Linux Process Documentation

The kernel development community

Jan 15, 2023

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So you want to be a Linux kernel developer? Welcome! While there is a lot to be learned about the kernel in a technical sense, it is also important to learn about how our community works. Reading these documents will make it much easier for you to get your changes merged with a minimum of trouble.

Below are the essential guides that every developer should read.

LINUX KERNEL LICENSING RULES

The Linux Kernel is provided under the terms of the GNU General Public License version 2 only (GPL-2.0), as provided in LICENSES/preferred/GPL-2.0, with an explicit syscall exception described in LICENSES/exceptions/Linux-syscall-note, as described in the COPYING file.

This documentation file provides a description of how each source file should be annotated to make its license clear and unambiguous. It doesn't replace the Kernel's license.

The license described in the COPYING file applies to the kernel source as a whole, though individual source files can have a different license which is required to be compatible with the GPL-2.0:

```
GPL-1.0+  :  GNU General Public License v1.0 or later
GPL-2.0+  :  GNU General Public License v2.0 or later
LGPL-2.0  :  GNU Library General Public License v2 only
LGPL-2.0+ :  GNU Library General Public License v2 or later
LGPL-2.1  :  GNU Lesser General Public License v2.1 only
LGPL-2.1+ :  GNU Lesser General Public License v2.1 or later
```

Aside from that, individual files can be provided under a dual license, e.g. one of the compatible GPL variants and alternatively under a permissive license like BSD, MIT etc.

The User-space API (UAPI) header files, which describe the interface of user-space programs to the kernel are a special case. According to the note in the kernel COPYING file, the syscall interface is a clear boundary, which does not extend the GPL requirements to any software which uses it to communicate with the kernel. Because the UAPI headers must be includable into any source files which create an executable running on the Linux kernel, the exception must be documented by a special license expression.

The common way of expressing the license of a source file is to add the matching boilerplate text into the top comment of the file. Due to formatting, typos etc. these "boilerplates" are hard to validate for tools which are used in the context of license compliance.

An alternative to boilerplate text is the use of Software Package Data Exchange (SPDX) license identifiers in each source file. SPDX license identifiers are machine parsable and precise short-hands for the license under which the content of the file is contributed. SPDX license identifiers are managed by the SPDX Workgroup at the Linux Foundation and have been agreed on by partners throughout the industry, tool vendors, and legal teams. For further information see https://spdx.org/

The Linux kernel requires the precise SPDX identifier in all source files. The valid identifiers used in the kernel are explained in the section *License identifiers* and have been retrieved from the official SPDX license list at https://spdx.org/licenses/ along with the license texts.

* License identifier syntax

1. Placement:

   The SPDX license identifier in kernel files shall be added at the first possible line in a file which can contain a comment. For the majority of files this is the first line, except for scripts which require the '#!PATH_TO_INTERPRETER' in the first line. For those scripts the SPDX identifier goes into the second line.

2. Style:

   The SPDX license identifier is added in form of a comment. The comment style depends on the file type:

   ```
   C source: // SPDX-License-Identifier: <SPDX License Expression>
   C header: /* SPDX-License-Identifier: <SPDX License Expression> */
   ASM:      /* SPDX-License-Identifier: <SPDX License Expression> */
   scripts:  # SPDX-License-Identifier: <SPDX License Expression>
   .rst:     .. SPDX-License-Identifier: <SPDX License Expression>
   .dts{i}:  // SPDX-License-Identifier: <SPDX License Expression>
   ```

   If a specific tool cannot handle the standard comment style, then the appropriate comment mechanism which the tool accepts shall be used. This is the reason for having the "/* */" style comment in C header files. There was build breakage observed with generated .lds files where 'ld' failed to parse the C++ comment. This has been fixed by now, but there are still older assembler tools which cannot handle C++ style comments.

3. Syntax:

   A <SPDX License Expression> is either an SPDX short form license identifier found on the SPDX License List, or the combination of two SPDX short form license identifiers separated by "WITH" when a license exception applies. When multiple licenses apply, an expression consists of keywords "AND", "OR" separating sub-expressions and surrounded by "(", ")" .

   License identifiers for licenses like [L]GPL with the 'or later' option are constructed by using a "+" for indicating the 'or later' option.:

   ```
   // SPDX-License-Identifier: GPL-2.0+
   // SPDX-License-Identifier: LGPL-2.1+
   ```

   WITH should be used when there is a modifier to a license needed. For example, the linux kernel UAPI files use the expression:

   ```
   // SPDX-License-Identifier: GPL-2.0 WITH Linux-syscall-note
   // SPDX-License-Identifier: GPL-2.0+ WITH Linux-syscall-note
   ```

   Other examples using WITH exceptions found in the kernel are:

```
// SPDX-License-Identifier: GPL-2.0 WITH mif-exception
// SPDX-License-Identifier: GPL-2.0+ WITH GCC-exception-2.0
```

Exceptions can only be used with particular License identifiers. The valid License identifiers are listed in the tags of the exception text file. For details see the point *Exceptions* in the chapter *License identifiers*.

OR should be used if the file is dual licensed and only one license is to be selected. For example, some dtsi files are available under dual licenses:

```
// SPDX-License-Identifier: GPL-2.0 OR BSD-3-Clause
```

Examples from the kernel for license expressions in dual licensed files:

```
// SPDX-License-Identifier: GPL-2.0 OR MIT
// SPDX-License-Identifier: GPL-2.0 OR BSD-2-Clause
// SPDX-License-Identifier: GPL-2.0 OR Apache-2.0
// SPDX-License-Identifier: GPL-2.0 OR MPL-1.1
// SPDX-License-Identifier: (GPL-2.0 WITH Linux-syscall-note) OR MIT
// SPDX-License-Identifier: GPL-1.0+ OR BSD-3-Clause OR OpenSSL
```

AND should be used if the file has multiple licenses whose terms all apply to use the file. For example, if code is inherited from another project and permission has been given to put it in the kernel, but the original license terms need to remain in effect:

```
// SPDX-License-Identifier: (GPL-2.0 WITH Linux-syscall-note) AND MIT
```

Another other example where both sets of license terms need to be adhered to is:

```
// SPDX-License-Identifier: GPL-1.0+ AND LGPL-2.1+
```

* License identifiers

The licenses currently used, as well as the licenses for code added to the kernel, can be broken down into:

1. Preferred licenses:

   Whenever possible these licenses should be used as they are known to be fully compatible and widely used. These licenses are available from the directory:

   ```
   LICENSES/preferred/
   ```

   in the kernel source tree.

   The files in this directory contain the full license text and *Metatags*. The file names are identical to the SPDX license identifier which shall be used for the license in source files.

   Examples:

   ```
   LICENSES/preferred/GPL-2.0
   ```

   Contains the GPL version 2 license text and the required metatags:

```
LICENSES/preferred/MIT
```

Contains the MIT license text and the required metatags

Metatags:

The following meta tags must be available in a license file:

- Valid-License-Identifier:

  One or more lines which declare which License Identifiers are valid inside the project to reference this particular license text. Usually this is a single valid identifier, but e.g. for licenses with the 'or later' options two identifiers are valid.

- SPDX-URL:

  The URL of the SPDX page which contains additional information related to the license.

- Usage-Guidance:

  Freeform text for usage advice. The text must include correct examples for the SPDX license identifiers as they should be put into source files according to the *License identifier syntax* guidelines.

- License-Text:

  All text after this tag is treated as the original license text

File format examples:

```
Valid-License-Identifier: GPL-2.0
Valid-License-Identifier: GPL-2.0+
SPDX-URL: https://spdx.org/licenses/GPL-2.0.html
Usage-Guide:
  To use this license in source code, put one of the following SPDX
  tag/value pairs into a comment according to the placement
  guidelines in the licensing rules documentation.
  For 'GNU General Public License (GPL) version 2 only' use:
    SPDX-License-Identifier: GPL-2.0
  For 'GNU General Public License (GPL) version 2 or any later version'␣
→use:
    SPDX-License-Identifier: GPL-2.0+
License-Text:
  Full license text
```

```
SPDX-License-Identifier: MIT
SPDX-URL: https://spdx.org/licenses/MIT.html
Usage-Guide:
  To use this license in source code, put the following SPDX
  tag/value pair into a comment according to the placement
  guidelines in the licensing rules documentation.
    SPDX-License-Identifier: MIT
License-Text:
  Full license text
```

2. Deprecated licenses:

   These licenses should only be used for existing code or for importing code from a different project. These licenses are available from the directory:

   ```
   LICENSES/deprecated/
   ```

   in the kernel source tree.

   The files in this directory contain the full license text and *Metatags*. The file names are identical to the SPDX license identifier which shall be used for the license in source files.

   Examples:

   ```
   LICENSES/deprecated/ISC
   ```

   Contains the Internet Systems Consortium license text and the required metatags:

   ```
   LICENSES/deprecated/GPL-1.0
   ```

   Contains the GPL version 1 license text and the required metatags.

   Metatags:

   The metatag requirements for 'other' licenses are identical to the requirements of the *Preferred licenses*.

   File format example:

   ```
   Valid-License-Identifier: ISC
   SPDX-URL: https://spdx.org/licenses/ISC.html
   Usage-Guide:
     Usage of this license in the kernel for new code is discouraged
     and it should solely be used for importing code from an already
     existing project.
     To use this license in source code, put the following SPDX
     tag/value pair into a comment according to the placement
     guidelines in the licensing rules documentation.
       SPDX-License-Identifier: ISC
   License-Text:
     Full license text
   ```

3. Dual Licensing Only

   These licenses should only be used to dual license code with another license in addition to a preferred license. These licenses are available from the directory:

   ```
   LICENSES/dual/
   ```

in the kernel source tree.

The files in this directory contain the full license text and *Metatags*. The file names are identical to the SPDX license identifier which shall be used for the license in source files.

Examples:

```
LICENSES/dual/MPL-1.1
```

Contains the Mozilla Public License version 1.1 license text and the required metatags:

```
LICENSES/dual/Apache-2.0
```

Contains the Apache License version 2.0 license text and the required metatags.

Metatags:

The metatag requirements for 'other' licenses are identical to the requirements of the *Preferred licenses*.

File format example:

```
Valid-License-Identifier: MPL-1.1
SPDX-URL: https://spdx.org/licenses/MPL-1.1.html
Usage-Guide:
  Do NOT use. The MPL-1.1 is not GPL2 compatible. It may only be used for
  dual-licensed files where the other license is GPL2 compatible.
  If you end up using this it MUST be used together with a GPL2 compatible
  license using "OR".
  To use the Mozilla Public License version 1.1 put the following SPDX
  tag/value pair into a comment according to the placement guidelines in
  the licensing rules documentation:
SPDX-License-Identifier: MPL-1.1
License-Text:
  Full license text
```

4. Exceptions:

   Some licenses can be amended with exceptions which grant certain rights which the original license does not. These exceptions are available from the directory:

   ```
   LICENSES/exceptions/
   ```

   in the kernel source tree. The files in this directory contain the full exception text and the required *Exception Metatags*.

   Examples:

   ```
   LICENSES/exceptions/Linux-syscall-note
   ```

Contains the Linux syscall exception as documented in the COPYING file of the Linux kernel, which is used for UAPI header files. e.g. /* SPDX-License-Identifier: GPL-2.0 WITH Linux-syscall-note */:

```
LICENSES/exceptions/GCC-exception-2.0
```

Contains the GCC 'linking exception' which allows to link any binary independent of its license against the compiled version of a file marked with this exception. This is required for creating runnable executables from source code which is not compatible with the GPL.

Exception Metatags:

The following meta tags must be available in an exception file:

- SPDX-Exception-Identifier:

  One exception identifier which can be used with SPDX license identifiers.

- SPDX-URL:

  The URL of the SPDX page which contains additional information related to the exception.

- SPDX-Licenses:

  A comma separated list of SPDX license identifiers for which the exception can be used.

- Usage-Guidance:

  Freeform text for usage advice. The text must be followed by correct examples for the SPDX license identifiers as they should be put into source files according to the *License identifier syntax* guidelines.

- Exception-Text:

  All text after this tag is treated as the original exception text

File format examples:

```
SPDX-Exception-Identifier: Linux-syscall-note
SPDX-URL: https://spdx.org/licenses/Linux-syscall-note.html
SPDX-Licenses: GPL-2.0, GPL-2.0+, GPL-1.0+, LGPL-2.0, LGPL-2.0+, LGPL-2.1,␣
 ↪LGPL-2.1+
Usage-Guidance:
  This exception is used together with one of the above SPDX-Licenses
  to mark user-space API (uapi) header files so they can be included
  into non GPL compliant user-space application code.
  To use this exception add it with the keyword WITH to one of the
  identifiers in the SPDX-Licenses tag:
    SPDX-License-Identifier: <SPDX-License> WITH Linux-syscall-note
Exception-Text:
  Full exception text
```

```
SPDX-Exception-Identifier: GCC-exception-2.0
SPDX-URL: https://spdx.org/licenses/GCC-exception-2.0.html
SPDX-Licenses: GPL-2.0, GPL-2.0+
Usage-Guidance:
```

```
  The "GCC Runtime Library exception 2.0" is used together with one
  of the above SPDX-Licenses for code imported from the GCC runtime
  library.
  To use this exception add it with the keyword WITH to one of the
  identifiers in the SPDX-Licenses tag:
    SPDX-License-Identifier: <SPDX-License> WITH GCC-exception-2.0
Exception-Text:
  Full exception text
```

All SPDX license identifiers and exceptions must have a corresponding file in the LICENSES subdirectories. This is required to allow tool verification (e.g. checkpatch.pl) and to have the licenses ready to read and extract right from the source, which is recommended by various FOSS organizations, e.g. the FSFE REUSE initiative.

* MODULE_LICENSE

Loadable kernel modules also require a MODULE_LICENSE() tag. This tag is neither a replacement for proper source code license information (SPDX-License-Identifier) nor in any way relevant for expressing or determining the exact license under which the source code of the module is provided.

The sole purpose of this tag is to provide sufficient information whether the module is free software or proprietary for the kernel module loader and for user space tools.

The valid license strings for MODULE_LICENSE() are:

"GPL"	Module is licensed under GPL version 2. This does not express any distinction between GPL-2.0-only or GPL-2.0-or-later. The exact license information can only be determined via the license information in the corresponding source files.
"GPL v2"	Same as "GPL". It exists for historic reasons.
"GPL and additional rights"	Historical variant of expressing that the module source is dual licensed under a GPL v2 variant and MIT license. Please do not use in new code.
"Dual MIT/GPL"	The correct way of expressing that the module is dual licensed under a GPL v2 variant or MIT license choice.
"Dual BSD/GPL"	The module is dual licensed under a GPL v2 variant or BSD license choice. The exact variant of the BSD license can only be determined via the license information in the corresponding source files.
"Dual MPL/GPL"	The module is dual licensed under a GPL v2 variant or Mozilla Public License (MPL) choice. The exact variant of the MPL license can only be determined via the license information in the corresponding source files.
"Proprietary"	The module is under a proprietary license. This string is solely for proprietary third party modules and cannot be used for modules which have their source code in the kernel tree. Modules tagged that way are tainting the kernel with the 'P' flag when loaded and the kernel module loader refuses to link such modules against symbols which are exported with EXPORT_SYMBOL_GPL().

HOWTO DO LINUX KERNEL DEVELOPMENT

This is the be-all, end-all document on this topic. It contains instructions on how to become a Linux kernel developer and how to learn to work with the Linux kernel development community. It tries to not contain anything related to the technical aspects of kernel programming, but will help point you in the right direction for that.

If anything in this document becomes out of date, please send in patches to the maintainer of this file, who is listed at the bottom of the document.

* Introduction

So, you want to learn how to become a Linux kernel developer? Or you have been told by your manager, "Go write a Linux driver for this device." This document's goal is to teach you everything you need to know to achieve this by describing the process you need to go through, and hints on how to work with the community. It will also try to explain some of the reasons why the community works like it does.

The kernel is written mostly in C, with some architecture-dependent parts written in assembly. A good understanding of C is required for kernel development. Assembly (any architecture) is not required unless you plan to do low-level development for that architecture. Though they are not a good substitute for a solid C education and/or years of experience, the following books are good for, if anything, reference:

- "The C Programming Language" by Kernighan and Ritchie [Prentice Hall]
- "Practical C Programming" by Steve Oualline [O'Reilly]
- "C: A Reference Manual" by Harbison and Steele [Prentice Hall]

The kernel is written using GNU C and the GNU toolchain. While it adheres to the ISO C89 standard, it uses a number of extensions that are not featured in the standard. The kernel is a freestanding C environment, with no reliance on the standard C library, so some portions of the C standard are not supported. Arbitrary long long divisions and floating point are not allowed. It can sometimes be difficult to understand the assumptions the kernel has on the toolchain and the extensions that it uses, and unfortunately there is no definitive reference for them. Please check the gcc info pages (*info gcc*) for some information on them.

Please remember that you are trying to learn how to work with the existing development community. It is a diverse group of people, with high standards for coding, style and procedure. These standards have been created over time based on what they have found to work best for such a large and geographically dispersed team. Try to learn as much as possible about these

standards ahead of time, as they are well documented; do not expect people to adapt to you or your company's way of doing things.

* Legal Issues

The Linux kernel source code is released under the GPL. Please see the file COPYING in the main directory of the source tree. The Linux kernel licensing rules and how to use SPDX identifiers in source code are described in *Documentation/process/license-rules.rst*. If you have further questions about the license, please contact a lawyer, and do not ask on the Linux kernel mailing list. The people on the mailing lists are not lawyers, and you should not rely on their statements on legal matters.

For common questions and answers about the GPL, please see:

> https://www.gnu.org/licenses/gpl-faq.html

* Documentation

The Linux kernel source tree has a large range of documents that are invaluable for learning how to interact with the kernel community. When new features are added to the kernel, it is recommended that new documentation files are also added which explain how to use the feature. When a kernel change causes the interface that the kernel exposes to userspace to change, it is recommended that you send the information or a patch to the manual pages explaining the change to the manual pages maintainer at mtk.manpages@gmail.com, and CC the list linux-api@vger.kernel.org.

Here is a list of files that are in the kernel source tree that are required reading:

Documentation/admin-guide/README.rst This file gives a short background on the Linux kernel and describes what is necessary to do to configure and build the kernel. People who are new to the kernel should start here.

Documentation/process/changes.rst This file gives a list of the minimum levels of various software packages that are necessary to build and run the kernel successfully.

Documentation/process/coding-style.rst This describes the Linux kernel coding style, and some of the rationale behind it. All new code is expected to follow the guidelines in this document. Most maintainers will only accept patches if these rules are followed, and many people will only review code if it is in the proper style.

Documentation/process/submitting-patches.rst **and** *Documentation/process/submitting* These files describe in explicit detail how to successfully create and send a patch, including (but not limited to):

- Email contents

- Email format

- Who to send it to

Following these rules will not guarantee success (as all patches are subject to scrutiny for content and style), but not following them will almost always prevent it.

Other excellent descriptions of how to create patches properly are:

"The Perfect Patch" https://www.ozlabs.org/~akpm/stuff/tpp.txt

"Linux kernel patch submission format" https://web.archive.org/web/20180829112450/http://linux.yyz.us/patch-format.html

Documentation/process/stable-api-nonsense.rst This file describes the rationale behind the conscious decision to not have a stable API within the kernel, including things like:

- Subsystem shim-layers (for compatibility?)
- Driver portability between Operating Systems.
- Mitigating rapid change within the kernel source tree (or preventing rapid change)

This document is crucial for understanding the Linux development philosophy and is very important for people moving to Linux from development on other Operating Systems.

Documentation/admin-guide/security-bugs.rst If you feel you have found a security problem in the Linux kernel, please follow the steps in this document to help notify the kernel developers, and help solve the issue.

Documentation/process/management-style.rst This document describes how Linux kernel maintainers operate and the shared ethos behind their methodologies. This is important reading for anyone new to kernel development (or anyone simply curious about it), as it resolves a lot of common misconceptions and confusion about the unique behavior of kernel maintainers.

Documentation/process/stable-kernel-rules.rst This file describes the rules on how the stable kernel releases happen, and what to do if you want to get a change into one of these releases.

Documentation/process/kernel-docs.rst A list of external documentation that pertains to kernel development. Please consult this list if you do not find what you are looking for within the in-kernel documentation.

Documentation/process/applying-patches.rst A good introduction describing exactly what a patch is and how to apply it to the different development branches of the kernel.

The kernel also has a large number of documents that can be automatically generated from the source code itself or from ReStructuredText markups (ReST), like this one. This includes a full description of the in-kernel API, and rules on how to handle locking properly.

All such documents can be generated as PDF or HTML by running:

```
make pdfdocs
make htmldocs
```

respectively from the main kernel source directory.

The documents that uses ReST markup will be generated at Documentation/output. They can also be generated on LaTeX and ePub formats with:

```
make latexdocs
make epubdocs
```

* Becoming A Kernel Developer

If you do not know anything about Linux kernel development, you should look at the Linux KernelNewbies project:

> https://kernelnewbies.org

It consists of a helpful mailing list where you can ask almost any type of basic kernel development question (make sure to search the archives first, before asking something that has already been answered in the past.) It also has an IRC channel that you can use to ask questions in real-time, and a lot of helpful documentation that is useful for learning about Linux kernel development.

The website has basic information about code organization, subsystems, and current projects (both in-tree and out-of-tree). It also describes some basic logistical information, like how to compile a kernel and apply a patch.

If you do not know where you want to start, but you want to look for some task to start doing to join into the kernel development community, go to the Linux Kernel Janitor's project:

> https://kernelnewbies.org/KernelJanitors

It is a great place to start. It describes a list of relatively simple problems that need to be cleaned up and fixed within the Linux kernel source tree. Working with the developers in charge of this project, you will learn the basics of getting your patch into the Linux kernel tree, and possibly be pointed in the direction of what to go work on next, if you do not already have an idea.

Before making any actual modifications to the Linux kernel code, it is imperative to understand how the code in question works. For this purpose, nothing is better than reading through it directly (most tricky bits are commented well), perhaps even with the help of specialized tools. One such tool that is particularly recommended is the Linux Cross-Reference project, which is able to present source code in a self-referential, indexed webpage format. An excellent up-to-date repository of the kernel code may be found at:

> https://elixir.bootlin.com/

* The development process

Linux kernel development process currently consists of a few different main kernel "branches" and lots of different subsystem-specific kernel branches. These different branches are:

- Linus's mainline tree
- Various stable trees with multiple major numbers
- Subsystem-specific trees
- linux-next integration testing tree

* Mainline tree

The mainline tree is maintained by Linus Torvalds, and can be found at https://kernel.org or in the repo. Its development process is as follows:

- As soon as a new kernel is released a two week window is open, during this period of time maintainers can submit big diffs to Linus, usually the patches that have already been included in the linux-next for a few weeks. The preferred way to submit big changes is using git (the kernel's source management tool, more information can be found at https://git-scm.com/) but plain patches are also just fine.

- After two weeks a -rc1 kernel is released and the focus is on making the new kernel as rock solid as possible. Most of the patches at this point should fix a regression. Bugs that have always existed are not regressions, so only push these kinds of fixes if they are important. Please note that a whole new driver (or filesystem) might be accepted after -rc1 because there is no risk of causing regressions with such a change as long as the change is self-contained and does not affect areas outside of the code that is being added. git can be used to send patches to Linus after -rc1 is released, but the patches need to also be sent to a public mailing list for review.

- A new -rc is released whenever Linus deems the current git tree to be in a reasonably sane state adequate for testing. The goal is to release a new -rc kernel every week.

- Process continues until the kernel is considered "ready", the process should last around 6 weeks.

It is worth mentioning what Andrew Morton wrote on the linux-kernel mailing list about kernel releases:

> *"Nobody knows when a kernel will be released, because it's released according to perceived bug status, not according to a preconceived timeline."*

* Various stable trees with multiple major numbers

Kernels with 3-part versions are -stable kernels. They contain relatively small and critical fixes for security problems or significant regressions discovered in a given major mainline release. Each release in a major stable series increments the third part of the version number, keeping the first two parts the same.

This is the recommended branch for users who want the most recent stable kernel and are not interested in helping test development/experimental versions.

Stable trees are maintained by the "stable" team <stable@vger.kernel.org>, and are released as needs dictate. The normal release period is approximately two weeks, but it can be longer if there are no pressing problems. A security-related problem, instead, can cause a release to happen almost instantly.

The file *Documentation/process/stable-kernel-rules.rst* in the kernel tree documents what kinds of changes are acceptable for the -stable tree, and how the release process works.

* Subsystem-specific trees

The maintainers of the various kernel subsystems — and also many kernel subsystem developers — expose their current state of development in source repositories. That way, others can see what is happening in the different areas of the kernel. In areas where development is rapid, a developer may be asked to base his submissions onto such a subsystem kernel tree so that conflicts between the submission and other already ongoing work are avoided.

Most of these repositories are git trees, but there are also other SCMs in use, or patch queues being published as quilt series. Addresses of these subsystem repositories are listed in the MAINTAINERS file. Many of them can be browsed at https://git.kernel.org/.

Before a proposed patch is committed to such a subsystem tree, it is subject to review which primarily happens on mailing lists (see the respective section below). For several kernel subsystems, this review process is tracked with the tool patchwork. Patchwork offers a web interface which shows patch postings, any comments on a patch or revisions to it, and maintainers can mark patches as under review, accepted, or rejected. Most of these patchwork sites are listed at https://patchwork.kernel.org/.

* linux-next integration testing tree

Before updates from subsystem trees are merged into the mainline tree, they need to be integration-tested. For this purpose, a special testing repository exists into which virtually all subsystem trees are pulled on an almost daily basis:

> https://git.kernel.org/?p=linux/kernel/git/next/linux-next.git

This way, the linux-next gives a summary outlook onto what will be expected to go into the mainline kernel at the next merge period. Adventurous testers are very welcome to runtime-test the linux-next.

* Bug Reporting

The file 'Documentation/admin-guide/reporting-issues.rst' in the main kernel source directory describes how to report a possible kernel bug, and details what kind of information is needed by the kernel developers to help track down the problem.

* Managing bug reports

One of the best ways to put into practice your hacking skills is by fixing bugs reported by other people. Not only you will help to make the kernel more stable, but you'll also learn to fix real world problems and you will improve your skills, and other developers will be aware of your presence. Fixing bugs is one of the best ways to get merits among other developers, because not many people like wasting time fixing other people's bugs.

To work on already reported bug reports, find a subsystem you are interested in. Check the MAINTAINERS file where bugs for that subsystem get reported to; often it will be a mailing list, rarely a bugtracker. Search the archives of said place for recent reports and help where you see fit. You may also want to check https://bugzilla.kernel.org for bug reports; only a handful

of kernel subsystems use it actively for reporting or tracking, nevertheless bugs for the whole kernel get filed there.

* Mailing lists

As some of the above documents describe, the majority of the core kernel developers participate on the Linux Kernel Mailing list. Details on how to subscribe and unsubscribe from the list can be found at:

> http://vger.kernel.org/vger-lists.html#linux-kernel

There are archives of the mailing list on the web in many different places. Use a search engine to find these archives. For example:

> http://dir.gmane.org/gmane.linux.kernel

It is highly recommended that you search the archives about the topic you want to bring up, before you post it to the list. A lot of things already discussed in detail are only recorded at the mailing list archives.

Most of the individual kernel subsystems also have their own separate mailing list where they do their development efforts. See the MAINTAINERS file for a list of what these lists are for the different groups.

Many of the lists are hosted on kernel.org. Information on them can be found at:

> http://vger.kernel.org/vger-lists.html

Please remember to follow good behavioral habits when using the lists. Though a bit cheesy, the following URL has some simple guidelines for interacting with the list (or any list):

> http://www.albion.com/netiquette/

If multiple people respond to your mail, the CC: list of recipients may get pretty large. Don't remove anybody from the CC: list without a good reason, or don't reply only to the list address. Get used to receiving the mail twice, one from the sender and the one from the list, and don't try to tune that by adding fancy mail-headers, people will not like it.

Remember to keep the context and the attribution of your replies intact, keep the "John Kernel-hacker wrote …:" lines at the top of your reply, and add your statements between the individual quoted sections instead of writing at the top of the mail.

If you add patches to your mail, make sure they are plain readable text as stated in *Documentation/process/submitting-patches.rst*. Kernel developers don't want to deal with attachments or compressed patches; they may want to comment on individual lines of your patch, which works only that way. Make sure you use a mail program that does not mangle spaces and tab characters. A good first test is to send the mail to yourself and try to apply your own patch by yourself. If that doesn't work, get your mail program fixed or change it until it works.

Above all, please remember to show respect to other subscribers.

* Working with the community

The goal of the kernel community is to provide the best possible kernel there is. When you submit a patch for acceptance, it will be reviewed on its technical merits and those alone. So, what should you be expecting?

- criticism
- comments
- requests for change
- requests for justification
- silence

Remember, this is part of getting your patch into the kernel. You have to be able to take criticism and comments about your patches, evaluate them at a technical level and either rework your patches or provide clear and concise reasoning as to why those changes should not be made. If there are no responses to your posting, wait a few days and try again, sometimes things get lost in the huge volume.

What should you not do?

- expect your patch to be accepted without question
- become defensive
- ignore comments
- resubmit the patch without making any of the requested changes

In a community that is looking for the best technical solution possible, there will always be differing opinions on how beneficial a patch is. You have to be cooperative, and willing to adapt your idea to fit within the kernel. Or at least be willing to prove your idea is worth it. Remember, being wrong is acceptable as long as you are willing to work toward a solution that is right.

It is normal that the answers to your first patch might simply be a list of a dozen things you should correct. This does **not** imply that your patch will not be accepted, and it is **not** meant against you personally. Simply correct all issues raised against your patch and resend it.

* Differences between the kernel community and corporate structures

The kernel community works differently than most traditional corporate development environments. Here are a list of things that you can try to do to avoid problems:

Good things to say regarding your proposed changes:

- "This solves multiple problems."
- "This deletes 2000 lines of code."
- "Here is a patch that explains what I am trying to describe."
- "I tested it on 5 different architectures…"
- "Here is a series of small patches that…"

- "This increases performance on typical machines..."

Bad things you should avoid saying:

- "We did it this way in AIX/ptx/Solaris, so therefore it must be good..."
- "I've being doing this for 20 years, so..."
- "This is required for my company to make money"
- "This is for our Enterprise product line."
- "Here is my 1000 page design document that describes my idea"
- "I've been working on this for 6 months..."
- "Here's a 5000 line patch that..."
- "I rewrote all of the current mess, and here it is..."
- "I have a deadline, and this patch needs to be applied now."

Another way the kernel community is different than most traditional software engineering work environments is the faceless nature of interaction. One benefit of using email and irc as the primary forms of communication is the lack of discrimination based on gender or race. The Linux kernel work environment is accepting of women and minorities because all you are is an email address. The international aspect also helps to level the playing field because you can't guess gender based on a person's name. A man may be named Andrea and a woman may be named Pat. Most women who have worked in the Linux kernel and have expressed an opinion have had positive experiences.

The language barrier can cause problems for some people who are not comfortable with English. A good grasp of the language can be needed in order to get ideas across properly on mailing lists, so it is recommended that you check your emails to make sure they make sense in English before sending them.

* Break up your changes

The Linux kernel community does not gladly accept large chunks of code dropped on it all at once. The changes need to be properly introduced, discussed, and broken up into tiny, individual portions. This is almost the exact opposite of what companies are used to doing. Your proposal should also be introduced very early in the development process, so that you can receive feedback on what you are doing. It also lets the community feel that you are working with them, and not simply using them as a dumping ground for your feature. However, don't send 50 emails at one time to a mailing list, your patch series should be smaller than that almost all of the time.

The reasons for breaking things up are the following:

1) Small patches increase the likelihood that your patches will be applied, since they don't take much time or effort to verify for correctness. A 5 line patch can be applied by a maintainer with barely a second glance. However, a 500 line patch may take hours to review for correctness (the time it takes is exponentially proportional to the size of the patch, or something).

   Small patches also make it very easy to debug when something goes wrong. It's much easier to back out patches one by one than it is to dissect a very large patch after it's been

applied (and broken something).

2) It's important not only to send small patches, but also to rewrite and simplify (or simply re-order) patches before submitting them.

Here is an analogy from kernel developer Al Viro:

"Think of a teacher grading homework from a math student. The teacher does not want to see the student's trials and errors before they came up with the solution. They want to see the cleanest, most elegant answer. A good student knows this, and would never submit her intermediate work before the final solution.

The same is true of kernel development. The maintainers and reviewers do not want to see the thought process behind the solution to the problem one is solving. They want to see a simple and elegant solution."

It may be challenging to keep the balance between presenting an elegant solution and working together with the community and discussing your unfinished work. Therefore it is good to get early in the process to get feedback to improve your work, but also keep your changes in small chunks that they may get already accepted, even when your whole task is not ready for inclusion now.

Also realize that it is not acceptable to send patches for inclusion that are unfinished and will be "fixed up later."

* Justify your change

Along with breaking up your patches, it is very important for you to let the Linux community know why they should add this change. New features must be justified as being needed and useful.

* Document your change

When sending in your patches, pay special attention to what you say in the text in your email. This information will become the ChangeLog information for the patch, and will be preserved for everyone to see for all time. It should describe the patch completely, containing:

- why the change is necessary
- the overall design approach in the patch
- implementation details
- testing results

For more details on what this should all look like, please see the ChangeLog section of the document:

> **"The Perfect Patch"** https://www.ozlabs.org/~akpm/stuff/tpp.txt

All of these things are sometimes very hard to do. It can take years to perfect these practices (if at all). It's a continuous process of improvement that requires a lot of patience and determination. But don't give up, it's possible. Many have done it before, and each had to start exactly where you are now.

CONTRIBUTOR COVENANT CODE OF CONDUCT

* Our Pledge

In the interest of fostering an open and welcoming environment, we as contributors and maintainers pledge to making participation in our project and our community a harassment-free experience for everyone, regardless of age, body size, disability, ethnicity, sex characteristics, gender identity and expression, level of experience, education, socio-economic status, nationality, personal appearance, race, religion, or sexual identity and orientation.

* Our Standards

Examples of behavior that contributes to creating a positive environment include:

- Using welcoming and inclusive language
- Being respectful of differing viewpoints and experiences
- Gracefully accepting constructive criticism
- Focusing on what is best for the community
- Showing empathy towards other community members

Examples of unacceptable behavior by participants include:

- The use of sexualized language or imagery and unwelcome sexual attention or advances
- Trolling, insulting/derogatory comments, and personal or political attacks
- Public or private harassment
- Publishing others' private information, such as a physical or electronic address, without explicit permission
- Other conduct which could reasonably be considered inappropriate in a professional setting

* Our Responsibilities

Maintainers are responsible for clarifying the standards of acceptable behavior and are expected to take appropriate and fair corrective action in response to any instances of unacceptable behavior.

Maintainers have the right and responsibility to remove, edit, or reject comments, commits, code, wiki edits, issues, and other contributions that are not aligned to this Code of Conduct, or to ban temporarily or permanently any contributor for other behaviors that they deem inappropriate, threatening, offensive, or harmful.

* Scope

This Code of Conduct applies both within project spaces and in public spaces when an individual is representing the project or its community. Examples of representing a project or community include using an official project e-mail address, posting via an official social media account, or acting as an appointed representative at an online or offline event. Representation of a project may be further defined and clarified by project maintainers.

* Enforcement

Instances of abusive, harassing, or otherwise unacceptable behavior may be reported by contacting the Code of Conduct Committee at <conduct@kernel.org>. All complaints will be reviewed and investigated and will result in a response that is deemed necessary and appropriate to the circumstances. The Code of Conduct Committee is obligated to maintain confidentiality with regard to the reporter of an incident. Further details of specific enforcement policies may be posted separately.

* Attribution

This Code of Conduct is adapted from the Contributor Covenant, version 1.4, available at https://www.contributor-covenant.org/version/1/4/code-of-conduct.html

* Interpretation

See the *Linux Kernel Contributor Covenant Code of Conduct Interpretation* document for how the Linux kernel community will be interpreting this document.

LINUX KERNEL CONTRIBUTOR COVENANT CODE OF CONDUCT INTERPRETATION

The *Contributor Covenant Code of Conduct* is a general document meant to provide a set of rules for almost any open source community. Every open-source community is unique and the Linux kernel is no exception. Because of this, this document describes how we in the Linux kernel community will interpret it. We also do not expect this interpretation to be static over time, and will adjust it as needed.

The Linux kernel development effort is a very personal process compared to "traditional" ways of developing software. Your contributions and ideas behind them will be carefully reviewed, often resulting in critique and criticism. The review will almost always require improvements before the material can be included in the kernel. Know that this happens because everyone involved wants to see the best possible solution for the overall success of Linux. This development process has been proven to create the most robust operating system kernel ever, and we do not want to do anything to cause the quality of submission and eventual result to ever decrease.

* Maintainers

The Code of Conduct uses the term "maintainers" numerous times. In the kernel community, a "maintainer" is anyone who is responsible for a subsystem, driver, or file, and is listed in the MAINTAINERS file in the kernel source tree.

* Responsibilities

The Code of Conduct mentions rights and responsibilities for maintainers, and this needs some further clarifications.

First and foremost, it is a reasonable expectation to have maintainers lead by example.

That being said, our community is vast and broad, and there is no new requirement for maintainers to unilaterally handle how other people behave in the parts of the community where they are active. That responsibility is upon all of us, and ultimately the Code of Conduct documents final escalation paths in case of unresolved concerns regarding conduct issues.

Maintainers should be willing to help when problems occur, and work with others in the community when needed. Do not be afraid to reach out to the Technical Advisory Board (TAB) or other maintainers if you're uncertain how to handle situations that come up. It will not be

considered a violation report unless you want it to be. If you are uncertain about approaching the TAB or any other maintainers, please reach out to our conflict mediator, Joanna Lee <joanna.lee@gesmer.com>.

In the end, "be kind to each other" is really what the end goal is for everybody. We know everyone is human and we all fail at times, but the primary goal for all of us should be to work toward amicable resolutions of problems. Enforcement of the code of conduct will only be a last resort option.

Our goal of creating a robust and technically advanced operating system and the technical complexity involved naturally require expertise and decision-making.

The required expertise varies depending on the area of contribution. It is determined mainly by context and technical complexity and only secondary by the expectations of contributors and maintainers.

Both the expertise expectations and decision-making are subject to discussion, but at the very end there is a basic necessity to be able to make decisions in order to make progress. This prerogative is in the hands of maintainers and project's leadership and is expected to be used in good faith.

As a consequence, setting expertise expectations, making decisions and rejecting unsuitable contributions are not viewed as a violation of the Code of Conduct.

While maintainers are in general welcoming to newcomers, their capacity of helping contributors overcome the entry hurdles is limited, so they have to set priorities. This, also, is not to be seen as a violation of the Code of Conduct. The kernel community is aware of that and provides entry level programs in various forms like kernelnewbies.org.

* Scope

The Linux kernel community primarily interacts on a set of public email lists distributed around a number of different servers controlled by a number of different companies or individuals. All of these lists are defined in the MAINTAINERS file in the kernel source tree. Any emails sent to those mailing lists are considered covered by the Code of Conduct.

Developers who use the kernel.org bugzilla, and other subsystem bugzilla or bug tracking tools should follow the guidelines of the Code of Conduct. The Linux kernel community does not have an "official" project email address, or "official" social media address. Any activity performed using a kernel.org email account must follow the Code of Conduct as published for kernel.org, just as any individual using a corporate email account must follow the specific rules of that corporation.

The Code of Conduct does not prohibit continuing to include names, email addresses, and associated comments in mailing list messages, kernel change log messages, or code comments.

Interaction in other forums is covered by whatever rules apply to said forums and is in general not covered by the Code of Conduct. Exceptions may be considered for extreme circumstances.

Contributions submitted for the kernel should use appropriate language. Content that already exists predating the Code of Conduct will not be addressed now as a violation. Inappropriate language can be seen as a bug, though; such bugs will be fixed more quickly if any interested parties submit patches to that effect. Expressions that are currently part of the user/kernel API, or reflect terminology used in published standards or specifications, are not considered bugs.

* Enforcement

The address listed in the Code of Conduct goes to the Code of Conduct Committee. The exact members receiving these emails at any given time are listed at https://kernel.org/code-of-conduct.html. Members can not access reports made before they joined or after they have left the committee.

The initial Code of Conduct Committee consists of volunteer members of the TAB, as well as a professional mediator acting as a neutral third party. The first task of the committee is to establish documented processes, which will be made public.

Any member of the committee, including the mediator, can be contacted directly if a reporter does not wish to include the full committee in a complaint or concern.

The Code of Conduct Committee reviews the cases according to the processes (see above) and consults with the TAB as needed and appropriate, for instance to request and receive information about the kernel community.

Any decisions by the committee will be brought to the TAB, for implementation of enforcement with the relevant maintainers if needed. A decision by the Code of Conduct Committee can be overturned by the TAB by a two-thirds vote.

At quarterly intervals, the Code of Conduct Committee and TAB will provide a report summarizing the anonymised reports that the Code of Conduct committee has received and their status, as well details of any overridden decisions including complete and identifiable voting details.

We expect to establish a different process for Code of Conduct Committee staffing beyond the bootstrap period. This document will be updated with that information when this occurs.

A GUIDE TO THE KERNEL DEVELOPMENT PROCESS

Contents:

* Introduction

* Executive summary

The rest of this section covers the scope of the kernel development process and the kinds of frustrations that developers and their employers can encounter there. There are a great many reasons why kernel code should be merged into the official ("mainline") kernel, including automatic availability to users, community support in many forms, and the ability to influence the direction of kernel development. Code contributed to the Linux kernel must be made available under a GPL-compatible license.

How the development process works introduces the development process, the kernel release cycle, and the mechanics of the merge window. The various phases in the patch development, review, and merging cycle are covered. There is some discussion of tools and mailing lists. Developers wanting to get started with kernel development are encouraged to track down and fix bugs as an initial exercise.

Early-stage planning covers early-stage project planning, with an emphasis on involving the development community as soon as possible.

Getting the code right is about the coding process; several pitfalls which have been encountered by other developers are discussed. Some requirements for patches are covered, and there is an introduction to some of the tools which can help to ensure that kernel patches are correct.

Posting patches talks about the process of posting patches for review. To be taken seriously by the development community, patches must be properly formatted and described, and they must be sent to the right place. Following the advice in this section should help to ensure the best possible reception for your work.

Followthrough covers what happens after posting patches; the job is far from done at that point. Working with reviewers is a crucial part of the development process; this section offers a number of tips on how to avoid problems at this important stage. Developers are cautioned against assuming that the job is done when a patch is merged into the mainline.

Advanced topics introduces a couple of "advanced" topics: managing patches with git and reviewing patches posted by others.

For more information concludes the document with pointers to sources for more information on kernel development.

* What this document is about

The Linux kernel, at over 8 million lines of code and well over 1000 contributors to each release, is one of the largest and most active free software projects in existence. Since its humble beginning in 1991, this kernel has evolved into a best-of-breed operating system component which runs on pocket-sized digital music players, desktop PCs, the largest supercomputers in existence, and all types of systems in between. It is a robust, efficient, and scalable solution for almost any situation.

With the growth of Linux has come an increase in the number of developers (and companies) wishing to participate in its development. Hardware vendors want to ensure that Linux supports their products well, making those products attractive to Linux users. Embedded systems vendors, who use Linux as a component in an integrated product, want Linux to be as capable and well-suited to the task at hand as possible. Distributors and other software vendors who base their products on Linux have a clear interest in the capabilities, performance, and reliability of the Linux kernel. And end users, too, will often wish to change Linux to make it better suit their needs.

One of the most compelling features of Linux is that it is accessible to these developers; anybody with the requisite skills can improve Linux and influence the direction of its development. Proprietary products cannot offer this kind of openness, which is a characteristic of the free software process. But, if anything, the kernel is even more open than most other free software projects. A typical three-month kernel development cycle can involve over 1000 developers working for more than 100 different companies (or for no company at all).

Working with the kernel development community is not especially hard. But, that notwithstanding, many potential contributors have experienced difficulties when trying to do kernel work. The kernel community has evolved its own distinct ways of operating which allow it to function smoothly (and produce a high-quality product) in an environment where thousands of lines of code are being changed every day. So it is not surprising that Linux kernel development process differs greatly from proprietary development methods.

The kernel's development process may come across as strange and intimidating to new developers, but there are good reasons and solid experience behind it. A developer who does not understand the kernel community's ways (or, worse, who tries to flout or circumvent them) will have a frustrating experience in store. The development community, while being helpful to those who are trying to learn, has little time for those who will not listen or who do not care about the development process.

It is hoped that those who read this document will be able to avoid that frustrating experience. There is a lot of material here, but the effort involved in reading it will be repaid in short order. The development community is always in need of developers who will help to make the kernel better; the following text should help you - or those who work for you - join our community.

* Credits

* The importance of getting code into the mainline

Some companies and developers occasionally wonder why they should bother learning how to work with the kernel community and get their code into the mainline kernel (the "mainline" being the kernel maintained by Linus Torvalds and used as a base by Linux distributors). In the short term, contributing code can look like an avoidable expense; it seems easier to just keep the code separate and support users directly. The truth of the matter is that keeping code separate ("out of tree") is a false economy.

As a way of illustrating the costs of out-of-tree code, here are a few relevant aspects of the kernel development process; most of these will be discussed in greater detail later in this document. Consider:

- Code which has been merged into the mainline kernel is available to all Linux users. It will automatically be present on all distributions which enable it. There is no need for driver disks, downloads, or the hassles of supporting multiple versions of multiple distributions; it all just works, for the developer and for the user. Incorporation into the mainline solves a large number of distribution and support problems.

- While kernel developers strive to maintain a stable interface to user space, the internal kernel API is in constant flux. The lack of a stable internal interface is a deliberate design decision; it allows fundamental improvements to be made at any time and results in higher-quality code. But one result of that policy is that any out-of-tree code requires constant upkeep if it is to work with new kernels. Maintaining out-of-tree code requires significant amounts of work just to keep that code working.

  Code which is in the mainline, instead, does not require this work as the result of a simple rule requiring any developer who makes an API change to also fix any code that breaks as the result of that change. So code which has been merged into the mainline has significantly lower maintenance costs.

- Beyond that, code which is in the kernel will often be improved by other developers. Surprising results can come from empowering your user community and customers to improve your product.

- Kernel code is subjected to review, both before and after merging into the mainline. No matter how strong the original developer's skills are, this review process invariably finds ways in which the code can be improved. Often review finds severe bugs and security problems. This is especially true for code which has been developed in a closed environment; such code benefits strongly from review by outside developers. Out-of-tree code is lower-quality code.

- Participation in the development process is your way to influence the direction of kernel development. Users who complain from the sidelines are heard, but active developers

have a stronger voice - and the ability to implement changes which make the kernel work better for their needs.

- When code is maintained separately, the possibility that a third party will contribute a different implementation of a similar feature always exists. Should that happen, getting your code merged will become much harder - to the point of impossibility. Then you will be faced with the unpleasant alternatives of either (1) maintaining a nonstandard feature out of tree indefinitely, or (2) abandoning your code and migrating your users over to the in-tree version.

- Contribution of code is the fundamental action which makes the whole process work. By contributing your code you can add new functionality to the kernel and provide capabilities and examples which are of use to other kernel developers. If you have developed code for Linux (or are thinking about doing so), you clearly have an interest in the continued success of this platform; contributing code is one of the best ways to help ensure that success.

All of the reasoning above applies to any out-of-tree kernel code, including code which is distributed in proprietary, binary-only form. There are, however, additional factors which should be taken into account before considering any sort of binary-only kernel code distribution. These include:

- The legal issues around the distribution of proprietary kernel modules are cloudy at best; quite a few kernel copyright holders believe that most binary-only modules are derived products of the kernel and that, as a result, their distribution is a violation of the GNU General Public license (about which more will be said below). Your author is not a lawyer, and nothing in this document can possibly be considered to be legal advice. The true legal status of closed-source modules can only be determined by the courts. But the uncertainty which haunts those modules is there regardless.

- Binary modules greatly increase the difficulty of debugging kernel problems, to the point that most kernel developers will not even try. So the distribution of binary-only modules will make it harder for your users to get support from the community.

- Support is also harder for distributors of binary-only modules, who must provide a version of the module for every distribution and every kernel version they wish to support. Dozens of builds of a single module can be required to provide reasonably comprehensive coverage, and your users will have to upgrade your module separately every time they upgrade their kernel.

- Everything that was said above about code review applies doubly to closed-source code. Since this code is not available at all, it cannot have been reviewed by the community and will, beyond doubt, have serious problems.

Makers of embedded systems, in particular, may be tempted to disregard much of what has been said in this section in the belief that they are shipping a self-contained product which uses a frozen kernel version and requires no more development after its release. This argument misses the value of widespread code review and the value of allowing your users to add capabilities to your product. But these products, too, have a limited commercial life, after which a new version must be released. At that point, vendors whose code is in the mainline and well maintained will be much better positioned to get the new product ready for market quickly.

* Licensing

Code is contributed to the Linux kernel under a number of licenses, but all code must be compatible with version 2 of the GNU General Public License (GPLv2), which is the license covering the kernel distribution as a whole. In practice, that means that all code contributions are covered either by GPLv2 (with, optionally, language allowing distribution under later versions of the GPL) or the three-clause BSD license. Any contributions which are not covered by a compatible license will not be accepted into the kernel.

Copyright assignments are not required (or requested) for code contributed to the kernel. All code merged into the mainline kernel retains its original ownership; as a result, the kernel now has thousands of owners.

One implication of this ownership structure is that any attempt to change the licensing of the kernel is doomed to almost certain failure. There are few practical scenarios where the agreement of all copyright holders could be obtained (or their code removed from the kernel). So, in particular, there is no prospect of a migration to version 3 of the GPL in the foreseeable future.

It is imperative that all code contributed to the kernel be legitimately free software. For that reason, code from anonymous (or pseudonymous) contributors will not be accepted. All contributors are required to "sign off" on their code, stating that the code can be distributed with the kernel under the GPL. Code which has not been licensed as free software by its owner, or which risks creating copyright-related problems for the kernel (such as code which derives from reverse-engineering efforts lacking proper safeguards) cannot be contributed.

Questions about copyright-related issues are common on Linux development mailing lists. Such questions will normally receive no shortage of answers, but one should bear in mind that the people answering those questions are not lawyers and cannot provide legal advice. If you have legal questions relating to Linux source code, there is no substitute for talking with a lawyer who understands this field. Relying on answers obtained on technical mailing lists is a risky affair.

* How the development process works

Linux kernel development in the early 1990's was a pretty loose affair, with relatively small numbers of users and developers involved. With a user base in the millions and with some 2,000 developers involved over the course of one year, the kernel has since had to evolve a number of processes to keep development happening smoothly. A solid understanding of how the process works is required in order to be an effective part of it.

* The big picture

The kernel developers use a loosely time-based release process, with a new major kernel release happening every two or three months. The recent release history looks like this:

5.0	March 3, 2019
5.1	May 5, 2019
5.2	July 7, 2019
5.3	September 15, 2019
5.4	November 24, 2019
5.5	January 6, 2020

Every 5.x release is a major kernel release with new features, internal API changes, and more. A typical release can contain about 13,000 changesets with changes to several hundred thousand lines of code. 5.x is the leading edge of Linux kernel development; the kernel uses a rolling development model which is continually integrating major changes.

A relatively straightforward discipline is followed with regard to the merging of patches for each release. At the beginning of each development cycle, the "merge window" is said to be open. At that time, code which is deemed to be sufficiently stable (and which is accepted by the development community) is merged into the mainline kernel. The bulk of changes for a new development cycle (and all of the major changes) will be merged during this time, at a rate approaching 1,000 changes ("patches," or "changesets") per day.

(As an aside, it is worth noting that the changes integrated during the merge window do not come out of thin air; they have been collected, tested, and staged ahead of time. How that process works will be described in detail later on).

The merge window lasts for approximately two weeks. At the end of this time, Linus Torvalds will declare that the window is closed and release the first of the "rc" kernels. For the kernel which is destined to be 5.6, for example, the release which happens at the end of the merge window will be called 5.6-rc1. The -rc1 release is the signal that the time to merge new features has passed, and that the time to stabilize the next kernel has begun.

Over the next six to ten weeks, only patches which fix problems should be submitted to the mainline. On occasion a more significant change will be allowed, but such occasions are rare; developers who try to merge new features outside of the merge window tend to get an unfriendly reception. As a general rule, if you miss the merge window for a given feature, the best thing to do is to wait for the next development cycle. (An occasional exception is made for drivers for previously-unsupported hardware; if they touch no in-tree code, they cannot cause regressions and should be safe to add at any time).

As fixes make their way into the mainline, the patch rate will slow over time. Linus releases new -rc kernels about once a week; a normal series will get up to somewhere between -rc6 and -rc9 before the kernel is considered to be sufficiently stable and the final release is made. At that point the whole process starts over again.

As an example, here is how the 5.4 development cycle went (all dates in 2019):

September 15	5.3 stable release
September 30	5.4-rc1, merge window closes
October 6	5.4-rc2
October 13	5.4-rc3
October 20	5.4-rc4
October 27	5.4-rc5
November 3	5.4-rc6
November 10	5.4-rc7
November 17	5.4-rc8
November 24	5.4 stable release

How do the developers decide when to close the development cycle and create the stable release? The most significant metric used is the list of regressions from previous releases. No bugs are welcome, but those which break systems which worked in the past are considered to be especially serious. For this reason, patches which cause regressions are looked upon unfavorably and are quite likely to be reverted during the stabilization period.

The developers' goal is to fix all known regressions before the stable release is made. In the real world, this kind of perfection is hard to achieve; there are just too many variables in a project of this size. There comes a point where delaying the final release just makes the problem worse; the pile of changes waiting for the next merge window will grow larger, creating even more regressions the next time around. So most 5.x kernels go out with a handful of known regressions though, hopefully, none of them are serious.

Once a stable release is made, its ongoing maintenance is passed off to the "stable team," currently Greg Kroah-Hartman. The stable team will release occasional updates to the stable release using the 5.x.y numbering scheme. To be considered for an update release, a patch must (1) fix a significant bug, and (2) already be merged into the mainline for the next development kernel. Kernels will typically receive stable updates for a little more than one development cycle past their initial release. So, for example, the 5.2 kernel's history looked like this (all dates in 2019):

July 7	5.2 stable release
July 14	5.2.1
July 21	5.2.2
July 26	5.2.3
July 28	5.2.4
July 31	5.2.5
…	…
October 11	5.2.21

5.2.21 was the final stable update of the 5.2 release.

Some kernels are designated "long term" kernels; they will receive support for a longer period. As of this writing, the current long term kernels and their maintainers are:

3.16	Ben Hutchings	(very long-term kernel)
4.4	Greg Kroah-Hartman & Sasha Levin	(very long-term kernel)
4.9	Greg Kroah-Hartman & Sasha Levin	
4.14	Greg Kroah-Hartman & Sasha Levin	
4.19	Greg Kroah-Hartman & Sasha Levin	
5.4	Greg Kroah-Hartman & Sasha Levin	

The selection of a kernel for long-term support is purely a matter of a maintainer having the need and the time to maintain that release. There are no known plans for long-term support for any specific upcoming release.

* The lifecycle of a patch

Patches do not go directly from the developer's keyboard into the mainline kernel. There is, instead, a somewhat involved (if somewhat informal) process designed to ensure that each patch is reviewed for quality and that each patch implements a change which is desirable to have in the mainline. This process can happen quickly for minor fixes, or, in the case of large and controversial changes, go on for years. Much developer frustration comes from a lack of understanding of this process or from attempts to circumvent it.

In the hopes of reducing that frustration, this document will describe how a patch gets into the kernel. What follows below is an introduction which describes the process in a somewhat

idealized way. A much more detailed treatment will come in later sections.

The stages that a patch goes through are, generally:

- Design. This is where the real requirements for the patch - and the way those requirements will be met - are laid out. Design work is often done without involving the community, but it is better to do this work in the open if at all possible; it can save a lot of time redesigning things later.

- Early review. Patches are posted to the relevant mailing list, and developers on that list reply with any comments they may have. This process should turn up any major problems with a patch if all goes well.

- Wider review. When the patch is getting close to ready for mainline inclusion, it should be accepted by a relevant subsystem maintainer - though this acceptance is not a guarantee that the patch will make it all the way to the mainline. The patch will show up in the maintainer's subsystem tree and into the -next trees (described below). When the process works, this step leads to more extensive review of the patch and the discovery of any problems resulting from the integration of this patch with work being done by others.

- Please note that most maintainers also have day jobs, so merging your patch may not be their highest priority. If your patch is getting feedback about changes that are needed, you should either make those changes or justify why they should not be made. If your patch has no review complaints but is not being merged by its appropriate subsystem or driver maintainer, you should be persistent in updating the patch to the current kernel so that it applies cleanly and keep sending it for review and merging.

- Merging into the mainline. Eventually, a successful patch will be merged into the mainline repository managed by Linus Torvalds. More comments and/or problems may surface at this time; it is important that the developer be responsive to these and fix any issues which arise.

- Stable release. The number of users potentially affected by the patch is now large, so, once again, new problems may arise.

- Long-term maintenance. While it is certainly possible for a developer to forget about code after merging it, that sort of behavior tends to leave a poor impression in the development community. Merging code eliminates some of the maintenance burden, in that others will fix problems caused by API changes. But the original developer should continue to take responsibility for the code if it is to remain useful in the longer term.

One of the largest mistakes made by kernel developers (or their employers) is to try to cut the process down to a single "merging into the mainline" step. This approach invariably leads to frustration for everybody involved.

* How patches get into the Kernel

There is exactly one person who can merge patches into the mainline kernel repository: Linus Torvalds. But, for example, of the over 9,500 patches which went into the 2.6.38 kernel, only 112 (around 1.3%) were directly chosen by Linus himself. The kernel project has long since grown to a size where no single developer could possibly inspect and select every patch unassisted. The way the kernel developers have addressed this growth is through the use of a lieutenant system built around a chain of trust.

The kernel code base is logically broken down into a set of subsystems: networking, specific architecture support, memory management, video devices, etc. Most subsystems have a desig-

nated maintainer, a developer who has overall responsibility for the code within that subsystem. These subsystem maintainers are the gatekeepers (in a loose way) for the portion of the kernel they manage; they are the ones who will (usually) accept a patch for inclusion into the mainline kernel.

Subsystem maintainers each manage their own version of the kernel source tree, usually (but certainly not always) using the git source management tool. Tools like git (and related tools like quilt or mercurial) allow maintainers to track a list of patches, including authorship information and other metadata. At any given time, the maintainer can identify which patches in his or her repository are not found in the mainline.

When the merge window opens, top-level maintainers will ask Linus to "pull" the patches they have selected for merging from their repositories. If Linus agrees, the stream of patches will flow up into his repository, becoming part of the mainline kernel. The amount of attention that Linus pays to specific patches received in a pull operation varies. It is clear that, sometimes, he looks quite closely. But, as a general rule, Linus trusts the subsystem maintainers to not send bad patches upstream.

Subsystem maintainers, in turn, can pull patches from other maintainers. For example, the networking tree is built from patches which accumulated first in trees dedicated to network device drivers, wireless networking, etc. This chain of repositories can be arbitrarily long, though it rarely exceeds two or three links. Since each maintainer in the chain trusts those managing lower-level trees, this process is known as the "chain of trust."

Clearly, in a system like this, getting patches into the kernel depends on finding the right maintainer. Sending patches directly to Linus is not normally the right way to go.

* Next trees

The chain of subsystem trees guides the flow of patches into the kernel, but it also raises an interesting question: what if somebody wants to look at all of the patches which are being prepared for the next merge window? Developers will be interested in what other changes are pending to see whether there are any conflicts to worry about; a patch which changes a core kernel function prototype, for example, will conflict with any other patches which use the older form of that function. Reviewers and testers want access to the changes in their integrated form before all of those changes land in the mainline kernel. One could pull changes from all of the interesting subsystem trees, but that would be a big and error-prone job.

The answer comes in the form of -next trees, where subsystem trees are collected for testing and review. The older of these trees, maintained by Andrew Morton, is called "-mm" (for memory management, which is how it got started). The -mm tree integrates patches from a long list of subsystem trees; it also has some patches aimed at helping with debugging.

Beyond that, -mm contains a significant collection of patches which have been selected by Andrew directly. These patches may have been posted on a mailing list, or they may apply to a part of the kernel for which there is no designated subsystem tree. As a result, -mm operates as a sort of subsystem tree of last resort; if there is no other obvious path for a patch into the mainline, it is likely to end up in -mm. Miscellaneous patches which accumulate in -mm will eventually either be forwarded on to an appropriate subsystem tree or be sent directly to Linus. In a typical development cycle, approximately 5-10% of the patches going into the mainline get there via -mm.

The current -mm patch is available in the "mmotm" (-mm of the moment) directory at:

> https://www.ozlabs.org/~akpm/mmotm/

Use of the MMOTM tree is likely to be a frustrating experience, though; there is a definite chance that it will not even compile.

The primary tree for next-cycle patch merging is linux-next, maintained by Stephen Rothwell. The linux-next tree is, by design, a snapshot of what the mainline is expected to look like after the next merge window closes. Linux-next trees are announced on the linux-kernel and linux-next mailing lists when they are assembled; they can be downloaded from:

https://www.kernel.org/pub/linux/kernel/next/

Linux-next has become an integral part of the kernel development process; all patches merged during a given merge window should really have found their way into linux-next some time before the merge window opens.

* Staging trees

The kernel source tree contains the drivers/staging/ directory, where many sub-directories for drivers or filesystems that are on their way to being added to the kernel tree live. They remain in drivers/staging while they still need more work; once complete, they can be moved into the kernel proper. This is a way to keep track of drivers that aren't up to Linux kernel coding or quality standards, but people may want to use them and track development.

Greg Kroah-Hartman currently maintains the staging tree. Drivers that still need work are sent to him, with each driver having its own subdirectory in drivers/staging/. Along with the driver source files, a TODO file should be present in the directory as well. The TODO file lists the pending work that the driver needs for acceptance into the kernel proper, as well as a list of people that should be Cc'd for any patches to the driver. Current rules require that drivers contributed to staging must, at a minimum, compile properly.

Staging can be a relatively easy way to get new drivers into the mainline where, with luck, they will come to the attention of other developers and improve quickly. Entry into staging is not the end of the story, though; code in staging which is not seeing regular progress will eventually be removed. Distributors also tend to be relatively reluctant to enable staging drivers. So staging is, at best, a stop on the way toward becoming a proper mainline driver.

* Tools

As can be seen from the above text, the kernel development process depends heavily on the ability to herd collections of patches in various directions. The whole thing would not work anywhere near as well as it does without suitably powerful tools. Tutorials on how to use these tools are well beyond the scope of this document, but there is space for a few pointers.

By far the dominant source code management system used by the kernel community is git. Git is one of a number of distributed version control systems being developed in the free software community. It is well tuned for kernel development, in that it performs quite well when dealing with large repositories and large numbers of patches. It also has a reputation for being difficult to learn and use, though it has gotten better over time. Some sort of familiarity with git is almost a requirement for kernel developers; even if they do not use it for their own work, they'll need git to keep up with what other developers (and the mainline) are doing.

Git is now packaged by almost all Linux distributions. There is a home page at:

https://git-scm.com/

That page has pointers to documentation and tutorials.

Among the kernel developers who do not use git, the most popular choice is almost certainly Mercurial:

> https://www.selenic.com/mercurial/

Mercurial shares many features with git, but it provides an interface which many find easier to use.

The other tool worth knowing about is Quilt:

> https://savannah.nongnu.org/projects/quilt/

Quilt is a patch management system, rather than a source code management system. It does not track history over time; it is, instead, oriented toward tracking a specific set of changes against an evolving code base. Some major subsystem maintainers use quilt to manage patches intended to go upstream. For the management of certain kinds of trees (-mm, for example), quilt is the best tool for the job.

* Mailing lists

A great deal of Linux kernel development work is done by way of mailing lists. It is hard to be a fully-functioning member of the community without joining at least one list somewhere. But Linux mailing lists also represent a potential hazard to developers, who risk getting buried under a load of electronic mail, running afoul of the conventions used on the Linux lists, or both.

Most kernel mailing lists are run on vger.kernel.org; the master list can be found at:

> http://vger.kernel.org/vger-lists.html

There are lists hosted elsewhere, though; a number of them are at redhat.com/mailman/listinfo.

The core mailing list for kernel development is, of course, linux-kernel. This list is an intimidating place to be; volume can reach 500 messages per day, the amount of noise is high, the conversation can be severely technical, and participants are not always concerned with showing a high degree of politeness. But there is no other place where the kernel development community comes together as a whole; developers who avoid this list will miss important information.

There are a few hints which can help with linux-kernel survival:

- Have the list delivered to a separate folder, rather than your main mailbox. One must be able to ignore the stream for sustained periods of time.

- Do not try to follow every conversation - nobody else does. It is important to filter on both the topic of interest (though note that long-running conversations can drift away from the original subject without changing the email subject line) and the people who are participating.

- Do not feed the trolls. If somebody is trying to stir up an angry response, ignore them.

- When responding to linux-kernel email (or that on other lists) preserve the Cc: header for all involved. In the absence of a strong reason (such as an explicit request), you should never remove recipients. Always make sure that the person you are responding to is in the Cc: list. This convention also makes it unnecessary to explicitly ask to be copied on replies to your postings.

- Search the list archives (and the net as a whole) before asking questions. Some developers can get impatient with people who clearly have not done their homework.

- Avoid top-posting (the practice of putting your answer above the quoted text you are responding to). It makes your response harder to read and makes a poor impression.

- Ask on the correct mailing list. Linux-kernel may be the general meeting point, but it is not the best place to find developers from all subsystems.

The last point - finding the correct mailing list - is a common place for beginning developers to go wrong. Somebody who asks a networking-related question on linux-kernel will almost certainly receive a polite suggestion to ask on the netdev list instead, as that is the list frequented by most networking developers. Other lists exist for the SCSI, video4linux, IDE, filesystem, etc. subsystems. The best place to look for mailing lists is in the MAINTAINERS file packaged with the kernel source.

* Getting started with Kernel development

Questions about how to get started with the kernel development process are common - from both individuals and companies. Equally common are missteps which make the beginning of the relationship harder than it has to be.

Companies often look to hire well-known developers to get a development group started. This can, in fact, be an effective technique. But it also tends to be expensive and does not do much to grow the pool of experienced kernel developers. It is possible to bring in-house developers up to speed on Linux kernel development, given the investment of a bit of time. Taking this time can endow an employer with a group of developers who understand the kernel and the company both, and who can help to train others as well. Over the medium term, this is often the more profitable approach.

Individual developers are often, understandably, at a loss for a place to start. Beginning with a large project can be intimidating; one often wants to test the waters with something smaller first. This is the point where some developers jump into the creation of patches fixing spelling errors or minor coding style issues. Unfortunately, such patches create a level of noise which is distracting for the development community as a whole, so, increasingly, they are looked down upon. New developers wishing to introduce themselves to the community will not get the sort of reception they wish for by these means.

Andrew Morton gives this advice for aspiring kernel developers

```
The #1 project for all kernel beginners should surely be "make sure
that the kernel runs perfectly at all times on all machines which
you can lay your hands on".  Usually the way to do this is to work
with others on getting things fixed up (this can require
persistence!) but that's fine - it's a part of kernel development.
```

(https://lwn.net/Articles/283982/).

In the absence of obvious problems to fix, developers are advised to look at the current lists of regressions and open bugs in general. There is never any shortage of issues in need of fixing; by addressing these issues, developers will gain experience with the process while, at the same time, building respect with the rest of the development community.

* Early-stage planning

When contemplating a Linux kernel development project, it can be tempting to jump right in and start coding. As with any significant project, though, much of the groundwork for success is best laid before the first line of code is written. Some time spent in early planning and communication can save far more time later on.

* Specifying the problem

Like any engineering project, a successful kernel enhancement starts with a clear description of the problem to be solved. In some cases, this step is easy: when a driver is needed for a specific piece of hardware, for example. In others, though, it is tempting to confuse the real problem with the proposed solution, and that can lead to difficulties.

Consider an example: some years ago, developers working with Linux audio sought a way to run applications without dropouts or other artifacts caused by excessive latency in the system. The solution they arrived at was a kernel module intended to hook into the Linux Security Module (LSM) framework; this module could be configured to give specific applications access to the realtime scheduler. This module was implemented and sent to the linux-kernel mailing list, where it immediately ran into problems.

To the audio developers, this security module was sufficient to solve their immediate problem. To the wider kernel community, though, it was seen as a misuse of the LSM framework (which is not intended to confer privileges onto processes which they would not otherwise have) and a risk to system stability. Their preferred solutions involved realtime scheduling access via the rlimit mechanism for the short term, and ongoing latency reduction work in the long term.

The audio community, however, could not see past the particular solution they had implemented; they were unwilling to accept alternatives. The resulting disagreement left those developers feeling disillusioned with the entire kernel development process; one of them went back to an audio list and posted this:

> There are a number of very good Linux kernel developers, but they tend to get out-shouted by a large crowd of arrogant fools. Trying to communicate user requirements to these people is a waste of time. They are much too "intelligent" to listen to lesser mortals.

(https://lwn.net/Articles/131776/).

The reality of the situation was different; the kernel developers were far more concerned about system stability, long-term maintenance, and finding the right solution to the problem than they were with a specific module. The moral of the story is to focus on the problem - not a specific solution - and to discuss it with the development community before investing in the creation of a body of code.

So, when contemplating a kernel development project, one should obtain answers to a short set of questions:

- What, exactly, is the problem which needs to be solved?
- Who are the users affected by this problem? Which use cases should the solution address?
- How does the kernel fall short in addressing that problem now?

Only then does it make sense to start considering possible solutions.

---

* Early discussion

When planning a kernel development project, it makes great sense to hold discussions with the community before launching into implementation. Early communication can save time and trouble in a number of ways:

- It may well be that the problem is addressed by the kernel in ways which you have not understood. The Linux kernel is large and has a number of features and capabilities which are not immediately obvious. Not all kernel capabilities are documented as well as one might like, and it is easy to miss things. Your author has seen the posting of a complete driver which duplicated an existing driver that the new author had been unaware of. Code which reinvents existing wheels is not only wasteful; it will also not be accepted into the mainline kernel.

- There may be elements of the proposed solution which will not be acceptable for mainline merging. It is better to find out about problems like this before writing the code.

- It's entirely possible that other developers have thought about the problem; they may have ideas for a better solution, and may be willing to help in the creation of that solution.

Years of experience with the kernel development community have taught a clear lesson: kernel code which is designed and developed behind closed doors invariably has problems which are only revealed when the code is released into the community. Sometimes these problems are severe, requiring months or years of effort before the code can be brought up to the kernel community's standards. Some examples include:

- The Devicescape network stack was designed and implemented for single-processor systems. It could not be merged into the mainline until it was made suitable for multiprocessor systems. Retrofitting locking and such into code is a difficult task; as a result, the merging of this code (now called mac80211) was delayed for over a year.

- The Reiser4 filesystem included a number of capabilities which, in the core kernel developers' opinion, should have been implemented in the virtual filesystem layer instead. It also included features which could not easily be implemented without exposing the system to user-caused deadlocks. The late revelation of these problems - and refusal to address some of them - has caused Reiser4 to stay out of the mainline kernel.

- The AppArmor security module made use of internal virtual filesystem data structures in ways which were considered to be unsafe and unreliable. This concern (among others) kept AppArmor out of the mainline for years.

In each of these cases, a great deal of pain and extra work could have been avoided with some early discussion with the kernel developers.

* Who do you talk to?

When developers decide to take their plans public, the next question will be: where do we start? The answer is to find the right mailing list(s) and the right maintainer. For mailing lists, the best approach is to look in the MAINTAINERS file for a relevant place to post. If there is a suitable subsystem list, posting there is often preferable to posting on linux-kernel; you are more likely to reach developers with expertise in the relevant subsystem and the environment may be more supportive.

Finding maintainers can be a bit harder. Again, the MAINTAINERS file is the place to start. That file tends to not always be up to date, though, and not all subsystems are represented there.

The person listed in the MAINTAINERS file may, in fact, not be the person who is actually acting in that role currently. So, when there is doubt about who to contact, a useful trick is to use git (and "git log" in particular) to see who is currently active within the subsystem of interest. Look at who is writing patches, and who, if anybody, is attaching Signed-off-by lines to those patches. Those are the people who will be best placed to help with a new development project.

The task of finding the right maintainer is sometimes challenging enough that the kernel developers have added a script to ease the process:

```
.../scripts/get_maintainer.pl
```

This script will return the current maintainer(s) for a given file or directory when given the "-f" option. If passed a patch on the command line, it will list the maintainers who should probably receive copies of the patch. This is the preferred way (unlike "-f" option) to get the list of people to Cc for your patches. There are a number of options regulating how hard get_maintainer.pl will search for maintainers; please be careful about using the more aggressive options as you may end up including developers who have no real interest in the code you are modifying.

If all else fails, talking to Andrew Morton can be an effective way to track down a maintainer for a specific piece of code.

* When to post?

If possible, posting your plans during the early stages can only be helpful. Describe the problem being solved and any plans that have been made on how the implementation will be done. Any information you can provide can help the development community provide useful input on the project.

One discouraging thing which can happen at this stage is not a hostile reaction, but, instead, little or no reaction at all. The sad truth of the matter is (1) kernel developers tend to be busy, (2) there is no shortage of people with grand plans and little code (or even prospect of code) to back them up, and (3) nobody is obligated to review or comment on ideas posted by others. Beyond that, high-level designs often hide problems which are only revealed when somebody actually tries to implement those designs; for that reason, kernel developers would rather see the code.

If a request-for-comments posting yields little in the way of comments, do not assume that it means there is no interest in the project. Unfortunately, you also cannot assume that there are no problems with your idea. The best thing to do in this situation is to proceed, keeping the community informed as you go.

* Getting official buy-in

If your work is being done in a corporate environment - as most Linux kernel work is - you must, obviously, have permission from suitably empowered managers before you can post your company's plans or code to a public mailing list. The posting of code which has not been cleared for release under a GPL-compatible license can be especially problematic; the sooner that a company's management and legal staff can agree on the posting of a kernel development project, the better off everybody involved will be.

Some readers may be thinking at this point that their kernel work is intended to support a product which does not yet have an officially acknowledged existence. Revealing their employer's

plans on a public mailing list may not be a viable option. In cases like this, it is worth considering whether the secrecy is really necessary; there is often no real need to keep development plans behind closed doors.

That said, there are also cases where a company legitimately cannot disclose its plans early in the development process. Companies with experienced kernel developers may choose to proceed in an open-loop manner on the assumption that they will be able to avoid serious integration problems later. For companies without that sort of in-house expertise, the best option is often to hire an outside developer to review the plans under a non-disclosure agreement. The Linux Foundation operates an NDA program designed to help with this sort of situation; more information can be found at:

> https://www.linuxfoundation.org/nda/

This kind of review is often enough to avoid serious problems later on without requiring public disclosure of the project.

* Getting the code right

While there is much to be said for a solid and community-oriented design process, the proof of any kernel development project is in the resulting code. It is the code which will be examined by other developers and merged (or not) into the mainline tree. So it is the quality of this code which will determine the ultimate success of the project.

This section will examine the coding process. We'll start with a look at a number of ways in which kernel developers can go wrong. Then the focus will shift toward doing things right and the tools which can help in that quest.

* Pitfalls

Coding style

The kernel has long had a standard coding style, described in *Documentation/process/coding-style.rst*. For much of that time, the policies described in that file were taken as being, at most, advisory. As a result, there is a substantial amount of code in the kernel which does not meet the coding style guidelines. The presence of that code leads to two independent hazards for kernel developers.

The first of these is to believe that the kernel coding standards do not matter and are not enforced. The truth of the matter is that adding new code to the kernel is very difficult if that code is not coded according to the standard; many developers will request that the code be reformatted before they will even review it. A code base as large as the kernel requires some uniformity of code to make it possible for developers to quickly understand any part of it. So there is no longer room for strangely-formatted code.

Occasionally, the kernel's coding style will run into conflict with an employer's mandated style. In such cases, the kernel's style will have to win before the code can be merged. Putting code into the kernel means giving up a degree of control in a number of ways - including control over how the code is formatted.

The other trap is to assume that code which is already in the kernel is urgently in need of coding style fixes. Developers may start to generate reformatting patches as a way of gaining familiarity with the process, or as a way of getting their name into the kernel changelogs - or

both. But pure coding style fixes are seen as noise by the development community; they tend to get a chilly reception. So this type of patch is best avoided. It is natural to fix the style of a piece of code while working on it for other reasons, but coding style changes should not be made for their own sake.

The coding style document also should not be read as an absolute law which can never be transgressed. If there is a good reason to go against the style (a line which becomes far less readable if split to fit within the 80-column limit, for example), just do it.

Note that you can also use the `clang-format` tool to help you with these rules, to quickly re-format parts of your code automatically, and to review full files in order to spot coding style mistakes, typos and possible improvements. It is also handy for sorting `#includes`, for aligning variables/macros, for reflowing text and other similar tasks. See the file *Documentation/process/clang-format.rst* for more details.

Abstraction layers

Computer Science professors teach students to make extensive use of abstraction layers in the name of flexibility and information hiding. Certainly the kernel makes extensive use of abstraction; no project involving several million lines of code could do otherwise and survive. But experience has shown that excessive or premature abstraction can be just as harmful as premature optimization. Abstraction should be used to the level required and no further.

At a simple level, consider a function which has an argument which is always passed as zero by all callers. One could retain that argument just in case somebody eventually needs to use the extra flexibility that it provides. By that time, though, chances are good that the code which implements this extra argument has been broken in some subtle way which was never noticed - because it has never been used. Or, when the need for extra flexibility arises, it does not do so in a way which matches the programmer's early expectation. Kernel developers will routinely submit patches to remove unused arguments; they should, in general, not be added in the first place.

Abstraction layers which hide access to hardware - often to allow the bulk of a driver to be used with multiple operating systems - are especially frowned upon. Such layers obscure the code and may impose a performance penalty; they do not belong in the Linux kernel.

On the other hand, if you find yourself copying significant amounts of code from another kernel subsystem, it is time to ask whether it would, in fact, make sense to pull out some of that code into a separate library or to implement that functionality at a higher level. There is no value in replicating the same code throughout the kernel.

