

Tools, Git, Gerrit, Jenkins and Testing

About this presentation

This is not a recommendation to change your processes.

I'm not talking about editors - use the editor you want.

I just want to make people aware of these tools.

Tools

git terminal prompt

There are various versions for different shells - [bash](#), [zsh](#), [fish](#), [tcsh](#)

shellcheck

shellcheck is a lint tool for shell scripts

online version at shellcheck.net

Testimonials

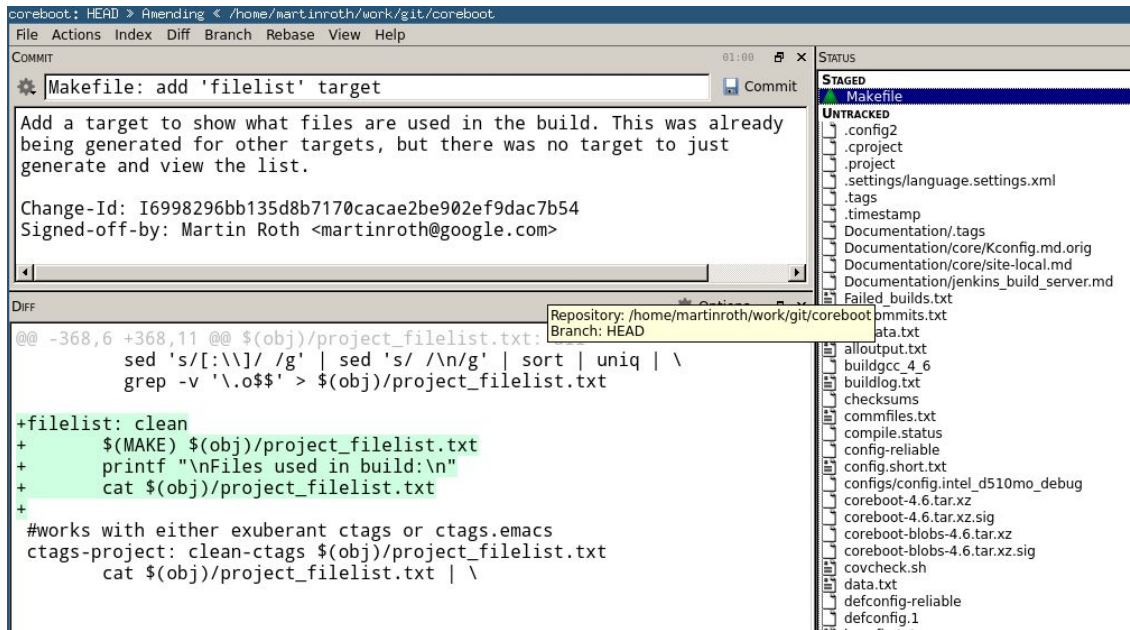
At first you're like "shellcheck is awesome" but then you're like "wtf are we still using bash"

Alexander Tarasikov, [via Twitter](#)

git cola

<https://git-cola.github.io/>

Another git gui interface -
I find it useful for adding
individual lines and
reviewing the changes as
I'm preparing patches



The screenshot shows the git cola interface for a commit. The top bar indicates the repository path and branch: `coreboot: HEAD > Amending < /home/martinroth/work/git/coreboot`. The main window is divided into three sections:

- COMMIT:** Contains the commit message `Makefile: add 'filelist' target` and a `Commit` button. Below the message is a description: "Add a target to show what files are used in the build. This was already being generated for other targets, but there was no target to just generate and view the list." It also shows the `Change-Id` and `Signed-off-by` information.
- DIFF:** Shows the changes being committed. The diff includes a new target `filelist: clean` and a `ctags-project` target. The diff text is:

```
@@ -368,6 +368,11 @@ $(obj)/project_filelist.txt:
     sed 's/[:\|\\]/ /g' | sed 's/ \\\n/g' | sort | uniq | \
     grep -v '\.o$$' > $(obj)/project_filelist.txt
+filelist: clean
+ $(MAKE) $(obj)/project_filelist.txt
+ printf "\nFiles used in build:\n"
+ cat $(obj)/project_filelist.txt
+
#works with either exuberant ctags or ctags.emacs
ctags-project: clean-ctags $(obj)/project_filelist.txt
cat $(obj)/project_filelist.txt | \
```
- STATUS:** Lists the files in the repository, categorized into `STAGED` (Makefile) and `UNTRACKED` (various configuration and build files).

