

WPE QA

2021 WebEngines Hackfest

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AGENDA

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- CI and testing in WebKit
- Developer tools
- Plans and challenges

CI IN WEBKIT

CI OVERVIEW

- Early Warning System - EWS <https://ews-build.webkit.org>
- Post-commit <https://build.webkit.org>
- Buildbot-based
 - A Server assigns *Jobs* to *Queues*, which in turn send *Steps* to *Workers*

TERMINOLOGY

- Port: “Flavor” of WebKit
 - Mac, iOS, GTK, WPE, Playstation, etc...
- Configuration: Port + build type
 - GTK-Release, WPE-Debug, etc...
- Job: Sequence of steps to be run
- Step: Unit of work
 - Checkout revision, build webkit, run a specific suite, etc
- Worker: remote service executing steps

EWS

- First line of defense
 - 36 queues
 - EWS-specific: Style checks, test subsets, etc
- Triggered when submitting a patch for review
- Resource intensive
 - Patches everywhere
 - Tests re-run on failure to double check

EWS BUBBLES

Bug 224381 - Reduce maximum HashTable entry size to 128 bytes [\(edit\)](#)

Status: RESOLVED FIXED [\(edit\)](#)

Alias: None [\(edit\)](#)

Product: WebKit [\(show other bugs\)](#)

Component: New Bugs [\(show other bugs\)](#)

Version: WebKit Nightly Build [\(show other bugs\)](#)

Hardware: Unspecified [\(show other bugs\)](#)

Importance: P2 [\(show other bugs\)](#)

Assignee: Alex Christensen [\(edit\)](#) [\(take\)](#)

URL:

Keywords: InRadar

Personal Tags:

Depends on:

Blocks:

Reported: 2021-04-09 11:23 PDT
Modified: 2021-04-19 07:00 PDT
CC List: 13 users including you
Ignore Bug Mail: (never email me about this bug)

See Also: 224567 Remove [\(add\)](#)

Attachments

Patch (5.70 KB, patch) 2021-04-15 12:42 PDT, Alex Christensen	no flags	Review Patch Details Formatted Diff Diff commit style ios ios-sim mac mac-debug mac-A5-debug tv tv-sim watch watch-sim gtk wpe wincairo win ios-wk2 mac-wk1 mac-wk2 mac-debug-wk1 mac-A5-debug-wk2 api-ios api-mac api-gtk bindings jsc jsc-armv7 jsc-armv7-tests jsc-mips jsc-mips-tests jsc-i386 webkitperf
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[Add an attachment](#) (proposed patch, testcase, etc.) [Show Obsolete](#) (1) [View All](#)

Additional Comments:

[Comment](#) [Preview](#)

EWS bubbles

POST-COMMIT

- Triggered when a patch lands in the main repository
- More comprehensive testing
 - 77 queues
 - Post-commit specific: Packaging bots
- “Official” test results

TEST SUITES

LAYOUT TESTS

- Main suite of tests
- Includes imported Web Platform Tests (WPT) suite
- Tests against actual JS/HTML/CSS code
- Over 60k test cases

API TESTS

- “Developer point of view” tests
- Separate tests for each port
 - iOS, GTK, Mac, PlayStation, WinCairo, WPE, etc...

JS TESTS

- Conformance tests
- test262
- Stress tests

OTHER SMALLER SUITES

- WebDriver
- webkitpy
- webkitperl
- bindings

TESTING WPE

EWS

- Currently, one build-only queue with 2 workers
 - WPE-Release config
- API coverage comes from shared GLIB API with GTK.

