



Gerrit Code Review

Web based code review and project management for Git based projects

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Agenda

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- Why Code Reviews?
- Why a Dedicated Tool for Reviews?
- Google's Web Code Review Tools
- Introducing Gerrit Code Review
- Gerrit Workflow
- Typical Lifecycle of a Change
- Access Control
- Our Experience





Why Code Review?

Why Code Review?

- Detect more problems early and save hours of error finding
 - Four eyes see more than two
- Keep code quality high
 - Enforce coding standards
- Learn from mistakes without breaking stuff
 - Mentor other developers



Why Code Review?

- Prepare for more delegation
 - Building trust relationships
- Everyone is responsible
 - Collective code ownership
- Asynchronous and across locations
 - Alternative to pair programming





Why a Dedicated Tool for Reviews?

Why a Dedicated Tool for Reviews?

- How to review changesets?
 - In e-mails?
 - In the console?
 - In the changelog?
- When to review changes?
- How to collaborate?
- How to document the review process?
- How to integrate tools into the review?



Why a Dedicated Tool for Reviews?

How to integrate tools into the review process?

- How to avoid breaking the continuous integration build before applying changesets
 - ... and blocking other developers :-)
- How to enforce coding standards (whitespaces, ...)





Google's Web Based Code Review Tools

Google's Code Review Tools

Mondrian

- Created by Guido van Rossum (Author of Python)
- Named after Piet Mondrian
- Based on Perforce
- Proprietary
- Tied to Google infrastructure



Google's Code Review Tools

Rietveld

- Also created by Guido van Rossum
- Named after Gerrit Rietveld
- Based on SVN
- Hosted on App Engine (<https://codereview.appspot.com>)





Introducing Gerrit Code Review

Introducing Gerrit Code Review

- Created by Shawn Pearce (Author of JGit)
- Started as set of patches against Rietveld
- Named after Gerrit Rietveld
- Intentionally created for Android Open Source Project
- Based on GIT
- Version 2: Completely rewritten in Java
 - JGit, GWT



Introducing Gerrit Code Review

Main Features

- Users and Groups
- Project and branch security
- Git repository browsing
- Git repository replication
- Code collaboration and review
- Code validation through Jenkins Triggers



Introducing Gerrit Code Review

- Gateprotect
- <https://gerrit-review.googlesource.com>
- <https://review.source.android.com>
- <https://gwt-review.googlesource.com>
- <https://gerrit.chromium.org>
- <https://git.eclipse.org/r>
- <https://gerrit.libreoffice.org>
- <https://review.openstack.org>
- <https://review.typo3.org>
- <https://gerrit.wikimedia.org>
- IBM, SAP, ...





Gerrit Workflow

Gerrit Workflow

- Automatic creating of topic-branches on commit
- Commits are drafts until they are merged in a real branch
- Jenkins validation
- Inline discussion on style and architecture



Gerrit Workflow

Change-IDs

- Commits change during the improvement process
 - Commit hashes change
- Gerrit introduces a Change-Id to uniquely identify a change across all drafts of it
- Assigned on commit
- Commit hook for auto-generating Change-Ids
 - `scp -p -P 29418 review.example.com:hooks/commit-msg .git/hooks/`



Gerrit Workflow

Change-IDs

Fixes IE's http status code mangling from 204 to 1223

XMLHttpRequest object in IE will return a status code of 1223 and drops some response headers if the server returns a HTTP/204.

This patch intercepts the original response in IE6-9 and returns 204 when the code is 1223.

Associated issue:

<http://code.google.com/p/google-web-toolkit/issues/detail?id=5031>

Change-Id: I97b9094ef702cd852cc4d918183b394ffc853c32



Gerrit Workflow

Democratic voting

- +2 Ok, Approved
- +1 Ok, someone else must approve
- 0 No score, just comments
- -1 I would not submit this
- -2 Blocks submitting



Gerrit Workflow

Democratic voting

- +1 and -1 are just an opinion
- +2 and -2 are allowing or blocking the change
- They do not accumulate
 - Two +1 do not equate to a +2.