#ifdef and preprocessor use in general

The C preprocessor seems to present a powerful temptation to some C programmers, who see it as a way to efficiently encode a great deal of flexibility into a source file. But the preprocessor is not C, and heavy use of it results in code which is much harder for others to read and harder for the compiler to check for correctness. Heavy preprocessor use is almost always a sign of code which needs some cleanup work.

Conditional compilation with #ifdef is, indeed, a powerful feature, and it is used within the kernel. But there is little desire to see code which is sprinkled liberally with #ifdef blocks. As a general rule, #ifdef use should be confined to header files whenever possible. Conditionally-compiled code can be confined to functions which, if the code is not to be present, simply

become empty. The compiler will then quietly optimize out the call to the empty function. The result is far cleaner code which is easier to follow.

C preprocessor macros present a number of hazards, including possible multiple evaluation of expressions with side effects and no type safety. If you are tempted to define a macro, consider creating an inline function instead. The code which results will be the same, but inline functions are easier to read, do not evaluate their arguments multiple times, and allow the compiler to perform type checking on the arguments and return value.

Inline functions

Inline functions present a hazard of their own, though. Programmers can become enamored of the perceived efficiency inherent in avoiding a function call and fill a source file with inline functions. Those functions, however, can actually reduce performance. Since their code is replicated at each call site, they end up bloating the size of the compiled kernel. That, in turn, creates pressure on the processor's memory caches, which can slow execution dramatically. Inline functions, as a rule, should be quite small and relatively rare. The cost of a function call, after all, is not that high; the creation of large numbers of inline functions is a classic example of premature optimization.

In general, kernel programmers ignore cache effects at their peril. The classic time/space trade-off taught in beginning data structures classes often does not apply to contemporary hardware. Space *is* time, in that a larger program will run slower than one which is more compact.

More recent compilers take an increasingly active role in deciding whether a given function should actually be inlined or not. So the liberal placement of "inline" keywords may not just be excessive; it could also be irrelevant.

Locking

In May, 2006, the "Devicescape" networking stack was, with great fanfare, released under the GPL and made available for inclusion in the mainline kernel. This donation was welcome news; support for wireless networking in Linux was considered substandard at best, and the Devicescape stack offered the promise of fixing that situation. Yet, this code did not actually make it into the mainline until June, 2007 (2.6.22). What happened?

This code showed a number of signs of having been developed behind corporate doors. But one large problem in particular was that it was not designed to work on multiprocessor systems. Before this networking stack (now called mac80211) could be merged, a locking scheme needed to be retrofitted onto it.

Once upon a time, Linux kernel code could be developed without thinking about the concurrency issues presented by multiprocessor systems. Now, however, this document is being written on a dual-core laptop. Even on single-processor systems, work being done to improve responsiveness will raise the level of concurrency within the kernel. The days when kernel code could be written without thinking about locking are long past.

Any resource (data structures, hardware registers, etc.) which could be accessed concurrently by more than one thread must be protected by a lock. New code should be written with this requirement in mind; retrofitting locking after the fact is a rather more difficult task. Kernel developers should take the time to understand the available locking primitives well enough to pick the right tool for the job. Code which shows a lack of attention to concurrency will have a difficult path into the mainline.

Regressions

One final hazard worth mentioning is this: it can be tempting to make a change (which may bring big improvements) which causes something to break for existing users. This kind of change is called a "regression," and regressions have become most unwelcome in the mainline kernel. With few exceptions, changes which cause regressions will be backed out if the regression cannot be fixed in a timely manner. Far better to avoid the regression in the first place.

It is often argued that a regression can be justified if it causes things to work for more people than it creates problems for. Why not make a change if it brings new functionality to ten systems for each one it breaks? The best answer to this question was expressed by Linus in July, 2007:

```
So we don't fix bugs by introducing new problems.  That way lies
madness, and nobody ever knows if you actually make any real
progress at all. Is it two steps forwards, one step back, or one
step forward and two steps back?
```

(https://lwn.net/Articles/243460/).

An especially unwelcome type of regression is any sort of change to the user-space ABI. Once an interface has been exported to user space, it must be supported indefinitely. This fact makes the creation of user-space interfaces particularly challenging: since they cannot be changed in incompatible ways, they must be done right the first time. For this reason, a great deal of thought, clear documentation, and wide review for user-space interfaces is always required.

* Code checking tools

For now, at least, the writing of error-free code remains an ideal that few of us can reach. What we can hope to do, though, is to catch and fix as many of those errors as possible before our code goes into the mainline kernel. To that end, the kernel developers have put together an impressive array of tools which can catch a wide variety of obscure problems in an automated way. Any problem caught by the computer is a problem which will not afflict a user later on, so it stands to reason that the automated tools should be used whenever possible.

The first step is simply to heed the warnings produced by the compiler. Contemporary versions of gcc can detect (and warn about) a large number of potential errors. Quite often, these warnings point to real problems. Code submitted for review should, as a rule, not produce any compiler warnings. When silencing warnings, take care to understand the real cause and try to avoid "fixes" which make the warning go away without addressing its cause.

Note that not all compiler warnings are enabled by default. Build the kernel with "make KCFLAGS=-W" to get the full set.

The kernel provides several configuration options which turn on debugging features; most of these are found in the "kernel hacking" submenu. Several of these options should be turned on for any kernel used for development or testing purposes. In particular, you should turn on:

- FRAME_WARN to get warnings for stack frames larger than a given amount. The output generated can be verbose, but one need not worry about warnings from other parts of the kernel.

- DEBUG_OBJECTS will add code to track the lifetime of various objects created by the kernel and warn when things are done out of order. If you are adding a subsystem which

creates (and exports) complex objects of its own, consider adding support for the object debugging infrastructure.

- DEBUG_SLAB can find a variety of memory allocation and use errors; it should be used on most development kernels.

- DEBUG_SPINLOCK, DEBUG_ATOMIC_SLEEP, and DEBUG_MUTEXES will find a number of common locking errors.

There are quite a few other debugging options, some of which will be discussed below. Some of them have a significant performance impact and should not be used all of the time. But some time spent learning the available options will likely be paid back many times over in short order.

One of the heavier debugging tools is the locking checker, or "lockdep." This tool will track the acquisition and release of every lock (spinlock or mutex) in the system, the order in which locks are acquired relative to each other, the current interrupt environment, and more. It can then ensure that locks are always acquired in the same order, that the same interrupt assumptions apply in all situations, and so on. In other words, lockdep can find a number of scenarios in which the system could, on rare occasion, deadlock. This kind of problem can be painful (for both developers and users) in a deployed system; lockdep allows them to be found in an automated manner ahead of time. Code with any sort of non-trivial locking should be run with lockdep enabled before being submitted for inclusion.

As a diligent kernel programmer, you will, beyond doubt, check the return status of any operation (such as a memory allocation) which can fail. The fact of the matter, though, is that the resulting failure recovery paths are, probably, completely untested. Untested code tends to be broken code; you could be much more confident of your code if all those error-handling paths had been exercised a few times.

The kernel provides a fault injection framework which can do exactly that, especially where memory allocations are involved. With fault injection enabled, a configurable percentage of memory allocations will be made to fail; these failures can be restricted to a specific range of code. Running with fault injection enabled allows the programmer to see how the code responds when things go badly. See Documentation/fault-injection/fault-injection.rst for more information on how to use this facility.

Other kinds of errors can be found with the "sparse" static analysis tool. With sparse, the programmer can be warned about confusion between user-space and kernel-space addresses, mixture of big-endian and small-endian quantities, the passing of integer values where a set of bit flags is expected, and so on. Sparse must be installed separately (it can be found at https://sparse.wiki.kernel.org/index.php/Main_Page if your distributor does not package it); it can then be run on the code by adding "C=1" to your make command.

The "Coccinelle" tool (http://coccinelle.lip6.fr/) is able to find a wide variety of potential coding problems; it can also propose fixes for those problems. Quite a few "semantic patches" for the kernel have been packaged under the scripts/coccinelle directory; running "make coccicheck" will run through those semantic patches and report on any problems found. See Documentation/dev-tools/coccinelle.rst for more information.

Other kinds of portability errors are best found by compiling your code for other architectures. If you do not happen to have an S/390 system or a Blackfin development board handy, you can still perform the compilation step. A large set of cross compilers for x86 systems can be found at

> https://www.kernel.org/pub/tools/crosstool/

Some time spent installing and using these compilers will help avoid embarrassment later.

* Documentation

Documentation has often been more the exception than the rule with kernel development. Even so, adequate documentation will help to ease the merging of new code into the kernel, make life easier for other developers, and will be helpful for your users. In many cases, the addition of documentation has become essentially mandatory.

The first piece of documentation for any patch is its associated changelog. Log entries should describe the problem being solved, the form of the solution, the people who worked on the patch, any relevant effects on performance, and anything else that might be needed to understand the patch. Be sure that the changelog says *why* the patch is worth applying; a surprising number of developers fail to provide that information.

Any code which adds a new user-space interface - including new sysfs or /proc files - should include documentation of that interface which enables user-space developers to know what they are working with. See Documentation/ABI/README for a description of how this documentation should be formatted and what information needs to be provided.

The file Documentation/admin-guide/kernel-parameters.rst describes all of the kernel's boot-time parameters. Any patch which adds new parameters should add the appropriate entries to this file.

Any new configuration options must be accompanied by help text which clearly explains the options and when the user might want to select them.

Internal API information for many subsystems is documented by way of specially-formatted comments; these comments can be extracted and formatted in a number of ways by the "kernel-doc" script. If you are working within a subsystem which has kerneldoc comments, you should maintain them and add them, as appropriate, for externally-available functions. Even in areas which have not been so documented, there is no harm in adding kerneldoc comments for the future; indeed, this can be a useful activity for beginning kernel developers. The format of these comments, along with some information on how to create kerneldoc templates can be found at Documentation/doc-guide/.

Anybody who reads through a significant amount of existing kernel code will note that, often, comments are most notable by their absence. Once again, the expectations for new code are higher than they were in the past; merging uncommented code will be harder. That said, there is little desire for verbosely-commented code. The code should, itself, be readable, with comments explaining the more subtle aspects.

Certain things should always be commented. Uses of memory barriers should be accompanied by a line explaining why the barrier is necessary. The locking rules for data structures generally need to be explained somewhere. Major data structures need comprehensive documentation in general. Non-obvious dependencies between separate bits of code should be pointed out. Anything which might tempt a code janitor to make an incorrect "cleanup" needs a comment saying why it is done the way it is. And so on.

* Internal API changes

The binary interface provided by the kernel to user space cannot be broken except under the most severe circumstances. The kernel's internal programming interfaces, instead, are highly fluid and can be changed when the need arises. If you find yourself having to work around a kernel API, or simply not using a specific functionality because it does not meet your needs, that may be a sign that the API needs to change. As a kernel developer, you are empowered to make such changes.

There are, of course, some catches. API changes can be made, but they need to be well justified. So any patch making an internal API change should be accompanied by a description of what the change is and why it is necessary. This kind of change should also be broken out into a separate patch, rather than buried within a larger patch.

The other catch is that a developer who changes an internal API is generally charged with the task of fixing any code within the kernel tree which is broken by the change. For a widely-used function, this duty can lead to literally hundreds or thousands of changes - many of which are likely to conflict with work being done by other developers. Needless to say, this can be a large job, so it is best to be sure that the justification is solid. Note that the Coccinelle tool can help with wide-ranging API changes.

When making an incompatible API change, one should, whenever possible, ensure that code which has not been updated is caught by the compiler. This will help you to be sure that you have found all in-tree uses of that interface. It will also alert developers of out-of-tree code that there is a change that they need to respond to. Supporting out-of-tree code is not something that kernel developers need to be worried about, but we also do not have to make life harder for out-of-tree developers than it needs to be.

* Posting patches

Sooner or later, the time comes when your work is ready to be presented to the community for review and, eventually, inclusion into the mainline kernel. Unsurprisingly, the kernel development community has evolved a set of conventions and procedures which are used in the posting of patches; following them will make life much easier for everybody involved. This document will attempt to cover these expectations in reasonable detail; more information can also be found in the files *Documentation/process/submitting-patches.rst*, *Documentation/process/submitting-drivers.rst* and *Documentation/process/submit-checklist.rst*.

* When to post

There is a constant temptation to avoid posting patches before they are completely "ready." For simple patches, that is not a problem. If the work being done is complex, though, there is a lot to be gained by getting feedback from the community before the work is complete. So you should consider posting in-progress work, or even making a git tree available so that interested developers can catch up with your work at any time.

When posting code which is not yet considered ready for inclusion, it is a good idea to say so in the posting itself. Also mention any major work which remains to be done and any known problems. Fewer people will look at patches which are known to be half-baked, but those who do will come in with the idea that they can help you drive the work in the right direction.

* Before creating patches

There are a number of things which should be done before you consider sending patches to the development community. These include:

- Test the code to the extent that you can. Make use of the kernel's debugging tools, ensure that the kernel will build with all reasonable combinations of configuration options, use cross-compilers to build for different architectures, etc.
- Make sure your code is compliant with the kernel coding style guidelines.
- Does your change have performance implications? If so, you should run benchmarks showing what the impact (or benefit) of your change is; a summary of the results should be included with the patch.
- Be sure that you have the right to post the code. If this work was done for an employer, the employer likely has a right to the work and must be agreeable with its release under the GPL.

As a general rule, putting in some extra thought before posting code almost always pays back the effort in short order.

* Patch preparation

The preparation of patches for posting can be a surprising amount of work, but, once again, attempting to save time here is not generally advisable even in the short term.

Patches must be prepared against a specific version of the kernel. As a general rule, a patch should be based on the current mainline as found in Linus's git tree. When basing on mainline, start with a well-known release point - a stable or -rc release - rather than branching off the mainline at an arbitrary spot.

It may become necessary to make versions against -mm, linux-next, or a subsystem tree, though, to facilitate wider testing and review. Depending on the area of your patch and what is going on elsewhere, basing a patch against these other trees can require a significant amount of work resolving conflicts and dealing with API changes.

Only the most simple changes should be formatted as a single patch; everything else should be made as a logical series of changes. Splitting up patches is a bit of an art; some developers spend a long time figuring out how to do it in the way that the community expects. There are a few rules of thumb, however, which can help considerably:

- The patch series you post will almost certainly not be the series of changes found in your working revision control system. Instead, the changes you have made need to be considered in their final form, then split apart in ways which make sense. The developers are interested in discrete, self-contained changes, not the path you took to get to those changes.
- Each logically independent change should be formatted as a separate patch. These changes can be small ("add a field to this structure") or large (adding a significant new driver, for example), but they should be conceptually small and amenable to a one-line description. Each patch should make a specific change which can be reviewed on its own and verified to do what it says it does.
- As a way of restating the guideline above: do not mix different types of changes in the same patch. If a single patch fixes a critical security bug, rearranges a few structures, and

reformats the code, there is a good chance that it will be passed over and the important fix will be lost.

- Each patch should yield a kernel which builds and runs properly; if your patch series is interrupted in the middle, the result should still be a working kernel. Partial application of a patch series is a common scenario when the "git bisect" tool is used to find regressions; if the result is a broken kernel, you will make life harder for developers and users who are engaging in the noble work of tracking down problems.

- Do not overdo it, though. One developer once posted a set of edits to a single file as 500 separate patches - an act which did not make him the most popular person on the kernel mailing list. A single patch can be reasonably large as long as it still contains a single *logical* change.

- It can be tempting to add a whole new infrastructure with a series of patches, but to leave that infrastructure unused until the final patch in the series enables the whole thing. This temptation should be avoided if possible; if that series adds regressions, bisection will finger the last patch as the one which caused the problem, even though the real bug is elsewhere. Whenever possible, a patch which adds new code should make that code active immediately.

Working to create the perfect patch series can be a frustrating process which takes quite a bit of time and thought after the "real work" has been done. When done properly, though, it is time well spent.

* Patch formatting and changelogs

So now you have a perfect series of patches for posting, but the work is not done quite yet. Each patch needs to be formatted into a message which quickly and clearly communicates its purpose to the rest of the world. To that end, each patch will be composed of the following:

- An optional "From" line naming the author of the patch. This line is only necessary if you are passing on somebody else's patch via email, but it never hurts to add it when in doubt.

- A one-line description of what the patch does. This message should be enough for a reader who sees it with no other context to figure out the scope of the patch; it is the line that will show up in the "short form" changelogs. This message is usually formatted with the relevant subsystem name first, followed by the purpose of the patch. For example:

```
gpio: fix build on CONFIG_GPIO_SYSFS=n
```

- A blank line followed by a detailed description of the contents of the patch. This description can be as long as is required; it should say what the patch does and why it should be applied to the kernel.

- One or more tag lines, with, at a minimum, one Signed-off-by: line from the author of the patch. Tags will be described in more detail below.

The items above, together, form the changelog for the patch. Writing good changelogs is a crucial but often-neglected art; it's worth spending another moment discussing this issue. When writing a changelog, you should bear in mind that a number of different people will be reading your words. These include subsystem maintainers and reviewers who need to decide whether the patch should be included, distributors and other maintainers trying to decide whether a patch should be backported to other kernels, bug hunters wondering whether the patch is responsible for a problem they are chasing, users who want to know how the kernel has changed,

and more. A good changelog conveys the needed information to all of these people in the most direct and concise way possible.

To that end, the summary line should describe the effects of and motivation for the change as well as possible given the one-line constraint. The detailed description can then amplify on those topics and provide any needed additional information. If the patch fixes a bug, cite the commit which introduced the bug if possible (and please provide both the commit ID and the title when citing commits). If a problem is associated with specific log or compiler output, include that output to help others searching for a solution to the same problem. If the change is meant to support other changes coming in later patch, say so. If internal APIs are changed, detail those changes and how other developers should respond. In general, the more you can put yourself into the shoes of everybody who will be reading your changelog, the better that changelog (and the kernel as a whole) will be.

Needless to say, the changelog should be the text used when committing the change to a revision control system. It will be followed by:

- The patch itself, in the unified ("-u") patch format. Using the "-p" option to diff will associate function names with changes, making the resulting patch easier for others to read.

You should avoid including changes to irrelevant files (those generated by the build process, for example, or editor backup files) in the patch. The file "dontdiff" in the Documentation directory can help in this regard; pass it to diff with the "-X" option.

The tags already briefly mentioned above are used to provide insights how the patch came into being. They are described in detail in the *Documentation/process/submitting-patches.rst* document; what follows here is a brief summary.

One tag is used to refer to earlier commits which introduced problems fixed by the patch:

```
Fixes: 1f2e3d4c5b6a ("The first line of the commit specified by the first 12␣
↪characters of its SHA-1 ID")
```

Another tag is used for linking web pages with additional backgrounds or details, for example a report about a bug fixed by the patch or a document with a specification implemented by the patch:

```
Link: https://example.com/somewhere.html  optional-other-stuff
```

Many maintainers when applying a patch also add this tag to link to the latest public review posting of the patch; often this is automatically done by tools like b4 or a git hook like the one described in 'Documentation/maintainer/configure-git.rst'.

A third kind of tag is used to document who was involved in the development of the patch. Each of these uses this format:

```
tag: Full Name <email address>  optional-other-stuff
```

The tags in common use are:

- Signed-off-by: this is a developer's certification that he or she has the right to submit the patch for inclusion into the kernel. It is an agreement to the Developer's Certificate of Origin, the full text of which can be found in *Documentation/process/submitting-patches.rst* Code without a proper signoff cannot be merged into the mainline.

- Co-developed-by: states that the patch was co-created by several developers; it is a used to give attribution to co-authors (in addition to the author attributed by the From: tag) when

multiple people work on a single patch. Every Co-developed-by: must be immediately followed by a Signed-off-by: of the associated co-author. Details and examples can be found in *Documentation/process/submitting-patches.rst*.

- Acked-by: indicates an agreement by another developer (often a maintainer of the relevant code) that the patch is appropriate for inclusion into the kernel.

- Tested-by: states that the named person has tested the patch and found it to work.

- Reviewed-by: the named developer has reviewed the patch for correctness; see the reviewer's statement in *Documentation/process/submitting-patches.rst* for more detail.

- Reported-by: names a user who reported a problem which is fixed by this patch; this tag is used to give credit to the (often underappreciated) people who test our code and let us know when things do not work correctly.

- Cc: the named person received a copy of the patch and had the opportunity to comment on it.

Be careful in the addition of tags to your patches: only Cc: is appropriate for addition without the explicit permission of the person named.

* Sending the patch

Before you mail your patches, there are a couple of other things you should take care of:

- Are you sure that your mailer will not corrupt the patches? Patches which have had gratuitous white-space changes or line wrapping performed by the mail client will not apply at the other end, and often will not be examined in any detail. If there is any doubt at all, mail the patch to yourself and convince yourself that it shows up intact.

  Documentation/process/email-clients.rst has some helpful hints on making specific mail clients work for sending patches.

- Are you sure your patch is free of silly mistakes? You should always run patches through scripts/checkpatch.pl and address the complaints it comes up with. Please bear in mind that checkpatch.pl, while being the embodiment of a fair amount of thought about what kernel patches should look like, is not smarter than you. If fixing a checkpatch.pl complaint would make the code worse, don't do it.

Patches should always be sent as plain text. Please do not send them as attachments; that makes it much harder for reviewers to quote sections of the patch in their replies. Instead, just put the patch directly into your message.

When mailing patches, it is important to send copies to anybody who might be interested in it. Unlike some other projects, the kernel encourages people to err on the side of sending too many copies; don't assume that the relevant people will see your posting on the mailing lists. In particular, copies should go to:

- The maintainer(s) of the affected subsystem(s). As described earlier, the MAINTAINERS file is the first place to look for these people.

- Other developers who have been working in the same area - especially those who might be working there now. Using git to see who else has modified the files you are working on can be helpful.

- If you are responding to a bug report or a feature request, copy the original poster as well.

- Send a copy to the relevant mailing list, or, if nothing else applies, the linux-kernel list.

- If you are fixing a bug, think about whether the fix should go into the next stable update. If so, stable@vger.kernel.org should get a copy of the patch. Also add a "Cc: stable@vger.kernel.org" to the tags within the patch itself; that will cause the stable team to get a notification when your fix goes into the mainline.

When selecting recipients for a patch, it is good to have an idea of who you think will eventually accept the patch and get it merged. While it is possible to send patches directly to Linus Torvalds and have him merge them, things are not normally done that way. Linus is busy, and there are subsystem maintainers who watch over specific parts of the kernel. Usually you will be wanting that maintainer to merge your patches. If there is no obvious maintainer, Andrew Morton is often the patch target of last resort.

Patches need good subject lines. The canonical format for a patch line is something like:

```
[PATCH nn/mm] subsys: one-line description of the patch
```

where "nn" is the ordinal number of the patch, "mm" is the total number of patches in the series, and "subsys" is the name of the affected subsystem. Clearly, nn/mm can be omitted for a single, standalone patch.

If you have a significant series of patches, it is customary to send an introductory description as part zero. This convention is not universally followed though; if you use it, remember that information in the introduction does not make it into the kernel changelogs. So please ensure that the patches, themselves, have complete changelog information.

In general, the second and following parts of a multi-part patch should be sent as a reply to the first part so that they all thread together at the receiving end. Tools like git and quilt have commands to mail out a set of patches with the proper threading. If you have a long series, though, and are using git, please stay away from the –chain-reply-to option to avoid creating exceptionally deep nesting.

* Followthrough

At this point, you have followed the guidelines given so far and, with the addition of your own engineering skills, have posted a perfect series of patches. One of the biggest mistakes that even experienced kernel developers can make is to conclude that their work is now done. In truth, posting patches indicates a transition into the next stage of the process, with, possibly, quite a bit of work yet to be done.

It is a rare patch which is so good at its first posting that there is no room for improvement. The kernel development process recognizes this fact, and, as a result, is heavily oriented toward the improvement of posted code. You, as the author of that code, will be expected to work with the kernel community to ensure that your code is up to the kernel's quality standards. A failure to participate in this process is quite likely to prevent the inclusion of your patches into the mainline.

* Working with reviewers

A patch of any significance will result in a number of comments from other developers as they review the code. Working with reviewers can be, for many developers, the most intimidating part of the kernel development process. Life can be made much easier, though, if you keep a few things in mind:

- If you have explained your patch well, reviewers will understand its value and why you went to the trouble of writing it. But that value will not keep them from asking a fundamental question: what will it be like to maintain a kernel with this code in it five or ten years later? Many of the changes you may be asked to make - from coding style tweaks to substantial rewrites - come from the understanding that Linux will still be around and under development a decade from now.

- Code review is hard work, and it is a relatively thankless occupation; people remember who wrote kernel code, but there is little lasting fame for those who reviewed it. So reviewers can get grumpy, especially when they see the same mistakes being made over and over again. If you get a review which seems angry, insulting, or outright offensive, resist the impulse to respond in kind. Code review is about the code, not about the people, and code reviewers are not attacking you personally.

- Similarly, code reviewers are not trying to promote their employers' agendas at the expense of your own. Kernel developers often expect to be working on the kernel years from now, but they understand that their employer could change. They truly are, almost without exception, working toward the creation of the best kernel they can; they are not trying to create discomfort for their employers' competitors.

What all of this comes down to is that, when reviewers send you comments, you need to pay attention to the technical observations that they are making. Do not let their form of expression or your own pride keep that from happening. When you get review comments on a patch, take the time to understand what the reviewer is trying to say. If possible, fix the things that the reviewer is asking you to fix. And respond back to the reviewer: thank them, and describe how you will answer their questions.

Note that you do not have to agree with every change suggested by reviewers. If you believe that the reviewer has misunderstood your code, explain what is really going on. If you have a technical objection to a suggested change, describe it and justify your solution to the problem. If your explanations make sense, the reviewer will accept them. Should your explanation not prove persuasive, though, especially if others start to agree with the reviewer, take some time to think things over again. It can be easy to become blinded by your own solution to a problem to the point that you don't realize that something is fundamentally wrong or, perhaps, you're not even solving the right problem.

Andrew Morton has suggested that every review comment which does not result in a code change should result in an additional code comment instead; that can help future reviewers avoid the questions which came up the first time around.

One fatal mistake is to ignore review comments in the hope that they will go away. They will not go away. If you repost code without having responded to the comments you got the time before, you're likely to find that your patches go nowhere.

Speaking of reposting code: please bear in mind that reviewers are not going to remember all the details of the code you posted the last time around. So it is always a good idea to remind reviewers of previously raised issues and how you dealt with them; the patch changelog is a good place for this kind of information. Reviewers should not have to search through list

archives to familiarize themselves with what was said last time; if you help them get a running start, they will be in a better mood when they revisit your code.

What if you've tried to do everything right and things still aren't going anywhere? Most technical disagreements can be resolved through discussion, but there are times when somebody simply has to make a decision. If you honestly believe that this decision is going against you wrongly, you can always try appealing to a higher power. As of this writing, that higher power tends to be Andrew Morton. Andrew has a great deal of respect in the kernel development community; he can often unjam a situation which seems to be hopelessly blocked. Appealing to Andrew should not be done lightly, though, and not before all other alternatives have been explored. And bear in mind, of course, that he may not agree with you either.

* What happens next

If a patch is considered to be a good thing to add to the kernel, and once most of the review issues have been resolved, the next step is usually entry into a subsystem maintainer's tree. How that works varies from one subsystem to the next; each maintainer has his or her own way of doing things. In particular, there may be more than one tree - one, perhaps, dedicated to patches planned for the next merge window, and another for longer-term work.

For patches applying to areas for which there is no obvious subsystem tree (memory management patches, for example), the default tree often ends up being -mm. Patches which affect multiple subsystems can also end up going through the -mm tree.

Inclusion into a subsystem tree can bring a higher level of visibility to a patch. Now other developers working with that tree will get the patch by default. Subsystem trees typically feed linux-next as well, making their contents visible to the development community as a whole. At this point, there's a good chance that you will get more comments from a new set of reviewers; these comments need to be answered as in the previous round.

What may also happen at this point, depending on the nature of your patch, is that conflicts with work being done by others turn up. In the worst case, heavy patch conflicts can result in some work being put on the back burner so that the remaining patches can be worked into shape and merged. Other times, conflict resolution will involve working with the other developers and, possibly, moving some patches between trees to ensure that everything applies cleanly. This work can be a pain, but count your blessings: before the advent of the linux-next tree, these conflicts often only turned up during the merge window and had to be addressed in a hurry. Now they can be resolved at leisure, before the merge window opens.

Some day, if all goes well, you'll log on and see that your patch has been merged into the mainline kernel. Congratulations! Once the celebration is complete (and you have added yourself to the MAINTAINERS file), though, it is worth remembering an important little fact: the job still is not done. Merging into the mainline brings its own challenges.

To begin with, the visibility of your patch has increased yet again. There may be a new round of comments from developers who had not been aware of the patch before. It may be tempting to ignore them, since there is no longer any question of your code being merged. Resist that temptation, though; you still need to be responsive to developers who have questions or suggestions.

More importantly, though: inclusion into the mainline puts your code into the hands of a much larger group of testers. Even if you have contributed a driver for hardware which is not yet available, you will be surprised by how many people will build your code into their kernels. And, of course, where there are testers, there will be bug reports.

The worst sort of bug reports are regressions. If your patch causes a regression, you'll find an uncomfortable number of eyes upon you; regressions need to be fixed as soon as possible. If you are unwilling or unable to fix the regression (and nobody else does it for you), your patch will almost certainly be removed during the stabilization period. Beyond negating all of the work you have done to get your patch into the mainline, having a patch pulled as the result of a failure to fix a regression could well make it harder for you to get work merged in the future.

After any regressions have been dealt with, there may be other, ordinary bugs to deal with. The stabilization period is your best opportunity to fix these bugs and ensure that your code's debut in a mainline kernel release is as solid as possible. So, please, answer bug reports, and fix the problems if at all possible. That's what the stabilization period is for; you can start creating cool new patches once any problems with the old ones have been taken care of.

And don't forget that there are other milestones which may also create bug reports: the next mainline stable release, when prominent distributors pick up a version of the kernel containing your patch, etc. Continuing to respond to these reports is a matter of basic pride in your work. If that is insufficient motivation, though, it's also worth considering that the development community remembers developers who lose interest in their code after it's merged. The next time you post a patch, they will be evaluating it with the assumption that you will not be around to maintain it afterward.

* Other things that can happen

One day, you may open your mail client and see that somebody has mailed you a patch to your code. That is one of the advantages of having your code out there in the open, after all. If you agree with the patch, you can either forward it on to the subsystem maintainer (be sure to include a proper From: line so that the attribution is correct, and add a signoff of your own), or send an Acked-by: response back and let the original poster send it upward.

If you disagree with the patch, send a polite response explaining why. If possible, tell the author what changes need to be made to make the patch acceptable to you. There is a certain resistance to merging patches which are opposed by the author and maintainer of the code, but it only goes so far. If you are seen as needlessly blocking good work, those patches will eventually flow around you and get into the mainline anyway. In the Linux kernel, nobody has absolute veto power over any code. Except maybe Linus.

On very rare occasion, you may see something completely different: another developer posts a different solution to your problem. At that point, chances are that one of the two patches will not be merged, and "mine was here first" is not considered to be a compelling technical argument. If somebody else's patch displaces yours and gets into the mainline, there is really only one way to respond: be pleased that your problem got solved and get on with your work. Having one's work shoved aside in this manner can be hurtful and discouraging, but the community will remember your reaction long after they have forgotten whose patch actually got merged.

* Advanced topics

At this point, hopefully, you have a handle on how the development process works. There is still more to learn, however! This section will cover a number of topics which can be helpful for developers wanting to become a regular part of the Linux kernel development process.

* Managing patches with git

The use of distributed version control for the kernel began in early 2002, when Linus first started playing with the proprietary BitKeeper application. While BitKeeper was controversial, the approach to software version management it embodied most certainly was not. Distributed version control enabled an immediate acceleration of the kernel development project. In current times, there are several free alternatives to BitKeeper. For better or for worse, the kernel project has settled on git as its tool of choice.

Managing patches with git can make life much easier for the developer, especially as the volume of those patches grows. Git also has its rough edges and poses certain hazards; it is a young and powerful tool which is still being civilized by its developers. This document will not attempt to teach the reader how to use git; that would be sufficient material for a long document in its own right. Instead, the focus here will be on how git fits into the kernel development process in particular. Developers who wish to come up to speed with git will find more information at:

https://git-scm.com/

https://www.kernel.org/pub/software/scm/git/docs/user-manual.html

and on various tutorials found on the web.

The first order of business is to read the above sites and get a solid understanding of how git works before trying to use it to make patches available to others. A git-using developer should be able to obtain a copy of the mainline repository, explore the revision history, commit changes to the tree, use branches, etc. An understanding of git's tools for the rewriting of history (such as rebase) is also useful. Git comes with its own terminology and concepts; a new user of git should know about refs, remote branches, the index, fast-forward merges, pushes and pulls, detached heads, etc. It can all be a little intimidating at the outset, but the concepts are not that hard to grasp with a bit of study.

Using git to generate patches for submission by email can be a good exercise while coming up to speed.

When you are ready to start putting up git trees for others to look at, you will, of course, need a server that can be pulled from. Setting up such a server with git-daemon is relatively straightforward if you have a system which is accessible to the Internet. Otherwise, free, public hosting sites (Github, for example) are starting to appear on the net. Established developers can get an account on kernel.org, but those are not easy to come by; see https://kernel.org/faq/ for more information.

The normal git workflow involves the use of a lot of branches. Each line of development can be separated into a separate "topic branch" and maintained independently. Branches in git are cheap, there is no reason to not make free use of them. And, in any case, you should not do your development in any branch which you intend to ask others to pull from. Publicly-available branches should be created with care; merge in patches from development branches when they are in complete form and ready to go - not before.

Git provides some powerful tools which can allow you to rewrite your development history. An inconvenient patch (one which breaks bisection, say, or which has some other sort of obvious bug) can be fixed in place or made to disappear from the history entirely. A patch series can be rewritten as if it had been written on top of today's mainline, even though you have been working on it for months. Changes can be transparently shifted from one branch to another. And so on. Judicious use of git's ability to revise history can help in the creation of clean patch sets with fewer problems.

Excessive use of this capability can lead to other problems, though, beyond a simple obsession for the creation of the perfect project history. Rewriting history will rewrite the changes contained in that history, turning a tested (hopefully) kernel tree into an untested one. But, beyond that, developers cannot easily collaborate if they do not have a shared view of the project history; if you rewrite history which other developers have pulled into their repositories, you will make life much more difficult for those developers. So a simple rule of thumb applies here: history which has been exported to others should generally be seen as immutable thereafter.

So, once you push a set of changes to your publicly-available server, those changes should not be rewritten. Git will attempt to enforce this rule if you try to push changes which do not result in a fast-forward merge (i.e. changes which do not share the same history). It is possible to override this check, and there may be times when it is necessary to rewrite an exported tree. Moving changesets between trees to avoid conflicts in linux-next is one example. But such actions should be rare. This is one of the reasons why development should be done in private branches (which can be rewritten if necessary) and only moved into public branches when it's in a reasonably advanced state.

As the mainline (or other tree upon which a set of changes is based) advances, it is tempting to merge with that tree to stay on the leading edge. For a private branch, rebasing can be an easy way to keep up with another tree, but rebasing is not an option once a tree is exported to the world. Once that happens, a full merge must be done. Merging occasionally makes good sense, but overly frequent merges can clutter the history needlessly. Suggested technique in this case is to merge infrequently, and generally only at specific release points (such as a mainline -rc release). If you are nervous about specific changes, you can always perform test merges in a private branch. The git "rerere" tool can be useful in such situations; it remembers how merge conflicts were resolved so that you don't have to do the same work twice.

One of the biggest recurring complaints about tools like git is this: the mass movement of patches from one repository to another makes it easy to slip in ill-advised changes which go into the mainline below the review radar. Kernel developers tend to get unhappy when they see that kind of thing happening; putting up a git tree with unreviewed or off-topic patches can affect your ability to get trees pulled in the future. Quoting Linus:

```
You can send me patches, but for me to pull a git patch from you, I
need to know that you know what you're doing, and I need to be able
to trust things *without* then having to go and check every
individual change by hand.
```

(https://lwn.net/Articles/224135/).

To avoid this kind of situation, ensure that all patches within a given branch stick closely to the associated topic; a "driver fixes" branch should not be making changes to the core memory management code. And, most importantly, do not use a git tree to bypass the review process. Post an occasional summary of the tree to the relevant list, and, when the time is right, request that the tree be included in linux-next.

If and when others start to send patches for inclusion into your tree, don't forget to review them. Also ensure that you maintain the correct authorship information; the git "am" tool does its best in this regard, but you may have to add a "From:" line to the patch if it has been relayed to you via a third party.

When requesting a pull, be sure to give all the relevant information: where your tree is, what branch to pull, and what changes will result from the pull. The git request-pull command can be helpful in this regard; it will format the request as other developers expect, and will also check to be sure that you have remembered to push those changes to the public server.

* Reviewing patches

Some readers will certainly object to putting this section with "advanced topics" on the grounds that even beginning kernel developers should be reviewing patches. It is certainly true that there is no better way to learn how to program in the kernel environment than by looking at code posted by others. In addition, reviewers are forever in short supply; by looking at code you can make a significant contribution to the process as a whole.

Reviewing code can be an intimidating prospect, especially for a new kernel developer who may well feel nervous about questioning code - in public - which has been posted by those with more experience. Even code written by the most experienced developers can be improved, though. Perhaps the best piece of advice for reviewers (all reviewers) is this: phrase review comments as questions rather than criticisms. Asking "how does the lock get released in this path?" will always work better than stating "the locking here is wrong."

Different developers will review code from different points of view. Some are mostly concerned with coding style and whether code lines have trailing white space. Others will focus primarily on whether the change implemented by the patch as a whole is a good thing for the kernel or not. Yet others will check for problematic locking, excessive stack usage, possible security issues, duplication of code found elsewhere, adequate documentation, adverse effects on performance, user-space ABI changes, etc. All types of review, if they lead to better code going into the kernel, are welcome and worthwhile.

* For more information

There are numerous sources of information on Linux kernel development and related topics. First among those will always be the Documentation directory found in the kernel source distribution. The top-level *process/howto.rst* file is an important starting point; *process/submitting-patches.rst* and *process/submitting-drivers.rst* are also something which all kernel developers should read. Many internal kernel APIs are documented using the kerneldoc mechanism; "make htmldocs" or "make pdfdocs" can be used to generate those documents in HTML or PDF format (though the version of TeX shipped by some distributions runs into internal limits and fails to process the documents properly).

Various web sites discuss kernel development at all levels of detail. Your author would like to humbly suggest https://lwn.net/ as a source; information on many specific kernel topics can be found via the LWN kernel index at:

> https://lwn.net/Kernel/Index/

Beyond that, a valuable resource for kernel developers is:

> https://kernelnewbies.org/

And, of course, one should not forget https://kernel.org/, the definitive location for kernel release information.

There are a number of books on kernel development:

Linux Device Drivers, 3rd Edition (Jonathan Corbet, Alessandro Rubini, and Greg Kroah-Hartman). Online at https://lwn.net/Kernel/LDD3/.

Linux Kernel Development (Robert Love).

Understanding the Linux Kernel (Daniel Bovet and Marco Cesati).

All of these books suffer from a common fault, though: they tend to be somewhat obsolete by the time they hit the shelves, and they have been on the shelves for a while now. Still, there is quite a bit of good information to be found there.

Documentation for git can be found at:

https://www.kernel.org/pub/software/scm/git/docs/

https://www.kernel.org/pub/software/scm/git/docs/user-manual.html

* Conclusion

Congratulations to anybody who has made it through this long-winded document. Hopefully it has provided a helpful understanding of how the Linux kernel is developed and how you can participate in that process.

In the end, it's the participation that matters. Any open source software project is no more than the sum of what its contributors put into it. The Linux kernel has progressed as quickly and as well as it has because it has been helped by an impressively large group of developers, all of whom are working to make it better. The kernel is a premier example of what can be done when thousands of people work together toward a common goal.

The kernel can always benefit from a larger developer base, though. There is always more work to do. But, just as importantly, most other participants in the Linux ecosystem can benefit through contributing to the kernel. Getting code into the mainline is the key to higher code quality, lower maintenance and distribution costs, a higher level of influence over the direction of kernel development, and more. It is a situation where everybody involved wins. Fire up your editor and come join us; you will be more than welcome.

The purpose of this document is to help developers (and their managers) work with the development community with a minimum of frustration. It is an attempt to document how this community works in a way which is accessible to those who are not intimately familiar with Linux kernel development (or, indeed, free software development in general). While there is some technical material here, this is very much a process-oriented discussion which does not require a deep knowledge of kernel programming to understand.

SUBMITTING PATCHES: THE ESSENTIAL GUIDE TO GETTING YOUR CODE INTO THE KERNEL

For a person or company who wishes to submit a change to the Linux kernel, the process can sometimes be daunting if you're not familiar with "the system." This text is a collection of suggestions which can greatly increase the chances of your change being accepted.

This document contains a large number of suggestions in a relatively terse format. For detailed information on how the kernel development process works, see *A guide to the Kernel Development Process*. Also, read *Linux Kernel patch submission checklist* for a list of items to check before submitting code. If you are submitting a driver, also read *Submitting Drivers For The Linux Kernel*; for device tree binding patches, read Documentation/devicetree/bindings/submitting-patches.rst.

This documentation assumes that you're using `git` to prepare your patches. If you're unfamiliar with `git`, you would be well-advised to learn how to use it, it will make your life as a kernel developer and in general much easier.

Some subsystems and maintainer trees have additional information about their workflow and expectations, see *Documentation/process/maintainer-handbooks.rst*.

* Obtain a current source tree

If you do not have a repository with the current kernel source handy, use `git` to obtain one. You'll want to start with the mainline repository, which can be grabbed with:

```
git clone git://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git
```

Note, however, that you may not want to develop against the mainline tree directly. Most subsystem maintainers run their own trees and want to see patches prepared against those trees. See the **T:** entry for the subsystem in the MAINTAINERS file to find that tree, or simply ask the maintainer if the tree is not listed there.

* Describe your changes

Describe your problem. Whether your patch is a one-line bug fix or 5000 lines of a new feature, there must be an underlying problem that motivated you to do this work. Convince the reviewer that there is a problem worth fixing and that it makes sense for them to read past the first paragraph.

Describe user-visible impact. Straight up crashes and lockups are pretty convincing, but not all bugs are that blatant. Even if the problem was spotted during code review, describe the impact you think it can have on users. Keep in mind that the majority of Linux installations run kernels from secondary stable trees or vendor/product-specific trees that cherry-pick only specific patches from upstream, so include anything that could help route your change downstream: provoking circumstances, excerpts from dmesg, crash descriptions, performance regressions, latency spikes, lockups, etc.

Quantify optimizations and trade-offs. If you claim improvements in performance, memory consumption, stack footprint, or binary size, include numbers that back them up. But also describe non-obvious costs. Optimizations usually aren't free but trade-offs between CPU, memory, and readability; or, when it comes to heuristics, between different workloads. Describe the expected downsides of your optimization so that the reviewer can weigh costs against benefits.

Once the problem is established, describe what you are actually doing about it in technical detail. It's important to describe the change in plain English for the reviewer to verify that the code is behaving as you intend it to.

The maintainer will thank you if you write your patch description in a form which can be easily pulled into Linux's source code management system, `git`, as a "commit log". See *The canonical patch format*.

Solve only one problem per patch. If your description starts to get long, that's a sign that you probably need to split up your patch. See *Separate your changes*.

When you submit or resubmit a patch or patch series, include the complete patch description and justification for it. Don't just say that this is version N of the patch (series). Don't expect the subsystem maintainer to refer back to earlier patch versions or referenced URLs to find the patch description and put that into the patch. I.e., the patch (series) and its description should be self-contained. This benefits both the maintainers and reviewers. Some reviewers probably didn't even receive earlier versions of the patch.

Describe your changes in imperative mood, e.g. "make xyzzy do frotz" instead of "[This patch] makes xyzzy do frotz" or "[I] changed xyzzy to do frotz", as if you are giving orders to the codebase to change its behaviour.

If you want to refer to a specific commit, don't just refer to the SHA-1 ID of the commit. Please also include the oneline summary of the commit, to make it easier for reviewers to know what it is about. Example:

```
Commit e21d2170f36602ae2708 ("video: remove unnecessary
platform_set_drvdata()") removed the unnecessary
platform_set_drvdata(), but left the variable "dev" unused,
delete it.
```

You should also be sure to use at least the first twelve characters of the SHA-1 ID. The kernel repository holds a *lot* of objects, making collisions with shorter IDs a real possibility. Bear in

mind that, even if there is no collision with your six-character ID now, that condition may change five years from now.

If related discussions or any other background information behind the change can be found on the web, add 'Link:' tags pointing to it. In case your patch fixes a bug, for example, add a tag with a URL referencing the report in the mailing list archives or a bug tracker; if the patch is a result of some earlier mailing list discussion or something documented on the web, point to it.

When linking to mailing list archives, preferably use the lore.kernel.org message archiver service. To create the link URL, use the contents of the `Message-Id` header of the message without the surrounding angle brackets. For example:

```
Link: https://lore.kernel.org/r/30th.anniversary.repost@klaava.Helsinki.FI/
```

Please check the link to make sure that it is actually working and points to the relevant message.

However, try to make your explanation understandable without external resources. In addition to giving a URL to a mailing list archive or bug, summarize the relevant points of the discussion that led to the patch as submitted.

If your patch fixes a bug in a specific commit, e.g. you found an issue using `git bisect`, please use the 'Fixes:' tag with the first 12 characters of the SHA-1 ID, and the one line summary. Do not split the tag across multiple lines, tags are exempt from the "wrap at 75 columns" rule in order to simplify parsing scripts. For example:

```
Fixes: 54a4f0239f2e ("KVM: MMU: make kvm_mmu_zap_page() return the number of␣
↪pages it actually freed")
```

The following `git config` settings can be used to add a pretty format for outputting the above style in the `git log` or `git show` commands:

```
[core]
        abbrev = 12
[pretty]
        fixes = Fixes: %h (\"%s\")
```

An example call:

```
$ git log -1 --pretty=fixes 54a4f0239f2e
Fixes: 54a4f0239f2e ("KVM: MMU: make kvm_mmu_zap_page() return the number of␣
↪pages it actually freed")
```

* Separate your changes

Separate each **logical change** into a separate patch.

For example, if your changes include both bug fixes and performance enhancements for a single driver, separate those changes into two or more patches. If your changes include an API update, and a new driver which uses that new API, separate those into two patches.

On the other hand, if you make a single change to numerous files, group those changes into a single patch. Thus a single logical change is contained within a single patch.

The point to remember is that each patch should make an easily understood change that can be verified by reviewers. Each patch should be justifiable on its own merits.

If one patch depends on another patch in order for a change to be complete, that is OK. Simply note **"this patch depends on patch X"** in your patch description.

When dividing your change into a series of patches, take special care to ensure that the kernel builds and runs properly after each patch in the series. Developers using `git bisect` to track down a problem can end up splitting your patch series at any point; they will not thank you if you introduce bugs in the middle.

If you cannot condense your patch set into a smaller set of patches, then only post say 15 or so at a time and wait for review and integration.

* Style-check your changes

Check your patch for basic style violations, details of which can be found in *Linux kernel coding style*. Failure to do so simply wastes the reviewers time and will get your patch rejected, probably without even being read.

One significant exception is when moving code from one file to another – in this case you should not modify the moved code at all in the same patch which moves it. This clearly delineates the act of moving the code and your changes. This greatly aids review of the actual differences and allows tools to better track the history of the code itself.

Check your patches with the patch style checker prior to submission (scripts/checkpatch.pl). Note, though, that the style checker should be viewed as a guide, not as a replacement for human judgment. If your code looks better with a violation then its probably best left alone.

The checker reports at three levels:

- ERROR: things that are very likely to be wrong
- WARNING: things requiring careful review
- CHECK: things requiring thought

You should be able to justify all violations that remain in your patch.

* Select the recipients for your patch

You should always copy the appropriate subsystem maintainer(s) on any patch to code that they maintain; look through the MAINTAINERS file and the source code revision history to see who those maintainers are. The script scripts/get_maintainer.pl can be very useful at this step (pass paths to your patches as arguments to scripts/get_maintainer.pl). If you cannot find a maintainer for the subsystem you are working on, Andrew Morton (akpm@linux-foundation.org) serves as a maintainer of last resort.

You should also normally choose at least one mailing list to receive a copy of your patch set. linux-kernel@vger.kernel.org should be used by default for all patches, but the volume on that list has caused a number of developers to tune it out. Look in the MAINTAINERS file for a subsystem-specific list; your patch will probably get more attention there. Please do not spam unrelated lists, though.

Many kernel-related lists are hosted on vger.kernel.org; you can find a list of them at http://vger.kernel.org/vger-lists.html. There are kernel-related lists hosted elsewhere as well, though.

Do not send more than 15 patches at once to the vger mailing lists!!!

Linus Torvalds is the final arbiter of all changes accepted into the Linux kernel. His e-mail address is <torvalds@linux-foundation.org>. He gets a lot of e-mail, and, at this point, very few patches go through Linus directly, so typically you should do your best to -avoid- sending him e-mail.

If you have a patch that fixes an exploitable security bug, send that patch to security@kernel.org. For severe bugs, a short embargo may be considered to allow distributors to get the patch out to users; in such cases, obviously, the patch should not be sent to any public lists. See also Documentation/admin-guide/security-bugs.rst.

Patches that fix a severe bug in a released kernel should be directed toward the stable maintainers by putting a line like this:

```
Cc: stable@vger.kernel.org
```

into the sign-off area of your patch (note, NOT an email recipient). You should also read *Everything you ever wanted to know about Linux -stable releases* in addition to this document.

If changes affect userland-kernel interfaces, please send the MAN-PAGES maintainer (as listed in the MAINTAINERS file) a man-pages patch, or at least a notification of the change, so that some information makes its way into the manual pages. User-space API changes should also be copied to linux-api@vger.kernel.org.

* No MIME, no links, no compression, no attachments. Just plain text

Linus and other kernel developers need to be able to read and comment on the changes you are submitting. It is important for a kernel developer to be able to "quote" your changes, using standard e-mail tools, so that they may comment on specific portions of your code.

For this reason, all patches should be submitted by e-mail "inline". The easiest way to do this is with `git send-email`, which is strongly recommended. An interactive tutorial for `git send-email` is available at https://git-send-email.io.

If you choose not to use `git send-email`:

> **Warning:** Be wary of your editor's word-wrap corrupting your patch, if you choose to cut-n-paste your patch.

Do not attach the patch as a MIME attachment, compressed or not. Many popular e-mail applications will not always transmit a MIME attachment as plain text, making it impossible to comment on your code. A MIME attachment also takes Linus a bit more time to process, decreasing the likelihood of your MIME-attached change being accepted.

Exception: If your mailer is mangling patches then someone may ask you to re-send them using MIME.

See *Email clients info for Linux* for hints about configuring your e-mail client so that it sends your patches untouched.

* Respond to review comments

Your patch will almost certainly get comments from reviewers on ways in which the patch can be improved, in the form of a reply to your email. You must respond to those comments; ignoring reviewers is a good way to get ignored in return. You can simply reply to their emails to answer their comments. Review comments or questions that do not lead to a code change should almost certainly bring about a comment or changelog entry so that the next reviewer better understands what is going on.

Be sure to tell the reviewers what changes you are making and to thank them for their time. Code review is a tiring and time-consuming process, and reviewers sometimes get grumpy. Even in that case, though, respond politely and address the problems they have pointed out. When sending a next version, add a `patch changelog` to the cover letter or to individual patches explaining difference aganst previous submission (see *The canonical patch format*).

See *Email clients info for Linux* for recommendations on email clients and mailing list etiquette.

* Don't get discouraged - or impatient

After you have submitted your change, be patient and wait. Reviewers are busy people and may not get to your patch right away.

Once upon a time, patches used to disappear into the void without comment, but the development process works more smoothly than that now. You should receive comments within a week or so; if that does not happen, make sure that you have sent your patches to the right place. Wait for a minimum of one week before resubmitting or pinging reviewers - possibly longer during busy times like merge windows.

It's also ok to resend the patch or the patch series after a couple of weeks with the word "RE-SEND" added to the subject line:

```
[PATCH Vx RESEND] sub/sys: Condensed patch summary
```

Don't add "RESEND" when you are submitting a modified version of your patch or patch series - "RESEND" only applies to resubmission of a patch or patch series which have not been modified in any way from the previous submission.

* Include PATCH in the subject

Due to high e-mail traffic to Linus, and to linux-kernel, it is common convention to prefix your subject line with [PATCH]. This lets Linus and other kernel developers more easily distinguish patches from other e-mail discussions.

`git send-email` will do this for you automatically.

* Sign your work - the Developer's Certificate of Origin

To improve tracking of who did what, especially with patches that can percolate to their final resting place in the kernel through several layers of maintainers, we've introduced a "sign-off" procedure on patches that are being emailed around.

The sign-off is a simple line at the end of the explanation for the patch, which certifies that you wrote it or otherwise have the right to pass it on as an open-source patch. The rules are pretty simple: if you can certify the below:

* Developer's Certificate of Origin 1.1

By making a contribution to this project, I certify that:

(a) The contribution was created in whole or in part by me and I have the right to submit it under the open source license indicated in the file; or

(b) The contribution is based upon previous work that, to the best of my knowledge, is covered under an appropriate open source license and I have the right under that license to submit that work with modifications, whether created in whole or in part by me, under the same open source license (unless I am permitted to submit under a different license), as indicated in the file; or

(c) The contribution was provided directly to me by some other person who certified (a), (b) or (c) and I have not modified it.

(d) I understand and agree that this project and the contribution are public and that a record of the contribution (including all personal information I submit with it, including my sign-off) is maintained indefinitely and may be redistributed consistent with this project or the open source license(s) involved.

then you just add a line saying:

```
Signed-off-by: Random J Developer <random@developer.example.org>
```

using your real name (sorry, no pseudonyms or anonymous contributions.) This will be done for you automatically if you use `git commit -s`. Reverts should also include "Signed-off-by". `git revert -s` does that for you.

Some people also put extra tags at the end. They'll just be ignored for now, but you can do this to mark internal company procedures or just point out some special detail about the sign-off.

Any further SoBs (Signed-off-by:'s) following the author's SoB are from people handling and transporting the patch, but were not involved in its development. SoB chains should reflect the **real** route a patch took as it was propagated to the maintainers and ultimately to Linus, with the first SoB entry signalling primary authorship of a single author.

* When to use Acked-by:, Cc:, and Co-developed-by:

The Signed-off-by: tag indicates that the signer was involved in the development of the patch, or that he/she was in the patch's delivery path.

If a person was not directly involved in the preparation or handling of a patch but wishes to signify and record their approval of it then they can ask to have an Acked-by: line added to the patch's changelog.

Acked-by: is often used by the maintainer of the affected code when that maintainer neither contributed to nor forwarded the patch.

Acked-by: is not as formal as Signed-off-by:. It is a record that the acker has at least reviewed the patch and has indicated acceptance. Hence patch mergers will sometimes manually convert an acker's "yep, looks good to me" into an Acked-by: (but note that it is usually better to ask for an explicit ack).

Acked-by: does not necessarily indicate acknowledgement of the entire patch. For example, if a patch affects multiple subsystems and has an Acked-by: from one subsystem maintainer then this usually indicates acknowledgement of just the part which affects that maintainer's code. Judgement should be used here. When in doubt people should refer to the original discussion in the mailing list archives.

If a person has had the opportunity to comment on a patch, but has not provided such comments, you may optionally add a `Cc:` tag to the patch. This is the only tag which might be added without an explicit action by the person it names - but it should indicate that this person was copied on the patch. This tag documents that potentially interested parties have been included in the discussion.

Co-developed-by: states that the patch was co-created by multiple developers; it is used to give attribution to co-authors (in addition to the author attributed by the From: tag) when several people work on a single patch. Since Co-developed-by: denotes authorship, every Co-developed-by: must be immediately followed by a Signed-off-by: of the associated co-author. Standard sign-off procedure applies, i.e. the ordering of Signed-off-by: tags should reflect the chronological history of the patch insofar as possible, regardless of whether the author is attributed via From: or Co-developed-by:. Notably, the last Signed-off-by: must always be that of the developer submitting the patch.

Note, the From: tag is optional when the From: author is also the person (and email) listed in the From: line of the email header.

Example of a patch submitted by the From: author:

```
<changelog>

Co-developed-by: First Co-Author <first@coauthor.example.org>
Signed-off-by: First Co-Author <first@coauthor.example.org>
Co-developed-by: Second Co-Author <second@coauthor.example.org>
Signed-off-by: Second Co-Author <second@coauthor.example.org>
Signed-off-by: From Author <from@author.example.org>
```

Example of a patch submitted by a Co-developed-by: author:

```
From: From Author <from@author.example.org>
```

```
<changelog>

Co-developed-by: Random Co-Author <random@coauthor.example.org>
Signed-off-by: Random Co-Author <random@coauthor.example.org>
Signed-off-by: From Author <from@author.example.org>
Co-developed-by: Submitting Co-Author <sub@coauthor.example.org>
Signed-off-by: Submitting Co-Author <sub@coauthor.example.org>
```

* Using Reported-by:, Tested-by:, Reviewed-by:, Suggested-by: and Fixes:

The Reported-by tag gives credit to people who find bugs and report them and it hopefully inspires them to help us again in the future. Please note that if the bug was reported in private, then ask for permission first before using the Reported-by tag. The tag is intended for bugs; please do not use it to credit feature requests.

A Tested-by: tag indicates that the patch has been successfully tested (in some environment) by the person named. This tag informs maintainers that some testing has been performed, provides a means to locate testers for future patches, and ensures credit for the testers.

Reviewed-by:, instead, indicates that the patch has been reviewed and found acceptable according to the Reviewer's Statement:

* Reviewer's statement of oversight

By offering my Reviewed-by: tag, I state that:

(a) I have carried out a technical review of this patch to evaluate its appropriateness and readiness for inclusion into the mainline kernel.

(b) Any problems, concerns, or questions relating to the patch have been communicated back to the submitter. I am satisfied with the submitter's response to my comments.

(c) While there may be things that could be improved with this submission, I believe that it is, at this time, (1) a worthwhile modification to the kernel, and (2) free of known issues which would argue against its inclusion.

(d) While I have reviewed the patch and believe it to be sound, I do not (unless explicitly stated elsewhere) make any warranties or guarantees that it will achieve its stated purpose or function properly in any given situation.

A Reviewed-by tag is a statement of opinion that the patch is an appropriate modification of the kernel without any remaining serious technical issues. Any interested reviewer (who has done the work) can offer a Reviewed-by tag for a patch. This tag serves to give credit to reviewers and to inform maintainers of the degree of review which has been done on the patch. Reviewed-by: tags, when supplied by reviewers known to understand the subject area and to perform thorough reviews, will normally increase the likelihood of your patch getting into the kernel.

Both Tested-by and Reviewed-by tags, once received on mailing list from tester or reviewer, should be added by author to the applicable patches when sending next versions. However if the patch has changed substantially in following version, these tags might not be applicable

anymore and thus should be removed. Usually removal of someone's Tested-by or Reviewed-by tags should be mentioned in the patch changelog (after the '—' separator).

A Suggested-by: tag indicates that the patch idea is suggested by the person named and ensures credit to the person for the idea. Please note that this tag should not be added without the reporter's permission, especially if the idea was not posted in a public forum. That said, if we diligently credit our idea reporters, they will, hopefully, be inspired to help us again in the future.

A Fixes: tag indicates that the patch fixes an issue in a previous commit. It is used to make it easy to determine where a bug originated, which can help review a bug fix. This tag also assists the stable kernel team in determining which stable kernel versions should receive your fix. This is the preferred method for indicating a bug fixed by the patch. See *Describe your changes* for more details.

Note: Attaching a Fixes: tag does not subvert the stable kernel rules process nor the requirement to Cc: stable@vger.kernel.org on all stable patch candidates. For more information, please read *Everything you ever wanted to know about Linux -stable releases*.

* The canonical patch format

This section describes how the patch itself should be formatted. Note that, if you have your patches stored in a `git` repository, proper patch formatting can be had with `git format-patch`. The tools cannot create the necessary text, though, so read the instructions below anyway.

The canonical patch subject line is:

```
Subject: [PATCH 001/123] subsystem: summary phrase
```

The canonical patch message body contains the following:

- A `from` line specifying the patch author, followed by an empty line (only needed if the person sending the patch is not the author).

- The body of the explanation, line wrapped at 75 columns, which will be copied to the permanent changelog to describe this patch.

- An empty line.

- The `Signed-off-by:` lines, described above, which will also go in the changelog.

- A marker line containing simply `---`.

- Any additional comments not suitable for the changelog.

- The actual patch (`diff` output).

The Subject line format makes it very easy to sort the emails alphabetically by subject line - pretty much any email reader will support that - since because the sequence number is zero-padded, the numerical and alphabetic sort is the same.

The `subsystem` in the email's Subject should identify which area or subsystem of the kernel is being patched.

The `summary phrase` in the email's Subject should concisely describe the patch which that email contains. The `summary phrase` should not be a filename. Do not use the same `summary`

phrase for every patch in a whole patch series (where a `patch series` is an ordered sequence of multiple, related patches).

Bear in mind that the `summary phrase` of your email becomes a globally-unique identifier for that patch. It propagates all the way into the `git` changelog. The `summary phrase` may later be used in developer discussions which refer to the patch. People will want to google for the `summary phrase` to read discussion regarding that patch. It will also be the only thing that people may quickly see when, two or three months later, they are going through perhaps thousands of patches using tools such as `gitk` or `git log --oneline`.

For these reasons, the `summary` must be no more than 70-75 characters, and it must describe both what the patch changes, as well as why the patch might be necessary. It is challenging to be both succinct and descriptive, but that is what a well-written summary should do.

The `summary phrase` may be prefixed by tags enclosed in square brackets: "Subject: [PATCH <tag>...] <summary phrase>". The tags are not considered part of the summary phrase, but describe how the patch should be treated. Common tags might include a version descriptor if the multiple versions of the patch have been sent out in response to comments (i.e., "v1, v2, v3"), or "RFC" to indicate a request for comments.

If there are four patches in a patch series the individual patches may be numbered like this: 1/4, 2/4, 3/4, 4/4. This assures that developers understand the order in which the patches should be applied and that they have reviewed or applied all of the patches in the patch series.

Here are some good example Subjects:

```
Subject: [PATCH 2/5] ext2: improve scalability of bitmap searching
Subject: [PATCH v2 01/27] x86: fix eflags tracking
Subject: [PATCH v2] sub/sys: Condensed patch summary
Subject: [PATCH v2 M/N] sub/sys: Condensed patch summary
```

The `from` line must be the very first line in the message body, and has the form:

> From: Patch Author <author@example.com>

The `from` line specifies who will be credited as the author of the patch in the permanent changelog. If the `from` line is missing, then the `From:` line from the email header will be used to determine the patch author in the changelog.

The explanation body will be committed to the permanent source changelog, so should make sense to a competent reader who has long since forgotten the immediate details of the discussion that might have led to this patch. Including symptoms of the failure which the patch addresses (kernel log messages, oops messages, etc.) are especially useful for people who might be searching the commit logs looking for the applicable patch. The text should be written in such detail so that when read weeks, months or even years later, it can give the reader the needed details to grasp the reasoning for **why** the patch was created.

If a patch fixes a compile failure, it may not be necessary to include _all_ of the compile failures; just enough that it is likely that someone searching for the patch can find it. As in the `summary phrase`, it is important to be both succinct as well as descriptive.

The `---` marker line serves the essential purpose of marking for patch handling tools where the changelog message ends.

One good use for the additional comments after the `---` marker is for a `diffstat`, to show what files have changed, and the number of inserted and deleted lines per file. A `diffstat` is especially useful on bigger patches. If you are going to include a `diffstat` after the `---` marker,

please use `diffstat` options `-p 1 -w 70` so that filenames are listed from the top of the kernel source tree and don't use too much horizontal space (easily fit in 80 columns, maybe with some indentation). (`git` generates appropriate diffstats by default.)

Other comments relevant only to the moment or the maintainer, not suitable for the permanent changelog, should also go here. A good example of such comments might be `patch changelogs` which describe what has changed between the v1 and v2 version of the patch.

Please put this information **after** the `---` line which separates the changelog from the rest of the patch. The version information is not part of the changelog which gets committed to the git tree. It is additional information for the reviewers. If it's placed above the commit tags, it needs manual interaction to remove it. If it is below the separator line, it gets automatically stripped off when applying the patch:

```
<commit message>
...
Signed-off-by: Author <author@mail>
---
V2 -> V3: Removed redundant helper function
V1 -> V2: Cleaned up coding style and addressed review comments

path/to/file | 5+++--
...
```

See more details on the proper patch format in the following references.

* Backtraces in commit mesages

Backtraces help document the call chain leading to a problem. However, not all backtraces are helpful. For example, early boot call chains are unique and obvious. Copying the full dmesg output verbatim, however, adds distracting information like timestamps, module lists, register and stack dumps.

Therefore, the most useful backtraces should distill the relevant information from the dump, which makes it easier to focus on the real issue. Here is an example of a well-trimmed backtrace:

```
unchecked MSR access error: WRMSR to 0xd51 (tried to write 0x0000000000000064)
at rIP: 0xffffffffae059994 (native_write_msr+0x4/0x20)
Call Trace:
mba_wrmsr
update_domains
rdtgroup_mkdir
```

* Explicit In-Reply-To headers

It can be helpful to manually add In-Reply-To: headers to a patch (e.g., when using `git send-email`) to associate the patch with previous relevant discussion, e.g. to link a bug fix to the email with the bug report. However, for a multi-patch series, it is generally best to avoid using In-Reply-To: to link to older versions of the series. This way multiple versions of the patch don't become an unmanageable forest of references in email clients. If a link is helpful, you can use the https://lore.kernel.org/ redirector (e.g., in the cover email text) to link to an earlier version of the patch series.

* Providing base tree information

When other developers receive your patches and start the review process, it is often useful for them to know where in the tree history they should place your work. This is particularly useful for automated CI processes that attempt to run a series of tests in order to establish the quality of your submission before the maintainer starts the review.

If you are using `git format-patch` to generate your patches, you can automatically include the base tree information in your submission by using the `--base` flag. The easiest and most convenient way to use this option is with topical branches:

```
$ git checkout -t -b my-topical-branch master
Branch 'my-topical-branch' set up to track local branch 'master'.
Switched to a new branch 'my-topical-branch'

[perform your edits and commits]

$ git format-patch --base=auto --cover-letter -o outgoing/ master
outgoing/0000-cover-letter.patch
outgoing/0001-First-Commit.patch
outgoing/...
```

When you open `outgoing/0000-cover-letter.patch` for editing, you will notice that it will have the `base-commit:` trailer at the very bottom, which provides the reviewer and the CI tools enough information to properly perform `git am` without worrying about conflicts:

```
$ git checkout -b patch-review [base-commit-id]
Switched to a new branch 'patch-review'
$ git am patches.mbox
Applying: First Commit
Applying: ...
```

Please see `man git-format-patch` for more information about this option.

Note: The `--base` feature was introduced in git version 2.9.0.

If you are not using git to format your patches, you can still include the same `base-commit` trailer to indicate the commit hash of the tree on which your work is based. You should add it

either in the cover letter or in the first patch of the series and it should be placed either below the - - - line or at the very bottom of all other content, right before your email signature.

* References

Andrew Morton, "The perfect patch" (tpp). <https://www.ozlabs.org/~akpm/stuff/tpp.txt>

Jeff Garzik, "Linux kernel patch submission format". <https://web.archive.org/web/20180829112450/http://linux.yyz.us/patch-format.html>

Greg Kroah-Hartman, "How to piss off a kernel subsystem maintainer". <http://www.kroah.com/log/linux/maintainer.html>

<http://www.kroah.com/log/linux/maintainer-02.html>

<http://www.kroah.com/log/linux/maintainer-03.html>

<http://www.kroah.com/log/linux/maintainer-04.html>

<http://www.kroah.com/log/linux/maintainer-05.html>

<http://www.kroah.com/log/linux/maintainer-06.html>

NO!!!! No more huge patch bombs to linux-kernel@vger.kernel.org people! <https://lore.kernel.org/r/20050711.125305.08322243.davem@davemloft.net>

Kernel *Linux kernel coding style*

Linus Torvalds's mail on the canonical patch format: <https://lore.kernel.org/r/Pine.LNX.4.58.0504071023190.28951@ppc970.osdl.org>

Andi Kleen, "On submitting kernel patches" Some strategies to get difficult or controversial changes in.

http://halobates.de/on-submitting-patches.pdf

HANDLING REGRESSIONS

We don't cause regressions – this document describes what this "first rule of Linux kernel development" means in practice for developers. It complements Documentation/admin-guide/reporting-regressions.rst, which covers the topic from a user's point of view; if you never read that text, go and at least skim over it before continuing here.

* The important bits (aka "The TL;DR")

1. Ensure subscribers of the regression mailing list (regressions@lists.linux.dev) quickly become aware of any new regression report:

    - When receiving a mailed report that did not CC the list, bring it into the loop by immediately sending at least a brief "Reply-all" with the list CCed.

    - Forward or bounce any reports submitted in bug trackers to the list.

2. Make the Linux kernel regression tracking bot "regzbot" track the issue (this is optional, but recommended):

    - For mailed reports, check if the reporter included a line like `#regzbot introduced v5.13..v5.14-rc1`. If not, send a reply (with the regressions list in CC) containing a paragraph like the following, which tells regzbot when the issue started to happen:

    ```
    #regzbot ^introduced 1f2e3d4c5b6a
    ```

    - When forwarding reports from a bug tracker to the regressions list (see above), include a paragraph like the following:

    ```
    #regzbot introduced: v5.13..v5.14-rc1
    #regzbot from: Some N. Ice Human <some.human@example.com>
    #regzbot monitor: http://some.bugtracker.example.com/ticket?
     ↪id=123456789
    ```

3. When submitting fixes for regressions, add "Link:" tags to the patch description pointing to all places where the issue was reported, as mandated by *Submitting patches: the essential guide to getting your code into the kernel* and *Documentation/process/5.Posting.rst*.

4. Try to fix regressions quickly once the culprit has been identified; fixes for most regressions should be merged within two weeks, but some need to be resolved within two or three days.

* All the details on Linux kernel regressions relevant for developers

* The important basics in more detail

What to do when receiving regression reports

Ensure the Linux kernel's regression tracker and others subscribers of the regression mailing list (regressions@lists.linux.dev) become aware of any newly reported regression:

- When you receive a report by mail that did not CC the list, immediately bring it into the loop by sending at least a brief "Reply-all" with the list CCed; try to ensure it gets CCed again in case you reply to a reply that omitted the list.

- If a report submitted in a bug tracker hits your Inbox, forward or bounce it to the list. Consider checking the list archives beforehand, if the reporter already forwarded the report as instructed by Documentation/admin-guide/reporting-issues.rst.

When doing either, consider making the Linux kernel regression tracking bot "regzbot" immediately start tracking the issue:

- For mailed reports, check if the reporter included a "regzbot command" like `#regzbot introduced 1f2e3d4c5b6a`. If not, send a reply (with the regressions list in CC) with a paragraph like the following::

```
#regzbot ^introduced: v5.13..v5.14-rc1
```

  This tells regzbot the version range in which the issue started to happen; you can specify a range using commit-ids as well or state a single commit-id in case the reporter bisected the culprit.

  Note the caret (^) before the "introduced": it tells regzbot to treat the parent mail (the one you reply to) as the initial report for the regression you want to see tracked; that's important, as regzbot will later look out for patches with "Link:" tags pointing to the report in the archives on lore.kernel.org.

- When forwarding a regressions reported to a bug tracker, include a paragraph with these regzbot commands:

```
#regzbot introduced: 1f2e3d4c5b6a
#regzbot from: Some N. Ice Human <some.human@example.com>
#regzbot monitor: http://some.bugtracker.example.com/ticket?id=123456789
```

  Regzbot will then automatically associate patches with the report that contain "Link:" tags pointing to your mail or the mentioned ticket.

What's important when fixing regressions

You don't need to do anything special when submitting fixes for regression, just remember to do what *Submitting patches: the essential guide to getting your code into the kernel*, *Documentation/process/5.Posting.rst*, and *Everything you ever wanted to know about Linux -stable releases* already explain in more detail:

- Point to all places where the issue was reported using "Link:" tags:

```
Link: https://lore.kernel.org/r/30th.anniversary.repost@klaava.Helsinki.FI/
Link: https://bugzilla.kernel.org/show_bug.cgi?id=1234567890
```

- Add a "Fixes:" tag to specify the commit causing the regression.

- If the culprit was merged in an earlier development cycle, explicitly mark the fix for back-porting using the `Cc: stable@vger.kernel.org` tag.

All this is expected from you and important when it comes to regression, as these tags are of great value for everyone (you included) that might be looking into the issue weeks, months, or years later. These tags are also crucial for tools and scripts used by other kernel developers or Linux distributions; one of these tools is regzbot, which heavily relies on the "Link:" tags to associate reports for regression with changes resolving them.

Prioritize work on fixing regressions

You should fix any reported regression as quickly as possible, to provide affected users with a solution in a timely manner and prevent more users from running into the issue; nevertheless developers need to take enough time and care to ensure regression fixes do not cause additional damage.

In the end though, developers should give their best to prevent users from running into situations where a regression leaves them only three options: "run a kernel with a regression that seriously impacts usage", "continue running an outdated and thus potentially insecure kernel version for more than two weeks after a regression's culprit was identified", and "downgrade to a still supported kernel series that lack required features".

How to realize this depends a lot on the situation. Here are a few rules of thumb for you, in order or importance:

- Prioritize work on handling regression reports and fixing regression over all other Linux kernel work, unless the latter concerns acute security issues or bugs causing data loss or damage.

- Always consider reverting the culprit commits and reapplying them later together with necessary fixes, as this might be the least dangerous and quickest way to fix a regression.

- Developers should handle regressions in all supported kernel series, but are free to delegate the work to the stable team, if the issue probably at no point in time occurred with mainline.

- Try to resolve any regressions introduced in the current development before its end. If you fear a fix might be too risky to apply only days before a new mainline release, let Linus decide: submit the fix separately to him as soon as possible with the explanation of the situation. He then can make a call and postpone the release if necessary, for example if multiple such changes show up in his inbox.

- Address regressions in stable, longterm, or proper mainline releases with more urgency than regressions in mainline pre-releases. That changes after the release of the fifth pre-release, aka "-rc5": mainline then becomes as important, to ensure all the improvements and fixes are ideally tested together for at least one week before Linus releases a new mainline version.

- Fix regressions within two or three days, if they are critical for some reason – for example, if the issue is likely to affect many users of the kernel series in question on all or certain architectures. Note, this includes mainline, as issues like compile errors otherwise might prevent many testers or continuous integration systems from testing the series.

- Aim to fix regressions within one week after the culprit was identified, if the issue was introduced in either:

  - a recent stable/longterm release

  - the development cycle of the latest proper mainline release

  In the latter case (say Linux v5.14), try to address regressions even quicker, if the stable series for the predecessor (v5.13) will be abandoned soon or already was stamped "End-of-Life" (EOL) – this usually happens about three to four weeks after a new mainline release.

- Try to fix all other regressions within two weeks after the culprit was found. Two or three additional weeks are acceptable for performance regressions and other issues which are annoying, but don't prevent anyone from running Linux (unless it's an issue in the current development cycle, as those should ideally be addressed before the release). A few weeks in total are acceptable if a regression can only be fixed with a risky change and at the same time is affecting only a few users; as much time is also okay if the regression is already present in the second newest longterm kernel series.

Note: The aforementioned time frames for resolving regressions are meant to include getting the fix tested, reviewed, and merged into mainline, ideally with the fix being in linux-next at least briefly. This leads to delays you need to account for.

Subsystem maintainers are expected to assist in reaching those periods by doing timely reviews and quick handling of accepted patches. They thus might have to send git-pull requests earlier or more often than usual; depending on the fix, it might even be acceptable to skip testing in linux-next. Especially fixes for regressions in stable and longterm kernels need to be handled quickly, as fixes need to be merged in mainline before they can be backported to older series.

* More aspects regarding regressions developers should be aware of

How to deal with changes where a risk of regression is known

Evaluate how big the risk of regressions is, for example by performing a code search in Linux distributions and Git forges. Also consider asking other developers or projects likely to be affected to evaluate or even test the proposed change; if problems surface, maybe some solution acceptable for all can be found.

If the risk of regressions in the end seems to be relatively small, go ahead with the change, but let all involved parties know about the risk. Hence, make sure your patch description makes this aspect obvious. Once the change is merged, tell the Linux kernel's regression tracker and the regressions mailing list about the risk, so everyone has the change on the radar in case reports trickle in. Depending on the risk, you also might want to ask the subsystem maintainer to mention the issue in his mainline pull request.

What else is there to known about regressions?

Check out Documentation/admin-guide/reporting-regressions.rst, it covers a lot of other aspects you want might want to be aware of:

- the purpose of the "no regressions rule"

- what issues actually qualify as regression

- who's in charge for finding the root cause of a regression

- how to handle tricky situations, e.g. when a regression is caused by a security fix or when fixing a regression might cause another one

Whom to ask for advice when it comes to regressions

Send a mail to the regressions mailing list (regressions@lists.linux.dev) while CCing the Linux kernel's regression tracker (regressions@leemhuis.info); if the issue might better be dealt with in private, feel free to omit the list.

* More about regression tracking and regzbot

Why the Linux kernel has a regression tracker, and why is regzbot used?

Rules like "no regressions" need someone to ensure they are followed, otherwise they are broken either accidentally or on purpose. History has shown this to be true for the Linux kernel as well. That's why Thorsten Leemhuis volunteered to keep an eye on things as the Linux kernel's regression tracker, who's occasionally helped by other people. Neither of them are paid to do this, that's why regression tracking is done on a best effort basis.

Earlier attempts to manually track regressions have shown it's an exhausting and frustrating work, which is why they were abandoned after a while. To prevent this from happening again, Thorsten developed regzbot to facilitate the work, with the long term goal to automate regression tracking as much as possible for everyone involved.

How does regression tracking work with regzbot?

The bot watches for replies to reports of tracked regressions. Additionally, it's looking out for posted or committed patches referencing such reports with "Link:" tags; replies to such patch postings are tracked as well. Combined this data provides good insights into the current state of the fixing process.

Regzbot tries to do its job with as little overhead as possible for both reporters and developers. In fact, only reporters are burdened with an extra duty: they need to tell regzbot about the regression report using the `#regzbot introduced` command outlined above; if they don't do that, someone else can take care of that using `#regzbot ^introduced`.

