



# Simplificando o processo de contribuição para o Kernel Linux

Expandindo a ferramenta kworkflow

Rubens Gomes Neto

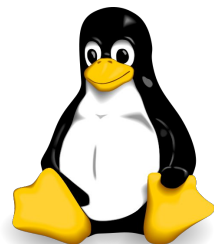
Orientador: Paulo Meirelles

Coorientador: Rodrigo Siqueira

# 1. Introdução

- Kernel Linux
  - Maior projeto de desenvolvimento colaborativo de software do mundo
  - Ciclos de  $\sim 2\frac{1}{2}$  meses
  - Modelo de contribuição através de listas de e-mail

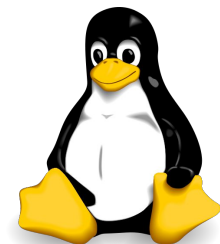
- v5.12
  - 30.545.558 linhas
  - 71.463 arquivos
- v5.0 a v5.12
  - $\sim 217$  patches / dia
    - $\sim 9$  patches / hora



# 1. Introdução

- Kernel Linux
  - ~2000 contribuidores / ciclo
  - 10% a 15% estão fazendo sua primeira contribuição

Versão	Contribuidores	Newcomers	Proporção
5.10	1971	252	12,8%
5.11	1915	280	14,5%
5.12	1873	262	14,0%
5.13	2062	329	15,9%
5.14	1912	261	13,6%



# 1. Introdução

- kworkflow (kw)
  - Reúne diversas utilidades para simplificar o processo de desenvolvimento para o kernel
  - Em uso por alguns dos desenvolvedores do kernel que trabalham na AMD
  - Interessante agir sobre todos os aspectos do processo de contribuição



# kworkflow

kw is our inglorious kernel developer workflow tool with a simple mission: reduce the overhead with infrastructure setup for Linux development

[kworkflow.org/](https://kworkflow.org/)

📖 Readme

📄 GPL-2.0 License

☆ 63 stars

👁️ 7 watching

🍴 35 forks

## 2. Objetivos

- Simplificar o processo de contribuição ao kernel
  - Diminuir a barreira de entrada na comunidade
- Expandir as funcionalidades do kw para que ele lide com o envio de patches por e-mail
- Melhorar a qualidade geral do kw

## 3. kw mail

- Patches devem ser enviados por e-mail para mantenedores e listas de e-mail
- Configurar os patches e o serviço de e-mail
- Encontrar os mantenedores e listas relevantes

```
git config user.name 'Rubens Gomes Neto'
git config user.email rubens.gomes.neto@usp.br
git config sendemail.smtpuser rubens.gomes.neto@usp.br
git config ...
.
.
.

git format-patch ...

perl scripts/get_maintainer.pl ...

git send-email ...
```

# 3. kw mail

## Better tools for kernel developers

Posted Feb 6, 2020 22:39 UTC (Thu) by **Cyberax** (★ supporter ★, #52523) [[Link](#)]

> You just email a patch using git's \*built in\* patch-formatting tools.

The last time I had to:

- 1) Get special permission from IT to use IMAP for mail instead of regular Exchange protocol.
- 2) Install imapproxy.
- 3) Install mutt.
- 4) Set up this whole shebang (which was NOT trivial at all).
- 5) Finally be able to use git's mail capability (after misusing it once and spamming the LKML with an incomplete patch series).
- 6) Learn how to use mutt to reply to emails with code reviews (newsflash: mutt sucks).

Sorry, this is not trivial and is extremely convoluted compared to creating PRs on Github (and I've done quite a bit of drive-by contributions using it).

