



## The 'gerrit' code review system

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[training.linuxfoundation.org](https://training.linuxfoundation.org)

# Topics

- What is 'Gerrit'
- Gerrit workflow
- OPNFV's use of Gerrit
- First steps, Submitting code, Reviewing
- Hands-on labs

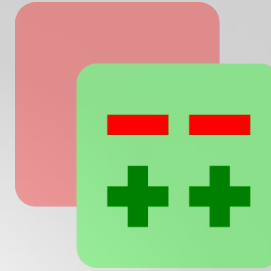




# What is 'Gerrit'

# Gerrit

- Web-based code review tool
- Maintained by Google
  - <https://www.gerritcodereview.com/>
- Framework for reviewing every change
  - changes can be uploaded/proposed
  - but do not get applied until reviewed
  - combination with CI tool possible



# Gerrit

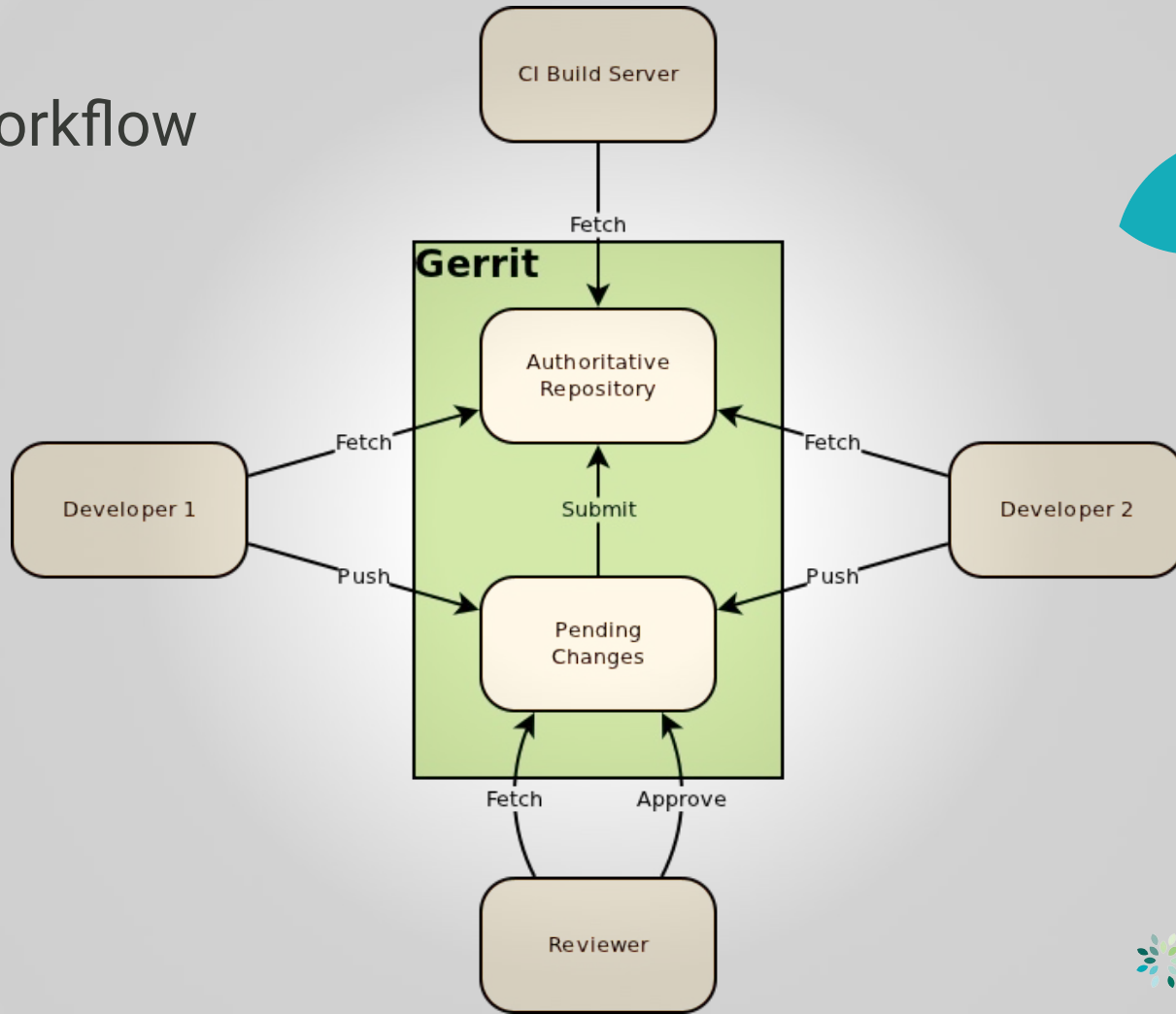
- Serves/hosts git repositories
- Provides review workflow
- Access control for repositories