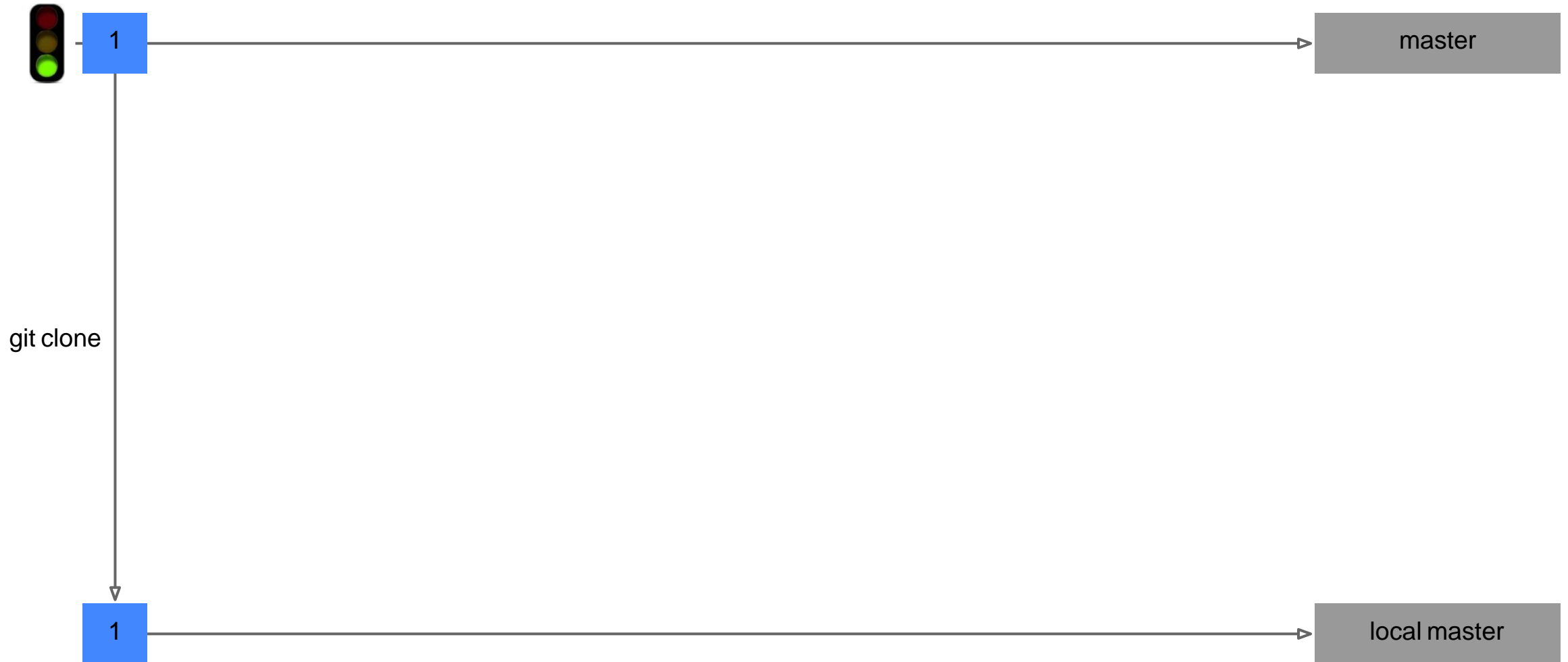


Typical Lifecycle of a Change

