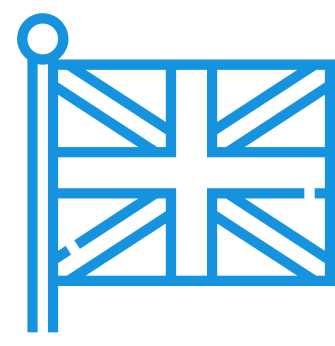


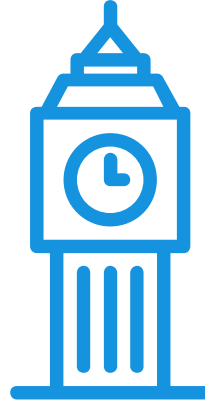
Luca Milanesio
Gerrit Code Review Maintainer
GerritForge

What's new in Gerrit 3.4/3.5

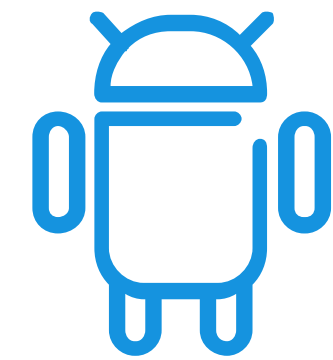
About GerritForge



Founded in the UK



HQ in London with presence in Europe (GerritForge Ltd) and the USA (GerritForge Inc.)



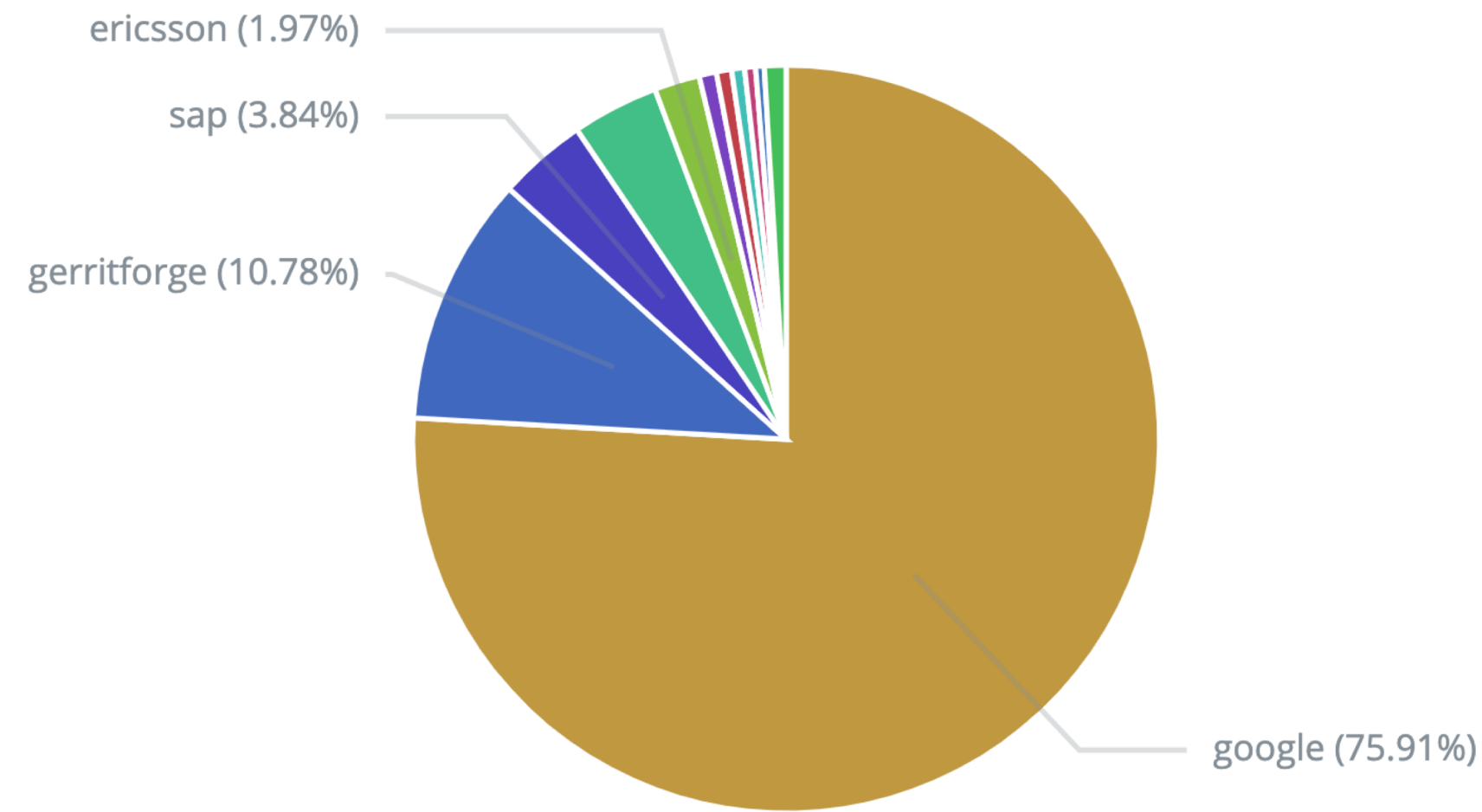
Committed to OpenSource and to Gerrit Code Review since 2009