COMMIT

01:00

STATUS

Makefile: add 'filelist' target

Commit

Add a target to show what files are used in the build. This was already being generated for other targets, but there was no target to just generate and view the list.

Change-Id: I6998296bb135d8b7170cacae2be902ef9dac7b54
Signed-off-by: Martin Roth <martinroth@google.com>

DIFF

Options

```
@@ -368,6 +368,11 @@ $(obj)/project_filelist.txt: all
     sed 's/[:\]\]/ /g' | sed 's/ /\n/g' | sort | uniq | \
     grep -v '\.o$$' > $(obj)/project_filelist.txt
```

```
+filelist: clean
```

```
+ $(MAKE) $(obj)/project_filelist.txt
+ printf "\nFiles used in build:\n"
+ cat $(obj)/project_filelist.txt
```

```
+
#works with either exuberant ctags or ctags
ctags-project: clean-ctags $(obj)/project_filelist.txt
cat $(obj)/project_filelist.txt
```

+	Stage Section	H
+	Stage Selected Lines	S
+	Revert Section...	
+	Revert Selected Lines...	
+	Launch Editor	Return
+	Launch Diff Tool	Ctrl+D
+	Copy	Ctrl+C
+	Select All	Ctrl+A

MODIFIED

Makefile

UNTRACKED

```
.config2
.cproject
.project
.settings/language
.tags
.timestamp
Documentation/
Documentation/c
Documentation/c
Documentation/j
Failed_builds.txt
all_commits.txt
all_data.txt
alloutput.txt
buildgcc_4_6
buildlog.txt
checksums
commfiles.txt
compile.status
config-reliable
config.short.txt
configs/config.int
coreboot-4.6.tar
coreboot-4.6.tar
coreboot-blobs-4
coreboot-blobs-4
covcheck.sh
data.txt
defconfig-reliable
defconfig.1
kconfig.txt
kconfig_dir/AAEC
kconfig_dir/ABIT
kconfig_dir/ADI_F
```

lint tool for coreboot's kconfig - util/lint/kconfig_lint

util/lint/kconfig_lint -p -e prints the entire kconfig tree as it will be parsed

- [kconfig_tree.txt](#)

remake

[remake](#) is an enhanced version of GNU Make that adds improved error reporting, better tracing, profiling and a debugger.

Make targets

Isolate your project

make ctags-project

make cscope-project

make doxyplatform

make filelist ([NEW!](#))

git

git rebase -i <commit>

commands:

- p, pick - Use commit (default)
- r, reword - Use commit, but edit the commit message
- e, edit - Use commit, but stop for amending
- s, squash - Use commit, but merge into the previous commit
- f, fixup - Like squash, but discard this commit's log message
- x, exec - Run command (the rest of the line) using shell
- d, drop - remove commit

git commit -n (--no-verify)

This allows you to commit your changes without running the pre-commit hook

git grep

There are [numerous](#) grep-like tools available. The git grep tool is particularly useful in my opinion because it's fast, and ignores files that aren't committed to the current repository.

coreboot aliases: 'git sup' & 'git sup-destroy'

When 'make gitconfig' is run, coreboot adds a couple of aliases to help manage your submodules:

- git sup: submodule update - tries to update to the versions of submodules for that version of the repository. Leaves any changes in place.
- git sup-destroy: deletes the existing submodules and updates to the current version.