# Gerrit workflow

# Gerrit workflow



## Gerrit workflow

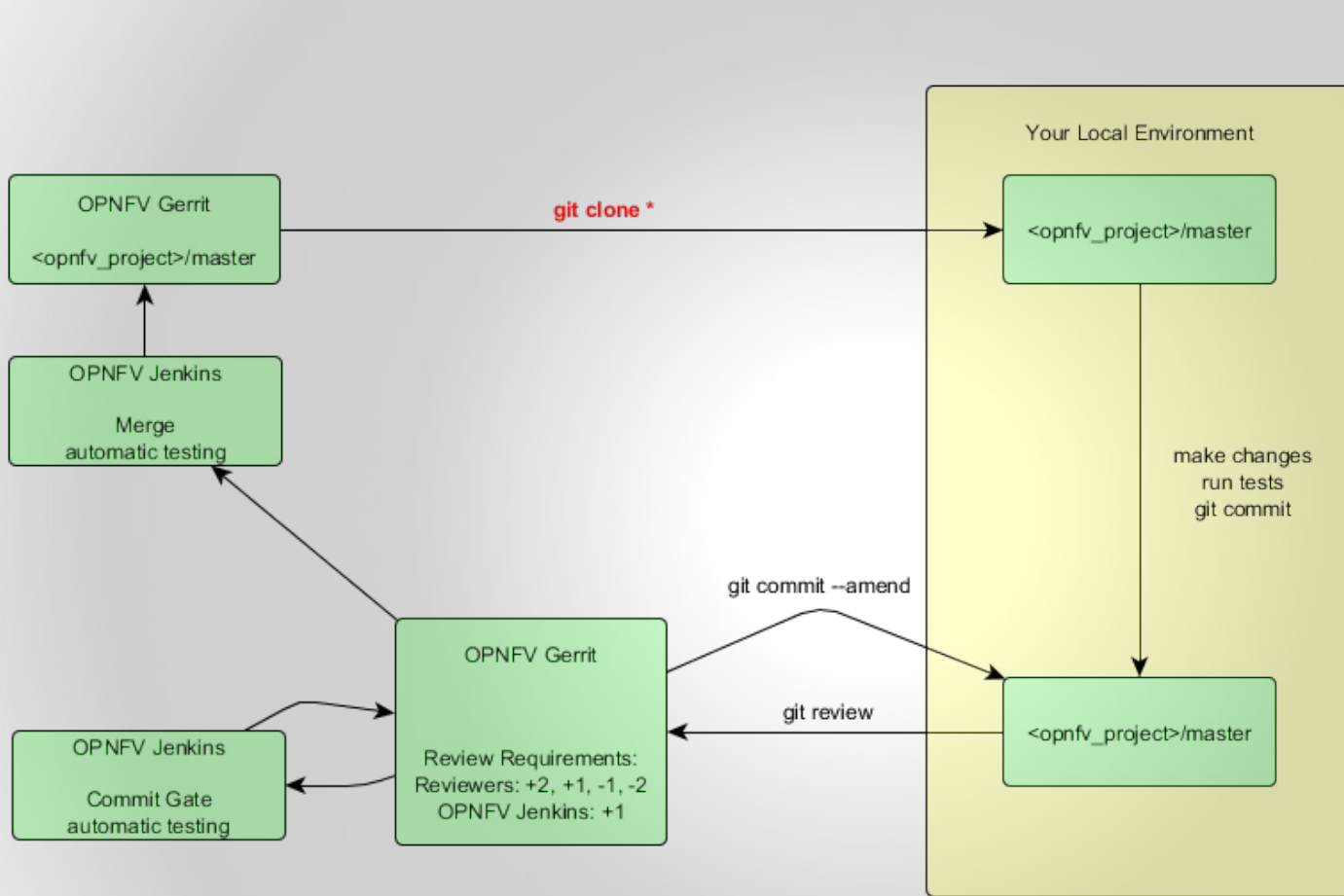
- Developers fetch from the central repository
- Pushed changes get staged until they are reviewed
- This process can be combined with CI builds







# OPNFV's use of Gerrit



## OPNFV & Gerrit

- Every project has a repository
- Changes are submitted through gerrit (using 'git review')
- Review mandatory
- Automated testing supports review process





