What’s new in Gerrit 3.4/3.5
About GerritForge

- Founded in the UK
- HQ in London with presence in Europe (GerritForge Ltd) and the USA (GerritForge Inc.)
- Committed to OpenSource and to Gerrit Code Review since 2009
Gerrit v3.4 in numbers

Gerrit core

- google (75.91%)
- gerritforge (10.78%)
- sap (3.84%)
- ericsson (1.97%)

1,067 #Commits
1 #Projects
48 #Authors
16 #Organizations

JGit and Gerrit plugins

- google (42.08%)
- gerritforge (30.32%)
- sap (11.65%)
- paranor (6.11%)
- gmail (0.9%)

884 #Commits
25 #Projects
42 #Authors
15 #Organizations

Source: analytics.gerrithub.io
Gerrit v3.5 in numbers

Gerrit core

- google (82.42%)
- wikimedia (13.1%)
- gerritforge (2.03%)

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<th>#Organizations</th>
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JGit and Gerrit plugins

- gerritforge (36.96%)
- qualcomm (8.13%)
- sap (10.88%)
- paranor (5.64%)
- acmegating (1.31%)

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Source: analytics.gerrithub.io
Upgrading to Gerrit v3.4 or v3.5

Upgrade with zero-downtime
- Possible from v3.3
- Can jump from v3.3 to v3.5 directly

Upgrade with downtime
- Possible from v3.0, v3.1 and v3.2
- Can jump from v3.3 to v3.5 directly (requires offline reindex)
Zero-downtime upgrade
Gerrit 3.4: **Java 11 (source compatible with Java 8)**

Gerrit officially **distributed** for Java 11 only

- gerrit.war and plugin API distributed on Java 11 bytecode
- Does NOT work out-of-the-box for Java 8 (needs rebuild)

- Incoming changes on stable-3.4: still validated for Java 8
- Gerrit plugins have to target Java 11
Gerrit 3.5: Java 11 (bye bye Java 8)

Gerrit only compatible with Java 11

- gerrit.war and plugin API distributed on Java 11 bytecode
- Java 8 is NOT supported anymore (binary or source code)

- Incoming changes on stable-3.5 and master: validated for Java 11 only
Gerrit 3.4: Performance improvements

Shawn (RIP) always said:
“performance is a feature, and a very important one”

Mergeability computation behavior is disabled by default

- If you need it back, set in gerrit.config:

```
[change]
mergeabilityComputationBehavior = API_REF_UPDATED_AND_CHANGE_REINDEX
```

Faster
Sslower
Gerrit 3.5: Performance improvements

Shawn (RIP) always said:
“performance is a feature, and a very important one”

Conflicts predicate computation behavior is configurable (enabled by default)

To disable conflicts predicates, set in gerrit.config:

```plaintext
[change]
  conflictsPredicateEnabled = false
```
Gerrit 3.4: Performance - reftable

Designed to speedup repos with lots of refs (https://www.git-scm.com/docs/reftable)

New command to convert projects to reftable

```
ssh -p <port> <host> gerrit convert-ref-storage
   [--format <format>]
   [--backup | -b]
   [--reflogs | -r]
   [--project <PROJECT> | -p <PROJECT>]
```
Gerrit 3.4: Performance – new caches

groups_byuuuid_persisted
persisted version of `groups_byuuuid`

comment_context
lines of the source file highlighted by the user when the comment was written
Gerrit 3.5: Performance – diff cache refactoring

diff cache is replaced by

modified_files
git_modified_files
git_file_diff
gerrit_file_diff

Store more granular data for the diffs rendering of the change screen
Gerrit 3.5: Performance – new caches

approvals
approvals granted on patch set as well as approvals copied from earlier patch sets
Gerrit 3.4: Performance – change limits

**change.maxFiles**
Maximum number of files allowed per change. Larger changes are rejected and must be split up.

**change.maxPatchSets**
Maximum number of patch sets allowed per change. If this is insufficient, recreate the change with a new Change-Id, then abandon the old change.
Gerrit 3.5: Performance – cancellation & deadlines

**Cancellation**
Do not process and consume resources if the user has cancelled the operation on the client.

**Deadline**
Do not allow an operation to consume CPU for more than X time.
Gerrit 3.4: Breaking changes - plugins

HTML plugins are not supported anymore

- If you need it back, set in gerrit.config:

```
[change]
mergeabilityComputationBehavior = API_REF_UPDATED_AND_CHANGE_REINDEX
```
Gerrit 3.4: Breaking changes - SSH

SSH Client stack moved to Apache
JCraft JSch client is still available if you see issues, configurable in gerrit.config:

```
[ssh]
clientImplementation = JSCH
```

SSH Server bump to MINA SSHD 2.6.0 removed obsolete algorithms
Deprecated algorithms are configurable in gerrit.config:

```
[sshd]
enableDeprecatedKexAlgorithms = diffie-hellman-group1-sha1
enableDeprecatedKexAlgorithms = diffie-hellman-group14-sha1
enableDeprecatedKexAlgorithms = diffie-hellman-group-exchange-sha1
```
Gerrit 3.5: Case-insensitive usernames

New Gerrit sites won’t allow usernames to differ only in case. Existing sites continue to be case-sensitive, behavior can be configured:

```
[auth]
  userNameCaseInsensitive = false
```