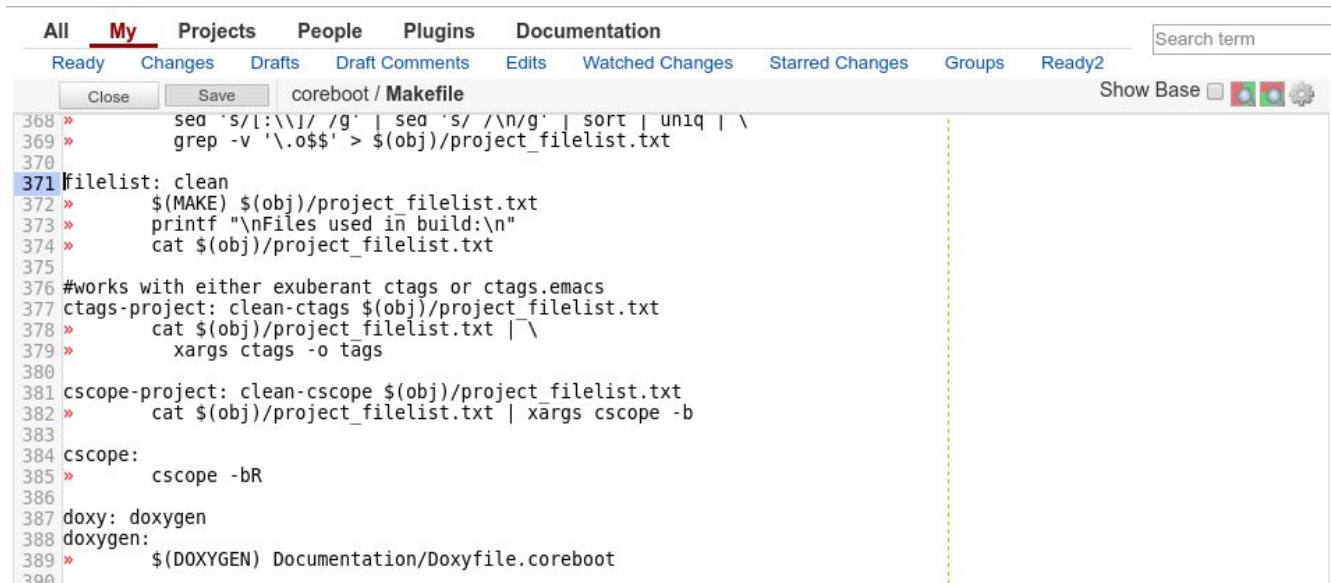
gerrit

Editing commits inside Gerrit

ctl-alt-e inside a review
brings up the editor.

when finished -

- save
- close
- done editing
- (compare)
- publish edit



The screenshot shows the Gerrit web editor interface. At the top, there are navigation tabs: "All", "My" (selected), "Projects", "People", "Plugins", and "Documentation". Below these are sub-tabs: "Ready", "Changes", "Drafts", "Draft Comments", "Edits", "Watched Changes", "Starred Changes", "Groups", and "Ready2". A search bar is on the right. The main editor area has a title bar "coreboot / Makefile" and a "Show Base" button. The code content is as follows:

```
368 » sed 's/!:\\\\ /g' | sed 's/ /\n/g' | sort | uniq | \  
369 » grep -v '\.o$$' > $(obj)/project_filelist.txt  
370  
371 filelist: clean  
372 » $(MAKE) $(obj)/project_filelist.txt  
373 » printf "\nFiles used in build:\n"  
374 » cat $(obj)/project_filelist.txt  
375  
376 #works with either exuberant ctags or ctags.emacs  
377 ctags-project: clean-ctags $(obj)/project_filelist.txt  
378 » cat $(obj)/project_filelist.txt | \  
379 » xargs ctags -o tags  
380  
381 cscope-project: clean-cscope $(obj)/project_filelist.txt  
382 » cat $(obj)/project_filelist.txt | xargs cscope -b  
383  
384 cscope:  
385 » cscope -bR  
386  
387 doxy: doxygen  
388 doxygen:  
389 » $(DOXYGEN) Documentation/Doxyfile.coreboot  
390
```

Change 20049 - Needs Code-Review Label

Makefile: add 'filelist' target

Add a target to show what files are used in the build. This was already being generated for other targets, but there was no target to just generate and view the list.

Change-Id: I6998296bb135d8b7170cacae2be902ef9dac7b54

Signed-off-by: Martin Roth <martinroth@google.com>



Own
Assi
Revi

Proje
Bran
Topic
Strat
Upda

Che

Del

Author Martin Roth <martinroth@google.com>

Jun 6, 2017 06:44

Committer Martin Roth <martinroth@google.com>

Jun 6, 2017 06:45

Commit e2d69c25a949269943b3fb2307dad521770227c2

(gitweb)

Parent(s) • b09933a2eb9b0fbbfe35392dac98d415290867aa

(gitweb)

Change-Id I6998296bb135d8b7170cacae2be902ef9dac7b54



Code
Verif

Files Add... Delete... Rename... Open All Diff against: Base Done Editing

File Path

Commit Message

Makefile

Change 20049 - Change Edit

Publish Edit

Delete Edit

Makefile: add 'filelist' target

Add a target to show what files are used in the build. This was already being generated for other targets, but there was no target to just generate and view the list.

