

# WPE QA

2021 WebEngines Hackfest

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# AGENDA



# AGENDA

- 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

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

**Version:** WebKit Nightly Build

**Hardware:** Unspecified Unspecified

**Importance:** P2 Normal

**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-AS-debug](#) [tv](#) [tv-sim](#) [watch](#) [watch-sim](#) [gtk](#) [wpe](#) [wincairo](#) [win](#) [ios-wk2](#) [mac-wk1](#) [mac-wk2](#) [mac-debug-wk1](#) [mac-AS-debug-wk2](#) [api-ios](#) [api-mac](#) [api-gtk](#) [bindings](#) [jsc](#) [jsc-armv7](#) [jsc-armv7-tests](#) [jsc-mips](#) [jsc-mips-tests](#) [jsc-i386](#) [webkitperl](#)

[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

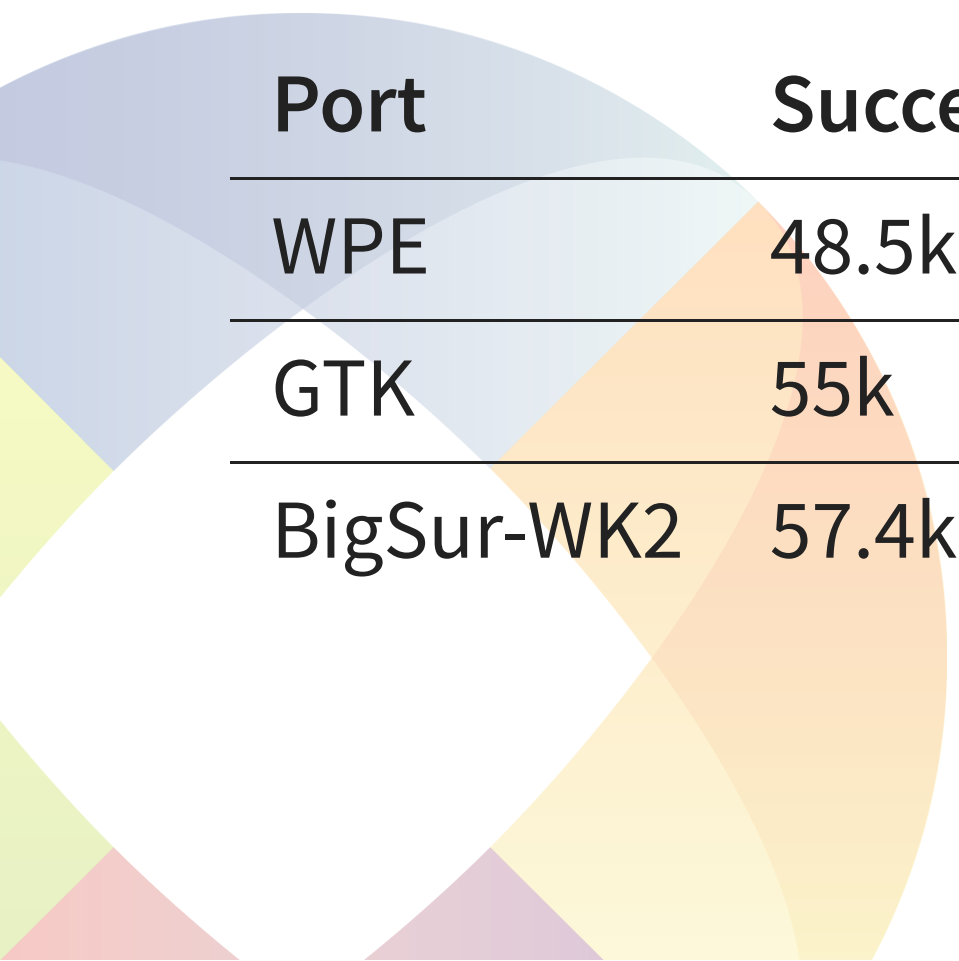
- Currently, one build-only queue with 2 workers
  - WPE-Release config
- API coverage comes from shared GLIB API with GTK.