# 3. kw mail

```
└─$ kw mail --interactive
Welcome to the interactive setup of the mail capabilities.

Do you wish to list the currently set values? [y/N]: N

You may choose one of the following templates to start your configuration.
(enter the corresponding number to choose)
1) Codeaurora      3) Outlook        5) Yahoo           7) Exit kw mail
2) Gmail           4) Riseup         6) Skip template

#? 2

We will start with the essential configuration options!

[local] Setup your name:
Enter new name: Rubens Gomes Neto

=====

[local] Setup your email:
Enter new email: rubens.gomes.neto@usp.br

=====

[local] Setup your smtpuser:
kw will set this option to rubens.gomes.neto@usp.br
Do you want to change it? [y/N]:

=====

These are the optional configuration options.
```



# 3. kw mail

```
Enter new email: rubens.gomes.neto@usp.br
```

```
=====  
[local] Setup your smtpuser:  
kw will set this option to rubens.gomes.neto@usp.br  
Do you want to change it? [y/N]:
```

```
=====  
These are the optional configuration options.
```

```
[local] Setup your smtppass:  
Enter new smtppass:
```

```
=====  
[local] 'user.name' was set to: Rubens Gomes Neto  
[local] 'user.email' was set to: rubens.gomes.neto@usp.br  
[local] 'sendemail.smtpuser' was set to: rubens.gomes.neto@usp.br  
[local] 'sendemail.smtpserver' was set to: smtp.gmail.com  
[local] 'sendemail.smtpserverport' was set to: 587  
[local] 'sendemail.smtpencryption' was set to: tls
```

```
└─$ cd ~/Documents/Aulas/TCC_MAC0499/linux & fix-header *1  
> git config --local -l | tail -6  
user.name=Rubens Gomes Neto  
user.email=rubens.gomes.neto@usp.br  
sendemail.smtpuser=rubens.gomes.neto@usp.br  
sendemail.smtpserver=smtp.gmail.com  
sendemail.smtpserverport=587  
sendemail.smtpencryption=tls
```

## 3. kw mail

```
~/Documents/Aulas/TCC_MAC0499/linux git ✎ fix-header *1 .....  
> kw mail --verify  
Missing configurations required for send-email:  
user.name  
user.email  
sendemail.smtpuser  
sendemail.smtpserver  
sendemail.smtpserverport
```

```
~/Documents/Aulas/TCC_MAC0499/linux git ✎ fix-header *1 .....  
> kw mail --verify  
It looks like you are ready to send patches as:  
Rubens Gomes Neto <rubens.gomes.neto@usp.br>  
  
If you encounter problems you might need to configure these options:  
sendemail.smtppass
```

# 3. kw mail

- Usuários experientes podem configurar um novo ambiente com apenas 1 linha

```
~ /Documents/Aulas/TCC_MAC0499/linux git | fix-header *1 ..... 12s
> kw mail --verify
Missing configurations required for send-email:
user.name
user.email
sendemail.smtpuser
sendemail.smtpserver
sendemail.smtpserverport
```

```
~ /Documents/Aulas/TCC_MAC0499/linux git | fix-header *1 .....
> kw mail --template=gmail --name 'Rubens Gomes Neto' --email rubens.gomes.neto@usp.br
```

```
[local] Setup your smtpuser:
kw will set this option to rubens.gomes.neto@usp.br
Do you want to change it? [y/N]:
```

```
=====

[local] 'user.name' was set to: Rubens Gomes Neto
[local] 'user.email' was set to: rubens.gomes.neto@usp.br
[local] 'sendemail.smtpuser' was set to: rubens.gomes.neto@usp.br
[local] 'sendemail.smtpserver' was set to: smtp.gmail.com
[local] 'sendemail.smtpserverport' was set to: 587
[local] 'sendemail.smtpencryption' was set to: tls
```

```
~ /Documents/Aulas/TCC_MAC0499/linux git | fix-header *1 ..... 8s
> kw mail --verify
It looks like you are ready to send patches as:
Rubens Gomes Neto <rubens.gomes.neto@usp.br>
```

# 3. kw mail

## 2 PRs

- 15 commits
  - +2203 linhas adicionadas
  - -207 linhas removidas
- 17 arquivos
- Mais de 150 comentários de revisão
- ~110 dias de discussão

The screenshot shows a GitHub Pull Request interface. At the top, the title is "Sendemail setup #437". A red "Closed" status is visible. The PR description states: "kwy95 wants to merge 3 commits into `workflow:unstable` from `kwy95:sendemail-setup`". Below the title, there are statistics: "Conversation 120", "Commits 3", "Checks 3", and "Files changed 12". On the right, a green bar indicates "+1,444 -2" lines of code. A comment from user "kwy95" is visible, dated "Aug 27, 2021", with the text "Support to setting up `git send-email`". The comment is marked as a "Collaborator" comment. The reviewer "rodrigosomeira" is listed at the bottom right.