Change-Id: I6998296bb135d8b7170cacae2be902ef9dac7b54

Signed-off-by: Martin Roth <martinroth@google.com>

Owner Martin Roth

Assignee

Reviewers Patrick George

build bot (Jer)

Project [coreboot](#)

Branch [master](#)

Topic

Updated 2 hours ago

Abandon

Delete Change

Code-Review +1 Paul M

Verified +1 build bot

Author Martin Roth <martinroth@google.com> Jun 6, 2017 06:44

Committer Martin Roth <martinroth@google.com> Jun 6, 2017 09:58

Commit 3009718ca7d123ceffaa3ca7007650838699d8e7

Parent(s) b09933a2eb9b0fbbfe35392dac98d415290867aa

Change-Id I6998296bb135d8b7170cacae2be902ef9dac7b54

Files

Open All

Diff against:

Base

Edit

File Path

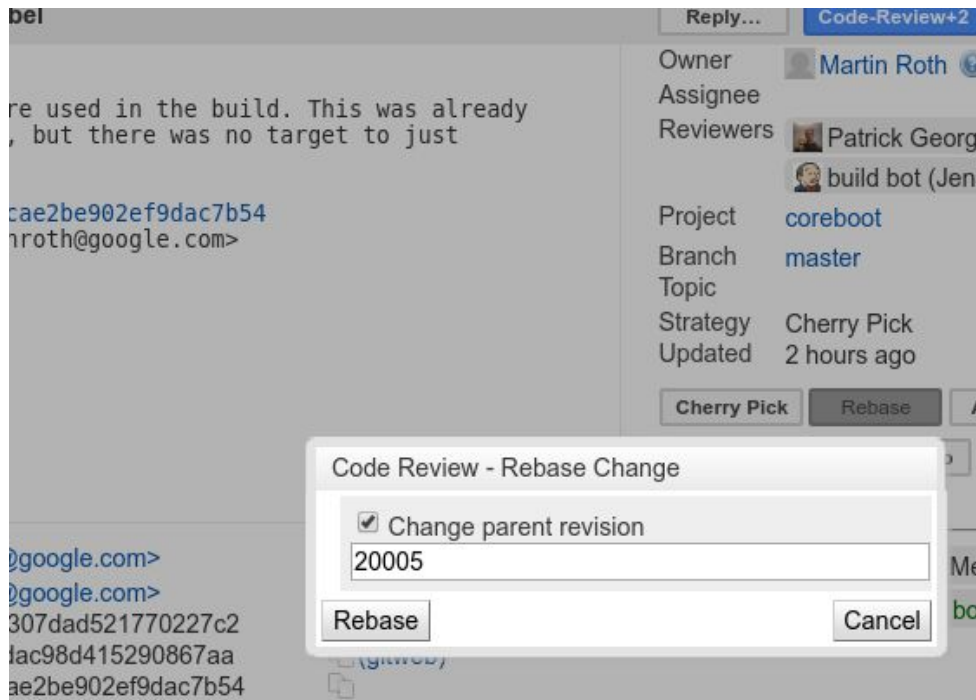
Comments Size

Commit Message

Makefile

+6, -0

rebasing commits inside gerrit



“Cannot Merge” warning in Gerrit


Label






Reply... Code-Review+2 Patch Sets (1)


i function and should actually be moved
om.c.
t defines HAVE_STRNLEN.

[25eeaeef9ff886d6bae987](#)
o.huber@secunet.com>


Owner Nico Huber ⓘ

Assignee 

Reviewers  David Hendricks ×
 Paul Menzel ×
 Philippe Mathieu-Daudé ×
 build bot (Jenkins) × 

