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**PLUMBERS
CONFERENCE**



Doing more with lore and b4

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In the beginning...

- There was email
- And it was good

Directed by

ROBERT B. WEIDE

RFC2822 is more than just email

- usenet (the lists before the lists)
- it was nice, but it didn't deal well with abuse
- people jumped ship to mailing lists (and web boards)
- abuse intensified, resulting in
 - SPF, DKIM, DMARC
 - continued centralization
- DMARC broke delivery from many lists
 - but not because it's inherently incompatible with lists
 - it's easy to do both DMARC and lists, [ask me how](#)
- RFC2822 is not protocol-specific
 - it doesn't need to arrive via smtp

Why still use email?

- The only standard, widely used p2p messaging system
- Decentralized, vendor-neutral
- Provides full address portability
 - assuming you use your own domain
- Provides strong domain-level attestation
 - if yours isn't, it should! DKIM is a *good* thing!
- Manages to handle abuse
 - not great still, but improving year after year
- Allows for mixed messages
 - this part for humans, this part for robots
- Everything is in one place: the inbox

Death by 10,000 shortcuts

- Maintainers don't scale
- Maintainers don't ~~like~~ have time to learn new UIs
 - Linus maintains uEmacs because of “muscle memory”
 - Oblig. XKCD Ref: [1782](#)
- We want maintainers to focus on maintaining
 - If something is working well for a maintainer, avoid breaking it
- DON'T BREAK MAINTAINERFLOW?
 - sometimes it is inevitable *because reasons*
 - let me tell you about that one time when I turned off ``finger kernel.org``
- MUA workflows allow maintainers to scale

Patches sent via email

- Patches are conversations
 - Hey, my name is Alex Eagerdev
 - I have a suggestion about coolfeature
 - This is how you are doing it now
 - I think you should do it this way
- From, Subject, Date, Explanation, Patch
- Interleaved email replies are natural
- Great workflow for reviews
- Not so great for anything else

Ye Olde Maintainer Workflow

- Save submission as an mbox file
 - or use tools like quilt
- Edit it manually to rearrange the series in the right order
- Collect and fill in code review trailers
 - Acked-by, Reviewed-By, Tested-by, etc
- Make a git branch
- Apply the mbox file
- Merge into your main branch
- Provide as much relevant info as possible in the merge message
- Ask upstream maintainer to pull

Email archives

- Decision crumb trail
 - “Who approved this?”
 - “Was this even tested?”
 - “I never said I reviewed this!”
- The great gmane.org meltdown
- The great lkml.org meltdown
- There was a need for distributable archives
 - that are easy to update
 - kind of like a feed
 - or a git repo?
 - is that even sane?

lore.kernel.org

- Public-inbox
 - clonable backend
 - archives are git repositories
 - fast search
 - using xapian
 - developer-friendly search
 - dfn: match filename from diff
 - dfn:MAINTAINERS
 - dfhh: match diff hunk header context
 - dfhh:apic_bus_freq_is_known
 - dfpost: match post-image git blob ID
 - dfpost:0466106d16

lore.kernel.org

- Can be mirrored in its entirety
 - in fact, lore.kernel.org is 3 geo-distributed mirror nodes
- 100% free software
- Anyone can set up a full clone and keep it updated
- Started out as just an archive collection site
- But it also allows for greater workflow automation

b4

- The name is a Star Trek reference
 - Blame vger for this whole theme
- I regret the clever name because it's hard to search
 - “b4” is a valid hex code
- You can install it from:
 - pypi (pip install --user b4)
 - your distro (though it probably has an older version)
 - by cloning the repo
 - I try to be very conservative with dependencies
- It's seen some adoption by maintainers