kibana

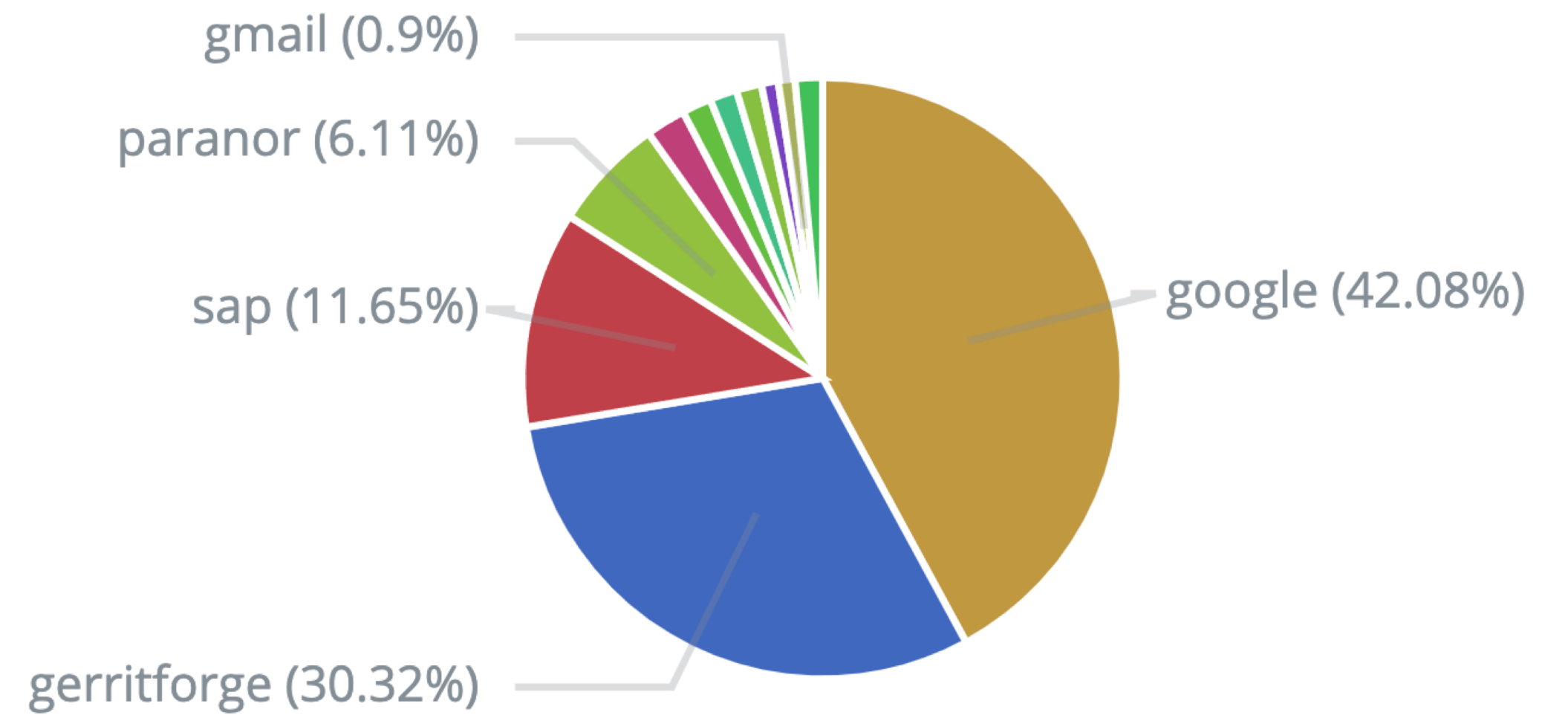


Gerrit v3.4 in numbers



Gerrit core

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

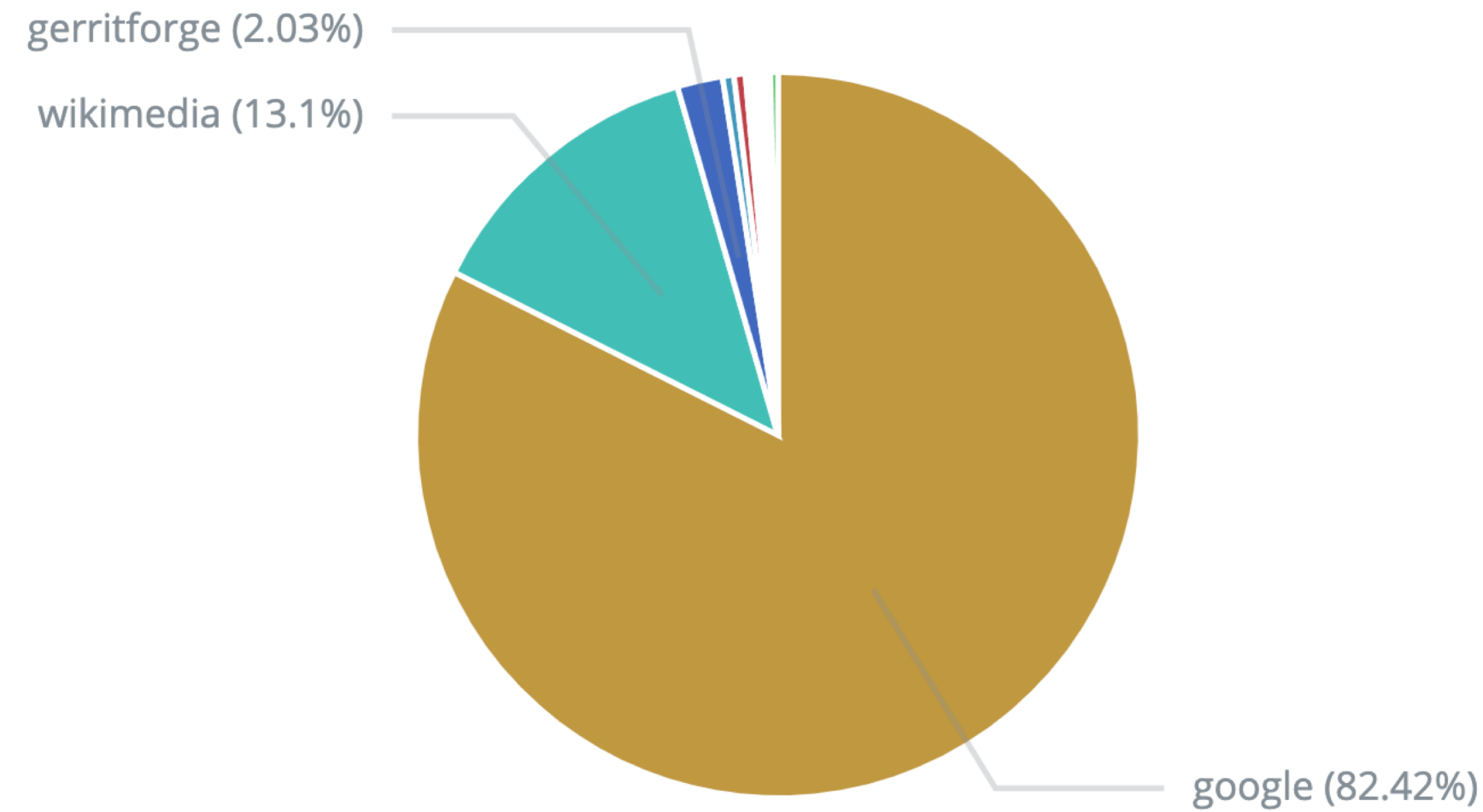


JGit and Gerrit plugins

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

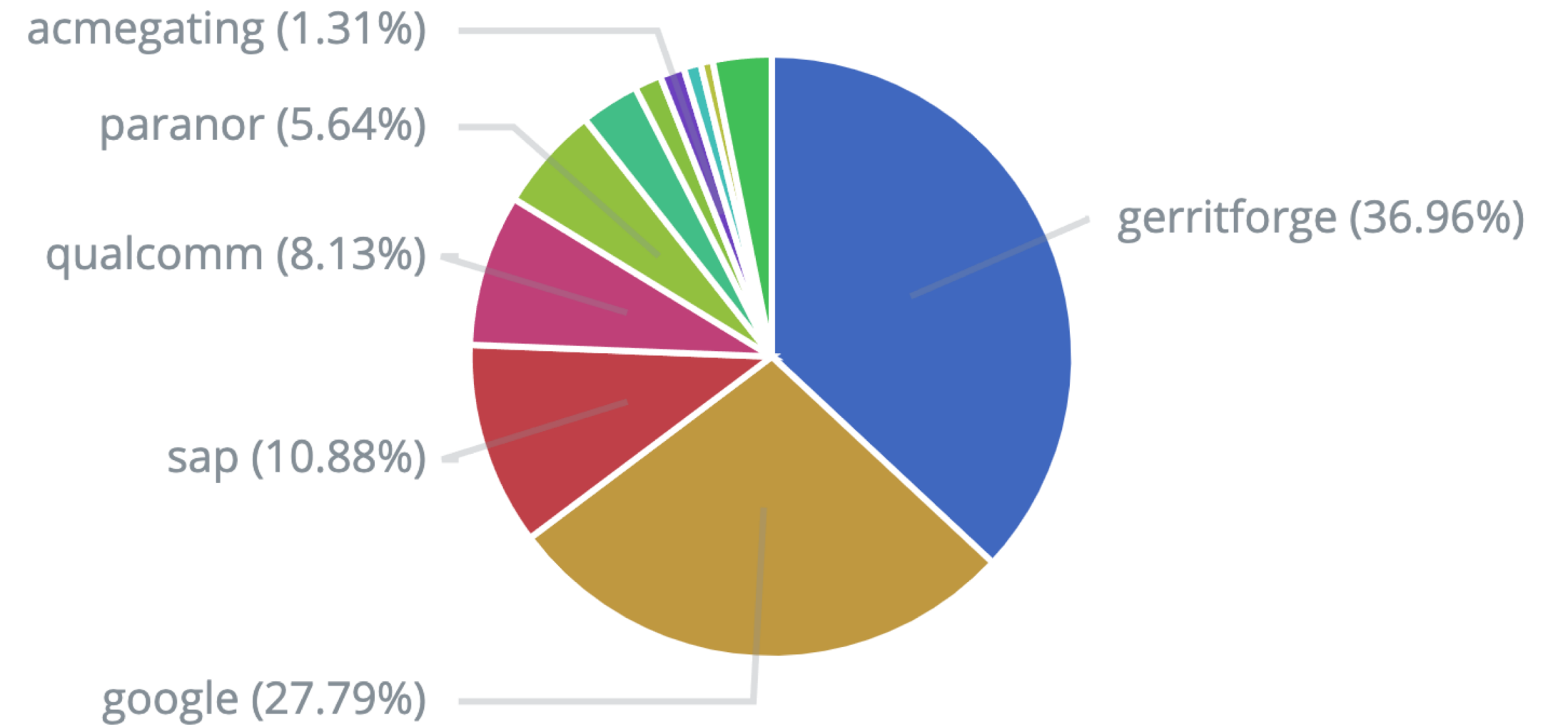
Source: analytics.gerrithub.io

