gerrit.server.plugins.PluginLoader : Unloading plugin download-command
s, version v3.0.3
```

- Start/Stop Gerriit Service:  
`sudo sh [PATH TO YOUR GERRIT SITE]/bin/gerriit.sh start | stop | restart`