# First steps, Submitting code, Reviewing

# Topics

- Create ssh key \*(if not present already)
- Log-in to gerrit, upload ssh key, sign agreements
- Install git-review \*(if not installed already)
- Clone repository
- Submit change
- Review



## Create ssh key (if not already present)

- `ssh-keygen` is used to create a ssh private/public keypair

```
$~/> ssh-keygen -t rsa -C "youremail@yourdomain.com"  
Generating public/private rsa key pair.  
Enter file in which to save the key (/home/me/.ssh/id_rsa): ↵  
Created directory '/home/me/.ssh'.  
Enter passphrase (empty for no passphrase): <secretpass> ↵  
Enter same passphrase again: <secretpass> ↵  
Your identification has been saved in /home/me/.ssh/id_rsa .  
Your public key has been saved in /home/me/.ssh/id_rsa.pub .  
[...]
```

## Create ssh key (if not already present)

- `ssh-add` can be used to avoid re-entering passwords

```
$~/> ssh-add ~/.ssh/id_rsa
Enter passphrase for /home/me/.ssh/id_rsa: <secretpass> ↵
Identity added: /home/me/.ssh/id_rsa (/home/me/.ssh/id_rsa)
$~/>
```

```
# Note: You'll have to do this once before you use ssh or git
#       every time you log in to your system. It works like
#       a keyring and will stay in the background.
```

# Log in to gerrit.opnfv.org

- Open a browser and navigate to gerrit.opnfv.org
- Use your Linux Foundation ID to log in .



The screenshot shows a login interface with the following elements:

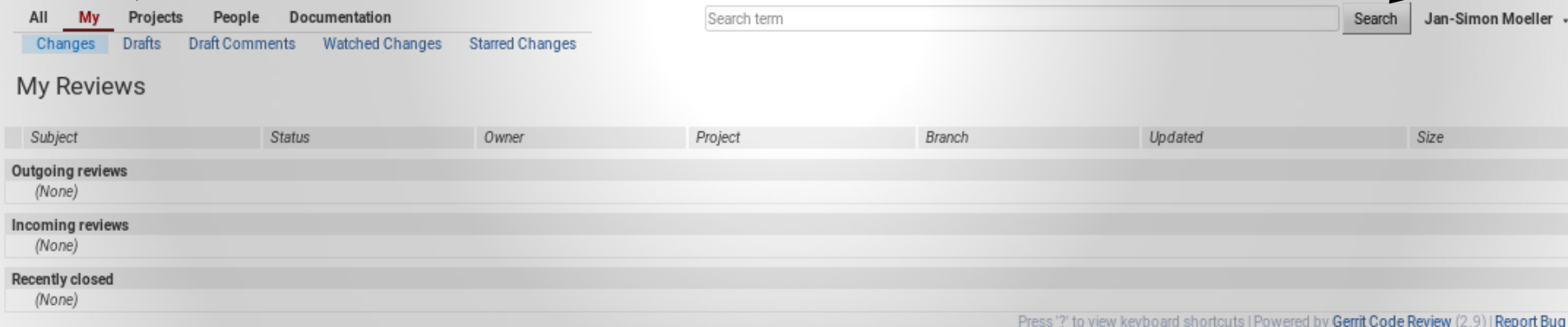
- Two social login buttons: "Log in with Facebook" (with the Facebook 'f' icon) and "Log in with Google" (with the Google 'G' icon).
- A horizontal separator line with the word "Or" centered below it.
- Two radio button options:
  - I already have a Linux Foundation ID
  - I need to create a Linux Foundation ID
- A text input field labeled "Username".
- A text input field labeled "Password".
- A large blue button labeled "Log in".
- A link labeled "Request new password" located below the "Log in" button.





# gerrit.opnfv.org

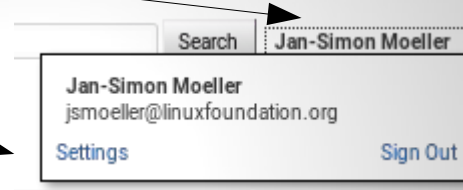
- The main screen of gerrit has
  - a few tabs on the left, a search bar
  - a personal settings menu on the right



The screenshot shows the Gerrit web interface. At the top left, there are navigation tabs: 'All', 'My' (selected), 'Projects', 'People', and 'Documentation'. Below these are sub-tabs: 'Changes', 'Drafts', 'Draft Comments', 'Watched Changes', and 'Starred Changes'. A search bar with the text 'Search term' and a 'Search' button is located to the right. On the far right, the user profile 'Jan-Simon Moeller' is visible. Below the navigation is the 'My Reviews' section, which contains a table with columns: 'Subject', 'Status', 'Owner', 'Project', 'Branch', 'Updated', and 'Size'. The table is currently empty, with sections for 'Outgoing reviews', 'Incoming reviews', and 'Recently closed', each showing '(None)'. At the bottom right, there is a footer with the text: 'Press '?' to view keyboard shortcuts | Powered by [Gerrit Code Review \(2.9\)](#) | [Report Bug](#)'.