Gerrit v3.5 in numbers



Gerrit core

1,183 #Commits **1** #Projects **46** #Authors **14** #Organizations



JGit and Gerrit plugins

763 #Commits **61** #Projects **62** #Authors **20** #Organizations

Source: analytics.gerrithub.io

Upgrading to Gerrit v3.4 or v3.5

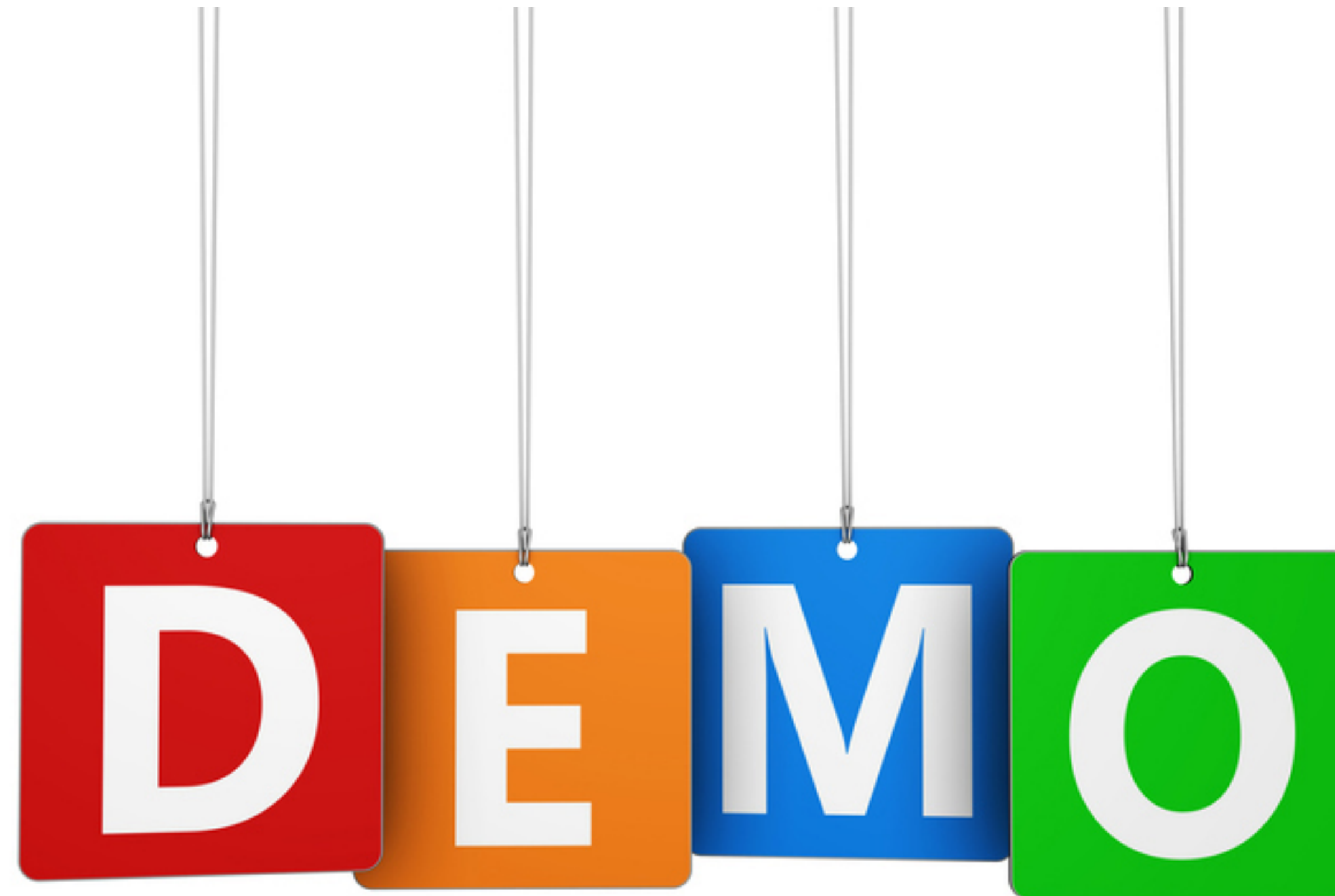
Upgrade with zero-downtime

- 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”

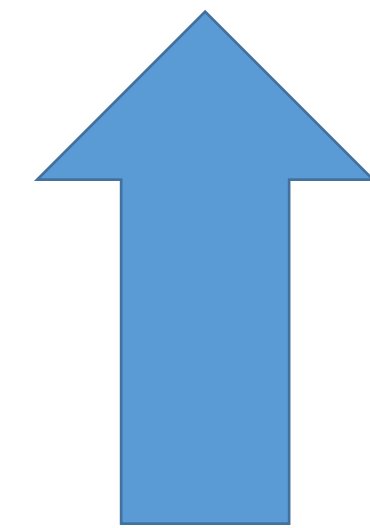
Mergeability computation behavior
is disabled by default

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

[change]

```
mergeabilityComputationBehavior = API_REF_UPDATED_AND_CHANGE_REINDEX
```