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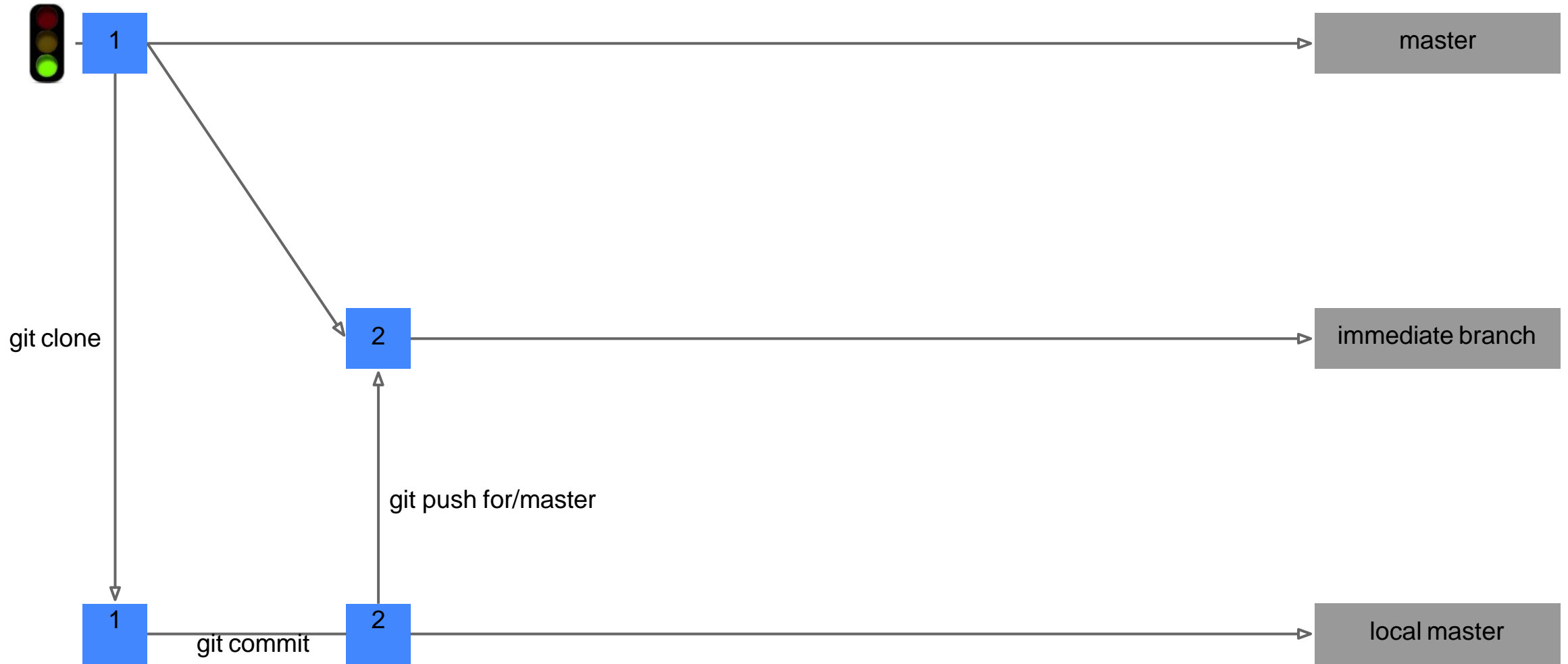
Typical Lifecycle of a Change