Project flashrom 

Branch staging

Topic libflashrom+layout 

Strategy Cherry Pick **Cannot Merge**

Updated 3 hours ago

Cherry Pick Rebase Abandon

Delete Change Follow-Up

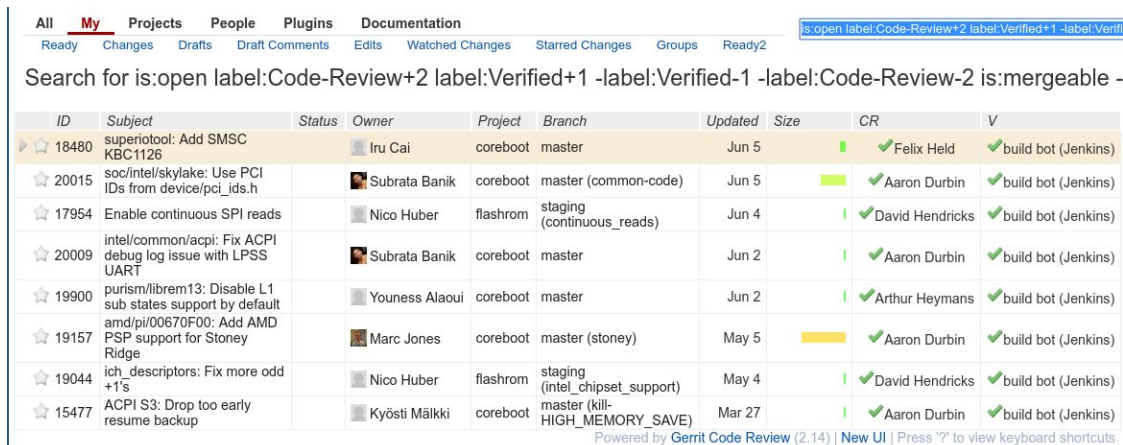
er@secunet.com> May 3, 2016 02:48

Custom gerrit searches

Search used for merging patches:

is:open label:Code-Review+2 label:Verified+1 -label:Verified-1

-label:Code-Review-2 is:mergeable -is:draft age:24hours -age:3months



All My Projects People Plugins Documentation

Ready Changes Drafts Draft Comments Edits Watched Changes Starred Changes Groups Ready2

Search for is:open label:Code-Review+2 label:Verified+1 -label:Verified-1 -label:Code-Review-2 is:mergeable -

ID	Subject	Status	Owner	Project	Branch	Updated	Size	CR	V
18480	superiotool: Add SMSC KBC1126		Iru Cai	coreboot	master	Jun 5		✓ Felix Held	✓ build bot (Jenkins)
20015	soc/intel/skylake: Use PCI IDs from device/pci_ids.h		Subrata Banik	coreboot	master (common-code)	Jun 5		✓ Aaron Durbin	✓ build bot (Jenkins)
17954	Enable continuous SPI reads		Nico Huber	flashrom	staging (continuous_reads)	Jun 4		✓ David Hendricks	✓ build bot (Jenkins)
20009	intel/common/acpi: Fix ACPI debug log issue with LPSS UART		Subrata Banik	coreboot	master	Jun 2		✓ Aaron Durbin	✓ build bot (Jenkins)
19900	purism/librem13: Disable L1 sub states support by default		Youness Alaoui	coreboot	master	Jun 2		✓ Arthur Heymans	✓ build bot (Jenkins)
19157	amd/pi/00670F00: Add AMD PSP support for Stoney Ridge		Marc Jones	coreboot	master (stoney)	May 5		✓ Aaron Durbin	✓ build bot (Jenkins)
19044	ich_descriptors: Fix more odd +1's		Nico Huber	flashrom	staging (intel_chipset_support)	May 4		✓ David Hendricks	✓ build bot (Jenkins)
15477	ACPI S3: Drop too early resume backup		Kyösti Mälkki	coreboot	master (kill-HIGH_MEMORY_SAVE)	Mar 27		✓ Aaron Durbin	✓ build bot (Jenkins)

Powered by [Gerrit Code Review](#) (2.14) | [New UI](#) | Press '?' to view keyboard shortcuts

Settings

- Profile
- Preferences
- Diff Preferences
- Edit Preferences
- Watched Projects
- Contact Information
- SSH Public Keys
- HTTP Password
- GPG Public Keys
- Identities
- Groups

Display In Review Category:

Maximum Page Size:

Date/Time Format:

Email Notifications:

Email Format:

Default Base For Merges:

Diff View:

- Show Site Header / Footer
- Highlight Changes Assigned To Me In Changes Table
- Show Relative Dates In Changes Table
- Show Change Sizes As Colored Bars
- Show Change Number In Changes Table
- Mute Common Path Prefixes In File List
- Insert Signed-off-by Footer For Inline Edit Changes