# 3. kw mail

## 2 PRs

- 15 commits
  - +2203 linhas adicionadas
  - -207 linhas removidas
- 17 arquivos
- Mais de 150 comentários de revisão
- ~110 dias de discussão

The screenshot shows a GitHub pull request interface. At the top, the title is "Mail setup using templates #509". Below the title, there is a red "Closed" status indicator and a description: "kwy95 wants to merge 12 commits into `workflow:unstable` from `kwy95:sendemail-part2`".

Navigation tabs include "Conversation" (39), "Commits" (12), "Checks" (3), and "Files changed" (9). A summary bar shows a net change of +759 lines and -205 lines.

A comment from user "kwy95" is visible, dated "Nov 11, 2021". The comment text is: "Make it possible to setup the git send-email environment using templates." The user is identified as a "Collaborator".

On the right side, the "Reviewers" section lists "rodrigosomeira" with a red "Review" button. The "Assignees" section is currently empty.

# 3. kw mail

## Codecov Report

Merging #437 (93c6539) into unstable (9682ff9) will increase coverage by 0.88%.

The diff coverage is 85.04%.

! Current head 93c6539 differs from pull request most recent head 8a988ee. Consider uploading reports for the commit 8a988ee to get more accurate results



@@	Coverage Diff			@@
##	unstable	#437	+/-	##
+ Coverage	68.52%	69.40%	+0.88%	
Files	30	31	+1	
Lines	3793	4007	+214	
+ Hits	2599	2781	+182	
- Misses	1194	1226	+32	

## 2 PRs

- 15 commits
  - +2203 linhas adicionadas
  - -207 linhas removidas
- 17 arquivos
- Mais de 150 comentários de revisão
- ~110 dias de discussão

## Testes

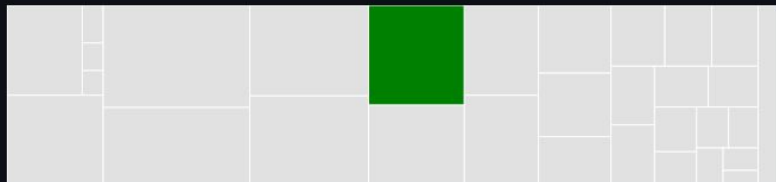
- ~85% das alterações cobertas por testes
- Aumento da cobertura geral dos testes de 0,88% e 0,20%

# 3. kw mail

## Codecov Report

Merging #509 (c3200c8) into unstable (4b8ba01) will increase coverage by 0.20%.

The diff coverage is 84.14%.



	Coverage	Diff	
##	unstable	#509	+/-
##	##	##	##
+ Coverage	71.21%	71.42%	+0.20%
Files	31	31	
Lines	4426	4525	+99
+ Hits	3152	3232	+80
- Misses	1274	1293	+19

## 2 PRs

- 15 commits
  - +2203 linhas adicionadas
  - -207 linhas removidas
- 17 arquivos
- Mais de 150 comentários de revisão
- ~110 dias de discussão

## Testes

- ~85% das alterações cobertas por testes
- Aumento da cobertura geral dos testes de 0,88% e 0,20%

## 4. kw mail (send)

- Dificuldade de encontrar pra quem enviar os patches
- Muitos parâmetros de envio

```
git send-email --annotate --cover-letter --thread --no-chain-reply-to  
--to="...PESSOAS OU LISTA DE EMAIL..." --suppress-cc=all <COMMIT>
```

```
git send-email --annotate --cover-letter --thread --no-chain-reply-to  
--to="..." --cc="..." <COMMIT>
```