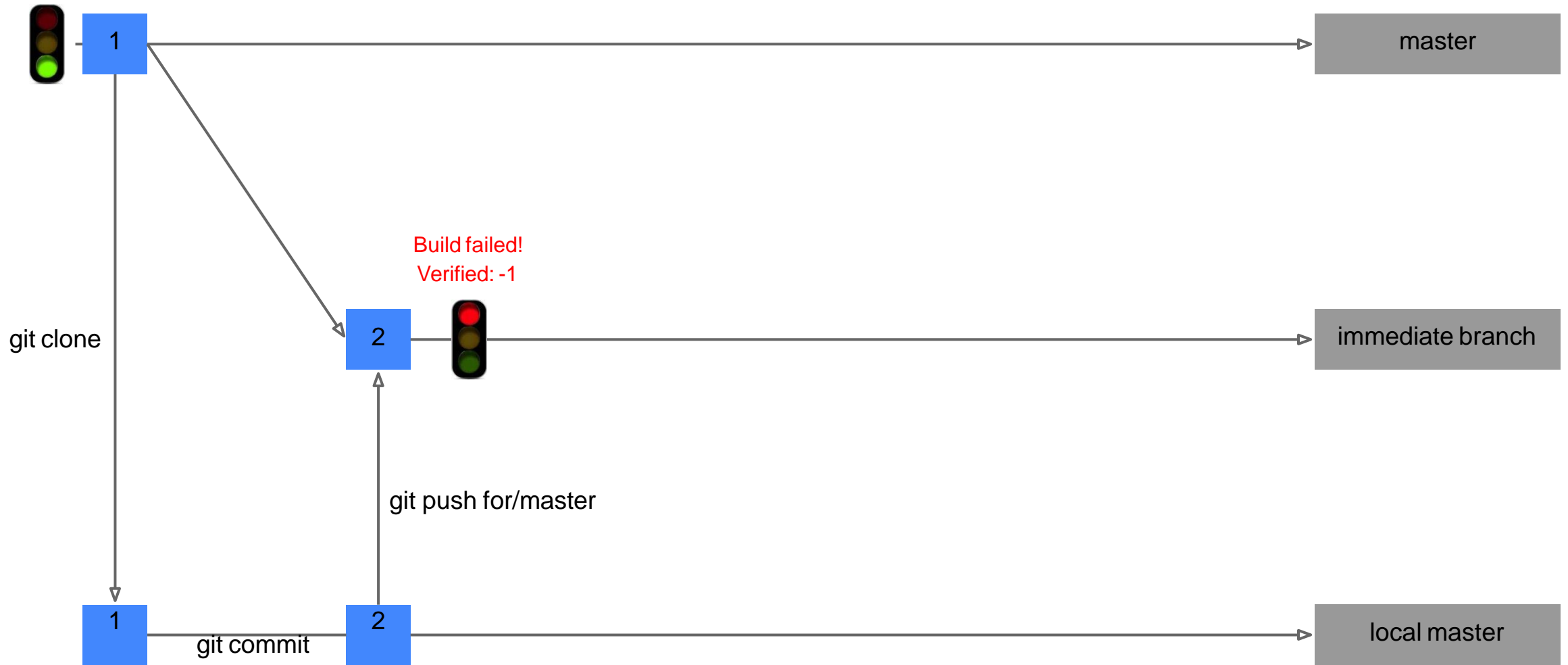
Typical Lifecycle of a Change



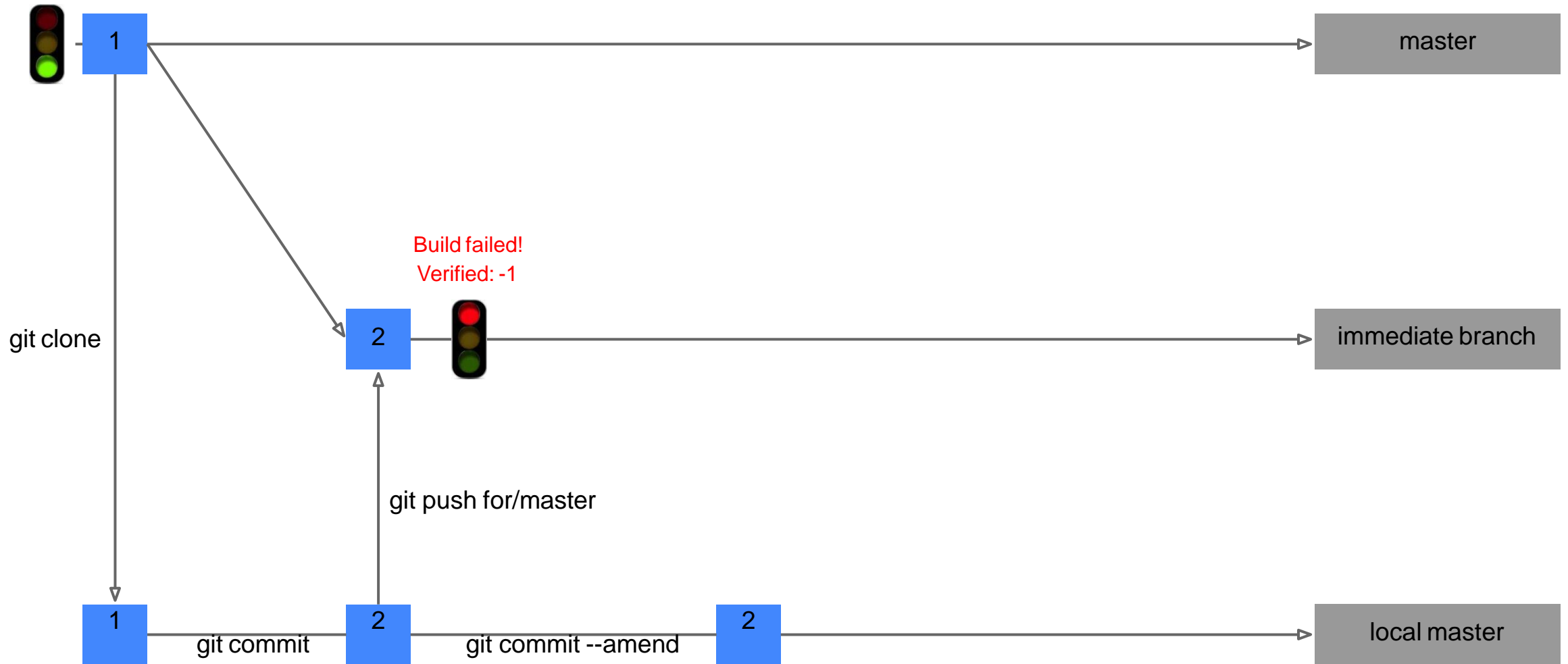