For developers there normally is no extra work involved, they just need to make sure to do something that was expected long before regzbot came to light: add "Link:" tags to the patch description pointing to all reports about the issue fixed.

Do I have to use regzbot?

It's in the interest of everyone if you do, as kernel maintainers like Linus Torvalds partly rely on regzbot's tracking in their work – for example when deciding to release a new version or extend the development phase. For this they need to be aware of all unfixed regression; to do that, Linus is known to look into the weekly reports sent by regzbot.

Do I have to tell regzbot about every regression I stumble upon?

Ideally yes: we are all humans and easily forget problems when something more important unexpectedly comes up – for example a bigger problem in the Linux kernel or something in real life that's keeping us away from keyboards for a while. Hence, it's best to tell regzbot about every regression, except when you immediately write a fix and commit it to a tree regularly merged to the affected kernel series.

How to see which regressions regzbot tracks currently?

Check regzbot's web-interface for the latest info; alternatively, search for the latest regression report, which regzbot normally sends out once a week on Sunday evening (UTC), which is a few hours before Linus usually publishes new (pre-)releases.

What places is regzbot monitoring?

Regzbot is watching the most important Linux mailing lists as well as the git repositories of linux-next, mainline, and stable/longterm.

What kind of issues are supposed to be tracked by regzbot?

The bot is meant to track regressions, hence please don't involve regzbot for regular issues. But it's okay for the Linux kernel's regression tracker if you use regzbot to track severe issues, like reports about hangs, corrupted data, or internal errors (Panic, Oops, BUG(), warning, …).

Can I add regressions found by CI systems to regzbot's tracking?

Feel free to do so, if the particular regression likely has impact on practical use cases and thus might be noticed by users; hence, please don't involve regzbot for theoretical regressions unlikely to show themselves in real world usage.

How to interact with regzbot?

By using a 'regzbot command' in a direct or indirect reply to the mail with the regression report. These commands need to be in their own paragraph (IOW: they need to be separated from the rest of the mail using blank lines).

One such command is `#regzbot introduced <version or commit>`, which makes regzbot consider your mail as a regressions report added to the tracking, as already described above; `#regzbot ^introduced <version or commit>` is another such command, which makes regzbot consider the parent mail as a report for a regression which it starts to track.

Once one of those two commands has been utilized, other regzbot commands can be used in direct or indirect replies to the report. You can write them below one of the *introduced* commands or in replies to the mail that used one of them or itself is a reply to that mail:

- Set or update the title:

```
#regzbot title: foo
```

- Monitor a discussion or bugzilla.kernel.org ticket where additions aspects of the issue or a fix are discussed – for example the posting of a patch fixing the regression:

```
#regzbot monitor: https://lore.kernel.org/all/30th.anniversary.
 ↪repost@klaava.Helsinki.FI/
```

Monitoring only works for lore.kernel.org and bugzilla.kernel.org; regzbot will consider all messages in that thread or ticket as related to the fixing process.

- Point to a place with further details of interest, like a mailing list post or a ticket in a bug tracker that are slightly related, but about a different topic:

```
#regzbot link: https://bugzilla.kernel.org/show_bug.cgi?id=123456789
```

- Mark a regression as fixed by a commit that is heading upstream or already landed:

```
#regzbot fixed-by: 1f2e3d4c5d
```

- Mark a regression as a duplicate of another one already tracked by regzbot:

```
#regzbot dup-of: https://lore.kernel.org/all/30th.anniversary.
 ↪repost@klaava.Helsinki.FI/
```

- Mark a regression as invalid:

```
#regzbot invalid: wasn't a regression, problem has always existed
```

Is there more to tell about regzbot and its commands?

More detailed and up-to-date information about the Linux kernel's regression tracking bot can be found on its project page, which among others contains a getting started guide and reference documentation which both cover more details than the above section.

* Quotes from Linus about regression

Find below a few real life examples of how Linus Torvalds expects regressions to be handled:

- From 2017-10-26 (1/2):

```
If you break existing user space setups THAT IS A REGRESSION.

It's not ok to say "but we'll fix the user space setup".

Really. NOT OK.
```

```
[...]

The first rule is:

 - we don't cause regressions

and the corollary is that when regressions *do* occur, we admit to
them and fix them, instead of blaming user space.

The fact that you have apparently been denying the regression now for
three weeks means that I will revert, and I will stop pulling apparmor
requests until the people involved understand how kernel development
is done.
```

- From 2017-10-26 (2/2):

```
People should basically always feel like they can update their kernel
and simply not have to worry about it.

I refuse to introduce "you can only update the kernel if you also
update that other program" kind of limitations. If the kernel used to
work for you, the rule is that it continues to work for you.

There have been exceptions, but they are few and far between, and they
generally have some major and fundamental reasons for having happened,
that were basically entirely unavoidable, and people _tried_hard_ to
avoid them. Maybe we can't practically support the hardware any more
after it is decades old and nobody uses it with modern kernels any
more. Maybe there's a serious security issue with how we did things,
and people actually depended on that fundamentally broken model. Maybe
there was some fundamental other breakage that just _had_ to have a
flag day for very core and fundamental reasons.

And notice that this is very much about *breaking* peoples environments.

Behavioral changes happen, and maybe we don't even support some
feature any more. There's a number of fields in /proc/<pid>/stat that
are printed out as zeroes, simply because they don't even *exist* in
the kernel any more, or because showing them was a mistake (typically
an information leak). But the numbers got replaced by zeroes, so that
the code that used to parse the fields still works. The user might not
see everything they used to see, and so behavior is clearly different,
but things still _work_, even if they might no longer show sensitive
(or no longer relevant) information.

But if something actually breaks, then the change must get fixed or
reverted. And it gets fixed in the *kernel*. Not by saying "well, fix
your user space then". It was a kernel change that exposed the
problem, it needs to be the kernel that corrects for it, because we
have a "upgrade in place" model. We don't have a "upgrade with new
```

```
user space".

And I seriously will refuse to take code from people who do not
understand and honor this very simple rule.

This rule is also not going to change.

And yes, I realize that the kernel is "special" in this respect. I'm
proud of it.

I have seen, and can point to, lots of projects that go "We need to
break that use case in order to make progress" or "you relied on
undocumented behavior, it sucks to be you" or "there's a better way to
do what you want to do, and you have to change to that new better
way", and I simply don't think that's acceptable outside of very early
alpha releases that have experimental users that know what they signed
up for. The kernel hasn't been in that situation for the last two
decades.

We do API breakage _inside_ the kernel all the time. We will fix
internal problems by saying "you now need to do XYZ", but then it's
about internal kernel API's, and the people who do that then also
obviously have to fix up all the in-kernel users of that API. Nobody
can say "I now broke the API you used, and now _you_ need to fix it
up". Whoever broke something gets to fix it too.

And we simply do not break user space.
```

- From 2020-05-21:

```
The rules about regressions have never been about any kind of
documented behavior, or where the code lives.

The rules about regressions are always about "breaks user workflow".

Users are literally the _only_ thing that matters.

No amount of "you shouldn't have used this" or "that behavior was
undefined, it's your own fault your app broke" or "that used to work
simply because of a kernel bug" is at all relevant.

Now, reality is never entirely black-and-white. So we've had things
like "serious security issue" etc that just forces us to make changes
that may break user space. But even then the rule is that we don't
really have other options that would allow things to continue.

And obviously, if users take years to even notice that something
broke, or if we have sane ways to work around the breakage that
doesn't make for too much trouble for users (ie "ok, there are a
handful of users, and they can use a kernel command line to work
around it" kind of things) we've also been a bit less strict.
```

But no, "that was documented to be broken" (whether it's because the
code was in staging or because the man-page said something else) is
irrelevant. If staging code is so useful that people end up using it,
that means that it's basically regular kernel code with a flag saying
"please clean this up".

The other side of the coin is that people who talk about "API
stability" are entirely wrong. API's don't matter either. You can make
any changes to an API you like - as long as nobody notices.

Again, the regression rule is not about documentation, not about
API's, and not about the phase of the moon.

It's entirely about "we caused problems for user space that used to work".

- From 2017-11-05:

And our regression rule has never been "behavior doesn't change".
That would mean that we could never make any changes at all.

For example, we do things like add new error handling etc all the
time, which we then sometimes even add tests for in our kselftest
directory.

So clearly behavior changes all the time and we don't consider that a
regression per se.

The rule for a regression for the kernel is that some real user
workflow breaks. Not some test. Not a "look, I used to be able to do
X, now I can't".

- From 2018-08-03:

YOU ARE MISSING THE #1 KERNEL RULE.

We do not regress, and we do not regress exactly because your are 100%
 →wrong.

And the reason you state for your opinion is in fact exactly *WHY* you
are wrong.

Your "good reasons" are pure and utter garbage.

The whole point of "we do not regress" is so that people can upgrade
the kernel and never have to worry about it.

> Kernel had a bug which has been fixed

That is *ENTIRELY* immaterial.

Guys, whether something was buggy or not DOES NOT MATTER.

Why?

Bugs happen. That's a fact of life. Arguing that "we had to break something because we were fixing a bug" is completely insane. We fix tens of bugs every single day, thinking that "fixing a bug" means that we can break something is simply NOT TRUE.

So bugs simply aren't even relevant to the discussion. They happen, they get found, they get fixed, and it has nothing to do with "we break users".

Because the only thing that matters IS THE USER.

How hard is that to understand?

Anybody who uses "but it was buggy" as an argument is entirely missing the point. As far as the USER was concerned, it wasn't buggy - it worked for him/her.

Maybe it worked *because* the user had taken the bug into account, maybe it worked because the user didn't notice - again, it doesn't matter. It worked for the user.

Breaking a user workflow for a "bug" is absolutely the WORST reason for breakage you can imagine.

It's basically saying "I took something that worked, and I broke it, but now it's better". Do you not see how f*cking insane that statement is?

And without users, your program is not a program, it's a pointless piece of code that you might as well throw away.

Seriously. This is *why* the #1 rule for kernel development is "we don't break users". Because "I fixed a bug" is absolutely NOT AN ARGUMENT if that bug fix broke a user setup. You actually introduced a MUCH BIGGER bug by "fixing" something that the user clearly didn't even care about.

And dammit, we upgrade the kernel ALL THE TIME without upgrading any other programs at all. It is absolutely required, because flag-days and dependencies are horribly bad.

And it is also required simply because I as a kernel developer do not upgrade random other tools that I don't even care about as I develop the kernel, and I want any of my users to feel safe doing the same time.

> So no. Your rule is COMPLETELY wrong. If you cannot upgrade a kernel
> without upgrading some other random binary, then we have a problem.

- From 2021-06-05:

> THERE ARE NO VALID ARGUMENTS FOR REGRESSIONS.
>
> Honestly, security people need to understand that "not working" is not
> a success case of security. It's a failure case.
>
> Yes, "not working" may be secure. But security in that case is *pointless*.

- From 2011-05-06 (1/3):

> Binary compatibility is more important.
>
> And if binaries don't use the interface to parse the format (or just
> parse it wrongly - see the fairly recent example of adding uuid's to
> /proc/self/mountinfo), then it's a regression.
>
> And regressions get reverted, unless there are security issues or
> similar that makes us go "Oh Gods, we really have to break things".
>
> I don't understand why this simple logic is so hard for some kernel
> developers to understand. Reality matters. Your personal wishes matter
> NOT AT ALL.
>
> If you made an interface that can be used without parsing the
> interface description, then we're stuck with the interface. Theory
> simply doesn't matter.
>
> You could help fix the tools, and try to avoid the compatibility
> issues that way. There aren't that many of them.

From 2011-05-06 (2/3):

> it's clearly NOT an internal tracepoint. By definition. It's being
> used by powertop.

From 2011-05-06 (3/3):

> We have programs that use that ABI and thus it's a regression if they␣
> →break.

- From 2012-07-06:

> > Now this got me wondering if Debian _unstable_ actually qualifies as a
> > standard distro userspace.
>
> Oh, if the kernel breaks some standard user space, that counts. Tons
> of people run Debian unstable

- From 2019-09-15:

> One _particularly_ last-minute revert is the top-most commit (ignoring
> the version change itself) done just before the release, and while
> it's very annoying, it's perhaps also instructive.
>
> What's instructive about it is that I reverted a commit that wasn't
> actually buggy. In fact, it was doing exactly what it set out to do,
> and did it very well. In fact it did it _so_ well that the much
> improved IO patterns it caused then ended up revealing a user-visible
> regression due to a real bug in a completely unrelated area.
>
> The actual details of that regression are not the reason I point that
> revert out as instructive, though. It's more that it's an instructive
> example of what counts as a regression, and what the whole "no
> regressions" kernel rule means. The reverted commit didn't change any
> API's, and it didn't introduce any new bugs. But it ended up exposing
> another problem, and as such caused a kernel upgrade to fail for a
> user. So it got reverted.
>
> The point here being that we revert based on user-reported _behavior_,
> not based on some "it changes the ABI" or "it caused a bug" concept.
> The problem was really pre-existing, and it just didn't happen to
> trigger before. The better IO patterns introduced by the change just
> happened to expose an old bug, and people had grown to depend on the
> previously benign behavior of that old issue.
>
> And never fear, we'll re-introduce the fix that improved on the IO
> patterns once we've decided just how to handle the fact that we had a
> bad interaction with an interface that people had then just happened
> to rely on incidental behavior for before. It's just that we'll have
> to hash through how to do that (there are no less than three different
> patches by three different developers being discussed, and there might
> be more coming...). In the meantime, I reverted the thing that exposed
> the problem to users for this release, even if I hope it will be
> re-introduced (perhaps even backported as a stable patch) once we have
> consensus about the issue it exposed.
>
> Take-away from the whole thing: it's not about whether you change the
> kernel-userspace ABI, or fix a bug, or about whether the old code
> "should never have worked in the first place". It's about whether
> something breaks existing users' workflow.
>
> Anyway, that was my little aside on the whole regression thing. Since
> it's that "first rule of kernel programming", I felt it is perhaps
> worth just bringing it up every once in a while

PROGRAMMING LANGUAGE

The kernel is written in the C programming language [c-language]. More precisely, the kernel is typically compiled with gcc [gcc] under -std=gnu11 [gcc-c-dialect-options]: the GNU dialect of ISO C11. clang [clang] is also supported, see docs on Building Linux with Clang/LLVM.

This dialect contains many extensions to the language [gnu-extensions], and many of them are used within the kernel as a matter of course.

There is some support for compiling the kernel with icc [icc] for several of the architectures, although at the time of writing it is not completed, requiring third-party patches.

* Attributes

One of the common extensions used throughout the kernel are attributes [gcc-attribute-syntax]. Attributes allow to introduce implementation-defined semantics to language entities (like variables, functions or types) without having to make significant syntactic changes to the language (e.g. adding a new keyword) [n2049].

In some cases, attributes are optional (i.e. a compiler not supporting them should still produce proper code, even if it is slower or does not perform as many compile-time checks/diagnostics).

The kernel defines pseudo-keywords (e.g. __pure) instead of using directly the GNU attribute syntax (e.g. __attribute__((__pure__))) in order to feature detect which ones can be used and/or to shorten the code.

Please refer to include/linux/compiler_attributes.h for more information.

LINUX KERNEL CODING STYLE

This is a short document describing the preferred coding style for the linux kernel. Coding style is very personal, and I won't **force** my views on anybody, but this is what goes for anything that I have to be able to maintain, and I'd prefer it for most other things too. Please at least consider the points made here.

First off, I'd suggest printing out a copy of the GNU coding standards, and NOT read it. Burn them, it's a great symbolic gesture.

Anyway, here goes:

* 1) Indentation

Tabs are 8 characters, and thus indentations are also 8 characters. There are heretic movements that try to make indentations 4 (or even 2!) characters deep, and that is akin to trying to define the value of PI to be 3.

Rationale: The whole idea behind indentation is to clearly define where a block of control starts and ends. Especially when you've been looking at your screen for 20 straight hours, you'll find it a lot easier to see how the indentation works if you have large indentations.

Now, some people will claim that having 8-character indentations makes the code move too far to the right, and makes it hard to read on a 80-character terminal screen. The answer to that is that if you need more than 3 levels of indentation, you're screwed anyway, and should fix your program.

In short, 8-char indents make things easier to read, and have the added benefit of warning you when you're nesting your functions too deep. Heed that warning.

The preferred way to ease multiple indentation levels in a switch statement is to align the `switch` and its subordinate `case` labels in the same column instead of `double-indenting` the `case` labels. E.g.:

```
switch (suffix) {
case 'G':
case 'g':
        mem <<= 30;
        break;
case 'M':
case 'm':
        mem <<= 20;
        break;
```

```
case 'K':
case 'k':
        mem <<= 10;
        fallthrough;
default:
        break;
}
```

Don't put multiple statements on a single line unless you have something to hide:

```
if (condition) do_this;
  do_something_everytime;
```

Don't use commas to avoid using braces:

```
if (condition)
        do_this(), do_that();
```

Always uses braces for multiple statements:

```
if (condition) {
        do_this();
        do_that();
}
```

Don't put multiple assignments on a single line either. Kernel coding style is super simple. Avoid tricky expressions.

Outside of comments, documentation and except in Kconfig, spaces are never used for indentation, and the above example is deliberately broken.

Get a decent editor and don't leave whitespace at the end of lines.

* 2) Breaking long lines and strings

Coding style is all about readability and maintainability using commonly available tools.

The preferred limit on the length of a single line is 80 columns.

Statements longer than 80 columns should be broken into sensible chunks, unless exceeding 80 columns significantly increases readability and does not hide information.

Descendants are always substantially shorter than the parent and are placed substantially to the right. A very commonly used style is to align descendants to a function open parenthesis.

These same rules are applied to function headers with a long argument list.

However, never break user-visible strings such as printk messages because that breaks the ability to grep for them.

* 3) Placing Braces and Spaces

The other issue that always comes up in C styling is the placement of braces. Unlike the indent size, there are few technical reasons to choose one placement strategy over the other, but the preferred way, as shown to us by the prophets Kernighan and Ritchie, is to put the opening brace last on the line, and put the closing brace first, thusly:

```
if (x is true) {
        we do y
}
```

This applies to all non-function statement blocks (if, switch, for, while, do). E.g.:

```
switch (action) {
case KOBJ_ADD:
        return "add";
case KOBJ_REMOVE:
        return "remove";
case KOBJ_CHANGE:
        return "change";
default:
        return NULL;
}
```

However, there is one special case, namely functions: they have the opening brace at the beginning of the next line, thus:

```
int function(int x)
{
        body of function
}
```

Heretic people all over the world have claimed that this inconsistency is ... well ... inconsistent, but all right-thinking people know that (a) K&R are **right** and (b) K&R are right. Besides, functions are special anyway (you can't nest them in C).

Note that the closing brace is empty on a line of its own, **except** in the cases where it is followed by a continuation of the same statement, ie a `while` in a do-statement or an `else` in an if-statement, like this:

```
do {
        body of do-loop
} while (condition);
```

and

```
if (x == y) {
        ..
} else if (x > y) {
        ...
} else {
        ....
```

```
}
```

Rationale: K&R.

Also, note that this brace-placement also minimizes the number of empty (or almost empty) lines, without any loss of readability. Thus, as the supply of new-lines on your screen is not a renewable resource (think 25-line terminal screens here), you have more empty lines to put comments on.

Do not unnecessarily use braces where a single statement will do.

```
if (condition)
        action();
```

and

```
if (condition)
        do_this();
else
        do_that();
```

This does not apply if only one branch of a conditional statement is a single statement; in the latter case use braces in both branches:

```
if (condition) {
        do_this();
        do_that();
} else {
        otherwise();
}
```

Also, use braces when a loop contains more than a single simple statement:

```
while (condition) {
        if (test)
                do_something();
}
```

* 3.1) Spaces

Linux kernel style for use of spaces depends (mostly) on function-versus-keyword usage. Use a space after (most) keywords. The notable exceptions are sizeof, typeof, alignof, and __attribute__, which look somewhat like functions (and are usually used with parentheses in Linux, although they are not required in the language, as in: `sizeof info` after `struct fileinfo info;` is declared).

So use a space after these keywords:

```
if, switch, case, for, do, while
```

but not with sizeof, typeof, alignof, or __attribute__. E.g.,

```
s = sizeof(struct file);
```

Do not add spaces around (inside) parenthesized expressions. This example is **bad**:

```
s = sizeof( struct file );
```

When declaring pointer data or a function that returns a pointer type, the preferred use of * is adjacent to the data name or function name and not adjacent to the type name. Examples:

```
char *linux_banner;
unsigned long long memparse(char *ptr, char **retptr);
char *match_strdup(substring_t *s);
```

Use one space around (on each side of) most binary and ternary operators, such as any of these:

```
=  +  -  <  >  *  /  %  |  &  ^  <=  >=  ==  !=  ?  :
```

but no space after unary operators:

```
&  *  +  -  ~  !  sizeof  typeof  alignof  __attribute__  defined
```

no space before the postfix increment & decrement unary operators:

```
++   --
```

no space after the prefix increment & decrement unary operators:

```
++   --
```

and no space around the . and -> structure member operators.

Do not leave trailing whitespace at the ends of lines. Some editors with `smart` indentation will insert whitespace at the beginning of new lines as appropriate, so you can start typing the next line of code right away. However, some such editors do not remove the whitespace if you end up not putting a line of code there, such as if you leave a blank line. As a result, you end up with lines containing trailing whitespace.

Git will warn you about patches that introduce trailing whitespace, and can optionally strip the trailing whitespace for you; however, if applying a series of patches, this may make later patches in the series fail by changing their context lines.

* 4) Naming

C is a Spartan language, and your naming conventions should follow suit. Unlike Modula-2 and Pascal programmers, C programmers do not use cute names like ThisVariableIsATemporaryCounter. A C programmer would call that variable `tmp`, which is much easier to write, and not the least more difficult to understand.

HOWEVER, while mixed-case names are frowned upon, descriptive names for global variables are a must. To call a global function `foo` is a shooting offense.

GLOBAL variables (to be used only if you **really** need them) need to have descriptive names, as do global functions. If you have a function that counts the number of active users, you should call that `count_active_users()` or similar, you should **not** call it `cntusr()`.

Encoding the type of a function into the name (so-called Hungarian notation) is asinine - the compiler knows the types anyway and can check those, and it only confuses the programmer.

LOCAL variable names should be short, and to the point. If you have some random integer loop counter, it should probably be called `i`. Calling it `loop_counter` is non-productive, if there is no chance of it being mis-understood. Similarly, `tmp` can be just about any type of variable that is used to hold a temporary value.

If you are afraid to mix up your local variable names, you have another problem, which is called the function-growth-hormone-imbalance syndrome. See chapter 6 (Functions).

For symbol names and documentation, avoid introducing new usage of 'master / slave' (or 'slave' independent of 'master') and 'blacklist / whitelist'.

Recommended replacements for 'master / slave' are: '{primary,main} / {secondary,replica,subordinate}' '{initiator,requester} / {target,responder}' '{controller,host} / {device,worker,proxy}' 'leader / follower' 'director / performer'

Recommended replacements for 'blacklist/whitelist' are: 'denylist / allowlist' 'blocklist / passlist'

Exceptions for introducing new usage is to maintain a userspace ABI/API, or when updating code for an existing (as of 2020) hardware or protocol specification that mandates those terms. For new specifications translate specification usage of the terminology to the kernel coding standard where possible.

* 5) Typedefs

Please don't use things like `vps_t`. It's a **mistake** to use typedef for structures and pointers. When you see a

```
vps_t a;
```

in the source, what does it mean? In contrast, if it says

```
struct virtual_container *a;
```

you can actually tell what `a` is.

Lots of people think that typedefs `help readability`. Not so. They are useful only for:

(a) totally opaque objects (where the typedef is actively used to **hide** what the object is).

Example: `pte_t` etc. opaque objects that you can only access using the proper accessor functions.

Note: Opaqueness and `accessor functions` are not good in themselves. The reason we have them for things like pte_t etc. is that there really is absolutely **zero** portably accessible information there.

(b) Clear integer types, where the abstraction **helps** avoid confusion whether it is `int` or `long`.

u8/u16/u32 are perfectly fine typedefs, although they fit into category (d) better than here.

Note: Again - there needs to be a **reason** for this. If something is `unsigned long`, then there's no reason to do

> typedef unsigned long myflags_t;

---

but if there is a clear reason for why it under certain circumstances might be an `unsigned int` and under other configurations might be `unsigned long`, then by all means go ahead and use a typedef.

(c) when you use sparse to literally create a **new** type for type-checking.

(d) New types which are identical to standard C99 types, in certain exceptional circumstances.

Although it would only take a short amount of time for the eyes and brain to become accustomed to the standard types like `uint32_t`, some people object to their use anyway.

Therefore, the Linux-specific u8/u16/u32/u64 types and their signed equivalents which are identical to standard types are permitted – although they are not mandatory in new code of your own.

When editing existing code which already uses one or the other set of types, you should conform to the existing choices in that code.

(e) Types safe for use in userspace.

In certain structures which are visible to userspace, we cannot require C99 types and cannot use the u32 form above. Thus, we use __u32 and similar types in all structures which are shared with userspace.

Maybe there are other cases too, but the rule should basically be to NEVER EVER use a typedef unless you can clearly match one of those rules.

In general, a pointer, or a struct that has elements that can reasonably be directly accessed should **never** be a typedef.

* 6) Functions

Functions should be short and sweet, and do just one thing. They should fit on one or two screenfuls of text (the ISO/ANSI screen size is 80x24, as we all know), and do one thing and do that well.

The maximum length of a function is inversely proportional to the complexity and indentation level of that function. So, if you have a conceptually simple function that is just one long (but simple) case-statement, where you have to do lots of small things for a lot of different cases, it's OK to have a longer function.

However, if you have a complex function, and you suspect that a less-than-gifted first-year high-school student might not even understand what the function is all about, you should adhere to the maximum limits all the more closely. Use helper functions with descriptive names (you can ask the compiler to in-line them if you think it's performance-critical, and it will probably do a better job of it than you would have done).

Another measure of the function is the number of local variables. They shouldn't exceed 5-10, or you're doing something wrong. Re-think the function, and split it into smaller pieces. A human brain can generally easily keep track of about 7 different things, anything more and it gets confused. You know you're brilliant, but maybe you'd like to understand what you did 2 weeks from now.

In source files, separate functions with one blank line. If the function is exported, the **EXPORT** macro for it should follow immediately after the closing function brace line. E.g.:

```
int system_is_up(void)
{
        return system_state == SYSTEM_RUNNING;
}
EXPORT_SYMBOL(system_is_up);
```

* 6.1) Function prototypes

In function prototypes, include parameter names with their data types. Although this is not required by the C language, it is preferred in Linux because it is a simple way to add valuable information for the reader.

Do not use the `extern` keyword with function declarations as this makes lines longer and isn't strictly necessary.

When writing function prototypes, please keep the order of elements regular. For example, using this function declaration example:

```
__init void * __must_check action(enum magic value, size_t size, u8 count,
                                  char *fmt, ...) __printf(4, 5) __malloc;
```

The preferred order of elements for a function prototype is:

- storage class (below, `static __always_inline`, noting that `__always_inline` is technically an attribute but is treated like `inline`)
- storage class attributes (here, `__init` – i.e. section declarations, but also things like `__cold`)
- return type (here, `void *`)
- return type attributes (here, `__must_check`)
- function name (here, `action`)
- function parameters (here, `(enum magic value, size_t size, u8 count, char *fmt, ...)`, noting that parameter names should always be included)
- function parameter attributes (here, `__printf(4, 5)`)
- function behavior attributes (here, `__malloc`)

Note that for a function **definition** (i.e. the actual function body), the compiler does not allow function parameter attributes after the function parameters. In these cases, they should go after the storage class attributes (e.g. note the changed position of `__printf(4, 5)` below, compared to the **declaration** example above):

```
static __always_inline __init __printf(4, 5) void * __must_check action(enum
 ↪magic value,
               size_t size, u8 count, char *fmt, ...) __malloc
{
       ...
}
```

* 7) Centralized exiting of functions

Albeit deprecated by some people, the equivalent of the goto statement is used frequently by compilers in form of the unconditional jump instruction.

The goto statement comes in handy when a function exits from multiple locations and some common work such as cleanup has to be done. If there is no cleanup needed then just return directly.

Choose label names which say what the goto does or why the goto exists. An example of a good name could be `out_free_buffer:` if the goto frees `buffer`. Avoid using GW-BASIC names like `err1:` and `err2:`, as you would have to renumber them if you ever add or remove exit paths, and they make correctness difficult to verify anyway.

The rationale for using gotos is:

- unconditional statements are easier to understand and follow

- nesting is reduced

- errors by not updating individual exit points when making modifications are prevented

- saves the compiler work to optimize redundant code away ;)

```c
int fun(int a)
{
        int result = 0;
        char *buffer;

        buffer = kmalloc(SIZE, GFP_KERNEL);
        if (!buffer)
                return -ENOMEM;

        if (condition1) {
                while (loop1) {
                        ...
                }
                result = 1;
                goto out_free_buffer;
        }
        ...
out_free_buffer:
        kfree(buffer);
        return result;
}
```

A common type of bug to be aware of is `one err bugs` which look like this:

```
err:
        kfree(foo->bar);
        kfree(foo);
        return ret;
```

The bug in this code is that on some exit paths `foo` is NULL. Normally the fix for this is to split it up into two error labels `err_free_bar:` and `err_free_foo::`

```
err_free_bar:
        kfree(foo->bar);
err_free_foo:
        kfree(foo);
        return ret;
```

Ideally you should simulate errors to test all exit paths.

* 8) Commenting

Comments are good, but there is also a danger of over-commenting. NEVER try to explain HOW your code works in a comment: it's much better to write the code so that the **working** is obvious, and it's a waste of time to explain badly written code.

Generally, you want your comments to tell WHAT your code does, not HOW. Also, try to avoid putting comments inside a function body: if the function is so complex that you need to separately comment parts of it, you should probably go back to chapter 6 for a while. You can make small comments to note or warn about something particularly clever (or ugly), but try to avoid excess. Instead, put the comments at the head of the function, telling people what it does, and possibly WHY it does it.

When commenting the kernel API functions, please use the kernel-doc format. See the files at Documentation/doc-guide/ and `scripts/kernel-doc` for details.

The preferred style for long (multi-line) comments is:

```
/*
 * This is the preferred style for multi-line
 * comments in the Linux kernel source code.
 * Please use it consistently.
 *
 * Description:  A column of asterisks on the left side,
 * with beginning and ending almost-blank lines.
 */
```

For files in net/ and drivers/net/ the preferred style for long (multi-line) comments is a little different.

```
/* The preferred comment style for files in net/ and drivers/net
 * looks like this.
 *
 * It is nearly the same as the generally preferred comment style,
```

```
 * but there is no initial almost-blank line.
 */
```

It's also important to comment data, whether they are basic types or derived types. To this end, use just one data declaration per line (no commas for multiple data declarations). This leaves you room for a small comment on each item, explaining its use.

* 9) You've made a mess of it

That's OK, we all do. You've probably been told by your long-time Unix user helper that GNU emacs automatically formats the C sources for you, and you've noticed that yes, it does do that, but the defaults it uses are less than desirable (in fact, they are worse than random typing - an infinite number of monkeys typing into GNU emacs would never make a good program).

So, you can either get rid of GNU emacs, or change it to use saner values. To do the latter, you can stick the following in your .emacs file:

```
(defun c-lineup-arglist-tabs-only (ignored)
  "Line up argument lists by tabs, not spaces"
  (let* ((anchor (c-langelem-pos c-syntactic-element))
         (column (c-langelem-2nd-pos c-syntactic-element))
         (offset (- (1+ column) anchor))
         (steps (floor offset c-basic-offset)))
    (* (max steps 1)
       c-basic-offset)))

(dir-locals-set-class-variables
 'linux-kernel
 '((c-mode . (
        (c-basic-offset . 8)
        (c-label-minimum-indentation . 0)
        (c-offsets-alist . (
                (arglist-close         . c-lineup-arglist-tabs-only)
                (arglist-cont-nonempty .
                    (c-lineup-gcc-asm-reg c-lineup-arglist-tabs-only))
                (arglist-intro         . +)
                (brace-list-intro      . +)
                (c                     . c-lineup-C-comments)
                (case-label            . 0)
                (comment-intro         . c-lineup-comment)
                (cpp-define-intro      . +)
                (cpp-macro             . -1000)
                (cpp-macro-cont        . +)
                (defun-block-intro     . +)
                (else-clause           . 0)
                (func-decl-cont        . +)
                (inclass               . +)
                (inher-cont            . c-lineup-multi-inher)
                (knr-argdecl-intro     . 0)
                (label                 . -1000)
```

```
                (statement              . 0)
                (statement-block-intro  . +)
                (statement-case-intro   . +)
                (statement-cont         . +)
                (substatement           . +)
                ))
        (indent-tabs-mode . t)
        (show-trailing-whitespace . t)
        ))))

(dir-locals-set-directory-class
 (expand-file-name "~/src/linux-trees")
 'linux-kernel)
```

This will make emacs go better with the kernel coding style for C files below ~/src/linux-trees.

But even if you fail in getting emacs to do sane formatting, not everything is lost: use indent.

Now, again, GNU indent has the same brain-dead settings that GNU emacs has, which is why you need to give it a few command line options. However, that's not too bad, because even the makers of GNU indent recognize the authority of K&R (the GNU people aren't evil, they are just severely misguided in this matter), so you just give indent the options -kr -i8 (stands for K&R, 8 character indents), or use scripts/Lindent, which indents in the latest style.

indent has a lot of options, and especially when it comes to comment re-formatting you may want to take a look at the man page. But remember: indent is not a fix for bad programming.

Note that you can also use the clang-format tool to help you with these rules, to quickly re-format parts of your code automatically, and to review full files in order to spot coding style mistakes, typos and possible improvements. It is also handy for sorting #includes, for aligning variables/macros, for reflowing text and other similar tasks. See the file *Documentation/process/clang-format.rst* for more details.

* 10) Kconfig configuration files

For all of the Kconfig* configuration files throughout the source tree, the indentation is some-what different. Lines under a config definition are indented with one tab, while help text is indented an additional two spaces. Example:

```
config AUDIT
      bool "Auditing support"
      depends on NET
      help
        Enable auditing infrastructure that can be used with another
        kernel subsystem, such as SELinux (which requires this for
        logging of avc messages output).  Does not do system-call
        auditing without CONFIG_AUDITSYSCALL.
```

Seriously dangerous features (such as write support for certain filesystems) should advertise this prominently in their prompt string:

```
config ADFS_FS_RW
        bool "ADFS write support (DANGEROUS)"
        depends on ADFS_FS
        ...
```

For full documentation on the configuration files, see the file Documentation/kbuild/kconfig-language.rst.

* 11) Data structures

Data structures that have visibility outside the single-threaded environment they are created and destroyed in should always have reference counts. In the kernel, garbage collection doesn't exist (and outside the kernel garbage collection is slow and inefficient), which means that you absolutely **have** to reference count all your uses.

Reference counting means that you can avoid locking, and allows multiple users to have access to the data structure in parallel - and not having to worry about the structure suddenly going away from under them just because they slept or did something else for a while.

Note that locking is **not** a replacement for reference counting. Locking is used to keep data structures coherent, while reference counting is a memory management technique. Usually both are needed, and they are not to be confused with each other.

Many data structures can indeed have two levels of reference counting, when there are users of different `classes`. The subclass count counts the number of subclass users, and decrements the global count just once when the subclass count goes to zero.

Examples of this kind of `multi-level-reference-counting` can be found in memory management (`struct mm_struct`: mm_users and mm_count), and in filesystem code (`struct super_block`: s_count and s_active).

Remember: if another thread can find your data structure, and you don't have a reference count on it, you almost certainly have a bug.

* 12) Macros, Enums and RTL

Names of macros defining constants and labels in enums are capitalized.

```
#define CONSTANT 0x12345
```

Enums are preferred when defining several related constants.

CAPITALIZED macro names are appreciated but macros resembling functions may be named in lower case.

Generally, inline functions are preferable to macros resembling functions.

Macros with multiple statements should be enclosed in a do - while block:

```
#define macrofun(a, b, c)                              \
        do {                                           \
                if (a == 5)                            \
```

```
                        do_this(b, c);          \
        } while (0)
```

Things to avoid when using macros:

1) macros that affect control flow:

```
#define FOO(x)                          \
        do {                            \
                if (blah(x) < 0)        \
                        return -EBUGGERED;      \
        } while (0)
```

is a **very** bad idea. It looks like a function call but exits the `calling` function; don't break the internal parsers of those who will read the code.

2) macros that depend on having a local variable with a magic name:

```
#define FOO(val) bar(index, val)
```

might look like a good thing, but it's confusing as hell when one reads the code and it's prone to breakage from seemingly innocent changes.

3) macros with arguments that are used as l-values: FOO(x) = y; will bite you if somebody e.g. turns FOO into an inline function.

4) forgetting about precedence: macros defining constants using expressions must enclose the expression in parentheses. Beware of similar issues with macros using parameters.

```
#define CONSTANT 0x4000
#define CONSTEXP (CONSTANT | 3)
```

5) namespace collisions when defining local variables in macros resembling functions:

```
#define FOO(x)                          \
({                                      \
        typeof(x) ret;                  \
        ret = calc_ret(x);              \
        (ret);                          \
})
```

ret is a common name for a local variable - __foo_ret is less likely to collide with an existing variable.

The cpp manual deals with macros exhaustively. The gcc internals manual also covers RTL which is used frequently with assembly language in the kernel.

* 13) Printing kernel messages

Kernel developers like to be seen as literate. Do mind the spelling of kernel messages to make a good impression. Do not use incorrect contractions like `dont`; use `do not` or `don't` instead. Make the messages concise, clear, and unambiguous.

Kernel messages do not have to be terminated with a period.

Printing numbers in parentheses (%d) adds no value and should be avoided.

There are a number of driver model diagnostic macros in <linux/dev_printk.h> which you should use to make sure messages are matched to the right device and driver, and are tagged with the right level: dev_err(), dev_warn(), dev_info(), and so forth. For messages that aren't associated with a particular device, <linux/printk.h> defines pr_notice(), pr_info(), pr_warn(), pr_err(), etc.

Coming up with good debugging messages can be quite a challenge; and once you have them, they can be a huge help for remote troubleshooting. However debug message printing is handled differently than printing other non-debug messages. While the other pr_XXX() functions print unconditionally, pr_debug() does not; it is compiled out by default, unless either DEBUG is defined or CONFIG_DYNAMIC_DEBUG is set. That is true for dev_dbg() also, and a related convention uses VERBOSE_DEBUG to add dev_vdbg() messages to the ones already enabled by DEBUG.

Many subsystems have Kconfig debug options to turn on -DDEBUG in the corresponding Makefile; in other cases specific files #define DEBUG. And when a debug message should be unconditionally printed, such as if it is already inside a debug-related #ifdef section, printk(KERN_DEBUG ...) can be used.

* 14) Allocating memory

The kernel provides the following general purpose memory allocators: kmalloc(), kzalloc(), kmalloc_array(), kcalloc(), vmalloc(), and vzalloc(). Please refer to the API documentation for further information about them. Documentation/core-api/memory-allocation.rst

The preferred form for passing a size of a struct is the following:

```
p = kmalloc(sizeof(*p), ...);
```

The alternative form where struct name is spelled out hurts readability and introduces an opportunity for a bug when the pointer variable type is changed but the corresponding sizeof that is passed to a memory allocator is not.

Casting the return value which is a void pointer is redundant. The conversion from void pointer to any other pointer type is guaranteed by the C programming language.

The preferred form for allocating an array is the following:

```
p = kmalloc_array(n, sizeof(...), ...);
```

The preferred form for allocating a zeroed array is the following:

```
p = kcalloc(n, sizeof(...), ...);
```

Both forms check for overflow on the allocation size n * sizeof(…), and return NULL if that occurred.

These generic allocation functions all emit a stack dump on failure when used without __GFP_NOWARN so there is no use in emitting an additional failure message when NULL is returned.

* 15) The inline disease

There appears to be a common misperception that gcc has a magic "make me faster" speedup option called `inline`. While the use of inlines can be appropriate (for example as a means of replacing macros, see Chapter 12), it very often is not. Abundant use of the inline keyword leads to a much bigger kernel, which in turn slows the system as a whole down, due to a bigger icache footprint for the CPU and simply because there is less memory available for the pagecache. Just think about it; a pagecache miss causes a disk seek, which easily takes 5 milliseconds. There are a LOT of cpu cycles that can go into these 5 milliseconds.

A reasonable rule of thumb is to not put inline at functions that have more than 3 lines of code in them. An exception to this rule are the cases where a parameter is known to be a compiletime constant, and as a result of this constantness you *know* the compiler will be able to optimize most of your function away at compile time. For a good example of this later case, see the kmalloc() inline function.

Often people argue that adding inline to functions that are static and used only once is always a win since there is no space tradeoff. While this is technically correct, gcc is capable of inlining these automatically without help, and the maintenance issue of removing the inline when a second user appears outweighs the potential value of the hint that tells gcc to do something it would have done anyway.

* 16) Function return values and names

Functions can return values of many different kinds, and one of the most common is a value indicating whether the function succeeded or failed. Such a value can be represented as an error-code integer (-Exxx = failure, 0 = success) or a `succeeded` boolean (0 = failure, non-zero = success).

Mixing up these two sorts of representations is a fertile source of difficult-to-find bugs. If the C language included a strong distinction between integers and booleans then the compiler would find these mistakes for us… but it doesn't. To help prevent such bugs, always follow this convention:

```
If the name of a function is an action or an imperative command,
the function should return an error-code integer.  If the name
is a predicate, the function should return a "succeeded" boolean.
```

For example, `add work` is a command, and the add_work() function returns 0 for success or -EBUSY for failure. In the same way, `PCI device present` is a predicate, and the pci_dev_present() function returns 1 if it succeeds in finding a matching device or 0 if it doesn't.

All EXPORTed functions must respect this convention, and so should all public functions. Private (static) functions need not, but it is recommended that they do.

Functions whose return value is the actual result of a computation, rather than an indication of whether the computation succeeded, are not subject to this rule. Generally they indicate failure by returning some out-of-range result. Typical examples would be functions that return pointers; they use NULL or the ERR_PTR mechanism to report failure.

* 17) Using bool

The Linux kernel bool type is an alias for the C99 _Bool type. bool values can only evaluate to 0 or 1, and implicit or explicit conversion to bool automatically converts the value to true or false. When using bool types the !! construction is not needed, which eliminates a class of bugs.

When working with bool values the true and false definitions should be used instead of 1 and 0.

bool function return types and stack variables are always fine to use whenever appropriate. Use of bool is encouraged to improve readability and is often a better option than 'int' for storing boolean values.

Do not use bool if cache line layout or size of the value matters, as its size and alignment varies based on the compiled architecture. Structures that are optimized for alignment and size should not use bool.

If a structure has many true/false values, consider consolidating them into a bitfield with 1 bit members, or using an appropriate fixed width type, such as u8.

Similarly for function arguments, many true/false values can be consolidated into a single bitwise 'flags' argument and 'flags' can often be a more readable alternative if the call-sites have naked true/false constants.

Otherwise limited use of bool in structures and arguments can improve readability.

* 18) Don't re-invent the kernel macros

The header file include/linux/kernel.h contains a number of macros that you should use, rather than explicitly coding some variant of them yourself. For example, if you need to calculate the length of an array, take advantage of the macro

```
#define ARRAY_SIZE(x) (sizeof(x) / sizeof((x)[0]))
```

Similarly, if you need to calculate the size of some structure member, use

```
#define sizeof_field(t, f) (sizeof(((t*)0)->f))
```

There are also min() and max() macros that do strict type checking if you need them. Feel free to peruse that header file to see what else is already defined that you shouldn't reproduce in your code.

* 19) Editor modelines and other cruft

Some editors can interpret configuration information embedded in source files, indicated with special markers. For example, emacs interprets lines marked like this:

```
-*- mode: c -*-
```

Or like this:

```
/*
Local Variables:
compile-command: "gcc -DMAGIC_DEBUG_FLAG foo.c"
End:
*/
```

Vim interprets markers that look like this:

```
/* vim:set sw=8 noet */
```

Do not include any of these in source files. People have their own personal editor configurations, and your source files should not override them. This includes markers for indentation and mode configuration. People may use their own custom mode, or may have some other magic method for making indentation work correctly.

* 20) Inline assembly

In architecture-specific code, you may need to use inline assembly to interface with CPU or platform functionality. Don't hesitate to do so when necessary. However, don't use inline assembly gratuitously when C can do the job. You can and should poke hardware from C when possible.

Consider writing simple helper functions that wrap common bits of inline assembly, rather than repeatedly writing them with slight variations. Remember that inline assembly can use C parameters.

Large, non-trivial assembly functions should go in .S files, with corresponding C prototypes defined in C header files. The C prototypes for assembly functions should use asmlinkage.

You may need to mark your asm statement as volatile, to prevent GCC from removing it if GCC doesn't notice any side effects. You don't always need to do so, though, and doing so unnecessarily can limit optimization.

When writing a single inline assembly statement containing multiple instructions, put each instruction on a separate line in a separate quoted string, and end each string except the last with \n\t to properly indent the next instruction in the assembly output:

```
asm ("magic %reg1, #42\n\t"
     "more_magic %reg2, %reg3"
     : /* outputs */ : /* inputs */ : /* clobbers */);
```

* 21) Conditional Compilation

Wherever possible, don't use preprocessor conditionals (#if, #ifdef) in .c files; doing so makes code harder to read and logic harder to follow. Instead, use such conditionals in a header file defining functions for use in those .c files, providing no-op stub versions in the #else case, and then call those functions unconditionally from .c files. The compiler will avoid generating any code for the stub calls, producing identical results, but the logic will remain easy to follow.

Prefer to compile out entire functions, rather than portions of functions or portions of expressions. Rather than putting an ifdef in an expression, factor out part or all of the expression into a separate helper function and apply the conditional to that function.

If you have a function or variable which may potentially go unused in a particular configuration, and the compiler would warn about its definition going unused, mark the definition as __maybe_unused rather than wrapping it in a preprocessor conditional. (However, if a function or variable *always* goes unused, delete it.)

Within code, where possible, use the IS_ENABLED macro to convert a Kconfig symbol into a C boolean expression, and use it in a normal C conditional:

```c
if (IS_ENABLED(CONFIG_SOMETHING)) {
        ...
}
```

The compiler will constant-fold the conditional away, and include or exclude the block of code just as with an #ifdef, so this will not add any runtime overhead. However, this approach still allows the C compiler to see the code inside the block, and check it for correctness (syntax, types, symbol references, etc). Thus, you still have to use an #ifdef if the code inside the block references symbols that will not exist if the condition is not met.

At the end of any non-trivial #if or #ifdef block (more than a few lines), place a comment after the #endif on the same line, noting the conditional expression used. For instance:

```c
#ifdef CONFIG_SOMETHING
...
#endif /* CONFIG_SOMETHING */
```

* Appendix I) References

The C Programming Language, Second Edition by Brian W. Kernighan and Dennis M. Ritchie. Prentice Hall, Inc., 1988. ISBN 0-13-110362-8 (paperback), 0-13-110370-9 (hardback).

The Practice of Programming by Brian W. Kernighan and Rob Pike. Addison-Wesley, Inc., 1999. ISBN 0-201-61586-X.

GNU manuals - where in compliance with K&R and this text - for cpp, gcc, gcc internals and indent, all available from https://www.gnu.org/manual/

WG14 is the international standardization working group for the programming language C, URL: http://www.open-std.org/JTC1/SC22/WG14/

Kernel *process/coding-style.rst*, by greg@kroah.com at OLS 2002: http://www.kroah.com/linux/talks/ols_2002_kernel_codingstyle_talk/html/

SUBSYSTEM AND MAINTAINER TREE SPECIFIC DEVELOPMENT PROCESS NOTES

The purpose of this document is to provide subsystem specific information which is supplementary to the general development process handbook *Documentation/process*.

Contents:

* The tip tree handbook

* What is the tip tree?

The tip tree is a collection of several subsystems and areas of development. The tip tree is both a direct development tree and a aggregation tree for several sub-maintainer trees. The tip tree gitweb URL is: https://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git

The tip tree contains the following subsystems:

- **x86 architecture**

  The x86 architecture development takes place in the tip tree except for the x86 KVM and XEN specific parts which are maintained in the corresponding subsystems and routed directly to mainline from there. It's still good practice to Cc the x86 maintainers on x86-specific KVM and XEN patches.

  Some x86 subsystems have their own maintainers in addition to the overall x86 maintainers. Please Cc the overall x86 maintainers on patches touching files in arch/x86 even when they are not called out by the MAINTAINER file.

  Note, that `x86@kernel.org` is not a mailing list. It is merely a mail alias which distributes mails to the x86 top-level maintainer team. Please always Cc the Linux Kernel mailing list (LKML) `linux-kernel@vger.kernel.org`, otherwise your mail ends up only in the private inboxes of the maintainers.

- **Scheduler**

  Scheduler development takes place in the -tip tree, in the sched/core branch - with occasional sub-topic trees for work-in-progress patch-sets.

- **Locking and atomics**

  Locking development (including atomics and other synchronization primitives that are connected to locking) takes place in the -tip tree, in the locking/core branch - with occasional sub-topic trees for work-in-progress patch-sets.

- **Generic interrupt subsystem and interrupt chip drivers**:

    - interrupt core development happens in the irq/core branch

    - interrupt chip driver development also happens in the irq/core branch, but the patches are usually applied in a separate maintainer tree and then aggregated into irq/core

- **Time, timers, timekeeping, NOHZ and related chip drivers**:

    - timekeeping, clocksource core, NTP and alarmtimer development happens in the timers/core branch, but patches are usually applied in a separate maintainer tree and then aggregated into timers/core

    - clocksource/event driver development happens in the timers/core branch, but patches are mostly applied in a separate maintainer tree and then aggregated into timers/core

- **Performance counters core, architecture support and tooling**:

    - perf core and architecture support development happens in the perf/core branch

    - perf tooling development happens in the perf tools maintainer tree and is aggregated into the tip tree.

- **CPU hotplug core**

- **RAS core**

    Mostly x86-specific RAS patches are collected in the tip ras/core branch.

- **EFI core**

    EFI development in the efi git tree. The collected patches are aggregated in the tip efi/core branch.

- **RCU**

    RCU development happens in the linux-rcu tree. The resulting changes are aggregated into the tip core/rcu branch.

- **Various core code components**:

    - debugobjects

    - objtool

    - random bits and pieces

* Patch submission notes

Selecting the tree/branch

In general, development against the head of the tip tree master branch is fine, but for the subsystems which are maintained separately, have their own git tree and are only aggregated into the tip tree, development should take place against the relevant subsystem tree or branch.

Bug fixes which target mainline should always be applicable against the mainline kernel tree. Potential conflicts against changes which are already queued in the tip tree are handled by the maintainers.

Patch subject

The tip tree preferred format for patch subject prefixes is 'subsys/component:', e.g. 'x86/apic:', 'x86/mm/fault:', 'sched/fair:', 'genirq/core:'. Please do not use file names or complete file paths as prefix. 'git log path/to/file' should give you a reasonable hint in most cases.

The condensed patch description in the subject line should start with a uppercase letter and should be written in imperative tone.

Changelog

The general rules about changelogs in the process documentation, see *Documentation/process/*, apply.

The tip tree maintainers set value on following these rules, especially on the request to write changelogs in imperative mood and not impersonating code or the execution of it. This is not just a whim of the maintainers. Changelogs written in abstract words are more precise and tend to be less confusing than those written in the form of novels.

It's also useful to structure the changelog into several paragraphs and not lump everything together into a single one. A good structure is to explain the context, the problem and the solution in separate paragraphs and this order.

Examples for illustration:

Example 1:

```
x86/intel_rdt/mbm: Fix MBM overflow handler during hot cpu

When a CPU is dying, we cancel the worker and schedule a new worker on␣
 ↪a
different CPU on the same domain. But if the timer is already about to
expire (say 0.99s) then we essentially double the interval.

We modify the hot cpu handling to cancel the delayed work on the dying
cpu and run the worker immediately on a different cpu in same domain.␣
 ↪We
donot flush the worker because the MBM overflow worker reschedules the
worker on same CPU and scans the domain->cpu_mask to get the domain
pointer.
```

Improved version:

```
x86/intel_rdt/mbm: Fix MBM overflow handler during CPU hotplug

When a CPU is dying, the overflow worker is canceled and rescheduled␣
 ↪on a
different CPU in the same domain. But if the timer is already about to
expire this essentially doubles the interval which might result in a␣
 ↪non
detected overflow.

Cancel the overflow worker and reschedule it immediately on a␣
 ↪different CPU
```

> in the same domain. The work could be flushed as well, but that would
> reschedule it on the same CPU.

Example 2:

```
time: POSIX CPU timers: Ensure that variable is initialized

If cpu_timer_sample_group returns -EINVAL, it will not have written␣
 ↪into
*sample. Checking for cpu_timer_sample_group's return value precludes␣
 ↪the
potential use of an uninitialized value of now in the following block.
Given an invalid clock_idx, the previous code could otherwise overwrite
*oldval in an undefined manner. This is now prevented. We also exploit
short-circuiting of && to sample the timer only if the result will
actually be used to update *oldval.
```

Improved version:

```
posix-cpu-timers: Make set_process_cpu_timer() more robust

Because the return value of cpu_timer_sample_group() is not checked,
compilers and static checkers can legitimately warn about a potential␣
 ↪use
of the uninitialized variable 'now'. This is not a runtime issue as all
call sites hand in valid clock ids.

Also cpu_timer_sample_group() is invoked unconditionally even when the
result is not used because *oldval is NULL.

Make the invocation conditional and check the return value.
```

Example 3:

```
The entity can also be used for other purposes.

Let's rename it to be more generic.
```

Improved version:

```
The entity can also be used for other purposes.

Rename it to be more generic.
```

For complex scenarios, especially race conditions and memory ordering issues, it is valuable to depict the scenario with a table which shows the parallelism and the temporal order of events. Here is an example:

```
CPU0                            CPU1
free_irq(X)                     interrupt X
                                spin_lock(desc->lock)
                                wake irq thread()
```

```
                                    spin_unlock(desc->lock)
spin_lock(desc->lock)
remove action()
shutdown_irq()
release_resources()             thread_handler()
spin_unlock(desc->lock)            access released resources.
                                   ^^^^^^^^^^^^^^^^^^^^^^^^^^

synchronize_irq()
```

Lockdep provides similar useful output to depict a possible deadlock scenario:

```
CPU0                                  CPU1
rtmutex_lock(&rcu->rt_mutex)
  spin_lock(&rcu->rt_mutex.wait_lock)

                                      local_irq_disable()
                                      spin_lock(&timer->it_lock)
                                      spin_lock(&rcu->mutex.wait_lock)
--> Interrupt
    spin_lock(&timer->it_lock)
```

Function references in changelogs

When a function is mentioned in the changelog, either the text body or the subject line, please use the format 'function_name()'. Omitting the brackets after the function name can be ambiguous:

```
Subject: subsys/component: Make reservation_count static

reservation_count is only used in reservation_stats. Make it static.
```

The variant with brackets is more precise:

```
Subject: subsys/component: Make reservation_count() static

reservation_count() is only called from reservation_stats(). Make it
static.
```

Backtraces in changelogs

See *Backtraces in commit mesages*.

Ordering of commit tags

To have a uniform view of the commit tags, the tip maintainers use the following tag ordering scheme:

- Fixes: 12char-SHA1 ("sub/sys: Original subject line")

  A Fixes tag should be added even for changes which do not need to be backported to stable kernels, i.e. when addressing a recently introduced issue which only affects tip or the current head of mainline. These tags are helpful to identify the original commit and are much more valuable than prominently mentioning the commit which introduced a problem in the text of the changelog itself because they can be automatically extracted.

  The following example illustrates the difference:

```
Commit

  abcdef012345678 ("x86/xxx: Replace foo with bar")

left an unused instance of variable foo around. Remove it.

Signed-off-by: J.Dev <j.dev@mail>
```

  Please say instead:

```
The recent replacement of foo with bar left an unused instance of
variable foo around. Remove it.

Fixes: abcdef012345678 ("x86/xxx: Replace foo with bar")
Signed-off-by: J.Dev <j.dev@mail>
```

  The latter puts the information about the patch into the focus and amends it with the reference to the commit which introduced the issue rather than putting the focus on the original commit in the first place.

- Reported-by: Reporter <reporter@mail>

- Originally-by: Original author <original-author@mail>

- Suggested-by: Suggester <suggester@mail>

- Co-developed-by: Co-author <co-author@mail>

  Signed-off: Co-author <co-author@mail>

  Note, that Co-developed-by and Signed-off-by of the co-author(s) must come in pairs.

- Signed-off-by: Author <author@mail>

  The first Signed-off-by (SOB) after the last Co-developed-by/SOB pair is the author SOB, i.e. the person flagged as author by git.

- Signed-off-by: `Patch handler <handler@mail>`

  SOBs after the author SOB are from people handling and transporting the patch, but were not involved in development. SOB chains should reflect the **real** route a patch took as it was propagated to us, with the first SOB entry signalling primary authorship of a single author. Acks should be given as Acked-by lines and review approvals as Reviewed-by lines.

  If the handler made modifications to the patch or the changelog, then this should be mentioned **after** the changelog text and **above** all commit tags in the following format:

  ```
  ... changelog text ends.

  [ handler: Replaced foo by bar and updated changelog ]

  First-tag: .....
  ```

  Note the two empty new lines which separate the changelog text and the commit tags from that notice.

  If a patch is sent to the mailing list by a handler then the author has to be noted in the first line of the changelog with:

  ```
  From: Author <author@mail>

  Changelog text starts here....
  ```

  so the authorship is preserved. The 'From:' line has to be followed by a empty newline. If that 'From:' line is missing, then the patch would be attributed to the person who sent (transported, handled) it. The 'From:' line is automatically removed when the patch is applied and does not show up in the final git changelog. It merely affects the authorship information of the resulting Git commit.

- Tested-by: `Tester <tester@mail>`

- Reviewed-by: `Reviewer <reviewer@mail>`

- Acked-by: `Acker <acker@mail>`

- Cc: `cc-ed-person <person@mail>`

  If the patch should be backported to stable, then please add a 'Cc: `stable@vger.kernel.org`' tag, but do not Cc stable when sending your mail.

- Link: `https://link/to/information`

  For referring to an email on LKML or other kernel mailing lists, please use the lore.kernel.org redirector URL:

  ```
  https://lore.kernel.org/r/email-message@id
  ```

  The kernel.org redirector is considered a stable URL, unlike other email archives.

  Maintainers will add a Link tag referencing the email of the patch submission when they apply a patch to the tip tree. This tag is useful for later reference and is also used for commit notifications.

Please do not use combined tags, e.g. `Reported-and-tested-by`, as they just complicate automated extraction of tags.

Links to documentation

Providing links to documentation in the changelog is a great help to later debugging and analysis. Unfortunately, URLs often break very quickly because companies restructure their websites frequently. Non-'volatile' exceptions include the Intel SDM and the AMD APM.

Therefore, for 'volatile' documents, please create an entry in the kernel bugzilla https://bugzilla. kernel.org and attach a copy of these documents to the bugzilla entry. Finally, provide the URL of the bugzilla entry in the changelog.

Patch resend or reminders

See *Don't get discouraged - or impatient*.

Merge window

Please do not expect large patch series to be handled during the merge window or even during the week before. Such patches should be submitted in mergeable state *at least* a week before the merge window opens. Exceptions are made for bug fixes and *sometimes* for small standalone drivers for new hardware or minimally invasive patches for hardware enablement.

During the merge window, the maintainers instead focus on following the upstream changes, fixing merge window fallout, collecting bug fixes, and allowing themselves a breath. Please respect that.

The release candidate -rc1 is the starting point for new patches to be applied which are targeted for the next merge window.

Git

The tip maintainers accept git pull requests from maintainers who provide subsystem changes for aggregation in the tip tree.

Pull requests for new patch submissions are usually not accepted and do not replace proper patch submission to the mailing list. The main reason for this is that the review workflow is email based.

If you submit a larger patch series it is helpful to provide a git branch in a private repository which allows interested people to easily pull the series for testing. The usual way to offer this is a git URL in the cover letter of the patch series.

Testing

Code should be tested before submitting to the tip maintainers. Anything other than minor changes should be built, booted and tested with comprehensive (and heavyweight) kernel debugging options enabled.

These debugging options can be found in kernel/configs/x86_debug.config and can be added to an existing kernel config by running:

```
make x86_debug.config
```

Some of these options are x86-specific and can be left out when testing on other architectures.

* Coding style notes

Comment style

Sentences in comments start with an uppercase letter.

Single line comments:

```
/* This is a single line comment */
```

Multi-line comments:

```
/*
 * This is a properly formatted
 * multi-line comment.
 *
 * Larger multi-line comments should be split into paragraphs.
 */
```

No tail comments:

Please refrain from using tail comments. Tail comments disturb the reading flow in almost all contexts, but especially in code:

```
if (somecondition_is_true) /* Don't put a comment here */
        dostuff(); /* Neither here */

seed = MAGIC_CONSTANT; /* Nor here */
```

Use freestanding comments instead:

```
/* This condition is not obvious without a comment */
if (somecondition_is_true) {
        /* This really needs to be documented */
        dostuff();
}

/* This magic initialization needs a comment. Maybe not? */
seed = MAGIC_CONSTANT;
```

Comment the important things:

Comments should be added where the operation is not obvious. Documenting the obvious is just a distraction:

```
/* Decrement refcount and check for zero */
if (refcount_dec_and_test(&p->refcnt)) {
        do;
        lots;
        of;
        magic;
        things;
}
```

Instead, comments should explain the non-obvious details and document constraints:

```
if (refcount_dec_and_test(&p->refcnt)) {
        /*
         * Really good explanation why the magic things below
         * need to be done, ordering and locking constraints,
         * etc..
         */
        do;
        lots;
        of;
        magic;
        /* Needs to be the last operation because ... */
        things;
}
```

Function documentation comments:

To document functions and their arguments please use kernel-doc format and not free form comments:

```
/**
 * magic_function - Do lots of magic stuff
 * @magic:      Pointer to the magic data to operate on
 * @offset:     Offset in the data array of @magic
 *
 * Deep explanation of mysterious things done with @magic along
 * with documentation of the return values.
 *
 * Note, that the argument descriptors above are arranged
 * in a tabular fashion.
 */
```

This applies especially to globally visible functions and inline functions in public header files. It might be overkill to use kernel-doc format for every (static) function which needs a tiny explanation. The usage of descriptive function names often replaces these tiny comments. Apply common sense as always.

Documenting locking requirements

Documenting locking requirements is a good thing, but comments are not necessarily the best choice. Instead of writing:

```
/* Caller must hold foo->lock */
void func(struct foo *foo)
{
        ...
}
```

Please use:

```
void func(struct foo *foo)
{
        lockdep_assert_held(&foo->lock);
        ...
}
```

In PROVE_LOCKING kernels, lockdep_assert_held() emits a warning if the caller doesn't hold the lock. Comments can't do that.

Bracket rules

Brackets should be omitted only if the statement which follows 'if', 'for', 'while' etc. is truly a single line:

```
if (foo)
        do_something();
```

The following is not considered to be a single line statement even though C does not require brackets:

```
for (i = 0; i < end; i++)
        if (foo[i])
                do_something(foo[i]);
```

Adding brackets around the outer loop enhances the reading flow:

```
for (i = 0; i < end; i++) {
        if (foo[i])
                do_something(foo[i]);
}
```

Variable declarations

The preferred ordering of variable declarations at the beginning of a function is reverse fir tree order:

```
struct long_struct_name *descriptive_name;
unsigned long foo, bar;
unsigned int tmp;
int ret;
```

The above is faster to parse than the reverse ordering:

```
int ret;
unsigned int tmp;
unsigned long foo, bar;
struct long_struct_name *descriptive_name;
```

And even more so than random ordering:

```
unsigned long foo, bar;
int ret;
struct long_struct_name *descriptive_name;
unsigned int tmp;
```

Also please try to aggregate variables of the same type into a single line. There is no point in wasting screen space:

```
unsigned long a;
unsigned long b;
unsigned long c;
unsigned long d;
```

It's really sufficient to do:

```
unsigned long a, b, c, d;
```

Please also refrain from introducing line splits in variable declarations:

```
struct long_struct_name *descriptive_name = container_of(bar,
                                            struct long_struct_name,
                                            member);
struct foobar foo;
```

It's way better to move the initialization to a separate line after the declarations:

```
struct long_struct_name *descriptive_name;
struct foobar foo;

descriptive_name = container_of(bar, struct long_struct_name, member);
```

Variable types

Please use the proper u8, u16, u32, u64 types for variables which are meant to describe hardware or are used as arguments for functions which access hardware. These types are clearly defining the bit width and avoid truncation, expansion and 32/64-bit confusion.

u64 is also recommended in code which would become ambiguous for 32-bit kernels when 'unsigned long' would be used instead. While in such situations 'unsigned long long' could be used as well, u64 is shorter and also clearly shows that the operation is required to be 64 bits wide independent of the target CPU.

Please use 'unsigned int' instead of 'unsigned'.

Constants

Please do not use literal (hexa)decimal numbers in code or initializers. Either use proper defines which have descriptive names or consider using an enum.

Struct declarations and initializers

Struct declarations should align the struct member names in a tabular fashion:

```
struct bar_order {
        unsigned int    guest_id;
        int             ordered_item;
        struct menu     *menu;
};
```

Please avoid documenting struct members within the declaration, because this often results in strangely formatted comments and the struct members become obfuscated:

```
struct bar_order {
        unsigned int    guest_id; /* Unique guest id */
        int             ordered_item;
        /* Pointer to a menu instance which contains all the drinks */
        struct menu     *menu;
};
```

Instead, please consider using the kernel-doc format in a comment preceding the struct declaration, which is easier to read and has the added advantage of including the information in the kernel documentation, for example, as follows:

```
/**
 * struct bar_order - Description of a bar order
 * @guest_id:           Unique guest id
 * @ordered_item:       The item number from the menu
 * @menu:               Pointer to the menu from which the item
 *                      was ordered
 *
 * Supplementary information for using the struct.
 *
 * Note, that the struct member descriptors above are arranged
 * in a tabular fashion.
 */
struct bar_order {
        unsigned int    guest_id;
        int             ordered_item;
        struct menu     *menu;
};
```

Static struct initializers must use C99 initializers and should also be aligned in a tabular fashion:

```
static struct foo statfoo = {
        .a              = 0,
```

```
            .plain_integer  = CONSTANT_DEFINE_OR_ENUM,
            .bar            = &statbar,
};
```

Note that while C99 syntax allows the omission of the final comma, we recommend the use of a comma on the last line because it makes reordering and addition of new lines easier, and makes such future patches slightly easier to read as well.

Line breaks

Restricting line length to 80 characters makes deeply indented code hard to read. Consider breaking out code into helper functions to avoid excessive line breaking.

The 80 character rule is not a strict rule, so please use common sense when breaking lines. Especially format strings should never be broken up.

When splitting function declarations or function calls, then please align the first argument in the second line with the first argument in the first line:

```
static int long_function_name(struct foobar *barfoo, unsigned int id,
                              unsigned int offset)
{

    if (!id) {
            ret = longer_function_name(barfoo, DEFAULT_BARFOO_ID,
                                       offset);
    ...
```

Namespaces

Function/variable namespaces improve readability and allow easy grepping. These namespaces are string prefixes for globally visible function and variable names, including inlines. These prefixes should combine the subsystem and the component name such as 'x86_comp_', 'sched_', 'irq_', and 'mutex_'.

This also includes static file scope functions that are immediately put into globally visible driver templates - it's useful for those symbols to carry a good prefix as well, for backtrace readability.

Namespace prefixes may be omitted for local static functions and variables. Truly local functions, only called by other local functions, can have shorter descriptive names - our primary concern is greppability and backtrace readability.

Please note that 'xxx_vendor_' and 'vendor_xxx_`' prefixes are not helpful for static functions in vendor-specific files. After all, it is already clear that the code is vendor-specific. In addition, vendor names should only be for truly vendor-specific functionality.

As always apply common sense and aim for consistency and readability.

* Commit notifications

The tip tree is monitored by a bot for new commits. The bot sends an email for each new commit to a dedicated mailing list (`linux-tip-commits@vger.kernel.org`) and Cc's all people who are mentioned in one of the commit tags. It uses the email message ID from the Link tag at the end of the tag list to set the In-Reply-To email header so the message is properly threaded with the patch submission email.

The tip maintainers and submaintainers try to reply to the submitter when merging a patch, but they sometimes forget or it does not fit the workflow of the moment. While the bot message is purely mechanical, it also implies a 'Thank you! Applied.'.

* netdev FAQ

* tl;dr

- designate your patch to a tree - [PATCH net] or [PATCH net-next]
- for fixes the `Fixes:` tag is required, regardless of the tree
- don't post large series (> 15 patches), break them up
- don't repost your patches within one 24h period
- reverse xmas tree

* What is netdev?

It is a mailing list for all network-related Linux stuff. This includes anything found under net/ (i.e. core code like IPv6) and drivers/net (i.e. hardware specific drivers) in the Linux source tree.

Note that some subsystems (e.g. wireless drivers) which have a high volume of traffic have their own specific mailing lists.

The netdev list is managed (like many other Linux mailing lists) through VGER (http://vger.kernel.org/) with archives available at https://lore.kernel.org/netdev/

Aside from subsystems like those mentioned above, all network-related Linux development (i.e. RFC, review, comments, etc.) takes place on netdev.

* How do the changes posted to netdev make their way into Linux?

There are always two trees (git repositories) in play. Both are driven by David Miller, the main network maintainer. There is the `net` tree, and the `net-next` tree. As you can probably guess from the names, the `net` tree is for fixes to existing code already in the mainline tree from Linus, and `net-next` is where the new code goes for the future release. You can find the trees here:

- https://git.kernel.org/pub/scm/linux/kernel/git/netdev/net.git
- https://git.kernel.org/pub/scm/linux/kernel/git/netdev/net-next.git

* How do I indicate which tree (net vs. net-next) my patch should be in?

To help maintainers and CI bots you should explicitly mark which tree your patch is targeting. Assuming that you use git, use the prefix flag:

```
git format-patch --subject-prefix='PATCH net-next' start..finish
```

Use `net` instead of `net-next` (always lower case) in the above for bug-fix `net` content.

* How often do changes from these trees make it to the mainline Linus tree?

To understand this, you need to know a bit of background information on the cadence of Linux development. Each new release starts off with a two week "merge window" where the main maintainers feed their new stuff to Linus for merging into the mainline tree. After the two weeks, the merge window is closed, and it is called/tagged `-rc1`. No new features get mainlined after this – only fixes to the rc1 content are expected. After roughly a week of collecting fixes to the rc1 content, rc2 is released. This repeats on a roughly weekly basis until rc7 (typically; sometimes rc6 if things are quiet, or rc8 if things are in a state of churn), and a week after the last vX.Y-rcN was done, the official vX.Y is released.

Relating that to netdev: At the beginning of the 2-week merge window, the `net-next` tree will be closed - no new changes/features. The accumulated new content of the past ~10 weeks will be passed onto mainline/Linus via a pull request for vX.Y – at the same time, the `net` tree will start accumulating fixes for this pulled content relating to vX.Y

An announcement indicating when `net-next` has been closed is usually sent to netdev, but knowing the above, you can predict that in advance.

> **Warning:** Do not send new `net-next` content to netdev during the period during which `net-next` tree is closed.

RFC patches sent for review only are obviously welcome at any time (use `--subject-prefix='RFC net-next'` with `git format-patch`).

Shortly after the two weeks have passed (and vX.Y-rc1 is released), the tree for `net-next` re-opens to collect content for the next (vX.Y+1) release.

If you aren't subscribed to netdev and/or are simply unsure if `net-next` has re-opened yet, simply check the `net-next` git repository link above for any new networking-related commits. You may also check the following website for the current status:

> http://vger.kernel.org/~davem/net-next.html

The `net` tree continues to collect fixes for the vX.Y content, and is fed back to Linus at regular (~weekly) intervals. Meaning that the focus for `net` is on stabilization and bug fixes.

Finally, the vX.Y gets released, and the whole cycle starts over.

* So where are we now in this cycle?

Load the mainline (Linus) page here:

> https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git

and note the top of the "tags" section. If it is rc1, it is early in the dev cycle. If it was tagged rc7 a week ago, then a release is probably imminent. If the most recent tag is a final release tag (without an `-rcN` suffix) - we are most likely in a merge window and `net-next` is closed.

* How can I tell the status of a patch I've sent?

Start by looking at the main patchworks queue for netdev:

> https://patchwork.kernel.org/project/netdevbpf/list/

The "State" field will tell you exactly where things are at with your patch. Patches are indexed by the `Message-ID` header of the emails which carried them so if you have trouble finding your patch append the value of `Message-ID` to the URL above.

* How long before my patch is accepted?

Generally speaking, the patches get triaged quickly (in less than 48h). But be patient, if your patch is active in patchwork (i.e. it's listed on the project's patch list) the chances it was missed are close to zero. Asking the maintainer for status updates on your patch is a good way to ensure your patch is ignored or pushed to the bottom of the priority list.

* Should I directly update patchwork state of my own patches?

It may be tempting to help the maintainers and update the state of your own patches when you post a new version or spot a bug. Please do not do that. Interfering with the patch status on patchwork will only cause confusion. Leave it to the maintainer to figure out what is the most recent and current version that should be applied. If there is any doubt, the maintainer will reply and ask what should be done.

* How do I divide my work into patches?

Put yourself in the shoes of the reviewer. Each patch is read separately and therefore should constitute a comprehensible step towards your stated goal.

Avoid sending series longer than 15 patches. Larger series takes longer to review as reviewers will defer looking at it until they find a large chunk of time. A small series can be reviewed in a short time, so Maintainers just do it. As a result, a sequence of smaller series gets merged quicker and with better review coverage. Re-posting large series also increases the mailing list traffic.

* I made changes to only a few patches in a patch series should I resend only those changed?

No, please resend the entire patch series and make sure you do number your patches such that it is clear this is the latest and greatest set of patches that can be applied.

* I have received review feedback, when should I post a revised version of the patches?

Allow at least 24 hours to pass between postings. This will ensure reviewers from all geographical locations have a chance to chime in. Do not wait too long (weeks) between postings either as it will make it harder for reviewers to recall all the context.

Make sure you address all the feedback in your new posting. Do not post a new version of the code if the discussion about the previous version is still ongoing, unless directly instructed by a reviewer.

* I submitted multiple versions of a patch series and it looks like a version other than the last one has been accepted, what should I do?

There is no revert possible, once it is pushed out, it stays like that. Please send incremental versions on top of what has been merged in order to fix the patches the way they would look like if your latest patch series was to be merged.

* Are there special rules regarding stable submissions on netdev?

While it used to be the case that netdev submissions were not supposed to carry explicit `CC:` `stable@vger.kernel.org` tags that is no longer the case today. Please follow the standard stable rules in *Documentation/process/stable-kernel-rules.rst*, and make sure you include appropriate Fixes tags!

* Is the comment style convention different for the networking content?

Yes, in a largely trivial way. Instead of this:

```
/*
 * foobar blah blah blah
 * another line of text
 */
```

it is requested that you make it look like this:

```
/* foobar blah blah blah
 * another line of text
 */
```

* What is "reverse xmas tree"?

Netdev has a convention for ordering local variables in functions. Order the variable declaration lines longest to shortest, e.g.:

```
struct scatterlist *sg;
struct sk_buff *skb;
int err, i;
```

If there are dependencies between the variables preventing the ordering move the initialization out of line.

* I am working in existing code which uses non-standard formatting. Which formatting should I use?

Make your code follow the most recent guidelines, so that eventually all code in the domain of netdev is in the preferred format.

* I found a bug that might have possible security implications or similar. Should I mail the main netdev maintainer off-list?

No. The current netdev maintainer has consistently requested that people use the mailing lists and not reach out directly. If you aren't OK with that, then perhaps consider mailing security@kernel.org or reading about http://oss-security.openwall.org/wiki/mailing-lists/distros as possible alternative mechanisms.

* What level of testing is expected before I submit my change?

At the very minimum your changes must survive an `allyesconfig` and an `allmodconfig` build with `W=1` set without new warnings or failures.

Ideally you will have done run-time testing specific to your change, and the patch series contains a set of kernel selftest for `tools/testing/selftests/net` or using the KUnit framework.

You are expected to test your changes on top of the relevant networking tree (`net` or `net-next`) and not e.g. a stable tree or `linux-next`.

* How do I post corresponding changes to user space components?

User space code exercising kernel features should be posted alongside kernel patches. This gives reviewers a chance to see how any new interface is used and how well it works.

When user space tools reside in the kernel repo itself all changes should generally come as one series. If series becomes too large or the user space project is not reviewed on netdev include a link to a public repo where user space patches can be seen.

In case user space tooling lives in a separate repository but is reviewed on netdev (e.g. patches to `iproute2` tools) kernel and user space patches should form separate series (threads) when posted to the mailing list, e.g.:

```
[PATCH net-next 0/3] net: some feature cover letter
 └ [PATCH net-next 1/3] net: some feature prep
 └ [PATCH net-next 2/3] net: some feature do it
 └ [PATCH net-next 3/3] selftest: net: some feature

[PATCH iproute2-next] ip: add support for some feature
```

Posting as one thread is discouraged because it confuses patchwork (as of patchwork 2.2.2).

* Can I reproduce the checks from patchwork on my local machine?

Checks in patchwork are mostly simple wrappers around existing kernel scripts, the sources are available at:

https://github.com/kuba-moo/nipa/tree/master/tests

* Running all the builds and checks locally is a pain, can I post my patches and have the patchwork bot validate them?

No, you must ensure that your patches are ready by testing them locally before posting to the mailing list. The patchwork build bot instance gets overloaded very easily and netdev@vger really doesn't need more traffic if we can help it.

* netdevsim is great, can I extend it for my out-of-tree tests?

No, `netdevsim` is a test vehicle solely for upstream tests. (Please add your tests under `tools/testing/selftests/`.)

We also give no guarantees that `netdevsim` won't change in the future in a way which would break what would normally be considered uAPI.

* Is netdevsim considered a "user" of an API?

Linux kernel has a long standing rule that no API should be added unless it has a real, in-tree user. Mock-ups and tests based on `netdevsim` are strongly encouraged when adding new APIs, but `netdevsim` in itself is **not** considered a use case/user.