## 4. kw mail (send)

- Simplificação do comando
- Geração automática de destinatários e listas de e-mail
- Possibilidade de usar opções do `git send-email`

```
~/Documents/Aulas/TCC_MAC0499/linux # fix-header *1
> kw mail --send --dry-run
git send-email --dry-run --annotate --cover-letter --no-chain-reply-to --threa
d --to=airlied@linux.ie,daniel@ffwll.ch --cc=dri-devel@lists.freedesktop.org,
linux-kernel@vger.kernel.org @^
/tmp/tPs8ngG49V/0000-cover-letter.patch
/tmp/tPs8ngG49V/0001-drm-selftest-remove-duplicate-word.patch
2 files to edit
Dry-OK. Log says:
Subject: [PATCH 0/1] TCC Demo
Date: Tue, 11 Jan 2022 11:53:45 -0300
Message-Id: <202201111145346.82602-1-rubens.gomes.neto@usp.br>
X-Mailer: git-send-email 2.32.0
MIME-Version: 1.0
Content-Transfer-Encoding: 8bit

Result: OK
Dry-OK. Log says:
Server: smtp.gmail.com
MAIL FROM:<rubens.gomes.neto@usp.br>
RCPT TO:<airlied@linux.ie>
RCPT TO:<daniel@ffwll.ch>
RCPT TO:<dri-devel@lists.freedesktop.org>
RCPT TO:<linux-kernel@vger.kernel.org>
From: Rubens Gomes Neto <rubens.gomes.neto@usp.br>
To: airlied@linux.ie,
    daniel@ffwll.ch
Cc: dri-devel@lists.freedesktop.org,
    linux-kernel@vger.kernel.org
Subject: [PATCH 1/1] drm: selftest: remove duplicate word
Date: Tue, 11 Jan 2022 11:53:46 -0300
Message-Id: <202201111145346.82602-2-rubens.gomes.neto@usp.br>
X-Mailer: git-send-email 2.32.0
In-Reply-To: <202201111145346.82602-1-rubens.gomes.neto@usp.br>
References: <202201111145346.82602-1-rubens.gomes.neto@usp.br>
MIME-Version: 1.0
Content-Transfer-Encoding: 8bit

Result: OK
```

# 4. kw mail (send)

## PR principal

- 5 commits
  - +311 linhas adicionadas
  - -12 linhas removidas
- 9 arquivos
- Mais de 40 comentários de revisão
- +20 dias de discussão

## Mail send #535

Edit

<> Code



kwy95 wants to merge 5 commits into `workflow:unstable` from `kwy95:mail-send`

Conversation 45

Commits 5

Checks 3

Files changed 9

+311 -12



kwy95 commented 18 days ago

Collaborator

Add send capabilities to the mail feature.

If inside a kernel root will add default options and populate the `to` and `cc` fields.

Reviewers

rodrigosiqueira

isinyaaa

Still in progress? Convert to draft

# 5. Documentação

## Codecov Report

Merging #348 ([b7427e6](#)) into unstable ([9ce893f](#)) will increase coverage by [0.30%](#).  
The diff coverage is [75.00%](#).

! Current head [b7427e6](#) differs from pull request most recent head [f839fa6](#). Consider uploading reports for the commit [f839fa6](#) to get more accurate results



	Coverage	Diff	
##	unstable	#348	+/-
+ Coverage	70.43%	70.74%	+0.30%
Files	27	27	
Lines	2801	2827	+26
+ Hits	1973	2000	+27
+ Misses	828	827	-1

## PR principal

- 18 commits
  - +1112 linhas adicionadas
  - -470 linhas removidas
- 42 arquivos
- Mais de 25 comentários de revisão
- ~45 dias de discussão

## Testes

- 75% das alterações cobertas por testes
- Aumento da cobertura do testes em geral de 0,30%

# 6. Banco de Dados

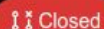
## 2 PRs

- 7 commits
  - +1148 linhas adicionadas
  - -160 linhas removidas
- 19 arquivos
- Mais de 80 comentários de revisão
- +45 dias de discussão

### src: db: introduce db interface #521

Edit

<> Code



kwy95 wants to merge 5 commits into `workflow:unstable` from `kwy95:sql-db`



Conversation 36



Commits 5



Checks 3



Files changed 8

+499 -0



kwy95 commented on Nov 25, 2021

Collaborator



In an effort to standardize our data collection and storage, as well as improve scalability this introduces a library to create and interact with `sqlite3` databases. This will eventually replace the files and folders found in `KW_DATA_DIR` with a unified database.