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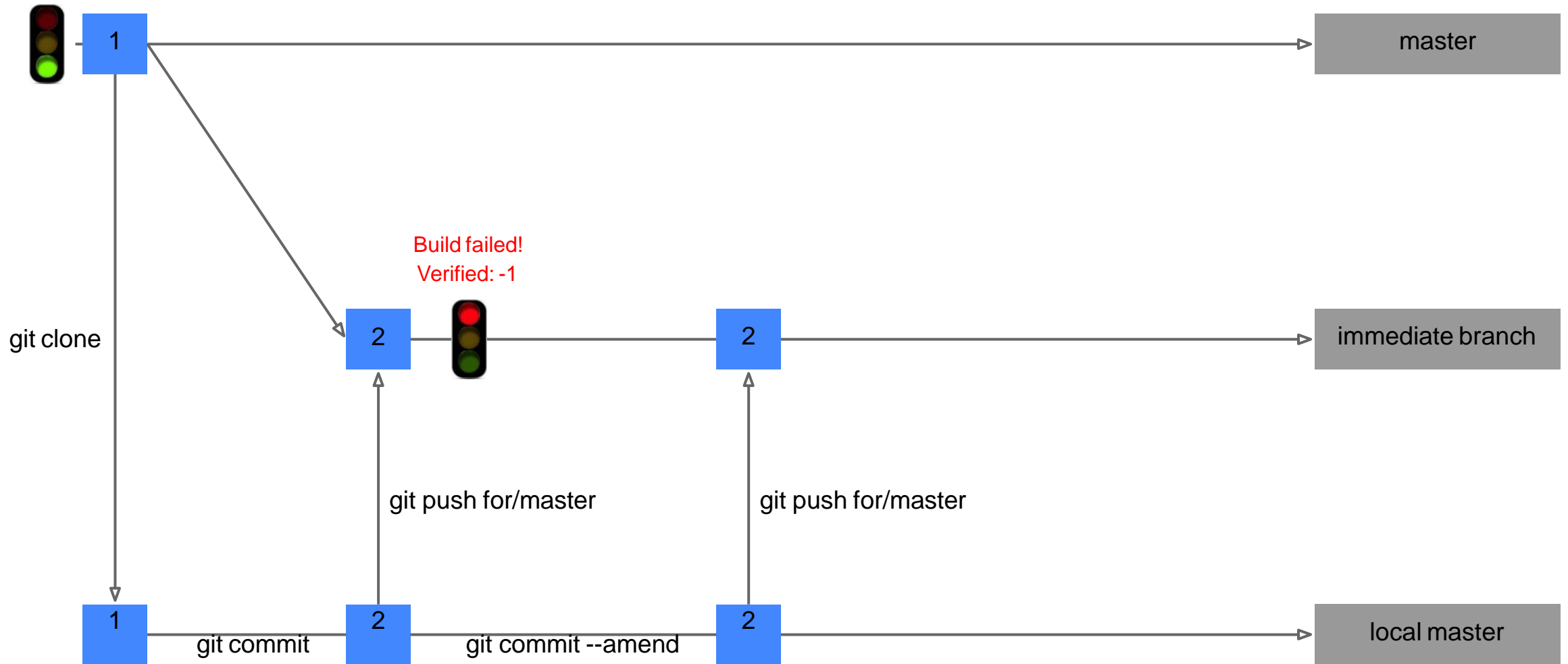
Typical Lifecycle of a Change