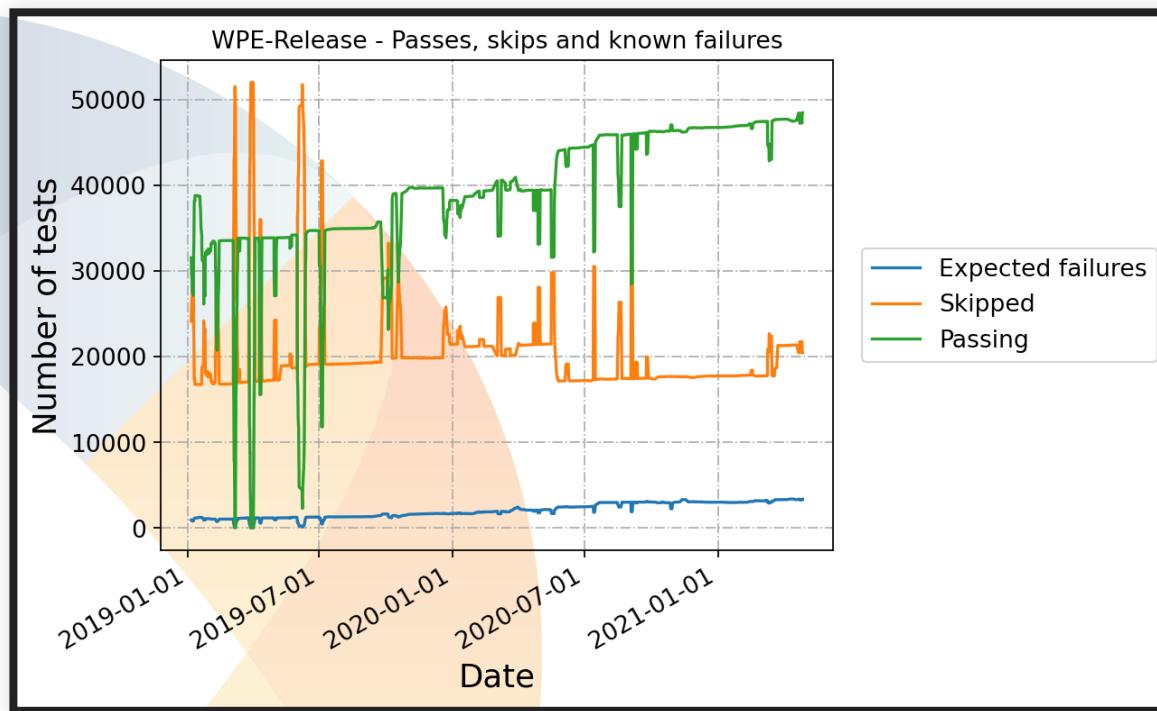
POST COMMIT

- 2 Builder queues
 - Release and Debug
- 2 Testing queues for each config:
 - Reuse the products from build queues
 - One for Layout + API + WebDriver tests
 - Another for JS Test
- 2 packaging queues
 - Ubuntu 18.04 and 20.04