FASTER



SLOWER

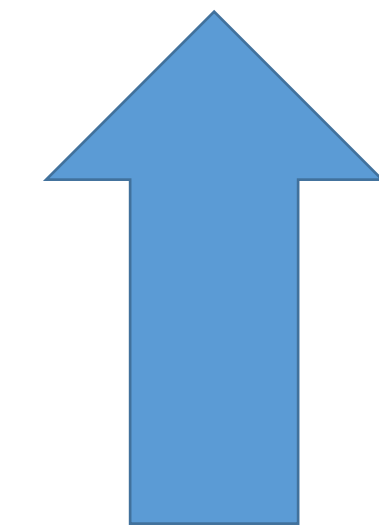
❖ Gerrit 3.5: Performance improvements

Shawn (RIP) always said:

“performance is a feature, and a very important one”

Conflicts predicate computation behavior is configurable (enabled by default)

FASTER



SLOWER

To disable conflicts predicates, set in gerrit.config:

[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_byuuid_persisted`
persisted version of `groups_byuuid``

`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
```

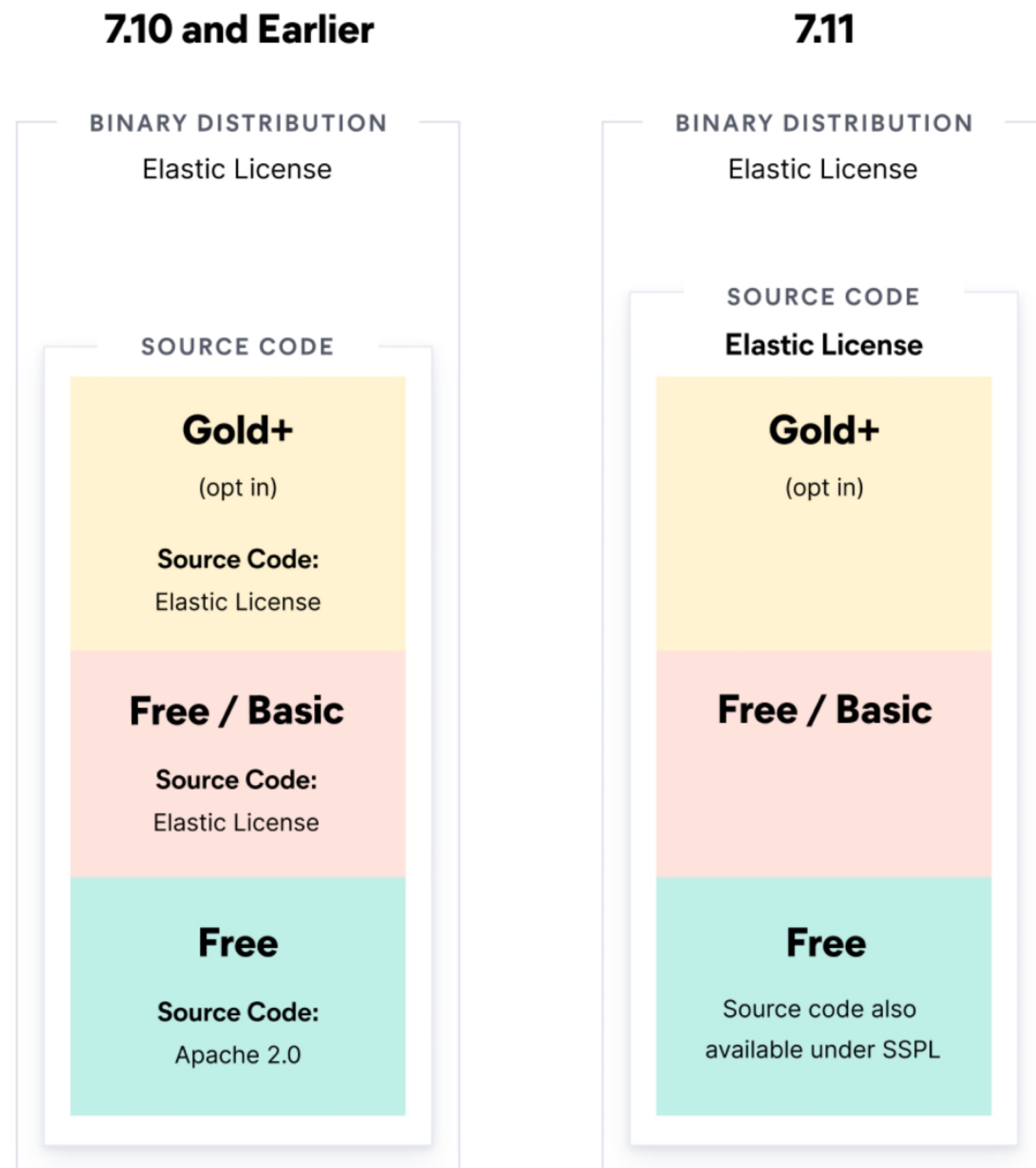
```
ssh -p <port> <host> gerrit migrate-externalids-to-insensitive
```

Offline (requires downtime)

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

```
java -jar gerrit.war ChangeExternalIdCaseSensitivity
```

Gerrit 3.5: ElasticSearch removal



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):