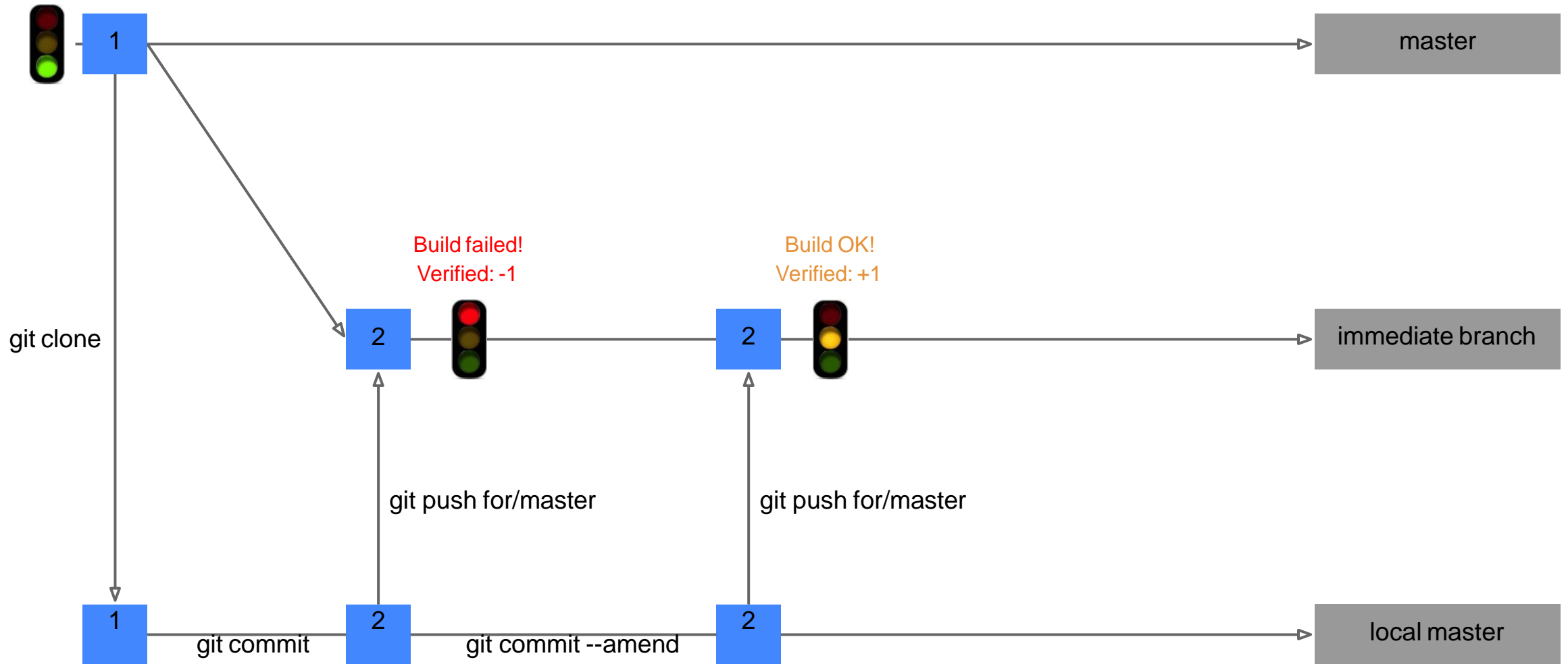
Typical Lifecycle of a Change



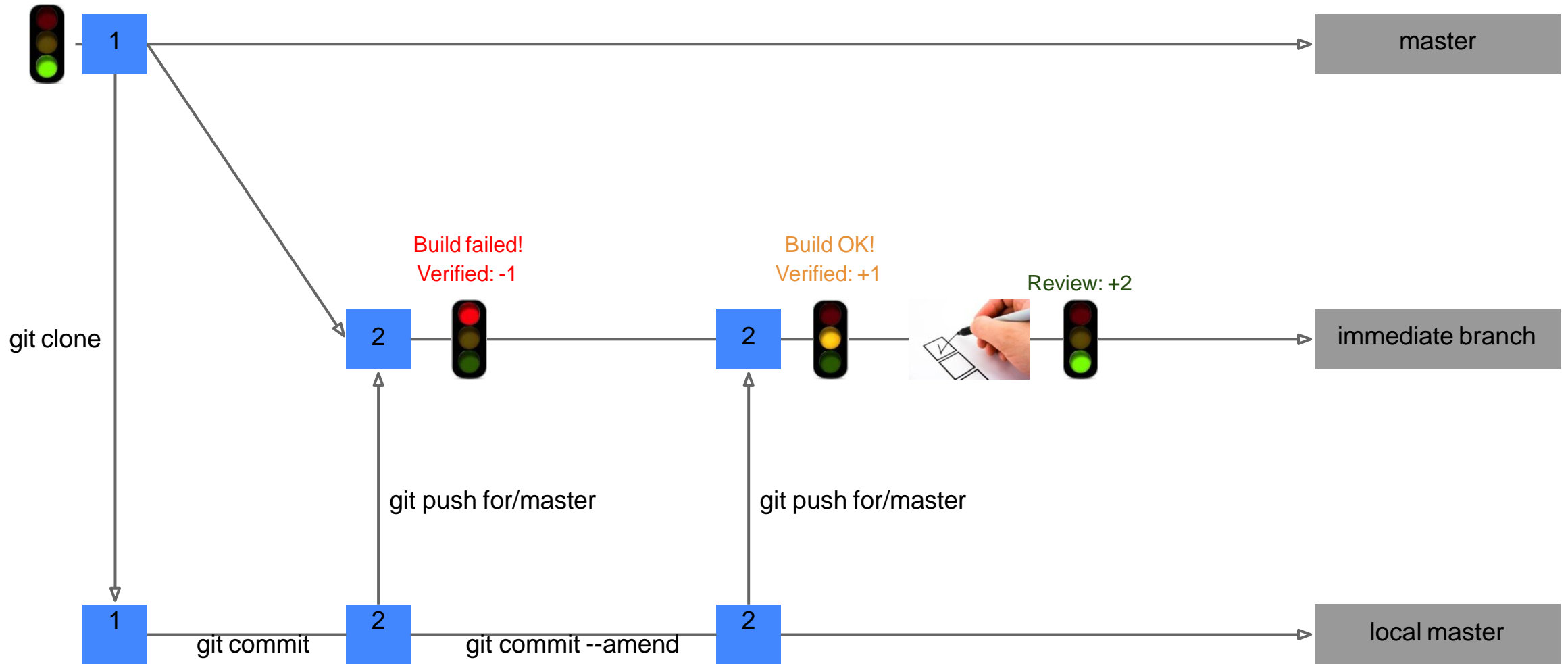