COVERAGE - LAYOUT TESTS

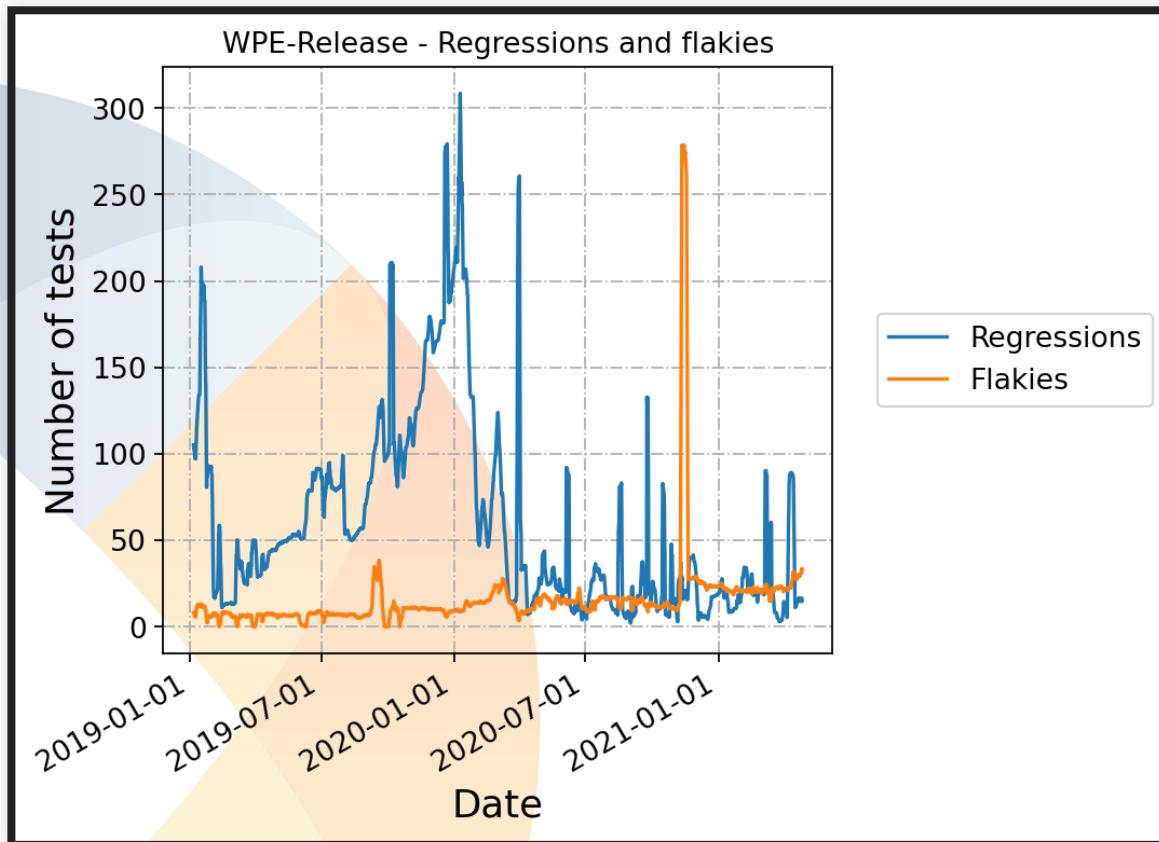
Port	Success	Total	Duration
WPE	48.5k	51k	~33min
GTK	55k	58.8k	~24min
BigSur-WK2	57.4k	60k	~32min