# POST COMMIT

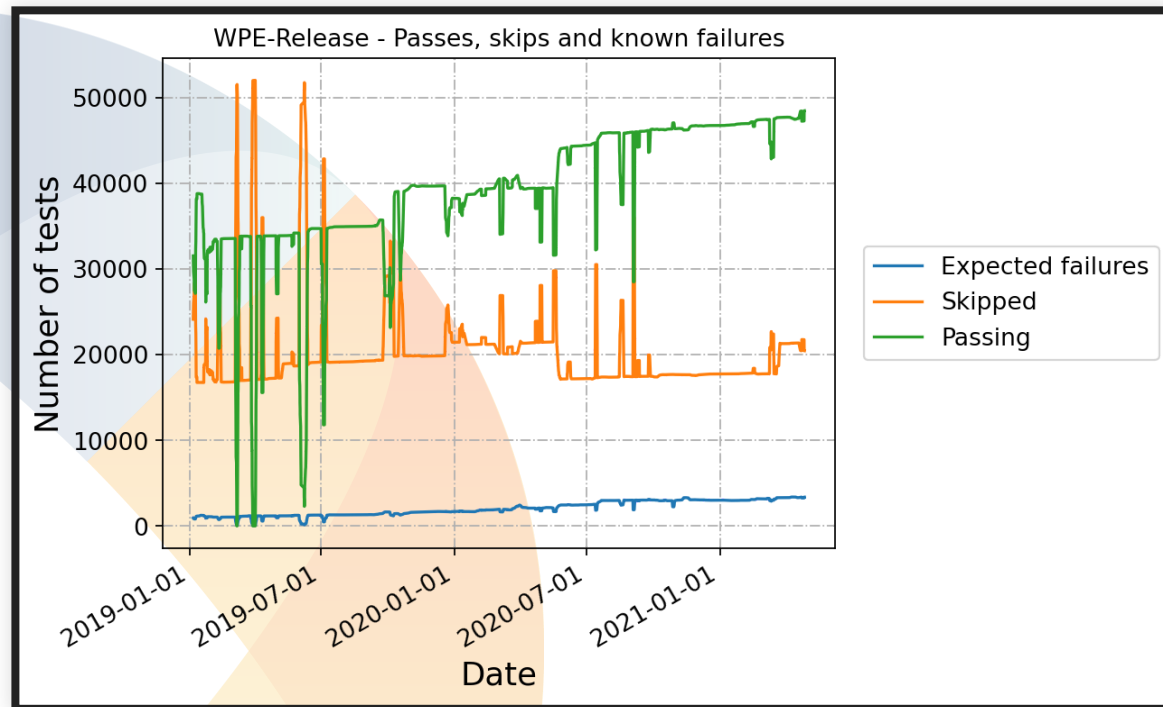
- 2 Builder queues
  - Release and Debug
- 2 Testing queues for each config:
  - Reuse the products from build queues
  - One for Layout + API + WebDriver tests
  - Another for JS Test
- 2 packaging queues
  - Ubuntu 18.04 and 20.04

# COVERAGE - LAYOUT TESTS



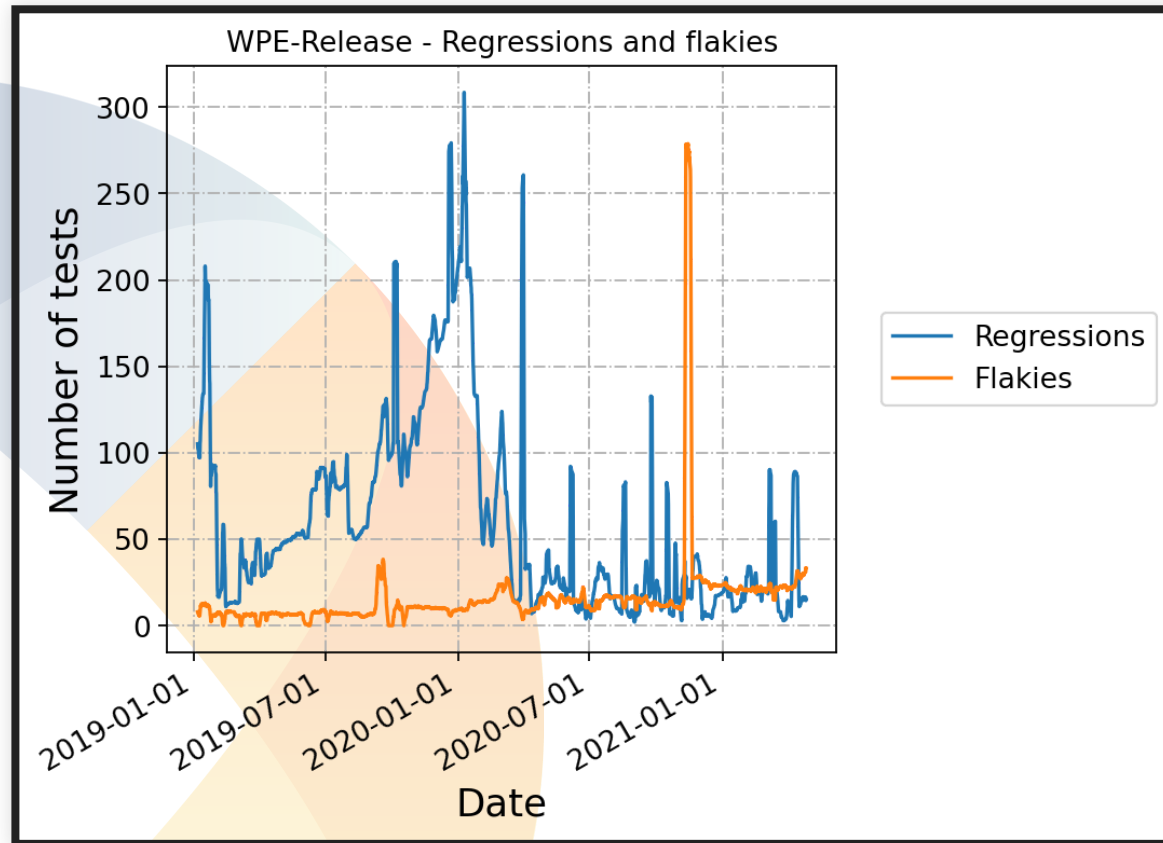
Port	Success	Total	Duration
WPE	48.5k	51k	~33min
GTK	55k	58.8k	~24min
BigSur-WK2	57.4k	60k	~32min