Signed-off-by: Rubens Gomes Neto [rubens.gomes.neto@usp.br](mailto:rubens.gomes.neto@usp.br)

Reviewers

rodrigosomeira

Assignees

No one—assign yourself

Labels

# 6. Banco de Dados

## 2 PRs

- 7 commits
  - +1148 linhas adicionadas
  - -160 linhas removidas
- 19 arquivos
- Mais de 80 comentários de revisão
- +45 dias de discussão

The screenshot shows a GitHub pull request interface. At the top, the title is "src: db: introduce db model and migration script #531". Below the title, it says "kwy95 wants to merge 2 commits into workflow:unstable from kwy95:sql-db". The interface includes navigation tabs for "Conversation" (52), "Commits" (2), "Checks" (3), and "Files changed" (15). A progress bar shows "+649" in green and "-160" in red. A comment from "kwy95" is visible, stating: "Introduces the file that builds the model to be used by kw to store all data related to statistics options and pomodoro sessions. Adds a script to handle the data migration from the files in KW\_DATA\_DIR to the newly introduced database. Thanks: Magali Lemes for the help modelling the database. @magalilemes Signed-off-by: Rubens Gomes Neto rubens.gomes.neto@usp.br". The right sidebar shows "Reviewers" with "rodrigosomeira" and "Assignees" with "No one—assign yourself".

src: db: introduce db model and migration script #531

Open kwy95 wants to merge 2 commits into workflow:unstable from kwy95:sql-db

Conversation 52 Commits 2 Checks 3 Files changed 15 +649 -160

**kwy95** commented 27 days ago • edited Collaborator

Introduces the file that builds the model to be used by kw to store all data related to statistics options and pomodoro sessions. Adds a script to handle the data migration from the files in `KW_DATA_DIR` to the newly introduced database.

Thanks: Magali Lemes for the help modelling the database. @magalilemes  
Signed-off-by: Rubens Gomes Neto [rubens.gomes.neto@usp.br](mailto:rubens.gomes.neto@usp.br)

**Reviewers**  
rodrigosomeira  
Still in progress? Convert to draft

**Assignees**  
No one—assign yourself

# 7. Conclusão

- Exposição a git e bash
- Projetos futuros
  - Refinamento das funcionalidades
  - Pesquisas sobre desenvolvimento do kernel através do kw

# 8. Referências

- Statistics from the 5.10 kernel development cycle
  - <https://lwn.net/Articles/839772/>
- Development statistics for the 5.11 kernel
  - <https://lwn.net/Articles/845831/>
- Some 5.12 development statistics
  - <https://lwn.net/Articles/853039/>
- Some 5.13 development statistics
  - <https://lwn.net/Articles/860989/>
- Some 5.14 development statistics
  - <https://lwn.net/Articles/867540/>
- Better tools for kernel developers
  - <https://lwn.net/Articles/811528/>
- Presentation on how the Linux kernel is developed - Greg Kroah-Hartman
  - <https://github.com/gregkh/kernel-developm-ent>
- Linux kernel history logs and stats - Greg Kroah-Hartman
  - <https://github.com/gregkh/kernel-history>
- Repositório kw
  - <https://github.com/kworkflow/kworkflow>
- PR documentação
  - <https://github.com/kworkflow/kworkflow/pull/348>
- PR kw mail 1
  - <https://github.com/kworkflow/kworkflow/pull/437>
- PR kw mail 2
  - <https://github.com/kworkflow/kworkflow/pull/509>
- PR kw mail 3
  - <https://github.com/kworkflow/kworkflow/pull/535>
- PR kw db 1
  - <https://github.com/kworkflow/kworkflow/pull/521>
- PR kw db 2
  - <https://github.com/kworkflow/kworkflow/pull/531>

# 9. Perguntas

USP

