What’s new in Gerrit 3.8

... and beyond

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Gerrit Maintainer
Member of the Gerrit ESC
Gerrit Release Manager
About GerritForge Inc.

US Corporation
Coming from UK and EU heritage

HQ in Sunnyvale CA since 2019

Committed to OpenSource and to Gerrit Code Review since 2009
Gerrit v3.8 in **numbers**

**Gerrit core**

-轴 (1.84%)
-linaro (6.13%)
-wikimedia (7.36%)
-gerritforge (20.86%)
-google (56.44%)

**JGit and Gerrit plugins**

- apache (1.49%)
- gmail (10.04%)
- google (12.02%)
- sap (32.09%)
-gerritforge (36.93%)

Source: analytics.gerrithub.io

Gerrit User Summit 2023 – Göteborg Sweden - Sunnyvale CA

GerritForge.com
Gerrit v3.5 (EOL) in numbers (last 12 months)

Gerrit core

- free: 6.42%
- axis: 7.34%
- google: 8.26%
- gerritforge: 13.76%
- sap: 18.35%
- linaro: 43.12%

JGit and Gerrit plugins

- linaro: 5.6%
- gmail: 15.95%
- gerritforge: 75.86%

Source: analytics.gerrithub.io
Gerrit v3.5 (EOL) and Qualcomm upgrade efforts

Qualcomm (Linaro.org) upgrade from Gerrit v2.7 to v3.5

See more at: https://youtu.be/V5QVf4DWUZ8
Last 12 months top-10 individual contributors

- Ben Rohlfs (14.27%)
- Edwin Kempin (9.32%)
- Matthias Sohn (8.01%)
- Luca Milanesio (7.56%)
- Thomas Draebing (4.8%)
- Jacek Centkowski (2.64%)
- Kamil Musin (4.55%)
- Other (37.34%)

Source: analytics.gerrithub.io
Last 12 months top-10 by organisation

- google (53.87%)
- gerritforge (16.76%)
- sap (14.52%)
- gmail (3.52%)
- wikimedia (2.46%)

Source: analytics.gerrithub.io
Gerrit v3.8 compared to v3.6/v3.7

Number of Commits

- Gerrit
- JGit+Plugins
Upgrading to Gerrit v3.8

Upgrade with zero-downtime
• Possible from v3.6 or v3.7
• No schema changes when upgrading from v3.7
• Online reindex for changes index (0079 => 0082)

Upgrade with downtime
• From any v3.2 or later version on Java 11
• Upgrade to v3.5 directly
• Run the copy-approvals utility (offline)
• Upgrade to v3.8 directly + off-line reindex
Downgrading to Gerrit v3.7

Downtime IS required

- Shutdown Gerrit v3.8
- Downgrade the gerrit.war + plugins
- Restore changes_0079
  OR
- Run off-line reindex of changes
Zero-downtime upgrade from v3.7 to v3.8
Zero-downtime upgrade from v3.7 to v3.8

http://localhost

haproxy

http://localhost:8081
ssh://localhost:29411

http://localhost:8082
ssh://localhost:29412

gerrit-01

gerrit-02

Indexvolume-01
gitvolume
sharedir
Indexvolume-02
Gerrit 3.8: Java 11 (compatible with Java 17)

Gerrit officially distributed for Java 11
- gerrit.war and plugin API distributed on Java 11 bytecode
- Supports Java 17 LTS
- Gerrit plugins have to target Java 11

NOTE:
Java 11 EOL is September 2023
Gerrit 3.8: native packages

AlmaLinux
- Upgraded to v9.1

Ubuntu Linux
- Stays at v22.04
Gerrit 3.8: Browser notifications

- Enable system-level notification from the browser
Gerrit 3.8: create patch-set from patch

• Allow formatting patch from one repository and create a patch-set from it on another repository

```
POST /changes/myProject~master~I8473b95934b5732ac55d26311a706c9c2bde9940/patch:apply

{
    
    "patch": "new file mode 100644
--- /dev/null
+++ b/a_new_file.txt
@@ -0,0 +1,2 @@
+     
+Patch compatible `git diff` output
+For example: `link:#get-patch[<gerrit patch>] | base64 -d | sed -z 's/\n/\n/g'``
```
Gerrit 3.8: file-mode patchsets detection

• Patch-sets shows differences in file-mode in files
Gerrit 3.8: **suggest edit**

- Propose alternative content from the reviewer
- Allow author to apply with a “Fix” button
### Gerrit 3.8: change queries