```
[label "Label-Name"]  
  copyAllScoresIfListOfFilesDidNotChange = true
```

Gerrit 3.4/3.5: Checks API and UI

Allow exposing CI/CD data into Gerrit change screen

The screenshot displays the Gerrit Checks API UI. The top navigation bar includes 'Files', 'Comments', 'Checks' (selected), and 'Findings'. The left sidebar shows 'Runs' with a 'Completed' section containing three items: 'RBE Build/Tests' (failed), 'Code Style' (passed), and 'Build/Tests' (passed). The main 'Results' area shows an 'Error (1)' section with a table of runs. The table has columns 'Run' and 'Summary'. One row is visible: 'RBE Build/Tests' with a summary of 'Failed (0 sec)'. Below the error section are sections for 'Warning (0)', 'Info (0)', and 'Success (2)'.


Run	Summary
RBE Build/Tests	Failed (0 sec)

<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.

692
693 * [Change 307482](https://gerrit-review.googlesource.com/307482):
694 EqualsLabelPredicate: fix bug that prevents matching owner votes.
695

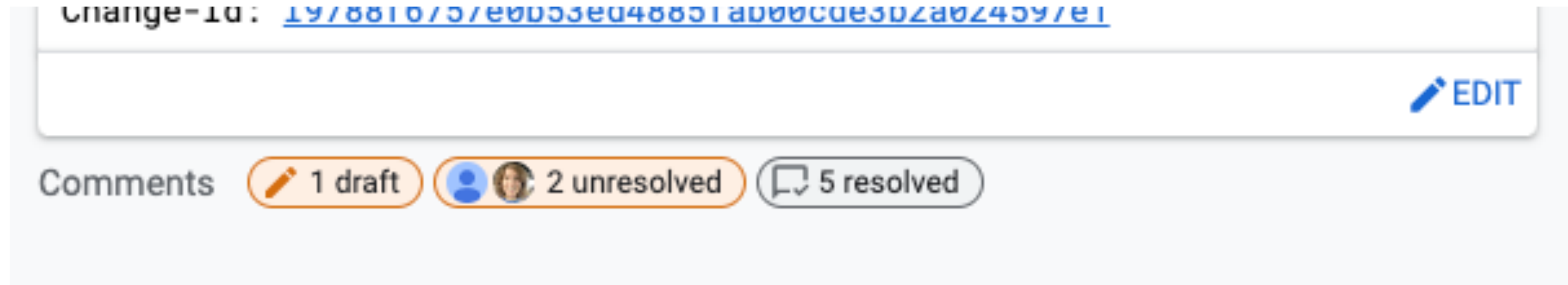
 Nasser From patchset 9 Nov 24 ^

also add bugfixes:

- 316702: ListAccess: Fix incorrect behavior when group appears twice for same rule | <https://gerrit-review.googlesource.com/c/gerrit/+316702>
- 314962: Fix DynamicOptions to invoke listeners registered to BeanParseListener | <https://gerrit-review.googlesource.com/c/gerrit/+314962>
- 323255: AllChangesIndexer: skip creating slices for projects with no changes | <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>

❖ Gerrit 3.4: **comments summary**

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



Gerrit 3.4: comments context

See the code together with its comment in the Comments tab and change log.

The screenshot shows the Gerrit interface for a change. At the top, there are tabs for 'Files', 'Comments', 'Checks', and 'Findings'. Below the tabs, there are radio buttons for 'Unresolved (5)', 'Drafts (0)', and 'All (5)'. The main content area is divided into two columns. The left column shows two comments, both by 'Ben' at '2:06 PM'. Each comment has a 'remove' button and a status of 'Unresolved'. The right column shows the code context for each comment. The first comment (#56) is associated with 'Patchset 4' and shows code lines 53-59. The second comment (#92) is also associated with 'Patchset 4' and shows code lines 89-95. In both code blocks, the line corresponding to the comment is highlighted in yellow. Below each code block is a 'VIEW DIFF' link.

Files **Comments** Checks Findings

Unresolved (5) Drafts (0) All (5)

[polygerrit-ui/app/elements/change/gr-file-list-header/gr-file-list-header.html.ts](#)

[#56](#)

Ben Patchset 4 | 2:06 PM ^
remove
Unresolved [REPLY](#) [QUOTE](#) [ACK](#) [DONE](#)

```
53  .latestPatchContainer a {  
54    text-decoration: none;  
55  }  
56  gr-editable-label.descriptionLabel {  
57    max-width: 100%;  
58  }  
59  .mobile {
```

[VIEW DIFF](#)

[#92](#)

Ben Patchset 4 | 2:06 PM ^
remove
Unresolved [REPLY](#) [QUOTE](#) [ACK](#) [DONE](#)