* Any other tips to help ensure my net/net-next patch gets OK'd?

Attention to detail. Re-read your own work as if you were the reviewer. You can start with using `checkpatch.pl`, perhaps even with the `--strict` flag. But do not be mindlessly robotic in doing so. If your change is a bug fix, make sure your commit log indicates the end-user visible symptom, the underlying reason as to why it happens, and then if necessary, explain why the fix proposed is the best way to get things done. Don't mangle whitespace, and as is common, don't mis-indent function arguments that span multiple lines. If it is your first patch, mail it to yourself so you can test apply it to an unpatched tree to confirm infrastructure didn't mangle it.

Finally, go back and read *Documentation/process/submitting-patches.rst* to be sure you are not repeating some common mistake documented there.

KERNEL MAINTAINER PGP GUIDE

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This document is aimed at Linux kernel developers, and especially at subsystem maintainers. It contains a subset of information discussed in the more general "Protecting Code Integrity" guide published by the Linux Foundation. Please read that document for more in-depth discussion on some of the topics mentioned in this guide.

* The role of PGP in Linux Kernel development

PGP helps ensure the integrity of the code that is produced by the Linux kernel development community and, to a lesser degree, establish trusted communication channels between developers via PGP-signed email exchange.

The Linux kernel source code is available in two main formats:

- Distributed source repositories (git)
- Periodic release snapshots (tarballs)

Both git repositories and tarballs carry PGP signatures of the kernel developers who create official kernel releases. These signatures offer a cryptographic guarantee that downloadable versions made available via kernel.org or any other mirrors are identical to what these developers have on their workstations. To this end:

- git repositories provide PGP signatures on all tags
- tarballs provide detached PGP signatures with all downloads

* Trusting the developers, not infrastructure

Ever since the 2011 compromise of core kernel.org systems, the main operating principle of the Kernel Archives project has been to assume that any part of the infrastructure can be compromised at any time. For this reason, the administrators have taken deliberate steps to emphasize that trust must always be placed with developers and never with the code hosting infrastructure, regardless of how good the security practices for the latter may be.

The above guiding principle is the reason why this guide is needed. We want to make sure that by placing trust into developers we do not simply shift the blame for potential future security incidents to someone else. The goal is to provide a set of guidelines developers can use to create a secure working environment and safeguard the PGP keys used to establish the integrity of the Linux kernel itself.

* **PGP tools**

* **Use GnuPG v2**

Your distro should already have GnuPG installed by default, you just need to verify that you are using version 2.x and not the legacy 1.4 release – many distributions still package both, with the default `gpg` command invoking GnuPG v.1. To check, run:

```
$ gpg --version | head -n1
```

If you see `gpg (GnuPG) 1.4.x`, then you are using GnuPG v.1. Try the `gpg2` command (if you don't have it, you may need to install the gnupg2 package):

```
$ gpg2 --version | head -n1
```

If you see `gpg (GnuPG) 2.x.x`, then you are good to go. This guide will assume you have the version 2.2 of GnuPG (or later). If you are using version 2.0 of GnuPG, then some of the commands in this guide will not work, and you should consider installing the latest 2.2 version of GnuPG. Versions of gnupg-2.1.11 and later should be compatible for the purposes of this guide as well.

If you have both `gpg` and `gpg2` commands, you should make sure you are always using GnuPG v2, not the legacy version. You can enforce this by setting the appropriate alias:

```
$ alias gpg=gpg2
```

You can put that in your `.bashrc` to make sure it's always the case.

Configure gpg-agent options

The GnuPG agent is a helper tool that will start automatically whenever you use the `gpg` command and run in the background with the purpose of caching the private key passphrase. There are two options you should know in order to tweak when the passphrase should be expired from cache:

- `default-cache-ttl` (seconds): If you use the same key again before the time-to-live expires, the countdown will reset for another period. The default is 600 (10 minutes).

- `max-cache-ttl` (seconds): Regardless of how recently you've used the key since initial passphrase entry, if the maximum time-to-live countdown expires, you'll have to enter the passphrase again. The default is 30 minutes.

If you find either of these defaults too short (or too long), you can edit your `~/.gnupg/gpg-agent.conf` file to set your own values:

```
# set to 30 minutes for regular ttl, and 2 hours for max ttl
default-cache-ttl 1800
max-cache-ttl 7200
```

Note: It is no longer necessary to start gpg-agent manually at the beginning of your shell session. You may want to check your rc files to remove anything you had in place for older

---

versions of GnuPG, as it may not be doing the right thing any more.

Set up a refresh cronjob

You will need to regularly refresh your keyring in order to get the latest changes on other people's public keys, which is best done with a daily cronjob:

```
@daily /usr/bin/gpg2 --refresh >/dev/null 2>&1
```

Check the full path to your `gpg` or `gpg2` command and use the `gpg2` command if regular `gpg` for you is the legacy GnuPG v.1.

* Protect your master PGP key

This guide assumes that you already have a PGP key that you use for Linux kernel development purposes. If you do not yet have one, please see the "Protecting Code Integrity" document mentioned earlier for guidance on how to create a new one.

You should also make a new key if your current one is weaker than 2048 bits (RSA).

* Master key vs. Subkeys

Subkeys are fully independent PGP keypairs that are tied to the "master" key using certifying key signatures (certificates). It is important to understand the following:

1. There are no technical differences between the "master key" and "subkeys."

2. At creation time, we assign functional limitations to each key by giving it specific capabilities.

3. A PGP key can have 4 capabilities:

   - **[S]** key can be used for signing

   - **[E]** key can be used for encryption

   - **[A]** key can be used for authentication

   - **[C]** key can be used for certifying other keys

4. A single key may have multiple capabilities.

5. A subkey is fully independent from the master key. A message encrypted to a subkey cannot be decrypted with the master key. If you lose your private subkey, it cannot be recreated from the master key in any way.

The key carrying the **[C]** (certify) capability is considered the "master" key because it is the only key that can be used to indicate relationship with other keys. Only the **[C]** key can be used to:

- add or revoke other keys (subkeys) with S/E/A capabilities

- add, change or revoke identities (uids) associated with the key

- add or change the expiration date on itself or any subkey

- sign other people's keys for web of trust purposes

By default, GnuPG creates the following when generating new keys:

- A master key carrying both Certify and Sign capabilities (**[SC]**)

- A separate subkey with the Encryption capability (**[E]**)

If you used the default parameters when generating your key, then that is what you will have. You can verify by running `gpg --list-secret-keys`, for example:

```
sec   rsa2048 2018-01-23 [SC] [expires: 2020-01-23]
      000000000000000000000000AAAABBBBCCCCDDDD
uid           [ultimate] Alice Dev <adev@kernel.org>
ssb   rsa2048 2018-01-23 [E] [expires: 2020-01-23]
```

Any key carrying the **[C]** capability is your master key, regardless of any other capabilities it may have assigned to it.

The long line under the `sec` entry is your key fingerprint – whenever you see `[fpr]` in the examples below, that 40-character string is what it refers to.

* Ensure your passphrase is strong

GnuPG uses passphrases to encrypt your private keys before storing them on disk. This way, even if your `.gnupg` directory is leaked or stolen in its entirety, the attackers cannot use your private keys without first obtaining the passphrase to decrypt them.

It is absolutely essential that your private keys are protected by a strong passphrase. To set it or change it, use:

```
$ gpg --change-passphrase [fpr]
```

* Create a separate Signing subkey

Our goal is to protect your master key by moving it to offline media, so if you only have a combined **[SC]** key, then you should create a separate signing subkey:

```
$ gpg --quick-addkey [fpr] ed25519 sign
```

Remember to tell the keyservers about this change, so others can pull down your new subkey:

```
$ gpg --send-key [fpr]
```

Note: ECC support in GnuPG

GnuPG 2.1 and later has full support for Elliptic Curve Cryptography, with ability to combine ECC subkeys with traditional RSA master keys. The main upside of ECC cryptography is that it is much faster computationally and creates much smaller signatures when compared byte for byte with 2048+ bit RSA keys. Unless you plan on using a smartcard device that does not support ECC operations, we recommend that you create an ECC signing subkey for your kernel work.

If for some reason you prefer to stay with RSA subkeys, just replace "ed25519" with "rsa2048" in the above command. Additionally, if you plan to use a hardware device that does not support ED25519 ECC keys, like Nitrokey Pro or a Yubikey, then you should use "nistp256" instead or "ed25519."

* Back up your master key for disaster recovery

The more signatures you have on your PGP key from other developers, the more reasons you have to create a backup version that lives on something other than digital media, for disaster recovery reasons.

The best way to create a printable hardcopy of your private key is by using the `paperkey` software written for this very purpose. See `man paperkey` for more details on the output format and its benefits over other solutions. Paperkey should already be packaged for most distributions.

Run the following command to create a hardcopy backup of your private key:

```
$ gpg --export-secret-key [fpr] | paperkey -o /tmp/key-backup.txt
```

Print out that file (or pipe the output straight to lpr), then take a pen and write your passphrase on the margin of the paper. **This is strongly recommended** because the key printout is still encrypted with that passphrase, and if you ever change it you will not remember what it used to be when you had created the backup – *guaranteed*.

Put the resulting printout and the hand-written passphrase into an envelope and store in a secure and well-protected place, preferably away from your home, such as your bank vault.

Note: Your printer is probably no longer a simple dumb device connected to your parallel port, but since the output is still encrypted with your passphrase, printing out even to "cloud-integrated" modern printers should remain a relatively safe operation. One option is to change the passphrase on your master key immediately after you are done with paperkey.

---

* Back up your whole GnuPG directory

Warning: !!!Do not skip this step!!!

It is important to have a readily available backup of your PGP keys should you need to recover them. This is different from the disaster-level preparedness we did with `paperkey`. You will also rely on these external copies whenever you need to use your Certify key – such as when making changes to your own key or signing other people's keys after conferences and summits.

Start by getting a small USB "thumb" drive (preferably two!) that you will use for backup purposes. You will need to encrypt them using LUKS – refer to your distro's documentation on how to accomplish this.

For the encryption passphrase, you can use the same one as on your master key.

Once the encryption process is over, re-insert the USB drive and make sure it gets properly mounted. Copy your entire `.gnupg` directory over to the encrypted storage:

---

*. Protect your master PGP key

```
$ cp -a ~/.gnupg /media/disk/foo/gnupg-backup
```

You should now test to make sure everything still works:

```
$ gpg --homedir=/media/disk/foo/gnupg-backup --list-key [fpr]
```

If you don't get any errors, then you should be good to go. Unmount the USB drive, distinctly label it so you don't blow it away next time you need to use a random USB drive, and put in a safe place – but not too far away, because you'll need to use it every now and again for things like editing identities, adding or revoking subkeys, or signing other people's keys.

* Remove the master key from your homedir

The files in our home directory are not as well protected as we like to think. They can be leaked or stolen via many different means:

- by accident when making quick homedir copies to set up a new workstation
- by systems administrator negligence or malice
- via poorly secured backups
- via malware in desktop apps (browsers, pdf viewers, etc)
- via coercion when crossing international borders

Protecting your key with a good passphrase greatly helps reduce the risk of any of the above, but passphrases can be discovered via keyloggers, shoulder-surfing, or any number of other means. For this reason, the recommended setup is to remove your master key from your home directory and store it on offline storage.

> **Warning:** Please see the previous section and make sure you have backed up your GnuPG directory in its entirety. What we are about to do will render your key useless if you do not have a usable backup!

First, identify the keygrip of your master key:

```
$ gpg --with-keygrip --list-key [fpr]
```

The output will be something like this:

```
pub    rsa2048 2018-01-24 [SC] [expires: 2020-01-24]
       000000000000000000000000AAAABBBBCCCCDDDD
       Keygrip = 1111000000000000000000000000000000000000
uid           [ultimate] Alice Dev <adev@kernel.org>
sub    rsa2048 2018-01-24 [E] [expires: 2020-01-24]
       Keygrip = 2222000000000000000000000000000000000000
sub    ed25519 2018-01-24 [S]
       Keygrip = 3333000000000000000000000000000000000000
```

Find the keygrip entry that is beneath the `pub` line (right under the master key fingerprint). This will correspond directly to a file in your `~/.gnupg` directory:

```
$ cd ~/.gnupg/private-keys-v1.d
$ ls
11110000000000000000000000000000000000000.key
22220000000000000000000000000000000000000.key
33330000000000000000000000000000000000000.key
```

All you have to do is simply remove the .key file that corresponds to the master keygrip:

```
$ cd ~/.gnupg/private-keys-v1.d
$ rm 11110000000000000000000000000000000000000.key
```

Now, if you issue the `--list-secret-keys` command, it will show that the master key is missing (the # indicates it is not available):

```
$ gpg --list-secret-keys
sec#   rsa2048 2018-01-24 [SC] [expires: 2020-01-24]
       0000000000000000000000AAAABBBBCCCCDDDD
uid            [ultimate] Alice Dev <adev@kernel.org>
ssb    rsa2048 2018-01-24 [E] [expires: 2020-01-24]
ssb    ed25519 2018-01-24 [S]
```

You should also remove any `secring.gpg` files in the `~/.gnupg` directory, which are left over from earlier versions of GnuPG.

If you don't have the "private-keys-v1.d" directory

If you do not have a `~/.gnupg/private-keys-v1.d` directory, then your secret keys are still stored in the legacy `secring.gpg` file used by GnuPG v1. Making any changes to your key, such as changing the passphrase or adding a subkey, should automatically convert the old `secring.gpg` format to use `private-keys-v1.d` instead.

Once you get that done, make sure to delete the obsolete `secring.gpg` file, which still contains your private keys.

* Move the subkeys to a dedicated crypto device

Even though the master key is now safe from being leaked or stolen, the subkeys are still in your home directory. Anyone who manages to get their hands on those will be able to decrypt your communication or fake your signatures (if they know the passphrase). Furthermore, each time a GnuPG operation is performed, the keys are loaded into system memory and can be stolen from there by sufficiently advanced malware (think Meltdown and Spectre).

The best way to completely protect your keys is to move them to a specialized hardware device that is capable of smartcard operations.

* The benefits of smartcards

A smartcard contains a cryptographic chip that is capable of storing private keys and performing crypto operations directly on the card itself. Because the key contents never leave the smartcard, the operating system of the computer into which you plug in the hardware device is not able to retrieve the private keys themselves. This is very different from the encrypted USB storage device we used earlier for backup purposes – while that USB device is plugged in and mounted, the operating system is able to access the private key contents.

Using external encrypted USB media is not a substitute to having a smartcard-capable device.

* Available smartcard devices

Unless all your laptops and workstations have smartcard readers, the easiest is to get a specialized USB device that implements smartcard functionality. There are several options available:

- Nitrokey Start: Open hardware and Free Software, based on FSI Japan's Gnuk. One of the few available commercial devices that support ED25519 ECC keys, but offer fewest security features (such as resistance to tampering or some side-channel attacks).

- Nitrokey Pro 2: Similar to the Nitrokey Start, but more tamper-resistant and offers more security features. Pro 2 supports ECC cryptography (NISTP).

- Yubikey 5: proprietary hardware and software, but cheaper than Nitrokey Pro and comes available in the USB-C form that is more useful with newer laptops. Offers additional security features such as FIDO U2F, among others, and now finally supports ECC keys (NISTP).

LWN has a good review of some of the above models, as well as several others. Your choice will depend on cost, shipping availability in your geographical region, and open/proprietary hardware considerations.

Note: If you are listed in MAINTAINERS or have an account at kernel.org, you qualify for a free Nitrokey Start courtesy of The Linux Foundation.

---

* Configure your smartcard device

Your smartcard device should Just Work (TM) the moment you plug it into any modern Linux workstation. You can verify it by running:

```
$ gpg --card-status
```

If you see full smartcard details, then you are good to go. Unfortunately, troubleshooting all possible reasons why things may not be working for you is way beyond the scope of this guide. If you are having trouble getting the card to work with GnuPG, please seek help via usual support channels.

To configure your smartcard, you will need to use the GnuPG menu system, as there are no convenient command-line switches:

```
$ gpg --card-edit
[...omitted...]
gpg/card> admin
Admin commands are allowed
gpg/card> passwd
```

You should set the user PIN (1), Admin PIN (3), and the Reset Code (4). Please make sure to record and store these in a safe place – especially the Admin PIN and the Reset Code (which allows you to completely wipe the smartcard). You so rarely need to use the Admin PIN, that you will inevitably forget what it is if you do not record it.

Getting back to the main card menu, you can also set other values (such as name, sex, login data, etc), but it's not necessary and will additionally leak information about your smartcard should you lose it.

Note: Despite having the name "PIN", neither the user PIN nor the admin PIN on the card need to be numbers.

Warning: Some devices may require that you move the subkeys onto the device before you can change the passphrase. Please check the documentation provided by the device manufacturer.

* Move the subkeys to your smartcard

Exit the card menu (using "q") and save all changes. Next, let's move your subkeys onto the smartcard. You will need both your PGP key passphrase and the admin PIN of the card for most operations:

```
$ gpg --edit-key [fpr]

Secret subkeys are available.

pub   rsa2048/AAAABBBBCCCCDDDD
      created: 2018-01-23  expires: 2020-01-23  usage: SC
      trust: ultimate       validity: ultimate
ssb   rsa2048/1111222233334444
      created: 2018-01-23  expires: never        usage: E
ssb   ed25519/5555666677778888
      created: 2017-12-07  expires: never        usage: S
[ultimate] (1). Alice Dev <adev@kernel.org>


gpg>
```

Using --edit-key puts us into the menu mode again, and you will notice that the key listing is a little different. From here on, all commands are done from inside this menu mode, as indicated by gpg>.

First, let's select the key we'll be putting onto the card – you do this by typing key 1 (it's the first one in the listing, the **[E]** subkey):

---

*. Move the subkeys to a dedicated crypto device   **145**

```
gpg> key 1
```

In the output, you should now see `ssb*` on the **[E]** key. The * indicates which key is currently "selected." It works as a *toggle*, meaning that if you type `key 1` again, the * will disappear and the key will not be selected any more.

Now, let's move that key onto the smartcard:

```
gpg> keytocard
Please select where to store the key:
   (2) Encryption key
Your selection? 2
```

Since it's our **[E]** key, it makes sense to put it into the Encryption slot. When you submit your selection, you will be prompted first for your PGP key passphrase, and then for the admin PIN. If the command returns without an error, your key has been moved.

Important: Now type `key 1` again to unselect the first key, and `key 2` to select the **[S]** key:

```
gpg> key 1
gpg> key 2
gpg> keytocard
Please select where to store the key:
   (1) Signature key
   (3) Authentication key
Your selection? 1
```

You can use the **[S]** key both for Signature and Authentication, but we want to make sure it's in the Signature slot, so choose (1). Once again, if your command returns without an error, then the operation was successful:

```
gpg> q
Save changes? (y/N) y
```

Saving the changes will delete the keys you moved to the card from your home directory (but it's okay, because we have them in our backups should we need to do this again for a replacement smartcard).

Verifying that the keys were moved

If you perform `--list-secret-keys` now, you will see a subtle difference in the output:

```
$ gpg --list-secret-keys
sec#  rsa2048 2018-01-24 [SC] [expires: 2020-01-24]
      000000000000000000000000AAAABBBBCCCCDDDD
uid           [ultimate] Alice Dev <adev@kernel.org>
ssb>  rsa2048 2018-01-24 [E] [expires: 2020-01-24]
ssb>  ed25519 2018-01-24 [S]
```

The > in the `ssb>` output indicates that the subkey is only available on the smartcard. If you go back into your secret keys directory and look at the contents there, you will notice that the `.key` files there have been replaced with stubs:

```
$ cd ~/.gnupg/private-keys-v1.d
$ strings *.key | grep 'private-key'
```

The output should contain `shadowed-private-key` to indicate that these files are only stubs and the actual content is on the smartcard.

Verifying that the smartcard is functioning

To verify that the smartcard is working as intended, you can create a signature:

```
$ echo "Hello world" | gpg --clearsign > /tmp/test.asc
$ gpg --verify /tmp/test.asc
```

This should ask for your smartcard PIN on your first command, and then show "Good signature" after you run `gpg --verify`.

Congratulations, you have successfully made it extremely difficult to steal your digital developer identity!

* Other common GnuPG operations

Here is a quick reference for some common operations you'll need to do with your PGP key.

Mounting your master key offline storage

You will need your master key for any of the operations below, so you will first need to mount your backup offline storage and tell GnuPG to use it:

```
$ export GNUPGHOME=/media/disk/foo/gnupg-backup
$ gpg --list-secret-keys
```

You want to make sure that you see `sec` and not `sec#` in the output (the # means the key is not available and you're still using your regular home directory location).

Extending key expiration date

The master key has the default expiration date of 2 years from the date of creation. This is done both for security reasons and to make obsolete keys eventually disappear from keyservers.

To extend the expiration on your key by a year from current date, just run:

```
$ gpg --quick-set-expire [fpr] 1y
```

You can also use a specific date if that is easier to remember (e.g. your birthday, January 1st, or Canada Day):

```
$ gpg --quick-set-expire [fpr] 2020-07-01
```

Remember to send the updated key back to keyservers:

---

*. Move the subkeys to a dedicated crypto device **147**

```
$ gpg --send-key [fpr]
```

Updating your work directory after any changes

After you make any changes to your key using the offline storage, you will want to import these changes back into your regular working directory:

```
$ gpg --export | gpg --homedir ~/.gnupg --import
$ unset GNUPGHOME
```

Using gpg-agent over ssh

You can forward your gpg-agent over ssh if you need to sign tags or commits on a remote system. Please refer to the instructions provided on the GnuPG wiki:

- Agent Forwarding over SSH

It works more smoothly if you can modify the sshd server settings on the remote end.

* Using PGP with Git

One of the core features of Git is its decentralized nature – once a repository is cloned to your system, you have full history of the project, including all of its tags, commits and branches. However, with hundreds of cloned repositories floating around, how does anyone verify that their copy of linux.git has not been tampered with by a malicious third party?

Or what happens if a backdoor is discovered in the code and the "Author" line in the commit says it was done by you, while you're pretty sure you had nothing to do with it?

To address both of these issues, Git introduced PGP integration. Signed tags prove the repository integrity by assuring that its contents are exactly the same as on the workstation of the developer who created the tag, while signed commits make it nearly impossible for someone to impersonate you without having access to your PGP keys.

* Configure git to use your PGP key

If you only have one secret key in your keyring, then you don't really need to do anything extra, as it becomes your default key. However, if you happen to have multiple secret keys, you can tell git which key should be used ([fpr] is the fingerprint of your key):

```
$ git config --global user.signingKey [fpr]
```

IMPORTANT: If you have a distinct `gpg2` command, then you should tell git to always use it instead of the legacy `gpg` from version 1:

```
$ git config --global gpg.program gpg2
$ git config --global gpgv.program gpgv2
```

* How to work with signed tags

To create a signed tag, simply pass the `-s` switch to the tag command:

```
$ git tag -s [tagname]
```

Our recommendation is to always sign git tags, as this allows other developers to ensure that the git repository they are pulling from has not been maliciously altered.

How to verify signed tags

To verify a signed tag, simply use the `verify-tag` command:

```
$ git verify-tag [tagname]
```

If you are pulling a tag from another fork of the project repository, git should automatically verify the signature at the tip you're pulling and show you the results during the merge operation:

```
$ git pull [url] tags/sometag
```

The merge message will contain something like this:

```
Merge tag 'sometag' of [url]

[Tag message]

# gpg: Signature made [...]
# gpg: Good signature from [...]
```

If you are verifying someone else's git tag, then you will need to import their PGP key. Please refer to the "*How to verify kernel developer identities*" section below.

Note: If you get "`gpg: Can't check signature: unknown pubkey algorithm`" error, you need to tell git to use gpgv2 for verification, so it properly processes signatures made by ECC keys. See instructions at the start of this section.

Configure git to always sign annotated tags

Chances are, if you're creating an annotated tag, you'll want to sign it. To force git to always sign annotated tags, you can set a global configuration option:

```
$ git config --global tag.forceSignAnnotated true
```

* How to work with signed commits

It is easy to create signed commits, but it is much more difficult to use them in Linux kernel development, since it relies on patches sent to the mailing list, and this workflow does not preserve PGP commit signatures. Furthermore, when rebasing your repository to match upstream, even your own PGP commit signatures will end up discarded. For this reason, most kernel developers don't bother signing their commits and will ignore signed commits in any external repositories that they rely upon in their work.

However, if you have your working git tree publicly available at some git hosting service (kernel.org, infradead.org, ozlabs.org, or others), then the recommendation is that you sign all your git commits even if upstream developers do not directly benefit from this practice.

We recommend this for the following reasons:

1. Should there ever be a need to perform code forensics or track code provenance, even externally maintained trees carrying PGP commit signatures will be valuable for such purposes.

2. If you ever need to re-clone your local repository (for example, after a disk failure), this lets you easily verify the repository integrity before resuming your work.

3. If someone needs to cherry-pick your commits, this allows them to quickly verify their integrity before applying them.

Creating signed commits

To create a signed commit, you just need to pass the `-S` flag to the `git commit` command (it's capital `-S` due to collision with another flag):

```
$ git commit -S
```

Configure git to always sign commits

You can tell git to always sign commits:

```
git config --global commit.gpgSign true
```

Note: Make sure you configure `gpg-agent` before you turn this on.

* How to verify kernel developer identities

Signing tags and commits is easy, but how does one go about verifying that the key used to sign something belongs to the actual kernel developer and not to a malicious imposter?

* Configure auto-key-retrieval using WKD and DANE

If you are not already someone with an extensive collection of other developers' public keys, then you can jumpstart your keyring by relying on key auto-discovery and auto-retrieval. GnuPG can piggyback on other delegated trust technologies, namely DNSSEC and TLS, to get you going if the prospect of starting your own Web of Trust from scratch is too daunting.

Add the following to your ~/.gnupg/gpg.conf:

```
auto-key-locate wkd,dane,local
auto-key-retrieve
```

DNS-Based Authentication of Named Entities ("DANE") is a method for publishing public keys in DNS and securing them using DNSSEC signed zones. Web Key Directory ("WKD") is the alternative method that uses https lookups for the same purpose. When using either DANE or WKD for looking up public keys, GnuPG will validate DNSSEC or TLS certificates, respectively, before adding auto-retrieved public keys to your local keyring.

Kernel.org publishes the WKD for all developers who have kernel.org accounts. Once you have the above changes in your `gpg.conf`, you can auto-retrieve the keys for Linus Torvalds and Greg Kroah-Hartman (if you don't already have them):

```
$ gpg --locate-keys torvalds@kernel.org gregkh@kernel.org
```

If you have a kernel.org account, then you should add the kernel.org UID to your key to make WKD more useful to other kernel developers.

* Web of Trust (WOT) vs. Trust on First Use (TOFU)

PGP incorporates a trust delegation mechanism known as the "Web of Trust." At its core, this is an attempt to replace the need for centralized Certification Authorities of the HTTPS/TLS world. Instead of various software makers dictating who should be your trusted certifying entity, PGP leaves this responsibility to each user.

Unfortunately, very few people understand how the Web of Trust works. While it remains an important aspect of the OpenPGP specification, recent versions of GnuPG (2.2 and above) have implemented an alternative mechanism called "Trust on First Use" (TOFU). You can think of TOFU as "the SSH-like approach to trust." With SSH, the first time you connect to a remote system, its key fingerprint is recorded and remembered. If the key changes in the future, the SSH client will alert you and refuse to connect, forcing you to make a decision on whether you choose to trust the changed key or not. Similarly, the first time you import someone's PGP key, it is assumed to be valid. If at any point in the future GnuPG comes across another key with the same identity, both the previously imported key and the new key will be marked as invalid and you will need to manually figure out which one to keep.

We recommend that you use the combined TOFU+PGP trust model (which is the new default in GnuPG v2). To set it, add (or modify) the `trust-model` setting in ~/.gnupg/gpg.conf:

```
trust-model tofu+pgp
```

* How to use keyservers (more) safely

If you get a "No public key" error when trying to validate someone's tag, then you should attempt to lookup that key using a keyserver. It is important to keep in mind that there is absolutely no guarantee that the key you retrieve from PGP keyservers belongs to the actual person – that much is by design. You are supposed to use the Web of Trust to establish key validity.

How to properly maintain the Web of Trust is beyond the scope of this document, simply because doing it properly requires both effort and dedication that tends to be beyond the caring threshold of most human beings. Here are some shortcuts that will help you reduce the risk of importing a malicious key.

First, let's say you've tried to run `git verify-tag` but it returned an error saying the key is not found:

```
$ git verify-tag sunxi-fixes-for-4.15-2
gpg: Signature made Sun 07 Jan 2018 10:51:55 PM EST
gpg:                 using RSA key DA73759BF8619E484E5A3B47389A54219C0F2430
gpg:                 issuer "wens@...org"
gpg: Can't check signature: No public key
```

Let's query the keyserver for more info about that key fingerprint (the fingerprint probably belongs to a subkey, so we can't use it directly without finding out the ID of the master key it is associated with):

```
$ gpg --search DA73759BF8619E484E5A3B47389A54219C0F2430
gpg: data source: hkp://keys.gnupg.net
(1) Chen-Yu Tsai <wens@...org>
      4096 bit RSA key C94035C21B4F2AEB, created: 2017-03-14, expires: 2019-03-
↪15
Keys 1-1 of 1 for "DA73759BF8619E484E5A3B47389A54219C0F2430".  Enter number(s),
↪ N)ext, or Q)uit > q
```

Locate the ID of the master key in the output, in our example `C94035C21B4F2AEB`. Now display the key of Linus Torvalds that you have on your keyring:

```
$ gpg --list-key torvalds@kernel.org
pub   rsa2048 2011-09-20 [SC]
      ABAF11C65A2970B130ABE3C479BE3E4300411886
uid           [ unknown] Linus Torvalds <torvalds@kernel.org>
sub   rsa2048 2011-09-20 [E]
```

Next, find a trust path from Linus Torvalds to the key-id you found via `gpg --search` of the unknown key. For this, you can use several tools including https://github.com/mricon/wotmate, https://git.kernel.org/pub/scm/docs/kernel/pgpkeys.git/tree/graphs, and https://the.earth.li/~noodles/pathfind.html.

If you get a few decent trust paths, then it's a pretty good indication that it is a valid key. You can add it to your keyring from the keyserver now:

```
$ gpg --recv-key C94035C21B4F2AEB
```

This process is not perfect, and you are obviously trusting the administrators of the PGP Pathfinder service to not be malicious (in fact, this goes against *Trusting the developers, not infrastructure*). However, if you do not carefully maintain your own web of trust, then it is a marked improvement over blindly trusting keyservers.

EMAIL CLIENTS INFO FOR LINUX

* Git

These days most developers use `git send-email` instead of regular email clients. The man page for this is quite good. On the receiving end, maintainers use `git am` to apply the patches.

If you are new to `git` then send your first patch to yourself. Save it as raw text including all the headers. Run `git am raw_email.txt` and then review the changelog with `git log`. When that works then send the patch to the appropriate mailing list(s).

* General Preferences

Patches for the Linux kernel are submitted via email, preferably as inline text in the body of the email. Some maintainers accept attachments, but then the attachments should have content-type `text/plain`. However, attachments are generally frowned upon because it makes quoting portions of the patch more difficult in the patch review process.

It's also strongly recommended that you use plain text in your email body, for patches and other emails alike. https://useplaintext.email may be useful for information on how to configure your preferred email client, as well as listing recommended email clients should you not already have a preference.

Email clients that are used for Linux kernel patches should send the patch text untouched. For example, they should not modify or delete tabs or spaces, even at the beginning or end of lines.

Don't send patches with `format=flowed`. This can cause unexpected and unwanted line breaks.

Don't let your email client do automatic word wrapping for you. This can also corrupt your patch.

Email clients should not modify the character set encoding of the text. Emailed patches should be in ASCII or UTF-8 encoding only. If you configure your email client to send emails with UTF-8 encoding, you avoid some possible charset problems.

Email clients should generate and maintain "References:" or "In-Reply-To:" headers so that mail threading is not broken.

Copy-and-paste (or cut-and-paste) usually does not work for patches because tabs are converted to spaces. Using xclipboard, xclip, and/or xcutsel may work, but it's best to test this for yourself or just avoid copy-and-paste.

Don't use PGP/GPG signatures in mail that contains patches. This breaks many scripts that read and apply the patches. (This should be fixable.)

It's a good idea to send a patch to yourself, save the received message, and successfully apply it with 'patch' before sending patches to Linux mailing lists.

* Some email client (MUA) hints

Here are some specific MUA configuration hints for editing and sending patches for the Linux kernel. These are not meant to be complete software package configuration summaries.

Legend:

- TUI = text-based user interface
- GUI = graphical user interface

* Alpine (TUI)

Config options:

In the *Sending Preferences* section:

- *Do Not Send Flowed Text* must be `enabled`
- *Strip Whitespace Before Sending* must be `disabled`

When composing the message, the cursor should be placed where the patch should appear, and then pressing `CTRL-R` let you specify the patch file to insert into the message.

* Claws Mail (GUI)

Works. Some people use this successfully for patches.

To insert a patch use *Message→Insert File* (`CTRL-I`) or an external editor.

If the inserted patch has to be edited in the Claws composition window "Auto wrapping" in *Configuration→Preferences→Compose→Wrapping* should be disabled.

* Evolution (GUI)

Some people use this successfully for patches.

When composing mail select: Preformat from *Format→Paragraph Style→Preformatted* (`CTRL-7`) or the toolbar

Then use: *Insert→Text File...* (`ALT-N x`) to insert the patch.

You can also `diff -Nru old.c new.c | xclip`, select *Preformat*, then paste with the middle button.

* Kmail (GUI)

Some people use Kmail successfully for patches.

The default setting of not composing in HTML is appropriate; do not enable it.

When composing an email, under options, uncheck "word wrap". The only disadvantage is any text you type in the email will not be word-wrapped so you will have to manually word wrap text before the patch. The easiest way around this is to compose your email with word wrap enabled, then save it as a draft. Once you pull it up again from your drafts it is now hard word-wrapped and you can uncheck "word wrap" without losing the existing wrapping.

At the bottom of your email, put the commonly-used patch delimiter before inserting your patch: three hyphens (- - -).

Then from the *Message* menu item, select *insert file* and choose your patch. As an added bonus you can customise the message creation toolbar menu and put the *insert file* icon there.

Make the composer window wide enough so that no lines wrap. As of KMail 1.13.5 (KDE 4.5.4), KMail will apply word wrapping when sending the email if the lines wrap in the composer window. Having word wrapping disabled in the Options menu isn't enough. Thus, if your patch has very long lines, you must make the composer window very wide before sending the email. See: https://bugs.kde.org/show_bug.cgi?id=174034

You can safely GPG sign attachments, but inlined text is preferred for patches so do not GPG sign them. Signing patches that have been inserted as inlined text will make them tricky to extract from their 7-bit encoding.

If you absolutely must send patches as attachments instead of inlining them as text, right click on the attachment and select *properties*, and highlight *Suggest automatic display* to make the attachment inlined to make it more viewable.

When saving patches that are sent as inlined text, select the email that contains the patch from the message list pane, right click and select *save as*. You can use the whole email unmodified as a patch if it was properly composed. Emails are saved as read-write for user only so you will have to chmod them to make them group and world readable if you copy them elsewhere.

* Lotus Notes (GUI)

Run away from it.

* IBM Verse (Web GUI)

See Lotus Notes.

* Mutt (TUI)

Plenty of Linux developers use `mutt`, so it must work pretty well.

Mutt doesn't come with an editor, so whatever editor you use should be used in a way that there are no automatic linebreaks. Most editors have an *insert file* option that inserts the contents of a file unaltered.

To use `vim` with mutt:

```
set editor="vi"
```

If using xclip, type the command:

```
:set paste
```

before middle button or shift-insert or use:

```
:r filename
```

if you want to include the patch inline. (a)ttach works fine without `set paste`.

You can also generate patches with `git format-patch` and then use Mutt to send them:

```
$ mutt -H 0001-some-bug-fix.patch
```

Config options:

It should work with default settings. However, it's a good idea to set the `send_charset` to:

```
set send_charset="us-ascii:utf-8"
```

Mutt is highly customizable. Here is a minimum configuration to start using Mutt to send patches through Gmail:

```
# .muttrc
# ================  IMAP  ====================
set imap_user = 'yourusername@gmail.com'
set imap_pass = 'yourpassword'
set spoolfile = imaps://imap.gmail.com/INBOX
set folder = imaps://imap.gmail.com/
set record="imaps://imap.gmail.com/[Gmail]/Sent Mail"
set postponed="imaps://imap.gmail.com/[Gmail]/Drafts"
set mbox="imaps://imap.gmail.com/[Gmail]/All Mail"

# ================  SMTP  ====================
set smtp_url = "smtp://username@smtp.gmail.com:587/"
set smtp_pass = $imap_pass
set ssl_force_tls = yes # Require encrypted connection

# ================  Composition  ====================
set editor = `echo \$EDITOR`
set edit_headers = yes  # See the headers when editing
set charset = UTF-8     # value of $LANG; also fallback for send_charset
```

```
# Sender, email address, and sign-off line must match
unset use_domain          # because joe@localhost is just embarrassing
set realname = "YOUR NAME"
set from = "username@gmail.com"
set use_from = yes
```

The Mutt docs have lots more information:

> https://gitlab.com/muttmua/mutt/-/wikis/UseCases/Gmail

> http://www.mutt.org/doc/manual/

* Pine (TUI)

Pine has had some whitespace truncation issues in the past, but these should all be fixed now.

Use alpine (pine's successor) if you can.

Config options:

- `quell-flowed-text` is needed for recent versions
- the `no-strip-whitespace-before-send` option is needed

* Sylpheed (GUI)

- Works well for inlining text (or using attachments).
- Allows use of an external editor.
- Is slow on large folders.
- Won't do TLS SMTP auth over a non-SSL connection.
- Has a helpful ruler bar in the compose window.
- Adding addresses to address book doesn't understand the display name properly.

* Thunderbird (GUI)

Thunderbird is an Outlook clone that likes to mangle text, but there are ways to coerce it into behaving.

- Allow use of an external editor: The easiest thing to do with Thunderbird and patches is to use an "external editor" extension and then just use your favorite $EDITOR for reading/merging patches into the body text. To do this, download and install the extension, then add a button for it using *View→Toolbars→Customize…* and finally just click on it when in the *Compose* dialog.

  Please note that "external editor" requires that your editor must not fork, or in other words, the editor must not return before closing. You may have to pass additional flags or change the settings of your editor. Most notably if you are using gvim then you must pass the `-f` option to gvim by putting `/usr/bin/gvim -f` (if the binary is in `/usr/bin`) to the text editor field in *external editor* settings. If you are using some other editor then please read its manual to find out how to do this.

To beat some sense out of the internal editor, do this:

- Edit your Thunderbird config settings so that it won't use `format=flowed`.   Go to *edit→preferences→advanced→config editor* to bring up the thunderbird's registry editor.

- Set `mailnews.send_plaintext_flowed` to `false`

- Set `mailnews.wraplength` from 72 to `0`

- *View→Message Body As→Plain Text*

- *View→Character Encoding→Unicode (UTF-8)*

* TkRat (GUI)

Works. Use "Insert file..." or external editor.

* Gmail (Web GUI)

Does not work for sending patches.

Gmail web client converts tabs to spaces automatically.

At the same time it wraps lines every 78 chars with CRLF style line breaks although tab2space problem can be solved with external editor.

Another problem is that Gmail will base64-encode any message that has a non-ASCII character. That includes things like European names.

LINUX KERNEL ENFORCEMENT STATEMENT

As developers of the Linux kernel, we have a keen interest in how our software is used and how the license for our software is enforced. Compliance with the reciprocal sharing obligations of GPL-2.0 is critical to the long-term sustainability of our software and community.

Although there is a right to enforce the separate copyright interests in the contributions made to our community, we share an interest in ensuring that individual enforcement actions are conducted in a manner that benefits our community and do not have an unintended negative impact on the health and growth of our software ecosystem. In order to deter unhelpful enforcement actions, we agree that it is in the best interests of our development community to undertake the following commitment to users of the Linux kernel on behalf of ourselves and any successors to our copyright interests:

> Notwithstanding the termination provisions of the GPL-2.0, we agree that it is in the best interests of our development community to adopt the following provisions of GPL-3.0 as additional permissions under our license with respect to any non-defensive assertion of rights under the license.

> > However, if you cease all violation of this License, then your license from a particular copyright holder is reinstated (a) provisionally, unless and until the copyright holder explicitly and finally terminates your license, and (b) permanently, if the copyright holder fails to notify you of the violation by some reasonable means prior to 60 days after the cessation.

> > Moreover, your license from a particular copyright holder is reinstated permanently if the copyright holder notifies you of the violation by some reasonable means, this is the first time you have received notice of violation of this License (for any work) from that copyright holder, and you cure the violation prior to 30 days after your receipt of the notice.

Our intent in providing these assurances is to encourage more use of the software. We want companies and individuals to use, modify and distribute this software. We want to work with users in an open and transparent way to eliminate any uncertainty about our expectations regarding compliance or enforcement that might limit adoption of our software. We view legal action as a last resort, to be initiated only when other community efforts have failed to resolve the problem.

Finally, once a non-compliance issue is resolved, we hope the user will feel welcome to join us in our efforts on this project. Working together, we will be stronger.

Except where noted below, we speak only for ourselves, and not for any company we might work for today, have in the past, or will in the future.

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- Lv Zheng
- Marc Zyngier (Arm Ltd)

KERNEL DRIVER STATEMENT

* Position Statement on Linux Kernel Modules

We, the undersigned Linux kernel developers, consider any closed-source Linux kernel module or driver to be harmful and undesirable. We have repeatedly found them to be detrimental to Linux users, businesses, and the greater Linux ecosystem. Such modules negate the openness, stability, flexibility, and maintainability of the Linux development model and shut their users off from the expertise of the Linux community. Vendors that provide closed-source kernel modules force their customers to give up key Linux advantages or choose new vendors. Therefore, in order to take full advantage of the cost savings and shared support benefits open source has to offer, we urge vendors to adopt a policy of supporting their customers on Linux with open-source kernel code.

We speak only for ourselves, and not for any company we might work for today, have in the past, or will in the future.

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- David Woodhouse
- Chris Wright
- Bryan Wu
- Rafael J. Wysocki
- Herbert Xu
- Vlad Yasevich
- Peter Zijlstra
- Bartlomiej Zolnierkiewicz

Other guides to the community that are of interest to most developers are:

MINIMAL REQUIREMENTS TO COMPILE THE KERNEL

* Intro

This document is designed to provide a list of the minimum levels of software necessary to run the current kernel version.

This document is originally based on my "Changes" file for 2.0.x kernels and therefore owes credit to the same people as that file (Jared Mauch, Axel Boldt, Alessandro Sigala, and countless other users all over the 'net).

* Current Minimal Requirements

Upgrade to at **least** these software revisions before thinking you've encountered a bug! If you're unsure what version you're currently running, the suggested command should tell you.

Again, keep in mind that this list assumes you are already functionally running a Linux kernel. Also, not all tools are necessary on all systems; obviously, if you don't have any PC Card hardware, for example, you probably needn't concern yourself with pcmciautils.

Program	Minimal version	Command to check the version
GNU C	5.1	gcc –version
Clang/LLVM (optional)	11.0.0	clang –version
GNU make	3.81	make –version
bash	4.2	bash –version
binutils	2.23	ld -v
flex	2.5.35	flex –version
bison	2.0	bison –version
pahole	1.16	pahole –version
util-linux	2.10o	fdformat –version
kmod	13	depmod -V
e2fsprogs	1.41.4	e2fsck -V
jfsutils	1.1.3	fsck.jfs -V
reiserfsprogs	3.6.3	reiserfsck -V
xfsprogs	2.6.0	xfs_db -V
squashfs-tools	4.0	mksquashfs -version
btrfs-progs	0.18	btrfsck
pcmciautils	004	pccardctl -V
quota-tools	3.09	quota -V
PPP	2.4.0	pppd –version
nfs-utils	1.0.5	showmount –version
procps	3.2.0	ps –version
udev	081	udevd –version
grub	0.93	grub –version || grub-install –version
mcelog	0.6	mcelog –version
iptables	1.4.2	iptables -V
openssl & libcrypto	1.0.0	openssl version
bc	1.06.95	bc –version
Sphinx[1]	1.7	sphinx-build –version
cpio	any	cpio –version

* Kernel compilation

GCC

The gcc version requirements may vary depending on the type of CPU in your computer.

---

[1] Sphinx is needed only to build the Kernel documentation

Clang/LLVM (optional)

The latest formal release of clang and LLVM utils (according to releases.llvm.org) are supported for building kernels. Older releases aren't guaranteed to work, and we may drop workarounds from the kernel that were used to support older versions. Please see additional docs on Building Linux with Clang/LLVM.

Make

You will need GNU make 3.81 or later to build the kernel.

Bash

Some bash scripts are used for the kernel build. Bash 4.2 or newer is needed.

Binutils

Binutils 2.23 or newer is needed to build the kernel.

pkg-config

The build system, as of 4.18, requires pkg-config to check for installed kconfig tools and to determine flags settings for use in 'make {g,x}config'. Previously pkg-config was being used but not verified or documented.

Flex

Since Linux 4.16, the build system generates lexical analyzers during build. This requires flex 2.5.35 or later.

Bison

Since Linux 4.16, the build system generates parsers during build. This requires bison 2.0 or later.

pahole:

Since Linux 5.2, if CONFIG_DEBUG_INFO_BTF is selected, the build system generates BTF (BPF Type Format) from DWARF in vmlinux, a bit later from kernel modules as well. This requires pahole v1.16 or later.

It is found in the 'dwarves' or 'pahole' distro packages or from https://fedorapeople.org/~acme/dwarves/.

Perl

You will need perl 5 and the following modules: `Getopt::Long`, `Getopt::Std`, `File::Basename`, and `File::Find` to build the kernel.

BC

You will need bc to build kernels 3.10 and higher

OpenSSL

Module signing and external certificate handling use the OpenSSL program and crypto library to do key creation and signature generation.

You will need openssl to build kernels 3.7 and higher if module signing is enabled. You will also need openssl development packages to build kernels 4.3 and higher.

* System utilities

Architectural changes

DevFS has been obsoleted in favour of udev (https://www.kernel.org/pub/linux/utils/kernel/hotplug/)

32-bit UID support is now in place. Have fun!

Linux documentation for functions is transitioning to inline documentation via specially-formatted comments near their definitions in the source. These comments can be combined with ReST files the Documentation/ directory to make enriched documentation, which can then be converted to PostScript, HTML, LaTex, ePUB and PDF files. In order to convert from ReST format to a format of your choice, you'll need Sphinx.

Util-linux

New versions of util-linux provide `fdisk` support for larger disks, support new options to mount, recognize more supported partition types, have a fdformat which works with 2.4 kernels, and similar goodies. You'll probably want to upgrade.

Ksymoops

If the unthinkable happens and your kernel oopses, you may need the ksymoops tool to decode it, but in most cases you don't. It is generally preferred to build the kernel with `CONFIG_KALLSYMS` so that it produces readable dumps that can be used as-is (this also produces better output than ksymoops). If for some reason your kernel is not build with `CONFIG_KALLSYMS` and you have no way to rebuild and reproduce the Oops with that option, then you can still decode that Oops with ksymoops.

Mkinitrd

These changes to the `/lib/modules` file tree layout also require that mkinitrd be upgraded.

E2fsprogs

The latest version of `e2fsprogs` fixes several bugs in fsck and debugfs. Obviously, it's a good idea to upgrade.

JFSutils

The `jfsutils` package contains the utilities for the file system. The following utilities are available:

- `fsck.jfs` - initiate replay of the transaction log, and check and repair a JFS formatted partition.
- `mkfs.jfs` - create a JFS formatted partition.
- other file system utilities are also available in this package.

Reiserfsprogs

The reiserfsprogs package should be used for reiserfs-3.6.x (Linux kernels 2.4.x). It is a combined package and contains working versions of `mkreiserfs`, `resize_reiserfs`, `debugreiserfs` and `reiserfsck`. These utils work on both i386 and alpha platforms.

Xfsprogs

The latest version of `xfsprogs` contains `mkfs.xfs`, `xfs_db`, and the `xfs_repair` utilities, among others, for the XFS filesystem. It is architecture independent and any version from 2.0.0 onward should work correctly with this version of the XFS kernel code (2.6.0 or later is recommended, due to some significant improvements).

PCMCIAutils

PCMCIAutils replaces `pcmcia-cs`. It properly sets up PCMCIA sockets at system startup and loads the appropriate modules for 16-bit PCMCIA devices if the kernel is modularized and the hotplug subsystem is used.

Quota-tools

Support for 32 bit uid's and gid's is required if you want to use the newer version 2 quota format. Quota-tools version 3.07 and newer has this support. Use the recommended version or newer from the table above.

Intel IA32 microcode

A driver has been added to allow updating of Intel IA32 microcode, accessible as a normal (misc) character device. If you are not using udev you may need to:

```
mkdir /dev/cpu
mknod /dev/cpu/microcode c 10 184
chmod 0644 /dev/cpu/microcode
```

as root before you can use this. You'll probably also want to get the user-space microcode_ctl utility to use with this.

udev

udev is a userspace application for populating /dev dynamically with only entries for devices actually present. udev replaces the basic functionality of devfs, while allowing persistent device naming for devices.

FUSE

Needs libfuse 2.4.0 or later. Absolute minimum is 2.3.0 but mount options direct_io and kernel_cache won't work.

* Networking

General changes

If you have advanced network configuration needs, you should probably consider using the network tools from ip-route2.

Packet Filter / NAT

The packet filtering and NAT code uses the same tools like the previous 2.4.x kernel series (iptables). It still includes backwards-compatibility modules for 2.2.x-style ipchains and 2.0.x-style ipfwadm.

PPP

The PPP driver has been restructured to support multilink and to enable it to operate over diverse media layers. If you use PPP, upgrade pppd to at least 2.4.0.

If you are not using udev, you must have the device file /dev/ppp which can be made by:

```
mknod /dev/ppp c 108 0
```

as root.

NFS-utils

In ancient (2.4 and earlier) kernels, the nfs server needed to know about any client that expected to be able to access files via NFS. This information would be given to the kernel by `mountd` when the client mounted the filesystem, or by `exportfs` at system startup. exportfs would take information about active clients from `/var/lib/nfs/rmtab`.

This approach is quite fragile as it depends on rmtab being correct which is not always easy, particularly when trying to implement fail-over. Even when the system is working well, `rmtab` suffers from getting lots of old entries that never get removed.

With modern kernels we have the option of having the kernel tell mountd when it gets a request from an unknown host, and mountd can give appropriate export information to the kernel. This removes the dependency on `rmtab` and means that the kernel only needs to know about currently active clients.

To enable this new functionality, you need to:

```
mount -t nfsd nfsd /proc/fs/nfsd
```

before running exportfs or mountd. It is recommended that all NFS services be protected from the internet-at-large by a firewall where that is possible.

mcelog

On x86 kernels the mcelog utility is needed to process and log machine check events when `CONFIG_X86_MCE` is enabled. Machine check events are errors reported by the CPU. Processing them is strongly encouraged.

* Kernel documentation

Sphinx

Please see sphinx_install in Documentation/doc-guide/sphinx.rst for details about Sphinx requirements.

* Getting updated software

* Kernel compilation

gcc

- <ftp://ftp.gnu.org/gnu/gcc/>

Clang/LLVM

- Getting LLVM.

Make

- <ftp://ftp.gnu.org/gnu/make/>

Bash

- <ftp://ftp.gnu.org/gnu/bash/>

Binutils

- <https://www.kernel.org/pub/linux/devel/binutils/>

Flex

- <https://github.com/westes/flex/releases>

Bison

- <ftp://ftp.gnu.org/gnu/bison/>

OpenSSL

- <https://www.openssl.org/>

* System utilities

Util-linux

- <https://www.kernel.org/pub/linux/utils/util-linux/>

Kmod

- <https://www.kernel.org/pub/linux/utils/kernel/kmod/>
- <https://git.kernel.org/pub/scm/utils/kernel/kmod/kmod.git>

Ksymoops

- <https://www.kernel.org/pub/linux/utils/kernel/ksymoops/v2.4/>

Mkinitrd

- <https://code.launchpad.net/initrd-tools/main>

E2fsprogs

- <https://www.kernel.org/pub/linux/kernel/people/tytso/e2fsprogs/>
- <https://git.kernel.org/pub/scm/fs/ext2/e2fsprogs.git/>

JFSutils

- <http://jfs.sourceforge.net/>

Reiserfsprogs

- <https://git.kernel.org/pub/scm/linux/kernel/git/jeffm/reiserfsprogs.git/>

Xfsprogs

- <https://git.kernel.org/pub/scm/fs/xfs/xfsprogs-dev.git>
- <https://www.kernel.org/pub/linux/utils/fs/xfs/xfsprogs/>

Pcmciautils

- <https://www.kernel.org/pub/linux/utils/kernel/pcmcia/>

Quota-tools

- <http://sourceforge.net/projects/linuxquota/>

Intel P6 microcode

- <https://downloadcenter.intel.com/>

udev

- <https://www.freedesktop.org/software/systemd/man/udev.html>

FUSE

- <https://github.com/libfuse/libfuse/releases>

mcelog

- <http://www.mcelog.org/>

cpio

- <https://www.gnu.org/software/cpio/>

* Networking

PPP

- <https://download.samba.org/pub/ppp/>
- <https://git.ozlabs.org/?p=ppp.git>
- <https://github.com/paulusmack/ppp/>

NFS-utils

- <http://sourceforge.net/project/showfiles.php?group_id=14>

Iptables

- <https://netfilter.org/projects/iptables/index.html>

Ip-route2

- <https://www.kernel.org/pub/linux/utils/net/iproute2/>

OProfile

- <http://oprofile.sf.net/download/>

NFS-Utils

- <http://nfs.sourceforge.net/>

* Kernel documentation

Sphinx

- <https://www.sphinx-doc.org/>

SUBMITTING DRIVERS FOR THE LINUX KERNEL

This document is intended to explain how to submit device drivers to the various kernel trees. Note that if you are interested in video card drivers you should probably talk to XFree86 (https://www.xfree86.org/) and/or X.Org (https://x.org/) instead.

Note: This document is old and has seen little maintenance in recent years; it should probably be updated or, perhaps better, just deleted. Most of what is here can be found in the other development documents anyway.

Oh, and we don't really recommend submitting changes to XFree86 :)

Also read the *Documentation/process/submitting-patches.rst* document.

* Allocating Device Numbers

Major and minor numbers for block and character devices are allocated by the Linux assigned name and number authority (currently this is Torben Mathiasen). The site is https://www.lanana.org/. This also deals with allocating numbers for devices that are not going to be submitted to the mainstream kernel. See Documentation/admin-guide/devices.rst for more information on this.

If you don't use assigned numbers then when your device is submitted it will be given an assigned number even if that is different from values you may have shipped to customers before.

* Who To Submit Drivers To

Linux 2.0: No new drivers are accepted for this kernel tree.

Linux 2.2: No new drivers are accepted for this kernel tree.

Linux 2.4: If the code area has a general maintainer then please submit it to the maintainer listed in MAINTAINERS in the kernel file. If the maintainer does not respond or you cannot find the appropriate maintainer then please contact Willy Tarreau <w@1wt.eu>.

Linux 2.6 and upper: The same rules apply as 2.4 except that you should follow linux-kernel to track changes in API's. The final contact point for Linux 2.6+ submissions is Andrew Morton.

* What Criteria Determine Acceptance

Licensing: The code must be released to us under the GNU General Public License. If you wish the driver to be useful to other communities such as BSD you may release under multiple licenses. If you choose to release under licenses other than the GPL, you should include your rationale for your license choices in your cover letter. See accepted licenses at include/linux/module.h

Copyright: The copyright owner must agree to use of GPL. It's best if the submitter and copyright owner are the same person/entity. If not, the name of the person/entity authorizing use of GPL should be listed in case it's necessary to verify the will of the copyright owner.

Interfaces: If your driver uses existing interfaces and behaves like other drivers in the same class it will be much more likely to be accepted than if it invents gratuitous new ones. If you need to implement a common API over Linux and NT drivers do it in userspace.

Code: Please use the Linux style of code formatting as documented in *Documentation/process/coding-style.rst*. If you have sections of code that need to be in other formats, for example because they are shared with a windows driver kit and you want to maintain them just once separate them out nicely and note this fact.

Portability: Pointers are not always 32bits, not all computers are little endian, people do not all have floating point and you shouldn't use inline x86 assembler in your driver without careful thought. Pure x86 drivers generally are not popular. If you only have x86 hardware it is hard to test portability but it is easy to make sure the code can easily be made portable.

Clarity: It helps if anyone can see how to fix the driver. It helps you because you get patches not bug reports. If you submit a driver that intentionally obfuscates how the hardware works it will go in the bitbucket.

PM support: Since Linux is used on many portable and desktop systems, your driver is likely to be used on such a system and therefore it should support basic power management by implementing, if necessary, the .suspend and .resume methods used during the system-wide suspend and resume transitions. You should verify that your driver correctly handles the suspend and resume, but if you are unable to ensure that, please at least define the .suspend method returning the -ENOSYS ("Function not implemented") error. You should also try to make sure that your driver uses as little power as possible when it's not doing anything. For the driver testing instructions see Documentation/power/drivers-testing.rst and for a relatively complete overview of the power management issues related to drivers see Documentation/driver-api/pm/devices.rst.

Control: In general if there is active maintenance of a driver by the author then patches will be redirected to them unless they are totally obvious and without need of checking. If you want to be the contact and update point for the driver it is a good idea to state this in the comments, and include an entry in MAINTAINERS for your driver.

* What Criteria Do Not Determine Acceptance

Vendor: Being the hardware vendor and maintaining the driver is often a good thing. If there is a stable working driver from other people already in the tree don't expect 'we are the vendor' to get your driver chosen. Ideally work with the existing driver author to build a single perfect driver.

Author: It doesn't matter if a large Linux company wrote the driver, or you did. Nobody has any special access to the kernel tree. Anyone who tells you otherwise isn't telling the whole story.

* Resources

Linux kernel master tree: ftp.*country_code*.kernel.org:/pub/linux/kernel/...

where *country_code* == your country code, such as **us**, **uk**, **fr**, etc.

https://git.kernel.org/?p=linux/kernel/git/torvalds/linux.git

Linux kernel mailing list: linux-kernel@vger.kernel.org [mail majordomo@vger.kernel.org to subscribe]

Linux Device Drivers, Third Edition (covers 2.6.10): https://lwn.net/Kernel/LDD3/ (free version)

LWN.net: Weekly summary of kernel development activity - https://lwn.net/

2.6 API changes:

https://lwn.net/Articles/2.6-kernel-api/

Porting drivers from prior kernels to 2.6:

https://lwn.net/Articles/driver-porting/

KernelNewbies: Documentation and assistance for new kernel programmers

https://kernelnewbies.org/

Linux USB project: http://www.linux-usb.org/

How to NOT write kernel driver by Arjan van de Ven: https://landley.net/kdocs/ols/2002/ols2002-pages-545-555.pdf

Kernel Janitor: https://kernelnewbies.org/KernelJanitors

GIT, Fast Version Control System: https://git-scm.com/

THE LINUX KERNEL DRIVER INTERFACE

(all of your questions answered and then some)

Greg Kroah-Hartman <greg@kroah.com>

This is being written to try to explain why Linux **does not have a binary kernel interface, nor does it have a stable kernel interface**.

Note: Please realize that this article describes the **in kernel** interfaces, not the kernel to userspace interfaces.

The kernel to userspace interface is the one that application programs use, the syscall interface. That interface is **very** stable over time, and will not break. I have old programs that were built on a pre 0.9something kernel that still work just fine on the latest 2.6 kernel release. That interface is the one that users and application programmers can count on being stable.

---

* Executive Summary

You think you want a stable kernel interface, but you really do not, and you don't even know it. What you want is a stable running driver, and you get that only if your driver is in the main kernel tree. You also get lots of other good benefits if your driver is in the main kernel tree, all of which has made Linux into such a strong, stable, and mature operating system which is the reason you are using it in the first place.

* Intro

It's only the odd person who wants to write a kernel driver that needs to worry about the in-kernel interfaces changing. For the majority of the world, they neither see this interface, nor do they care about it at all.

First off, I'm not going to address **any** legal issues about closed source, hidden source, binary blobs, source wrappers, or any other term that describes kernel drivers that do not have their source code released under the GPL. Please consult a lawyer if you have any legal questions, I'm a programmer and hence, I'm just going to be describing the technical issues here (not to make light of the legal issues, they are real, and you do need to be aware of them at all times.)

So, there are two main topics here, binary kernel interfaces and stable kernel source interfaces. They both depend on each other, but we will discuss the binary stuff first to get it out of the way.

* Binary Kernel Interface

Assuming that we had a stable kernel source interface for the kernel, a binary interface would naturally happen too, right? Wrong. Please consider the following facts about the Linux kernel:

- Depending on the version of the C compiler you use, different kernel data structures will contain different alignment of structures, and possibly include different functions in different ways (putting functions inline or not.) The individual function organization isn't that important, but the different data structure padding is very important.

- Depending on what kernel build options you select, a wide range of different things can be assumed by the kernel:

  - different structures can contain different fields

  - Some functions may not be implemented at all, (i.e. some locks compile away to nothing for non-SMP builds.)

  - Memory within the kernel can be aligned in different ways, depending on the build options.

- Linux runs on a wide range of different processor architectures. There is no way that binary drivers from one architecture will run on another architecture properly.

Now a number of these issues can be addressed by simply compiling your module for the exact specific kernel configuration, using the same exact C compiler that the kernel was built with. This is sufficient if you want to provide a module for a specific release version of a specific Linux distribution. But multiply that single build by the number of different Linux distributions and the number of different supported releases of the Linux distribution and you quickly have a nightmare of different build options on different releases. Also realize that each Linux distribution release contains a number of different kernels, all tuned to different hardware types (different processor types and different options), so for even a single release you will need to create multiple versions of your module.

Trust me, you will go insane over time if you try to support this kind of release, I learned this the hard way a long time ago...

* Stable Kernel Source Interfaces

This is a much more "volatile" topic if you talk to people who try to keep a Linux kernel driver that is not in the main kernel tree up to date over time.

Linux kernel development is continuous and at a rapid pace, never stopping to slow down. As such, the kernel developers find bugs in current interfaces, or figure out a better way to do things. If they do that, they then fix the current interfaces to work better. When they do so, function names may change, structures may grow or shrink, and function parameters may be reworked. If this happens, all of the instances of where this interface is used within the kernel are fixed up at the same time, ensuring that everything continues to work properly.

As a specific examples of this, the in-kernel USB interfaces have undergone at least three different reworks over the lifetime of this subsystem. These reworks were done to address a number of different issues:

- A change from a synchronous model of data streams to an asynchronous one. This reduced the complexity of a number of drivers and increased the throughput of all USB drivers such that we are now running almost all USB devices at their maximum speed possible.

- A change was made in the way data packets were allocated from the USB core by USB drivers so that all drivers now needed to provide more information to the USB core to fix a number of documented deadlocks.

This is in stark contrast to a number of closed source operating systems which have had to maintain their older USB interfaces over time. This provides the ability for new developers to accidentally use the old interfaces and do things in improper ways, causing the stability of the operating system to suffer.

In both of these instances, all developers agreed that these were important changes that needed to be made, and they were made, with relatively little pain. If Linux had to ensure that it will preserve a stable source interface, a new interface would have been created, and the older, broken one would have had to be maintained over time, leading to extra work for the USB developers. Since all Linux USB developers do their work on their own time, asking programmers to do extra work for no gain, for free, is not a possibility.

Security issues are also very important for Linux. When a security issue is found, it is fixed in a very short amount of time. A number of times this has caused internal kernel interfaces to be reworked to prevent the security problem from occurring. When this happens, all drivers that use the interfaces were also fixed at the same time, ensuring that the security problem was fixed and could not come back at some future time accidentally. If the internal interfaces were not allowed to change, fixing this kind of security problem and insuring that it could not happen again would not be possible.

Kernel interfaces are cleaned up over time. If there is no one using a current interface, it is deleted. This ensures that the kernel remains as small as possible, and that all potential interfaces are tested as well as they can be (unused interfaces are pretty much impossible to test for validity.)

* What to do

So, if you have a Linux kernel driver that is not in the main kernel tree, what are you, a developer, supposed to do? Releasing a binary driver for every different kernel version for every distribution is a nightmare, and trying to keep up with an ever changing kernel interface is also a rough job.

Simple, get your kernel driver into the main kernel tree (remember we are talking about drivers released under a GPL-compatible license here, if your code doesn't fall under this category, good luck, you are on your own here, you leech). If your driver is in the tree, and a kernel interface changes, it will be fixed up by the person who did the kernel change in the first place. This ensures that your driver is always buildable, and works over time, with very little effort on your part.

The very good side effects of having your driver in the main kernel tree are:

- The quality of the driver will rise as the maintenance costs (to the original developer) will decrease.

- Other developers will add features to your driver.

- Other people will find and fix bugs in your driver.

- Other people will find tuning opportunities in your driver.

- Other people will update the driver for you when external interface changes require it.

- The driver automatically gets shipped in all Linux distributions without having to ask the distros to add it.

As Linux supports a larger number of different devices "out of the box" than any other operating system, and it supports these devices on more different processor architectures than any other operating system, this proven type of development model must be doing something right :)

Thanks to Randy Dunlap, Andrew Morton, David Brownell, Hanna Linder, Robert Love, and Nishanth Aravamudan for their review and comments on early drafts of this paper.

LINUX KERNEL MANAGEMENT STYLE

This is a short document describing the preferred (or made up, depending on who you ask) management style for the linux kernel. It's meant to mirror the *process/coding-style.rst* document to some degree, and mainly written to avoid answering[1] the same (or similar) questions over and over again.

Management style is very personal and much harder to quantify than simple coding style rules, so this document may or may not have anything to do with reality. It started as a lark, but that doesn't mean that it might not actually be true. You'll have to decide for yourself.

Btw, when talking about "kernel manager", it's all about the technical lead persons, not the people who do traditional management inside companies. If you sign purchase orders or you have any clue about the budget of your group, you're almost certainly not a kernel manager. These suggestions may or may not apply to you.

First off, I'd suggest buying "Seven Habits of Highly Effective People", and NOT read it. Burn it, it's a great symbolic gesture.

Anyway, here goes:

* 1) Decisions

Everybody thinks managers make decisions, and that decision-making is important. The bigger and more painful the decision, the bigger the manager must be to make it. That's very deep and obvious, but it's not actually true.

The name of the game is to **avoid** having to make a decision. In particular, if somebody tells you "choose (a) or (b), we really need you to decide on this", you're in trouble as a manager. The people you manage had better know the details better than you, so if they come to you for a technical decision, you're screwed. You're clearly not competent to make that decision for them.

(Corollary:if the people you manage don't know the details better than you, you're also screwed, although for a totally different reason. Namely that you are in the wrong job, and that **they** should be managing your brilliance instead).

So the name of the game is to **avoid** decisions, at least the big and painful ones. Making small and non-consequential decisions is fine, and makes you look like you know what you're doing, so what a kernel manager needs to do is to turn the big and painful ones into small things where nobody really cares.

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[1] This document does so not so much by answering the question, but by making it painfully obvious to the questioner that we don't have a clue to what the answer is.

It helps to realize that the key difference between a big decision and a small one is whether you can fix your decision afterwards. Any decision can be made small by just always making sure that if you were wrong (and you **will** be wrong), you can always undo the damage later by backtracking. Suddenly, you get to be doubly managerial for making **two** inconsequential decisions - the wrong one **and** the right one.

And people will even see that as true leadership (*cough* bullshit *cough*).

Thus the key to avoiding big decisions becomes to just avoiding to do things that can't be undone. Don't get ushered into a corner from which you cannot escape. A cornered rat may be dangerous - a cornered manager is just pitiful.

It turns out that since nobody would be stupid enough to ever really let a kernel manager have huge fiscal responsibility **anyway**, it's usually fairly easy to backtrack. Since you're not going to be able to waste huge amounts of money that you might not be able to repay, the only thing you can backtrack on is a technical decision, and there back-tracking is very easy: just tell everybody that you were an incompetent nincompoop, say you're sorry, and undo all the worthless work you had people work on for the last year. Suddenly the decision you made a year ago wasn't a big decision after all, since it could be easily undone.

It turns out that some people have trouble with this approach, for two reasons:

- admitting you were an idiot is harder than it looks. We all like to maintain appearances, and coming out in public to say that you were wrong is sometimes very hard indeed.

- having somebody tell you that what you worked on for the last year wasn't worthwhile after all can be hard on the poor lowly engineers too, and while the actual **work** was easy enough to undo by just deleting it, you may have irrevocably lost the trust of that engineer. And remember: "irrevocable" was what we tried to avoid in the first place, and your decision ended up being a big one after all.

Happily, both of these reasons can be mitigated effectively by just admitting up-front that you don't have a friggin' clue, and telling people ahead of the fact that your decision is purely preliminary, and might be the wrong thing. You should always reserve the right to change your mind, and make people very **aware** of that. And it's much easier to admit that you are stupid when you haven't **yet** done the really stupid thing.

Then, when it really does turn out to be stupid, people just roll their eyes and say "Oops, not again".

This preemptive admission of incompetence might also make the people who actually do the work also think twice about whether it's worth doing or not. After all, if **they** aren't certain whether it's a good idea, you sure as hell shouldn't encourage them by promising them that what they work on will be included. Make them at least think twice before they embark on a big endeavor.

Remember: they'd better know more about the details than you do, and they usually already think they have the answer to everything. The best thing you can do as a manager is not to instill confidence, but rather a healthy dose of critical thinking on what they do.

Btw, another way to avoid a decision is to plaintively just whine "can't we just do both?" and look pitiful. Trust me, it works. If it's not clear which approach is better, they'll eventually figure it out. The answer may end up being that both teams get so frustrated by the situation that they just give up.

That may sound like a failure, but it's usually a sign that there was something wrong with both projects, and the reason the people involved couldn't decide was that they were both wrong.

You end up coming up smelling like roses, and you avoided yet another decision that you could have screwed up on.

* 2) People

Most people are idiots, and being a manager means you'll have to deal with it, and perhaps more importantly, that **they** have to deal with **you**.

It turns out that while it's easy to undo technical mistakes, it's not as easy to undo personality disorders. You just have to live with theirs - and yours.

However, in order to prepare yourself as a kernel manager, it's best to remember not to burn any bridges, bomb any innocent villagers, or alienate too many kernel developers. It turns out that alienating people is fairly easy, and un-alienating them is hard. Thus "alienating" immediately falls under the heading of "not reversible", and becomes a no-no according to *1) Decisions*.

There's just a few simple rules here:

  (1) don't call people d*ckheads (at least not in public)

  (2) learn how to apologize when you forgot rule (1)

The problem with #1 is that it's very easy to do, since you can say "you're a d*ckhead" in millions of different ways[2], sometimes without even realizing it, and almost always with a white-hot conviction that you are right.

And the more convinced you are that you are right (and let's face it, you can call just about **anybody** a d*ckhead, and you often **will** be right), the harder it ends up being to apologize afterwards.

To solve this problem, you really only have two options:

  • get really good at apologies

  • spread the "love" out so evenly that nobody really ends up feeling like they get unfairly targeted. Make it inventive enough, and they might even be amused.

The option of being unfailingly polite really doesn't exist. Nobody will trust somebody who is so clearly hiding their true character.

* 3) People II - the Good Kind

While it turns out that most people are idiots, the corollary to that is sadly that you are one too, and that while we can all bask in the secure knowledge that we're better than the average person (let's face it, nobody ever believes that they're average or below-average), we should also admit that we're not the sharpest knife around, and there will be other people that are less of an idiot than you are.

Some people react badly to smart people. Others take advantage of them.

---

[2] Paul Simon sang "Fifty Ways to Leave Your Lover", because quite frankly, "A Million Ways to Tell a Developer They're a D*ckhead" doesn't scan nearly as well. But I'm sure he thought about it.

Make sure that you, as a kernel maintainer, are in the second group. Suck up to them, because they are the people who will make your job easier. In particular, they'll be able to make your decisions for you, which is what the game is all about.

So when you find somebody smarter than you are, just coast along. Your management responsibilities largely become ones of saying "Sounds like a good idea - go wild", or "That sounds good, but what about xxx?". The second version in particular is a great way to either learn something new about "xxx" or seem **extra** managerial by pointing out something the smarter person hadn't thought about. In either case, you win.

One thing to look out for is to realize that greatness in one area does not necessarily translate to other areas. So you might prod people in specific directions, but let's face it, they might be good at what they do, and suck at everything else. The good news is that people tend to naturally gravitate back to what they are good at, so it's not like you are doing something irreversible when you **do** prod them in some direction, just don't push too hard.

* 4) Placing blame

Things will go wrong, and people want somebody to blame. Tag, you're it.

It's not actually that hard to accept the blame, especially if people kind of realize that it wasn't **all** your fault. Which brings us to the best way of taking the blame: do it for someone else. You'll feel good for taking the fall, they'll feel good about not getting blamed, and the person who lost their whole 36GB porn-collection because of your incompetence will grudgingly admit that you at least didn't try to weasel out of it.

Then make the developer who really screwed up (if you can find them) know **in private** that they screwed up. Not just so they can avoid it in the future, but so that they know they owe you one. And, perhaps even more importantly, they're also likely the person who can fix it. Because, let's face it, it sure ain't you.

Taking the blame is also why you get to be manager in the first place. It's part of what makes people trust you, and allow you the potential glory, because you're the one who gets to say "I screwed up". And if you've followed the previous rules, you'll be pretty good at saying that by now.

* 5) Things to avoid

There's one thing people hate even more than being called "d*ckhead", and that is being called a "d*ckhead" in a sanctimonious voice. The first you can apologize for, the second one you won't really get the chance. They likely will no longer be listening even if you otherwise do a good job.

We all think we're better than anybody else, which means that when somebody else puts on airs, it **really** rubs us the wrong way. You may be morally and intellectually superior to everybody around you, but don't try to make it too obvious unless you really **intend** to irritate somebody[3].

Similarly, don't be too polite or subtle about things. Politeness easily ends up going overboard and hiding the problem, and as they say, "On the internet, nobody can hear you being subtle".

---

[3] Hint: internet newsgroups that are not directly related to your work are great ways to take out your frustrations at other people. Write insulting posts with a sneer just to get into a good flame every once in a while, and you'll feel cleansed. Just don't crap too close to home.

Use a big blunt object to hammer the point in, because you can't really depend on people getting your point otherwise.

Some humor can help pad both the bluntness and the moralizing. Going overboard to the point of being ridiculous can drive a point home without making it painful to the recipient, who just thinks you're being silly. It can thus help get through the personal mental block we all have about criticism.

* 6) Why me?

Since your main responsibility seems to be to take the blame for other peoples mistakes, and make it painfully obvious to everybody else that you're incompetent, the obvious question becomes one of why do it in the first place?

First off, while you may or may not get screaming teenage girls (or boys, let's not be judgmental or sexist here) knocking on your dressing room door, you **will** get an immense feeling of personal accomplishment for being "in charge". Never mind the fact that you're really leading by trying to keep up with everybody else and running after them as fast as you can. Everybody will still think you're the person in charge.

It's a great job if you can hack it.

EVERYTHING YOU EVER WANTED TO KNOW ABOUT LINUX -STABLE RELEASES

Rules on what kind of patches are accepted, and which ones are not, into the "-stable" tree:

- It must be obviously correct and tested.

- It cannot be bigger than 100 lines, with context.

- It must fix only one thing.

- It must fix a real bug that bothers people (not a, "This could be a problem…" type thing).

- It must fix a problem that causes a build error (but not for things marked CONFIG_BROKEN), an oops, a hang, data corruption, a real security issue, or some "oh, that's not good" issue. In short, something critical.

- Serious issues as reported by a user of a distribution kernel may also be considered if they fix a notable performance or interactivity issue. As these fixes are not as obvious and have a higher risk of a subtle regression they should only be submitted by a distribution kernel maintainer and include an addendum linking to a bugzilla entry if it exists and additional information on the user-visible impact.

- New device IDs and quirks are also accepted.

- No "theoretical race condition" issues, unless an explanation of how the race can be exploited is also provided.

- It cannot contain any "trivial" fixes in it (spelling changes, whitespace cleanups, etc).

- It must follow the *Documentation/process/submitting-patches.rst* rules.

- It or an equivalent fix must already exist in Linus' tree (upstream).

* Procedure for submitting patches to the -stable tree

Note: Security patches should not be handled (solely) by the -stable review process but should follow the procedures in Documentation/admin-guide/security-bugs.rst.

* For all other submissions, choose one of the following procedures

* Option 1

To have the patch automatically included in the stable tree, add the tag

```
Cc: stable@vger.kernel.org
```

in the sign-off area. Once the patch is merged it will be applied to the stable tree without anything else needing to be done by the author or subsystem maintainer.

* Option 2

After the patch has been merged to Linus' tree, send an email to stable@vger.kernel.org containing the subject of the patch, the commit ID, why you think it should be applied, and what kernel version you wish it to be applied to.

* Option 3

Send the patch, after verifying that it follows the above rules, to stable@vger.kernel.org. You must note the upstream commit ID in the changelog of your submission, as well as the kernel version you wish it to be applied to.

Option 1 is **strongly** preferred, is the easiest and most common. *Option 2* and *Option 3* are more useful if the patch isn't deemed worthy at the time it is applied to a public git tree (for instance, because it deserves more regression testing first). *Option 3* is especially useful if the original upstream patch needs to be backported (for example the backport needs some special handling due to e.g. API changes).

Note that for *Option 3*, if the patch deviates from the original upstream patch (for example because it had to be backported) this must be very clearly documented and justified in the patch description.

The upstream commit ID must be specified with a separate line above the commit text, like this:

```
commit <sha1> upstream.
```

Additionally, some patches submitted via *Option 1* may have additional patch prerequisites which can be cherry-picked. This can be specified in the following format in the sign-off area:

```
Cc: <stable@vger.kernel.org> # 3.3.x: a1f84a3: sched: Check for idle
Cc: <stable@vger.kernel.org> # 3.3.x: 1b9508f: sched: Rate-limit newidle
Cc: <stable@vger.kernel.org> # 3.3.x: fd21073: sched: Fix affinity logic
Cc: <stable@vger.kernel.org> # 3.3.x
Signed-off-by: Ingo Molnar <mingo@elte.hu>
```

The tag sequence has the meaning of:

```
git cherry-pick a1f84a3
git cherry-pick 1b9508f
```

```
git cherry-pick fd21073
git cherry-pick <this commit>
```

Also, some patches may have kernel version prerequisites. This can be specified in the following format in the sign-off area:

```
Cc: <stable@vger.kernel.org> # 3.3.x
```

The tag has the meaning of:

```
git cherry-pick <this commit>
```

For each "-stable" tree starting with the specified version.