# Upload ssh key

- Click on your name
- Click on 'Settings'
- Select



'SSH Public Keys'

## Settings

- Profile
- Preferences
- Watched Projects
- Contact Information
- SSH Public Keys
- HTTP Password
- Identities
- Groups
- Agreements

Username	jsmoeller
Full Name	Jan-Simon Moeller
Email Address	jsmoeller@linuxfoundation.org
Registered	Dec 12, 2015 5:15 PM
Account ID	2855

# Upload ssh key

- Paste the content of `.ssh/id_rsa.pub` here
- Click on 'Add'

## Settings

- Profile
- Preferences
- Watched Projects
- Contact Information
- SSH Public Keys
- HTTP Password
- Identities
- Groups
- Agreements

### Add SSH Public Key

▶ How to Generate an SSH Key

Clear Add

### Server Host Key

Fingerprint:  
b1:c0:60:bd:85:18:94:8f:7c:16:3c:5f:32:28:8d:6a

Entry for ~/.ssh/known\_hosts:  
[gerrit.opnfv.org]:29418 ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGCe75tts...8EH8hkuQ==



# Contributor Agreement

- Click on 'Agreements'
- You must accept the adopted agreements of the OPNFV project before you can submit code for review !
- See [https://gerrit.opnfv.org/gerrit/static/CLA\\_individual.html](https://gerrit.opnfv.org/gerrit/static/CLA_individual.html)

## Settings

Profile  
Preferences  
Watched Projects  
Contact Information  
SSH Public Keys  
HTTP Password  
Identities  
Groups  
Agreements



Install git-review \*(if not installed already)

- Install 'git-review' using your distro package manager
- alternatively install 'pip' and call 'pip install git-review'



# Clone repository

- Clone the sandbox repository and initialize git review

```
$~/test/> rm -rf sandbox
$~/test/> git clone \
    ssh://<username>@gerrit.opnfv.org:29418/sandbox

$~/test/> cd sandbox
$~/test/sandbox/>
$~/test/sandbox/> git review -s
Creating a git remote called "gerrit" that maps to:
    ssh://<username>@gerrit.opnfv.org:29418/sandbox.git
$~/test/sandbox/>
```

## Submit change

- create/checkout a branch starting from gerrit/master
- Create a file <yourfirstname>.txt
  - content: 'Hello World'
- stage the file
- commit the file
- submit change using git review



# Submit change



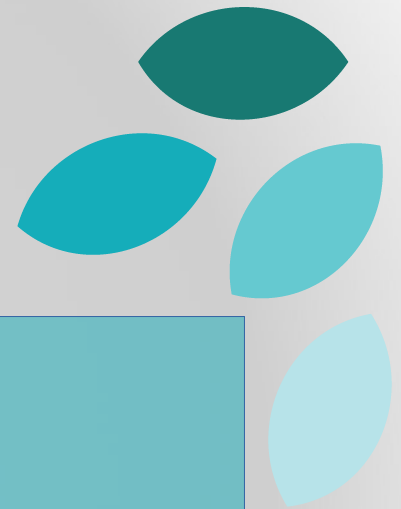
```
$~/test/sandbox/> git checkout -b mybranch gerrit/master
# => shortcut for branch+checkout

$~/test/sandbox/> echo 'Hello World!' > yourfirstname.txt

$~/test/sandbox/> git add yourfirstname.txt
$~/test/sandbox/> git commit -s
# Enter a proper commit message -
# see git tutorial
```



# Submit change



```
$~/test/sandbox/> git review
remote: New file detected, please ensure that it
        has the correct license header
remote: Processing changes: new: 1, refs: 1, done
remote:
remote: New Changes:
remote:   https://gerrit.opnfv.org/gerrit/6745
remote:
To ssh://<username>@gerrit.opnfv.org:29418/sandbox.git
* [new branch]      HEAD -> refs/publish/master/mybranch
```

# Review



All **My** Projects People Documentation  
Changes Drafts Draft Comments Watched Changes Starred Changes

Search term  Search Jan-Simon Moeller ▾

Change 6745 - Needs Code-Review

[Edit Message](#)

[Reply...](#)