b4 mbox

- grab whole threads from lore.kernel.org
 - threads are aggregated from across all lists
 - you can append them to existing mailboxes
- `b4 mbox -fo ~/Mail <msgid>`
 - downloads the whole thread and saves in your mailbox
 - filters out dupes already present in your mailbox
 - great for use with mutt:
 - `macro index 4 "<pipe-message>b4 mbox -fo ~/Mail<return>"`
 - press “4” to fetch the rest of the thread from lore
 - great for when someone cc’d you in the middle of a thread

b4 am

- Maintainer's workhorse
- `b4 am <msgid>`
 - gets the thread
 - applies any follow-up trailers
 - checks DKIM signatures and crypto attestations
 - makes a mbox file ready for "git am"
- Doesn't need to use lore.kernel.org
 - `-m ~/Mail` will get it from your local source
 - configuration settings can point it at any other public-inbox instance
 - configuration is stored in git config files
- Check out: `b4 am --help`

b4 am: lesser known features

- **-g, --guess-base**
 - guess where in the tree this patch series belongs
 - will work backwards from the date of patch submission
 - will try to match a tree corresponding to git index values
 - use `--guess-lookback` to extend beyond the default 14 days
 - not a perfect fix for lack of base-commit info, but better than nothing
- **-3, --prep-3way**
 - gets your local tree ready for 3way patching
 - I don't actually know what this means, but I'm told it's very useful
- **-c, --check-newer-revisions**
 - Check if a newer series revision is available

b4 diff

- Show a range-diff between patch revisions
 - keeps contributors honest :)
- Requires that index objects are present in the tree
- Can range-diff arbitrary revisions (if it finds them)
 - `b4 diff <msgid> -v 3 5`

b4 pr

- Helps process pull requests
- `b4 pr <msgid>`
 - fetches the remote into FETCH_HEAD
 - checks PGP signature
 - verifies that the commit sha in the message matches remote
- `--explode`
 - turns a pull request into individual commits
 - saves as a mbox/maildir
 - copies the To/Cc addresses
 - you can open it with your MUA and respond to objectionable things
- will soon be offered as automation (“GitHub pr-bot”)

b4 ty

- Automates “thanks, applied” responses
- Auto-Thankanator Gun `b4 ty --auto``
 - Looks at all patches/series you’ve downloaded with `b4 am`` or `b4 pr``
 - Tries to find them applied to the current tree
 - Writes out .thanks files according to the template
 - Future version will also send them out by itself

b4 attest

- Cryptographic attestation of patches
- Moved to its own library `patatt``
 - Adapts the DKIM standard for in-header cryptographic signatures
 - Can use OpenPGP or ed25519 sigs
 - Set up once and forget (as long as `git-send-email` is used)
- `b4 am`` will automatically check attestations
 - DKIM
 - `patatt`
- See my presentation to the Linux Security Summit next week

Attestation passing

Checking attestation on all messages, may take a moment...

✓ [PATCH v2] binfmt_elf: Reintroduce using MAP_FIXED_NOREPLACE

✓ Signed: openpgp/keescook@chromium.org

✓ Signed: DKIM/chromium.org

Attestation failing

Checking attestation on all messages, may take a moment...

X [PATCH v2] binfmt_elf: Reintroduce using MAP_FIXED_NOREPLACE

X BADSIG: openpgp/keescook@chromium.org

X BADSIG: DKIM/chromium.org

Share your b4 feedback

- I am not a kernel developer
- Sometimes I assume things and I'm wrong
- Your feedback is welcome and important
 - if you're working around the tool's quirks, it means I probably got it wrong
- Email tools@linux.kernel.org

Death by 10,000 mailing lists

- There is no “LKML”
 - nobody really reads linux-kernel@vger.kernel.org
 - it’s like yelling into a fire hose
- vger, infradead, linux.dev, oh my
- “where do I send this trivial typo patch?”
 - get-maintainer.pl is daunting for one-off contributors
- Can we harness the power of lore.kernel.org for good?

lore, meet lei

- public-inbox local email interface (lei)
 - query remote sources and deliver them locally
 - supports search-based queries
 - can deliver to local maildirs, or remote imap targets
 - can query lore.kernel.org/all/