Following the submission:

- The sender will receive an ACK when the patch has been accepted into the queue, or a NAK if the patch is rejected. This response might take a few days, according to the developer's schedules.

- If accepted, the patch will be added to the -stable queue, for review by other developers and by the relevant subsystem maintainer.

* Review cycle

- When the -stable maintainers decide for a review cycle, the patches will be sent to the review committee, and the maintainer of the affected area of the patch (unless the submitter is the maintainer of the area) and CC: to the linux-kernel mailing list.

- The review committee has 48 hours in which to ACK or NAK the patch.

- If the patch is rejected by a member of the committee, or linux-kernel members object to the patch, bringing up issues that the maintainers and members did not realize, the patch will be dropped from the queue.

- The ACKed patches will be posted again as part of release candidate (-rc) to be tested by developers and testers.

- Usually only one -rc release is made, however if there are any outstanding issues, some patches may be modified or dropped or additional patches may be queued. Additional -rc releases are then released and tested until no issues are found.

- Responding to the -rc releases can be done on the mailing list by sending a "Tested-by:" email with any testing information desired. The "Tested-by:" tags will be collected and added to the release commit.

- At the end of the review cycle, the new -stable release will be released containing all the queued and tested patches.

- Security patches will be accepted into the -stable tree directly from the security kernel team, and not go through the normal review cycle. Contact the kernel security team for more details on this procedure.

* Trees

- The queues of patches, for both completed versions and in progress versions can be found at:

    https://git.kernel.org/pub/scm/linux/kernel/git/stable/stable-queue.git

- The finalized and tagged releases of all stable kernels can be found in separate branches per version at:

    https://git.kernel.org/pub/scm/linux/kernel/git/stable/linux.git

- The release candidate of all stable kernel versions can be found at:

    https://git.kernel.org/pub/scm/linux/kernel/git/stable/linux-stable-rc.git/

> **Warning:** The -stable-rc tree is a snapshot in time of the stable-queue tree and will change frequently, hence will be rebased often. It should only be used for testing purposes (e.g. to be consumed by CI systems).

* Review committee

- This is made up of a number of kernel developers who have volunteered for this task, and a few that haven't.

LINUX KERNEL PATCH SUBMISSION CHECKLIST

Here are some basic things that developers should do if they want to see their kernel patch submissions accepted more quickly.

These are all above and beyond the documentation that is provided in *Documentation/process/submitting-patches.rst* and elsewhere regarding submitting Linux kernel patches.

1) If you use a facility then #include the file that defines/declares that facility. Don't depend on other header files pulling in ones that you use.

2) Builds cleanly:

a) with applicable or modified CONFIG options =y, =m, and =n. No `gcc` warnings/errors, no linker warnings/errors.

b) Passes `allnoconfig`, `allmodconfig`

c) Builds successfully when using `O=builddir`

d) Any Documentation/ changes build successfully without new warnings/errors. Use `make htmldocs` or `make pdfdocs` to check the build and fix any issues.

3) Builds on multiple CPU architectures by using local cross-compile tools or some other build farm.

4) ppc64 is a good architecture for cross-compilation checking because it tends to use `unsigned long` for 64-bit quantities.

5) Check your patch for general style as detailed in *Documentation/process/coding-style.rst*. Check for trivial violations with the patch style checker prior to submission (`scripts/checkpatch.pl`). You should be able to justify all violations that remain in your patch.

6) Any new or modified CONFIG options do not muck up the config menu and default to off unless they meet the exception criteria documented in `Documentation/kbuild/kconfig-language.rst` Menu attributes: default value.

7) All new `Kconfig` options have help text.

8) Has been carefully reviewed with respect to relevant `Kconfig` combinations. This is very hard to get right with testing – brainpower pays off here.

9) Check cleanly with sparse.

10) Use `make checkstack` and fix any problems that it finds.

Note: `checkstack` does not point out problems explicitly, but any one function that uses more than 512 bytes on the stack is a candidate for change.

---

11) Include kernel-doc to document global kernel APIs. (Not required for static functions, but OK there also.) Use `make htmldocs` or `make pdfdocs` to check the kernel-doc and fix any issues.

12) Has been tested with `CONFIG_PREEMPT`, `CONFIG_DEBUG_PREEMPT`, `CONFIG_DEBUG_SLAB`, `CONFIG_DEBUG_PAGEALLOC`, `CONFIG_DEBUG_MUTEXES`, `CONFIG_DEBUG_SPINLOCK`, `CONFIG_DEBUG_ATOMIC_SLEEP`, `CONFIG_PROVE_RCU` and `CONFIG_DEBUG_OBJECTS_RCU_HEAD` all simultaneously enabled.

13) Has been build- and runtime tested with and without `CONFIG_SMP` and `CONFIG_PREEMPT`.

14) All codepaths have been exercised with all lockdep features enabled.

15) All new `/proc` entries are documented under `Documentation/`

16) All new kernel boot parameters are documented in `Documentation/admin-guide/kernel-parameters.rst`.

17) All new module parameters are documented with `MODULE_PARM_DESC()`

18) All new userspace interfaces are documented in `Documentation/ABI/`. See `Documentation/ABI/README` for more information. Patches that change userspace interfaces should be CCed to linux-api@vger.kernel.org.

19) Has been checked with injection of at least slab and page-allocation failures. See `Documentation/fault-injection/`.

   If the new code is substantial, addition of subsystem-specific fault injection might be appropriate.

20) Newly-added code has been compiled with `gcc -W` (use `make KCFLAGS=-W`). This will generate lots of noise, but is good for finding bugs like "warning: comparison between signed and unsigned".

21) Tested after it has been merged into the -mm patchset to make sure that it still works with all of the other queued patches and various changes in the VM, VFS, and other subsystems.

22) All memory barriers {e.g., `barrier()`, `rmb()`, `wmb()`} need a comment in the source code that explains the logic of what they are doing and why.

23) If any ioctl's are added by the patch, then also update `Documentation/userspace-api/ioctl/ioctl-number.rst`.

24) If your modified source code depends on or uses any of the kernel APIs or features that are related to the following `Kconfig` symbols, then test multiple builds with the related `Kconfig` symbols disabled and/or =m (if that option is available) [not all of these at the same time, just various/random combinations of them]:

   `CONFIG_SMP`, `CONFIG_SYSFS`, `CONFIG_PROC_FS`, `CONFIG_INPUT`, `CONFIG_PCI`, `CONFIG_BLOCK`, `CONFIG_PM`, `CONFIG_MAGIC_SYSRQ`, `CONFIG_NET`, `CONFIG_INET=n` (but latter with `CONFIG_NET=y`).

INDEX OF DOCUMENTATION FOR PEOPLE INTERESTED IN WRITING AND/OR UNDERSTANDING THE LINUX KERNEL

Juan-Mariano de Goyeneche <jmseyas@dit.upm.es>

The need for a document like this one became apparent in the linux-kernel mailing list as the same questions, asking for pointers to information, appeared again and again.

Fortunately, as more and more people get to GNU/Linux, more and more get interested in the Kernel. But reading the sources is not always enough. It is easy to understand the code, but miss the concepts, the philosophy and design decisions behind this code.

Unfortunately, not many documents are available for beginners to start. And, even if they exist, there was no "well-known" place which kept track of them. These lines try to cover this lack. All documents available on line known by the author are listed, while some reference books are also mentioned.

PLEASE, if you know any paper not listed here or write a new document, send me an e-mail, and I'll include a reference to it here. Any corrections, ideas or comments are also welcomed.

The papers that follow are listed in no particular order. All are cataloged with the following fields: the document's "Title", the "Author"/s, the "URL" where they can be found, some "Keywords" helpful when searching for specific topics, and a brief "Description" of the Document.

Enjoy!

Note: The documents on each section of this document are ordered by its published date, from the newest to the oldest.

* Docs at the Linux Kernel tree

The Sphinx books should be built with `make {htmldocs | pdfdocs | epubdocs}`.

- Name: **linux/Documentation**

    Author Many.

    Location Documentation/

    Keywords text files, Sphinx.

Description Documentation that comes with the kernel sources, inside the Documentation directory. Some pages from this document (including this document itself) have been moved there, and might be more up to date than the web version.

* On-line docs

- Title: **Linux Kernel Mailing List Glossary**

  Author various

  URL https://kernelnewbies.org/KernelGlossary

  Date rolling version

  Keywords glossary, terms, linux-kernel.

  Description From the introduction: "This glossary is intended as a brief description of some of the acronyms and terms you may hear during discussion of the Linux kernel".

- Title: **Tracing the Way of Data in a TCP Connection through the Linux Kernel**

  Author Richard Sailer

  URL https://archive.org/details/linux_kernel_data_flow_short_paper

  Date 2016

  Keywords Linux Kernel Networking, TCP, tracing, ftrace

  Description A seminar paper explaining ftrace and how to use it for understanding linux kernel internals, illustrated at tracing the way of a TCP packet through the kernel.

  Abstract *This short paper outlines the usage of ftrace a tracing framework as a tool to understand a running Linux system. Having obtained a trace-log a kernel hacker can read and understand source code more determined and with context. In a detailed example this approach is demonstrated in tracing and the way of data in a TCP Connection through the kernel. Finally this trace-log is used as base for more a exact conceptual exploration and description of the Linux TCP/IP implementation.*

- Title: **On submitting kernel Patches**

  Author Andi Kleen

  URL http://halobates.de/on-submitting-kernel-patches.pdf

  Date 2008

  Keywords patches, review process, types of submissions, basic rules, case studies

  Description This paper gives several experience values on what types of patches there are and how likely they get merged.

  Abstract […]. This paper examines some common problems for submitting larger changes and some strategies to avoid problems.

- Title: **Linux Device Drivers, Third Edition**

    Author Jonathan Corbet, Alessandro Rubini, Greg Kroah-Hartman

    URL https://lwn.net/Kernel/LDD3/

    Date 2005

    Description A 600-page book covering the (2.6.10) driver programming API and kernel hacking in general. Available under the Creative Commons Attribution-ShareAlike 2.0 license.

    note You can also *purchase a copy from O'Reilly or elsewhere*.

- Title: **Writing an ALSA Driver**

    Author Takashi Iwai <tiwai@suse.de>

    URL http://www.alsa-project.org/~iwai/writing-an-alsa-driver/index.html

    Date 2005

    Keywords ALSA, sound, soundcard, driver, lowlevel, hardware.

    Description Advanced Linux Sound Architecture for developers, both at kernel and user-level sides. ALSA is the Linux kernel sound architecture in the 2.6 kernel version.

- Title: **Linux PCMCIA Programmer's Guide**

    Author David Hinds.

    URL http://pcmcia-cs.sourceforge.net/ftp/doc/PCMCIA-PROG.html

    Date 2003

    Keywords PCMCIA.

    Description "This document describes how to write kernel device drivers for the Linux PCMCIA Card Services interface. It also describes how to write user-mode utilities for communicating with Card Services.

- Title: **The Linux Kernel Module Programming Guide**

    Author Peter Jay Salzman, Michael Burian, Ori Pomerantz, Bob Mottram, Jim Huang.

    URL https://sysprog21.github.io/lkmpg/

    Date 2021

    Keywords modules, GPL book, /proc, ioctls, system calls, interrupt handlers .

    Description A very nice GPL book on the topic of modules programming. Lots of examples. Currently the new version is being actively maintained at https://github.com/sysprog21/lkmpg.

- Title: **Global spinlock list and usage**

    Author Rick Lindsley.

    URL http://lse.sourceforge.net/lockhier/global-spin-lock

    Date 2001

> **Keywords** spinlock.
>
> **Description** This is an attempt to document both the existence and usage of the spinlocks in the Linux 2.4.5 kernel. Comprehensive list of spinlocks showing when they are used, which functions access them, how each lock is acquired, under what conditions it is held, whether interrupts can occur or not while it is held…

- Title: **A Linux vm README**

  > **Author** Kanoj Sarcar.
  >
  > **URL** http://kos.enix.org/pub/linux-vmm.html
  >
  > **Date** 2001
  >
  > **Keywords** virtual memory, mm, pgd, vma, page, page flags, page cache, swap cache, kswapd.
  >
  > **Description** Telegraphic, short descriptions and definitions relating the Linux virtual memory implementation.

- Title: **Video4linux Drivers, Part 1: Video-Capture Device**

  > **Author** Alan Cox.
  >
  > **URL** http://www.linux-mag.com/id/406
  >
  > **Date** 2000
  >
  > **Keywords** video4linux, driver, video capture, capture devices, camera driver.
  >
  > **Description** The title says it all.

- Title: **Video4linux Drivers, Part 2: Video-capture Devices**

  > **Author** Alan Cox.
  >
  > **URL** http://www.linux-mag.com/id/429
  >
  > **Date** 2000
  >
  > **Keywords** video4linux, driver, video capture, capture devices, camera driver, control, query capabilities, capability, facility.
  >
  > **Description** The title says it all.

- Title: **Linux IP Networking. A Guide to the Implementation and Modification of the Linux Protocol Stack.**

  > **Author** Glenn Herrin.
  >
  > **URL** http://www.cs.unh.edu/cnrg/gherrin
  >
  > **Date** 2000
  >
  > **Keywords** network, networking, protocol, IP, UDP, TCP, connection, socket, receiving, transmitting, forwarding, routing, packets, modules, /proc, sk_buff, FIB, tags.
  >
  > **Description** Excellent paper devoted to the Linux IP Networking, explaining anything from the kernel's to the user space configuration tools' code. Very good to get a general overview of the kernel networking implementation and understand all steps packets follow from the time they are received at the network

device till they are delivered to applications. The studied kernel code is from 2.2.14 version. Provides code for a working packet dropper example.

- Title: **How To Make Sure Your Driver Will Work On The Power Macintosh**

  Author Paul Mackerras.

  URL http://www.linux-mag.com/id/261

  Date 1999

  Keywords Mac, Power Macintosh, porting, drivers, compatibility.

  Description The title says it all.

- Title: **An Introduction to SCSI Drivers**

  Author Alan Cox.

  URL http://www.linux-mag.com/id/284

  Date 1999

  Keywords SCSI, device, driver.

  Description The title says it all.

- Title: **Advanced SCSI Drivers And Other Tales**

  Author Alan Cox.

  URL http://www.linux-mag.com/id/307

  Date 1999

  Keywords SCSI, device, driver, advanced.

  Description The title says it all.

- Title: **Writing Linux Mouse Drivers**

  Author Alan Cox.

  URL http://www.linux-mag.com/id/330

  Date 1999

  Keywords mouse, driver, gpm.

  Description The title says it all.

- Title: **More on Mouse Drivers**

  Author Alan Cox.

  URL http://www.linux-mag.com/id/356

  Date 1999

  Keywords mouse, driver, gpm, races, asynchronous I/O.

  Description The title still says it all.

- Title: **Writing Video4linux Radio Driver**

  Author Alan Cox.

  URL http://www.linux-mag.com/id/381

Date 1999

Keywords video4linux, driver, radio, radio devices.

Description The title says it all.

- Title: **I/O Event Handling Under Linux**

  Author Richard Gooch.

  URL https://web.mit.edu/~yandros/doc/io-events.html

  Date 1999

  Keywords IO, I/O, select(2), poll(2), FDs, aio_read(2), readiness event queues.

  Description From the Introduction: "I/O Event handling is about how your Operating System allows you to manage a large number of open files (file descriptors in UNIX/POSIX, or FDs) in your application. You want the OS to notify you when FDs become active (have data ready to be read or are ready for writing). Ideally you want a mechanism that is scalable. This means a large number of inactive FDs cost very little in memory and CPU time to manage".

- Title: **(nearly) Complete Linux Loadable Kernel Modules. The definitive guide for hackers, virus coders and system administrators.**

  Author pragmatic/THC.

  URL http://packetstormsecurity.org/docs/hack/LKM_HACKING.html

  Date 1999

  Keywords syscalls, intercept, hide, abuse, symbol table.

  Description Interesting paper on how to abuse the Linux kernel in order to intercept and modify syscalls, make files/directories/processes invisible, become root, hijack ttys, write kernel modules based virus... and solutions for admins to avoid all those abuses.

  Notes For 2.0.x kernels. Gives guidances to port it to 2.2.x kernels.

- Name: **Linux Virtual File System**

  Author Peter J. Braam.

  URL http://www.coda.cs.cmu.edu/doc/talks/linuxvfs/

  Date 1998

  Keywords slides, VFS, inode, superblock, dentry, dcache.

  Description Set of slides, presumably from a presentation on the Linux VFS layer. Covers version 2.1.x, with dentries and the dcache.

- Title: **The Venus kernel interface**

  Author Peter J. Braam.

  URL http://www.coda.cs.cmu.edu/doc/html/kernel-venus-protocol.html

  Date 1998

  Keywords coda, filesystem, venus, cache manager.

Description "This document describes the communication between Venus and kernel level file system code needed for the operation of the Coda filesystem. This version document is meant to describe the current interface (version 1.0) as well as improvements we envisage".

- Title: **Design and Implementation of the Second Extended Filesystem**

  Author Rémy Card, Theodore Ts'o, Stephen Tweedie.

  URL https://web.mit.edu/tytso/www/linux/ext2intro.html

  Date 1998

  Keywords ext2, linux fs history, inode, directory, link, devices, VFS, physical structure, performance, benchmarks, ext2fs library, ext2fs tools, e2fsck.

  Description Paper written by three of the top ext2 hackers. Covers Linux filesystems history, ext2 motivation, ext2 features, design, physical structure on disk, performance, benchmarks, e2fsck's passes description... A must read!

  Notes This paper was first published in the Proceedings of the First Dutch International Symposium on Linux, ISBN 90-367-0385-9.

- Title: **The Linux RAID-1, 4, 5 Code**

  Author Ingo Molnar, Gadi Oxman and Miguel de Icaza.

  URL http://www.linuxjournal.com/article.php?sid=2391

  Date 1997

  Keywords RAID, MD driver.

  Description Linux Journal Kernel Korner article.

  Abstract *A description of the implementation of the RAID-1, RAID-4 and RAID-5 personalities of the MD device driver in the Linux kernel, providing users with high performance and reliable, secondary-storage capability using software.*

- Title: **Linux Kernel Hackers' Guide**

  Author Michael K. Johnson.

  URL https://www.tldp.org/LDP/khg/HyperNews/get/khg.html

  Date 1997

  Keywords device drivers, files, VFS, kernel interface, character vs block devices, hardware interrupts, scsi, DMA, access to user memory, memory allocation, timers.

  Description A guide designed to help you get up to speed on the concepts that are not intuitively obvious, and to document the internal structures of Linux.

- Title: **Dynamic Kernels: Modularized Device Drivers**

  Author Alessandro Rubini.

  URL http://www.linuxjournal.com/article.php?sid=1219

  Date 1996

  Keywords device driver, module, loading/unloading modules, allocating resources.

Description Linux Journal Kernel Korner article.

Abstract *This is the first of a series of four articles co-authored by Alessandro Rubini and Georg Zezchwitz which present a practical approach to writing Linux device drivers as kernel loadable modules. This installment presents an introduction to the topic, preparing the reader to understand next month's installment.*

- Title: **Dynamic Kernels: Discovery**

  Author Alessandro Rubini.

  URL http://www.linuxjournal.com/article.php?sid=1220

  Date 1996

  Keywords character driver, init_module, clean_up module, autodetection, mayor number, minor number, file operations, open(), close().

  Description Linux Journal Kernel Korner article.

  Abstract *This article, the second of four, introduces part of the actual code to create custom module implementing a character device driver. It describes the code for module initialization and cleanup, as well as the open() and close() system calls.*

- Title: **The Devil's in the Details**

  Author Georg v. Zezschwitz and Alessandro Rubini.

  URL http://www.linuxjournal.com/article.php?sid=1221

  Date 1996

  Keywords read(), write(), select(), ioctl(), blocking/non blocking mode, interrupt handler.

  Description Linux Journal Kernel Korner article.

  Abstract *This article, the third of four on writing character device drivers, introduces concepts of reading, writing, and using ioctl-calls.*

- Title: **Dissecting Interrupts and Browsing DMA**

  Author Alessandro Rubini and Georg v. Zezschwitz.

  URL https://www.linuxjournal.com/article.php?sid=1222

  Date 1996

  Keywords interrupts, irqs, DMA, bottom halves, task queues.

  Description Linux Journal Kernel Korner article.

  Abstract *This is the fourth in a series of articles about writing character device drivers as loadable kernel modules. This month, we further investigate the field of interrupt handling. Though it is conceptually simple, practical limitations and constraints make this an ''interesting'' part of device driver writing, and several different facilities have been provided for different situations. We also investigate the complex topic of DMA.*

- Title: **Device Drivers Concluded**

Author Georg v. Zezschwitz.

URL https://www.linuxjournal.com/article.php?sid=1287

Date 1996

Keywords address spaces, pages, pagination, page management, demand loading, swapping, memory protection, memory mapping, mmap, virtual memory areas (VMAs), vremap, PCI.

Description Finally, the above turned out into a five articles series. This latest one's introduction reads: "This is the last of five articles about character device drivers. In this final section, Georg deals with memory mapping devices, beginning with an overall description of the Linux memory management concepts".

- Title: **Network Buffers And Memory Management**

  Author Alan Cox.

  URL https://www.linuxjournal.com/article.php?sid=1312

  Date 1996

  Keywords sk_buffs, network devices, protocol/link layer variables, network devices flags, transmit, receive, configuration, multicast.

  Description Linux Journal Kernel Korner.

  Abstract *Writing a network device driver for Linux is fundamentally simple— most of the complexity (other than talking to the hardware) involves managing network packets in memory.*

- Title: **Analysis of the Ext2fs structure**

  Author Louis-Dominique Dubeau.

  URL https://teaching.csse.uwa.edu.au/units/CITS2002/fs-ext2/

  Date 1994

  Keywords ext2, filesystem, ext2fs.

  Description Description of ext2's blocks, directories, inodes, bitmaps, invariants…

* Published books

- Title: **Linux Treiber entwickeln**

  Author Jürgen Quade, Eva-Katharina Kunst

  Publisher dpunkt.verlag

  Date Oct 2015 (4th edition)

  Pages 688

  ISBN 978-3-86490-288-8

> **Note** German. The third edition from 2011 is much cheaper and still quite up-to-date.

- Title: **Linux Kernel Networking: Implementation and Theory**

  Author Rami Rosen

  Publisher Apress

  Date December 22, 2013

  Pages 648

  ISBN 978-1430261964

- Title: **Embedded Linux Primer: A practical Real-World Approach, 2nd Edition**

  Author Christopher Hallinan

  Publisher Pearson

  Date November, 2010

  Pages 656

  ISBN 978-0137017836

- Title: **Linux Kernel Development, 3rd Edition**

  Author Robert Love

  Publisher Addison-Wesley

  Date July, 2010

  Pages 440

  ISBN 978-0672329463

- Title: **Essential Linux Device Drivers**

  Author Sreekrishnan Venkateswaran

  Published Prentice Hall

  Date April, 2008

  Pages 744

  ISBN 978-0132396554

- Title: **Linux Device Drivers, 3rd Edition**

  Authors Jonathan Corbet, Alessandro Rubini, and Greg Kroah-Hartman

  Publisher O'Reilly & Associates

  Date 2005

  Pages 636

  ISBN 0-596-00590-3

  Notes Further information in http://www.oreilly.com/catalog/linuxdrive3/ PDF format, URL: https://lwn.net/Kernel/LDD3/

- Title: **Linux Kernel Internals**

Author Michael Beck

Publisher Addison-Wesley

Date 1997

ISBN 0-201-33143-8 (second edition)

- Title: **Programmation Linux 2.0 API systeme et fonctionnement du noyau**

   Author Remy Card, Eric Dumas, Franck Mevel

   Publisher Eyrolles

   Date 1997

   Pages 520

   ISBN 2-212-08932-5

   Notes French

- Title: **The Design and Implementation of the 4.4 BSD UNIX Operating System**

   Author Marshall Kirk McKusick, Keith Bostic, Michael J. Karels, John S. Quarter-
   man

   Publisher Addison-Wesley

   Date 1996

   ISBN 0-201-54979-4

- Title: **Unix internals – the new frontiers**

   Author Uresh Vahalia

   Publisher Prentice Hall

   Date 1996

   Pages 600

   ISBN 0-13-101908-2

- Title: **Programming for the real world - POSIX.4**

   Author Bill O. Gallmeister

   Publisher O'Reilly & Associates, Inc

   Date 1995

   Pages 552

   ISBN I-56592-074-0

   Notes Though not being directly about Linux, Linux aims to be POSIX. Good ref-
   erence.

- Title: **UNIX Systems for Modern Architectures: Symmetric Multiprocessing and
   Caching for Kernel Programmers**

   Author Curt Schimmel

   Publisher Addison Wesley

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*. Published books **215**

Date June, 1994

Pages 432

ISBN 0-201-63338-8

- Title: **The Design and Implementation of the 4.3 BSD UNIX Operating System**

    Author Samuel J. Leffler, Marshall Kirk McKusick, Michael J Karels, John S. Quarterman

    Publisher Addison-Wesley

    Date 1989 (reprinted with corrections on October, 1990)

    ISBN 0-201-06196-1

- Title: **The Design of the UNIX Operating System**

    Author Maurice J. Bach

    Publisher Prentice Hall

    Date 1986

    Pages 471

    ISBN 0-13-201757-1

* Miscellaneous

- Name: **Cross-Referencing Linux**

    URL https://elixir.bootlin.com/

    Keywords Browsing source code.

    Description Another web-based Linux kernel source code browser. Lots of cross references to variables and functions. You can see where they are defined and where they are used.

- Name: **Linux Weekly News**

    URL https://lwn.net

    Keywords latest kernel news.

    Description The title says it all. There's a fixed kernel section summarizing developers' work, bug fixes, new features and versions produced during the week. Published every Thursday.

- Name: **The home page of Linux-MM**

    Author The Linux-MM team.

    URL https://linux-mm.org/

    Keywords memory management, Linux-MM, mm patches, TODO, docs, mailing list.

Description Site devoted to Linux Memory Management development. Memory related patches, HOWTOs, links, mm developers... Don't miss it if you are interested in memory management development!

- Name: **Kernel Newbies IRC Channel and Website**

  URL https://www.kernelnewbies.org

  Keywords IRC, newbies, channel, asking doubts.

  Description #kernelnewbies on irc.oftc.net. #kernelnewbies is an IRC network dedicated to the 'newbie' kernel hacker. The audience mostly consists of people who are learning about the kernel, working on kernel projects or professional kernel hackers that want to help less seasoned kernel people. #kernelnewbies is on the OFTC IRC Network. Try irc.oftc.net as your server and then /join #kernelnewbies. The kernelnewbies website also hosts articles, documents, FAQs...

- Name: **linux-kernel mailing list archives and search engines**

  URL http://vger.kernel.org/vger-lists.html

  URL http://www.uwsg.indiana.edu/hypermail/linux/kernel/index.html

  URL http://groups.google.com/group/mlist.linux.kernel

  Keywords linux-kernel, archives, search.

  Description Some of the linux-kernel mailing list archivers. If you have a better/another one, please let me know.

Document last updated on Tue 2016-Sep-20

This document is based on: https://www.dit.upm.es/~jmseyas/linux/kernel/hackers-docs.html

DEPRECATED INTERFACES, LANGUAGE FEATURES, ATTRIBUTES, AND CONVENTIONS

In a perfect world, it would be possible to convert all instances of some deprecated API into the new API and entirely remove the old API in a single development cycle. However, due to the size of the kernel, the maintainership hierarchy, and timing, it's not always feasible to do these kinds of conversions at once. This means that new instances may sneak into the kernel while old ones are being removed, only making the amount of work to remove the API grow. In order to educate developers about what has been deprecated and why, this list has been created as a place to point when uses of deprecated things are proposed for inclusion in the kernel.

* __deprecated

While this attribute does visually mark an interface as deprecated, it does not produce warnings during builds any more because one of the standing goals of the kernel is to build without warnings and no one was actually doing anything to remove these deprecated interfaces. While using __*deprecated* is nice to note an old API in a header file, it isn't the full solution. Such interfaces must either be fully removed from the kernel, or added to this file to discourage others from using them in the future.

* BUG() and BUG_ON()

Use WARN() and WARN_ON() instead, and handle the "impossible" error condition as gracefully as possible. While the BUG()-family of APIs were originally designed to act as an "impossible situation" assert and to kill a kernel thread "safely", they turn out to just be too risky. (e.g. "In what order do locks need to be released? Have various states been restored?") Very commonly, using BUG() will destabilize a system or entirely break it, which makes it impossible to debug or even get viable crash reports. Linus has very strong feelings about this.

Note that the WARN()-family should only be used for "expected to be unreachable" situations. If you want to warn about "reachable but undesirable" situations, please use the pr_warn()-family of functions. System owners may have set the *panic_on_warn* sysctl, to make sure their systems do not continue running in the face of "unreachable" conditions. (For example, see commits like this one.)

* open-coded arithmetic in allocator arguments

Dynamic size calculations (especially multiplication) should not be performed in memory allocator (or similar) function arguments due to the risk of them overflowing. This could lead to values wrapping around and a smaller allocation being made than the caller was expecting. Using those allocations could lead to linear overflows of heap memory and other misbehaviors. (One exception to this is literal values where the compiler can warn if they might overflow. However, the preferred way in these cases is to refactor the code as suggested below to avoid the open-coded arithmetic.)

For example, do not use `count * size` as an argument, as in:

```
foo = kmalloc(count * size, GFP_KERNEL);
```

Instead, the 2-factor form of the allocator should be used:

```
foo = kmalloc_array(count, size, GFP_KERNEL);
```

Specifically, kmalloc() can be replaced with kmalloc_array(), and kzalloc() can be replaced with kcalloc().

If no 2-factor form is available, the saturate-on-overflow helpers should be used:

```
bar = vmalloc(array_size(count, size));
```

Another common case to avoid is calculating the size of a structure with a trailing array of others structures, as in:

```
header = kzalloc(sizeof(*header) + count * sizeof(*header->item),
                 GFP_KERNEL);
```

Instead, use the helper:

```
header = kzalloc(struct_size(header, item, count), GFP_KERNEL);
```

Note: If you are using struct_size() on a structure containing a zero-length or a one-element array as a trailing array member, please refactor such array usage and switch to a *flexible array member* instead.

For other calculations, please compose the use of the size_mul(), size_add(), and size_sub() helpers. For example, in the case of:

```
foo = krealloc(current_size + chunk_size * (count - 3), GFP_KERNEL);
```

Instead, use the helpers:

```
foo = krealloc(size_add(current_size,
                        size_mul(chunk_size,
                                 size_sub(count, 3))), GFP_KERNEL);
```

For more details, also see array3_size() and flex_array_size(), as well as the related check_mul_overflow(), check_add_overflow(), check_sub_overflow(), and check_shl_overflow()

family of functions.

* simple_strtol(), simple_strtoll(), simple_strtoul(), simple_strtoull()

The simple_strtol(), simple_strtoll(), simple_strtoul(), and simple_strtoull() functions explicitly ignore overflows, which may lead to unexpected results in callers. The respective kstrtol(), kstrtoll(), kstrtoul(), and kstrtoull() functions tend to be the correct replacements, though note that those require the string to be NUL or newline terminated.

* strcpy()

strcpy() performs no bounds checking on the destination buffer. This could result in linear overflows beyond the end of the buffer, leading to all kinds of misbehaviors. While *CONFIG_FORTIFY_SOURCE=y* and various compiler flags help reduce the risk of using this function, there is no good reason to add new uses of this function. The safe replacement is strscpy(), though care must be given to any cases where the return value of strcpy() was used, since strscpy() does not return a pointer to the destination, but rather a count of non-NUL bytes copied (or negative errno when it truncates).

* strncpy() on NUL-terminated strings

Use of strncpy() does not guarantee that the destination buffer will be NUL terminated. This can lead to various linear read overflows and other misbehavior due to the missing termination. It also NUL-pads the destination buffer if the source contents are shorter than the destination buffer size, which may be a needless performance penalty for callers using only NUL-terminated strings. The safe replacement is strscpy(), though care must be given to any cases where the return value of strncpy() was used, since strscpy() does not return a pointer to the destination, but rather a count of non-NUL bytes copied (or negative errno when it truncates). Any cases still needing NUL-padding should instead use strscpy_pad().

If a caller is using non-NUL-terminated strings, strncpy() can still be used, but destinations should be marked with the __nonstring attribute to avoid future compiler warnings.

* strlcpy()

strlcpy() reads the entire source buffer first (since the return value is meant to match that of strlen()). This read may exceed the destination size limit. This is both inefficient and can lead to linear read overflows if a source string is not NUL-terminated. The safe replacement is strscpy(), though care must be given to any cases where the return value of strlcpy() is used, since strscpy() will return negative errno values when it truncates.

* %p format specifier

Traditionally, using "%p" in format strings would lead to regular address exposure flaws in dmesg, proc, sysfs, etc. Instead of leaving these to be exploitable, all "%p" uses in the kernel are being printed as a hashed value, rendering them unusable for addressing. New uses of "%p" should not be added to the kernel. For text addresses, using "%pS" is likely better, as it produces the more useful symbol name instead. For nearly everything else, just do not add "%p" at all.

Paraphrasing Linus's current guidance:

- If the hashed "%p" value is pointless, ask yourself whether the pointer itself is important. Maybe it should be removed entirely?

- If you really think the true pointer value is important, why is some system state or user privilege level considered "special"? If you think you can justify it (in comments and commit log) well enough to stand up to Linus's scrutiny, maybe you can use "%px", along with making sure you have sensible permissions.

If you are debugging something where "%p" hashing is causing problems, you can temporarily boot with the debug flag "no_hash_pointers".

* Variable Length Arrays (VLAs)

Using stack VLAs produces much worse machine code than statically sized stack arrays. While these non-trivial performance issues are reason enough to eliminate VLAs, they are also a security risk. Dynamic growth of a stack array may exceed the remaining memory in the stack segment. This could lead to a crash, possible overwriting sensitive contents at the end of the stack (when built without *CONFIG_THREAD_INFO_IN_TASK=y*), or overwriting memory adjacent to the stack (when built without *CONFIG_VMAP_STACK=y*)

* Implicit switch case fall-through

The C language allows switch cases to fall through to the next case when a "break" statement is missing at the end of a case. This, however, introduces ambiguity in the code, as it's not always clear if the missing break is intentional or a bug. For example, it's not obvious just from looking at the code if *STATE_ONE* is intentionally designed to fall through into *STATE_TWO*:

```
switch (value) {
case STATE_ONE:
        do_something();
case STATE_TWO:
        do_other();
        break;
default:
        WARN("unknown state");
}
```

As there have been a long list of flaws due to missing "break" statements, we no longer allow implicit fall-through. In order to identify intentional fall-through cases, we have adopted a pseudo-

keyword macro "fallthrough" which expands to gcc's extension __attribute__((__fallthrough__)). (When the C17/C18 *[[fallthrough]]* syntax is more commonly supported by C compilers, static analyzers, and IDEs, we can switch to using that syntax for the macro pseudo-keyword.)

All switch/case blocks must end in one of:

- break;

- fallthrough;

- continue;

- goto <label>;

- return [expression];

* Zero-length and one-element arrays

There is a regular need in the kernel to provide a way to declare having a dynamically sized set of trailing elements in a structure. Kernel code should always use "flexible array members" for these cases. The older style of one-element or zero-length arrays should no longer be used.

In older C code, dynamically sized trailing elements were done by specifying a one-element array at the end of a structure:

```
struct something {
        size_t count;
        struct foo items[1];
};
```

This led to fragile size calculations via sizeof() (which would need to remove the size of the single trailing element to get a correct size of the "header"). A GNU C extension was introduced to allow for zero-length arrays, to avoid these kinds of size problems:

```
struct something {
        size_t count;
        struct foo items[0];
};
```

But this led to other problems, and didn't solve some problems shared by both styles, like not being able to detect when such an array is accidentally being used _not_ at the end of a structure (which could happen directly, or when such a struct was in unions, structs of structs, etc).

C99 introduced "flexible array members", which lacks a numeric size for the array declaration entirely:

```
struct something {
        size_t count;
        struct foo items[];
};
```

This is the way the kernel expects dynamically sized trailing elements to be declared. It allows the compiler to generate errors when the flexible array does not occur last in the structure, which helps to prevent some kind of undefined behavior bugs from being inadvertently introduced to the codebase. It also allows the compiler to correctly analyze array sizes (via sizeof(),

CONFIG_FORTIFY_SOURCE, and *CONFIG_UBSAN_BOUNDS*). For instance, there is no mech-
anism that warns us that the following application of the sizeof() operator to a zero-length array
always results in zero:

```
struct something {
        size_t count;
        struct foo items[0];
};

struct something *instance;

instance = kmalloc(struct_size(instance, items, count), GFP_KERNEL);
instance->count = count;

size = sizeof(instance->items) * instance->count;
memcpy(instance->items, source, size);
```

At the last line of code above, `size` turns out to be `zero`, when one might have thought it
represents the total size in bytes of the dynamic memory recently allocated for the trailing
array `items`. Here are a couple examples of this issue: link 1, link 2. Instead, flexible array
members have incomplete type, and so the sizeof() operator may not be applied, so any misuse
of such operators will be immediately noticed at build time.

With respect to one-element arrays, one has to be acutely aware that such arrays occupy at least
as much space as a single object of the type, hence they contribute to the size of the enclosing
structure. This is prone to error every time people want to calculate the total size of dynamic
memory to allocate for a structure containing an array of this kind as a member:

```
struct something {
        size_t count;
        struct foo items[1];
};

struct something *instance;

instance = kmalloc(struct_size(instance, items, count - 1), GFP_KERNEL);
instance->count = count;

size = sizeof(instance->items) * instance->count;
memcpy(instance->items, source, size);
```

In the example above, we had to remember to calculate `count - 1` when using the struct_size()
helper, otherwise we would have –unintentionally– allocated memory for one too many `items`
objects. The cleanest and least error-prone way to implement this is through the use of a *flexible
array member*, together with struct_size() and flex_array_size() helpers:

```
struct something {
        size_t count;
        struct foo items[];
};

struct something *instance;
```

```
instance = kmalloc(struct_size(instance, items, count), GFP_KERNEL);
instance->count = count;

memcpy(instance->items, source, flex_array_size(instance, items, instance->
↪count));
```

Chapter 22. Deprecated Interfaces, Language Features, Attributes, and Conventions

EMBARGOED HARDWARE ISSUES

* Scope

Hardware issues which result in security problems are a different category of security bugs than pure software bugs which only affect the Linux kernel.

Hardware issues like Meltdown, Spectre, L1TF etc. must be treated differently because they usually affect all Operating Systems ("OS") and therefore need coordination across different OS vendors, distributions, hardware vendors and other parties. For some of the issues, software mitigations can depend on microcode or firmware updates, which need further coordination.

* Contact

The Linux kernel hardware security team is separate from the regular Linux kernel security team.

The team only handles the coordination of embargoed hardware security issues. Reports of pure software security bugs in the Linux kernel are not handled by this team and the reporter will be guided to contact the regular Linux kernel security team (Documentation/admin-guide/) instead.

The team can be contacted by email at <hardware-security@kernel.org>. This is a private list of security officers who will help you to coordinate an issue according to our documented process.

The list is encrypted and email to the list can be sent by either PGP or S/MIME encrypted and must be signed with the reporter's PGP key or S/MIME certificate. The list's PGP key and S/MIME certificate are available from the following URLs:

- PGP: https://www.kernel.org/static/files/hardware-security.asc
- S/MIME: https://www.kernel.org/static/files/hardware-security.crt

While hardware security issues are often handled by the affected hardware vendor, we welcome contact from researchers or individuals who have identified a potential hardware flaw.

* Hardware security officers

The current team of hardware security officers:

- Linus Torvalds (Linux Foundation Fellow)
- Greg Kroah-Hartman (Linux Foundation Fellow)
- Thomas Gleixner (Linux Foundation Fellow)

* Operation of mailing-lists

The encrypted mailing-lists which are used in our process are hosted on Linux Foundation's IT infrastructure. By providing this service, members of Linux Foundation's IT operations personnel technically have the ability to access the embargoed information, but are obliged to confidentiality by their employment contract. Linux Foundation IT personnel are also responsible for operating and managing the rest of kernel.org infrastructure.

The Linux Foundation's current director of IT Project infrastructure is Konstantin Ryabitsev.

* Non-disclosure agreements

The Linux kernel hardware security team is not a formal body and therefore unable to enter into any non-disclosure agreements. The kernel community is aware of the sensitive nature of such issues and offers a Memorandum of Understanding instead.

* Memorandum of Understanding

The Linux kernel community has a deep understanding of the requirement to keep hardware security issues under embargo for coordination between different OS vendors, distributors, hardware vendors and other parties.

The Linux kernel community has successfully handled hardware security issues in the past and has the necessary mechanisms in place to allow community compliant development under embargo restrictions.

The Linux kernel community has a dedicated hardware security team for initial contact, which oversees the process of handling such issues under embargo rules.

The hardware security team identifies the developers (domain experts) who will form the initial response team for a particular issue. The initial response team can bring in further developers (domain experts) to address the issue in the best technical way.

All involved developers pledge to adhere to the embargo rules and to keep the received information confidential. Violation of the pledge will lead to immediate exclusion from the current issue and removal from all related mailing-lists. In addition, the hardware security team will also exclude the offender from future issues. The impact of this consequence is a highly effective deterrent in our community. In case a violation happens the hardware security team will inform the involved parties immediately. If you or anyone becomes aware of a potential violation, please report it immediately to the Hardware security officers.

* Process

Due to the globally distributed nature of Linux kernel development, face-to-face meetings are almost impossible to address hardware security issues. Phone conferences are hard to coordinate due to time zones and other factors and should be only used when absolutely necessary. Encrypted email has been proven to be the most effective and secure communication method for these types of issues.

Start of Disclosure

Disclosure starts by contacting the Linux kernel hardware security team by email. This initial contact should contain a description of the problem and a list of any known affected hardware. If your organization builds or distributes the affected hardware, we encourage you to also consider what other hardware could be affected.

The hardware security team will provide an incident-specific encrypted mailing-list which will be used for initial discussion with the reporter, further disclosure and coordination.

The hardware security team will provide the disclosing party a list of developers (domain experts) who should be informed initially about the issue after confirming with the developers that they will adhere to this Memorandum of Understanding and the documented process. These developers form the initial response team and will be responsible for handling the issue after initial contact. The hardware security team is supporting the response team, but is not necessarily involved in the mitigation development process.

While individual developers might be covered by a non-disclosure agreement via their employer, they cannot enter individual non-disclosure agreements in their role as Linux kernel developers. They will, however, agree to adhere to this documented process and the Memorandum of Understanding.

The disclosing party should provide a list of contacts for all other entities who have already been, or should be, informed about the issue. This serves several purposes:

- The list of disclosed entities allows communication across the industry, e.g. other OS vendors, HW vendors, etc.

- The disclosed entities can be contacted to name experts who should participate in the mitigation development.

- If an expert which is required to handle an issue is employed by an listed entity or member of an listed entity, then the response teams can request the disclosure of that expert from that entity. This ensures that the expert is also part of the entity's response team.

Disclosure

The disclosing party provides detailed information to the initial response team via the specific encrypted mailing-list.

From our experience the technical documentation of these issues is usually a sufficient starting point and further technical clarification is best done via email.

Mitigation development

The initial response team sets up an encrypted mailing-list or repurposes an existing one if appropriate.

Using a mailing-list is close to the normal Linux development process and has been successfully used in developing mitigations for various hardware security issues in the past.

The mailing-list operates in the same way as normal Linux development. Patches are posted, discussed and reviewed and if agreed on applied to a non-public git repository which is only accessible to the participating developers via a secure connection. The repository contains the main development branch against the mainline kernel and backport branches for stable kernel versions as necessary.

The initial response team will identify further experts from the Linux kernel developer community as needed. Bringing in experts can happen at any time of the development process and needs to be handled in a timely manner.

If an expert is employed by or member of an entity on the disclosure list provided by the disclosing party, then participation will be requested from the relevant entity.

If not, then the disclosing party will be informed about the experts participation. The experts are covered by the Memorandum of Understanding and the disclosing party is requested to acknowledge the participation. In case that the disclosing party has a compelling reason to object, then this objection has to be raised within five work days and resolved with the incident team immediately. If the disclosing party does not react within five work days this is taken as silent acknowledgement.

After acknowledgement or resolution of an objection the expert is disclosed by the incident team and brought into the development process.

Coordinated release

The involved parties will negotiate the date and time where the embargo ends. At that point the prepared mitigations are integrated into the relevant kernel trees and published.

While we understand that hardware security issues need coordinated embargo time, the embargo time should be constrained to the minimum time which is required for all involved parties to develop, test and prepare the mitigations. Extending embargo time artificially to meet conference talk dates or other non-technical reasons is creating more work and burden for the involved developers and response teams as the patches need to be kept up to date in order to follow the ongoing upstream kernel development, which might create conflicting changes.

CVE assignment

Neither the hardware security team nor the initial response team assign CVEs, nor are CVEs required for the development process. If CVEs are provided by the disclosing party they can be used for documentation purposes.

* Process ambassadors

For assistance with this process we have established ambassadors in various organizations, who can answer questions about or provide guidance on the reporting process and further handling. Ambassadors are not involved in the disclosure of a particular issue, unless requested by a response team or by an involved disclosed party. The current ambassadors list:

AMD	Tom Lendacky <tom.lendacky@amd.com>
Ampere	Darren Hart <darren@os.amperecomputing.com>
ARM	Catalin Marinas <catalin.marinas@arm.com>
IBM Power	Anton Blanchard <anton@linux.ibm.com>
IBM Z	Christian Borntraeger <borntraeger@de.ibm.com>
Intel	Tony Luck <tony.luck@intel.com>
Qualcomm	Trilok Soni <tsoni@codeaurora.org>
Microsoft	James Morris <jamorris@linux.microsoft.com>
VMware	
Xen	Andrew Cooper <andrew.cooper3@citrix.com>
Canonical	John Johansen <john.johansen@canonical.com>
Debian	Ben Hutchings <ben@decadent.org.uk>
Oracle	Konrad Rzeszutek Wilk <konrad.wilk@oracle.com>
Red Hat	Josh Poimboeuf <jpoimboe@redhat.com>
SUSE	Jiri Kosina <jkosina@suse.cz>
Amazon	
Google	Kees Cook <keescook@chromium.org>

If you want your organization to be added to the ambassadors list, please contact the hardware security team. The nominated ambassador has to understand and support our process fully and is ideally well connected in the Linux kernel community.

* Encrypted mailing-lists

We use encrypted mailing-lists for communication. The operating principle of these lists is that email sent to the list is encrypted either with the list's PGP key or with the list's S/MIME certificate. The mailing-list software decrypts the email and re-encrypts it individually for each subscriber with the subscriber's PGP key or S/MIME certificate. Details about the mailing-list software and the setup which is used to ensure the security of the lists and protection of the data can be found here: https://korg.wiki.kernel.org/userdoc/remail.

* List keys

For initial contact see *Contact*. For incident specific mailing-lists the key and S/MIME certificate are conveyed to the subscribers by email sent from the specific list.

* Subscription to incident specific lists

Subscription is handled by the response teams. Disclosed parties who want to participate in the communication send a list of potential subscribers to the response team so the response team can validate subscription requests.

Each subscriber needs to send a subscription request to the response team by email. The email must be signed with the subscriber's PGP key or S/MIME certificate. If a PGP key is used, it must be available from a public key server and is ideally connected to the Linux kernel's PGP web of trust. See also: https://www.kernel.org/signature.html.

The response team verifies that the subscriber request is valid and adds the subscriber to the list. After subscription the subscriber will receive email from the mailing-list which is signed either with the list's PGP key or the list's S/MIME certificate. The subscriber's email client can extract the PGP key or the S/MIME certificate from the signature so the subscriber can send encrypted email to the list.

LIST OF MAINTAINERS AND HOW TO SUBMIT KERNEL CHANGES

Please try to follow the guidelines below. This will make things easier on the maintainers. Not all of these guidelines matter for every trivial patch so apply some common sense.

* Tips for patch submitters

1. Always *test* your changes, however small, on at least 4 or 5 people, preferably many more.

2. Try to release a few ALPHA test versions to the net. Announce them onto the kernel channel and await results. This is especially important for device drivers, because often that's the only way you will find things like the fact version 3 firmware needs a magic fix you didn't know about, or some clown changed the chips on a board and not its name. (Don't laugh! Look at the SMC etherpower for that.)

3. Make sure your changes compile correctly in multiple configurations. In particular check that changes work both as a module and built into the kernel.

4. When you are happy with a change make it generally available for testing and await feedback.

5. Make a patch available to the relevant maintainer in the list. Use `diff -u` to make the patch easy to merge. Be prepared to get your changes sent back with seemingly silly requests about formatting and variable names. These aren't as silly as they seem. One job the maintainers (and especially Linus) do is to keep things looking the same. Sometimes this means that the clever hack in your driver to get around a problem actually needs to become a generalized kernel feature ready for next time.

   PLEASE check your patch with the automated style checker (scripts/checkpatch.pl) to catch trivial style violations. See *process/coding-style* for guidance here.

   PLEASE CC: the maintainers and mailing lists that are generated by `scripts/get_maintainer.pl`. The results returned by the script will be best if you have git installed and are making your changes in a branch derived from Linus' latest git tree. See *process/submitting-patches* for details.

   PLEASE try to include any credit lines you want added with the patch. It avoids people being missed off by mistake and makes it easier to know who wants adding and who doesn't.

   PLEASE document known bugs. If it doesn't work for everything or does something very odd once a month document it.

   PLEASE remember that submissions must be made under the terms of the Linux Foundation certificate of contribution and should include a Signed-off-by: line. The current version

of this "Developer's Certificate of Origin" (DCO) is listed in the file *process/submitting-patches*.

6. Make sure you have the right to send any changes you make. If you do changes at work you may find your employer owns the patch not you.

7. When sending security related changes or reports to a maintainer please Cc: security@kernel.org, especially if the maintainer does not respond. Please keep in mind that the security team is a small set of people who can be efficient only when working on verified bugs. Please only Cc: this list when you have identified that the bug would present a short-term risk to other users if it were publicly disclosed. For example, reports of address leaks do not represent an immediate threat and are better handled publicly, and ideally, should come with a patch proposal. Please do not send automated reports to this list either. Such bugs will be handled better and faster in the usual public places. See admin-guide/security-bugs for details.

8. Happy hacking.

* Descriptions of section entries and preferred order

    M: *Mail* patches to: FullName <address@domain>
    R: Designated *Reviewer*: FullName <address@domain>
        These reviewers should be CCed on patches.
    L: *Mailing list* that is relevant to this area
    S: *Status*, one of the following:
        Supported: Someone is actually paid to look after this.
        Maintained: Someone actually looks after it.
        Odd Fixes: It has a maintainer but they don't have time to do
            much other than throw the odd patch in. See below..
        Orphan: No current maintainer [but maybe you could take the
            role as you write your new code].
        Obsolete: Old code. Something tagged obsolete generally means
            it has been replaced by a better system and you
            should be using that.
    W: *Web-page* with status/info
    Q: *Patchwork* web based patch tracking system site
    B: URI for where to file *bugs*. A web-page with detailed bug
        filing info, a direct bug tracker link, or a mailto: URI.
    C: URI for *chat* protocol, server and channel where developers
        usually hang out, for example irc://server/channel.
    P: Subsystem Profile document for more details submitting
        patches to the given subsystem. This is either an in-tree file,
        or a URI. See maintainer/maintainer-entry-profile
        for details.
    T: *SCM* tree type and location.
        Type is one of: git, hg, quilt, stgit, topgit

F: *Files* and directories wildcard patterns.

    A trailing slash includes all files and subdirectory files.

    F: drivers/net/ all files in and below drivers/net

    F: drivers/net/* all files in drivers/net, but not below

    F: */net/* all files in "any top level directory"/net

    One pattern per line. Multiple F: lines acceptable.

X: *Excluded* files and directories that are NOT maintained, same

    rules as F:. Files exclusions are tested before file matches.

    Can be useful for excluding a specific subdirectory, for instance:

    F: net/

    X: net/ipv6/

    matches all files in and below net excluding net/ipv6/

N: Files and directories *Regex* patterns.

    N: [^a-z]tegra all files whose path contains tegra

        (not including files like integrator)

    One pattern per line. Multiple N: lines acceptable.

    scripts/get_maintainer.pl has different behavior for files that

    match F: pattern and matches of N: patterns. By default,

    get_maintainer will not look at git log history when an F: pattern

    match occurs. When an N: match occurs, git log history is used

    to also notify the people that have git commit signatures.

K: *Content regex* (perl extended) pattern match in a patch or file.

    For instance:

    K: of_get_profile

        matches patches or files that contain "of_get_profile"

    K: \b(printk|pr_(info|err))\b

        matches patches or files that contain one or more of the words

        printk, pr_info or pr_err

    One regex pattern per line. Multiple K: lines acceptable.

* Maintainers List

Note: When reading this list, please look for the most precise areas first. When adding to this list, please keep the entries in alphabetical order.

* 3C59X NETWORK DRIVER

Mail Steffen Klassert <klassert@kernel.org>

Mailing list netdev@vger.kernel.org

Status Odd Fixes

Files networking/device_drivers/ethernet/3com/vortex   `drivers/net/ethernet/`
`3com/3c59x.c`

* 3CR990 NETWORK DRIVER

Mail David Dillow <dave@thedillows.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/ethernet/3com/typhoon*`

* 3WARE SAS/SATA-RAID SCSI DRIVERS (3W-XXXX, 3W-9XXX, 3W-SAS)

Mail Adam Radford <aradford@gmail.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Web-page http://www.lsi.com

Files `drivers/scsi/3w-*`

* 53C700 AND 53C700-66 SCSI DRIVER

Mail "James E.J. Bottomley" <James.Bottomley@HansenPartnership.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files `drivers/scsi/53c700*`

* 6LOWPAN GENERIC (BTLE/IEEE 802.15.4)

Mail Alexander   Aring   <alex.aring@gmail.com>,   Jukka   Rissanen
<jukka.rissanen@linux.intel.com>

Mailing list linux-bluetooth@vger.kernel.org, linux-wpan@vger.kernel.org

Status Maintained

Files networking/6lowpan `include/net/6lowpan.h net/6lowpan/`

* 6PACK NETWORK DRIVER FOR AX.25

Mail Andreas Koensgen <ajk@comnets.uni-bremen.de>

Mailing list linux-hams@vger.kernel.org

Status Maintained

Files drivers/net/hamradio/6pack.c

* 802.11 (including CFG80211/NL80211)

Mail Johannes Berg <johannes@sipsolutions.net>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/

Patchwork https://patchwork.kernel.org/project/linux-wireless/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/wireless/wireless.git git git://git.kernel.org/pub/scm/linux/kernel/git/wireless/wireless-next.git

Files driver-api/80211/cfg80211 networking/regulatory include/linux/ieee80211.h include/net/cfg80211.h include/net/ieee80211_radiotap.h include/net/iw_handler.h include/net/wext.h include/uapi/linux/nl80211.h include/uapi/linux/wireless.h net/wireless/

* 8169 10/100/1000 GIGABIT ETHERNET DRIVER

Mail Heiner Kallweit <hkallweit1@gmail.com>, nic_swsd@realtek.com

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/realtek/r8169*

* 8250/16?50 (AND CLONE UARTS) SERIAL DRIVER

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Mailing list linux-serial@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/tty.git

Files drivers/tty/serial/8250* include/linux/serial_8250.h

* 8390 NETWORK DRIVERS [WD80x3/SMC-ELITE, SMC-ULTRA, NE2000, 3C503, etc.]

Mailing list netdev@vger.kernel.org

Status Orphan / Obsolete

Files `drivers/net/ethernet/8390/`

* 9P FILE SYSTEM

Mail Eric Van Hensbergen <ericvh@gmail.com>, Latchesar Ionkov <lucho@ionkov.net>, Dominique Martinet <asmadeus@codewreck.org>

Reviewer Christian Schoenebeck <linux_oss@crudebyte.com>

Mailing list v9fs-developer@lists.sourceforge.net

Status Maintained

Web-page http://swik.net/v9fs

Patchwork http://patchwork.kernel.org/project/v9fs-devel/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/ericvh/v9fs.git git git://github.com/martinetd/linux.git

Files filesystems/9p `fs/9p/` `include/net/9p/` `include/trace/events/9p.h` `include/uapi/linux/virtio_9p.h` `net/9p/`

* A8293 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/dvb-frontends/a8293*`

* AACRAID SCSI RAID DRIVER

Mail Adaptec OEM Raid Solutions <aacraid@microsemi.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Web-page http://www.adaptec.com/

Files scsi/aacraid `drivers/scsi/aacraid/`

* ABI/API

Mailing list linux-api@vger.kernel.org

Files `include/linux/syscalls.h kernel/sys_ni.c`

Excluded `include/uapi/ arch/*/include/uapi/`

* ABIT UGURU 1,2 HARDWARE MONITOR DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `drivers/hwmon/abituguru.c`

* ABIT UGURU 3 HARDWARE MONITOR DRIVER

Mail Alistair John Strachan <alistair@devzero.co.uk>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `drivers/hwmon/abituguru3.c`

* ACCES 104-DIO-48E GPIO DRIVER

Mail William Breathitt Gray <vilhelm.gray@gmail.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files `drivers/gpio/gpio-104-dio-48e.c`

* ACCES 104-IDI-48 GPIO DRIVER

Mail "William Breathitt Gray" <vilhelm.gray@gmail.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files `drivers/gpio/gpio-104-idi-48.c`

* ACCES 104-IDIO-16 GPIO DRIVER

Mail "William Breathitt Gray" <vilhelm.gray@gmail.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files `drivers/gpio/gpio-104-idio-16.c`

* ACCES 104-QUAD-8 DRIVER

Mail William Breathitt Gray <vilhelm.gray@gmail.com>, Syed Nayyar Waris <syed-nwaris@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files `drivers/counter/104-quad-8.c`

* ACCES PCI-IDIO-16 GPIO DRIVER

Mail William Breathitt Gray <vilhelm.gray@gmail.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files `drivers/gpio/gpio-pci-idio-16.c`

* ACCES PCIe-IDIO-24 GPIO DRIVER

Mail William Breathitt Gray <vilhelm.gray@gmail.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files `drivers/gpio/gpio-pcie-idio-24.c`

* ACENIC DRIVER

Mail Jes Sorensen <jes@trained-monkey.org>

Mailing list linux-acenic@sunsite.dk

Status Maintained

Files `drivers/net/ethernet/alteon/acenic*`

* ACER ASPIRE ONE TEMPERATURE AND FAN DRIVER

Mail Peter Kaestle <peter@piie.net>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Web-page http://piie.net/?section=acerhdf

Files `drivers/platform/x86/acerhdf.c`

* ACER WMI LAPTOP EXTRAS

Mail "Lee, Chun-Yi" <jlee@suse.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/acer-wmi.c`

* ACPI

Mail "Rafael J. Wysocki" <rafael@kernel.org>

Reviewer Len Brown <lenb@kernel.org>

Mailing list linux-acpi@vger.kernel.org

Status Supported

Web-page https://01.org/linux-acpi

Patchwork https://patchwork.kernel.org/project/linux-acpi/list/

bugs https://bugzilla.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rafael/linux-pm

Files `Documentation/ABI/testing/configfs-acpi Documentation/ABI/testing/ sysfs-bus-acpi    Documentation/firmware-guide/acpi/    drivers/acpi/ drivers/pci/*/*acpi* drivers/pci/*acpi* drivers/pnp/pnpacpi/ include/ acpi/ include/linux/acpi.h include/linux/fwnode.h tools/power/acpi/`

* ACPI APEI

Mail "Rafael J. Wysocki" <rafael@kernel.org>

Reviewer Len Brown <lenb@kernel.org>, James Morse <james.morse@arm.com>, Tony Luck <tony.luck@intel.com>, Borislav Petkov <bp@alien8.de>

Mailing list linux-acpi@vger.kernel.org

Files `drivers/acpi/apei/`

* ACPI COMPONENT ARCHITECTURE (ACPICA)

Mail Robert Moore <robert.moore@intel.com>, "Rafael J. Wysocki" <rafael.j.wysocki@intel.com>

Mailing list linux-acpi@vger.kernel.org, devel@acpica.org

Status Supported

Web-page https://acpica.org/ https://github.com/acpica/acpica/

Patchwork https://patchwork.kernel.org/project/linux-acpi/list/

bugs https://bugzilla.kernel.org https://bugs.acpica.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rafael/linux-pm

Files `drivers/acpi/acpica/ include/acpi/ tools/power/acpi/`

* ACPI FOR ARM64 (ACPI/arm64)

Mail Lorenzo Pieralisi <lpieralisi@kernel.org>, Hanjun Guo <guohan-jun@huawei.com>, Sudeep Holla <sudeep.holla@arm.com>

Mailing list linux-acpi@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `drivers/acpi/arm64`

* ACPI SERIAL MULTI INSTANTIATE DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/serial-multi-instantiate.c`

* ACPI PCC(Platform Communication Channel) MAILBOX DRIVER

Mail Sudeep Holla <sudeep.holla@arm.com>

Mailing list linux-acpi@vger.kernel.org

Status Supported

Files `drivers/mailbox/pcc.c`

* ACPI PMIC DRIVERS

Mail "Rafael J. Wysocki" <rafael@kernel.org>, Len Brown <lenb@kernel.org>

Reviewer Andy Shevchenko <andy@kernel.org>, Mika Westerberg <mika.westerberg@linux.intel.com>

Mailing list linux-acpi@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-acpi/list/

bugs https://bugzilla.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rafael/linux-pm

Files drivers/acpi/pmic/

* ACPI THERMAL DRIVER

Mail Rafael J. Wysocki <rafael@kernel.org>

Reviewer Zhang Rui <rui.zhang@intel.com>

Mailing list linux-acpi@vger.kernel.org

Status Supported

Web-page https://01.org/linux-acpi

bugs https://bugzilla.kernel.org

Files drivers/acpi/*thermal*

* ACPI VIOT DRIVER

Mail Jean-Philippe Brucker <jean-philippe@linaro.org>

Mailing list linux-acpi@vger.kernel.org, iommu@lists.linux.dev

Status Maintained

Files drivers/acpi/viot.c include/linux/acpi_viot.h

* ACPI WMI DRIVER

Mailing list platform-driver-x86@vger.kernel.org

Status Orphan

Files drivers/platform/x86/wmi.c include/uapi/linux/wmi.h

* ACRN HYPERVISOR SERVICE MODULE

Mail Fei Li <fei1.li@intel.com>

Mailing list acrn-dev@lists.projectacrn.org (subscribers-only)

Status Supported

Web-page https://projectacrn.org

Files Documentation/virt/acrn/   drivers/virt/acrn/   include/uapi/linux/
acrn.h

* AD1889 ALSA SOUND DRIVER

Mailing list linux-parisc@vger.kernel.org

Status Maintained

Web-page https://parisc.wiki.kernel.org/index.php/AD1889

Files sound/pci/ad1889.*

* AD5110 ANALOG DEVICES DIGITAL POTENTIOMETERS DRIVER

Mail Mugilraj Dhavachelvan <dmugil2000@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Files drivers/iio/potentiometer/ad5110.c

* AD525X ANALOG DEVICES DIGITAL POTENTIOMETERS DRIVER

Mail Michael Hennerich <michael.hennerich@analog.com>

Status Supported

Web-page http://wiki.analog.com/AD5254   https://ez.analog.com/
linux-software-drivers

Files drivers/misc/ad525x_dpot.c

* AD5398 CURRENT REGULATOR DRIVER (AD5398/AD5821)

Mail Michael Hennerich <michael.hennerich@analog.com>

Status Supported

Web-page http://wiki.analog.com/AD5398   https://ez.analog.com/
linux-software-drivers

Files drivers/regulator/ad5398.c

* AD714X CAPACITANCE TOUCH SENSOR DRIVER (AD7142/3/7/8/7A)

Mail Michael Hennerich <michael.hennerich@analog.com>

Status Supported

Web-page http://wiki.analog.com/AD7142 https://ez.analog.com/ linux-software-drivers

Files `drivers/input/misc/ad714x.c`

* AD7877 TOUCHSCREEN DRIVER

Mail Michael Hennerich <michael.hennerich@analog.com>

Status Supported

Web-page http://wiki.analog.com/AD7877 https://ez.analog.com/ linux-software-drivers

Files `drivers/input/touchscreen/ad7877.c`

* AD7879 TOUCHSCREEN DRIVER (AD7879/AD7889)

Mail Michael Hennerich <michael.hennerich@analog.com>

Status Supported

Web-page http://wiki.analog.com/AD7879 https://ez.analog.com/ linux-software-drivers

Files `drivers/input/touchscreen/ad7879.c`

* ADDRESS SPACE LAYOUT RANDOMIZATION (ASLR)

Mail Jiri Kosina <jikos@kernel.org>

Status Maintained

* ADF7242 IEEE 802.15.4 RADIO DRIVER

Mail Michael Hennerich <michael.hennerich@analog.com>

Mailing list linux-wpan@vger.kernel.org

Status Supported

Web-page https://wiki.analog.com/ADF7242 https://ez.analog.com/ linux-software-drivers

Files `Documentation/devicetree/bindings/net/ieee802154/adf7242.txt`
`drivers/net/ieee802154/adf7242.c`

* ADM1025 HARDWARE MONITOR DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/adm1025 drivers/hwmon/adm1025.c

* ADM1029 HARDWARE MONITOR DRIVER

Mail Corentin Labbe <clabbe.montjoie@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files drivers/hwmon/adm1029.c

* ADM8211 WIRELESS DRIVER

Mailing list linux-wireless@vger.kernel.org

Status Orphan

Web-page https://wireless.wiki.kernel.org/

Files drivers/net/wireless/admtek/adm8211.*

* ADP1653 FLASH CONTROLLER DRIVER

Mail Sakari Ailus <sakari.ailus@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/adp1653.c include/media/i2c/adp1653.h

* ADP5520 BACKLIGHT DRIVER WITH IO EXPANDER (ADP5520/ADP5501)

Mail Michael Hennerich <michael.hennerich@analog.com>

Status Supported

Web-page http://wiki.analog.com/ADP5520 https://ez.analog.com/linux-software-drivers

Files drivers/gpio/gpio-adp5520.c drivers/input/keyboard/adp5520-keys.c drivers/leds/leds-adp5520.c drivers/mfd/adp5520.c drivers/video/backlight/adp5520_bl.c

* ADP5588 QWERTY KEYPAD AND IO EXPANDER DRIVER (ADP5588/ADP5587)

Mail Michael Hennerich <michael.hennerich@analog.com>

Status Supported

Web-page http://wiki.analog.com/ADP5588   https://ez.analog.com/linux-software-drivers

Files `drivers/gpio/gpio-adp5588.c drivers/input/keyboard/adp5588-keys.c`

* ADP8860 BACKLIGHT DRIVER (ADP8860/ADP8861/ADP8863)

Mail Michael Hennerich <michael.hennerich@analog.com>

Status Supported

Web-page http://wiki.analog.com/ADP8860   https://ez.analog.com/linux-software-drivers

Files `drivers/video/backlight/adp8860_bl.c`

* ADT746X FAN DRIVER

Mail Colin Leroy <colin@colino.net>

Status Maintained

Files `drivers/macintosh/therm_adt746x.c`

* ADT7475 HARDWARE MONITOR DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `hwmon/adt7475 drivers/hwmon/adt7475.c`

* ADVANSYS SCSI DRIVER

Mail Matthew Wilcox <willy@infradead.org>, Hannes Reinecke <hare@suse.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files `scsi/advansys drivers/scsi/advansys.c`

* ADVANTECH SWBTN DRIVER

Mail Andrea Ho <Andrea.Ho@advantech.com.tw>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/adv_swbutton.c

* ADXL313 THREE-AXIS DIGITAL ACCELEROMETER DRIVER

Mail Lucas Stankus <lucas.p.stankus@gmail.com>

Status Supported

Files Documentation/devicetree/bindings/iio/accel/adi,adxl313.yaml
    drivers/iio/accel/adxl313*

* ADXL34X THREE-AXIS DIGITAL ACCELEROMETER DRIVER (ADXL345/ADXL346)

Mail Michael Hennerich <michael.hennerich@analog.com>

Status Supported

Web-page http://wiki.analog.com/ADXL345 https://ez.analog.com/
    linux-software-drivers

Files Documentation/devicetree/bindings/iio/accel/adi,adxl345.yaml
    drivers/input/misc/adxl34x.c

* ADXL355 THREE-AXIS DIGITAL ACCELEROMETER DRIVER

Mail Puranjay Mohan <puranjay12@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/iio/accel/adi,adxl355.yaml
    drivers/iio/accel/adxl355.h drivers/iio/accel/adxl355_core.c drivers/
    iio/accel/adxl355_i2c.c drivers/iio/accel/adxl355_spi.c

* ADXL367 THREE-AXIS DIGITAL ACCELEROMETER DRIVER

Mail Cosmin Tanislav <cosmin.tanislav@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page http://ez.analog.com/community/linux-device-drivers

Files Documentation/devicetree/bindings/iio/accel/adi,adxl367.yaml
    drivers/iio/accel/adxl367*

* ADXL372 THREE-AXIS DIGITAL ACCELEROMETER DRIVER

Mail Michael Hennerich <michael.hennerich@analog.com>

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/accel/adi,adxl372.yaml
drivers/iio/accel/adxl372.c drivers/iio/accel/adxl372_i2c.c drivers/
iio/accel/adxl372_spi.c

* AF9013 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/dvb-frontends/af9013*

* AF9033 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/dvb-frontends/af9033*

* AFFS FILE SYSTEM

Mail David Sterba <dsterba@suse.com>

Mailing list linux-fsdevel@vger.kernel.org

Status Odd Fixes

Files filesystems/affs fs/affs/

* AFS FILESYSTEM

Mail David Howells <dhowells@redhat.com>, Marc Dionne <marc.dionne@auristor.com>

Mailing list linux-afs@lists.infradead.org

Status Supported

Web-page https://www.infradead.org/~dhowells/kafs/

Files filesystems/afs `fs/afs/` `include/trace/events/afs.h`

* AGPGART DRIVER

Mail David Airlie <airlied@linux.ie>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm

Files `drivers/char/agp/` `include/linux/agp*` `include/uapi/linux/agp*`

* AHA152X SCSI DRIVER

Mail "Juergen E. Fischer" <fischer@norbit.de>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files `drivers/scsi/aha152x*` `drivers/scsi/pcmcia/aha152x*`

* AIC7XXX / AIC79XX SCSI DRIVER

Mail Hannes Reinecke <hare@suse.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files `drivers/scsi/aic7xxx/`

* AIMSLAB FM RADIO RECEIVER DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/radio/radio-aimslab*`

* AIO

Mail Benjamin LaHaise <bcrl@kvack.org>

Mailing list linux-aio@kvack.org

Status Supported

Files `fs/aio.c include/linux/*aio*.h`

* AIRSPY MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/usb/airspy/`

* ALACRITECH GIGABIT ETHERNET DRIVER

Mail Lino Sanfilippo <LinoSanfilippo@gmx.de>

Status Maintained

Files `drivers/net/ethernet/alacritech/*`

* ALCATEL SPEEDTOUCH USB DRIVER

Mail Duncan Sands <duncan.sands@free.fr>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Web-page http://www.linux-usb.org/SpeedTouch/

Files `drivers/usb/atm/speedtch.c drivers/usb/atm/usbatm.c`

* ALCHEMY AU1XX0 MMC DRIVER

Mail Manuel Lauss <manuel.lauss@gmail.com>

Status Maintained

Files `drivers/mmc/host/au1xmmc.c`

* ALI1563 I2C DRIVER

Mail Rudolf Marek <r.marek@assembler.cz>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files i2c/busses/i2c-ali1563 `drivers/i2c/busses/i2c-ali1563.c`

* ALIENWARE WMI DRIVER

Mailing list Dell.Client.Kernel@dell.com

Status Maintained

Files `drivers/platform/x86/dell/alienware-wmi.c`

* ALL SENSORS DLH SERIES PRESSURE SENSORS DRIVER

Mail Tomislav Denis <tomislav.denis@avl.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Web-page http://www.allsensors.com/

Files `Documentation/devicetree/bindings/iio/pressure/asc,dlhl60d.yaml`
`drivers/iio/pressure/dlhl60d.c`

* ALLEGRO DVT VIDEO IP CORE DRIVER

Mail Michael Tretter <m.tretter@pengutronix.de>

Reviewer Pengutronix Kernel Team <kernel@pengutronix.de>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/media/allegro,al5e.yaml drivers/`
`media/platform/allegro-dvt/`

* ALLWINNER A10 CSI DRIVER

Mail Maxime Ripard <mripard@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `Documentation/devicetree/bindings/media/allwinner,sun4i-a10-csi.`
`yaml drivers/media/platform/sunxi/sun4i-csi/`

* ALLWINNER CPUFREQ DRIVER

Mail Yangtao Li <tiny.windzz@gmail.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/opp/allwinner,
    `sun50i-h6-operating-points.yaml`   `drivers/cpufreq/`
    `sun50i-cpufreq-nvmem.c`

* ALLWINNER CRYPTO DRIVERS

Mail Corentin Labbe <clabbe.montjoie@gmail.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files `drivers/crypto/allwinner/`

* ALLWINNER HARDWARE SPINLOCK SUPPORT

Mail Wilken Gottwalt <wilken.gottwalt@posteo.net>

Status Maintained

Files Documentation/devicetree/bindings/hwlock/allwinner,
    `sun6i-a31-hwspinlock.yaml drivers/hwspinlock/sun6i_hwspinlock.c`

* ALLWINNER THERMAL DRIVER

Mail Vasily   Khoruzhick   <anarsoul@gmail.com>,   Yangtao   Li
    <tiny.windzz@gmail.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/thermal/allwinner,
    `sun8i-a83t-ths.yaml drivers/thermal/sun8i_thermal.c`

* ALLWINNER VPU DRIVER

Mail Maxime   Ripard   <mripard@kernel.org>,   Paul   Kocialkowski
    <paul.kocialkowski@bootlin.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/staging/media/sunxi/cedrus/`

* ALPHA PORT

Mail Richard Henderson <rth@twiddle.net>, Ivan Kokshaysky <ink@jurassic.park.msu.ru>, Matt Turner <mattst88@gmail.com>

Mailing list linux-alpha@vger.kernel.org

Status Odd Fixes

Files arch/alpha/

* ALPS PS/2 TOUCHPAD DRIVER

Reviewer Pali Rohár <pali@kernel.org>

Files drivers/input/mouse/alps.*

* ALTERA I2C CONTROLLER DRIVER

Mail Thor Thayer <thor.thayer@linux.intel.com>

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-altera.txt drivers/i2c/busses/i2c-altera.c

* ALTERA MAILBOX DRIVER

Mail Mun Yew Tham <mun.yew.tham@intel.com>

Status Maintained

Files drivers/mailbox/mailbox-altera.c

* ALTERA MSGDMA IP CORE DRIVER

Mail Olivier Dautricourt <olivierdautricourt@gmail.com>

Reviewer Stefan Roese <sr@denx.de>

Mailing list dmaengine@vger.kernel.org

Status Odd Fixes

Files Documentation/devicetree/bindings/dma/altr,msgdma.yaml drivers/dma/altera-msgdma.c

* ALTERA PIO DRIVER

Mail Mun Yew Tham <mun.yew.tham@intel.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files drivers/gpio/gpio-altera.c

* ALTERA SYSTEM MANAGER DRIVER

Mail Thor Thayer <thor.thayer@linux.intel.com>

Status Maintained

Files drivers/mfd/altera-sysmgr.c include/linux/mfd/altera-sysmgr.h

* ALTERA SYSTEM RESOURCE DRIVER FOR ARRIA10 DEVKIT

Mail Thor Thayer <thor.thayer@linux.intel.com>

Status Maintained

Files drivers/gpio/gpio-altera-a10sr.c   drivers/mfd/altera-a10sr.
    c   drivers/reset/reset-a10sr.c   include/dt-bindings/reset/altr,
    rst-mgr-a10sr.h include/linux/mfd/altera-a10sr.h

* ALTERA TRIPLE SPEED ETHERNET DRIVER

Mail Joyce Ooi <joyce.ooi@intel.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/altera/

* ALTERA UART/JTAG UART SERIAL DRIVERS

Mail Tobias Klauser <tklauser@distanz.ch>

Mailing list linux-serial@vger.kernel.org

Status Maintained

Files drivers/tty/serial/altera_jtaguart.c   drivers/tty/serial/
    altera_uart.c   include/linux/altera_jtaguart.h   include/linux/
    altera_uart.h

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* AMAZON ANNAPURNA LABS FIC DRIVER

Mail Talel Shenhar <talel@amazon.com>

Status Maintained

Files Documentation/devicetree/bindings/interrupt-controller/amazon,
al-fic.txt drivers/irqchip/irq-al-fic.c

* AMAZON ANNAPURNA LABS MEMORY CONTROLLER EDAC

Mail Talel Shenhar <talel@amazon.com>, Talel Shenhar <talelshenhar@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/edac/amazon,al-mc-edac.yaml
drivers/edac/al_mc_edac.c

* AMAZON ANNAPURNA LABS THERMAL MMIO DRIVER

Mail Talel Shenhar <talel@amazon.com>

Status Maintained

Files Documentation/devicetree/bindings/thermal/amazon,al-thermal.txt
drivers/thermal/thermal_mmio.c

* AMAZON ETHERNET DRIVERS

Mail Shay Agroskin <shayagr@amazon.com>, Arthur Kiyanovski
<akiyano@amazon.com>

Reviewer David Arinzon <darinzon@amazon.com>, Noam Dagan <ndagan@amazon.com>, Saeed Bishara <saeedb@amazon.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files networking/device_drivers/ethernet/amazon/ena   drivers/net/ethernet/
amazon/

* AMAZON RDMA EFA DRIVER

Mail Gal Pressman <galpress@amazon.com>

Reviewer Yossi Leybovich <sleybo@amazon.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-rdma/list/