Patch Sets (1/1) ▾

Download ▾



First commit of tutorial

```
This adds 'Hello World!' to a file  
<firstname>.txt as example during  
the Gerrit tutorial.
```

```
Change-Id: Ie8a626a6fc1ddf5228d7940b89d9d939d65ca0fa  
Signed-off-by: Jan-Simon Möller <jsmoeller@linuxfoundation.org>
```

Owner Jan-Simon Moeller

Reviewers

[Add...](#)

Project sandbox

Branch master

Topic mybranch

Strategy Merge if Necessary

Uploaded 4 minutes ago

[Cherry Pick](#)

[Rebase](#)

[Abandon](#)

Code-Review

Verified

Author Jan-Simon Möller <jsmoeller@linuxfoundation.org>

Jan 14, 2016 7:21 PM

Committer Jan-Simon Möller <jsmoeller@linuxfoundation.org>

Jan 14, 2016 7:21 PM

Commit 962c997a6975dc690fe171bf22f3df05ffacd05c

(gitweb)

Change-Id Ie8a626a6fc1ddf5228d7940b89d9d939d65ca0fa



Files

[Open All](#)

Diff against: Base ▾

	File Path	Comments	Size
▶	Commit Message		
▶	A jansimon.txt	1	
		+1, -0	

History

[Expand All](#)

Jan-Simon Moeller Uploaded patch set 1.

7:24 PM

# Review

- Add reviewers
- Rebase (rare)
- Abandon

Search term  Search Jan-Simon Moeller

Reply... Patch Sets (1/1) Download

Owner Jan-Simon Moeller  
Reviewers   
Project sandbox  
Branch master  
Topic mybranch  
Strategy Merge if Necessary  
Uploaded 4 minutes ago

Code-Review Verified

Comments	Size
	1
	+1, -0

7:24 PM

# Review (by project members/reviewers/owners)

- Review the changeset

- Comment here

- Rate

– +1/0/-1

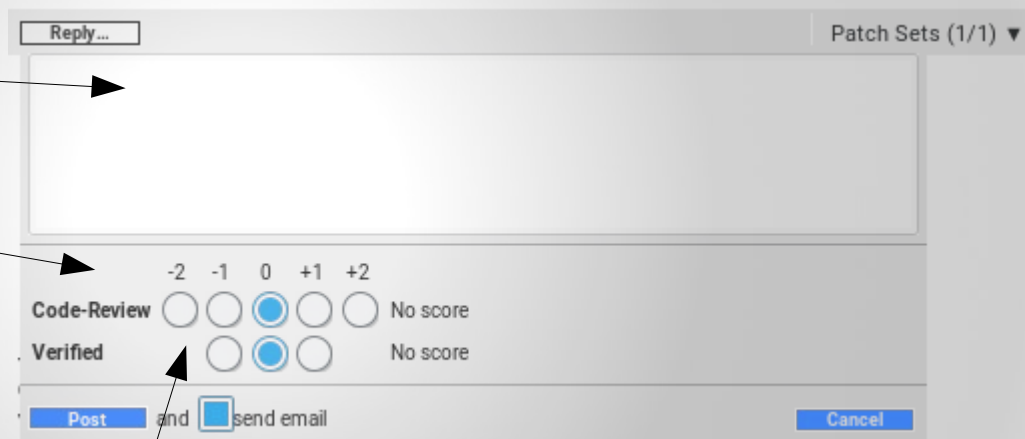
- approve/reject

– +2/-2

- force accept/deny

(only for committers/project owners/admins)

- Verified (e.g. by CI builder)



The screenshot shows a 'Reply...' dialog box for reviewing a patch set. It features a large text area for comments, a rating section with buttons for -2, -1, 0, +1, and +2, and a 'Verified' checkbox. The 'Code-Review' section has a radio button selected for '0' and 'No score' text. The 'Verified' section has a radio button selected for '0' and 'No score' text. At the bottom, there are 'Post' and 'Cancel' buttons, and a checkbox for 'send email'.



# Hands-on labs

# Task 1

- Set up your system for gerrit
  - ssh-key
  - upload key to gerrit.opnfv.org
  - install git-review
- Clone the sandbox repository
- Initialize git review ('git review -s')



## Task 2

- Create a branch 'mytopic' from gerrit/master
- Create a file <yourfirstname>.txt with the current date/time
- Stage and commit the file with a proper message
- Submit the change for review



## Task 3

- You can amend existing changesets and resubmit
- For this you need to keep the Change-Id:  
in the commit message intact
- Extend <yourfirstname>.txt with 'Hello World',  
stage, commit and (re-)submit for review
- (Note: one local branch per changeset helps a lot )





End



16-01-26