```
89  .someExpanded #expandBtn {  
90    margin-right: 8px;  
91  }  
92  gr-linked-chip {  
93    --linked-chip-text-color: var(--primary-text-color);  
94  }  
95  .someExpanded #collapseBtn,
```

[VIEW DIFF](#)

Gerrit 3.4: new related changes UI

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

Relation chain

- [GetCodeOwnersForPathInBranch: Improve sorting \(Abandoned\)](#)
- [Simplify code for getting CodeOwnersUpdate injected in tests \(Merged\)](#)
- [Rewrite lambdas as a method references where possible \(Merged\)](#)
- [Use Objects.hashCode\(\) instead of Objects.hash\(\) \(Merged\)](#)
- [CodeOwnersInBranchCollection: Fix link in javadoc \(Merged\)](#)
- [Rename CodeOwnersBackend to CodeOwnerBackend \(Merged\)](#)
- [Use 'example.com' domain for emails in tests \(Merged\)](#)
- [ProtoBackend: Support path expressions \(Merged\)](#)
- [ProtoCodeOwnerConfigParser: Support path expressions in code owner sets \(Merged\)](#)
- [Implement a PathExpressionMatcher for simple path expressions \(Merged\)](#)
- [FindOwnersBackend: Support path expressions \(Merged\)](#)
- [Implement a PathExpressionMatcher that matches against Java NIO globs \(Merged\)](#)
- [TestCodeOwnerConfigCreation: Support specifying code owner sets \(Merged\)](#)
- [CodeOwnerConfigOperationsImplTest: Add tests for updating CodeOwnerSets \(Merged\)](#)
- [FindOwnersCodeOwnerConfigParser: Support path expressions \(Merged\)](#)
- [Move code owner config test with non-sorted emails into test subclasses \(Merged\)](#)
- [ProtoCodeOwnerConfigParser: Restructure the code for better readability \(Merged\)](#)
- [FindOwnersCodeOwnerConfigParser: Restructure the code for better readability \(Merged\)](#)
- [CodeOwnerConfigHierarchyTest: Make use of MockitoRule and inject mock \(Merged\)](#)
- [Do not extend IterableSubject \(Merged\)](#)
- [Simplify the construction of Correspondences \(Merged\)](#)
- [Make use of OptionalSubject to make tests more readable \(Merged\)](#)
- [CodeOwnerSet: Support path expressions \(Merged\)](#)
- [CodeOwnerResolver#resolveLocalCodeOwners: Check that the path is absolute \(Merged\)](#)
- [Adapt tests to use new account test API for setting secondary emails \(Merged\)](#)
- [CodeOwnersPluginConfiguration: Do not hard-code plugin name \(Merged\)](#)
- [Add abstraction for a set of code owners \(Merged\)](#)
- [CodeOwnerConfigJsonTest: Fix test names \(Merged\)](#)
- [Do not set code_owners field in CodeOwnerConfigInfo if there are no code owners \(Merged\)](#)
- [FindOwnersCodeOwnerConfigParser: Terminate formatted string with a newline \(Merged\)](#)
- [Support ignore parent code owners in GetCodeOwnerConfigForPathInBranch \(Merged\)](#)
- [Support ignore parent code owners in ProtoBackend \(Merged\)](#)
- [Support ignore parent code owners in the REST API \(Merged\)](#)
- [Support ignore parent code owners setting in the test API \(Merged\)](#)
- [CodeOwnerConfigFile: Support ignore parent code owners setting \(Merged\)](#)
- [FindOwnersBackend: Support ignoring parent code owners \(Merged\)](#)
- [Copy code from find-owners plugin to reimplement FindOwnersCodeOwnerConfigParser \(Merged\)](#)
- [FindOwnersBackend: Add class javadoc and deprecation warning \(Merged\)](#)
- [ProtoCodeOwnerConfigParser: Format empty code owner config as empty string \(Merged\)](#)

Before



After

Relation chain SHOW ALL (13) ▾

- ~~▲ Bump Apache SSHD version to 2.4.1 SNAPSHOT (Abandoned)~~
- ~~Merge branch 'stable-3.2' (Abandoned)~~
- [Bazel: Remove unneeded imports flagged by buildifier \(Merged\)](#)
- [Bazel: Remove unneeded dependencies flagged by un... \(Merged\)](#)
- [Isolate mina and jsch ssh test backend in own classes \(Merged\)](#)
- [Migrate off JCraft HostKey class \(Merged\)](#)
- [Use MINA sshd library for key generation and export \(Merged\)](#)
- [Git transport: Switch to using Apache MINA ssh client... \(Merged\)](#)
- [Git transport: Add option to switch to using MINA ssh ... \(Merged\)](#)

Submitted together SHOW ALL (5) ▾

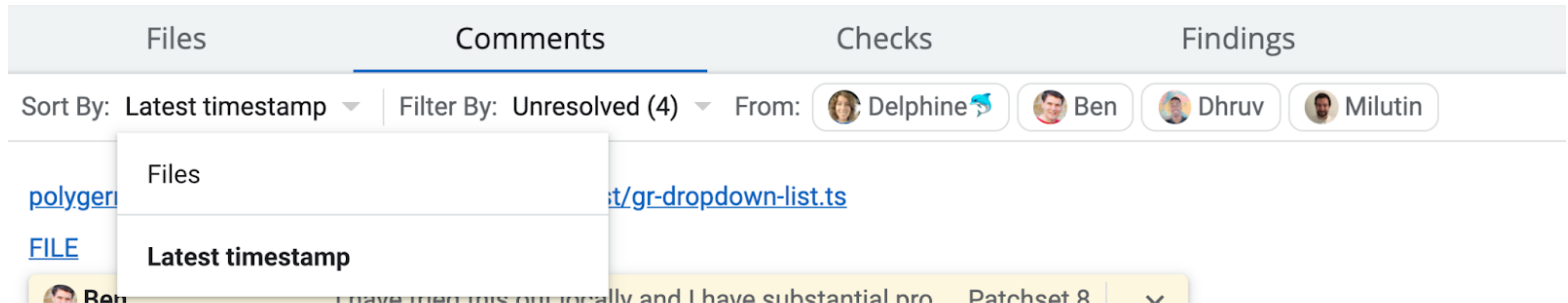
- ▲ [gerrit: master: Use MINA sshd library for key generation and ex...](#)
- [gerrit: master: Git transport: Switch to using Apache MINA ssh ...](#)
- [gerrit: master: Git transport: Add option to switch to using MIN...](#)

Cherry picks

- [stable-2.16: Git transport: Add option to switch to using MINA s...](#)

❖ 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.

[#142](#)

 **Ben** Patchset 3 | 8:32 AM ^

Maybe add