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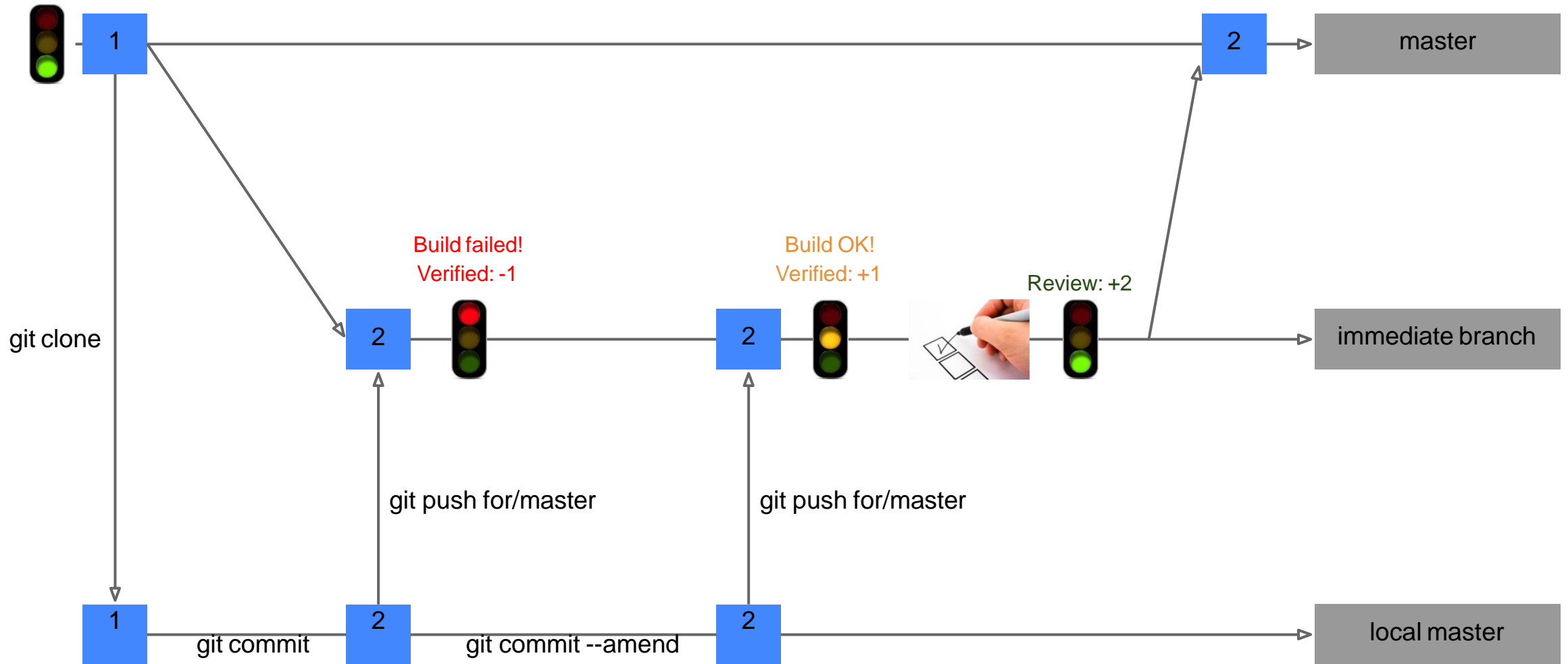
Typical Lifecycle of a Change