Moving to case-insensitive usernames require All-Users.git migration:

**Online (no downtime)**

```
[auth]
  userNameCaseInsensitive = true
  userNameCaseInsensitiveMigrationMode = true
```

```
ssh -p <port> <host> gerrit migrate-externalids-to-insensitive
```

**Offline (requires downtime)**

```
[auth]
  userNameCaseInsensitive = true
```

```
java -jar gerrit.war ChangeExternalIdCaseSensitivity
```
Elastic removed Apache 2.0 licensing from v7.11 onwards (2nd Feb 2021)

ElasticSearch removed from Gerrit core. If you still needed, it remains an option as `libModule`

```
[gerrit]
installIndexModule = com.google.gerrit.elasticsearch.ElasticIndexModule
```
Gerrit 3.4: **Review labels updates**

Score can be copied across patch-sets (if list of files did not change):

```python
[label "Label-Name"]
    copyAllScoresIfListofFilesDidNotChange = true
```
Allow exposing CI/CD data into Gerrit change screen

https://gerrit-documentation.storage.googleapis.com/Documentation/3.5.0/pg-plugin-checks-api.html
Gerrit 3.4: Ported comments across patch-sets

Comments left on an older patchset are ported to newer patchsets.

* [Change 387482](https://gerrit-review.googlesource.com/387482): 
EqualsLabelPredicate: fix bug that prevents matching owner votes.

Nasser

also add bugfixes:

- 323255: AllChangesIndexer: skip creating slices for projects with no changes | [https://gerrit-review.googlesource.com/c/gerrit+/323255](https://gerrit-review.googlesource.com/c/gerrit+/323255)
- 323635: Fix disabling repo configs if you do not have permissions to edit | [https://gerrit-review.googlesource.com/c/gerrit+/323635](https://gerrit-review.googlesource.com/c/gerrit+/323635)
Gerrit 3.4: comments summary

Provide an overview of unresolved and resolved comments in the change at a glance.

![Comments summary in Gerrit](image)
Gerrit 3.4: comments context

See the code together with its comment in the Comments tab and change log.
Gerrit 3.4: new related changes UI

Show a default number of changes for related changes and provide expansion buttons.

Before

After
Gerrit 3.5: comments filter

We improved the viewing experience of comments
**Gerrit 3.5: comments link**

Link to the comment thread can be found in the comment card now.
Gerrit 3.5: show soft hyphen in diffs

Link to the comment thread can be found in the comment card now.

```
582 "learningscreen.nestsense" = "NEST SENSE";
583 "leaseinfolayer.accessinfotitle.aw" = "Zugriffs­informationen";
584 "leaseinfolayer.accessperiod.aw" = "Zugriffszeitraum";
```
Gerrit 3.5: **topic auto-completion**
Gerrit 3.5: **better performance**

- Instant navigation from diff view to change view and back
- Faster diff loading for large files
- Faster change-page loads for pages with lots of messages.
- 10% faster page load thanks to lit migration
Gerrit 3.4: new plugins – code-owners

Provides support for defining code owners for files in a repository and selecting them from Gerrit.
Gerrit 3.4/3.5: replication improvements


- Allow Git push in batches
Gerrit 3.4/3.5: new plugins – pull-replication

Reduces replication times from minutes to seconds or milliseconds!

- git-upload-pack and Git protocol v2 (optimized for large refs)
- load-balancing of git-upload-packs with Gerrit HA
- sync and async replication model
- Ultra-fast (msec) replication of NoteDb’s /meta refs
- Allow non-Gerrit remotes (e.g. mirror external Git repositories)
- Manages Gerrit repo creation/deletion without adminSshUrl
Gerrit 3.4: `events-{aws-kinesis,gcloud-pubsub}`

Exposes Gerrit stream-events on AWS native streams or Gcloud pubsub

- Reliable across Gerrit restarts (no need of events-log plugin)
- Cloud-native in AWS or Gcloud
- Compatible with Gerrit HA without need of stream events broadcast
- Pluggable into Jenkins Gerrit-Code-Review plugin as event source
Gerrit 3.4: aws-dynamodb-refdb

Use AWS DynamoDb as global ref-database

- Cloud-native and fully managed in AWS
- Monitor concurrent refs updates in Gerrit multi-sites on HA
Gerrit 3.4: cache-chroniclemap

First production-ready libModule for Gerrit cache (https://gerrit.googlesource.com/modules/cache-chroniclemap/)

- Based on Open-Source ChronicleMap high-speed persistent cache (https://github.com/OpenHFT/Chronicle-Map)
- Designed for low-latency
- Never blocks, read or write operations
- Static file allocation: no need to vacuum or compaction
Gerrit 3.2 and 2.16: **EOL**

Gerrit 3.2.x is EOL according to the support policy [1]

Gerrit 2.16 is EOL **without exceptions:**
- Latest 2.16.24 has huge migration improvements by Qualcomm
- Proposals of a post-EOL support policy
  https://gerrit-review.googlesource.com/317484

Q&A: excited about the future of Gerrit?

Image from: http://cypp.rutgers.edu/ru-voting/political-information/public-opinion-polls/
Wants to know more?

GerritForge.com/contact