- **New “subject” and “prefix:subject” predicates for changes**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Owner</th>
<th>Reviewers</th>
<th>Repo</th>
<th>Branch</th>
<th>Updated</th>
<th>Size</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>refutable: close old Db in FileRepository#convertToPackedRefs</td>
<td>Han-Wen Nien...</td>
<td>davido, JGit, +2</td>
<td>GerritCodeReview/jgit</td>
<td>master</td>
<td>02/02/2022</td>
<td>XS</td>
<td>Merged</td>
</tr>
<tr>
<td>refutable: tweaks for Windows</td>
<td>Han-Wen Nien...</td>
<td>davido, JGit, +2</td>
<td>GerritCodeReview/jgit</td>
<td>master</td>
<td>02/02/2022</td>
<td>S</td>
<td>Merged</td>
</tr>
<tr>
<td>refutable: drop code for truncated reads</td>
<td>Han-Wen Nien...</td>
<td>JGit, Jonathan, +2</td>
<td>GerritCodeReview/jgit</td>
<td>stable-5.6</td>
<td>07/10/2021</td>
<td>S</td>
<td>Merged</td>
</tr>
<tr>
<td>refutable: pass on invalid object ID in conversion</td>
<td>Han-Wen Nien...</td>
<td>JGit, Matthias, +1</td>
<td>GerritCodeReview/jgit</td>
<td>stable-5.6</td>
<td>07/10/2021</td>
<td>S</td>
<td>Merged</td>
</tr>
<tr>
<td>refutable: pass on invalid object ID in conversion</td>
<td>Han-Wen Nien...</td>
<td>JGit, Matthias, +1</td>
<td>GerritCodeReview/jgit</td>
<td>stable-5.9</td>
<td>27/09/2021</td>
<td>S</td>
<td>Abandoned</td>
</tr>
<tr>
<td>refutable: add random suffix to table names</td>
<td>Han-Wen Nien...</td>
<td>JGit, Matthias, +1</td>
<td>GerritCodeReview/jgit</td>
<td>master</td>
<td>06/02/2021</td>
<td>XS</td>
<td>Merged</td>
</tr>
<tr>
<td>refutable: don't check deadline on the first try</td>
<td>Han-Wen Nien...</td>
<td>JGit, Matthias, +1</td>
<td>GerritCodeReview/jgit</td>
<td>stable-5.6</td>
<td>11/02/2020</td>
<td>XS</td>
<td>Merged</td>
</tr>
<tr>
<td>refutable: clarify comment</td>
<td>Han-Wen Nien...</td>
<td>David, JGit, +2</td>
<td>GerritCodeReview/jgit</td>
<td>stable-5.6</td>
<td>11/02/2020</td>
<td>XS</td>
<td>Merged</td>
</tr>
<tr>
<td>refutable: clear cache on full compaction</td>
<td>Han-Wen Nien...</td>
<td>JGit, Matthias, +1</td>
<td>GerritCodeReview/jgit</td>
<td>stable-5.6</td>
<td>11/02/2020</td>
<td>S</td>
<td>Merged</td>
</tr>
<tr>
<td>refutable: remove outdated comment</td>
<td>Han-Wen Nien...</td>
<td>David, JGit, +2</td>
<td>GerritCodeReview/jgit</td>
<td>stable-5.6</td>
<td>11/02/2020</td>
<td>XS</td>
<td>Merged</td>
</tr>
<tr>
<td>refutable: clarify that LogCursor may return a null ReflogEntry</td>
<td>Han-Wen Nien...</td>
<td>JGit, Matthias, +1</td>
<td>GerritCodeReview/jgit</td>
<td>stable-5.6</td>
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</tr>
</tbody>
</table>
Gerrit 3.8: improved rebase experience

- Rebase on behalf of the author
- Rebase a chain of ancestors all at once
Gerrit 3.8: view secondary e-mails

- New global capability in All-Projects to view users’ secondary emails
Gerrit 3.8: easier transition from LDAP to Google-OAuth

- Migrate automatically existing users from LDAP to Google-OAuth accounts, matching by e-mail
  - Only for LDAP to Google-OAuth transition
  - NOT implemented yet for:
    - Other OAuth providers
    - SAML
Gerrit 3.8: fix loginUrl / loginText

- Defined in gerrit.config but broken for many releases

- **Warning**: check if you have it on gerrit.config, as they will be now rendered
Gerrit 3.8.3: easier multi-site provisioning on the Cloud