My Menu

	Name	URL	
	<input type="text"/>	<input type="text"/>	
<input type="checkbox"/>	Ready	/q/is:open%20label:Code-Review%2B2%20label:Verified%2B1%20-label:Verified-1%20-label:Code-Review-2%20is:mergeable%20-is:draft%20age:24hours%20-age:3months	▼
<input type="checkbox"/>	Changes	/dashboard/self	▼ ▲
<input type="checkbox"/>	Drafts	/q/owner:self+is:draft	▼ ▲
<input type="checkbox"/>	Draft Comments	/q/has:draft	▼ ▲

Gerrit downloads: checkout, cherry-pick, and pull

View Label Patch Sets (1/1)

get	Checkout	git fetch ssh://Martin delete@review.coreboot.org:29418/coreboot refs/changes/49/20049/1 && g...	
files are used in the build. The targets, but there was no target:	Cherry Pick	git fetch ssh://Martin delete@review.coreboot.org:29418/coreboot refs/changes/49/20049/1 && g...	
	Format Patch	git fetch ssh://Martin delete@review.coreboot.org:29418/coreboot refs/changes/49/20049/1 && g...	
	Pull	git pull ssh://Martin delete@review.coreboot.org:29418/coreboot refs/changes/49/20049/1	
	Patch-File	e2d69c2.diff.base64 e2d69c2.diff.zip	
	Archive	tgz tar tbz2 txz	

```
170cacae2be902ef9dac7b54  
martinroth@google.com>
```

Topic

Strategy Cherry Pick
Updated 2 hours ago

```
inroth@google.com>  
inroth@google.com>  
3b3fb2307dad521770227c2
```

```
Jun 6, 2017 06:44  
Jun 6, 2017 06:45  
 (gitweb)
```

Code-Review +1 Paul Menzel x

Verified +1 build bot (Jenkins) x

Draft patches

Push your patch to coreboot privately:

```
git push origin HEAD:refs/drafts/master
```

All **my** Projects People Plugins Documentation

Ready Changes Drafts Draft Comments Edits Watched Changes Starred Changes Groups Ready2

owner:self is:draft

Search for owner:self is:draft

ID	Subject	Status	Owner	Project	Branch	Updated	Size	CR
★ 19134	src: Rename #defines that look like Kconfig symbols	Draft	Martin Roth	coreboot	master	Apr 4		
★ 19133	util/board_status: Fix and mute remaining shellcheck warnings	Draft	Martin Roth	coreboot	master	Apr 4		
★ 19132	util/board_status: General cleanup	Draft	Martin Roth	coreboot	master	Apr 4		
★ 19131	util/board_status: Add option to use an ssh key	Draft	Martin Roth	coreboot	master	Apr 4		
★ 19117	util/board_status: add command line parameter to specify ssh user	Draft	Martin Roth	coreboot	master	Apr 4		
★ 19116	util/board_status: Add option to build & push cbmem to remote host	Draft	Martin Roth	coreboot	master	Apr 4		
★ 19127	Kconfig: Show when the rom is known to be non-reproducible	Draft	Martin Roth	coreboot	master	Apr 4		
★ 19122	util/lint: Update license header lint scripts	Draft	Martin Roth	coreboot	master	Apr 4		
★ 19121	src/drivers: Add license headers	Draft	Martin Roth	coreboot	master	Apr 4		
★ 19120	cpu/x86: fix spelling mistake	Draft	Martin Roth	coreboot	master	Apr 4		

Jenkins builds

qa.coreboot.org - How jenkins works

can poll gerrit, can be kicked off by gerrit, can run timed builds

Sends the build to a server running inside a docker container

Builds are wrapped by Patrick's 'encapsulate' program - cannot reach network, can only touch specified directories

```
encapsulate "$WORKSPACE|/tmp|$HOME/.ccache|$COREBOOT_BUILD_DIR"  
sh -x -c "nice -n 20 make what-jenkins-does BUILD_TIMELESS=1"
```

make what-jenkins-does

This is what jenkins actually runs - allows updating the build within the project.

Really designed to be run by jenkins - outputs to xml files

coreboot-gerrit jenkins build

Kicked off by each updated patch.

<https://qa.coreboot.org/job/coreboot-gerrit/>

When everything works, you get test results on the patch page:

<https://qa.coreboot.org/job/coreboot-gerrit/XXXXX/>

To dig into the results, or when something goes wrong, you need to look at the console output:

<https://qa.coreboot.org/job/coreboot-gerrit/XXXXX/consoleText>

coreboot-checkpatch jenkins build

Currently, this should never fail - any failures are server issues. When we enable checkpatch issues as errors, it will be added into util/lint

Only for patch reviewers - must look at console

<https://qa.coreboot.org/job/coreboot-checkpatch/XXXXXX/consoleText>

coreboot jenkins build

This tests the current coreboot origin/master

When this fails, it's URGENT to get it fixed.

