

ICU 77.1 test failures

Affected tests from the [ICU 77.1 upgrade](#), with root cause identified for each.

The failures are from <https://chromium-review.googlesource.com/c/chromium/src/+6578333> and <https://chromium-review.googlesource.com/c/v8/v8/+6586986>.

Risky changes

The riskiest change identified is the [default number grouping for Italian](#). A flag was added to control it.

Common causes

IDNA

ICU 76 made some IDNA changes. From the [release notes](#):

The handling of UseSTD3ASCIIRules was simplified. Some existing characters changed from disallowed (when that was only for compatibility with long-obsolete IDNA2003) to valid.

Or as [summarized by Mustafa](#).

- Nontransitional mode is now default (<https://unicode-org.atlassian.net/browse/ICU-22294>). This is already what Chrome uses, so no concerns here.
- Some previously disallowed characters are now allowed.

unittests

ash/system/time/date_helper_unittest.cc

A change in Arabic 12-hour interval format inserting thin spaced (U+2009) around the en dash.

base/i18n/time_formatting_unittest.cc

An added comma in en-GB in a date format. Also seen in intl-date-time-format-expected.txt.

components/url_formatter/spoof_checks/idn_spoof_checker_unittest.cc

A mix of Devanagari and diacritics now fail the ICU spoof checks where they previously would proceed and fail a [subsequent “dangerous pattern” check](#).

This and other IDNA-related changes were [reviewed by Mustafa](#).

`url/url_canon_unittest.cc`

U+2132 and U+2F868 are now allowed. Changes like these are expected, ICU 76 release notes said “Some existing characters changed from disallowed (when that was only for compatibility with long-obsolete IDNA2003) to valid.”

`third_party/blink/renderer/core/html/forms/email_input_type_test.cc`

U+2132 (⌌) and U+2F868 (◻) are now valid in URLs. Same as above case.

[PartitionAllocTest.CheckReservationType](#)

[This test failed on Fuchsia with ICU 74, and on ChromeOS with ICU 77.1. The test was fixed by the memory team, see \[crbug.com/331366007\]\(https://crbug.com/331366007\) for more details.](#)

web-platform-tests

`third_party/blink/web_tests/external/wpt/url/IdnaTestV2.window-expected.txt`

On balance 31 subtests are fixed, but that's 60 fixed subtests and 29 new failures. All 29 of the new failures contain ZWNJ (U+200C) or ZWJ (U+200D) (or both).

The first failure can be reduced to `new
URL("https://\u200d\u2260\u1899\u226f.\u1a3-\u1874\u10a0/x")`.

Stepping through it in a debugger *before* the ICU upgrade, it's rejected as `UIDNA_ERROR_DISALLOWED` in [UTS46::processLabel](#) because of an U+FFFD, and the U+FFFD is from an earlier [uts46Norm2.normalize](#) call which replaced the final U+10A0 with U+FFFD.

With ICU 77, `uts46Norm2.normalize` replaces the final U+10A0 with U+2D00 (the lowercase character) and there are no errors.

But [these subtests all pass in Firefox and Safari on wpt.fyi](#).

[Per spec](#) we should throw because of the `CheckJoiners` flag, but Chromium doesn't use that flag, tracked by <https://crbug.com/40765949>.

So, this isn't a new issue, but some additional failures related to ZWNJ and ZWJ that are uncovered by other classes of errors no longer being errors.

<https://chromium-review.googlesource.com/c/chromium/src/+/6964119> would fix these and many other subtests, but it does not need to be coupled with the ICU 77 upgrade.

third_party/blink/web_tests/external/wpt/url/toascii.window-expected.txt

45 subtests start passing. [All subtests pass in Firefox and Safari.](#)

external/wpt/css/css-text/shaping/shaping-arabic-diacritics-002.html

This test requires not using the UAX#24 suggestions but using heuristic based on script extensions. Based on [an artificial test case reported to Mozilla](#).

web_tests

third_party/blink/web_tests/fast/css-generated-content/quotes-lang.html

Intentional change for quotes in Serbian in CLDR, from [U+201C](#) to [U+201D](#) and from [U+2018](#) to [U+2019](#).

third_party/blink/web_tests/fast/forms/calendar-picker/calendar-picker-appearance-ar.html

third_party/blink/web_tests/fast/forms/calendar-picker/calendar-picker-appearance-required-ar.html

third_party/blink/web_tests/fast/forms/calendar-picker/date-picker-appearance-rtl.html

Seems like start of the week for Arabic has changed.

third_party/blink/web_tests/fast/forms/month/month-appearance-l10n.html

Minor change in spacing in Hindi date format.

third_party/blink/web_tests/fast/text/line-break/phrase-ja.html

Line break opportunities change in Japanese for the CSS [word-break: auto-phrase](#). An [improvement by updated ML model](#) from [BudouX](#) for Japanese, [per Koji](#).

third_party/blink/web_tests/fast/url/idna2003.html

IDNA2003 is ancient and not used. ICU 76 release notes said “Some existing characters changed from disallowed (when that was only for compatibility with long-obsolete IDNA2003) to valid.” Test could be deleted.