Files drivers/infiniband/hw/efa/ include/uapi/rdma/efa-abi.h

* AMD CRYPTOGRAPHIC COPROCESSOR (CCP) DRIVER

Mail Tom Lendacky <thomas.lendacky@amd.com>, John Allen <john.allen@amd.com>

Mailing list linux-crypto@vger.kernel.org

Status Supported

Files `drivers/crypto/ccp/ include/linux/ccp.h`

* AMD CRYPTOGRAPHIC COPROCESSOR (CCP) DRIVER - SEV SUPPORT

Mail Brijesh Singh <brijesh.singh@amd.com>, Tom Lendacky <thomas.lendacky@amd.com>

Mailing list linux-crypto@vger.kernel.org

Status Supported

Files `drivers/crypto/ccp/sev* include/uapi/linux/psp-sev.h`

* AMD DISPLAY CORE

Mail Harry Wentland <harry.wentland@amd.com>, Leo Li <sunpeng.li@amd.com>, Rodrigo Siqueira <Rodrigo.Siqueira@amd.com>

Mailing list amd-gfx@lists.freedesktop.org

Status Supported

SCM git https://gitlab.freedesktop.org/agd5f/linux.git

Files `drivers/gpu/drm/amd/display/`

* AMD FAM15H PROCESSOR POWER MONITORING DRIVER

Mail Huang Rui <ray.huang@amd.com>

Mailing list linux-hwmon@vger.kernel.org

Status Supported

Files `hwmon/fam15h_power drivers/hwmon/fam15h_power.c`

* AMD FCH GPIO DRIVER

Mail Enrico Weigelt, metux IT consult <info@metux.net>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files `drivers/gpio/gpio-amd-fch.c include/linux/platform_data/gpio/ gpio-amd-fch.h`

* AMD GEODE CS5536 USB DEVICE CONTROLLER DRIVER

Mailing list linux-geode@lists.infradead.org (moderated for non-subscribers)

Status Orphan

Files `drivers/usb/gadget/udc/amd5536udc.*`

* AMD GEODE PROCESSOR/CHIPSET SUPPORT

Mail Andres Salomon <dilinger@queued.net>

Mailing list linux-geode@lists.infradead.org (moderated for non-subscribers)

Status Supported

Web-page http://www.amd.com/us-en/ConnectivitySolutions/TechnicalResources/0,
,50_2334_2452_11363,00.html

Files `arch/x86/include/asm/geode.h   drivers/char/hw_random/geode-rng.c
drivers/crypto/geode* drivers/video/fbdev/geode/`

* AMD IOMMU (AMD-VI)

Mail Joerg Roedel <joro@8bytes.org>

Reviewer Suravee Suthikulpanit <suravee.suthikulpanit@amd.com>

Mailing list iommu@lists.linux.dev

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/joro/iommu.git

Files `drivers/iommu/amd/ include/linux/amd-iommu.h`

* AMD KFD

Mail Felix Kuehling <Felix.Kuehling@amd.com>

Mailing list amd-gfx@lists.freedesktop.org

Status Supported

SCM git https://gitlab.freedesktop.org/agd5f/linux.git

Files `drivers/gpu/drm/amd/amdgpu/amdgpu_amdkfd*.[ch]   drivers/gpu/drm/
amd/amdkfd/ drivers/gpu/drm/amd/include/cik_structs.h drivers/gpu/
drm/amd/include/kgd_kfd_interface.h   drivers/gpu/drm/amd/include/
v9_structs.h drivers/gpu/drm/amd/include/vi_structs.h include/uapi/
linux/kfd_ioctl.h include/uapi/linux/kfd_sysfs.h`

* AMD SPI DRIVER

Mail Sanjay R Mehta <sanju.mehta@amd.com>

Status Maintained

Files `drivers/spi/spi-amd.c`

* AMD MP2 I2C DRIVER

Mail Elie Morisse <syniurge@gmail.com>, Nehal Shah <nehal-bakulchandra.shah@amd.com>, Shyam Sundar S K <shyam-sundar.s-k@amd.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files `drivers/i2c/busses/i2c-amd-mp2*`

* AMD PMC DRIVER

Mail Shyam Sundar S K <Shyam-sundar.S-k@amd.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/amd-pmc.*`

* AMD HSMP DRIVER

Mail Naveen Krishna Chatradhi <naveenkrishna.chatradhi@amd.com>

Reviewer Carlos Bilbao <carlos.bilbao@amd.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `x86/amd_hsmp arch/x86/include/asm/amd_hsmp.h arch/x86/include/uapi/asm/amd_hsmp.h drivers/platform/x86/amd_hsmp.c`

* AMD POWERPLAY AND SWSMU

Mail Evan Quan <evan.quan@amd.com>

Mailing list amd-gfx@lists.freedesktop.org

Status Supported

SCM git https://gitlab.freedesktop.org/agd5f/linux.git

Files `drivers/gpu/drm/amd/pm/`

* AMD PSTATE DRIVER

Mail Huang Rui <ray.huang@amd.com>

Mailing list linux-pm@vger.kernel.org

Status Supported

Files admin-guide/pm/amd-pstate drivers/cpufreq/amd-pstate* tools/power/
x86/amd_pstate_tracer/amd_pstate_trace.py

* AMD PTDMA DRIVER

Mail Sanjay R Mehta <sanju.mehta@amd.com>

Mailing list dmaengine@vger.kernel.org

Status Maintained

Files drivers/dma/ptdma/

* AMD SEATTLE DEVICE TREE SUPPORT

Mail Brijesh Singh <brijeshkumar.singh@amd.com>, Suravee
Suthikulpanit <suravee.suthikulpanit@amd.com>, Tom Lendacky
<thomas.lendacky@amd.com>

Status Supported

Files arch/arm64/boot/dts/amd/

* AMD XGBE DRIVER

Mail Tom Lendacky <thomas.lendacky@amd.com>, "Shyam Sundar S K" <Shyam-
sundar.S-k@amd.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files arch/arm64/boot/dts/amd/amd-seattle-xgbe*.dtsi drivers/net/
ethernet/amd/xgbe/

* AMD SENSOR FUSION HUB DRIVER

Mail Basavaraj Natikar <basavaraj.natikar@amd.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files Documentation/hid/amd-sfh* drivers/hid/amd-sfh-hid/

* AMPHION VPU CODEC V4L2 DRIVER

Mail Ming Qian <ming.qian@nxp.com>, Shijie Qin <shijie.qin@nxp.com>, Zhou Peng <eagle.zhou@nxp.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/amphion,vpu.yaml drivers/media/platform/amphion/

* AMS AS73211 DRIVER

Mail Christian Eggers <ceggers@arri.de>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/light/ams,as73211.yaml drivers/iio/light/as73211.c

* AMT (Automatic Multicast Tunneling)

Mail Taehee Yoo <ap420073@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/netdev/net.git git git://git.kernel.org/pub/scm/linux/kernel/git/netdev/net-next.git

Files drivers/net/amt.c

* ANALOG DEVICES INC AD7192 DRIVER

Mail Alexandru Tachici <alexandru.tachici@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/adc/adi,ad7192.yaml drivers/iio/adc/ad7192.c

* ANALOG DEVICES INC AD7292 DRIVER

Mail Marcelo Schmitt <marcelo.schmitt1@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/adc/adi,ad7292.yaml drivers/
iio/adc/ad7292.c

* ANALOG DEVICES INC AD3552R DRIVER

Mail Nuno Sá <nuno.sa@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/dac/adi,ad3552r.yaml
drivers/iio/dac/ad3552r.c

* ANALOG DEVICES INC AD7293 DRIVER

Mail Antoniu Miclaus <antoniu.miclaus@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/dac/adi,ad7293.yaml drivers/
iio/dac/ad7293.c

* ANALOG DEVICES INC AD7768-1 DRIVER

Mail Michael Hennerich <Michael.Hennerich@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/adc/adi,ad7768-1.yaml
drivers/iio/adc/ad7768-1.c

* ANALOG DEVICES INC AD7780 DRIVER

Mail Michael Hennerich <Michael.Hennerich@analog.com>, Renato Lui Geh <renatogeh@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/adc/adi,ad7780.yaml drivers/
iio/adc/ad7780.c

* ANALOG DEVICES INC AD74413R DRIVER

Mail Cosmin Tanislav <cosmin.tanislav@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page http://ez.analog.com/community/linux-device-drivers

Files Documentation/devicetree/bindings/iio/addac/adi,ad74413r.yaml
drivers/iio/addac/ad74413r.c   include/dt-bindings/iio/addac/adi,
ad74413r.h

* ANALOG DEVICES INC AD9389B DRIVER

Mail Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/ad9389b*

* ANALOG DEVICES INC ADA4250 DRIVER

Mail Antoniu Miclaus <antoniu.miclaus@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/amplifiers/adi,ada4250.yaml
drivers/iio/amplifiers/ada4250.c

* ANALOG DEVICES INC ADGS1408 DRIVER

Mail Mircea Caprioru <mircea.caprioru@analog.com>

Status Supported

Files Documentation/devicetree/bindings/mux/adi,adgs1408.txt   drivers/
mux/adgs1408.c

* ANALOG DEVICES INC ADIN DRIVER

Mail Michael Hennerich <michael.hennerich@analog.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/net/adi,adin.yaml   drivers/net/
phy/adin.c

* ANALOG DEVICES INC ADIS DRIVER LIBRARY

Mail Nuno Sa <nuno.sa@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Files drivers/iio/imu/adis.c drivers/iio/imu/adis_buffer.c drivers/iio/
imu/adis_trigger.c include/linux/iio/imu/adis.h

* ANALOG DEVICES INC ADIS16460 DRIVER

Mail Dragos Bogdan <dragos.bogdan@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/imu/adi,adis16460.yaml
drivers/iio/imu/adis16460.c

* ANALOG DEVICES INC ADIS16475 DRIVER

Mail Nuno Sa <nuno.sa@analog.com>

Mailing list linux-iio@vger.kernel.org

Web-page https://ez.analog.com/linux-software-drivers

Status Supported

Files drivers/iio/imu/adis16475.c Documentation/devicetree/bindings/iio/
imu/adi,adis16475.yaml

* ANALOG DEVICES INC ADM1177 DRIVER

Mail Michael Hennerich <Michael.Hennerich@analog.com>

Mailing list linux-hwmon@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/hwmon/adi,adm1177.yaml drivers/
hwmon/adm1177.c

* ANALOG DEVICES INC ADMV1013 DRIVER

Mail Antoniu Miclaus <antoniu.miclaus@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/frequency/adi,admv1013.yaml
drivers/iio/frequency/admv1013.c

* ANALOG DEVICES INC ADMV8818 DRIVER

Mail Antoniu Miclaus <antoniu.miclaus@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/filter/adi,admv8818.yaml
drivers/iio/filter/admv8818.c

* ANALOG DEVICES INC ADMV1014 DRIVER

Mail Antoniu Miclaus <antoniu.miclaus@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/frequency/adi,admv1014.yaml
    drivers/iio/frequency/admv1014.c

* ANALOG DEVICES INC ADP5061 DRIVER

Mail Michael Hennerich <Michael.Hennerich@analog.com>

Mailing list linux-pm@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files drivers/power/supply/adp5061.c

* ANALOG DEVICES INC ADRF6780 DRIVER

Mail Antoniu Miclaus <antoniu.miclaus@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/frequency/adi,adrf6780.yaml
    drivers/iio/frequency/adrf6780.c

* ANALOG DEVICES INC ADV7180 DRIVER

Mail Lars-Peter Clausen <lars@metafoo.de>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files drivers/media/i2c/adv7180.c   Documentation/devicetree/bindings/
    media/i2c/adv7180.yaml

* ANALOG DEVICES INC ADV748X DRIVER

Mail Kieran Bingham <kieran.bingham@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/i2c/adv748x.yaml drivers/
media/i2c/adv748x/*

* ANALOG DEVICES INC ADV7511 DRIVER

Mail Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/adv7511*

* ANALOG DEVICES INC ADV7604 DRIVER

Mail Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/adv7604* Documentation/devicetree/bindings/
media/i2c/adv7604.yaml

* ANALOG DEVICES INC ADV7842 DRIVER

Mail Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/adv7842*

* ANALOG DEVICES INC ADXRS290 DRIVER

Mail Nishant Malpani <nish.malpani25@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Files drivers/iio/gyro/adxrs290.c Documentation/devicetree/bindings/iio/
gyroscope/adi,adxrs290.yaml

* ANALOG DEVICES INC ASOC CODEC DRIVERS

Mail Lars-Peter Clausen <lars@metafoo.de>, Nuno Sá <nuno.sa@analog.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Supported

Web-page http://wiki.analog.com/ https://ez.analog.com/linux-software-drivers

Files `sound/soc/codecs/ad1* sound/soc/codecs/ad7* sound/soc/codecs/adau*`
`sound/soc/codecs/adav* sound/soc/codecs/sigmadsp.* sound/soc/codecs/`
`ssm*`

* ANALOG DEVICES INC DMA DRIVERS

Mail Lars-Peter Clausen <lars@metafoo.de>

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files `drivers/dma/dma-axi-dmac.c`

* ANALOG DEVICES INC IIO DRIVERS

Mail Lars-Peter Clausen <lars@metafoo.de>, Michael Hennerich <Michael.Hennerich@analog.com>

Status Supported

Web-page http://wiki.analog.com/ https://ez.analog.com/linux-software-drivers

Files `Documentation/ABI/testing/sysfs-bus-iio-frequency-ad9523`
`Documentation/ABI/testing/sysfs-bus-iio-frequency-adf4350`
`Documentation/devicetree/bindings/iio/*/adi,*` `Documentation/`
`devicetree/bindings/iio/dac/adi,ad5758.yaml` `drivers/iio/*/ad*`
`drivers/iio/adc/ltc249*` `drivers/iio/amplifiers/hmc425a.c` `drivers/`
`staging/iio/*/ad*`

Excluded `drivers/iio/*/adjd*`

* ANALOGBITS PLL LIBRARIES

Mail Paul Walmsley <paul.walmsley@sifive.com>

Status Supported

Files `drivers/clk/analogbits/* include/linux/clk/analogbits*`

* ANDROID CONFIG FRAGMENTS

Mail Rob Herring <robh@kernel.org>

Status Supported

Files kernel/configs/android*

* ANDROID DRIVERS

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>, Arve Hjønnevåg <arve@android.com>, Todd Kjos <tkjos@android.com>, Martijn Coenen <maco@android.com>, Joel Fernandes <joel@joelfernandes.org>, Christian Brauner <christian@brauner.io>, Hridya Valsaraju <hridya@google.com>, Suren Baghdasaryan <surenb@google.com>

Mailing list linux-kernel@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/staging.git

Files drivers/android/

* ANDROID GOLDFISH PIC DRIVER

Mail Miodrag Dinic <miodrag.dinic@mips.com>

Status Supported

Files Documentation/devicetree/bindings/interrupt-controller/google,goldfish-pic.txt drivers/irqchip/irq-goldfish-pic.c

* ANDROID GOLDFISH RTC DRIVER

Mail Jiaxun Yang <jiaxun.yang@flygoat.com>

Status Supported

Files Documentation/devicetree/bindings/rtc/google,goldfish-rtc.txt drivers/rtc/rtc-goldfish.c

* AOA (Apple Onboard Audio) ALSA DRIVER

Mail Johannes Berg <johannes@sipsolutions.net>

Mailing list linuxppc-dev@lists.ozlabs.org, alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files sound/aoa/

* APEX EMBEDDED SYSTEMS STX104 IIO DRIVER

Mail William Breathitt Gray <vilhelm.gray@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files drivers/iio/adc/stx104.c

* APM DRIVER

Mail Jiri Kosina <jikos@kernel.org>

Status Odd fixes

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jikos/apm.git

Files arch/x86/kernel/apm_32.c drivers/char/apm-emulation.c include/linux/apm_bios.h include/uapi/linux/apm_bios.h

* APPARMOR SECURITY MODULE

Mail John Johansen <john.johansen@canonical.com>

Mailing list apparmor@lists.ubuntu.com (subscribers-only, general discussion)

Status Supported

Web-page wiki.apparmor.net

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jj/linux-apparmor

Files admin-guide/LSM/apparmor security/apparmor/

* APPLE BCM5974 MULTITOUCH DRIVER

Mail Henrik Rydberg <rydberg@bitmath.org>

Mailing list linux-input@vger.kernel.org

Status Odd fixes

Files drivers/input/mouse/bcm5974.c

* APPLE PCIE CONTROLLER DRIVER

Mail Alyssa Rosenzweig <alyssa@rosenzweig.io>, Marc Zyngier <maz@kernel.org>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files drivers/pci/controller/pcie-apple.c

* APPLE SMC DRIVER

Mail Henrik Rydberg <rydberg@bitmath.org>

Mailing list linux-hwmon@vger.kernel.org

Status Odd fixes

Files drivers/hwmon/applesmc.c

* APPLETALK NETWORK LAYER

Mailing list netdev@vger.kernel.org

Status Odd fixes

Files drivers/net/appletalk/ include/linux/atalk.h include/uapi/linux/
   atalk.h net/appletalk/

* APPLIED MICRO (APM) X-GENE DEVICE TREE SUPPORT

Mail Khuong Dinh <khuong@os.amperecomputing.com>

Status Supported

Files arch/arm64/boot/dts/apm/

* APPLIED MICRO (APM) X-GENE SOC EDAC

Mail Khuong Dinh <khuong@os.amperecomputing.com>

Status Supported

Files Documentation/devicetree/bindings/edac/apm-xgene-edac.txt drivers/
   edac/xgene_edac.c

* APPLIED MICRO (APM) X-GENE SOC ETHERNET (V2) DRIVER

Mail Iyappan Subramanian <iyappan@os.amperecomputing.com>, Keyur Chudgar
   <keyur@os.amperecomputing.com>

Status Supported

Files drivers/net/ethernet/apm/xgene-v2/

* APPLIED MICRO (APM) X-GENE SOC ETHERNET DRIVER

Mail Iyappan Subramanian <iyappan@os.amperecomputing.com>, Keyur Chudgar <keyur@os.amperecomputing.com>, Quan Nguyen <quan@os.amperecomputing.com>

Status Supported

Files Documentation/devicetree/bindings/net/apm-xgene-enet.txt Documentation/devicetree/bindings/net/apm-xgene-mdio.txt drivers/net/ethernet/apm/xgene/ drivers/net/mdio/mdio-xgene.c

* APPLIED MICRO (APM) X-GENE SOC PMU

Mail Khuong Dinh <khuong@os.amperecomputing.com>

Status Supported

Files admin-guide/perf/xgene-pmu Documentation/devicetree/bindings/perf/apm-xgene-pmu.txt drivers/perf/xgene_pmu.c

* APTINA CAMERA SENSOR PLL

Mail Laurent Pinchart <Laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/aptina-pll.*

* AQUACOMPUTER D5 NEXT PUMP SENSOR DRIVER

Mail Aleksa Savic <savicaleksa83@gmail.com>, Jack Doan <me@jackdoan.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/aquacomputer_d5next drivers/hwmon/aquacomputer_d5next.c

* AQUANTIA ETHERNET DRIVER (atlantic)

Mail Igor Russkikh <irusskikh@marvell.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page https://www.marvell.com/

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/

Files networking/device_drivers/ethernet/aquantia/atlantic drivers/net/ethernet/aquantia/atlantic/

* AQUANTIA ETHERNET DRIVER PTP SUBSYSTEM

Mail Egor Pomozov <epomozov@marvell.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.aquantia.com

Files drivers/net/ethernet/aquantia/atlantic/aq_ptp*

* ARASAN NAND CONTROLLER DRIVER

Mail Miquel Raynal <miquel.raynal@bootlin.com>, Naga Sureshkumar Relli <naga-sure@xilinx.com>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/mtd/arasan,nand-controller.yaml drivers/mtd/nand/raw/arasan-nand-controller.c

* ARC FRAMEBUFFER DRIVER

Mail Jaya Kumar <jayalk@intworks.biz>

Status Maintained

Files drivers/video/fbdev/arcfb.c drivers/video/fbdev/core/fb_defio.c

* ARC PGU DRM DRIVER

Mail Alexey Brodkin <abrodkin@synopsys.com>

Status Supported

Files Documentation/devicetree/bindings/display/snps,arcpgu.txt drivers/gpu/drm/tiny/arcpgu.c

* ARCNET NETWORK LAYER

Mail Michael Grzeschik <m.grzeschik@pengutronix.de>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/arcnet/ include/uapi/linux/if_arcnet.h

* ARM ARCHITECTED TIMER DRIVER

Mail Mark Rutland <mark.rutland@arm.com>, Marc Zyngier <maz@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/include/asm/arch_timer.h   arch/arm64/include/asm/
  arch_timer.h drivers/clocksource/arm_arch_timer.c

* ARM HDLCD DRM DRIVER

Mail Liviu Dudau <liviu.dudau@arm.com>

Status Supported

Files Documentation/devicetree/bindings/display/arm,hdlcd.yaml   drivers/
  gpu/drm/arm/hdlcd_*

* ARM INTEGRATOR, VERSATILE AND REALVIEW SUPPORT

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/arm/arm,integrator.yaml
  Documentation/devicetree/bindings/arm/arm,realview.yaml
  Documentation/devicetree/bindings/arm/arm,versatile.yaml
  Documentation/devicetree/bindings/arm/arm,vexpress-juno.yaml
  Documentation/devicetree/bindings/auxdisplay/arm,versatile-lcd.
  yaml   Documentation/devicetree/bindings/clock/arm,syscon-icst.
  yaml   Documentation/devicetree/bindings/i2c/i2c-versatile.txt
  Documentation/devicetree/bindings/interrupt-controller/arm,
  versatile-fpga-irq.txt   Documentation/devicetree/bindings/mtd/
  mtd-physmap.yaml arch/arm/boot/dts/arm-realview-* arch/arm/boot/dts/
  integrator* arch/arm/boot/dts/versatile* arch/arm/mach-versatile/
  drivers/bus/arm-integrator-lm.c   drivers/clk/versatile/   drivers/
  i2c/busses/i2c-versatile.c   drivers/irqchip/irq-versatile-fpga.
  c   drivers/mtd/maps/physmap-versatile.*   drivers/power/reset/
  arm-versatile-reboot.c drivers/soc/versatile/

* ARM KOMEDA DRM-KMS DRIVER

Mail James   (Qian)   Wang   <james.qian.wang@arm.com>,   Liviu   Dudau
  <liviu.dudau@arm.com>, Mihail Atanassov <mihail.atanassov@arm.com>

Mailing list Mali DP Maintainers <malidp@foss.arm.com>

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/arm,komeda.yaml
     gpu/komeda-kms   drivers/gpu/drm/arm/display/include/   drivers/gpu/
     drm/arm/display/komeda/

* ARM MALI PANFROST DRM DRIVER

Mail Rob   Herring   <robh@kernel.org>,   Tomeu   Vizoso
     <tomeu.vizoso@collabora.com>

Reviewer Steven   Price   <steven.price@arm.com>,   Alyssa   Rosenzweig
     <alyssa.rosenzweig@collabora.com>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/panfrost/ include/uapi/drm/panfrost_drm.h

* ARM MALI-DP DRM DRIVER

Mail Liviu   Dudau   <liviu.dudau@arm.com>,   Brian   Starkey
     <brian.starkey@arm.com>

Mailing list Mali DP Maintainers <malidp@foss.arm.com>

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/arm,malidp.yaml gpu/afbc
     drivers/gpu/drm/arm/

* ARM MFM AND FLOPPY DRIVERS

Mail Ian Molton <spyro@f2s.com>

Status Maintained

Files arch/arm/include/asm/floppy.h arch/arm/mach-rpc/floppydma.S

* ARM PMU PROFILING AND DEBUGGING

Mail Will Deacon <will@kernel.org>, Mark Rutland <mark.rutland@arm.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/arm/pmu.yaml   Documentation/
     devicetree/bindings/perf/   arch/arm*/include/asm/hw_breakpoint.h
     arch/arm*/include/asm/perf_event.h arch/arm*/kernel/hw_breakpoint.c
     arch/arm*/kernel/perf_* drivers/perf/ include/linux/perf/arm_pmu.h

* ARM PORT

Mail Russell King <linux@armlinux.org.uk>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Odd Fixes

Web-page http://www.armlinux.org.uk/

SCM git git://git.armlinux.org.uk/~rmk/linux-arm.git

Files `arch/arm/`

Excluded `arch/arm/boot/dts/`

* ARM PRIMECELL AACI PL041 DRIVER

Mail Russell King <linux@armlinux.org.uk>

Status Odd Fixes

Files `sound/arm/aaci.*`

* ARM PRIMECELL BUS SUPPORT

Mail Russell King <linux@armlinux.org.uk>

Status Odd Fixes

Files `drivers/amba/ include/linux/amba/bus.h`

* ARM PRIMECELL PL35X NAND CONTROLLER DRIVER

Mail Miquel Raynal <miquel.raynal@bootlin.com>, Naga Sureshkumar Relli <naga-sure@xilinx.com>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Files `Documentation/devicetree/bindings/mtd/arm,pl353-nand-r2p1.yaml drivers/mtd/nand/raw/pl35x-nand-controller.c`

* ARM PRIMECELL PL35X SMC DRIVER

Mail Miquel Raynal <miquel.raynal@bootlin.com>, Naga Sureshkumar Relli <naga-sure@xilinx.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/memory-controllers/arm, pl353-smc.yaml drivers/memory/pl353-smc.c`

* ARM PRIMECELL CLCD PL110 DRIVER

Mail Russell King <linux@armlinux.org.uk>

Status Odd Fixes

Files `drivers/video/fbdev/amba-clcd.*`

* ARM PRIMECELL KMI PL050 DRIVER

Mail Russell King <linux@armlinux.org.uk>

Status Odd Fixes

Files `drivers/input/serio/ambakmi.* include/linux/amba/kmi.h`

* ARM PRIMECELL MMCI PL180/1 DRIVER

Mail Russell King <linux@armlinux.org.uk>

Status Odd Fixes

Files `drivers/mmc/host/mmci.* include/linux/amba/mmci.h`

* ARM PRIMECELL SSP PL022 SPI DRIVER

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/spi/spi-pl022.yaml  drivers/spi/spi-pl022.c`

* ARM PRIMECELL UART PL010 AND PL011 DRIVERS

Mail Russell King <linux@armlinux.org.uk>

Status Odd Fixes

Files `drivers/tty/serial/amba-pl01*.c include/linux/amba/serial.h`

* ARM PRIMECELL VIC PL190/PL192 DRIVER

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/interrupt-controller/arm,vic.yaml drivers/irqchip/irq-vic.c`

* ARM SMC WATCHDOG DRIVER

Mail Julius Werner <jwerner@chromium.org>

Reviewer Evan Benn <evanbenn@chromium.org>

Status Maintained

Files Documentation/devicetree/bindings/watchdog/arm-smc-wdt.yaml
    drivers/watchdog/arm_smc_wdt.c

* ARM SMMU DRIVERS

Mail Will Deacon <will@kernel.org>

Reviewer Robin Murphy <robin.murphy@arm.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/iommu/arm,smmu*   drivers/iommu/
    arm/ drivers/iommu/io-pgtable-arm*

* ARM AND ARM64 SoC SUB-ARCHITECTURES (COMMON PARTS)

Mail Arnd   Bergmann   <arnd@arndb.de>,   Olof   Johansson   <olof@lixom.net>,
    soc@kernel.org

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

chat irc://irc.libera.chat/armlinux

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/soc/soc.git

Files arch/arm/boot/dts/Makefile arch/arm64/boot/dts/Makefile

* ARM SUB-ARCHITECTURES

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

chat irc://irc.libera.chat/armlinux

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/soc/soc.git

Files arch/arm/mach-*/ arch/arm/plat-*/

* ARM/ACTIONS SEMI ARCHITECTURE

Mail Andreas Färber <afaerber@suse.de>, Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-actions@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/arm/actions.yaml Documentation/
devicetree/bindings/clock/actions,owl-cmu.txt Documentation/
devicetree/bindings/dma/owl-dma.yaml Documentation/devicetree/
bindings/i2c/i2c-owl.yaml Documentation/devicetree/bindings/
interrupt-controller/actions,owl-sirq.yaml Documentation/devicetree/
bindings/mmc/owl-mmc.yaml Documentation/devicetree/bindings/net/
actions,owl-emac.yaml Documentation/devicetree/bindings/pinctrl/
actions,* Documentation/devicetree/bindings/power/actions,owl-sps.
txt Documentation/devicetree/bindings/timer/actions,owl-timer.txt
arch/arm/boot/dts/owl-* arch/arm/mach-actions/ arch/arm64/boot/
dts/actions/ drivers/clk/actions/ drivers/clocksource/timer-owl*
drivers/dma/owl-dma.c drivers/i2c/busses/i2c-owl.c drivers/irqchip/
irq-owl-sirq.c drivers/mmc/host/owl-mmc.c drivers/net/ethernet/
actions/ drivers/pinctrl/actions/* drivers/soc/actions/ include/
dt-bindings/power/owl-* include/dt-bindings/reset/actions,* include/
linux/soc/actions/

Regex `owl`

* ARM/ADS SPHERE MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/AFEB9260 MACHINE SUPPORT

Mail Sergey Lapin <slapin@ossfans.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/AJECO 1ARM MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/Allwinner SoC Clock Support

Mail Emilio López <emilio@elopez.com.ar>

Status Maintained

Files drivers/clk/sunxi/

* ARM/Allwinner sunXi SoC support

Mail Chen-Yu Tsai <wens@csie.org>, Jernej Skrabec <jernej.skrabec@gmail.com>, Samuel Holland <samuel@sholland.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/sunxi/linux.git

Mailing list linux-sunxi@lists.linux.dev

Files arch/arm/mach-sunxi/ arch/arm64/boot/dts/allwinner/ drivers/clk/ sunxi-ng/ drivers/pinctrl/sunxi/ drivers/soc/sunxi/

Regex allwinner sun[x456789]i sun50i

* ARM/Amlogic Meson SoC CLOCK FRAMEWORK

Mail Neil Armstrong <narmstrong@baylibre.com>, Jerome Brunet <jbrunet@baylibre.com>

Mailing list linux-amlogic@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/clock/amlogic* drivers/clk/ meson/ include/dt-bindings/clock/gxbb* include/dt-bindings/clock/ meson*

* ARM/Amlogic Meson SoC Crypto Drivers

Mail Corentin Labbe <clabbe@baylibre.com>

Mailing list linux-crypto@vger.kernel.org, linux-amlogic@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/crypto/amlogic* drivers/crypto/
amlogic/

* ARM/Amlogic Meson SoC Sound Drivers

Mail Jerome Brunet <jbrunet@baylibre.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/sound/amlogic* sound/soc/meson/

* ARM/Amlogic Meson SoC support

Mail Neil Armstrong <narmstrong@baylibre.com>, Kevin Hilman
<khilman@baylibre.com>

Reviewer Jerome Brunet <jbrunet@baylibre.com>, Martin Blumenstingl <martin.blumenstingl@googlemail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers),
linux-amlogic@lists.infradead.org

Status Maintained

Web-page http://linux-meson.com/

Files arch/arm/boot/dts/meson* arch/arm/mach-meson/ arch/arm64/boot/dts/
amlogic/ drivers/mmc/host/meson* drivers/pinctrl/meson/ drivers/rtc/
rtc-meson* drivers/soc/amlogic/

Regex meson

* ARM/Annapurna Labs ALPINE ARCHITECTURE

Mail Tsahee Zidenberg <tsahee@annapurnalabs.com>, Antoine Tenart <atenart@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/boot/dts/alpine* arch/arm/mach-alpine/ arch/arm64/boot/
dts/amazon/ drivers/*/*alpine*

* ARM/APPLE MACHINE SUPPORT

Mail Hector Martin <marcan@marcan.st>, Sven Peter <sven@svenpeter.dev>

Reviewer Alyssa Rosenzweig <alyssa@rosenzweig.io>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page https://asahilinux.org

bugs https://github.com/AsahiLinux/linux/issues

chat irc://irc.oftc.net/asahi-dev

SCM git https://github.com/AsahiLinux/linux.git

Files Documentation/devicetree/bindings/arm/apple.yaml   Documentation/
devicetree/bindings/arm/apple/*   Documentation/devicetree/bindings/
clock/apple,nco.yaml   Documentation/devicetree/bindings/i2c/apple,
i2c.yaml   Documentation/devicetree/bindings/interrupt-controller/
apple,*   Documentation/devicetree/bindings/iommu/apple,dart.
yaml   Documentation/devicetree/bindings/iommu/apple,sart.yaml
Documentation/devicetree/bindings/mailbox/apple,mailbox.yaml
Documentation/devicetree/bindings/nvme/apple,nvme-ans.yaml
Documentation/devicetree/bindings/nvmem/apple,efuses.yaml
Documentation/devicetree/bindings/pci/apple,pcie.yaml Documentation/
devicetree/bindings/pinctrl/apple,pinctrl.yaml   Documentation/
devicetree/bindings/power/apple* Documentation/devicetree/bindings/
watchdog/apple,wdt.yaml   arch/arm64/boot/dts/apple/   drivers/clk/
clk-apple-nco.c drivers/i2c/busses/i2c-pasemi-core.c drivers/i2c/
busses/i2c-pasemi-platform.c   drivers/iommu/apple-dart.c   drivers/
irqchip/irq-apple-aic.c   drivers/mailbox/apple-mailbox.c   drivers/
nvme/host/apple.c   drivers/nvmem/apple-efuses.c   drivers/pinctrl/
pinctrl-apple-gpio.c drivers/soc/apple/* drivers/watchdog/apple_wdt.
c   include/dt-bindings/interrupt-controller/apple-aic.h   include/
dt-bindings/pinctrl/apple.h include/linux/apple-mailbox.h include/
linux/soc/apple/*

* ARM/ARTPEC MACHINE SUPPORT

Mail Jesper   Nilsson   <jesper.nilsson@axis.com>,   Lars   Persson
<lars.persson@axis.com>

Mailing list linux-arm-kernel@axis.com

Status Maintained

Files Documentation/devicetree/bindings/pinctrl/axis,artpec6-pinctrl.
txt arch/arm/boot/dts/artpec6* arch/arm/mach-artpec drivers/clk/axis
drivers/crypto/axis drivers/mmc/host/usdhi6rol0.c drivers/pinctrl/
pinctrl-artpec*

* ARM/ASPEED I2C DRIVER

Mail Brendan Higgins <brendanhiggins@google.com>

Reviewer Benjamin Herrenschmidt <benh@kernel.crashing.org>, Joel Stanley <joel@jms.id.au>

Mailing list linux-i2c@vger.kernel.org, openbmc@lists.ozlabs.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/i2c/aspeed,i2c.yaml Documentation/devicetree/bindings/interrupt-controller/aspeed, ast2400-i2c-ic.txt drivers/i2c/busses/i2c-aspeed.c drivers/irqchip/ irq-aspeed-i2c-ic.c`

* ARM/ASPEED MACHINE SUPPORT

Mail Joel Stanley <joel@jms.id.au>

Reviewer Andrew Jeffery <andrew@aj.id.au>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-aspeed@lists.ozlabs.org (moderated for non-subscribers)

Status Supported

Patchwork https://patchwork.ozlabs.org/project/linux-aspeed/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/joel/aspeed.git

Files `arch/arm/boot/dts/aspeed-* arch/arm/mach-aspeed/`

Regex `aspeed`

* ARM/BITMAIN ARCHITECTURE

Mail Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/arm/bitmain.yaml Documentation/ devicetree/bindings/clock/bitmain,bm1880-clk.yaml Documentation/ devicetree/bindings/pinctrl/bitmain,bm1880-pinctrl.txt arch/ arm64/boot/dts/bitmain/ drivers/clk/clk-bm1880.c drivers/pinctrl/ pinctrl-bm1880.c`

* ARM/CALXEDA HIGHBANK ARCHITECTURE

Mail Andre Przywara <andre.przywara@arm.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/boot/dts/ecx-*.dts* arch/arm/boot/dts/highbank.dts arch/
    arm/mach-highbank/

* ARM/CAVIUM NETWORKS CNS3XXX MACHINE SUPPORT

Mail Krzysztof Halasa <khalasa@piap.pl>

Status Maintained

Files arch/arm/mach-cns3xxx/

* ARM/CAVIUM THUNDER NETWORK DRIVER

Mail Sunil Goutham <sgoutham@marvell.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files drivers/net/ethernet/cavium/thunder/

* ARM/CIRRUS LOGIC BK3 MACHINE SUPPORT

Mail Lukasz Majewski <lukma@denx.de>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/mach-ep93xx/ts72xx.c

* ARM/CIRRUS LOGIC CLPS711X ARM ARCHITECTURE

Mail Alexander Shiyan <shc_work@mail.ru>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Odd Fixes

Regex clps711x

* ARM/CIRRUS LOGIC EDB9315A MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/CIRRUS LOGIC EP93XX ARM ARCHITECTURE

Mail Hartley Sweeten <hsweeten@visionengravers.com>, Alexander Sverdlin <alexander.sverdlin@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `arch/arm/mach-ep93xx/ arch/arm/mach-ep93xx/include/mach/`

* ARM/CLKDEV SUPPORT

Mail Russell King <linux@armlinux.org.uk>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.armlinux.org.uk/~rmk/linux-arm.git clkdev

Files `drivers/clk/clkdev.c`

* ARM/CONEXANT DIGICOLOR MACHINE SUPPORT

Mail Baruch Siach <baruch@tkos.co.il>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `arch/arm/boot/dts/cx92755*`

Regex `digicolor`

* ARM/CONTEC MICRO9 MACHINE SUPPORT

Mail Hubert Feurstein <hubert.feurstein@contec.at>

Status Maintained

Files `arch/arm/mach-ep93xx/micro9.c`

* ARM/CORESIGHT FRAMEWORK AND DRIVERS

Mail Mathieu Poirier <mathieu.poirier@linaro.org>, Suzuki K Poulose <suzuki.poulose@arm.com>

Reviewer Mike Leach <mike.leach@linaro.org>, Leo Yan <leo.yan@linaro.org>

Mailing list coresight@lists.linaro.org (moderated for non-subscribers), linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/coresight/linux.git

Files Documentation/ABI/testing/sysfs-bus-coresight-devices-*
Documentation/devicetree/bindings/arm/coresight-cpu-debug.
txt   Documentation/devicetree/bindings/arm/coresight-cti.yaml
Documentation/devicetree/bindings/arm/coresight.txt   Documentation/
devicetree/bindings/arm/ete.yaml Documentation/devicetree/bindings/
arm/trbe.yaml   Documentation/trace/coresight/*   drivers/hwtracing/
coresight/* include/dt-bindings/arm/coresight-cti-dt.h include/linux/
coresight*   samples/coresight/*   tools/perf/arch/arm/util/auxtrace.c
tools/perf/arch/arm/util/cs-etm.c   tools/perf/arch/arm/util/cs-etm.
h   tools/perf/arch/arm/util/pmu.c   tools/perf/util/cs-etm-decoder/*
tools/perf/util/cs-etm.*

* ARM/CORGI MACHINE SUPPORT

Mail Richard Purdie <rpurdie@rpsys.net>

Status Maintained

* ARM/CORTINA SYSTEMS GEMINI ARM ARCHITECTURE

Mail Hans Ulli Kroll <ulli.kroll@googlemail.com>, Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://github.com/ulli-kroll/linux.git

Files Documentation/devicetree/bindings/arm/gemini.yaml   Documentation/
devicetree/bindings/net/cortina,gemini-ethernet.yaml Documentation/
devicetree/bindings/pinctrl/cortina,gemini-pinctrl.txt
Documentation/devicetree/bindings/rtc/faraday,ftrtc010.yaml   arch/
arm/boot/dts/gemini*   arch/arm/mach-gemini/   drivers/crypto/gemini/
drivers/net/ethernet/cortina/   drivers/pinctrl/pinctrl-gemini.c
drivers/rtc/rtc-ftrtc010.c

* ARM/CZ.NIC TURRIS SUPPORT

Mail Marek Behún <kabel@kernel.org>

Status Maintained

Web-page https://www.turris.cz/

Files Documentation/ABI/testing/debugfs-moxtet Documentation/ABI/
testing/sysfs-bus-moxtet-devices Documentation/ABI/testing/
sysfs-firmware-turris-mox-rwtm Documentation/devicetree/bindings/
bus/moxtet.txt Documentation/devicetree/bindings/firmware/
cznic,turris-mox-rwtm.txt Documentation/devicetree/bindings/
gpio/gpio-moxtet.txt Documentation/devicetree/bindings/leds/
cznic,turris-omnia-leds.yaml Documentation/devicetree/bindings/
watchdog/armada-37xx-wdt.txt drivers/bus/moxtet.c drivers/firmware/
turris-mox-rwtm.c drivers/leds/leds-turris-omnia.c drivers/mailbox/
armada-37xx-rwtm-mailbox.c drivers/gpio/gpio-moxtet.c drivers/
watchdog/armada_37xx_wdt.c include/dt-bindings/bus/moxtet.h include/
linux/armada-37xx-rwtm-mailbox.h include/linux/moxtet.h

* ARM/EZX SMARTPHONES (A780, A910, A1200, E680, ROKR E2 and ROKR E6)

Mail Robert Jarzmik <robert.jarzmik@free.fr>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/mach-pxa/ezx.c

* ARM/FARADAY FA526 PORT

Mail Hans Ulli Kroll <ulli.kroll@googlemail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.berlios.de/gemini-board

Files arch/arm/mm/*-fa*

* ARM/FOOTBRIDGE ARCHITECTURE

Mail Russell King <linux@armlinux.org.uk>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://www.armlinux.org.uk/

Files arch/arm/include/asm/hardware/dec21285.h arch/arm/mach-footbridge/

* ARM/FREESCALE IMX / MXC ARM ARCHITECTURE

Mail Shawn Guo <shawnguo@kernel.org>, Sascha Hauer <s.hauer@pengutronix.de>

Reviewer Pengutronix Kernel Team <kernel@pengutronix.de>, Fabio Estevam <festevam@gmail.com>, NXP Linux Team <linux-imx@nxp.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/shawnguo/linux.git

Excluded `drivers/media/i2c/`

Regex `imx mxs`

* ARM/FREESCALE LAYERSCAPE ARM ARCHITECTURE

Mail Shawn Guo <shawnguo@kernel.org>, Li Yang <leoyang.li@nxp.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/shawnguo/linux.git

Files `arch/arm/boot/dts/ls1021a*` `arch/arm64/boot/dts/freescale/fsl-*` `arch/arm64/boot/dts/freescale/qoriq-*`

* ARM/FREESCALE VYBRID ARM ARCHITECTURE

Mail Shawn Guo <shawnguo@kernel.org>, Sascha Hauer <s.hauer@pengutronix.de>

Reviewer Pengutronix Kernel Team <kernel@pengutronix.de>, Stefan Agner <stefan@agner.ch>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/shawnguo/linux.git

Files `arch/arm/boot/dts/vf* arch/arm/mach-imx/*vf610*`

* ARM/GLOMATION GESBC9312SX MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/GUMSTIX MACHINE SUPPORT

Mail Steve Sakoman <sakoman@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/H4700 (HP IPAQ HX4700) MACHINE SUPPORT

Mail Philipp Zabel <philipp.zabel@gmail.com>, Paul Parsons <lost.distance@yahoo.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/mach-pxa/hx4700.c arch/arm/mach-pxa/include/mach/hx4700.h sound/soc/pxa/hx4700.c

* ARM/HISILICON SOC SUPPORT

Mail Wei Xu <xuwei5@hisilicon.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Web-page http://www.hisilicon.com

SCM git git://github.com/hisilicon/linux-hisi.git

Files arch/arm/boot/dts/hi3* arch/arm/boot/dts/hip* arch/arm/boot/dts/hisi* arch/arm/mach-hisi/ arch/arm64/boot/dts/hisilicon/

* ARM/HP JORNADA 7XX MACHINE SUPPORT

Mail Kristoffer Ericson <kristoffer.ericson@gmail.com>

Status Maintained

Web-page www.jlime.com

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kristoffer/linux-hpc.git

Files arch/arm/mach-sa1100/include/mach/jornada720.h arch/arm/mach-sa1100/jornada720.c

* ARM/HPE GXP ARCHITECTURE

Mail Jean-Marie Verdun <verdun@hpe.com>, Nick Hawkins <nick.hawkins@hpe.com>

Status Maintained

Files Documentation/devicetree/bindings/arm/hpe,gxp.yaml Documentation/
devicetree/bindings/timer/hpe,gxp-timer.yaml arch/arm/boot/dts/
hpe-bmc* arch/arm/boot/dts/hpe-gxp* arch/arm/mach-hpe/ drivers/
clocksource/timer-gxp.c drivers/watchdog/gxp-wdt.c

* ARM/IGEP MACHINE SUPPORT

Mail Enric Balletbo i Serra <eballetbo@gmail.com>, Javier Martinez Canillas <javier@dowhile0.org>

Mailing list linux-omap@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/boot/dts/omap3-igep*

* ARM/INCOME PXA270 SUPPORT

Mail Marek Vasut <marek.vasut@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/mach-pxa/colibri-pxa270-income.c

* ARM/INTEL IOP32X ARM ARCHITECTURE

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/INTEL IQ81342EX MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/INTEL IXDP2850 MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/INTEL IXP4XX ARM ARCHITECTURE

Mail Linus Walleij <linusw@kernel.org>, Imre Kaloz <kaloz@openwrt.org>, Krzysztof Halasa <khalasa@piap.pl>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/arm/intel-ixp4xx.
   yaml   Documentation/devicetree/bindings/bus/intel,
   ixp4xx-expansion-bus-controller.yaml   Documentation/devicetree/
   bindings/gpio/intel,ixp4xx-gpio.txt   Documentation/devicetree/
   bindings/interrupt-controller/intel,ixp4xx-interrupt.yaml
   Documentation/devicetree/bindings/timer/intel,ixp4xx-timer.yaml
   arch/arm/mach-ixp4xx/   drivers/bus/intel-ixp4xx-eb.c   drivers/
   clocksource/timer-ixp4xx.c drivers/crypto/ixp4xx_crypto.c drivers/
   gpio/gpio-ixp4xx.c   drivers/irqchip/irq-ixp4xx.c   include/linux/
   irqchip/irq-ixp4xx.h include/linux/platform_data/timer-ixp4xx.h

* ARM/INTEL KEEMBAY ARCHITECTURE

Mail Paul   J.   Murphy   <paul.j.murphy@intel.com>,   Daniele   Alessandrelli <daniele.alessandrelli@intel.com>

Status Maintained

Files Documentation/devicetree/bindings/arm/intel,keembay.yaml   arch/
   arm64/boot/dts/intel/keembay-evm.dts   arch/arm64/boot/dts/intel/
   keembay-soc.dtsi

* ARM/INTEL XSC3 (MANZANO) ARM CORE

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/IP FABRICS DOUBLE ESPRESSO MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/LG1K ARCHITECTURE

Mail Chanho Min <chanho.min@lge.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm64/boot/dts/lg/

* ARM/LOGICPD PXA270 MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/LPC18XX ARCHITECTURE

Mail Vladimir Zapolskiy <vz@mleia.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-lpc2k.txt arch/arm/boot/
dts/lpc43* drivers/i2c/busses/i2c-lpc2k.c drivers/memory/pl172.c
drivers/mtd/spi-nor/controllers/nxp-spifi.c drivers/rtc/rtc-lpc24xx.
c

Regex lpc18xx

* ARM/LPC32XX SOC SUPPORT

Mail Vladimir Zapolskiy <vz@mleia.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://github.com/vzapolskiy/linux-lpc32xx.git

Files Documentation/devicetree/bindings/i2c/i2c-pnx.txt arch/arm/boot/
dts/lpc32* arch/arm/mach-lpc32xx/ drivers/i2c/busses/i2c-pnx.c
drivers/net/ethernet/nxp/lpc_eth.c drivers/usb/host/ohci-nxp.c
drivers/watchdog/pnx4008_wdt.c

Regex lpc32xx

* ARM/MAGICIAN MACHINE SUPPORT

Mail Philipp Zabel <philipp.zabel@gmail.com>

Status Maintained

* ARM/Marvell Dove/MV78xx0/Orion SOC support

Mail Andrew Lunn <andrew@lunn.ch>, Sebastian Hesselbarth <sebastian.hesselbarth@gmail.com>, Gregory Clement <gregory.clement@bootlin.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gclement/mvebu.git

Files Documentation/devicetree/bindings/soc/dove/ arch/arm/boot/dts/dove* arch/arm/boot/dts/orion5x* arch/arm/mach-dove/ arch/arm/mach-mv78xx0/ arch/arm/mach-orion5x/ arch/arm/plat-orion/ drivers/soc/dove/

* ARM/Marvell Kirkwood and Armada 370, 375, 38x, 39x, XP, 3700, 7K/8K, CN9130 SOC support

Mail Andrew Lunn <andrew@lunn.ch>, Gregory Clement <gregory.clement@bootlin.com>, Sebastian Hesselbarth <sebastian.hesselbarth@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gclement/mvebu.git

Files arch/arm/boot/dts/armada* arch/arm/boot/dts/kirkwood* arch/arm/configs/mvebu_*_defconfig arch/arm/mach-mvebu/ arch/arm64/boot/dts/marvell/armada* arch/arm64/boot/dts/marvell/cn913* drivers/cpufreq/armada-37xx-cpufreq.c drivers/cpufreq/armada-8k-cpufreq.c drivers/cpufreq/mvebu-cpufreq.c drivers/irqchip/irq-armada-370-xp.c drivers/irqchip/irq-mvebu-* drivers/pinctrl/mvebu/ drivers/rtc/rtc-armada38x.c

* ARM/Mediatek RTC DRIVER

Mail Eddie Huang <eddie.huang@mediatek.com>, Sean Wang <sean.wang@mediatek.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-mediatek@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/rtc/rtc-mt2712.txt
    Documentation/devicetree/bindings/rtc/rtc-mt7622.txt   drivers/rtc/
    rtc-mt2712.c drivers/rtc/rtc-mt6397.c drivers/rtc/rtc-mt7622.c

* ARM/Mediatek SoC support

Mail Matthias Brugger <matthias.bgg@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers),
    linux-mediatek@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page https://mtk.wiki.kernel.org/

chat irc://chat.freenode.net/linux-mediatek

Files arch/arm/boot/dts/mt6* arch/arm/boot/dts/mt7* arch/arm/boot/dts/
    mt8* arch/arm/mach-mediatek/ arch/arm64/boot/dts/mediatek/ drivers/
    soc/mediatek/

Regex mtk mt[678]

Content regex mediatek

* ARM/Mediatek USB3 PHY DRIVER

Mail Chunfeng Yun <chunfeng.yun@mediatek.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers),
    linux-mediatek@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/phy/mediatek,*   drivers/phy/
    mediatek/

* ARM/Microchip (AT91) SoC support

Mail Nicolas Ferre <nicolas.ferre@microchip.com>, Alexandre Belloni <alexandre.belloni@bootlin.com>, Claudiu Beznea <claudiu.beznea@microchip.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Web-page http://www.linux4sam.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/at91/linux.git

Files arch/arm/boot/dts/at91*.dts arch/arm/boot/dts/at91*.dtsi arch/arm/
    boot/dts/sama*.dts arch/arm/boot/dts/sama*.dtsi arch/arm/include/
    debug/at91.S arch/arm/mach-at91/ drivers/memory/atmel* drivers/
    watchdog/sama5d4_wdt.c include/soc/at91/

Excluded drivers/input/touchscreen/atmel_mxt_ts.c drivers/net/wireless/
    atmel/

Regex `at91 atmel`

* ARM/Microchip Sparx5 SoC support

Mail Lars Povlsen <lars.povlsen@microchip.com>, Steen Hegelund <Steen.Hegelund@microchip.com>, UNGLinuxDriver@microchip.com

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

SCM git git://github.com/microchip-ung/linux-upstream.git

Files `arch/arm64/boot/dts/microchip/` `drivers/pinctrl/` `pinctrl-microchip-sgpio.c`

Regex `sparx5`

* Microchip Timer Counter Block (TCB) Capture Driver

Mail Kamel Bouhara <kamel.bouhara@bootlin.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-iio@vger.kernel.org

Status Maintained

Files `drivers/counter/microchip-tcb-capture.c`

* ARM/MILBEAUT ARCHITECTURE

Mail Taichi Sugaya <sugaya.taichi@socionext.com>, Takao Orito <orito.takao@socionext.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `arch/arm/boot/dts/milbeaut* arch/arm/mach-milbeaut/`

Regex `milbeaut`

* ARM/MIOA701 MACHINE SUPPORT

Mail Robert Jarzmik <robert.jarzmik@free.fr>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `arch/arm/mach-pxa/mioa701.c`

* ARM/MStar/Sigmastar Armv7 SoC support

Mail Daniel   Palmer   <daniel@thingy.jp>,   Romain   Perier   <romain.perier@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://linux-chenxing.org/

SCM git git://github.com/linux-chenxing/linux.git

Files Documentation/devicetree/bindings/arm/mstar/*   Documentation/
      devicetree/bindings/clock/mstar,msc313-mpll.yaml   Documentation/
      devicetree/bindings/gpio/mstar,msc313-gpio.yaml   arch/arm/boot/dts/
      mstar-* arch/arm/mach-mstar/ drivers/clk/mstar/ drivers/clocksource/
      timer-msc313e.c drivers/gpio/gpio-msc313.c drivers/rtc/rtc-msc313.c
      drivers/watchdog/msc313e_wdt.c   include/dt-bindings/clock/mstar-*
      include/dt-bindings/gpio/msc313-gpio.h

* ARM/NEC MOBILEPRO 900/c MACHINE SUPPORT

Mail Michael Petchkovsky <mkpetch@internode.on.net>

Status Maintained

* ARM/NOMADIK/Ux500 ARCHITECTURES

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/linusw/linux-nomadik.git

Files Documentation/devicetree/bindings/arm/ste-*   Documentation/
      devicetree/bindings/arm/ux500.yaml   Documentation/devicetree/
      bindings/arm/ux500/   Documentation/devicetree/bindings/i2c/
      i2c-nomadik.txt   arch/arm/boot/dts/ste-*   arch/arm/mach-nomadik/
      arch/arm/mach-ux500/ drivers/clk/clk-nomadik.c drivers/clocksource/
      clksrc-dbx500-prcmu.c   drivers/dma/ste_dma40*   drivers/hwspinlock/
      u8500_hsem.c   drivers/i2c/busses/i2c-nomadik.c   drivers/iio/adc/
      ab8500-gpadc.c drivers/mfd/ab8500* drivers/mfd/abx500* drivers/mfd/
      db8500* drivers/pinctrl/nomadik/ drivers/rtc/rtc-ab8500.c drivers/
      rtc/rtc-pl031.c drivers/soc/ux500/

* ARM/NUVOTON NPCM ARCHITECTURE

Mail Avi Fishman <avifishman70@gmail.com>, Tomer Maimon <tmaimon77@gmail.com>, Tali Perry <tali.perry1@gmail.com>

Reviewer Patrick Venture <venture@google.com>, Nancy Yuen <yuenn@google.com>, Benjamin Fair <benjaminfair@google.com>

Mailing list openbmc@lists.ozlabs.org (moderated for non-subscribers)

Status Supported

Files Documentation/devicetree/bindings/*/*/*npcm* Documentation/ devicetree/bindings/*/*npcm* Documentation/devicetree/bindings/arm/ npcm/* arch/arm/boot/dts/nuvoton-npcm* arch/arm/mach-npcm/ drivers/ */*npcm* drivers/*/*/*npcm* include/dt-bindings/clock/nuvoton, npcm7xx-clock.h

* ARM/NUVOTON WPCM450 ARCHITECTURE

Mail Jonathan Neuschäfer <j.neuschaefer@gmx.net>

Mailing list openbmc@lists.ozlabs.org (moderated for non-subscribers)

Status Maintained

Web-page https://github.com/neuschaefer/wpcm450/wiki

Files Documentation/devicetree/bindings/*/*wpcm* arch/arm/boot/dts/ nuvoton-wpcm450* arch/arm/mach-npcm/wpcm450.c drivers/*/*/*wpcm* drivers/*/*wpcm*

* ARM/NXP S32G ARCHITECTURE

Mail Chester Lin <clin@suse.com>

Reviewer Andreas Färber <afaerber@suse.de>, Matthias Brugger <mbrugger@suse.com>, NXP S32 Linux Team <s32@nxp.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm64/boot/dts/freescale/s32g*.dts*

* ARM/OPENMOKO NEO FREERUNNER (GTA02) MACHINE SUPPORT

Mailing list openmoko-kernel@lists.openmoko.org (subscribers-only)

Status Orphan

Web-page http://wiki.openmoko.org/wiki/Neo_FreeRunner

Files arch/arm/mach-s3c/gta02.h arch/arm/mach-s3c/mach-gta02.c

* ARM/Orion SoC/Technologic Systems TS-78xx platform support

Mail Alexander Clouter <alex@digriz.org.uk>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://www.digriz.org.uk/ts78xx/kernel

Files arch/arm/mach-orion5x/ts78xx-*

* ARM/OXNAS platform support

Mail Neil Armstrong <narmstrong@baylibre.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers),
linux-oxnas@groups.io (moderated for non-subscribers)

Status Maintained

Files arch/arm/boot/dts/ox8*.dts*   arch/arm/mach-oxnas/   drivers/power/
reset/oxnas-restart.c

Regex oxnas

* ARM/PALM TREO SUPPORT

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Orphan

Files arch/arm/mach-pxa/palmtreo.*

* ARM/PALMTX,PALMT5,PALMLD,PALMTE2,PALMTC SUPPORT

Mail Marek Vasut <marek.vasut@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://hackndev.com

Files arch/arm/mach-pxa/include/mach/palmld.h arch/arm/mach-pxa/include/
mach/palmtc.h   arch/arm/mach-pxa/include/mach/palmtx.h   arch/arm/
mach-pxa/palmld.c   arch/arm/mach-pxa/palmt5.*   arch/arm/mach-pxa/
palmtc.c arch/arm/mach-pxa/palmte2.* arch/arm/mach-pxa/palmtx.c

* ARM/PALMZ72 SUPPORT

Mail Sergey Lapin <slapin@ossfans.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://hackndev.com

Files arch/arm/mach-pxa/palmz72.*

* ARM/PLEB SUPPORT

Mail Peter Chubb <pleb@gelato.unsw.edu.au>

Status Maintained

Web-page http://www.disy.cse.unsw.edu.au/Hardware/PLEB

* ARM/PT DIGITAL BOARD PORT

Mail Stefan Eletzhofer <stefan.eletzhofer@eletztrick.de>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://www.armlinux.org.uk/

* ARM/QUALCOMM SUPPORT

Mail Andy Gross <agross@kernel.org>, Bjorn Andersson <bjorn.andersson@linaro.org>

Reviewer Konrad Dybcio <konrad.dybcio@somainline.org>

Mailing list linux-arm-msm@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/qcom/linux.git

Files Documentation/devicetree/bindings/*/qcom* Documentation/ devicetree/bindings/soc/qcom/ arch/arm/boot/dts/qcom-*.dts arch/ arm/boot/dts/qcom-*.dtsi arch/arm/mach-qcom/ arch/arm64/boot/ dts/qcom/ drivers/*/*/qcom* drivers/*/*/qcom/ drivers/*/pm8??? -* drivers/*/qcom* drivers/*/qcom/ drivers/bluetooth/btqcomsmd.c drivers/clocksource/timer-qcom.c drivers/cpuidle/cpuidle-qcom-spm. c drivers/extcon/extcon-qcom* drivers/i2c/busses/i2c-qcom-geni.c drivers/i2c/busses/i2c-qup.c drivers/iommu/msm* drivers/mfd/ssbi.c drivers/mmc/host/mmci_qcom* drivers/mmc/host/sdhci-msm.c drivers/pci/ controller/dwc/pcie-qcom.c drivers/phy/qualcomm/ drivers/power/*/msm* drivers/reset/reset-qcom-* drivers/ufs/host/ufs-qcom* drivers/spi/ spi-geni-qcom.c drivers/spi/spi-qcom-qspi.c drivers/spi/spi-qup.c

```
drivers/tty/serial/msm_serial.c drivers/usb/dwc3/dwc3-qcom.c include/
dt-bindings/*/qcom* include/linux/*/qcom* include/linux/soc/qcom/
```

* ARM/RADISYS ENP2611 MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/RDA MICRO ARCHITECTURE

Mail Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-unisoc@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/arm/rda.yaml Documentation/
devicetree/bindings/gpio/gpio-rda.yaml Documentation/devicetree/
bindings/interrupt-controller/rda,8810pl-intc.txt Documentation/
devicetree/bindings/serial/rda,8810pl-uart.yaml Documentation/
devicetree/bindings/timer/rda,8810pl-timer.yaml arch/arm/boot/dts/
rda8810pl-* drivers/clocksource/timer-rda.c drivers/gpio/gpio-rda.c
drivers/irqchip/irq-rda-intc.c drivers/tty/serial/rda-uart.c

* ARM/REALTEK ARCHITECTURE

Mail Andreas Färber <afaerber@suse.de>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-realtek-soc@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/arm/realtek.yaml arch/arm/boot/
dts/rtd* arch/arm/mach-realtek/ arch/arm64/boot/dts/realtek/

* ARM/RENESAS ARM64 ARCHITECTURE

Mail Geert Uytterhoeven <geert+renesas@glider.be>, Magnus Damm <magnus.damm@gmail.com>

Mailing list linux-renesas-soc@vger.kernel.org

Status Supported

Patchwork http://patchwork.kernel.org/project/linux-renesas-soc/list/

chat irc://irc.libera.chat/renesas-soc

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/geert/renesas-devel.git next

Files Documentation/devicetree/bindings/arm/renesas.yaml   arch/arm64/
boot/dts/renesas/ drivers/soc/renesas/ include/linux/soc/renesas/

* ARM/RISCPC ARCHITECTURE

Mail Russell King <linux@armlinux.org.uk>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://www.armlinux.org.uk/

Files arch/arm/include/asm/hardware/entry-macro-iomd.S arch/arm/include/
asm/hardware/ioc.h   arch/arm/include/asm/hardware/iomd.h   arch/arm/
include/asm/hardware/memc.h arch/arm/mach-rpc/ drivers/net/ethernet/
8390/etherh.c   drivers/net/ethernet/i825xx/ether1*   drivers/net/
ethernet/seeq/ether3* drivers/scsi/arm/

* ARM/Rockchip SoC support

Mail Heiko Stuebner <heiko@sntech.de>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers),
linux-rockchip@lists.infradead.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mmind/linux-rockchip.git

Files Documentation/devicetree/bindings/i2c/i2c-rk3x.yaml Documentation/
devicetree/bindings/mmc/rockchip-dw-mshc.yaml   Documentation/
devicetree/bindings/spi/spi-rockchip.yaml   arch/arm/boot/dts/rk3*
arch/arm/boot/dts/rv1108*   arch/arm/mach-rockchip/   drivers/*/*/
rockchip drivers/*/*rockchip* drivers/clk/rockchip/ drivers/i2c/
busses/i2c-rk3x.c sound/soc/rockchip/

Regex rockchip

* ARM/SAMSUNG S3C, S5P AND EXYNOS ARM ARCHITECTURES

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>

Reviewer Alim Akhtar <alim.akhtar@samsung.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers),
linux-samsung-soc@vger.kernel.org

Status Maintained

chat irc://irc.libera.chat/linux-exynos

Patchwork https://patchwork.kernel.org/project/linux-samsung-soc/list/

bugs mailto:linux-samsung-soc@vger.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/krzk/linux.git

Files Documentation/arm/samsung/ Documentation/devicetree/bindings/arm/
samsung/ Documentation/devicetree/bindings/power/pd-samsung.yaml
Documentation/devicetree/bindings/soc/samsung/ arch/arm/boot/dts/
exynos* arch/arm/boot/dts/s3c* arch/arm/boot/dts/s5p* arch/arm/
mach-exynos*/ arch/arm/mach-s3c/ arch/arm/mach-s5p*/ arch/arm64/
boot/dts/exynos/ drivers/*/*/*s3c24* drivers/*/*s3c24* drivers/*/
s3c64xx drivers/*/*s5pv210* drivers/clocksource/samsung_pwm_timer.
c drivers/memory/samsung/ drivers/pwm/pwm-samsung.c drivers/soc/
samsung/ drivers/tty/serial/samsung* include/clocksource/samsung_pwm.
h include/linux/platform_data/*s3c* include/linux/serial_s3c.h
include/linux/soc/samsung/

Regex exynos s3c2410 s3c64xx s5pv210

* ARM/SAMSUNG S5P SERIES 2D GRAPHICS ACCELERATION (G2D) SUPPORT

Mail Łukasz Stelmach <l.stelmach@samsung.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers),
linux-media@vger.kernel.org

Status Maintained

Files drivers/media/platform/samsung/s5p-g2d/

* ARM/SAMSUNG S5P SERIES HDMI CEC SUBSYSTEM SUPPORT

Mail Marek Szyprowski <m.szyprowski@samsung.com>

Mailing list linux-samsung-soc@vger.kernel.org, linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/s5p-cec.txt drivers/media/
cec/platform/s5p/

* ARM/SAMSUNG S5P SERIES JPEG CODEC SUPPORT

Mail Andrzej Pietrasiewicz <andrzejtp2010@gmail.com>, Jacek
Anaszewski <jacek.anaszewski@gmail.com>, Sylwester Nawrocki
<s.nawrocki@samsung.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers),
linux-media@vger.kernel.org

Status Maintained

Files drivers/media/platform/samsung/s5p-jpeg/

* ARM/SAMSUNG S5P SERIES Multi Format Codec (MFC) SUPPORT

Mail Marek Szyprowski <m.szyprowski@samsung.com>, Andrzej Hajda <andrzej.hajda@intel.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-media@vger.kernel.org

Status Maintained

Files drivers/media/platform/samsung/s5p-mfc/

* ARM/SHMOBILE ARM ARCHITECTURE

Mail Geert Uytterhoeven <geert+renesas@glider.be>, Magnus Damm <magnus.damm@gmail.com>

Mailing list linux-renesas-soc@vger.kernel.org

Status Supported

Patchwork http://patchwork.kernel.org/project/linux-renesas-soc/list/

chat irc://irc.libera.chat/renesas-soc

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/geert/renesas-devel.git next

Files Documentation/devicetree/bindings/arm/renesas.yaml arch/arm/boot/dts/emev2* arch/arm/boot/dts/gr-peach* arch/arm/boot/dts/iwg20d-q7* arch/arm/boot/dts/r7s* arch/arm/boot/dts/r8a* arch/arm/boot/dts/r9a* arch/arm/boot/dts/sh* arch/arm/configs/shmobile_defconfig arch/arm/include/debug/renesas-scif.S arch/arm/mach-shmobile/ drivers/soc/renesas/ include/linux/soc/renesas/

* ARM/SOCFPGA ARCHITECTURE

Mail Dinh Nguyen <dinguyen@kernel.org>

Status Maintained

Web-page http://www.rocketboards.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/dinguyen/linux.git

Files arch/arm/boot/dts/socfpga* arch/arm/configs/socfpga_defconfig arch/arm/mach-socfpga/ arch/arm64/boot/dts/altera/ arch/arm64/boot/dts/intel/

* ARM/SOCFPGA CLOCK FRAMEWORK SUPPORT

Mail Dinh Nguyen <dinguyen@kernel.org>

Status Maintained

Files drivers/clk/socfpga/

* ARM/SOCFPGA EDAC SUPPORT

Mail Dinh Nguyen <dinguyen@kernel.org>

Status Maintained

Files drivers/edac/altera_edac.[ch]

* ARM/SPREADTRUM SoC SUPPORT

Mail Orson Zhai <orsonzhai@gmail.com>, Baolin Wang <baolin.wang7@gmail.com>, Chunyan Zhang <zhang.lyra@gmail.com>

Status Maintained

Files arch/arm64/boot/dts/sprd

Regex sprd sc27xx sc2731

* ARM/STI ARCHITECTURE

Mail Patrice Chotard <patrice.chotard@foss.st.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://www.stlinux.com

Files Documentation/devicetree/bindings/i2c/i2c-st.txt   arch/arm/boot/
dts/sti* arch/arm/mach-sti/ drivers/ata/ahci_st.c drivers/char/
hw_random/st-rng.c drivers/clocksource/arm_global_timer.c drivers/
clocksource/clksrc_st_lpc.c drivers/cpufreq/sti-cpufreq.c drivers/
dma/st_fdma* drivers/i2c/busses/i2c-st.c drivers/media/platform/st/
sti/c8sectpfe/ drivers/media/rc/st_rc.c drivers/mmc/host/sdhci-st.c
drivers/phy/st/phy-miphy28lp.c   drivers/phy/st/phy-stih407-usb.c
drivers/pinctrl/pinctrl-st.c   drivers/remoteproc/st_remoteproc.c
drivers/remoteproc/st_slim_rproc.c drivers/reset/sti/ drivers/rtc/
rtc-st-lpc.c drivers/tty/serial/st-asc.c drivers/usb/dwc3/dwc3-st.
c drivers/usb/host/ehci-st.c drivers/usb/host/ohci-st.c drivers/
watchdog/st_lpc_wdt.c include/linux/remoteproc/st_slim_rproc.h

* ARM/STM32 ARCHITECTURE

Mail Maxime Coquelin <mcoquelin.stm32@gmail.com>, Alexandre Torgue <alexandre.torgue@foss.st.com>

Mailing list linux-stm32@st-md-mailman.stormreply.com (moderated for non-subscribers), linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/atorgue/stm32.git stm32-next

Files arch/arm/boot/dts/stm32* arch/arm/mach-stm32/ drivers/clocksource/ armv7m_systick.c

Regex stm32 stm

* ARM/Synaptics SoC support

Mail Jisheng Zhang <jszhang@kernel.org>, Sebastian Hesselbarth <sebastian.hesselbarth@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/boot/dts/berlin* arch/arm/mach-berlin/ arch/arm64/boot/ dts/synaptics/

* ARM/TECHNOLOGIC SYSTEMS TS7250 MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/TEGRA HDMI CEC SUBSYSTEM SUPPORT

Mail Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list linux-tegra@vger.kernel.org, linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/tegra-cec.txt drivers/ media/cec/platform/tegra/

* ARM/TESLA FSD SoC SUPPORT

Mail Alim Akhtar <alim.akhtar@samsung.com>, linux-fsd@tesla.com

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-samsung-soc@vger.kernel.org

Status Maintained

Files arch/arm64/boot/dts/tesla*

* ARM/TETON BGA MACHINE SUPPORT

Mail "Mark F. Brown" <mark.brown314@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/TEXAS INSTRUMENT AEMIF/EMIF DRIVERS

Mail Santosh Shilimkar <ssantosh@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files drivers/memory/*emif*

* ARM/TEXAS INSTRUMENT KEYSTONE ARCHITECTURE

Mail Nishanth Menon <nm@ti.com>, Santosh Shilimkar <ssantosh@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/ti/linux.git

Files arch/arm/boot/dts/keystone-* arch/arm/mach-keystone/

* ARM/TEXAS INSTRUMENT KEYSTONE CLOCK FRAMEWORK

Mail Santosh Shilimkar <ssantosh@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files drivers/clk/keystone/

* ARM/TEXAS INSTRUMENT KEYSTONE CLOCKSOURCE

Mail Santosh Shilimkar <ssantosh@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-kernel@vger.kernel.org

Status Maintained

Files drivers/clocksource/timer-keystone.c

* ARM/TEXAS INSTRUMENT KEYSTONE RESET DRIVER

Mail Santosh Shilimkar <ssantosh@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files drivers/power/reset/keystone-reset.c

* ARM/TEXAS INSTRUMENTS K3 ARCHITECTURE

Mail Nishanth Menon <nm@ti.com>, Vignesh Raghavendra <vigneshr@ti.com>, Tero Kristo <kristo@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files Documentation/devicetree/bindings/arm/ti/k3.yaml   arch/arm64/boot/dts/ti/Makefile   arch/arm64/boot/dts/ti/k3-*   include/dt-bindings/pinctrl/k3.h

* ARM/THECUS N2100 MACHINE SUPPORT

Mail Lennert Buytenhek <kernel@wantstofly.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

* ARM/TOSA MACHINE SUPPORT

Mail Dmitry Eremin-Solenikov <dbaryshkov@gmail.com>, Dirk Opfer <dirk@opfer-online.de>

Status Maintained

* ARM/TOSHIBA VISCONTI ARCHITECTURE

Mail Nobuhiro Iwamatsu <nobuhiro1.iwamatsu@toshiba.co.jp>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/iwamatsu/linux-visconti.git

Files Documentation/devicetree/bindings/arm/toshiba.yaml Documentation/
    devicetree/bindings/clock/toshiba,tmpv770x-pipllct.yaml
    Documentation/devicetree/bindings/clock/toshiba,tmpv770x-pismu.yaml
    Documentation/devicetree/bindings/net/toshiba,visconti-dwmac.yaml
    Documentation/devicetree/bindings/gpio/toshiba,gpio-visconti.yaml
    Documentation/devicetree/bindings/pci/toshiba,visconti-pcie.yaml
    Documentation/devicetree/bindings/pinctrl/toshiba,visconti-pinctrl.
    yaml   Documentation/devicetree/bindings/watchdog/toshiba,
    visconti-wdt.yaml arch/arm64/boot/dts/toshiba/ drivers/clk/visconti/
    drivers/net/ethernet/stmicro/stmmac/dwmac-visconti.c drivers/gpio/
    gpio-visconti.c drivers/pci/controller/dwc/pcie-visconti.c drivers/
    pinctrl/visconti/ drivers/watchdog/visconti_wdt.c

Regex visconti

* ARM/UNIPHIER ARCHITECTURE

Mail Kunihiko Hayashi <hayashi.kunihiko@socionext.com>, Masami Hiramatsu
    <mhiramat@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/arm/socionext/uniphier.yaml
    Documentation/devicetree/bindings/gpio/socionext,uniphier-gpio.
    yaml   Documentation/devicetree/bindings/pinctrl/socionext,
    uniphier-pinctrl.yaml arch/arm/boot/dts/uniphier* arch/arm/include/
    asm/hardware/cache-uniphier.h arch/arm/mach-uniphier/ arch/arm/mm/
    cache-uniphier.c arch/arm64/boot/dts/socionext/uniphier* drivers/
    bus/uniphier-system-bus.c   drivers/clk/uniphier/   drivers/dma/
    uniphier-mdmac.c drivers/gpio/gpio-uniphier.c drivers/i2c/busses/
    i2c-uniphier* drivers/irqchip/irq-uniphier-aidet.c drivers/mmc/host/
    uniphier-sd.c drivers/pinctrl/uniphier/ drivers/reset/reset-uniphier.
    c drivers/tty/serial/8250/8250_uniphier.c

Regex uniphier

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* ARM/VERSATILE EXPRESS PLATFORM

Mail Liviu Dudau <liviu.dudau@arm.com>, Sudeep Holla <sudeep.holla@arm.com>, Lorenzo Pieralisi <lpieralisi@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files */*/*/vexpress* */*/vexpress* arch/arm/boot/dts/vexpress* arch/arm/mach-vexpress/ arch/arm64/boot/dts/arm/ drivers/clk/versatile/clk-vexpress-osc.c drivers/clocksource/timer-versatile.c

Regex mps2

* ARM/VFP SUPPORT

Mail Russell King <linux@armlinux.org.uk>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://www.armlinux.org.uk/

Files arch/arm/vfp/

* ARM/VOIPAC PXA270 SUPPORT

Mail Marek Vasut <marek.vasut@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/mach-pxa/include/mach/vpac270.h arch/arm/mach-pxa/vpac270.c

* ARM/VT8500 ARM ARCHITECTURE

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Orphan

Files Documentation/devicetree/bindings/i2c/i2c-wmt.txt arch/arm/mach-vt8500/ drivers/clocksource/timer-vt8500.c drivers/i2c/busses/i2c-wmt.c drivers/mmc/host/wmt-sdmmc.c drivers/pwm/pwm-vt8500.c drivers/rtc/rtc-vt8500.c drivers/tty/serial/vt8500_serial.c drivers/usb/host/ehci-platform.c drivers/usb/host/uhci-platform.c drivers/video/fbdev/vt8500lcdfb.* drivers/video/fbdev/wm8505fb* drivers/video/fbdev/wmt_ge_rops.*

* ARM/ZIPIT Z2 SUPPORT

Mail Marek Vasut <marek.vasut@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `arch/arm/mach-pxa/include/mach/z2.h arch/arm/mach-pxa/z2.c`

* ARM/ZYNQ ARCHITECTURE

Mail Michal Simek <michal.simek@xilinx.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Web-page http://wiki.xilinx.com

SCM git https://github.com/Xilinx/linux-xlnx.git

Files `Documentation/devicetree/bindings/i2c/cdns,i2c-r1p10.yaml Documentation/devicetree/bindings/i2c/xlnx,xps-iic-2.00.a.yaml Documentation/devicetree/bindings/spi/xlnx,zynq-qspi.yaml arch/arm/mach-zynq/ drivers/clocksource/timer-cadence-ttc.c drivers/cpuidle/cpuidle-zynq.c drivers/edac/synopsys_edac.c drivers/i2c/busses/i2c-cadence.c drivers/i2c/busses/i2c-xiic.c drivers/mmc/host/sdhci-of-arasan.c`

Regex `zynq xilinx`

* ARM64 PORT (AARCH64 ARCHITECTURE)

Mail Catalin Marinas <catalin.marinas@arm.com>, Will Deacon <will@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/arm64/linux.git

Files `Documentation/arm64/ arch/arm64/ tools/testing/selftests/arm64/`

Excluded `arch/arm64/boot/dts/`

* ARROW SPEEDCHIPS XRS7000 SERIES ETHERNET SWITCH DRIVER

Mail George McCollister <george.mccollister@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/net/dsa/arrow,xrs700x.yaml drivers/net/dsa/xrs700x/* net/dsa/tag_xrs700x.c`

* AS3645A LED FLASH CONTROLLER DRIVER

Mail Sakari Ailus <sakari.ailus@iki.fi>

Mailing list linux-leds@vger.kernel.org

Status Maintained

Files `drivers/leds/flash/leds-as3645a.c`

* ASAHI KASEI AK7375 LENS VOICE COIL DRIVER

Mail Tianshu Qiu <tian.shu.qiu@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `Documentation/devicetree/bindings/media/i2c/ak7375.txt` `drivers/media/i2c/ak7375.c`

* ASAHI KASEI AK8974 DRIVER

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page http://www.akm.com/

Files `drivers/iio/magnetometer/ak8974.c`

* ASC7621 HARDWARE MONITOR DRIVER

Mail George Joseph <george.joseph@fairview5.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `hwmon/asc7621 drivers/hwmon/asc7621.c`