COVERAGE - WPE TESTS OVER TIME



Passing, skipped and to be fixed

COVERAGE - WPE TESTS OVER TIME



Regressions and flakies

DEVELOPER TOOLS

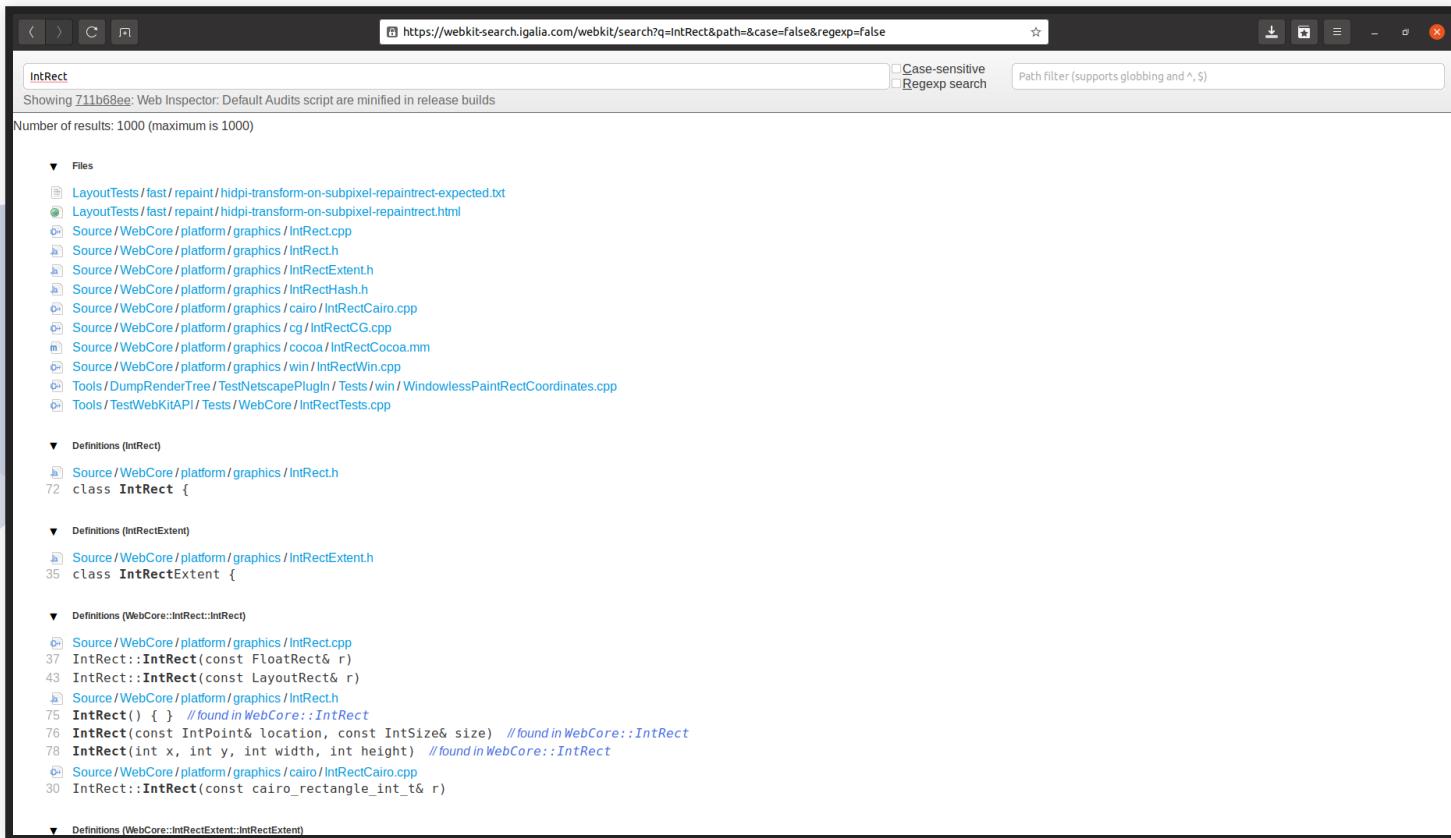
FLATPAK SDK

- Replaces the old JHBUILD environment
- Built with Buildstream
- WPE and GTK are built and tested inside flatpak by default
- Improved reproducibility
- Many tools bundled (gcc/clang/rr/gst-build)
- SDK source inside the WebKit repository