# COVERAGE - WPE TESTS OVER TIME



Passing, skipped and to be fixed

# COVERAGE - WPE TESTS OVER TIME



Regressions and flakies



# DEVELOPER TOOLS

# FLATPAK SDK

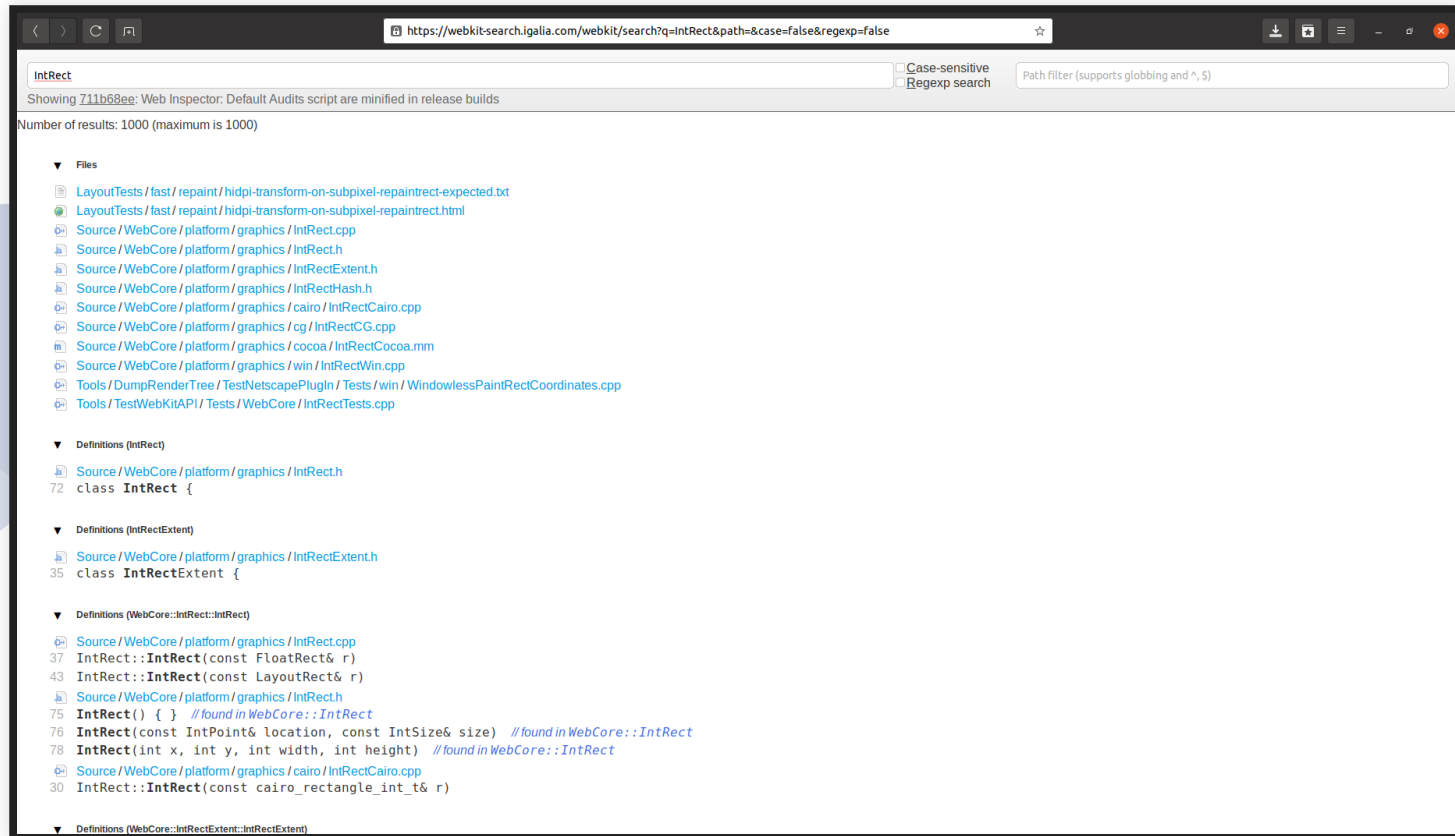
- Replaces the old JHBUILD environment
- Built with Buildstream
- WPE and GTK are built and tested inside flatpak by default
- Improved reproducibility
- Many tools bundled (gcc/clang/rr/gst-build)
- SDK source inside the WebKit repository



# WEBKITSEARCH

- WebKitSearch
- Uses mozsearch
- Helpful navigating WebKit codebase

# WEBKITSEARCH



Searching 'IntRect'



results.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
  - Initialy RPies



**THANK YOU**