```
if (this._loading) return;
```

Unresolved [🔗](#) [REPLY](#) [QUOTE](#) [ACK](#) [DONE](#)

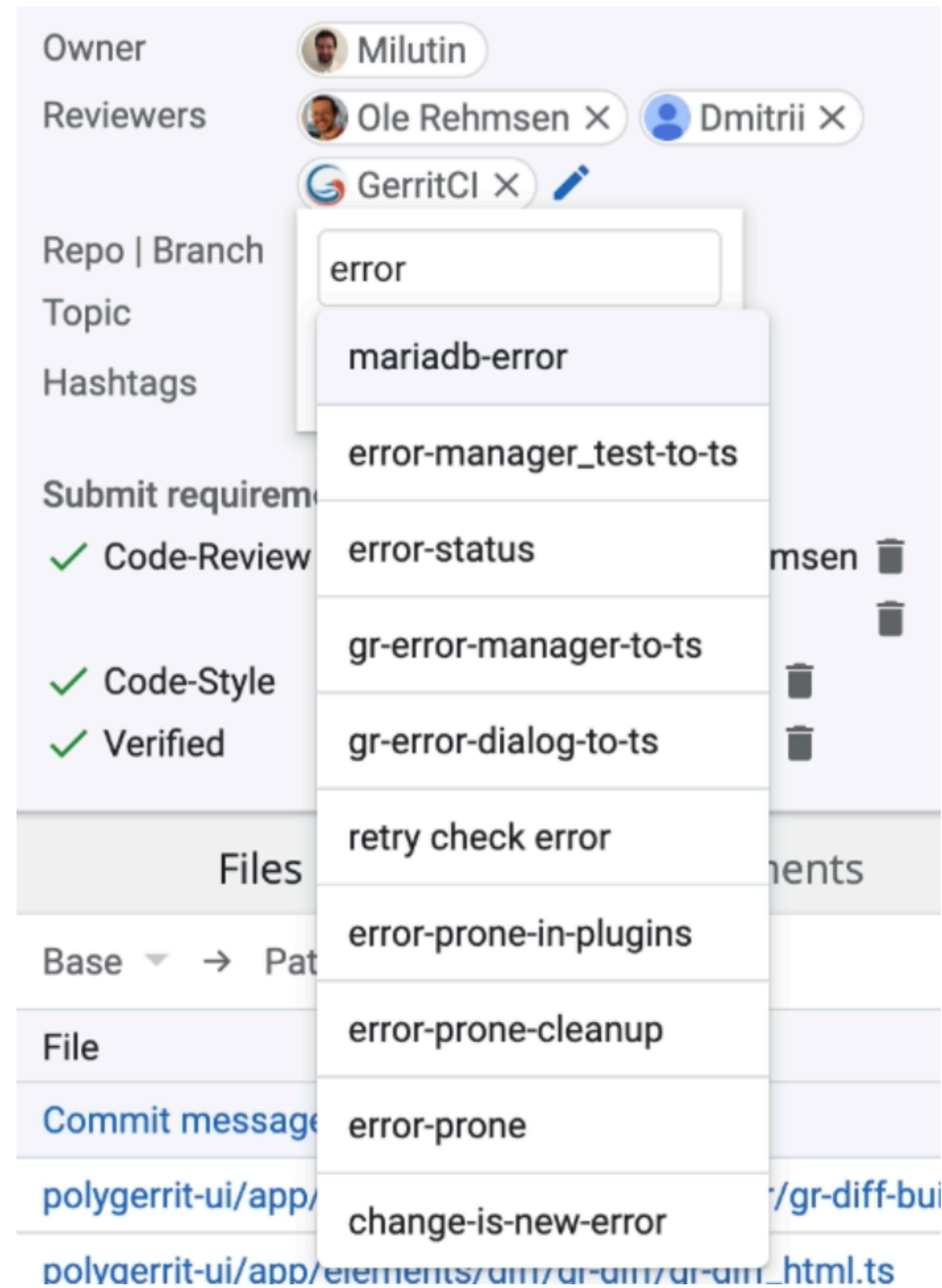


❖ Gerrit 3.5: show soft hyphen in diffs

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

```
582 "learningscreen.nestsense" = "NEST SENSE";  
583 "leaseinfo1ayer.accessinfotitle.aw" = "Zugriffs·informationen";  
584 "leaseinfo1ayer.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

Active ☆ 9491 Add test info

Updated 3:42 PM

Owner taoalpha@google.com

Uploader Delphine

Committer Delphine

Assignee

Reviewers ADD REVIEWER

CC ADD CC

Repo | Branch code-owners-test | master

Parent caaca0e

Topic No topic

Hashtags

Code Owners 6 missing **SUGGEST OWNERS**

Code-Review No votes.

Other labels

Owners-Override No votes.

Reviewers Add reviewer... HIDE OWNERS

OWNERS (+ 5 more) Edwin K... taoalph... Ben R

gr-settings-api.ts taoalph... Ben R

CC Add CC...

Say something nice...

Preview formatting

Code-Review -1 0 +1 No score

Owners-Override You don't have permission to edit this label.

Bring to attention of taoalpha@goo... MODIFY

CANCEL SEND

❖ Gerrit 3.4/3.5: replication improvements

- Distribution of replication events across Gerrit cluster nodes (<https://gerrit.googlesource.com/plugins/replication/+refs/heads/master/src/main/resources/Documentation/config.md#configuring-cluster-replication>)
- 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>

[1] <https://www.gerritcodereview.com/support.html>

❏ 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