Failures here send emails to Patrick, Stefan, and Martin.

coverity

coverity is a static analysis tool

<https://scan.coverity.com/projects/coreboot>

Very expensive tool that is free for open source projects. The commercial product costs several cents per line of code.

Number of times a project can be analyzed each week depends on code size. coreboot is way past the largest size, so we get to run twice a week.

Not perfect for coreboot / chrome EC because we rebuild over and over with different configurations. Coverity does not expect this - they have an internal bug that they're working on to fix it

coreboot

[Overview](#)[Project Settings](#)[Analysis Settings](#)[Members](#)[Invite](#)coverity passed

Analysis Metrics

Version: coreboot_4.6-302-gb09933a2eb

Jun 06, 2017

Last Analyzed

2,912,116

Lines of Code Analyzed

2,416,304

Lines of Code in Selected
Components

0.21

Defect Density

Defect changes since previous build dated Jun 02, 2017

0

Newly detected

1

Eliminated

Defects by status for current build

1,761

Total defects

500

Outstanding

74

Dismissed

1,187

Fixed

Quick Start Guide

Project Actions

[View Defects](#)[Submit Build](#)

Configuration Progress

- Registered project ✓
- Submitted first build ✓
- Configured components ✓
- Submitted modeling file ✓

Be in the Spotlight!

Nominate your project for inclusion in the monthly [Spotlight Series](#) for Coverity Scan Open Source Projects.

Classification	Severity	Action	Component	Category	File	Function
Unclassified	Unspecified	Undecided	coreboot	Memory - corruptions	/src/lib/edid.c	detailed_block
Unclassified	Unspecified	Undecided	payloads	Resource leaks	/payloads/coreinfo/timestamps_module.c	timestamps_module_init
Unclassified	Unspecified	Undecided	coreboot	Memory - corruptions	/src/northbridge/intel/sandybridge/acpi.c	init_opregion_vbt

1 of 105 issues selected Page 1 of 1

```

timestamps_module.c
199     buff_cur += sprintf(buffer + buff_cur, SCREEN_X, "%d", total_time);
200
201     /* Calculate how many characters will be displayed on screen */
202     u32 chars_count = calculate_chars_count(buffer, buff_cur + 1,
203     SCREEN_X, LINES_SHOWN);
204
205     /* Sanity check, chars_count must be padded to full line */
206     if (chars_count % SCREEN_X != 0)
207         return -2;
208
209     g_lines_count = chars_count / SCREEN_X;
210     g_max_cursor_line = MAX(g_lines_count - 1 - LINES_SHOWN, 0);
211
212     g_buf = malloc(chars_count);
213     if (!g_buf)
214         return -3;
215
216     if (sanitize_buffer_for_display(buffer, buff_cur + 1, g_buf,
217     chars_count, SCREEN_X) < 0) {
218         free(buffer);
219         free(g_buf);

```

17. **noescape: Resource** buffer + buff_cur is not freed or pointed-to in sprintf. [Note: The source code implementation of the function has been overridden by a builtin model.]

18. **noescape: Resource** buffer is not freed or pointed-to in calculate_chars_count. [show details]

CID 1373370 (#1 of 1): Resource leak (RESOURCE_LEAK)
 22. **leaked_storage:** Variable buffer going out of scope leaks the storage it points to.

1373370 Resource leak

The system resource will not be reclaimed and reused, reducing the future availability of the resource.

In timestamps_module_init: Leak of memory or pointers to system resources (CWE-404)

Triage

Classification:

Severity:

Action:

Ext. Reference:

Owner:

Enter comments (See the Triage History section below for previous comments)

► Projects & Streams

► Detection History

► Triage History

▼ Occurrences

1: coreboot

Events contributing to issue:

3 alloc_fn	timestamps
4 var_assign	timestamps
6 noescape	timestamps
7 noescape	timestamps
7.1 noescape	timestamps
9 noescape	timestamps

Building in docker - WIP

Building locally inside a docker container

```
make -C util/docker docker-build-coreboot
```

Will download the docker image and runs the coreboot build inside the container

currently builds as root inside the container - does a sudo chown back to the current user - sub-optimal