- Override instance-id via JVM System property `gerrit.instanceId`.
- Override `HttpCanonicalWebUrlProvider` by plugins (used by virtual-host module).
- Example: `review.gerrithub.io, eclipse.gerrithub.io`.
  Two instance-ids, two virtual-hosts, one multi-site setup.
Gerrit 3.8: define relevant (external) groups

- `groups.relevantGroup` can list multiple times the groups that are always "relevant" even if not loaded in cache
Gerrit 3.8: **skip author/committer as reviewer on cherry-picks**

- `reviewer.skipAddingAuthorAndCommitterAsReviewers` for not adding the author and committer of the cherry-picked changes as reviewers
- Useful when cherry-picking changes from people not anymore in the project
Gerrit 3.8: committer/uploader e-mail in SRs

- New submit requirements operator committeremail, uploaderemail for matching emails in expressions
Gerrit 3.8: has_submodule_update in SRs

- New submit requirements operator
  has_submodule_update
  for checking if the change has updates on its submodules
Gerrit 3.8: label from non-contributor in SRs

- `user=non_contributor` argument for labels that returns true if the change has a label vote matching the specified value and the vote is applied from a NOT uploader, author or committer
Gerrit 3.8: plugins improvements - TaskListeners

- Allow plugins to listen to `com.google.gerrit.server.git.WorkQueue$Task` before they run, and after they complete.
Gerrit 3.8: plugins improvements – insertCSSRule()

- Allow JavaScript plugins to insert arbitrary CSS rules to the whole UI (replaces plugin.registerStyleModule())

```javascript
Gerrit.install(plugin => {
  const rule = `html.darkTheme { --header-background-color: #148d9e; }
  plugin.styleApi().insertCSSRule(rule);
});
```
Gerrit 3.8: Performance improvements (1)

New setting `core.usePerRequestRefCache`

- Leverage the JGit SnapshottingRefDirectory
- Avoids multiple reads for packed-refs over NFS (when `core.trustFolderStats` on `jgit.config` is set to false)
- Use thread-local cache
Gerrit 3.8: **Attention-set enabled for all**

`change.enableAttentionSet` is REDUNDANT

- Attention-set is enabled for all
- Assignee feature is completely removed
Gerrit 3.8: **phase-out robot-comments**

```javascript
change.enableRobotComments
```

- Robot comments are about to be phased out
- Can be disabled on the UI, preparing for their removal
Gerrit 3.8: Breaking changes

commentlink.name.html is IGNORED
Gerrit 3.8: Breaking changes?

Prolog rules are officially deprecated
• Planned for removal in future releases
• Warning displayed when uploading new rules.pl
Gerrit 3.6 / Java 11: EOL plans

Gerrit 3.6 will be EOL once 3.9 will be released (according to the support policy [1])

Java 11 is EOL and will be dropped from Gerrit vNext in favour of Java 21

Gerrit 3.9: preview

Planned for November 2023
(release plan published after the hackathon)
Released on Java 21 (code-level compatible with Java 11)
Gerrit 3.9: **batch-ref-updated stream event**

Allow preventing multiple CI/CD actions on single updates
Enable consistent alignment across multiple sites (either all replicated or none)

Can be turned on/off for backward compatibility with legacy CI/CD systems
Gerrit 3.9: draft comments ref-updated stream event

Generate ref-update for comments that just stored as drafts under All-Users.git

Needed for multi-site setups where drafts need to be accessed by multiple sites.
Gerrit 3.9: limit changes in topics

change.topicLimit defines the maximum number of changes in the same topic
Gerrit 3.9: limit download size

change.maxFileSizeDownload prevents memory overload due to clients downloading large files from REST-API
Gerrit 3.9: **limit diff size**

`change.maxFileSizeDiff` prevents memory overload due to the rendering of large files diffs.
Gerrit 3.9: introduce diff3 view

change.diff3ConflictView Use the diff3 formatter when showing merge conflicts
Gerrit 3.9: attention-set automatic assignment

attentionSet.readdAfter/ readdMessage allow to add the owner back into the attention-set automatically
Gerrit 3.9: indexing improvements

`index.defaultLimit` set a limit to the query results if the client does not request `--no-limit`

`index.indexChangesAsync` does not block the UI for the change to be reindexed upon updates
Gerrit 3.9: account deletion

Accounts can be deleted via REST-API
Gerrit 3.9: plugins – custom key/value to change notes

A plugin may store additional key/value pairs (both String) for adding custom data to Change notes.
Q&A: excited about the future of Gerrit?
Wants to know more?

GerritForge.com/contact