* ASIX AX88796C SPI ETHERNET ADAPTER

Mail Łukasz Stelmach <l.stelmach@samsung.com>

Status Maintained

Files `Documentation/devicetree/bindings/net/asix,ax88796c.yaml` `drivers/net/ethernet/asix/ax88796c_*`

* ASPEED PECI CONTROLLER

Mail Iwona Winiarska <iwona.winiarska@intel.com>

Mailing list linux-aspeed@lists.ozlabs.org (moderated for non-subscribers), openbmc@lists.ozlabs.org (moderated for non-subscribers)

Status Supported

Files Documentation/devicetree/bindings/peci/peci-aspeed.yaml drivers/ peci/controller/peci-aspeed.c

* ASPEED PINCTRL DRIVERS

Mail Andrew Jeffery <andrew@aj.id.au>

Mailing list linux-aspeed@lists.ozlabs.org (moderated for non-subscribers), openbmc@lists.ozlabs.org (moderated for non-subscribers), linux-gpio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pinctrl/aspeed,* drivers/ pinctrl/aspeed/

* ASPEED SCU INTERRUPT CONTROLLER DRIVER

Mail Eddie James <eajames@linux.ibm.com>

Mailing list linux-aspeed@lists.ozlabs.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/interrupt-controller/aspeed, ast2xxx-scu-ic.txt drivers/irqchip/irq-aspeed-scu-ic.c include/ dt-bindings/interrupt-controller/aspeed-scu-ic.h

* ASPEED SD/MMC DRIVER

Mail Andrew Jeffery <andrew@aj.id.au>

Mailing list linux-aspeed@lists.ozlabs.org (moderated for non-subscribers), openbmc@lists.ozlabs.org (moderated for non-subscribers), linux-mmc@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/mmc/aspeed,sdhci.yaml drivers/ mmc/host/sdhci-of-aspeed*

* ASPEED SMC SPI DRIVER

Mail Chin-Ting Kuo <chin-ting_kuo@aspeedtech.com>, Cédric Le Goater <clg@kaod.org>

Mailing list linux-aspeed@lists.ozlabs.org (moderated for non-subscribers), openbmc@lists.ozlabs.org (moderated for non-subscribers), linux-spi@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/spi/aspeed,ast2600-fmc.yaml
drivers/spi/spi-aspeed-smc.c

* ASPEED VIDEO ENGINE DRIVER

Mail Eddie James <eajames@linux.ibm.com>

Mailing list linux-media@vger.kernel.org, openbmc@lists.ozlabs.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/media/aspeed-video.txt drivers/
media/platform/aspeed/

* ASUS NOTEBOOKS AND EEEPC ACPI/WMI EXTRAS DRIVERS

Mail Corentin Chary <corentin.chary@gmail.com>

Mailing list acpi4asus-user@lists.sourceforge.net, platform-driver-x86@vger.kernel.org

Status Maintained

Web-page http://acpi4asus.sf.net

Files drivers/platform/x86/asus*.c drivers/platform/x86/eeepc*.c

* ASUS TF103C DOCK DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pdx86/platform-drivers-x86.git

Files drivers/platform/x86/asus-tf103c-dock.c

* ASUS WMI HARDWARE MONITOR DRIVER

Mail Ed Brindley <kernel@maidavale.org>, Denis Pauk <pauk.denis@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files drivers/hwmon/asus_wmi_sensors.c

* ASUS WMI EC HARDWARE MONITOR DRIVER

Mail Eugene Shalygin <eugene.shalygin@gmail.com>, Denis Pauk <pauk.denis@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files drivers/hwmon/asus_wmi_ec_sensors.c

* ASUS EC HARDWARE MONITOR DRIVER

Mail Eugene Shalygin <eugene.shalygin@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files drivers/hwmon/asus-ec-sensors.c

* ASUS WIRELESS RADIO CONTROL DRIVER

Mail João Paulo Rechi Vita <jprvita@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/asus-wireless.c

* ASYMMETRIC KEYS

Mail David Howells <dhowells@redhat.com>

Mailing list keyrings@vger.kernel.org

Status Maintained

Files crypto/asymmetric-keys crypto/asymmetric_keys/ include/crypto/pkcs7.h include/crypto/public_key.h include/linux/verification.h

* ASYNCHRONOUS TRANSFERS/TRANSFORMS (IOAT) API

Reviewer Dan Williams <dan.j.williams@intel.com>

Status Odd fixes

Web-page http://sourceforge.net/projects/xscaleiop

Files crypto/async-tx-api `crypto/async_tx/ include/linux/async_tx.h`

* AT24 EEPROM DRIVER

Mail Bartosz Golaszewski <brgl@bgdev.pl>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/brgl/linux.git

Files `Documentation/devicetree/bindings/eeprom/at24.yaml drivers/misc/eeprom/at24.c`

* ATA OVER ETHERNET (AOE) DRIVER

Mail "Justin Sanders" <justin@coraid.com>

Status Supported

Web-page http://www.openaoe.org/

Files `Documentation/admin-guide/aoe/ drivers/block/aoe/`

* ATC260X PMIC MFD DRIVER

Mail Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>, Cristian Ciocaltea <cristian.ciocaltea@gmail.com>

Mailing list linux-actions@lists.infradead.org

Status Maintained

Files `Documentation/devicetree/bindings/mfd/actions,atc260x.yaml drivers/input/misc/atc260x-onkey.c drivers/mfd/atc260* drivers/power/reset/atc260x-poweroff.c drivers/regulator/atc260x-regulator.c include/linux/mfd/atc260x/*`

* ATHEROS 71XX/9XXX GPIO DRIVER

Mail Alban Bedel <albeu@free.fr>

Status Maintained

Web-page https://github.com/AlbanBedel/linux

SCM git git://github.com/AlbanBedel/linux

Files Documentation/devicetree/bindings/gpio/gpio-ath79.txt   drivers/
    gpio/gpio-ath79.c

* ATHEROS 71XX/9XXX USB PHY DRIVER

Mail Alban Bedel <albeu@free.fr>

Status Maintained

Web-page https://github.com/AlbanBedel/linux

SCM git git://github.com/AlbanBedel/linux

Files Documentation/devicetree/bindings/phy/phy-ath79-usb.txt   drivers/
    phy/qualcomm/phy-ath79-usb.c

* ATHEROS ATH GENERIC UTILITIES

Mail Kalle Valo <kvalo@kernel.org>

Mailing list linux-wireless@vger.kernel.org

Status Supported

Files drivers/net/wireless/ath/*

* ATHEROS ATH5K WIRELESS DRIVER

Mail Jiri Slaby <jirislaby@kernel.org>, Nick Kossifidis <mickflemm@gmail.com>,
    Luis Chamberlain <mcgrof@kernel.org>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/ath5k

Files drivers/net/wireless/ath/ath5k/

* ATHEROS ATH6KL WIRELESS DRIVER

Mailing list linux-wireless@vger.kernel.org

Status Orphan

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/ath6kl

Files drivers/net/wireless/ath/ath6kl/

* ATI_REMOTE2 DRIVER

Mail Ville Syrjala <syrjala@sci.fi>

Status Maintained

Files drivers/input/misc/ati_remote2.c

* ATK0110 HWMON DRIVER

Mail Luca Tettamanti <kronos.it@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files drivers/hwmon/asus_atk0110.c

* ATLX ETHERNET DRIVERS

Mail Chris Snook <chris.snook@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Web-page http://sourceforge.net/projects/atl1 http://atl1.sourceforge.net

Files drivers/net/ethernet/atheros/

* ATM

Mail Chas Williams <3chas3@gmail.com>

Mailing list linux-atm-general@lists.sourceforge.net (moderated for non-subscribers), netdev@vger.kernel.org

Status Maintained

Web-page http://linux-atm.sourceforge.net

Files drivers/atm/ include/linux/atm* include/uapi/linux/atm*

* ATMEL MACB ETHERNET DRIVER

Mail Nicolas Ferre <nicolas.ferre@microchip.com>, Claudiu Beznea <claudiu.beznea@microchip.com>

Status Supported

Files drivers/net/ethernet/cadence/

* ATMEL MAXTOUCH DRIVER

Mail Nick Dyer <nick@shmanahar.org>

Status Maintained

SCM git git://github.com/ndyer/linux.git

Files Documentation/devicetree/bindings/input/atmel,maxtouch.yaml
drivers/input/touchscreen/atmel_mxt_ts.c

* ATMEL WIRELESS DRIVER

Mail Simon Kelley <simon@thekelleys.org.uk>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page http://www.thekelleys.org.uk/atmel http://atmelwlandriver.sourceforge.
net/

Files drivers/net/wireless/atmel/atmel*

* ATOMIC INFRASTRUCTURE

Mail Will Deacon <will@kernel.org>, Peter Zijlstra <peterz@infradead.org>

Reviewer Boqun Feng <boqun.feng@gmail.com>, Mark Rutland <mark.rutland@arm.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files arch/*/include/asm/atomic*.h include/*/atomic*.h include/linux/
refcount.h Documentation/atomic_*.txt scripts/atomic/

* ATTO EXPRESSSAS SAS/SATA RAID SCSI DRIVER

Mail Bradley Grove <linuxdrivers@attotech.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Web-page http://www.attotech.com

Files drivers/scsi/esas2r

* ATUSB IEEE 802.15.4 RADIO DRIVER

Mail Stefan Schmidt <stefan@datenfreihafen.org>

Mailing list linux-wpan@vger.kernel.org

Status Maintained

Files drivers/net/ieee802154/at86rf230.h drivers/net/ieee802154/atusb.c
    drivers/net/ieee802154/atusb.h

* AUDIT SUBSYSTEM

Mail Paul Moore <paul@paul-moore.com>, Eric Paris <eparis@redhat.com>

Mailing list linux-audit@redhat.com (moderated for non-subscribers)

Status Supported

Web-page https://github.com/linux-audit

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pcmoore/audit.git

Files include/asm-generic/audit_*.h include/linux/audit.h include/linux/
    audit_arch.h include/uapi/linux/audit.h kernel/audit* lib/*audit.c

* AUXILIARY DISPLAY DRIVERS

Mail Miguel Ojeda <ojeda@kernel.org>

Status Maintained

Files Documentation/devicetree/bindings/auxdisplay/ drivers/auxdisplay/
    include/linux/cfag12864b.h

* AVIA HX711 ANALOG DIGITAL CONVERTER IIO DRIVER

Mail Andreas Klinger <ak@it-klinger.de>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/adc/avia-hx711.yaml drivers/
   iio/adc/hx711.c

* AX.25 NETWORK LAYER

Mail Ralf Baechle <ralf@linux-mips.org>

Mailing list linux-hams@vger.kernel.org

Status Maintained

Web-page http://www.linux-ax25.org/

Files include/net/ax25.h include/uapi/linux/ax25.h net/ax25/

* AXENTIA ARM DEVICES

Mail Peter Rosin <peda@axentia.se>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/boot/dts/at91-linea.dtsi   arch/arm/boot/dts/at91-natte.
   dtsi arch/arm/boot/dts/at91-nattis-2-natte-2.dts arch/arm/boot/dts/
   at91-tse850-3.dts

* AXENTIA ASOC DRIVERS

Mail Peter Rosin <peda@axentia.se>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/sound/axentia,* sound/soc/atmel/
   tse850-pcm5142.c

* AXI-FAN-CONTROL HARDWARE MONITOR DRIVER

Mail Nuno Sá <nuno.sa@analog.com>

Mailing list linux-hwmon@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/hwmon/adi,axi-fan-control.yaml
    drivers/hwmon/axi-fan-control.c

* AXXIA I2C CONTROLLER

Mail Krzysztof Adamski <krzysztof.adamski@nokia.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-axxia.txt   drivers/i2c/
    busses/i2c-axxia.c

* AZ6007 DVB DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/usb/dvb-usb-v2/az6007.c

* AZTECH FM RADIO RECEIVER DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/radio/radio-aztech*

* B43 WIRELESS DRIVER

Mailing list linux-wireless@vger.kernel.org, b43-dev@lists.infradead.org

Status Odd Fixes

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/b43

Files `drivers/net/wireless/broadcom/b43/`

* B43LEGACY WIRELESS DRIVER

Mail Larry Finger <Larry.Finger@lwfinger.net>

Mailing list linux-wireless@vger.kernel.org, b43-dev@lists.infradead.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/b43

Files `drivers/net/wireless/broadcom/b43legacy/`

* BACKLIGHT CLASS/SUBSYSTEM

Mail Lee Jones <lee.jones@linaro.org>, Daniel Thompson <daniel.thompson@linaro.org>, Jingoo Han <jingoohan1@gmail.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/lee/backlight.git

Files `Documentation/ABI/stable/sysfs-class-backlight Documentation/ABI/testing/sysfs-class-backlight Documentation/devicetree/bindings/leds/backlight drivers/video/backlight/ include/linux/backlight.h include/linux/pwm_backlight.h`

* BARCO P50 GPIO DRIVER

Mail Santosh Kumar Yadav <santoshkumar.yadav@barco.com>, Peter Korsgaard <peter.korsgaard@barco.com>

Status Maintained

Files `drivers/platform/x86/barco-p50-gpio.c`

* BATMAN ADVANCED

Mail Marek Lindner <mareklindner@neomailbox.ch>, Simon Wunderlich <sw@simonwunderlich.de>, Antonio Quartulli <a@unstable.cc>, Sven Eckelmann <sven@narfation.org>

Mailing list b.a.t.m.a.n@lists.open-mesh.org (moderated for non-subscribers)

Status Maintained

Web-page https://www.open-mesh.org/

Patchwork https://patchwork.open-mesh.org/project/batman/list/

bugs https://www.open-mesh.org/projects/batman-adv/issues

chat ircs://irc.hackint.org/batadv

SCM git https://git.open-mesh.org/linux-merge.git

Files networking/batman-adv include/uapi/linux/batadv_packet.h include/
uapi/linux/batman_adv.h net/batman-adv/

* BAYCOM/HDLCDRV DRIVERS FOR AX.25

Mail Thomas Sailer <t.sailer@alumni.ethz.ch>

Mailing list linux-hams@vger.kernel.org

Status Maintained

Web-page http://www.baycom.org/~tom/ham/ham.html

Files drivers/net/hamradio/baycom*

* BCACHE (BLOCK LAYER CACHE)

Mail Coly Li <colyli@suse.de>, Kent Overstreet <kent.overstreet@gmail.com>

Mailing list linux-bcache@vger.kernel.org

Status Maintained

Web-page http://bcache.evilpiepirate.org

chat irc://irc.oftc.net/bcache

Files drivers/md/bcache/

* BDISP ST MEDIA DRIVER

Mail Fabien Dessenne <fabien.dessenne@foss.st.com>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/platform/st/sti/bdisp`

* BECKHOFF CX5020 ETHERCAT MASTER DRIVER

Mail Dariusz Marcinkiewicz <reksio@newterm.pl>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/ethernet/ec_bhf.c`

* BEFS FILE SYSTEM

Mail Luis de Bethencourt <luisbg@kernel.org>, Salah Triki <salah.triki@gmail.com>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/luisbg/linux-befs.git

Files filesystems/befs `fs/befs/`

* BFQ I/O SCHEDULER

Mail Paolo Valente <paolo.valente@linaro.org>, Jens Axboe <axboe@kernel.dk>

Mailing list linux-block@vger.kernel.org

Status Maintained

Files block/bfq-iosched `block/bfq-*`

* BFS FILE SYSTEM

Mail "Tigran A. Aivazian" <aivazian.tigran@gmail.com>

Status Maintained

Files filesystems/bfs `fs/bfs/ include/uapi/linux/bfs_fs.h`

* BITMAP API

Mail Yury Norov <yury.norov@gmail.com>

Reviewer Andy Shevchenko <andriy.shevchenko@linux.intel.com>, Rasmus Villemoes <linux@rasmusvillemoes.dk>

Status Maintained

Files `include/linux/bitmap.h include/linux/cpumask.h include/linux/find.h include/linux/nodemask.h lib/bitmap.c lib/cpumask.c lib/find_bit.c lib/find_bit_benchmark.c lib/nodemask.c lib/test_bitmap.c tools/include/linux/bitmap.h tools/include/linux/find.h tools/lib/bitmap.c tools/lib/find_bit.c`

* BLINKM RGB LED DRIVER

Mail Jan-Simon Moeller <jansimon.moeller@gmx.de>

Status Maintained

Files `drivers/leds/leds-blinkm.c`

* BLOCK LAYER

Mail Jens Axboe <axboe@kernel.dk>

Mailing list linux-block@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/axboe/linux-block.git

Files `Documentation/ABI/stable/sysfs-block Documentation/block/ block/ drivers/block/ include/linux/bio.h include/linux/blk* kernel/trace/blktrace.c lib/sbitmap.c`

* BLOCK2MTD DRIVER

Mail Joern Engel <joern@lazybastard.org>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Files `drivers/mtd/devices/block2mtd.c`

* BLUETOOTH DRIVERS

Mail Marcel Holtmann <marcel@holtmann.org>, Johan Hedberg <johan.hedberg@gmail.com>, Luiz Augusto von Dentz <luiz.dentz@gmail.com>

Mailing list linux-bluetooth@vger.kernel.org

Status Supported

Web-page http://www.bluez.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/bluetooth/bluetooth.git git git://git.kernel.org/pub/scm/linux/kernel/git/bluetooth/bluetooth-next.git

Files drivers/bluetooth/

* BLUETOOTH SUBSYSTEM

Mail Marcel Holtmann <marcel@holtmann.org>, Johan Hedberg <johan.hedberg@gmail.com>, Luiz Augusto von Dentz <luiz.dentz@gmail.com>

Mailing list linux-bluetooth@vger.kernel.org

Status Supported

Web-page http://www.bluez.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/bluetooth/bluetooth.git git git://git.kernel.org/pub/scm/linux/kernel/git/bluetooth/bluetooth-next.git

Files include/net/bluetooth/ net/bluetooth/

* BONDING DRIVER

Mail Jay Vosburgh <j.vosburgh@gmail.com>, Veaceslav Falico <vfalico@gmail.com>, Andy Gospodarek <andy@greyhouse.net>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://sourceforge.net/projects/bonding/

Files networking/bonding drivers/net/bonding/ include/net/bond* include/uapi/linux/if_bonding.h

* BOSCH SENSORTEC BMA400 ACCELEROMETER IIO DRIVER

Mail Dan Robertson <dan@dlrobertson.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/accel/bosch,bma400.yaml drivers/iio/accel/bma400*

* BPF [GENERAL] (Safe Dynamic Programs and Tools)

Mail Alexei Starovoitov <ast@kernel.org>, Daniel Borkmann <daniel@iogearbox.net>, Andrii Nakryiko <andrii@kernel.org>

Reviewer Martin KaFai Lau <martin.lau@linux.dev>, Song Liu <song@kernel.org>, Yonghong Song <yhs@fb.com>, John Fastabend <john.fastabend@gmail.com>, KP Singh <kpsingh@kernel.org>, Stanislav Fomichev <sdf@google.com>, Hao Luo <haoluo@google.com>, Jiri Olsa <jolsa@kernel.org>

Mailing list bpf@vger.kernel.org

Status Supported

Web-page https://bpf.io/

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/?delegate=121173

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/bpf/bpf.git git git://git.kernel.org/pub/scm/linux/kernel/git/bpf/bpf-next.git

Files Documentation/bpf/ networking/filter Documentation/userspace-api/ ebpf/ arch/*/net/* include/linux/bpf* include/linux/btf* include/ linux/filter.h include/trace/events/xdp.h include/uapi/linux/bpf* include/uapi/linux/btf* include/uapi/linux/filter.h kernel/bpf/ kernel/trace/bpf_trace.c lib/test_bpf.c net/bpf/ net/core/filter.c net/sched/act_bpf.c net/sched/cls_bpf.c samples/bpf/ scripts/bpf_doc. py scripts/pahole-flags.sh scripts/pahole-version.sh tools/bpf/ tools/ lib/bpf/ tools/testing/selftests/bpf/

* BPF JIT for ARM

Mail Shubham Bansal <illusionist.neo@gmail.com>

Mailing list bpf@vger.kernel.org

Status Odd Fixes

Files arch/arm/net/

* BPF JIT for ARM64

Mail Daniel Borkmann <daniel@iogearbox.net>, Alexei Starovoitov <ast@kernel.org>, Zi Shen Lim <zlim.lnx@gmail.com>

Mailing list bpf@vger.kernel.org

Status Supported

Files arch/arm64/net/

* BPF JIT for MIPS (32-BIT AND 64-BIT)

Mail Johan Almbladh <johan.almbladh@anyfinetworks.com>, Paul Burton <paulburton@kernel.org>

Mailing list bpf@vger.kernel.org

Status Maintained

Files `arch/mips/net/`

* BPF JIT for NFP NICs

Mail Jakub Kicinski <kuba@kernel.org>

Mailing list bpf@vger.kernel.org

Status Odd Fixes

Files `drivers/net/ethernet/netronome/nfp/bpf/`

* BPF JIT for POWERPC (32-BIT AND 64-BIT)

Mail Naveen N. Rao <naveen.n.rao@linux.ibm.com>, Michael Ellerman <mpe@ellerman.id.au>

Mailing list bpf@vger.kernel.org

Status Supported

Files `arch/powerpc/net/`

* BPF JIT for RISC-V (32-bit)

Mail Luke Nelson <luke.r.nels@gmail.com>, Xi Wang <xi.wang@gmail.com>

Mailing list bpf@vger.kernel.org

Status Maintained

Files `arch/riscv/net/`

Excluded `arch/riscv/net/bpf_jit_comp64.c`

* BPF JIT for RISC-V (64-bit)

Mail Björn Töpel <bjorn@kernel.org>

Mailing list bpf@vger.kernel.org

Status Maintained

Files `arch/riscv/net/`

Excluded `arch/riscv/net/bpf_jit_comp32.c`

* BPF JIT for S390

Mail Ilya Leoshkevich <iii@linux.ibm.com>, Heiko Carstens <hca@linux.ibm.com>,
Vasily Gorbik <gor@linux.ibm.com>

Mailing list bpf@vger.kernel.org

Status Supported

Files arch/s390/net/

Excluded arch/s390/net/pnet.c

* BPF JIT for SPARC (32-BIT AND 64-BIT)

Mail David S. Miller <davem@davemloft.net>

Mailing list bpf@vger.kernel.org

Status Odd Fixes

Files arch/sparc/net/

* BPF JIT for X86 32-BIT

Mail Wang YanQing <udknight@gmail.com>

Mailing list bpf@vger.kernel.org

Status Odd Fixes

Files arch/x86/net/bpf_jit_comp32.c

* BPF JIT for X86 64-BIT

Mail Alexei Starovoitov <ast@kernel.org>, Daniel Borkmann
<daniel@iogearbox.net>

Mailing list bpf@vger.kernel.org

Status Supported

Files arch/x86/net/

Excluded arch/x86/net/bpf_jit_comp32.c

* BPF [CORE]

Mail Alexei Starovoitov <ast@kernel.org>, Daniel Borkmann
<daniel@iogearbox.net>

Reviewer John Fastabend <john.fastabend@gmail.com>

Mailing list bpf@vger.kernel.org

Status Maintained

Files `kernel/bpf/verifier.c kernel/bpf/tnum.c kernel/bpf/core.c kernel/`
`bpf/syscall.c       kernel/bpf/dispatcher.c       kernel/bpf/trampoline.c`
`include/linux/bpf* include/linux/filter.h`

* BPF [BTF]

Mail Martin KaFai Lau <martin.lau@linux.dev>

Mailing list bpf@vger.kernel.org

Status Maintained

Files `kernel/bpf/btf.c include/linux/btf*`

* BPF [TRACING]

Mail Song Liu <song@kernel.org>

Reviewer Jiri Olsa <jolsa@kernel.org>

Mailing list bpf@vger.kernel.org

Status Maintained

Files `kernel/trace/bpf_trace.c kernel/bpf/stackmap.c`

* BPF [NETWORKING] (tc BPF, sock_addr)

Mail Martin   KaFai   Lau   <martin.lau@linux.dev>,   Daniel   Borkmann
<daniel@iogearbox.net>

Reviewer John Fastabend <john.fastabend@gmail.com>

Mailing list bpf@vger.kernel.org, netdev@vger.kernel.org

Status Maintained

Files `net/core/filter.c net/sched/act_bpf.c net/sched/cls_bpf.c`

* BPF [NETWORKING] (struct_ops, reuseport)

Mail Martin KaFai Lau <martin.lau@linux.dev>

Mailing list bpf@vger.kernel.org, netdev@vger.kernel.org

Status Maintained

Files `kernel/bpf/bpf_struct*`

* BPF [SECURITY & LSM] (Security Audit and Enforcement using BPF)

Mail KP Singh <kpsingh@kernel.org>

Reviewer Florent Revest <revest@chromium.org>, Brendan Jackman <jackmanb@chromium.org>

Mailing list bpf@vger.kernel.org

Status Maintained

Files bpf/prog_lsm include/linux/bpf_lsm.h kernel/bpf/bpf_lsm.c security/bpf/

* BPF [STORAGE & CGROUPS]

Mail Martin KaFai Lau <martin.lau@linux.dev>

Mailing list bpf@vger.kernel.org

Status Maintained

Files kernel/bpf/cgroup.c kernel/bpf/*storage.c kernel/bpf/bpf_lru*

* BPF [RINGBUF]

Mail Andrii Nakryiko <andrii@kernel.org>

Mailing list bpf@vger.kernel.org

Status Maintained

Files kernel/bpf/ringbuf.c

* BPF [ITERATOR]

Mail Yonghong Song <yhs@fb.com>

Mailing list bpf@vger.kernel.org

Status Maintained

Files kernel/bpf/*iter.c

* BPF [L7 FRAMEWORK] (sockmap)

Mail John Fastabend <john.fastabend@gmail.com>, Jakub Sitnicki <jakub@cloudflare.com>

Mailing list netdev@vger.kernel.org, bpf@vger.kernel.org

Status Maintained

Files include/linux/skmsg.h net/core/skmsg.c net/core/sock_map.c net/ipv4/tcp_bpf.c net/ipv4/udp_bpf.c net/unix/unix_bpf.c

* BPF [LIBRARY] (libbpf)

Mail Andrii Nakryiko <andrii@kernel.org>

Mailing list bpf@vger.kernel.org

Status Maintained

Files `tools/lib/bpf/`

* BPF [TOOLING] (bpftool)

Mail Quentin Monnet <quentin@isovalent.com>

Mailing list bpf@vger.kernel.org

Status Maintained

Files `kernel/bpf/disasm.* tools/bpf/bpftool/`

* BPF [SELFTESTS] (Test Runners & Infrastructure)

Mail Andrii Nakryiko <andrii@kernel.org>

Reviewer Mykola Lysenko <mykolal@fb.com>

Mailing list bpf@vger.kernel.org

Status Maintained

Files `tools/testing/selftests/bpf/`

* BPF [MISC]

Mailing list bpf@vger.kernel.org

Status Odd Fixes

Content regex `(?:\b|_)bpf(?:\b|_)`

* BROADCOM B44 10/100 ETHERNET DRIVER

Mail Michael Chan <michael.chan@broadcom.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files `drivers/net/ethernet/broadcom/b44.*`

* BROADCOM B53/SF2 ETHERNET SWITCH DRIVER

Mail Florian Fainelli <f.fainelli@gmail.com>

Mailing list netdev@vger.kernel.org,   openwrt-devel@lists.openwrt.org
(subscribers-only)

Status Supported

Files Documentation/devicetree/bindings/net/dsa/brcm,b53.yaml   drivers/
net/dsa/b53/*   drivers/net/dsa/bcm_sf2*   include/linux/dsa/brcm.h
include/linux/platform_data/b53.h

* BROADCOM BCMBCA ARM ARCHITECTURE

Mail William   Zhang   <william.zhang@broadcom.com>,   Anand   Gore
<anand.gore@broadcom.com>, Kursad Oney <kursad.oney@broadcom.com>

Reviewer Broadcom   internal   kernel   review   list   <bcm-kernel-feedback-
list@broadcom.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://github.com/broadcom/stblinux.git

Files Documentation/devicetree/bindings/arm/bcm/brcm,bcmbca.yaml   arch/
arm/boot/dts/bcm47622.dtsi arch/arm/boot/dts/bcm947622.dts

Regex bcmbca bcm[9]?47622

* BROADCOM BCM2711/BCM2835 ARM ARCHITECTURE

Mail Florian Fainelli <f.fainelli@gmail.com>

Reviewer Broadcom   internal   kernel   review   list   <bcm-kernel-feedback-
list@broadcom.com>

Mailing list linux-rpi-kernel@lists.infradead.org (moderated for non-subscribers),
linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://github.com/broadcom/stblinux.git

Files Documentation/devicetree/bindings/pci/brcm,stb-pcie.yaml   drivers/
pci/controller/pcie-brcmstb.c drivers/staging/vc04_services

Regex bcm2711 bcm283* raspberrypi

* BROADCOM BCM281XX/BCM11XXX/BCM216XX ARM ARCHITECTURE

Mail Florian Fainelli <f.fainelli@gmail.com>, Ray Jui <rjui@broadcom.com>, Scott Branden <sbranden@broadcom.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Status Maintained

SCM git git://github.com/broadcom/mach-bcm

Files arch/arm/mach-bcm/

Regex bcm281* bcm113* bcm216* kona

* BROADCOM BCM47XX MIPS ARCHITECTURE

Mail Hauke Mehrtens <hauke@hauke-m.de>, Rafał Miłecki <zajec5@gmail.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/mips/brcm/ arch/mips/bcm47xx/* arch/mips/include/asm/mach-bcm47xx/*

* BROADCOM BCM4908 ETHERNET DRIVER

Mail Rafał Miłecki <rafal@milecki.pl>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/brcm,bcm4908-enet.yaml drivers/net/ethernet/broadcom/bcm4908_enet.* drivers/net/ethernet/broadcom/unimac.h

* BROADCOM BCM4908 PINMUX DRIVER

Mail Rafał Miłecki <rafal@milecki.pl>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pinctrl/brcm,bcm4908-pinctrl.yaml drivers/pinctrl/bcm/pinctrl-bcm4908.c

* BROADCOM BCM5301X ARM ARCHITECTURE

Mail Florian Fainelli <f.fainelli@gmail.com>, Hauke Mehrtens <hauke@hauke-m.de>, Rafał Miłecki <zajec5@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/boot/dts/bcm470* arch/arm/boot/dts/bcm5301* arch/arm/boot/dts/bcm953012* arch/arm/mach-bcm/bcm_5301x.c

* BROADCOM BCM53573 ARM ARCHITECTURE

Mail Florian Fainelli <f.fainelli@gmail.com>, Rafał Miłecki <rafal@milecki.pl>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm/boot/dts/bcm47189* arch/arm/boot/dts/bcm53573*

* BROADCOM BCM63XX ARM ARCHITECTURE

Mail Florian Fainelli <f.fainelli@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://github.com/broadcom/stblinux.git

Regex bcm63xx

* BROADCOM BCM63XX/BCM33XX UDC DRIVER

Mail Kevin Cernekee <cernekee@gmail.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files drivers/usb/gadget/udc/bcm63xx_udc.*

* BROADCOM BCM7XXX ARM ARCHITECTURE

Mail Florian Fainelli <f.fainelli@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://github.com/broadcom/stblinux.git

Files Documentation/devicetree/bindings/pci/brcm,stb-pcie.yaml arch/arm/
boot/dts/bcm7*.dts*   arch/arm/include/asm/hardware/cache-b15-rac.h
arch/arm/mach-bcm/*brcmstb* arch/arm/mm/cache-b15-rac.c drivers/bus/
brcmstb_gisb.c drivers/pci/controller/pcie-brcmstb.c

Regex brcmstb bcm7038 bcm7120

* BROADCOM BDC DRIVER

Mail Al Cooper <alcooperx@gmail.com>

Mailing list linux-usb@vger.kernel.org

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Status Maintained

Files Documentation/devicetree/bindings/usb/brcm,bdc.yaml   drivers/usb/
gadget/udc/bdc/

* BROADCOM BMIPS CPUFREQ DRIVER

Mail Markus Mayer <mmayer@broadcom.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files drivers/cpufreq/bmips-cpufreq.c

* BROADCOM BMIPS MIPS ARCHITECTURE

Mail Florian Fainelli <f.fainelli@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

SCM git git://github.com/broadcom/stblinux.git

Files arch/mips/bmips/* arch/mips/boot/dts/brcm/bcm*.dts* arch/mips/include/asm/mach-bmips/* arch/mips/kernel/*bmips* drivers/soc/bcm/bcm63xx drivers/irqchip/irq-bcm63* drivers/irqchip/irq-bcm7* drivers/irqchip/irq-brcmstb* include/linux/bcm963xx_nvram.h include/linux/bcm963xx_tag.h

* BROADCOM BNX2 GIGABIT ETHERNET DRIVER

Mail Rasesh Mody <rmody@marvell.com>, GR-Linux-NIC-Dev@marvell.com

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/broadcom/bnx2.* drivers/net/ethernet/broadcom/bnx2_*

* BROADCOM BNX2FC 10 GIGABIT FCOE DRIVER

Mail Saurav Kashyap <skashyap@marvell.com>, Javed Hasan <jhasan@marvell.com>, GR-QLogic-Storage-Upstream@marvell.com

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files drivers/scsi/bnx2fc/

* BROADCOM BNX2I 1/10 GIGABIT iSCSI DRIVER

Mail Nilesh Javali <njavali@marvell.com>, Manish Rangankar <mrangankar@marvell.com>, GR-QLogic-Storage-Upstream@marvell.com

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files drivers/scsi/bnx2i/

* BROADCOM BNX2X 10 GIGABIT ETHERNET DRIVER

Mail Ariel Elior <aelior@marvell.com>, Sudarsana Kalluru <skalluru@marvell.com>, Manish Chopra <manishc@marvell.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files `drivers/net/ethernet/broadcom/bnx2x/`

* BROADCOM BNXT_EN 50 GIGABIT ETHERNET DRIVER

Mail Michael Chan <michael.chan@broadcom.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files `drivers/firmware/broadcom/tee_bnxt_fw.c drivers/net/ethernet/ broadcom/bnxt/ include/linux/firmware/broadcom/tee_bnxt_fw.h`

* BROADCOM BRCM80211 IEEE802.11n WIRELESS DRIVER

Mail Arend van Spriel <aspriel@gmail.com>, Franky Lin <franky.lin@broadcom.com>, Hante Meuleman <hante.meuleman@broadcom.com>

Mailing list linux-wireless@vger.kernel.org, brcm80211-dev-list.pdl@broadcom.com, SHA-cyfmac-dev-list@infineon.com

Status Supported

Files `drivers/net/wireless/broadcom/brcm80211/`

* BROADCOM BRCMSTB GPIO DRIVER

Mail Doug Berger <opendmb@gmail.com>, Florian Fainelli <f.fainelli@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Status Supported

Files `Documentation/devicetree/bindings/gpio/brcm,brcmstb-gpio.yaml drivers/gpio/gpio-brcmstb.c`

* BROADCOM BRCMSTB I2C DRIVER

Mail Kamal Dasu <kdasu.kdev@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-i2c@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/i2c/brcm,brcmstb-i2c.yaml
drivers/i2c/busses/i2c-brcmstb.c

* BROADCOM BRCMSTB UART DRIVER

Mail Al Cooper <alcooperx@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-serial@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/serial/brcm,bcm7271-uart.yaml
drivers/tty/serial/8250/8250_bcm7271.c

* BROADCOM BRCMSTB USB EHCI DRIVER

Mail Al Cooper <alcooperx@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/usb/brcm,bcm7445-ehci.yaml
drivers/usb/host/ehci-brcm.*

* BROADCOM BRCMSTB USB PIN MAP DRIVER

Mail Al Cooper <alcooperx@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/usb/brcm,usb-pinmap.yaml
drivers/usb/misc/brcmstb-usb-pinmap.c

* BROADCOM BRCMSTB USB2 and USB3 PHY DRIVER

Mail Al Cooper <alcooperx@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files `drivers/phy/broadcom/phy-brcm-usb*`

* BROADCOM ETHERNET PHY DRIVERS

Mail Florian Fainelli <f.fainelli@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files `Documentation/devicetree/bindings/net/broadcom-bcm87xx.txt drivers/net/phy/bcm*.[ch] drivers/net/phy/broadcom.c include/linux/ brcmphy.h`

* BROADCOM GENET ETHERNET DRIVER

Mail Doug Berger <opendmb@gmail.com>, Florian Fainelli <f.fainelli@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files `Documentation/devicetree/bindings/net/brcm,bcmgenet.yaml Documentation/devicetree/bindings/net/brcm,unimac-mdio.yaml drivers/ net/ethernet/broadcom/genet/ drivers/net/ethernet/broadcom/unimac.h drivers/net/mdio/mdio-bcm-unimac.c include/linux/platform_data/ bcmgenet.h include/linux/platform_data/mdio-bcm-unimac.h`

* BROADCOM IPROC ARM ARCHITECTURE

Mail Ray Jui <rjui@broadcom.com>, Scott Branden <sbranden@broadcom.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://github.com/broadcom/stblinux.git

Files arch/arm64/boot/dts/broadcom/northstar2/* arch/arm64/boot/dts/broadcom/stingray/* drivers/clk/bcm/clk-ns* drivers/clk/bcm/clk-sr* drivers/pinctrl/bcm/pinctrl-ns* include/dt-bindings/clock/bcm-sr*

Regex iproc cygnus bcm[-_]nsp bcm9113* bcm9583* bcm9585* bcm9586* bcm988312 bcm113* bcm583* bcm585* bcm586* bcm88312 hr2 stingray

* BROADCOM IPROC GBIT ETHERNET DRIVER

Mail Rafał Miłecki <rafal@milecki.pl>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/brcm,amac.yaml drivers/net/ethernet/broadcom/bgmac* drivers/net/ethernet/broadcom/unimac.h

* BROADCOM KONA GPIO DRIVER

Mail Ray Jui <rjui@broadcom.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Status Supported

Files Documentation/devicetree/bindings/gpio/brcm,kona-gpio.txt drivers/gpio/gpio-bcm-kona.c

* BROADCOM MPI3 STORAGE CONTROLLER DRIVER

Mail Sathya Prakash Veerichetty <sathya.prakash@broadcom.com>, Kashyap Desai <kashyap.desai@broadcom.com>, Sumit Saxena <sumit.saxena@broadcom.com>, Sreekanth Reddy <sreekanth.reddy@broadcom.com>

Mailing list mpi3mr-linuxdrv.pdl@broadcom.com, linux-scsi@vger.kernel.org

Status Supported

Web-page https://www.broadcom.com/support/storage

Files drivers/scsi/mpi3mr/

* BROADCOM NETXTREME-E ROCE DRIVER

Mail Selvin Xavier <selvin.xavier@broadcom.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Web-page http://www.broadcom.com

Files drivers/infiniband/hw/bnxt_re/ include/uapi/rdma/bnxt_re-abi.h

* BROADCOM NVRAM DRIVER

Mail Rafał Miłecki <zajec5@gmail.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files drivers/firmware/broadcom/*

* BROADCOM PMB (POWER MANAGEMENT BUS) DRIVER

Mail Rafał Miłecki <rafal@milecki.pl>, Florian Fainelli <f.fainelli@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

SCM git git://github.com/broadcom/stblinux.git

Files drivers/soc/bcm/bcm63xx/bcm-pmb.c include/dt-bindings/soc/bcm-pmb.h

* BROADCOM SPECIFIC AMBA DRIVER (BCMA)

Mail Rafał Miłecki <zajec5@gmail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files drivers/bcma/ include/linux/bcma/

* BROADCOM SPI DRIVER

Mail Kamal Dasu <kdasu.kdev@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Status Maintained

Files Documentation/devicetree/bindings/spi/brcm,spi-bcm-qspi.yaml drivers/spi/spi-bcm-qspi.* drivers/spi/spi-brcmstb-qspi.c drivers/spi/spi-iproc-qspi.c

* BROADCOM STB AVS CPUFREQ DRIVER

Mail Markus Mayer <mmayer@broadcom.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/cpufreq/brcm,stb-avs-cpu-freq.txt drivers/cpufreq/brcmstb*

* BROADCOM STB AVS TMON DRIVER

Mail Markus Mayer <mmayer@broadcom.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/thermal/brcm,avs-tmon.yaml drivers/thermal/broadcom/brcmstb*

* BROADCOM STB DPFE DRIVER

Mail Markus Mayer <mmayer@broadcom.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/memory-controllers/brcm,dpfe-cpu.yaml drivers/memory/brcmstb_dpfe.c

* BROADCOM STB NAND FLASH DRIVER

Mail Brian Norris <computersforpeace@gmail.com>, Kamal Dasu <kdasu.kdev@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Files drivers/mtd/nand/raw/brcmnand/ include/linux/platform_data/ brcmnand.h

* BROADCOM STB PCIE DRIVER

Mail Jim Quinlan <jim2101024@gmail.com>, Nicolas Saenz Julienne <nsaenz@kernel.org>, Florian Fainelli <f.fainelli@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pci/brcm,stb-pcie.yaml drivers/ pci/controller/pcie-brcmstb.c

* BROADCOM SYSTEMPORT ETHERNET DRIVER

Mail Florian Fainelli <f.fainelli@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/broadcom/bcmsysport.* drivers/net/ethernet/ broadcom/unimac.h Documentation/devicetree/bindings/net/brcm, systemport.yaml

* BROADCOM TG3 GIGABIT ETHERNET DRIVER

Mail Siva Reddy Kallam <siva.kallam@broadcom.com>, Prashant Sreedharan <prashant@broadcom.com>, Michael Chan <mchan@broadcom.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/broadcom/tg3.*

* BROADCOM VK DRIVER

Mail Scott Branden <scott.branden@broadcom.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Status Supported

Files `drivers/misc/bcm-vk/ include/uapi/linux/misc/bcm_vk.h`

* BROCADE BFA FC SCSI DRIVER

Mail Anil Gurumurthy <anil.gurumurthy@qlogic.com>, Sudarsana Kalluru <sudarsana.kalluru@qlogic.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files `drivers/scsi/bfa/`

* BROCADE BNA 10 GIGABIT ETHERNET DRIVER

Mail Rasesh Mody <rmody@marvell.com>, Sudarsana Kalluru <skalluru@marvell.com>, GR-Linux-NIC-Dev@marvell.com

Mailing list netdev@vger.kernel.org

Status Supported

Files `drivers/net/ethernet/brocade/bna/`

* BSG (block layer generic sg v4 driver)

Mail FUJITA Tomonori <fujita.tomonori@lab.ntt.co.jp>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files `block/bsg.c include/linux/bsg.h include/uapi/linux/bsg.h`

* BT87X AUDIO DRIVER

Mail Clemens Ladisch <clemens@ladisch.de>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tiwai/sound.git

Files `sound/cards/bt87x sound/pci/bt87x.c`

* BT8XXGPIO DRIVER

Mail Michael Buesch <m@bues.ch>

Status Maintained

Web-page http://bu3sch.de/btgpio.php

Files drivers/gpio/gpio-bt8xx.c

* BTRFS FILE SYSTEM

Mail Chris Mason <clm@fb.com>, Josef Bacik <josef@toxicpanda.com>, David
 Sterba <dsterba@suse.com>

Mailing list linux-btrfs@vger.kernel.org

Status Maintained

Web-page http://btrfs.wiki.kernel.org/

Patchwork http://patchwork.kernel.org/project/linux-btrfs/list/

chat irc://irc.libera.chat/btrfs

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kdave/linux.git

Files filesystems/btrfs fs/btrfs/ include/linux/btrfs* include/uapi/linux/
 btrfs*

* BTTV VIDEO4LINUX DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Odd fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files Documentation/driver-api/media/drivers/bttv*   drivers/media/pci/
 bt8xx/bttv*

* BUS FREQUENCY DRIVER FOR SAMSUNG EXYNOS

Mail Chanwoo Choi <cw00.choi@samsung.com>

Mailing list linux-pm@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/chanwoo/linux.git

Files Documentation/devicetree/bindings/devfreq/exynos-bus.txt drivers/
 devfreq/exynos-bus.c

* BUSLOGIC SCSI DRIVER

Mail Khalid Aziz <khalid@gonehiking.org>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files `drivers/scsi/BusLogic.* drivers/scsi/FlashPoint.*`

* C-MEDIA CMI8788 DRIVER

Mail Clemens Ladisch <clemens@ladisch.de>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tiwai/sound.git

Files `sound/pci/oxygen/`

* C-SKY ARCHITECTURE

Mail Guo Ren <guoren@kernel.org>

Mailing list linux-csky@vger.kernel.org

Status Supported

SCM git https://github.com/c-sky/csky-linux.git

Files `Documentation/devicetree/bindings/csky/ Documentation/devicetree/
    bindings/interrupt-controller/csky,*   Documentation/devicetree/
    bindings/timer/csky,* arch/csky/ drivers/clocksource/timer-gx6605s.c
    drivers/clocksource/timer-mp-csky.c drivers/irqchip/irq-csky-*`

Regex `csky`

Content regex `csky`

* CA8210 IEEE-802.15.4 RADIO DRIVER

Mailing list linux-wpan@vger.kernel.org

Status Orphan

Web-page https://github.com/Cascoda/ca8210-linux.git

Files `Documentation/devicetree/bindings/net/ieee802154/ca8210.txt
    drivers/net/ieee802154/ca8210.c`

* CANAAN/KENDRYTE K210 SOC FPIOA DRIVER

Mail Damien Le Moal <damien.lemoal@wdc.com>

Mailing list linux-riscv@lists.infradead.org, linux-gpio@vger.kernel.org (pinctrl driver)

Files Documentation/devicetree/bindings/pinctrl/canaan,k210-fpioa.yaml drivers/pinctrl/pinctrl-k210.c

* CANAAN/KENDRYTE K210 SOC RESET CONTROLLER DRIVER

Mail Damien Le Moal <damien.lemoal@wdc.com>

Mailing list linux-kernel@vger.kernel.org, linux-riscv@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/reset/canaan,k210-rst.yaml drivers/reset/reset-k210.c

* CANAAN/KENDRYTE K210 SOC SYSTEM CONTROLLER DRIVER

Mail Damien Le Moal <damien.lemoal@wdc.com>

Mailing list linux-riscv@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/mfd/canaan,k210-sysctl.yaml drivers/soc/canaan/ include/soc/canaan/

* CACHEFILES: FS-CACHE BACKEND FOR CACHING ON MOUNTED FILESYSTEMS

Mail David Howells <dhowells@redhat.com>

Mailing list linux-cachefs@redhat.com (moderated for non-subscribers)

Status Supported

Files filesystems/caching/cachefiles fs/cachefiles/

* CADENCE MIPI-CSI2 BRIDGES

Mail Maxime Ripard <mripard@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/cdns,*.txt drivers/media/ platform/cadence/cdns-csi2*

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* CADENCE NAND DRIVER

Mailing list linux-mtd@lists.infradead.org

Status Orphan

Files Documentation/devicetree/bindings/mtd/cadence-nand-controller.txt
drivers/mtd/nand/raw/cadence-nand-controller.c

* CADENCE USB3 DRD IP DRIVER

Mail Peter Chen <peter.chen@kernel.org>, Pawel Laszczak <pawell@cadence.com>

Reviewer Roger Quadros <rogerq@kernel.org>, Aswath Govindraju <a-govindraju@ti.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/peter.chen/usb.git

Files Documentation/devicetree/bindings/usb/cdns,usb3.yaml drivers/usb/cdns3/

Excluded drivers/usb/cdns3/cdnsp*

* CADENCE USBSSP DRD IP DRIVER

Mail Pawel Laszczak <pawell@cadence.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/peter.chen/usb.git

Files drivers/usb/cdns3/

Excluded drivers/usb/cdns3/cdns3*

* CADET FM/AM RADIO RECEIVER DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/radio/radio-cadet*

* CAFE CMOS INTEGRATED CAMERA CONTROLLER DRIVER

Mailing list linux-media@vger.kernel.org

Status Orphan

SCM git git://linuxtv.org/media_tree.git

Files Documentation/admin-guide/media/cafe_ccic* drivers/media/platform/
marvell/

* CAIF NETWORK LAYER

Mailing list netdev@vger.kernel.org

Status Orphan

Files Documentation/networking/caif/ drivers/net/caif/ include/net/caif/
include/uapi/linux/caif/ net/caif/

* CAKE QDISC

Mail Toke Høiland-Jørgensen <toke@toke.dk>

Mailing list cake@lists.bufferbloat.net (moderated for non-subscribers)

Status Maintained

Files net/sched/sch_cake.c

* CAN NETWORK DRIVERS

Mail Wolfgang Grandegger <wg@grandegger.com>, Marc Kleine-Budde
<mkl@pengutronix.de>

Mailing list linux-can@vger.kernel.org

Status Maintained

Web-page https://github.com/linux-can

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mkl/linux-can.git git
git://git.kernel.org/pub/scm/linux/kernel/git/mkl/linux-can-next.git

Files Documentation/devicetree/bindings/net/can/ Documentation/
devicetree/bindings/phy/ti,tcan104x-can.yaml drivers/net/can/
drivers/phy/phy-can-transceiver.c include/linux/can/bittiming.h
include/linux/can/dev.h include/linux/can/length.h include/linux/
can/platform/ include/linux/can/rx-offload.h include/uapi/linux/
can/error.h include/uapi/linux/can/netlink.h include/uapi/linux/can/
vxcan.h

* CAN NETWORK LAYER

Mail Oliver Hartkopp <socketcan@hartkopp.net>, Marc Kleine-Budde <mkl@pengutronix.de>

Mailing list linux-can@vger.kernel.org

Status Maintained

Web-page https://github.com/linux-can

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mkl/linux-can.git git git://git.kernel.org/pub/scm/linux/kernel/git/mkl/linux-can-next.git

Files networking/can include/linux/can/can-ml.h include/linux/can/core.h include/linux/can/skb.h include/net/netns/can.h include/uapi/linux/can.h include/uapi/linux/can/bcm.h include/uapi/linux/can/gw.h include/uapi/linux/can/isotp.h include/uapi/linux/can/raw.h net/can/

* CAN-J1939 NETWORK LAYER

Mail Robin van der Gracht <robin@protonic.nl>, Oleksij Rempel <o.rempel@pengutronix.de>

Reviewer kernel@pengutronix.de

Mailing list linux-can@vger.kernel.org

Status Maintained

Files networking/j1939 include/uapi/linux/can/j1939.h net/can/j1939/

* CAPABILITIES

Mail Serge Hallyn <serge@hallyn.com>

Mailing list linux-security-module@vger.kernel.org

Status Supported

Files include/linux/capability.h include/uapi/linux/capability.h kernel/capability.c security/commoncap.c

* CAPELLA MICROSYSTEMS LIGHT SENSOR DRIVER

Mail Kevin Tsai <ktsai@capellamicro.com>

Status Maintained

Files drivers/iio/light/cm*

* CARL9170 LINUX COMMUNITY WIRELESS DRIVER

Mail Christian Lamparter <chunkeey@googlemail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/carl9170

Files drivers/net/wireless/ath/carl9170/

* CAVIUM I2C DRIVER

Mail Robert Richter <rric@kernel.org>

Status Odd Fixes

Web-page http://www.marvell.com

Files drivers/i2c/busses/i2c-octeon* drivers/i2c/busses/i2c-thunderx*

* CAVIUM LIQUIDIO NETWORK DRIVER

Mail Derek Chickles <dchickles@marvell.com>, Satanand Burla <sburla@marvell.com>, Felix Manlunas <fmanlunas@marvell.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.marvell.com

Files drivers/net/ethernet/cavium/liquidio/

* CAVIUM MMC DRIVER

Mail Robert Richter <rric@kernel.org>

Status Odd Fixes

Web-page http://www.marvell.com

Files drivers/mmc/host/cavium*

* CAVIUM OCTEON-TX CRYPTO DRIVER

Mail George Cherian <gcherian@marvell.com>

Mailing list linux-crypto@vger.kernel.org

Status Supported

Web-page http://www.marvell.com

Files drivers/crypto/cavium/cpt/

* CAVIUM THUNDERX2 ARM64 SOC

Mail Robert Richter <rric@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Odd Fixes

Files Documentation/devicetree/bindings/arm/cavium-thunder2.txt   arch/
    arm64/boot/dts/cavium/thunder2-99xx*

* CBS/ETF/TAPRIO QDISCS

Mail Vinicius Costa Gomes <vinicius.gomes@intel.com>

Status Maintained

Mailing list netdev@vger.kernel.org

Files net/sched/sch_cbs.c net/sched/sch_etf.c net/sched/sch_taprio.c

* CC2520 IEEE-802.15.4 RADIO DRIVER

Mail Varka Bhadram <varkabhadram@gmail.com>

Mailing list linux-wpan@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/ieee802154/cc2520.txt
    drivers/net/ieee802154/cc2520.c include/linux/spi/cc2520.h

* CCREE ARM TRUSTZONE CRYPTOCELL REE DRIVER

Mail Gilad Ben-Yossef <gilad@benyossef.com>

Mailing list linux-crypto@vger.kernel.org

Status Supported

Web-page https://developer.arm.com/products/system-ip/trustzone-cryptocell/
    cryptocell-700-family

Files drivers/crypto/ccree/

* CCTRNG ARM TRUSTZONE CRYPTOCELL TRUE RANDOM NUMBER GENERATOR (TRNG) DRIVER

Mail Hadar Gat <hadar.gat@arm.com>

Mailing list linux-crypto@vger.kernel.org

Status Supported

Files drivers/char/hw_random/cctrng.c   drivers/char/hw_random/cctrng.h
    Documentation/devicetree/bindings/rng/arm-cctrng.yaml

Web-page https://developer.arm.com/products/system-ip/trustzone-cryptocell/cryptocell-700-family

* CEC FRAMEWORK

Mail Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page http://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files Documentation/ABI/testing/debugfs-cec-error-inj Documentation/
devicetree/bindings/media/cec.txt driver-api/media/cec-core
Documentation/userspace-api/media/cec drivers/media/cec/ drivers/
media/rc/keymaps/rc-cec.c include/media/cec-notifier.h include/media/
cec.h include/uapi/linux/cec-funcs.h include/uapi/linux/cec.h

* CEC GPIO DRIVER

Mail Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page http://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/cec-gpio.txt drivers/
media/cec/platform/cec-gpio/

* CELL BROADBAND ENGINE ARCHITECTURE

Mail Arnd Bergmann <arnd@arndb.de>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Supported

Web-page http://www.ibm.com/developerworks/power/cell/

Files arch/powerpc/include/asm/cell*.h arch/powerpc/include/asm/spu*.h
arch/powerpc/include/uapi/asm/spu*.h arch/powerpc/platforms/cell/

* CELLWISE CW2015 BATTERY DRIVER

Mail Tobias Schrammm <t.schramm@manjaro.org>

Status Maintained

Files Documentation/devicetree/bindings/power/supply/cw2015_battery.yaml
    drivers/power/supply/cw2015_battery.c

* CEPH COMMON CODE (LIBCEPH)

Mail Ilya Dryomov <idryomov@gmail.com>, Xiubo Li <xiubli@redhat.com>

Reviewer Jeff Layton <jlayton@kernel.org>

Mailing list ceph-devel@vger.kernel.org

Status Supported

Web-page http://ceph.com/

SCM git git://github.com/ceph/ceph-client.git

Files include/linux/ceph/ include/linux/crush/ net/ceph/

* CEPH DISTRIBUTED FILE SYSTEM CLIENT (CEPH)

Mail Xiubo Li <xiubli@redhat.com>, Ilya Dryomov <idryomov@gmail.com>

Reviewer Jeff Layton <jlayton@kernel.org>

Mailing list ceph-devel@vger.kernel.org

Status Supported

Web-page http://ceph.com/

SCM git git://github.com/ceph/ceph-client.git

Files filesystems/ceph fs/ceph/

* CERTIFICATE HANDLING

Mail David Howells <dhowells@redhat.com>, David Woodhouse
    <dwmw2@infradead.org>

Mailing list keyrings@vger.kernel.org

Status Maintained

Files admin-guide/module-signing certs/ scripts/check-blacklist-hashes.awk
    scripts/sign-file.c tools/certs/

* CFAG12864B LCD DRIVER

Mail Miguel Ojeda <ojeda@kernel.org>

Status Maintained

Files `drivers/auxdisplay/cfag12864b.c include/linux/cfag12864b.h`

* CFAG12864BFB LCD FRAMEBUFFER DRIVER

Mail Miguel Ojeda <ojeda@kernel.org>

Status Maintained

Files `drivers/auxdisplay/cfag12864bfb.c include/linux/cfag12864b.h`

* CHAR and MISC DRIVERS

Mail Arnd Bergmann <arnd@arndb.de>, Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/char-misc.git

Files `drivers/char/ drivers/misc/ include/linux/miscdevice.h`

Excluded `drivers/char/agp/ drivers/char/hw_random/ drivers/char/ipmi/ drivers/char/random.c drivers/char/tpm/`

* CHECKPATCH

Mail Andy Whitcroft <apw@canonical.com>, Joe Perches <joe@perches.com>

Reviewer Dwaipayan Ray <dwaipayanray1@gmail.com>, Lukas Bulwahn <lukas.bulwahn@gmail.com>

Status Maintained

Files `scripts/checkpatch.pl`

* CHECKPATCH DOCUMENTATION

Mail Dwaipayan Ray <dwaipayanray1@gmail.com>, Lukas Bulwahn <lukas.bulwahn@gmail.com>

Reviewer Joe Perches <joe@perches.com>

Status Maintained

Files dev-tools/checkpatch

* CHINESE DOCUMENTATION

Mail Alex Shi <alexs@kernel.org>, Yanteng Si <siyanteng@loongson.cn>

Status Maintained

Files Documentation/translations/zh_CN/

* CHIPIDEA USB HIGH SPEED DUAL ROLE CONTROLLER

Mail Peter Chen <peter.chen@kernel.org>

Mailing list linux-usb@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/peter.chen/usb.git

Files drivers/usb/chipidea/

* CHIPONE ICN8318 I2C TOUCHSCREEN DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/input/touchscreen/chipone,
    icn8318.yaml drivers/input/touchscreen/chipone_icn8318.c

* CHIPONE ICN8505 I2C TOUCHSCREEN DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files drivers/input/touchscreen/chipone_icn8505.c

* CHROME HARDWARE PLATFORM SUPPORT

Mail Benson Leung <bleung@chromium.org>

Mailing list chrome-platform@lists.linux.dev

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/chrome-platform/linux.git

Files drivers/platform/chrome/

* CHROMEOS EC CODEC DRIVER

Mail Cheng-Yi   Chiang   <cychiang@chromium.org>,   Tzung-Bi   Shih
<tzungbi@google.com>

Reviewer Guenter Roeck <groeck@chromium.org>

Mailing list chrome-platform@lists.linux.dev

Status Maintained

Files Documentation/devicetree/bindings/sound/google,cros-ec-codec.yaml
sound/soc/codecs/cros_ec_codec.*

* CHROMEOS EC SUBDRIVERS

Mail Benson Leung <bleung@chromium.org>

Reviewer Guenter Roeck <groeck@chromium.org>

Mailing list chrome-platform@lists.linux.dev

Status Maintained

Files drivers/power/supply/cros_usbpd-charger.c

Regex cros_ec cros-ec

* CHROMEOS EC USB TYPE-C DRIVER

Mail Prashant Malani <pmalani@chromium.org>

Mailing list chrome-platform@lists.linux.dev

Status Maintained

Files drivers/platform/chrome/cros_ec_typec.c

* CHROMEOS EC USB PD NOTIFY DRIVER

Mail Prashant Malani <pmalani@chromium.org>

Mailing list chrome-platform@lists.linux.dev

Status Maintained

Files drivers/platform/chrome/cros_usbpd_notify.c   include/linux/
platform_data/cros_usbpd_notify.h

* CHRONTEL CH7322 CEC DRIVER

Mail Joe Tessler <jrt@google.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/chrontel,ch7322.yaml
  drivers/media/cec/i2c/ch7322.c

* CIRRUS LOGIC AUDIO CODEC DRIVERS

Mail James   Schulman   <james.schulman@cirrus.com>,   David
  Rhodes   <david.rhodes@cirrus.com>,   Lucas   Tanure   <ta-
  nureal@opensource.cirrus.com>,   Richard   Fitzgerald
  <rf@opensource.cirrus.com>

Mailing list alsa-devel@alsa-project.org   (moderated   for   non-subscribers),
  patches@opensource.cirrus.com

Status Maintained

Files Documentation/devicetree/bindings/sound/cirrus,cs*   include/
  dt-bindings/sound/cs* sound/pci/hda/cs* sound/soc/codecs/cs*

* CIRRUS LOGIC DSP FIRMWARE DRIVER

Mail Simon   Trimmer   <simont@opensource.cirrus.com>,   Charles
  Keepax   <ckeepax@opensource.cirrus.com>,   Richard   Fitzgerald
  <rf@opensource.cirrus.com>

Mailing list patches@opensource.cirrus.com

Status Supported

Web-page https://github.com/CirrusLogic/linux-drivers/wiki

SCM git https://github.com/CirrusLogic/linux-drivers.git

Files drivers/firmware/cirrus/* include/linux/firmware/cirrus/*

* CIRRUS LOGIC EP93XX ETHERNET DRIVER

Mail Hartley Sweeten <hsweeten@visionengravers.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/cirrus/ep93xx_eth.c

* CIRRUS LOGIC LOCHNAGAR DRIVER

Mail Charles Keepax <ckeepax@opensource.cirrus.com>, Richard Fitzgerald <rf@opensource.cirrus.com>

Mailing list patches@opensource.cirrus.com

Status Supported

Files Documentation/devicetree/bindings/clock/cirrus,lochnagar.
    yaml   Documentation/devicetree/bindings/hwmon/cirrus,lochnagar.
    yaml   Documentation/devicetree/bindings/mfd/cirrus,lochnagar.
    yaml   Documentation/devicetree/bindings/pinctrl/cirrus,lochnagar.
    yaml   Documentation/devicetree/bindings/sound/cirrus,lochnagar.
    yaml   hwmon/lochnagar   drivers/clk/clk-lochnagar.c   drivers/hwmon/
    lochnagar-hwmon.c drivers/mfd/lochnagar-i2c.c drivers/pinctrl/cirrus/
    pinctrl-lochnagar.c drivers/regulator/lochnagar-regulator.c include/
    dt-bindings/clk/lochnagar.h include/dt-bindings/pinctrl/lochnagar.h
    include/linux/mfd/lochnagar* sound/soc/codecs/lochnagar-sc.c

* CIRRUS LOGIC MADERA CODEC DRIVERS

Mail Charles Keepax <ckeepax@opensource.cirrus.com>, Richard Fitzgerald <rf@opensource.cirrus.com>

Mailing list alsa-devel@alsa-project.org   (moderated   for   non-subscribers), patches@opensource.cirrus.com

Status Supported

Web-page https://github.com/CirrusLogic/linux-drivers/wiki

SCM git https://github.com/CirrusLogic/linux-drivers.git

Files Documentation/devicetree/bindings/mfd/cirrus,madera.yaml
    Documentation/devicetree/bindings/pinctrl/cirrus,madera.yaml
    Documentation/devicetree/bindings/sound/cirrus,madera.yaml drivers/
    gpio/gpio-madera*   drivers/irqchip/irq-madera*   drivers/mfd/cs47l*
    drivers/mfd/madera*   drivers/pinctrl/cirrus/*   include/dt-bindings/
    sound/madera* include/linux/irqchip/irq-madera* include/linux/mfd/
    madera/* include/sound/madera* sound/soc/codecs/cs47l* sound/soc/
    codecs/madera*

* CISCO FCOE HBA DRIVER

Mail Satish Kharat <satishkh@cisco.com>, Sesidhar Baddela <sebad-del@cisco.com>, Karan Tilak Kumar <kartilak@cisco.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files drivers/scsi/fnic/

* CISCO SCSI HBA DRIVER

Mail Karan Tilak Kumar <kartilak@cisco.com>, Sesidhar Baddela <sebaddel@cisco.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files drivers/scsi/snic/

* CISCO VIC ETHERNET NIC DRIVER

Mail Christian Benvenuti <benve@cisco.com>, Govindarajulu Varadarajan <_govind@gmx.com>

Status Supported

Files drivers/net/ethernet/cisco/enic/

* CISCO VIC LOW LATENCY NIC DRIVER

Mail Christian Benvenuti <benve@cisco.com>, Nelson Escobar <neescoba@cisco.com>

Status Supported

Files drivers/infiniband/hw/usnic/

* CLANG-FORMAT FILE

Mail Miguel Ojeda <ojeda@kernel.org>

Status Maintained

Files .clang-format

* CLANG/LLVM BUILD SUPPORT

Mail Nathan Chancellor <nathan@kernel.org>, Nick Desaulniers <ndesaulniers@google.com>

Reviewer Tom Rix <trix@redhat.com>

Mailing list llvm@lists.linux.dev

Status Supported

Web-page https://clangbuiltlinux.github.io/

bugs https://github.com/ClangBuiltLinux/linux/issues

chat irc://irc.libera.chat/clangbuiltlinux

Files kbuild/llvm   include/linux/compiler-clang.h   scripts/Makefile.clang
scripts/clang-tools/

Content regex `\b(?i:clang|llvm)\b`

* CLANG CONTROL FLOW INTEGRITY SUPPORT

Mail Sami Tolvanen <samitolvanen@google.com>, Kees Cook <keescook@chromium.org>

Reviewer Nathan Chancellor <nathan@kernel.org>, Nick Desaulniers <ndesaulniers@google.com>

Mailing list llvm@lists.linux.dev

Status Supported

bugs https://github.com/ClangBuiltLinux/linux/issues

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git for-next/clang/features

Files `include/linux/cfi.h kernel/cfi.c`

* CLK API

Mail Russell King <linux@armlinux.org.uk>

Mailing list linux-clk@vger.kernel.org

Status Maintained

Files `include/linux/clk.h`

* CLOCKSOURCE, CLOCKEVENT DRIVERS

Mail Daniel Lezcano <daniel.lezcano@linaro.org>, Thomas Gleixner <tglx@linutronix.de>

Mailing list linux-kernel@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git timers/core

Files `Documentation/devicetree/bindings/timer/ drivers/clocksource/`

* CMPC ACPI DRIVER

Mail Thadeu Lima de Souza Cascardo <cascardo@holoscopio.com>, Daniel Oliveira Nascimento <don@syst.com.br>

Mailing list platform-driver-x86@vger.kernel.org

Status Supported

Files `drivers/platform/x86/classmate-laptop.c`

* COBALT MEDIA DRIVER

Mail Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/pci/cobalt/

* COCCINELLE/Semantic Patches (SmPL)

Mail Julia Lawall <Julia.Lawall@inria.fr>, Nicolas Palix <nicolas.palix@imag.fr>

Mailing list cocci@inria.fr (moderated for non-subscribers)

Status Supported

Web-page https://coccinelle.gitlabpages.inria.fr/website/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jlawall/linux.git

Files dev-tools/coccinelle scripts/coccicheck scripts/coccinelle/

* CODA FILE SYSTEM

Mail Jan Harkes <jaharkes@cs.cmu.edu>, coda@cs.cmu.edu

Mailing list codalist@coda.cs.cmu.edu

Status Maintained

Web-page http://www.coda.cs.cmu.edu/

Files filesystems/coda fs/coda/ include/linux/coda*.h include/uapi/linux/ coda*.h

* CODA V4L2 MEM2MEM DRIVER

Mail Philipp Zabel <p.zabel@pengutronix.de>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/coda.yaml drivers/media/ platform/chips-media/

* CODE OF CONDUCT

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Status Supported

Files *process/code-of-conduct-interpretation process/code-of-conduct*

* COMEDI DRIVERS

Mail Ian Abbott <abbotti@mev.co.uk>, H Hartley Sweeten <hsweeten@visionengravers.com>

Status Odd Fixes

Files `drivers/comedi/ include/linux/comedi/ include/uapi/linux/comedi.h`

* COMMON CLK FRAMEWORK

Mail Michael Turquette <mturquette@baylibre.com>, Stephen Boyd <sboyd@kernel.org>

Mailing list linux-clk@vger.kernel.org

Status Maintained

Patchwork http://patchwork.kernel.org/project/linux-clk/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/clk/linux.git

Files `Documentation/devicetree/bindings/clock/ drivers/clk/ include/ dt-bindings/clock/ include/linux/clk-pr* include/linux/clk/ include/ linux/of_clk.h`

Excluded `drivers/clk/clkdev.c`

* COMMON INTERNET FILE SYSTEM CLIENT (CIFS)

Mail Steve French <sfrench@samba.org>

Mailing list linux-cifs@vger.kernel.org, samba-technical@lists.samba.org (moderated for non-subscribers)

Status Supported

Web-page http://linux-cifs.samba.org/

SCM git git://git.samba.org/sfrench/cifs-2.6.git

Files `Documentation/admin-guide/cifs/ fs/cifs/ fs/smbfs_common/`

* COMPACTPCI HOTPLUG CORE

Mail Scott Murray <scott@spiteful.org>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files drivers/pci/hotplug/cpci_hotplug*

* COMPACTPCI HOTPLUG GENERIC DRIVER

Mail Scott Murray <scott@spiteful.org>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files drivers/pci/hotplug/cpcihp_generic.c

* COMPACTPCI HOTPLUG ZIATECH ZT5550 DRIVER

Mail Scott Murray <scott@spiteful.org>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files drivers/pci/hotplug/cpcihp_zt5550.*

* COMPAL LAPTOP SUPPORT

Mail Cezary Jackiewicz <cezary.jackiewicz@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/compal-laptop.c

* COMPILER ATTRIBUTES

Mail Miguel Ojeda <ojeda@kernel.org>

Reviewer Nick Desaulniers <ndesaulniers@google.com>

Status Maintained

Files include/linux/compiler_attributes.h

* COMPUTE EXPRESS LINK (CXL)

Mail Alison Schofield <alison.schofield@intel.com>, Vishal Verma <vishal.l.verma@intel.com>, Ira Weiny <ira.weiny@intel.com>, Ben Widawsky <bwidawsk@kernel.org>, Dan Williams <dan.j.williams@intel.com>

Mailing list linux-cxl@vger.kernel.org

Status Maintained

Files drivers/cxl/ include/uapi/linux/cxl_mem.h

* CONEXANT ACCESSRUNNER USB DRIVER

Mailing list accessrunner-general@lists.sourceforge.net

Status Orphan

Web-page http://accessrunner.sourceforge.net/

Files drivers/usb/atm/cxacru.c

* CONFIGFS

Mail Joel Becker <jlbec@evilplan.org>, Christoph Hellwig <hch@lst.de>

Status Supported

SCM git git://git.infradead.org/users/hch/configfs.git

Files fs/configfs/ include/linux/configfs.h samples/configfs/

* CONSOLE SUBSYSTEM

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Status Supported

Files drivers/video/console/ include/linux/console*

* CONTEXT TRACKING

Mail Frederic Weisbecker <frederic@kernel.org>

Status Maintained

Files kernel/context_tracking.c include/linux/context_tracking*

* CONTROL GROUP (CGROUP)

Mail Tejun Heo <tj@kernel.org>, Zefan Li <lizefan.x@bytedance.com>, Johannes
Weiner <hannes@cmpxchg.org>

Mailing list cgroups@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tj/cgroup.git

Files Documentation/admin-guide/cgroup-v1/ admin-guide/cgroup-v2 include/
linux/cgroup* kernel/cgroup/ tools/testing/selftests/cgroup/

* CONTROL GROUP - BLOCK IO CONTROLLER (BLKIO)

Mail Tejun Heo <tj@kernel.org>, Jens Axboe <axboe@kernel.dk>

Mailing list cgroups@vger.kernel.org, linux-block@vger.kernel.org

SCM git git://git.kernel.dk/linux-block

Files admin-guide/cgroup-v1/blkio-controller block/bfq-cgroup.c block/
blk-cgroup.c block/blk-iolatency.c block/blk-throttle.c include/
linux/blk-cgroup.h

* CONTROL GROUP - CPUSET

Mail Zefan Li <lizefan.x@bytedance.com>

Mailing list cgroups@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tj/cgroup.git

Files admin-guide/cgroup-v1/cpusets include/linux/cpuset.h kernel/cgroup/
cpuset.c

* CONTROL GROUP - MEMORY RESOURCE CONTROLLER (MEMCG)

Mail Johannes Weiner <hannes@cmpxchg.org>, Michal Hocko
<mhocko@kernel.org>, Roman Gushchin <roman.gushchin@linux.dev>,
Shakeel Butt <shakeelb@google.com>

Reviewer Muchun Song <songmuchun@bytedance.com>

Mailing list cgroups@vger.kernel.org, linux-mm@kvack.org

Status Maintained

Files mm/memcontrol.c mm/swap_cgroup.c tools/testing/selftests/cgroup/
memcg_protection.m tools/testing/selftests/cgroup/test_kmem.c tools/
testing/selftests/cgroup/test_memcontrol.c

* CORETEMP HARDWARE MONITORING DRIVER

Mail Fenghua Yu <fenghua.yu@intel.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/coretemp `drivers/hwmon/coretemp.c`

* CORSAIR-CPRO HARDWARE MONITOR DRIVER

Mail Marius Zachmann <mail@mariuszachmann.de>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `drivers/hwmon/corsair-cpro.c`

* CORSAIR-PSU HARDWARE MONITOR DRIVER

Mail Wilken Gottwalt <wilken.gottwalt@posteo.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/corsair-psu `drivers/hwmon/corsair-psu.c`

* COUNTER SUBSYSTEM

Mail William Breathitt Gray <vilhelm.gray@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

SCM git git@gitlab.com:vilhelmgray/counter.git

Files `Documentation/ABI/testing/sysfs-bus-counter` driver-api/generic-counter
`drivers/counter/ include/linux/counter.h include/uapi/linux/counter.h`
`tools/counter/`

* CP2615 I2C DRIVER

Mail Bence Csókás <bence98@sch.bme.hu>

Status Maintained

Files `drivers/i2c/busses/i2c-cp2615.c`

* CPMAC ETHERNET DRIVER

Mail Florian Fainelli <f.fainelli@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/ti/cpmac.c

* CPU FREQUENCY DRIVERS - VEXPRESS SPC ARM BIG LITTLE

Mail Viresh Kumar <viresh.kumar@linaro.org>, Sudeep Holla <sudeep.holla@arm.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Web-page http://www.arm.com/products/processors/technologies/biglittleprocessing.php

Files drivers/cpufreq/vexpress-spc-cpufreq.c

* CPU FREQUENCY SCALING FRAMEWORK

Mail "Rafael J. Wysocki" <rafael@kernel.org>, Viresh Kumar <viresh.kumar@linaro.org>

Mailing list linux-pm@vger.kernel.org

Status Maintained

bugs https://bugzilla.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rafael/linux-pm.git git git://git.kernel.org/pub/scm/linux/kernel/git/vireshk/pm.git (For ARM Updates)

Files admin-guide/pm/cpufreq admin-guide/pm/intel_pstate Documentation/cpu-freq/ Documentation/devicetree/bindings/cpufreq/ drivers/cpufreq/ include/linux/cpufreq.h include/linux/sched/cpufreq.h kernel/sched/cpufreq*.c tools/testing/selftests/cpufreq/

* CPU IDLE TIME MANAGEMENT FRAMEWORK

Mail "Rafael J. Wysocki" <rafael@kernel.org>, Daniel Lezcano <daniel.lezcano@linaro.org>

Mailing list linux-pm@vger.kernel.org

Status Maintained

bugs https://bugzilla.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rafael/linux-pm.git

Files admin-guide/pm/cpuidle driver-api/pm/cpuidle drivers/cpuidle/ include/linux/cpuidle.h

* CPU POWER MONITORING SUBSYSTEM

Mail Thomas Renninger <trenn@suse.com>, Shuah Khan <shuah@kernel.org>, Shuah Khan <skhan@linuxfoundation.org>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files `tools/power/cpupower/`

* CPUID/MSR DRIVER

Mail "H. Peter Anvin" <hpa@zytor.com>

Status Maintained

Files `arch/x86/kernel/cpuid.c arch/x86/kernel/msr.c`

* CPUIDLE DRIVER - ARM BIG LITTLE

Mail Lorenzo Pieralisi <lpieralisi@kernel.org>, Daniel Lezcano <daniel.lezcano@linaro.org>

Mailing list linux-pm@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rafael/linux-pm.git

Files `drivers/cpuidle/cpuidle-big_little.c`

* CPUIDLE DRIVER - ARM EXYNOS

Mail Bartlomiej Zolnierkiewicz <b.zolnierkie@samsung.com>, Daniel Lezcano <daniel.lezcano@linaro.org>, Kukjin Kim <kgene@kernel.org>

Mailing list linux-pm@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status Supported

Files `arch/arm/mach-exynos/pm.c drivers/cpuidle/cpuidle-exynos.c include/linux/platform_data/cpuidle-exynos.h`

* CPUIDLE DRIVER - ARM PSCI

Mail Lorenzo Pieralisi <lpieralisi@kernel.org>, Sudeep Holla <sudeep.holla@arm.com>

Mailing list linux-pm@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files `drivers/cpuidle/cpuidle-psci.c`

* CPUIDLE DRIVER - ARM PSCI PM DOMAIN

Mail Ulf Hansson <ulf.hansson@linaro.org>

Mailing list linux-pm@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files `drivers/cpuidle/cpuidle-psci.h` `drivers/cpuidle/cpuidle-psci-domain.c`

* CPUIDLE DRIVER - DT IDLE PM DOMAIN

Mail Ulf Hansson <ulf.hansson@linaro.org>

Mailing list linux-pm@vger.kernel.org

Status Supported

Files `drivers/cpuidle/dt_idle_genpd.c drivers/cpuidle/dt_idle_genpd.h`

* CPUIDLE DRIVER - RISC-V SBI

Mail Anup Patel <anup@brainfault.org>

Mailing list linux-pm@vger.kernel.org, linux-riscv@lists.infradead.org

Status Maintained

Files `drivers/cpuidle/cpuidle-riscv-sbi.c`

* CRAMFS FILESYSTEM

Mail Nicolas Pitre <nico@fluxnic.net>

Status Maintained

Files filesystems/cramfs `fs/cramfs/`

* CREATIVE SB0540

Mail Bastien Nocera <hadess@hadess.net>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `drivers/hid/hid-creative-sb0540.c`