This and other IDNA-related changes were [reviewed by Mustafa](#).

third_party/blink/web_tests/fast/url/idna2008.html

The hostnames are now navigable, but they are caught by spoof checks.

This and other IDNA-related changes were [reviewed by Mustafa](#).

third_party/blink/web_tests/svg/text/combining-character-queries.html

The U+030C combining caron after a period is placed a bit differently now. This is a synthetic test and not a concern.

third_party/blink/web_tests/virtual/stable/webexposed/intl-date-time-format-expected.txt

third_party/blink/web_tests/webexposed/intl-date-time-format-expected.txt

[en-GB] A comma is added in some date strings

[ta] Order of time and AM/PM is changed in Tamil

[ka] Kannada uses AM/PM instead of ಪೂರ್ವಾಹ್ನ/ಅಪರಾಹ್ನ

[am] Order changes in full Amharic date strings

third_party/blink/web_tests/virtual/stable/webexposed/intl-duration-format-expected.txt

third_party/blink/web_tests/webexposed/intl-duration-format-expected.txt

Amharic duration format changed to be a little bit more verbose.

third_party/blink/web_tests/virtual/stable/webexposed/intl-number-format-expected.txt

third_party/blink/web_tests/webexposed/intl-number-format-expected.txt

Decimal number format for 4-digit strings in Italian no longer have a thousands separator, similar to Spanish and Portuguese. This was reported as a [regression in Firefox](#) after the ICU 76 upgrade, with one [duplicate](#). The change is explained in <https://unicode-org.atlassian.net/browse/CLDR-18213>.

The same change was in iOS 18.5 and resulted in <https://stackoverflow.com/q/79621903> and other reports linked from there. One comment says that iOS 18.5 has ICU 76, which would make sense. The change was confirmed on iOS 18.6.2 on an iPhone.

The workaround to get the old behavior is to add `{useGrouping: "always"}` to the options.

The behavior is controlled by a flag added in <https://chromium-review.googlesource.com/c/v8/v8/+6944304> in case it needs to be reverted.

V8 tests

test/intl/date-format/month-far-future.js

The behavior of far future dates has changed for some calendars, returning an empty string. Very obscure and not a real-world scenario.

test/intl/number-format/italian-compat-off.js

The test for the Italian number format flag changes as expected.

test/intl/regress-1451943.js

Requesting calendar “iso8601” now works. Sites would have to use it and depend on it *not working* for this to be a problem. Not impossible, but low risk.

test/test262/test262.status

Lots of tests in Test262 no longer fail 🎉

Previous failures

Failures that were observed at some point in the CLs but were resolved.

ui/gfx/render_text_unittest.cc

See [third_party/blink/renderer/platform/fonts](#) below.

third_party/blink/renderer/platform/fonts/script_run_iterator_test.cc

third_party/blink/renderer/platform/fonts/shaping/caching_word_shaper_test.cc

third_party/blink/renderer/platform/fonts/shaping/run_segmenter_test.cc

This is because of an intentional change to the CLDR Script Extension property for [\[178-C39\]](#).

We once tried to [change](#) the script resolution for combining marks (e.g., diacritic marks) to match [UAX#24 5.2](#) better, but [it wasn't web compatible](#).

Reverted the change to the script resolution logic and updated test expectations.

third_party/blink/renderer/platform/text/text_break_iterator_test.cc

ICU77 changed the Swedish word segmenter to not tailor.

See [ICU-22941 Revert ICU-22112, untailoring root word break](#) for details.

Read Aloud test for `TextSegmenter.updateLanguage` was [changed](#) not to use the Swedish word segmenter.

ash/system/geolocation/geolocation_controller.cc

A compilation failure, see <https://crbug.com/419726206>. The call site was fixed with a flag and ICU was patched to keep the old code path compiling until it's deleted.