A bug is NOT a bug is NOT a bug

Differences in bug classes, bug tracking and bug impact

Spelling mistake in a comment

Compiler warning

A static analysis finding that should be addressed

Code snippets in Documentation that do not work

A failing test case in xfs_tests

Unintentional dead code

What's a bug?

Race Conditions

A missing error check

Information leaks from the kernel

A system call changing the errno values it returns, although the "specification" claims system call behaviour remains backwards-compatible.

Bug (in the widest sense we can think of)

Every commit that does not add a feature is a bug-fix commit.

... and the initial trigger that motivates the change is the *bug*.

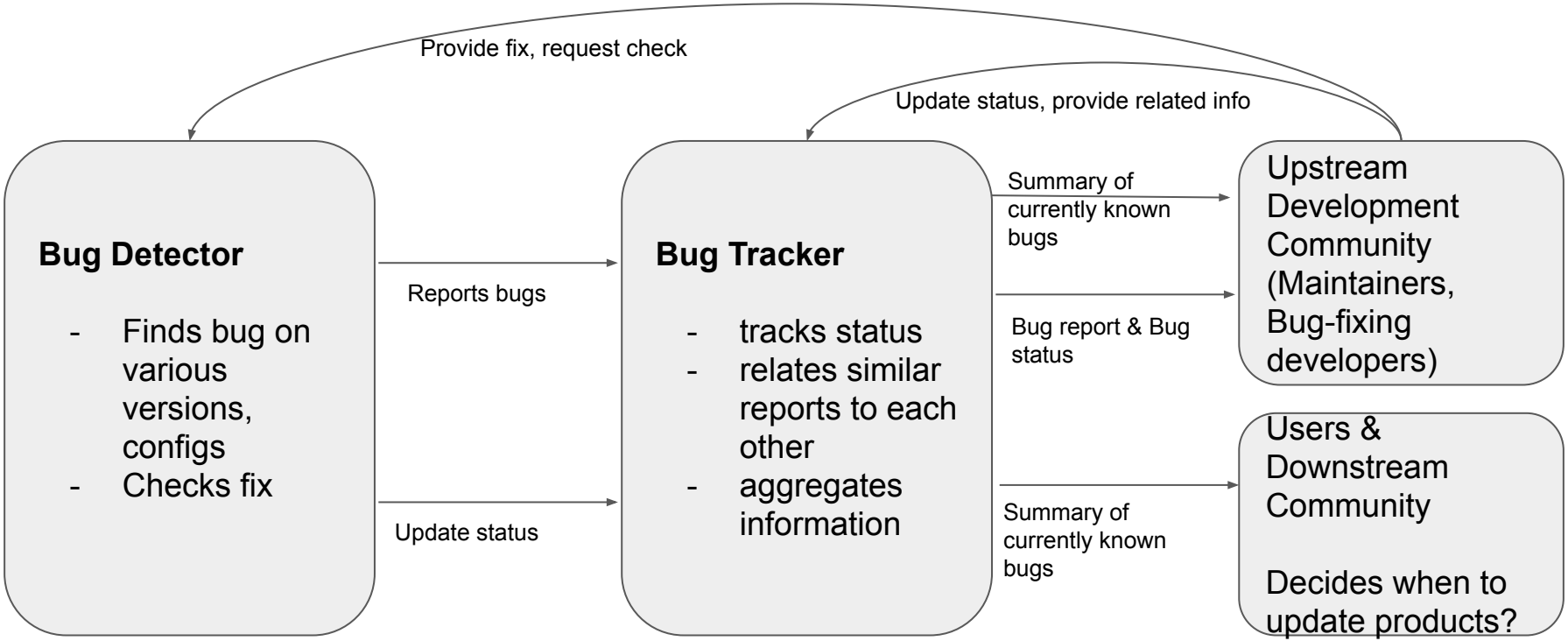
Definition:

A Bug is one locally-bound aspect of the content in the kernel repository

- that motivates a change to the kernel repository
- without adding significant new functionality for any stakeholder

The Kernel’s State of the Union

- Who identifies bugs?
- How are bugs reported?
- How are bugs tracked?
- Who cares about specific bugs?
- Which actions happen due to a bug report?
  - How fast? How reliable?


Provide fix, request check
Update status, provide related info
Bug Detector
- Finds bug on various versions, configs
- Checks fix
Reports bugs
Update status
Bug Tracker
- tracks status
- relates similar reports to each other
- aggregates information
Summary of currently known bugs
Bug report & Bug status
Summary of currently known bugs
Upstream Development Community (Maintainers, Bug-fixing developers)
Users & Downstream Community
Decides when to update products?

Examples of “bug tracking systems” in the kernel

Let’s look at bug tracking for selective bug classes:

- ***Bug report*** by a human kernel user
- ***Bug report*** by an automated testing system (a dedicated repeatable test)
- Some “compiler warning” ***bug report***
- ***Bug report*** identified by fuzzing
- Some “static analysis” ***bug report***

Bug report by a human kernel user

Current resources:

- https://www.kernel.org/doc/html/latest/admin-guide/reporting-issues.html
  reworked by Thorsten Leemhuis
- bugzilla.kernel.org, regressions@lists.linux.dev
- linux distro bug trackers

Potential future tools:

- regzbot (https://linux-regtracking.leemhuis.info/post/regzbot-approach/)
  envisioned by Thorsten Leemhuis

Bug report by an automated testing system

Current resources:

- Lava, Fuego, Kernel CI (and kcidb)...

But… How does bug tracking work?

- What is suitable identifier for a bug reported by a failed test suite?
- How is bug and its fix linked to a change from non-failing to failing test and vice versa?
- How to link a commit fix to a specific interval or collection (e.g., on different configs) of failing tests?

Some “compiler warning” ***bug report***

Current resources:

- Stephen Rothwell's email notifications on linux-next mailing lists
- ClangBuiltLinux's linux github tracker
- Kernel CI build logs
- kernel test robot (Intel’s 0-day testing)

Precise parsing? Automation? Collaborative tracking and reporting?

Bug report identified by fuzzing

Current resources:

- Syzbot (https://syzkaller.appspot.com/upstream)
  - Comes with its own “bug tracker” machinery
  - Needed to reinvent “bug tracking” because there was nothing suitable available in the community…
- Other syzkaller instances (from other users):
  - How do they report and are we then managing bug tracking with multiple non-synchronized syzbot instances?

Can we provide something suitable before the next tool comes along and builds yet another bug tracker?

Some “static analysis” ***bug report***

Current resources:

- Coverity and coverity-bot (Colin King, Kees Cook)
- https://codechecker.elisa.tech (in early testing)

Providing summaries of bug reports to maintainers

All these systems can aggregate information…

… but what do maintainers expect to see to do their job? And when?

Discussion

Which other tools and resources are used? **Please share in the chat!**

What is missing for bug reporters?

… and for bug report consumers?

Different tools are needed… but where is potential for synergies?

How can we connect “bug reporters” and “bug reporter consumers” in a suitable way?

What features are helpful for bug tracker tools?

How can (novice) community members help in “tracking bugs” beyond what tools can do to support developers and maintainers?