WEBKITSEARCH

- `WebKitSearch`
- Uses `mozsearch`
- Helpful navigating WebKit codebase

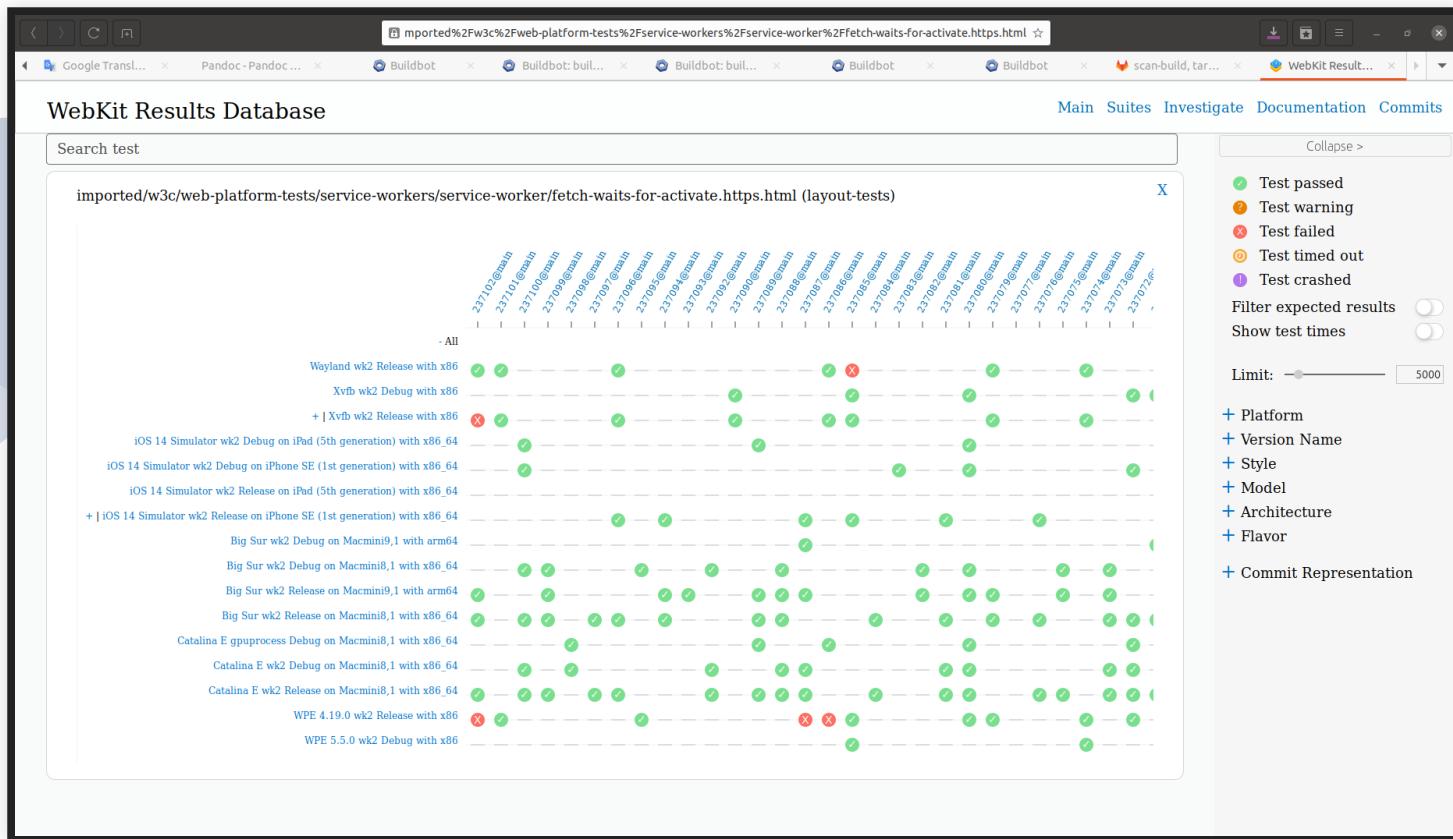
WEBKITSEARCH



Searching ‘IntRect’

RESULTS DATABASES

results.webkit.org



RESULTS DATABASE

- [WebKit Testhunter](#)
- CLI tool
- Good for long term history (years)
- Updated daily

CHALLENGES AND PLANS

BOT MANAGEMENT

- Currently manually managed through ssh
 - Manually deployed with some helper scripts
 - Cumbersome to “turn it off and on again”
 - Over 40 workers (GTK + WPE + JSC 32bit)
 - Some workers also manage embedded boards that run JSC tests
- Work in progress to adopt an Ansible-based setup

TEST COVERAGE

- Big blocks of test still skipped
 - compositing
 - editing
 - inspector
- These are from WebKit own tests
- To be unskipped and triaged

TEST MANAGEMENT

- Too many tests
 - Some outdated expectations
- Improving gardening experience
- Flatpak SDK
- Shared expectations with GTK

NEW BOTS PLANNED

- Sanitizers (ASAN/UBSAN)
- Fuzzing
- More workers to increase EWS response and coverage
 - Non-unified builder
 - WPE tests in EWS
- Improve performance testing

WPT SYNC

- Still a manual process, despite some helper scripts

SDK UPDATES

- Currently manually updated from local builds
 - No staging area
- Work in progress to use flat-manager to automate updates

EMBEDDED TESTING

- Currently, WPE bots are all x86-64 machines
- Planned work to deploy bots in embedded boards
 - Initially RPies



THANK YOU