Typical Lifecycle of a Change



Typical Lifecycle of a Change





Access Control

Access control

- Define who can merge changes
- Define access rights to GIT operations
- Delegate project administration
- Assign code-review voting range rights
- Organize project rights hierarchically
- Define rights to reference names by regular expressions
 - `refs/heads/experimental/*`
 - `refs/heads/sandbox/${username}/*`





Our Experience

Our Experience

- Review all changes
- Reviews may take time
 - Authors have to wait for reviews
- Every developer should do reviews
- Connect continuous integration





Q&A

gateprotect - **company profile**



- Founded 2002
- Headquarter in Hamburg
 - Branch offices in 15 Countries
- 134 Employees
 - 50 in Research and Development
- Leading European manufacturer of network security solutions and ”
Made in Germany”



Small and Medium Companies

Modern Unified Threat Management Solution

The All-in-One-Solution for customers requiring complete protection and an easy-to-use solution...

Medium and Enterprise Companies

Next Generation Firewall Solution

The Enterprise Solution from gateprotect fulfilling the highest security needs...



Security Providers, System Retailers and Companies

Command Center – Managed Security Platform

Central management and monitoring for world-wide installed firewalls...

eGUI – The unique easy-to-use user interface

The world-wide unique graphical user interface allowing the complex network security configuration to be more clear and understandable. Because transparency leads to security



<Thank you!>



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