Example: MAINTAINERS

OPEN FIRMWARE AND DEVICE TREE OVERLAYS

M: Pantelis Antoniou <pantelis.antoniou@konsulko.com>

M: Frank Rowand <frowand.list@gmail.com>

L: devicetree@vger.kernel.org

S: Maintained

F: Documentation/devicetree/dynamic-resolution-notes.rst

F: Documentation/devicetree/overlay-notes.rst

F: drivers/of/overlay.c

F: drivers/of/resolver.c

K: of_overlay_notifier_

lore query

F: Documentation/devicetree/dynamic-resolution-notes.rst

F: Documentation/devicetree/overlay-notes.rst

F: drivers/of/overlay.c

F: drivers/of/resolver.c

K: of_overlay_notifier_

dfn:Documentation/devicetree/dynamic-resolution-notes.rst

OR dfn:Documentation/devicetree/overlay-notes.rst

OR dfn:drivers/of/overlay.c

OR dfn:drivers/of/resolver.c

OR dfctx:of_overlay_notifier_*

[Live lore link](#)

lei command

```
lei q -o ~/Mail/overlay -I https://lore.kernel.org/all/ \  
-t '(dfn:Documentation/devicetree/dynamic-resolution-notes.rst \  
OR dfn:Documentation/devicetree/overlay-notes.rst \  
OR dfn:drivers/of/overlay.c OR dfn:drivers/of/resolver.c \  
OR dfctx:of_overlay_notifier_*) AND rt:6.months.ago..'
```

- -t: means “whole threads” (you may not want that!)
- rt:6.months.ago.. (the last “..” is important)
 - Change it to “rt:1.week.ago..” after the first run
- -o imaps://imap.gmail.com/lore/overlay

lei up and friends

- `lei edit-search ~/Mail/overlay`
 - tweak search parameters
 - highly recommended to change `rt:` after the initial run
 - exclude things with: `AND NOT ([foo] OR [bar] OR [baz])`
- `lei up ~/Mail/overlay`
 - fetch the latest results
 - you can delete messages from the folder, they won't get re-added
- `lei up --all`
 - set up `git-credential-helper` for `imap` creds
- `lei ls-search`
- `lei forget-search ~/Mail/overlay`

Status of lei

- under heavy development
 - core functionality stable and working well
 - documentation is being written
 - new features are forged all the time
- your feedback is needed!
 - email meta@public-inbox.org
- installing lei
 - <https://public-inbox.org/INSTALL.html>
 - lots of perl dependencies, but all present on Debian
 - I hope to package it for Fedora soon
 - you can use my [toolbox instructions](#)

Neat ideas

- pseudo mailing lists
 - kernel.org manages query-based searches
 - results are offered via read-only IMAP (and POP3, not yet available)
 - remote POP3 folders can be added to gmail
 - allows you to use L: `linux-kernel@vger.kernel.org`
 - “Just send patches to LKML, I’ll see them”
 - “Just mention mysubsystem in the email, I’ll see that”
 - Including in a follow-up, if grabbing full threads
 - Easy onboarding for new maintainers
 - Can be used for patchwork projects
- Read-write IMAP for individual maintainers?

Main goals

- Help maintainers scale
 - turn up the signal, turn down the noise
- Keep things decentralized
 - anyone can set up a full mirror
- But hopefully not confusing or frustrating
 - you can do it yourself, but we'll also do it for you, if you like
- Don't break maintainerflow
 - adding new without disrupting old
 - introducing new tools without any "everyone must switch" flag days
- Simplify things for contributors

Keeping in touch

- workflows@vger.kernel.org
 - discuss maintainer workflows
- tools@linux.kernel.org
 - talk about b4 or other maintainer tooling
 - or just mention “b4” in an email, I’ll see it
 - this is 100% normal and non-creepy
- meta@public-inbox.org
 - feedback for public-inbox and lei