* CRYPTO API

Mail Herbert Xu <herbert@gondor.apana.org.au>, "David S. Miller" <davem@davemloft.net>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/herbert/cryptodev-2.6.git git git://git.kernel.org/pub/scm/linux/kernel/git/herbert/crypto-2.6.git

Files Documentation/crypto/ Documentation/devicetree/bindings/crypto/ arch/*/crypto/ crypto/ drivers/crypto/ include/crypto/ include/linux/ crypto* lib/crypto/

* CRYPTOGRAPHIC RANDOM NUMBER GENERATOR

Mail Neil Horman <nhorman@tuxdriver.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files crypto/ansi_cprng.c crypto/rng.c

* CS3308 MEDIA DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Web-page http://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/cs3308.c

* CS5535 Audio ALSA driver

Mail Jaya Kumar <jayakumar.alsa@gmail.com>

Status Maintained

Files sound/pci/cs5535audio/

Files `drivers/media/common/cx2341x* include/media/drv-intf/cx2341x.h`

* CX24120 MEDIA DRIVER

Mail Jemma Denson <jdenson@gmail.com>, Patrick Boettcher <patrick.boettcher@posteo.de>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

Files `drivers/media/dvb-frontends/cx24120*`

* CX88 VIDEO4LINUX DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Odd fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `Documentation/driver-api/media/drivers/cx88*     drivers/media/pci/cx88/`

* CXD2820R MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/dvb-frontends/cxd2820r*`

* CXGB3 ETHERNET DRIVER (CXGB3)

Mail Raju Rangoju <rajur@chelsio.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.chelsio.com

Files drivers/net/ethernet/chelsio/cxgb3/

* CXGB3 ISCSI DRIVER (CXGB3I)

Mail Karen Xie <kxie@chelsio.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Web-page http://www.chelsio.com

Files drivers/scsi/cxgbi/cxgb3i

* CXGB4 CRYPTO DRIVER (chcr)

Mail Ayush Sawal <ayush.sawal@chelsio.com>, Vinay Kumar Yadav <vinay.yadav@chelsio.com>, Rohit Maheshwari <rohitm@chelsio.com>

Mailing list linux-crypto@vger.kernel.org

Status Supported

Web-page http://www.chelsio.com

Files drivers/crypto/chelsio

* CXGB4 INLINE CRYPTO DRIVER

Mail Ayush Sawal <ayush.sawal@chelsio.com>, Vinay Kumar Yadav <vinay.yadav@chelsio.com>, Rohit Maheshwari <rohitm@chelsio.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.chelsio.com

Files drivers/net/ethernet/chelsio/inline_crypto/

* CXGB4 ETHERNET DRIVER (CXGB4)

Mail Raju Rangoju <rajur@chelsio.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.chelsio.com

Files drivers/net/ethernet/chelsio/cxgb4/

* CXGB4 ISCSI DRIVER (CXGB4I)

Mail Karen Xie <kxie@chelsio.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Web-page http://www.chelsio.com

Files drivers/scsi/cxgbi/cxgb4i

* CXGB4 IWARP RNIC DRIVER (IW_CXGB4)

Mail Potnuri Bharat Teja <bharat@chelsio.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Web-page http://www.openfabrics.org

Files drivers/infiniband/hw/cxgb4/ include/uapi/rdma/cxgb4-abi.h

* CXGB4VF ETHERNET DRIVER (CXGB4VF)

Mail Raju Rangoju <rajur@chelsio.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.chelsio.com

Files drivers/net/ethernet/chelsio/cxgb4vf/

* CXL (IBM Coherent Accelerator Processor Interface CAPI) DRIVER

Mail Frederic Barrat <fbarrat@linux.ibm.com>, Andrew Donnellan <ajd@linux.ibm.com>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Supported

Files Documentation/ABI/testing/sysfs-class-cxl powerpc/cxl arch/powerpc/platforms/powernv/pci-cxl.c drivers/misc/cxl/ include/misc/cxl* include/uapi/misc/cxl.h

* CXLFLASH (IBM Coherent Accelerator Processor Interface CAPI Flash) SCSI DRIVER

Mail Manoj N. Kumar <manoj@linux.ibm.com>, Matthew R. Ochs <mrochs@linux.ibm.com>, Uma Krishnan <ukrishn@linux.ibm.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files powerpc/cxlflash drivers/scsi/cxlflash/ include/uapi/scsi/cxlflash_ioctl.h

* CYBERPRO FB DRIVER

Mail Russell King <linux@armlinux.org.uk>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://www.armlinux.org.uk/

Files drivers/video/fbdev/cyber2000fb.*

* CYCLADES PC300 DRIVER

Status Orphan

Files drivers/net/wan/pc300*

* CYPRESS_FIRMWARE MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/common/cypress_firmware*

* CYPRESS CY8CTMA140 TOUCHSCREEN DRIVER

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files drivers/input/touchscreen/cy8ctma140.c

* CYPRESS STREETFIGHTER TOUCHKEYS DRIVER

Mail Yassine Oudjana <y.oudjana@protonmail.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/input/cypress-sf.yaml   drivers/
      input/keyboard/cypress-sf.c

* CYTTSP TOUCHSCREEN DRIVER

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files drivers/input/touchscreen/cyttsp*

* D-LINK DIR-685 TOUCHKEYS DRIVER

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-input@vger.kernel.org

Status Supported

Files drivers/input/keyboard/dlink-dir685-touchkeys.c

* DALLAS/MAXIM DS1685-FAMILY REAL TIME CLOCK

Mail Joshua Kinard <kumba@gentoo.org>

Status Maintained

Files drivers/rtc/rtc-ds1685.c include/linux/rtc/ds1685.h

* DAMA SLAVE for AX.25

Mail Joerg Reuter <jreuter@yaina.de>

Mailing list linux-hams@vger.kernel.org

Status Maintained

Web-page http://yaina.de/jreuter/ http://www.qsl.net/dl1bke/

Files net/ax25/af_ax25.c net/ax25/ax25_dev.c net/ax25/ax25_ds_* net/ax25/ax25_in.c net/ax25/ax25_out.c net/ax25/ax25_timer.c net/ax25/sysctl_net_ax25.c

* DATA ACCESS MONITOR

Mail SeongJae Park <sj@kernel.org>

Mailing list damon@lists.linux.dev, linux-mm@kvack.org

Status Maintained

Files Documentation/ABI/testing/sysfs-kernel-mm-damon Documentation/admin-guide/mm/damon/ Documentation/vm/damon/ include/linux/damon.h include/trace/events/damon.h mm/damon/ tools/testing/selftests/damon/

* DAVICOM FAST ETHERNET (DMFE) NETWORK DRIVER

Mailing list netdev@vger.kernel.org

Status Orphan

Files networking/device_drivers/ethernet/dec/dmfe drivers/net/ethernet/dec/tulip/dmfe.c

* DC390/AM53C974 SCSI driver

Mail Hannes Reinecke <hare@suse.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files drivers/scsi/am53c974.c

* DC395x SCSI driver

Mail Oliver Neukum <oliver@neukum.org>, Ali Akcaagac <aliakc@web.de>, Jamie Lenehan <lenehan@twibble.org>

Mailing list dc395x@twibble.org

Status Maintained

Web-page http://twibble.org/dist/dc395x/ http://lists.twibble.org/mailman/listinfo/dc395x/

Files scsi/dc395x drivers/scsi/dc395x.*

* DCCP PROTOCOL

Mailing list dccp@vger.kernel.org

Status Orphan

Web-page http://www.linuxfoundation.org/collaborate/workgroups/networking/dccp

Files include/linux/dccp.h include/linux/tfrc.h include/uapi/linux/dccp.h net/dccp/

* DECnet NETWORK LAYER

Mailing list linux-decnet-user@lists.sourceforge.net

Status Orphan

Web-page http://linux-decnet.sourceforge.net

Files networking/decnet net/decnet/

* DECSTATION PLATFORM SUPPORT

Mail "Maciej W. Rozycki" <macro@orcam.me.uk>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Web-page http://www.linux-mips.org/wiki/DECstation

Files arch/mips/dec/   arch/mips/include/asm/dec/   arch/mips/include/asm/mach-dec/

* DEFXX FDDI NETWORK DRIVER

Mail "Maciej W. Rozycki" <macro@orcam.me.uk>

Status Maintained

Files drivers/net/fddi/defxx.*

* DEFZA FDDI NETWORK DRIVER

Mail "Maciej W. Rozycki" <macro@orcam.me.uk>

Status Maintained

Files `drivers/net/fddi/defza.*`

* DEINTERLACE DRIVERS FOR ALLWINNER H3

Mail Jernej Skrabec <jernej.skrabec@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `Documentation/devicetree/bindings/media/allwinner,`
`    sun8i-h3-deinterlace.yaml drivers/media/platform/sunxi/sun8i-di/`

* DELL LAPTOP DRIVER

Mail Matthew Garrett <mjg59@srcf.ucam.org>, Pali Rohár <pali@kernel.org>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/dell/dell-laptop.c`

* DELL LAPTOP FREEFALL DRIVER

Mail Pali Rohár <pali@kernel.org>

Status Maintained

Files `drivers/platform/x86/dell/dell-smo8800.c`

* DELL LAPTOP RBTN DRIVER

Mail Pali Rohár <pali@kernel.org>

Status Maintained

Files `drivers/platform/x86/dell/dell-rbtn.*`

* DELL LAPTOP SMM DRIVER

Mail Pali Rohár <pali@kernel.org>

Status Maintained

Files Documentation/ABI/obsolete/procfs-i8k   drivers/hwmon/
    dell-smm-hwmon.c include/uapi/linux/i8k.h

* DELL REMOTE BIOS UPDATE DRIVER

Mail Stuart Hayes <stuart.w.hayes@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/dell/dell_rbu.c

* DELL SMBIOS DRIVER

Mail Pali Rohár <pali@kernel.org>

Mailing list Dell.Client.Kernel@dell.com, platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/dell/dell-smbios.*

* DELL SMBIOS SMM DRIVER

Mailing list Dell.Client.Kernel@dell.com, platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/dell/dell-smbios-smm.c

* DELL SMBIOS WMI DRIVER

Mailing list Dell.Client.Kernel@dell.com, platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/dell/dell-smbios-wmi.c   tools/wmi/
    dell-smbios-example.c

* DELL SYSTEMS MANAGEMENT BASE DRIVER (dcdbas)

Mail Stuart Hayes <stuart.w.hayes@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files driver-api/dcdbas `drivers/platform/x86/dell/dcdbas.*`

* DELL WMI DESCRIPTOR DRIVER

Mailing list Dell.Client.Kernel@dell.com

Status Maintained

Files `drivers/platform/x86/dell/dell-wmi-descriptor.c`

* DELL WMI SYSMAN DRIVER

Mail Divya Bharathi <divya.bharathi@dell.com>, Prasanth Ksr <prasanth.ksr@dell.com>

Mailing list Dell.Client.Kernel@dell.com, platform-driver-x86@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/sysfs-class-firmware-attributes `drivers/platform/x86/dell/dell-wmi-sysman/`

* DELL WMI NOTIFICATIONS DRIVER

Mail Matthew Garrett <mjg59@srcf.ucam.org>, Pali Rohár <pali@kernel.org>

Status Maintained

Files `drivers/platform/x86/dell/dell-wmi-base.c`

* DELL WMI HARDWARE PRIVACY SUPPORT

Mail Perry Yuan <Perry.Yuan@dell.com>

Mailing list Dell.Client.Kernel@dell.com, platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/dell/dell-wmi-privacy.c`

* DELTA ST MEDIA DRIVER

Mail Hugues Fruchet <hugues.fruchet@foss.st.com>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/platform/st/sti/delta

* DELTA AHE-50DC FAN CONTROL MODULE DRIVER

Mail Zev Weiss <zev@bewilderbeest.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files drivers/hwmon/pmbus/delta-ahe50dc-fan.c

* DELTA DPS920AB PSU DRIVER

Mail Robert Marko <robert.marko@sartura.hr>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/dps920ab drivers/hwmon/pmbus/dps920ab.c

* DELTA NETWORKS TN48M CPLD DRIVERS

Mail Robert Marko <robert.marko@sartura.hr>

Status Maintained

Files Documentation/devicetree/bindings/gpio/delta,tn48m-gpio.yaml
Documentation/devicetree/bindings/mfd/delta,tn48m-cpld.yaml
Documentation/devicetree/bindings/reset/delta,tn48m-reset.yaml
drivers/gpio/gpio-tn48m.c   include/dt-bindings/reset/delta,
tn48m-reset.h

* DENALI NAND DRIVER

Mailing list linux-mtd@lists.infradead.org

Status Orphan

Files `drivers/mtd/nand/raw/denali*`

* DESIGNWARE EDMA CORE IP DRIVER

Mail Gustavo Pimentel <gustavo.pimentel@synopsys.com>

Mailing list dmaengine@vger.kernel.org

Status Maintained

Files `drivers/dma/dw-edma/ include/linux/dma/edma.h`

* DESIGNWARE XDATA IP DRIVER

Mail Gustavo Pimentel <gustavo.pimentel@synopsys.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files misc-devices/dw-xdata-pcie `drivers/misc/dw-xdata-pcie.c`

* DESIGNWARE USB2 DRD IP DRIVER

Mail Minas Harutyunyan <hminas@synopsys.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/balbi/usb.git

Files `drivers/usb/dwc2/`

* DESIGNWARE USB3 DRD IP DRIVER

Mail Felipe Balbi <balbi@kernel.org>

Mailing list linux-usb@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/balbi/usb.git

Files `drivers/usb/dwc3/`

* DEVANTECH SRF ULTRASONIC RANGER IIO DRIVER

Mail Andreas Klinger <ak@it-klinger.de>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/sysfs-bus-iio-distance-srf08   drivers/ iio/proximity/srf*.c

* DEVICE COREDUMP (DEV_COREDUMP)

Mail Johannes Berg <johannes@sipsolutions.net>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files drivers/base/devcoredump.c include/linux/devcoredump.h

* DEVICE DEPENDENCY HELPER SCRIPT

Mail Saravana Kannan <saravanak@google.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files scripts/dev-needs.sh

* DEVICE DIRECT ACCESS (DAX)

Mail Dan   Williams   <dan.j.williams@intel.com>,   Vishal   Verma <vishal.l.verma@intel.com>, Dave Jiang <dave.jiang@intel.com>

Mailing list nvdimm@lists.linux.dev

Status Supported

Files drivers/dax/

* DEVICE FREQUENCY (DEVFREQ)

Mail MyungJoo Ham <myungjoo.ham@samsung.com>, Kyungmin Park <kyung-min.park@samsung.com>, Chanwoo Choi <cw00.choi@samsung.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/chanwoo/linux.git

Files Documentation/devicetree/bindings/devfreq/   drivers/devfreq/ include/linux/devfreq.h include/trace/events/devfreq.h

* DEVICE FREQUENCY EVENT (DEVFREQ-EVENT)

Mail Chanwoo Choi <cw00.choi@samsung.com>

Mailing list linux-pm@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/chanwoo/linux.git

Files Documentation/devicetree/bindings/devfreq/event/ drivers/devfreq/
devfreq-event.c drivers/devfreq/event/ include/dt-bindings/pmu/
exynos_ppmu.h include/linux/devfreq-event.h

* DEVICE NUMBER REGISTRY

Mail Torben Mathiasen <device@lanana.org>

Status Maintained

Web-page http://lanana.org/docs/device-list/index.html

* DEVICE RESOURCE MANAGEMENT HELPERS

Mail Hans de Goede <hdegoede@redhat.com>

Reviewer Matti Vaittinen <mazziesaccount@gmail.com>

Status Maintained

Files include/linux/devm-helpers.h

* DEVICE-MAPPER (LVM)

Mail Alasdair Kergon <agk@redhat.com>, Mike Snitzer <snitzer@kernel.org>, dm-devel@redhat.com

Mailing list dm-devel@redhat.com

Status Maintained

Web-page http://sources.redhat.com/dm

Patchwork http://patchwork.kernel.org/project/dm-devel/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/device-mapper/linux-dm.git
quilt http://people.redhat.com/agk/patches/linux/editing/

Files Documentation/admin-guide/device-mapper/ drivers/md/Kconfig
drivers/md/Makefile drivers/md/dm* drivers/md/persistent-data/
include/linux/device-mapper.h include/linux/dm-*.h include/uapi/
linux/dm-*.h

* DEVLINK

Mail Jiri Pirko <jiri@nvidia.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files Documentation/networking/devlink include/net/devlink.h include/
uapi/linux/devlink.h net/core/devlink.c

* DH ELECTRONICS IMX6 DHCOM BOARD SUPPORT

Mail Christoph Niedermaier <cniedermaier@dh-electronics.com>

Mailing list kernel@dh-electronics.com

Status Maintained

Files arch/arm/boot/dts/imx6*-dhcom-*

* DH ELECTRONICS STM32MP1 DHCOM/DHCOR BOARD SUPPORT

Mail Marek Vasut <marex@denx.de>

Mailing list kernel@dh-electronics.com

Status Maintained

Files arch/arm/boot/dts/stm32mp1*-dhcom-* arch/arm/boot/dts/
stm32mp1*-dhcor-*

* DIALOG SEMICONDUCTOR DRIVERS

Mail Support Opensource <support.opensource@diasemi.com>

Status Supported

Web-page http://www.dialog-semiconductor.com/products

Files Documentation/devicetree/bindings/input/da90??-onkey.
txt Documentation/devicetree/bindings/input/dlg,da72??.txt
Documentation/devicetree/bindings/mfd/da90*.txt Documentation/
devicetree/bindings/regulator/dlg,da9*.yaml Documentation/
devicetree/bindings/regulator/da92*.txt Documentation/devicetree/
bindings/regulator/slg51000.txt Documentation/devicetree/bindings/
sound/da[79]*.txt Documentation/devicetree/bindings/thermal/da90?
?-thermal.txt Documentation/devicetree/bindings/watchdog/da90??
-wdt.txt Documentation/hwmon/da90??.rst drivers/gpio/gpio-da90??.c
drivers/hwmon/da90??-hwmon.c drivers/iio/adc/da91??-*.c drivers/
input/misc/da72??.[ch] drivers/input/misc/da90??_onkey.c drivers/
input/touchscreen/da9052_tsi.c drivers/leds/leds-da90??.c drivers/
mfd/da903x.c drivers/mfd/da90??-*.c drivers/mfd/da91??-*.c drivers/
pinctrl/pinctrl-da90??.c drivers/power/supply/da9052-battery.c

```
drivers/power/supply/da91??-*.c  drivers/regulator/da9???-regulator.
[ch] drivers/regulator/slg51000-regulator.[ch] drivers/rtc/rtc-da90?
?.c drivers/thermal/da90??-thermal.c  drivers/video/backlight/da90??
_bl.c  drivers/watchdog/da90??_wdt.c  include/dt-bindings/regulator/
dlg,da9*-regulator.h  include/linux/mfd/da903x.h  include/linux/mfd/
da9052/ include/linux/mfd/da9055/ include/linux/mfd/da9062/ include/
linux/mfd/da9063/ include/linux/mfd/da9150/ include/linux/regulator/
da9211.h include/sound/da[79]*.h sound/soc/codecs/da[79]*.[ch]
```

* DIAMOND SYSTEMS GPIO-MM GPIO DRIVER

Mail William Breathitt Gray <vilhelm.gray@gmail.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files drivers/gpio/gpio-gpio-mm.c

* DIOLAN U2C-12 I2C DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files drivers/i2c/busses/i2c-diolan-u2c.c

* DIRECTORY NOTIFICATION (DNOTIFY)

Mail Jan Kara <jack@suse.cz>

Reviewer Amir Goldstein <amir73il@gmail.com>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

Files filesystems/dnotify fs/notify/dnotify/ include/linux/dnotify.h

* DISK GEOMETRY AND PARTITION HANDLING

Mail Andries Brouwer <aeb@cwi.nl>

Status Maintained

Web-page http://www.win.tue.nl/~aeb/linux/Large-Disk.html   http://www.win.tue.
nl/~aeb/linux/zip/zip-1.html   http://www.win.tue.nl/~aeb/partitions/partition_
types-1.html

* DISKQUOTA

Mail Jan Kara <jack@suse.com>

Status Maintained

Files filesystems/quota `fs/quota/ include/linux/quota*.h include/uapi/linux/` `quota*.h`

* DISPLAYLINK USB 2.0 FRAMEBUFFER DRIVER (UDLFB)

Mail Bernie Thompson <bernie@plugable.com>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Web-page http://plugable.com/category/projects/udlfb/

Files fb/udlfb `drivers/video/fbdev/udlfb.c include/video/udlfb.h`

* DISTRIBUTED LOCK MANAGER (DLM)

Mail Christine Caulfield <ccaulfie@redhat.com>, David Teigland <teigland@redhat.com>

Mailing list cluster-devel@redhat.com

Status Supported

Web-page http://sources.redhat.com/cluster/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/teigland/linux-dlm.git

Files `fs/dlm/`

* DMA BUFFER SHARING FRAMEWORK

Mail Sumit Semwal <sumit.semwal@linaro.org>, Christian König <christian.koenig@amd.com>

Mailing list linux-media@vger.kernel.org, dri-devel@lists.freedesktop.org, linaro-mm-sig@lists.linaro.org (moderated for non-subscribers)

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files driver-api/dma-buf `drivers/dma-buf/ include/linux/*fence.h include/` `linux/dma-buf.h include/linux/dma-resv.h`

Content regex `\bdma_(?:buf|fence|resv)\b`

* DMA GENERIC OFFLOAD ENGINE SUBSYSTEM

Mail Vinod Koul <vkoul@kernel.org>

Mailing list dmaengine@vger.kernel.org

Status Maintained

Patchwork https://patchwork.kernel.org/project/linux-dmaengine/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/vkoul/dmaengine.git

Files Documentation/devicetree/bindings/dma/ Documentation/driver-api/
dmaengine/ drivers/dma/ include/linux/dma/ include/linux/dmaengine.h
include/linux/of_dma.h

* DMA MAPPING HELPERS

Mail Christoph Hellwig <hch@lst.de>, Marek Szyprowski
<m.szyprowski@samsung.com>

Reviewer Robin Murphy <robin.murphy@arm.com>

Mailing list iommu@lists.linux.dev

Status Supported

Web-page http://git.infradead.org/users/hch/dma-mapping.git

SCM git git://git.infradead.org/users/hch/dma-mapping.git

Files include/asm-generic/dma-mapping.h include/linux/dma-direct.h
include/linux/dma-mapping.h include/linux/dma-map-ops.h kernel/dma/

* DMA MAPPING BENCHMARK

Mail Xiang Chen <chenxiang66@hisilicon.com>

Mailing list iommu@lists.linux.dev

Files kernel/dma/map_benchmark.c tools/testing/selftests/dma/

* DMA-BUF HEAPS FRAMEWORK

Mail Sumit Semwal <sumit.semwal@linaro.org>

Reviewer Benjamin Gaignard <benjamin.gaignard@collabora.com>, Liam Mark
<lmark@codeaurora.org>, Laura Abbott <labbott@redhat.com>, Brian Starkey
<Brian.Starkey@arm.com>, John Stultz <jstultz@google.com>

Mailing list linux-media@vger.kernel.org, dri-devel@lists.freedesktop.org, linaro-
mm-sig@lists.linaro.org (moderated for non-subscribers)

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files `drivers/dma-buf/dma-heap.c  drivers/dma-buf/heaps/*  include/linux/dma-heap.h include/uapi/linux/dma-heap.h`

* DMC FREQUENCY DRIVER FOR SAMSUNG EXYNOS5422

Mail Lukasz Luba <lukasz.luba@arm.com>

Mailing list linux-pm@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/memory-controllers/samsung, exynos5422-dmc.yaml drivers/memory/samsung/exynos5422-dmc.c`

* DME1737 HARDWARE MONITOR DRIVER

Mail Juerg Haefliger <juergh@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `hwmon/dme1737 drivers/hwmon/dme1737.c`

* DMI/SMBIOS SUPPORT

Mail Jean Delvare <jdelvare@suse.com>

Status Maintained

SCM git   git://git.kernel.org/pub/scm/linux/kernel/git/jdelvare/staging.git   dmi-for-next

Files `Documentation/ABI/testing/sysfs-firmware-dmi-tables        drivers/firmware/dmi-id.c drivers/firmware/dmi_scan.c include/linux/dmi.h`

* DOCUMENTATION

Mail Jonathan Corbet <corbet@lwn.net>

Mailing list linux-doc@vger.kernel.org

Status Maintained

P doc-guide/maintainer-profile

SCM git git://git.lwn.net/linux.git docs-next

Files `Documentation/    scripts/documentation-file-ref-check    scripts/kernel-doc scripts/sphinx-pre-install`

Excluded `Documentation/ABI/              Documentation/admin-guide/media/ Documentation/devicetree/              Documentation/driver-api/media/ Documentation/firmware-guide/acpi/ Documentation/i2c/ Documentation/power/ Documentation/spi/ Documentation/userspace-api/media/`

* DOCUMENTATION REPORTING ISSUES

Mail Thorsten Leemhuis <linux@leemhuis.info>

Mailing list linux-doc@vger.kernel.org

Status Maintained

Files admin-guide/reporting-issues

* DOCUMENTATION SCRIPTS

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-doc@vger.kernel.org

Status Maintained

Files Documentation/sphinx/parse-headers.pl   scripts/
    documentation-file-ref-check scripts/sphinx-pre-install

* DOCUMENTATION/ITALIAN

Mail Federico Vaga <federico.vaga@vaga.pv.it>

Mailing list linux-doc@vger.kernel.org

Status Maintained

Files Documentation/translations/it_IT

* DOCUMENTATION/JAPANESE

Reviewer Akira Yokosawa <akiyks@gmail.com>

Mailing list linux-doc@vger.kernel.org

Status Maintained

Files Documentation/translations/ja_JP

* DONGWOON DW9714 LENS VOICE COIL DRIVER

Mail Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/dongwoon,dw9714.txt
    drivers/media/i2c/dw9714.c

* DONGWOON DW9768 LENS VOICE COIL DRIVER

Mail Dongchun Zhu <dongchun.zhu@mediatek.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/dongwoon,dw9768.yaml
    drivers/media/i2c/dw9768.c

* DONGWOON DW9807 LENS VOICE COIL DRIVER

Mail Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/dongwoon,dw9807-vcm.
    yaml drivers/media/i2c/dw9807-vcm.c

* DOUBLETALK DRIVER

Mail "James R. Van Zandt" <jrv@vanzandt.mv.com>

Mailing list blinux-list@redhat.com

Status Maintained

Files drivers/char/dtlk.c include/linux/dtlk.h

* DPAA2 DATAPATH I/O (DPIO) DRIVER

Mail Roy Pledge <Roy.Pledge@nxp.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files drivers/soc/fsl/dpio

* DPAA2 ETHERNET DRIVER

Mail Ioana Ciornei <ioana.ciornei@nxp.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files networking/device_drivers/ethernet/freescale/dpaa2/ethernet-driver
networking/device_drivers/ethernet/freescale/dpaa2/mac-phy-support drivers/
net/ethernet/freescale/dpaa2/Kconfig drivers/net/ethernet/freescale/
dpaa2/Makefile   drivers/net/ethernet/freescale/dpaa2/dpaa2-eth*
drivers/net/ethernet/freescale/dpaa2/dpaa2-mac*   drivers/net/
ethernet/freescale/dpaa2/dpkg.h   drivers/net/ethernet/freescale/
dpaa2/dpmac* drivers/net/ethernet/freescale/dpaa2/dpni*

* DPAA2 ETHERNET SWITCH DRIVER

Mail Ioana Ciornei <ioana.ciornei@nxp.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files networking/device_drivers/ethernet/freescale/dpaa2/switch-driver drivers/
net/ethernet/freescale/dpaa2/dpaa2-switch*   drivers/net/ethernet/
freescale/dpaa2/dpsw*

* DPT_I2O SCSI RAID DRIVER

Mail Adaptec OEM Raid Solutions <aacraid@microsemi.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Web-page http://www.adaptec.com/

Files drivers/scsi/dpt* drivers/scsi/dpt/

* DRBD DRIVER

Mail Philipp   Reisner   <philipp.reisner@linbit.com>,   Lars   Ellen-
berg   <lars.ellenberg@linbit.com>,   Christoph   Böhmwalder
<christoph.boehmwalder@linbit.com>

Mailing list drbd-dev@lists.linbit.com

Status Supported

Web-page http://www.drbd.org

SCM git git://git.linbit.com/linux-drbd.git git git://git.linbit.com/drbd-8.4.git

Files Documentation/admin-guide/blockdev/   drivers/block/drbd/   lib/
lru_cache.c

* DRIVER COMPONENT FRAMEWORK

Mailing list dri-devel@lists.freedesktop.org

Files `drivers/base/component.c include/linux/component.h`

* DRIVER CORE, KOBJECTS, DEBUGFS AND SYSFS

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Reviewer "Rafael J. Wysocki" <rafael@kernel.org>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/driver-core.git

Files `core-api/kobject drivers/base/ fs/debugfs/ fs/sysfs/ include/linux/` `debugfs.h include/linux/kobj* lib/kobj*`

* DRIVERS FOR OMAP ADAPTIVE VOLTAGE SCALING (AVS)

Mail Nishanth Menon <nm@ti.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files `drivers/soc/ti/smartreflex.c include/linux/power/smartreflex.h`

* DRM DRIVER FOR ALLWINNER DE2 AND DE3 ENGINE

Mail Maxime Ripard <mripard@kernel.org>, Chen-Yu Tsai <wens@csie.org>

Reviewer Jernej Skrabec <jernej.skrabec@gmail.com>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files `drivers/gpu/drm/sun4i/sun8i*`

* DRM DRIVER FOR ARM PL111 CLCD

Mail Emma Anholt <emma@anholt.net>

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files `drivers/gpu/drm/pl111/`

* DRM DRIVER FOR ARM VERSATILE TFT PANELS

Mail Linus Walleij <linus.walleij@linaro.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/panel/arm,
    versatile-tft-panel.yaml drivers/gpu/drm/panel/panel-arm-versatile.c

* DRM DRIVER FOR ASPEED BMC GFX

Mail Joel Stanley <joel@jms.id.au>

Mailing list linux-aspeed@lists.ozlabs.org (moderated for non-subscribers)

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/gpu/aspeed-gfx.txt drivers/gpu/
    drm/aspeed/

* DRM DRIVER FOR AST SERVER GRAPHICS CHIPS

Mail Dave Airlie <airlied@redhat.com>

Reviewer Thomas Zimmermann <tzimmermann@suse.de>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/ast/

* DRM DRIVER FOR BOCHS VIRTUAL GPU

Mail Gerd Hoffmann <kraxel@redhat.com>

Mailing list virtualization@lists.linux-foundation.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/tiny/bochs.c

* DRM DRIVER FOR BOE HIMAX8279D PANELS

Mail Jerry Han <hanxu5@huaqin.corp-partner.google.com>

Status Maintained

Files Documentation/devicetree/bindings/display/panel/boe,himax8279d.
   yaml drivers/gpu/drm/panel/panel-boe-himax8279d.c

* DRM DRIVER FOR CHIPONE ICN6211 MIPI-DSI to RGB CONVERTER BRIDGE

Mail Jagan Teki <jagan@amarulasolutions.com>

Status Maintained

Files Documentation/devicetree/bindings/display/bridge/chipone,icn6211.
   yaml drivers/gpu/drm/bridge/chipone-icn6211.c

* DRM DRIVER FOR FARADAY TVE200 TV ENCODER

Mail Linus Walleij <linus.walleij@linaro.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/tve200/

* DRM DRIVER FOR FEIXIN K101 IM2BA02 MIPI-DSI LCD PANELS

Mail Icenowy Zheng <icenowy@aosc.io>

Status Maintained

Files Documentation/devicetree/bindings/display/panel/feixin,
   k101-im2ba02.yaml drivers/gpu/drm/panel/panel-feixin-k101-im2ba02.c

* DRM DRIVER FOR FEIYANG FY07024DI26A30-D MIPI-DSI LCD PANELS

Mail Jagan Teki <jagan@amarulasolutions.com>

Status Maintained

Files Documentation/devicetree/bindings/display/panel/
   feiyang,fy07024di26a30d.yaml   drivers/gpu/drm/panel/
   panel-feiyang-fy07024di26a30d.c

* DRM DRIVER FOR GENERIC USB DISPLAY

Mail Noralf Trønnes <noralf@tronnes.org>

Status Maintained

Web-page https://github.com/notro/gud/wiki

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/gud/ include/drm/gud.h

* DRM DRIVER FOR GRAIN MEDIA GM12U320 PROJECTORS

Mail Hans de Goede <hdegoede@redhat.com>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/tiny/gm12u320.c

* DRM DRIVER FOR HX8357D PANELS

Mail Emma Anholt <emma@anholt.net>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/himax,hx8357d.txt
    drivers/gpu/drm/tiny/hx8357d.c

* DRM DRIVER FOR ILITEK ILI9225 PANELS

Mail David Lechner <david@lechnology.com>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/ilitek,ili9225.txt
    drivers/gpu/drm/tiny/ili9225.c

* DRM DRIVER FOR ILITEK ILI9486 PANELS

Mail Kamlesh Gurudasani <kamlesh.gurudasani@gmail.com>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/ilitek,ili9486.yaml
    drivers/gpu/drm/tiny/ili9486.c

* DRM DRIVER FOR INTEL I810 VIDEO CARDS

Status Orphan / Obsolete

Files `drivers/gpu/drm/i810/ include/uapi/drm/i810_drm.h`

* DRM DRIVER FOR LVDS PANELS

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list dri-devel@lists.freedesktop.org

SCM git git://anongit.freedesktop.org/drm/drm-misc

Status Maintained

Files `drivers/gpu/drm/panel/panel-lvds.c` Documentation/devicetree/
bindings/display/lvds.yaml Documentation/devicetree/bindings/
display/panel/panel-lvds.yaml

* DRM DRIVER FOR MANTIX MLAF057WE51 PANELS

Mail Guido Günther <agx@sigxcpu.org>

Reviewer Purism Kernel Team <kernel@puri.sm>

Status Maintained

Files `Documentation/devicetree/bindings/display/panel/mantix,
mlaf057we51-x.yaml drivers/gpu/drm/panel/panel-mantix-mlaf057we51.c`

* DRM DRIVER FOR MATROX G200/G400 GRAPHICS CARDS

Status Orphan / Obsolete

Files `drivers/gpu/drm/mga/ include/uapi/drm/mga_drm.h`

* DRM DRIVER FOR MGA G200 GRAPHICS CHIPS

Mail Dave Airlie <airlied@redhat.com>

Reviewer Thomas Zimmermann <tzimmermann@suse.de>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files `drivers/gpu/drm/mgag200/`

* DRM DRIVER FOR MI0283QT

Mail Noralf Trønnes <noralf@tronnes.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/multi-inno,mi0283qt.txt
drivers/gpu/drm/tiny/mi0283qt.c

* DRM DRIVER FOR MIPI DBI compatible panels

Mail Noralf Trønnes <noralf@tronnes.org>

Status Maintained

Web-page https://github.com/notro/panel-mipi-dbi/wiki

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/panel/
panel-mipi-dbi-spi.yaml drivers/gpu/drm/tiny/panel-mipi-dbi.c

* DRM DRIVER FOR MSM ADRENO GPU

Mail Rob Clark <robdclark@gmail.com>, Abhinav Kumar <quic_abhinavk@quicinc.com>, Dmitry Baryshkov <dmitry.baryshkov@linaro.org>

Reviewer Sean Paul <sean@poorly.run>

Mailing list linux-arm-msm@vger.kernel.org, dri-devel@lists.freedesktop.org, freedreno@lists.freedesktop.org

Status Maintained

SCM git https://gitlab.freedesktop.org/drm/msm.git

Files Documentation/devicetree/bindings/display/msm/ drivers/gpu/drm/msm/ include/uapi/drm/msm_drm.h

* DRM DRIVER FOR NOVATEK NT35510 PANELS

Mail Linus Walleij <linus.walleij@linaro.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/panel/novatek,nt35510.
yaml drivers/gpu/drm/panel/panel-novatek-nt35510.c

* DRM DRIVER FOR NOVATEK NT35560 PANELS

Mail Linus Walleij <linus.walleij@linaro.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/panel/sony,acx424akp.
yaml drivers/gpu/drm/panel/panel-novatek-nt35560.c

* DRM DRIVER FOR NOVATEK NT36672A PANELS

Mail Sumit Semwal <sumit.semwal@linaro.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/panel/novatek,nt36672a.
yaml drivers/gpu/drm/panel/panel-novatek-nt36672a.c

* DRM DRIVER FOR NVIDIA GEFORCE/QUADRO GPUS

Mail Ben Skeggs <bskeggs@redhat.com>, Karol Herbst <kherbst@redhat.com>,
Lyude Paul <lyude@redhat.com>

Mailing list dri-devel@lists.freedesktop.org, nouveau@lists.freedesktop.org

Status Supported

Web-page https://nouveau.freedesktop.org/

Patchwork https://patchwork.freedesktop.org/project/nouveau/   https://gitlab.
freedesktop.org/drm/nouveau/-/merge_requests

bugs https://gitlab.freedesktop.org/drm/nouveau/-/issues

chat irc://irc.oftc.net/nouveau

SCM git https://gitlab.freedesktop.org/drm/nouveau.git

Files drivers/gpu/drm/nouveau/ include/uapi/drm/nouveau_drm.h

* DRM DRIVER FOR OLIMEX LCD-OLINUXINO PANELS

Mail Stefan Mavrodiev <stefan@olimex.com>

Status Maintained

Files Documentation/devicetree/bindings/display/panel/olimex,
lcd-olinuxino.yaml drivers/gpu/drm/panel/panel-olimex-lcd-olinuxino.
c

* DRM DRIVER FOR PARADE PS8640 BRIDGE CHIP

Reviewer Douglas Anderson <dianders@chromium.org>

Files Documentation/devicetree/bindings/display/bridge/ps8640.yaml
   drivers/gpu/drm/bridge/parade-ps8640.c

* DRM DRIVER FOR PERVASIVE DISPLAYS REPAPER PANELS

Mail Noralf Trønnes <noralf@tronnes.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/repaper.txt drivers/gpu/
   drm/tiny/repaper.c

* DRM DRIVER FOR SOLOMON SSD130X OLED DISPLAYS

Mail Javier Martinez Canillas <javierm@redhat.com>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/solomon,ssd1307fb.yaml
   drivers/gpu/drm/solomon/ssd130x*

* DRM DRIVER FOR QEMU'S CIRRUS DEVICE

Mail Dave Airlie <airlied@redhat.com>, Gerd Hoffmann <kraxel@redhat.com>

Mailing list virtualization@lists.linux-foundation.org

Status Obsolete

Web-page https://www.kraxel.org/blog/2014/10/qemu-using-cirrus-considered-harmful/

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/tiny/cirrus.c

* DRM DRIVER FOR QXL VIRTUAL GPU

Mail Dave Airlie <airlied@redhat.com>, Gerd Hoffmann <kraxel@redhat.com>

Mailing list virtualization@lists.linux-foundation.org,   spice-
   devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/qxl/ include/uapi/drm/qxl_drm.h

* DRM DRIVER FOR RAGE 128 VIDEO CARDS

Status Orphan / Obsolete

Files `drivers/gpu/drm/r128/ include/uapi/drm/r128_drm.h`

* DRM DRIVER FOR RAYDIUM RM67191 PANELS

Mail Robert Chiras <robert.chiras@nxp.com>

Status Maintained

Files `Documentation/devicetree/bindings/display/panel/raydium,rm67191.`
`yaml drivers/gpu/drm/panel/panel-raydium-rm67191.c`

* DRM DRIVER FOR SAMSUNG DB7430 PANELS

Mail Linus Walleij <linus.walleij@linaro.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files `Documentation/devicetree/bindings/display/panel/samsung,`
`lms397kf04.yaml drivers/gpu/drm/panel/panel-samsung-db7430.c`

* DRM DRIVER FOR SAMSUNG S6D27A1 PANELS

Mail Markuss Broks <markuss.broks@gmail.com>

Status Maintained

Files `Documentation/devicetree/bindings/display/panel/samsung,s6d27a1.`
`yaml drivers/gpu/drm/panel/panel-samsung-s6d27a1.c`

* DRM DRIVER FOR SITRONIX ST7703 PANELS

Mail Guido Günther <agx@sigxcpu.org>

Reviewer Purism Kernel Team <kernel@puri.sm>, Ondrej Jirman
<megous@megous.com>

Status Maintained

Files `Documentation/devicetree/bindings/display/panel/rocktech,`
`jh057n00900.yaml drivers/gpu/drm/panel/panel-sitronix-st7703.c`

* DRM DRIVER FOR SAVAGE VIDEO CARDS

Status Orphan / Obsolete

Files drivers/gpu/drm/savage/ include/uapi/drm/savage_drm.h

* DRM DRIVER FOR SIMPLE FRAMEBUFFERS

Mail Thomas Zimmermann <tzimmermann@suse.de>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/tiny/simpledrm.c

* DRM DRIVER FOR SIS VIDEO CARDS

Status Orphan / Obsolete

Files drivers/gpu/drm/sis/ include/uapi/drm/sis_drm.h

* DRM DRIVER FOR SITRONIX ST7586 PANELS

Mail David Lechner <david@lechnology.com>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/sitronix,st7586.txt
    drivers/gpu/drm/tiny/st7586.c

* DRM DRIVER FOR SITRONIX ST7701 PANELS

Mail Jagan Teki <jagan@amarulasolutions.com>

Status Maintained

Files Documentation/devicetree/bindings/display/panel/sitronix,st7701.
    yaml drivers/gpu/drm/panel/panel-sitronix-st7701.c

* DRM DRIVER FOR SITRONIX ST7735R PANELS

Mail David Lechner <david@lechnology.com>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/sitronix,st7735r.yaml
    drivers/gpu/drm/tiny/st7735r.c

* DRM DRIVER FOR ST-ERICSSON MCDE

Mail Linus Walleij <linus.walleij@linaro.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/ste,mcde.yaml drivers/
  gpu/drm/mcde/

* DRM DRIVER FOR TDFX VIDEO CARDS

Status Orphan / Obsolete

Files drivers/gpu/drm/tdfx/

* DRM DRIVER FOR TI SN65DSI86 BRIDGE CHIP

Reviewer Douglas Anderson <dianders@chromium.org>

Files Documentation/devicetree/bindings/display/bridge/ti,sn65dsi86.yaml
  drivers/gpu/drm/bridge/ti-sn65dsi86.c

* DRM DRIVER FOR TPO TPG110 PANELS

Mail Linus Walleij <linus.walleij@linaro.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/panel/tpo,tpg110.yaml
  drivers/gpu/drm/panel/panel-tpo-tpg110.c

* DRM DRIVER FOR USB DISPLAYLINK VIDEO ADAPTERS

Mail Dave Airlie <airlied@redhat.com>

Reviewer Sean Paul <sean@poorly.run>, Thomas Zimmermann <tzimmer-
  mann@suse.de>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/udl/

* DRM DRIVER FOR VIRTUAL KERNEL MODESETTING (VKMS)

Mail Rodrigo Siqueira <rodrigosiqueiramelo@gmail.com>, Melissa Wen <melissa.srw@gmail.com>

Reviewer Haneen Mohammed <hamohammed.sa@gmail.com>, Daniel Vetter <daniel@ffwll.ch>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files gpu/vkms drivers/gpu/drm/vkms/

* DRM DRIVER FOR VIRTUALBOX VIRTUAL GPU

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/vboxvideo/

* DRM DRIVER FOR VMWARE VIRTUAL GPU

Mail Zack Rusin <zackr@vmware.com>

Reviewer VMware Graphics Reviewers <linux-graphics-maintainer@vmware.com>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/vmwgfx/ include/uapi/drm/vmwgfx_drm.h

* DRM DRIVER FOR WIDECHIPS WS2401 PANELS

Mail Linus Walleij <linus.walleij@linaro.org>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/panel/samsung, lms380kf01.yaml drivers/gpu/drm/panel/panel-widechips-ws2401.c

* DRM DRIVERS

Mail David Airlie <airlied@linux.ie>, Daniel Vetter <daniel@ffwll.ch>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

bugs https://gitlab.freedesktop.org/drm

chat irc://irc.oftc.net/dri-devel

SCM git git://anongit.freedesktop.org/drm/drm

Files Documentation/devicetree/bindings/display/ Documentation/
devicetree/bindings/gpu/ Documentation/gpu/ drivers/gpu/ include/drm/
include/linux/vga* include/uapi/drm/

* DRM DRIVERS AND MISC GPU PATCHES

Mail Maarten Lankhorst <maarten.lankhorst@linux.intel.com>, Maxime Ripard
<mripard@kernel.org>, Thomas Zimmermann <tzimmermann@suse.de>

Status Maintained

Web-page https://01.org/linuxgraphics/gfx-docs/maintainer-tools/drm-misc.html

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/gpu/ drivers/gpu/drm/* drivers/gpu/vga/ include/drm/
drm* include/linux/vga* include/uapi/drm/drm*

* DRM DRIVERS FOR ALLWINNER A10

Mail Maxime Ripard <mripard@kernel.org>, Chen-Yu Tsai <wens@csie.org>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/allwinner* drivers/gpu/
drm/sun4i/

* DRM DRIVERS FOR AMLOGIC SOCS

Mail Neil Armstrong <narmstrong@baylibre.com>

Mailing list dri-devel@lists.freedesktop.org, linux-amlogic@lists.infradead.org

Status Supported

Web-page http://linux-meson.com/

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/amlogic,meson-dw-hdmi.
yaml Documentation/devicetree/bindings/display/amlogic,meson-vpu.
yaml gpu/meson drivers/gpu/drm/meson/

* DRM DRIVERS FOR ATMEL HLCDC

Mail Sam Ravnborg <sam@ravnborg.org>, Boris Brezillon <bbrezillon@kernel.org>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/atmel/ drivers/gpu/drm/
atmel-hlcdc/

* DRM DRIVERS FOR BRIDGE CHIPS

Mail Andrzej Hajda <andrzej.hajda@intel.com>, Neil Armstrong <narmstrong@baylibre.com>, Robert Foss <robert.foss@linaro.org>

Reviewer Laurent Pinchart <Laurent.pinchart@ideasonboard.com>, Jonas Karlman <jonas@kwiboo.se>, Jernej Skrabec <jernej.skrabec@gmail.com>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/bridge/ drivers/gpu/drm/
bridge/

* DRM DRIVERS FOR EXYNOS

Mail Inki Dae <inki.dae@samsung.com>, Joonyoung Shim <jy0922.shim@samsung.com>, Seung-Woo Kim <sw0312.kim@samsung.com>, Kyungmin Park <kyungmin.park@samsung.com>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/daeinki/drm-exynos.git

Files Documentation/devicetree/bindings/display/exynos/ Documentation/
devicetree/bindings/display/samsung/ drivers/gpu/drm/exynos/ include/
uapi/drm/exynos_drm.h

* DRM DRIVERS FOR FREESCALE DCU

Mail Stefan Agner <stefan@agner.ch>, Alison Wang <alison.wang@nxp.com>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files `Documentation/devicetree/bindings/display/fsl,dcu.txt`
`Documentation/devicetree/bindings/display/fsl,tcon.txt drivers/gpu/`
`drm/fsl-dcu/`

* DRM DRIVERS FOR FREESCALE IMX

Mail Philipp Zabel <p.zabel@pengutronix.de>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

Files `Documentation/devicetree/bindings/display/imx/ drivers/gpu/drm/`
`imx/ drivers/gpu/ipu-v3/`

* DRM DRIVERS FOR GMA500 (Poulsbo, Moorestown and derivative chipsets)

Mail Patrik Jakobsson <patrik.r.jakobsson@gmail.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://github.com/patjak/drm-gma500

Files `drivers/gpu/drm/gma500/`

* DRM DRIVERS FOR HISILICON

Mail Xinliang Liu <xinliang.liu@linaro.org>, Tian Tao <tiantao6@hisilicon.com>

Reviewer John Stultz <jstultz@google.com>, Xinwei Kong <kong.kongxinwei@hisilicon.com>, Chen Feng <puck.chen@hisilicon.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files `Documentation/devicetree/bindings/display/hisilicon/ drivers/gpu/`
`drm/hisilicon/`

* DRM DRIVER FOR HYPERV SYNTHETIC VIDEO DEVICE

Mail Deepak Rawat <drawat.floss@gmail.com>

Mailing list linux-hyperv@vger.kernel.org, dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/hyperv

* DRM DRIVERS FOR LIMA

Mail Qiang Yu <yuq825@gmail.com>

Mailing list dri-devel@lists.freedesktop.org, lima@lists.freedesktop.org (moderated for non-subscribers)

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/lima/ include/uapi/drm/lima_drm.h

* DRM DRIVERS FOR MEDIATEK

Mail Chun-Kuang Hu <chunkuang.hu@kernel.org>, Philipp Zabel <p.zabel@pengutronix.de>

Mailing list dri-devel@lists.freedesktop.org, linux-mediatek@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files Documentation/devicetree/bindings/display/mediatek/ drivers/gpu/drm/mediatek/ drivers/phy/mediatek/phy-mtk-hdmi* drivers/phy/mediatek/phy-mtk-mipi*

* DRM DRIVERS FOR NVIDIA TEGRA

Mail Thierry Reding <thierry.reding@gmail.com>

Mailing list dri-devel@lists.freedesktop.org, linux-tegra@vger.kernel.org

Status Supported

SCM git git://anongit.freedesktop.org/tegra/linux.git

Files Documentation/devicetree/bindings/display/tegra/nvidia, tegra20-host1x.txt Documentation/devicetree/bindings/gpu/host1x/ drivers/gpu/drm/tegra/ drivers/gpu/host1x/ include/linux/host1x.h include/uapi/drm/tegra_drm.h

* DRM DRIVERS FOR RENESAS

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>, Kieran Bingham <kieran.bingham+renesas@ideasonboard.com>

Mailing list dri-devel@lists.freedesktop.org, linux-renesas-soc@vger.kernel.org

Status Supported

SCM git git://linuxtv.org/pinchartl/media drm/du/next

Files Documentation/devicetree/bindings/display/bridge/renesas,
dsi-csi2-tx.yaml Documentation/devicetree/bindings/display/bridge/
renesas,dw-hdmi.yaml Documentation/devicetree/bindings/display/
bridge/renesas,lvds.yaml Documentation/devicetree/bindings/display/
renesas,du.yaml drivers/gpu/drm/rcar-du/ drivers/gpu/drm/shmobile/
include/linux/platform_data/shmob_drm.h

* DRM DRIVERS FOR ROCKCHIP

Mail Sandy Huang <hjc@rock-chips.com>, Heiko Stübner <heiko@sntech.de>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/rockchip/ drivers/gpu/
drm/rockchip/

* DRM DRIVERS FOR STI

Mail Alain Volmat <alain.volmat@foss.st.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/st,stih4xx.txt drivers/
gpu/drm/sti

* DRM DRIVERS FOR STM

Mail Yannick Fertre <yannick.fertre@foss.st.com>, Raphael Gallais-Pou <raphael.gallais-pou@foss.st.com>, Philippe Cornu <philippe.cornu@foss.st.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/st,stm32-ltdc.yaml
drivers/gpu/drm/stm

* DRM DRIVERS FOR TI KEYSTONE

Mail Jyri Sarha <jyri.sarha@iki.fi>, Tomi Valkeinen <tomba@kernel.org>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/ti/ti,am65x-dss.yaml
Documentation/devicetree/bindings/display/ti/ti,j721e-dss.yaml
Documentation/devicetree/bindings/display/ti/ti,k2g-dss.yaml
drivers/gpu/drm/tidss/

* DRM DRIVERS FOR TI LCDC

Mail Jyri Sarha <jyri.sarha@iki.fi>

Reviewer Tomi Valkeinen <tomba@kernel.org>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

Files Documentation/devicetree/bindings/display/tilcdc/ drivers/gpu/drm/
tilcdc/

* DRM DRIVERS FOR TI OMAP

Mail Tomi Valkeinen <tomba@kernel.org>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

Files Documentation/devicetree/bindings/display/ti/ drivers/gpu/drm/
omapdrm/

* DRM DRIVERS FOR V3D

Mail Emma Anholt <emma@anholt.net>

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/gpu/brcm,bcm-v3d.yaml drivers/
gpu/drm/v3d/ include/uapi/drm/v3d_drm.h

* DRM DRIVERS FOR VC4

Mail Emma Anholt <emma@anholt.net>, Maxime Ripard <mripard@kernel.org>

Status Supported

SCM git git://github.com/anholt/linux git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/brcm,bcm2835-*.yaml drivers/gpu/drm/vc4/ include/uapi/drm/vc4_drm.h

* DRM DRIVERS FOR VIVANTE GPU IP

Mail Lucas Stach <l.stach@pengutronix.de>

Reviewer Russell King <linux+etnaviv@armlinux.org.uk>, Christian Gmeiner <christian.gmeiner@gmail.com>

Mailing list etnaviv@lists.freedesktop.org (moderated for non-subscribers), dri-devel@lists.freedesktop.org

Status Maintained

Files Documentation/devicetree/bindings/gpu/vivante,gc.yaml drivers/gpu/drm/etnaviv/ include/uapi/drm/etnaviv_drm.h

* DRM DRIVERS FOR XEN

Mail Oleksandr Andrushchenko <oleksandr_andrushchenko@epam.com>

Mailing list dri-devel@lists.freedesktop.org, xen-devel@lists.xenproject.org (moderated for non-subscribers)

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files gpu/xen-front drivers/gpu/drm/xen/

* DRM DRIVERS FOR XILINX

Mail Hyun Kwon <hyun.kwon@xilinx.com>, Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/xlnx/ drivers/gpu/drm/xlnx/

* DRM PANEL DRIVERS

Mail Thierry Reding <thierry.reding@gmail.com>

Reviewer Sam Ravnborg <sam@ravnborg.org>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/panel/ drivers/gpu/drm/ drm_panel.c drivers/gpu/drm/panel/ include/drm/drm_panel.h

* DRM PRIVACY-SCREEN CLASS

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/drm_privacy_screen* include/drm/ drm_privacy_screen*

* DRM TTM SUBSYSTEM

Mail Christian Koenig <christian.koenig@amd.com>, Huang Rui <ray.huang@amd.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/ttm/ include/drm/ttm/

* DRM GPU SCHEDULER

Mail Andrey Grodzovsky <andrey.grodzovsky@amd.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/gpu/drm/scheduler/ include/drm/gpu_scheduler.h

* DSBR100 USB FM RADIO DRIVER

Mail Alexey Klimov <klimov.linux@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/radio/dsbr100.c

* DT3155 MEDIA DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/pci/dt3155/

* DVB_USB_AF9015 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/usb/dvb-usb-v2/af9015*

* DVB_USB_AF9035 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/usb/dvb-usb-v2/af9035*

* DVB_USB_ANYSEE MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/usb/dvb-usb-v2/anysee*

* DVB_USB_AU6610 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/usb/dvb-usb-v2/au6610*

* DVB_USB_CE6230 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/usb/dvb-usb-v2/ce6230*

* DVB_USB_CXUSB MEDIA DRIVER

Mail Michael Krufky <mkrufky@linuxtv.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://github.com/mkrufky

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/usb/dvb-usb/cxusb*`

* DVB_USB_EC168 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/usb/dvb-usb-v2/ec168*`

* DVB_USB_GL861 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/usb/dvb-usb-v2/gl861*`

* DVB_USB_MXL111SF MEDIA DRIVER

Mail Michael Krufky <mkrufky@linuxtv.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://github.com/mkrufky

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/mkrufky/mxl111sf.git

Files `drivers/media/usb/dvb-usb-v2/mxl111sf*`

* DVB_USB_RTL28XXU MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/usb/dvb-usb-v2/rtl28xxu*

* DVB_USB_V2 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/usb/dvb-usb-v2/dvb_usb*   drivers/media/usb/
dvb-usb-v2/usb_urb.c

* DYNAMIC DEBUG

Mail Jason Baron <jbaron@akamai.com>

Status Maintained

Files include/linux/dynamic_debug.h lib/dynamic_debug.c

* DYNAMIC INTERRUPT MODERATION

Mail Tal Gilboa <talgi@nvidia.com>

Status Maintained

Files networking/net_dim include/linux/dim.h lib/dim/

* DZ DECSTATION DZ11 SERIAL DRIVER

Mail "Maciej W. Rozycki" <macro@orcam.me.uk>

Status Maintained

Files drivers/tty/serial/dz.*

* E3X0 POWER BUTTON DRIVER

Mail Moritz Fischer <moritz.fischer@ettus.com>

Mailing list usrp-users@lists.ettus.com

Status Supported

Web-page http://www.ettus.com

Files Documentation/devicetree/bindings/input/e3x0-button.txt   drivers/
    input/misc/e3x0-button.c

* E4000 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/tuners/e4000*

* EARTH_PT1 MEDIA DRIVER

Mail Akihiro Tsukada <tskd08@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Files drivers/media/pci/pt1/

* EARTH_PT3 MEDIA DRIVER

Mail Akihiro Tsukada <tskd08@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Files `drivers/media/pci/pt3/`

* EC100 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/dvb-frontends/ec100*`

* ECRYPT FILE SYSTEM

Mail Tyler Hicks <code@tyhicks.com>

Mailing list ecryptfs@vger.kernel.org

Status Odd Fixes

Web-page http://ecryptfs.org https://launchpad.net/ecryptfs

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tyhicks/ecryptfs.git

Files filesystems/ecryptfs `fs/ecryptfs/`

* EDAC-AMD64

Mail Yazen Ghannam <yazen.ghannam@amd.com>

Mailing list linux-edac@vger.kernel.org

Status Supported

Files `drivers/edac/amd64_edac* drivers/edac/mce_amd*`

* EDAC-ARMADA

Mail Jan Luebbe <jlu@pengutronix.de>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/memory-controllers/marvell,
    mvebu-sdram-controller.yaml drivers/edac/armada_xp_*

* EDAC-AST2500

Mail Stefan Schaeckeler <sschaeck@cisco.com>

Status Supported

Files Documentation/devicetree/bindings/edac/aspeed-sdram-edac.txt
    drivers/edac/aspeed_edac.c

* EDAC-BLUEFIELD

Mail Shravan Kumar Ramani <shravankr@nvidia.com>

Status Supported

Files drivers/edac/bluefield_edac.c

* EDAC-CALXEDA

Mail Andre Przywara <andre.przywara@arm.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/highbank*

* EDAC-CAVIUM OCTEON

Mail Ralf Baechle <ralf@linux-mips.org>

Mailing list linux-edac@vger.kernel.org, linux-mips@vger.kernel.org

Status Supported

Files drivers/edac/octeon_edac*

* EDAC-CAVIUM THUNDERX

Mail Robert Richter <rric@kernel.org>

Mailing list linux-edac@vger.kernel.org

Status Odd Fixes

Files `drivers/edac/thunderx_edac*`

* EDAC-CORE

Mail Borislav Petkov <bp@alien8.de>, Mauro Carvalho Chehab <mchehab@kernel.org>, Tony Luck <tony.luck@intel.com>

Reviewer James Morse <james.morse@arm.com>, Robert Richter <rric@kernel.org>

Mailing list linux-edac@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/ras/ras.git edac-for-next

Files admin-guide/ras driver-api/edac `drivers/edac/` `include/linux/edac.h`

* EDAC-DMC520

Mail Lei Wang <lewan@microsoft.com>

Mailing list linux-edac@vger.kernel.org

Status Supported

Files `drivers/edac/dmc520_edac.c`

* EDAC-E752X

Mail Mark Gross <markgross@kernel.org>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files `drivers/edac/e752x_edac.c`

* EDAC-E7XXX

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files `drivers/edac/e7xxx_edac.c`

* EDAC-FSL_DDR

Mail York Sun <york.sun@nxp.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/fsl_ddr_edac.*

* EDAC-GHES

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/ghes_edac.c

* EDAC-I10NM

Mail Tony Luck <tony.luck@intel.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/i10nm_base.c

* EDAC-I3000

Mailing list linux-edac@vger.kernel.org

Status Orphan

Files drivers/edac/i3000_edac.c

* EDAC-I5000

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/i5000_edac.c

* EDAC-I5400

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/i5400_edac.c

* EDAC-I7300

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/i7300_edac.c

* EDAC-I7CORE

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/i7core_edac.c

* EDAC-I82443BXGX

Mail Tim Small <tim@buttersideup.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/i82443bxgx_edac.c

* EDAC-I82975X

Mail "Arvind R." <arvino55@gmail.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/i82975x_edac.c

* EDAC-IE31200

Mail Jason Baron <jbaron@akamai.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/ie31200_edac.c

* EDAC-IGEN6

Mail Tony Luck <tony.luck@intel.com>

Reviewer Qiuxu Zhuo <qiuxu.zhuo@intel.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/igen6_edac.c

* EDAC-MPC85XX

Mail Johannes Thumshirn <morbidrsa@gmail.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/mpc85xx_edac.[ch]

* EDAC-PASEMI

Mail Egor Martovetsky <egor@pasemi.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/pasemi_edac.c

* EDAC-PND2

Mail Tony Luck <tony.luck@intel.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/pnd2_edac.[ch]

* EDAC-QCOM

Mail Channagoud Kadabi <ckadabi@codeaurora.org>, Venkata Narendra Kumar Gutta <vnkgutta@codeaurora.org>

Mailing list linux-arm-msm@vger.kernel.org, linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/qcom_edac.c

* EDAC-R82600

Mail Tim Small <tim@buttersideup.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/r82600_edac.c

* EDAC-SBRIDGE

Mail Tony Luck <tony.luck@intel.com>

Reviewer Qiuxu Zhuo <qiuxu.zhuo@intel.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/sb_edac.c

* EDAC-SKYLAKE

Mail Tony Luck <tony.luck@intel.com>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files drivers/edac/skx_*.[ch]

* EDAC-TI

Mail Tero Kristo <kristo@kernel.org>

Mailing list linux-edac@vger.kernel.org

Status Odd Fixes

Files drivers/edac/ti_edac.c

* EDIROL UA-101/UA-1000 DRIVER

Mail Clemens Ladisch <clemens@ladisch.de>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tiwai/sound.git

Files `sound/usb/misc/ua101.c`

* EFI TEST DRIVER

Mail Ivan Hu <ivan.hu@canonical.com>, Ard Biesheuvel <ardb@kernel.org>

Mailing list linux-efi@vger.kernel.org

Status Maintained

Files `drivers/firmware/efi/test/`

* EFI VARIABLE FILESYSTEM

Mail Matthew Garrett <matthew.garrett@nebula.com>, Jeremy Kerr <jk@ozlabs.org>, Ard Biesheuvel <ardb@kernel.org>

Mailing list linux-efi@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/efi/efi.git

Files `fs/efivarfs/`

* EFIFB FRAMEBUFFER DRIVER

Mail Peter Jones <pjones@redhat.com>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files `drivers/video/fbdev/efifb.c`

* EFS FILESYSTEM

Status Orphan

Web-page http://aeschi.ch.eu.org/efs/

Files `fs/efs/`

* EHEA (IBM pSeries eHEA 10Gb ethernet adapter) DRIVER

Mail Douglas Miller <dougmill@linux.ibm.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/ibm/ehea/

* EM28XX VIDEO4LINUX DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files Documentation/admin-guide/media/em28xx* drivers/media/usb/em28xx/

* EMBEDDED LINUX

Mail Matt Mackall <mpm@selenic.com>, David Woodhouse <dwmw2@infradead.org>

Mailing list linux-embedded@vger.kernel.org

Status Maintained

* EMMC CMDQ HOST CONTROLLER INTERFACE (CQHCI) DRIVER

Mail Adrian Hunter <adrian.hunter@intel.com>, Ritesh Harjani <riteshh@codeaurora.org>, Asutosh Das <asutoshd@codeaurora.org>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

Files drivers/mmc/host/cqhci*

* EMULEX 10Gbps iSCSI - OneConnect DRIVER

Mail Ketan Mukadam <ketan.mukadam@broadcom.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Web-page http://www.broadcom.com

Files drivers/scsi/be2iscsi/

* EMULEX 10Gbps NIC BE2, BE3-R, Lancer, Skyhawk-R DRIVER (be2net)

Mail Ajit Khaparde <ajit.khaparde@broadcom.com>, Sriharsha Basavapatna <sriharsha.basavapatna@broadcom.com>, Somnath Kotur <somnath.kotur@broadcom.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.emulex.com

Files drivers/net/ethernet/emulex/benet/

* EMULEX ONECONNECT ROCE DRIVER

Mail Selvin Xavier <selvin.xavier@broadcom.com>

Mailing list linux-rdma@vger.kernel.org

Status Odd Fixes

Web-page http://www.broadcom.com

Files drivers/infiniband/hw/ocrdma/ include/uapi/rdma/ocrdma-abi.h

* EMULEX/BROADCOM LPFC FC/FCOE SCSI DRIVER

Mail James Smart <james.smart@broadcom.com>, Dick Kennedy <dick.kennedy@broadcom.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Web-page http://www.broadcom.com

Files drivers/scsi/lpfc/

* EMULEX/BROADCOM EFCT FC/FCOE SCSI TARGET DRIVER

Mail James Smart <james.smart@broadcom.com>, Ram Vegesna <ram.vegesna@broadcom.com>

Mailing list linux-scsi@vger.kernel.org, target-devel@vger.kernel.org

Status Supported

Web-page http://www.broadcom.com

Files drivers/scsi/elx/

* ENE CB710 FLASH CARD READER DRIVER

Mail Michał Mirosław <mirq-linux@rere.qmqm.pl>

Status Maintained

Files drivers/misc/cb710/ drivers/mmc/host/cb710-mmc.* include/linux/
cb710.h

* ENE KB2426 (ENE0100/ENE020XX) INFRARED RECEIVER

Mail Maxim Levitsky <maximlevitsky@gmail.com>

Status Maintained

Files drivers/media/rc/ene_ir.*

* EPAPR HYPERVISOR BYTE CHANNEL DEVICE DRIVER

Mail Laurentiu Tudor <laurentiu.tudor@nxp.com>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Maintained

Files drivers/tty/ehv_bytechan.c

* EPSON S1D13XXX FRAMEBUFFER DRIVER

Mail Kristoffer Ericson <kristoffer.ericson@gmail.com>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kristoffer/linux-hpc.git

Files drivers/video/fbdev/s1d13xxxfb.c include/video/s1d13xxxfb.h

* EROFS FILE SYSTEM

Mail Gao Xiang <xiang@kernel.org>, Chao Yu <chao@kernel.org>

Mailing list linux-erofs@lists.ozlabs.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/xiang/erofs.git

Files filesystems/erofs fs/erofs/ include/trace/events/erofs.h

* ERRSEQ ERROR TRACKING INFRASTRUCTURE

Mail Jeff Layton <jlayton@kernel.org>

Status Maintained

Files `include/linux/errseq.h lib/errseq.c`

* ET131X NETWORK DRIVER

Mail Mark Einon <mark.einon@gmail.com>

Status Odd Fixes

Files `drivers/net/ethernet/agere/`

* ETAS ES58X CAN/USB DRIVER

Mail Vincent Mailhol <mailhol.vincent@wanadoo.fr>

Mailing list linux-can@vger.kernel.org

Status Maintained

Files `drivers/net/can/usb/etas_es58x/`

* ETHERNET BRIDGE

Mail Roopa Prabhu <roopa@nvidia.com>, Nikolay Aleksandrov <razor@blackwall.org>

Mailing list bridge@lists.linux-foundation.org (moderated for non-subscribers), netdev@vger.kernel.org

Status Maintained

Web-page http://www.linuxfoundation.org/en/Net:Bridge

Files `include/linux/netfilter_bridge/ net/bridge/`

* ETHERNET PHY LIBRARY

Mail Andrew Lunn <andrew@lunn.ch>, Heiner Kallweit <hkallweit1@gmail.com>

Reviewer Russell King <linux@armlinux.org.uk>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `Documentation/ABI/testing/sysfs-class-net-phydev Documentation/devicetree/bindings/net/ethernet-phy.yaml Documentation/devicetree/bindings/net/mdio* Documentation/devicetree/bindings/net/qca,ar803x.yaml networking/phy drivers/net/mdio/ drivers/net/mdio/acpi_mdio.c drivers/net/mdio/fwnode_mdio.c drivers/net/mdio/of_mdio.c drivers/net/pcs/ drivers/net/phy/ include/dt-bindings/net/qca-ar803x.h`

```
include/linux/linkmode.h      include/linux/*mdio*.h      include/linux/
mdio/*.h include/linux/mii.h include/linux/of_net.h include/linux/
phy.h      include/linux/phy_fixed.h      include/linux/platform_data/
mdio-bcm-unimac.h   include/linux/platform_data/mdio-gpio.h   include/
trace/events/mdio.h   include/uapi/linux/mdio.h   include/uapi/linux/
mii.h net/core/of_net.c
```

* EXEC & BINFMT API

Reviewer Eric Biederman <ebiederm@xmission.com>, Kees Cook <keescook@chromium.org>

Mailing list linux-mm@kvack.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git for-next/execve

Files arch/alpha/kernel/binfmt_loader.c fs/*binfmt_*.c fs/exec.c include/ linux/binfmts.h include/linux/elf.h include/uapi/linux/binfmts.h include/uapi/linux/elf.h tools/testing/selftests/exec/

Regex asm/elf.h binfmt

* EXFAT FILE SYSTEM

Mail Namjae Jeon <linkinjeon@kernel.org>, Sungjong Seo <sj1557.seo@samsung.com>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

Files fs/exfat/

* EXT2 FILE SYSTEM

Mail Jan Kara <jack@suse.com>

Mailing list linux-ext4@vger.kernel.org

Status Maintained

Files filesystems/ext2 fs/ext2/ include/linux/ext2*

* EXT4 FILE SYSTEM

Mail "Theodore Ts'o" <tytso@mit.edu>, Andreas Dilger <adilger.kernel@dilger.ca>

Mailing list linux-ext4@vger.kernel.org

Status Maintained

Web-page http://ext4.wiki.kernel.org

Patchwork http://patchwork.ozlabs.org/project/linux-ext4/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tytso/ext4.git

Files Documentation/filesystems/ext4/ fs/ext4/ include/trace/events/ext4.
    h

* Extended Verification Module (EVM)

Mail Mimi Zohar <zohar@linux.ibm.com>

Mailing list linux-integrity@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/zohar/linux-integrity.git

Files security/integrity/evm/ security/integrity/

* EXTENSIBLE FIRMWARE INTERFACE (EFI)

Mail Ard Biesheuvel <ardb@kernel.org>

Mailing list linux-efi@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/efi/efi.git

Files admin-guide/efi-stub   arch/*/include/asm/efi.h   arch/*/kernel/efi.c
    arch/arm/boot/compressed/efi-header.S arch/arm64/kernel/efi-entry.S
    arch/x86/platform/efi/ drivers/firmware/efi/ include/linux/efi*.h

* EXTERNAL CONNECTOR SUBSYSTEM (EXTCON)

Mail MyungJoo   Ham   <myungjoo.ham@samsung.com>,   Chanwoo   Choi
    <cw00.choi@samsung.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/chanwoo/extcon.git

Files Documentation/devicetree/bindings/extcon/ firmware-guide/acpi/extcon-
    intel-int3496   drivers/extcon/   include/linux/extcon.h   include/linux/
    extcon/

* EXTRA BOOT CONFIG

Mail Masami Hiramatsu <mhiramat@kernel.org>

Status Maintained

Files admin-guide/bootconfig fs/proc/bootconfig.c include/linux/bootconfig.h lib/bootconfig-data.S lib/bootconfig.c tools/bootconfig/* tools/bootconfig/scripts/*

* EXYNOS DP DRIVER

Mail Jingoo Han <jingoohan1@gmail.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

Files drivers/gpu/drm/exynos/exynos_dp*

* EXYNOS SYSMMU (IOMMU) driver

Mail Marek Szyprowski <m.szyprowski@samsung.com>

Mailing list iommu@lists.linux.dev

Status Maintained

Files drivers/iommu/exynos-iommu.c

* F2FS FILE SYSTEM

Mail Jaegeuk Kim <jaegeuk@kernel.org>, Chao Yu <chao@kernel.org>

Mailing list linux-f2fs-devel@lists.sourceforge.net

Status Maintained

Web-page https://f2fs.wiki.kernel.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jaegeuk/f2fs.git

Files Documentation/ABI/testing/sysfs-fs-f2fs filesystems/f2fs fs/f2fs/ include/linux/f2fs_fs.h include/trace/events/f2fs.h include/uapi/ linux/f2fs.h

* F71805F HARDWARE MONITORING DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/f71805f `drivers/hwmon/f71805f.c`

* FADDR2LINE

Mail Josh Poimboeuf <jpoimboe@kernel.org>

Status Maintained

Files `scripts/faddr2line`

* FAILOVER MODULE

Mail Sridhar Samudrala <sridhar.samudrala@intel.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files networking/failover `include/net/failover.h` `net/core/failover.c`

* FANOTIFY

Mail Jan Kara <jack@suse.cz>

Reviewer Amir Goldstein <amir73il@gmail.com>, Matthew Bobrowski <repnop@google.com>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

Files `fs/notify/fanotify/` `include/linux/fanotify.h` `include/uapi/linux/fanotify.h`

* FARSYNC SYNCHRONOUS DRIVER

Mail Kevin Curtis <kevin.curtis@farsite.co.uk>

Status Supported

Web-page http://www.farsite.co.uk/

Files `drivers/net/wan/farsync.*`

* FAULT INJECTION SUPPORT

Mail Akinobu Mita <akinobu.mita@gmail.com>

Status Supported

Files Documentation/fault-injection/ lib/fault-inject.c

* FBTFT Framebuffer drivers

Mailing list dri-devel@lists.freedesktop.org, linux-fbdev@vger.kernel.org

Status Orphan

Files drivers/staging/fbtft/

* FC0011 TUNER DRIVER

Mail Michael Buesch <m@bues.ch>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/tuners/fc0011.c drivers/media/tuners/fc0011.h

* FC2580 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/tuners/fc2580*

* FCOE SUBSYSTEM (libfc, libfcoe, fcoe)

Mail Hannes Reinecke <hare@suse.de>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Web-page www.Open-FCoE.org

Files drivers/scsi/fcoe/ drivers/scsi/libfc/ include/scsi/fc/ include/scsi/libfc.h include/scsi/libfcoe.h include/uapi/scsi/fc/

* FILE LOCKING (flock() and fcntl()/lockf())

Mail Jeff Layton <jlayton@kernel.org>, Chuck Lever <chuck.lever@oracle.com>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

Files `fs/fcntl.c  fs/locks.c  include/linux/fcntl.h  include/uapi/linux/fcntl.h`

* FILESYSTEM DIRECT ACCESS (DAX)

Mail Dan Williams <dan.j.williams@intel.com>

Reviewer Matthew Wilcox <willy@infradead.org>, Jan Kara <jack@suse.cz>

Mailing list linux-fsdevel@vger.kernel.org, nvdimm@lists.linux.dev

Status Supported

Files `fs/dax.c include/linux/dax.h include/trace/events/fs_dax.h`

* FILESYSTEMS (VFS and infrastructure)

Mail Alexander Viro <viro@zeniv.linux.org.uk>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

Files `fs/* include/linux/fs.h include/linux/fs_types.h include/uapi/linux/fs.h include/uapi/linux/openat2.h`

* FINTEK F75375S HARDWARE MONITOR AND FAN CONTROLLER DRIVER

Mail Riku Voipio <riku.voipio@iki.fi>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `drivers/hwmon/f75375s.c include/linux/f75375s.h`

* FIREWIRE AUDIO DRIVERS and IEC 61883-1/6 PACKET STREAMING ENGINE

Mail Clemens Ladisch <clemens@ladisch.de>, Takashi Sakamoto <o-takashi@sakamocchi.jp>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tiwai/sound.git

Files `include/uapi/sound/firewire.h sound/firewire/`

* FIREWIRE MEDIA DRIVERS (firedtv)

Mail Stefan Richter <stefanr@s5r6.in-berlin.de>

Mailing list linux-media@vger.kernel.org, linux1394-devel@lists.sourceforge.net

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mchehab/linux-media.git

Files `drivers/media/firewire/`

* FIREWIRE SBP-2 TARGET

Mail Chris Boot <bootc@bootc.net>

Mailing list linux-scsi@vger.kernel.org, target-devel@vger.kernel.org, linux1394-devel@lists.sourceforge.net

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/nab/lio-core-2.6.git master

Files `drivers/target/sbp/`

* FIREWIRE SUBSYSTEM

Mail Stefan Richter <stefanr@s5r6.in-berlin.de>

Mailing list linux1394-devel@lists.sourceforge.net

Status Maintained

Web-page http://ieee1394.wiki.kernel.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/ieee1394/linux1394.git

Files `drivers/firewire/` `include/linux/firewire.h` `include/uapi/linux/firewire*.h tools/firewire/`

* FIRMWARE FRAMEWORK FOR ARMV8-A

Mail Sudeep Holla <sudeep.holla@arm.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `drivers/firmware/arm_ffa/ include/linux/arm_ffa.h`

* FIRMWARE LOADER (request_firmware)

Mail Luis Chamberlain <mcgrof@kernel.org>, Russ Weight <russell.h.weight@intel.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files Documentation/firmware_class/ drivers/base/firmware_loader/ include/linux/firmware.h

* FLEXTIMER FTM-QUADDEC DRIVER

Mail Patrick Havelange <patrick.havelange@essensium.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/counter/ftm-quaddec.txt drivers/counter/ftm-quaddec.c

* FLOPPY DRIVER

Mail Denis Efremov <efremov@linux.com>

Mailing list linux-block@vger.kernel.org

Status Odd Fixes

Files drivers/block/floppy.c

* FLYSKY FSIA6B RC RECEIVER

Mail Markus Koch <markus@notsyncing.net>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files drivers/input/joystick/fsia6b.c

* FOCUSRITE SCARLETT GEN 2/3 MIXER DRIVER

Mail Geoffrey D. Bennett <g@b4.vu>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tiwai/sound.git

Files sound/usb/mixer_scarlett_gen2.c

* FORCEDETH GIGABIT ETHERNET DRIVER

Mail Rain River <rain.1986.08.12@gmail.com>, Zhu Yanjun <zyjzyj2000@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/nvidia/*

* FORTIFY_SOURCE

Mail Kees Cook <keescook@chromium.org>

Mailing list linux-hardening@vger.kernel.org

Status Supported

Files include/linux/fortify-string.h   lib/test_fortify/*   scripts/test_fortify.sh

Content regex \b__NO_FORTIFY\b

* FPGA DFL DRIVERS

Mail Wu Hao <hao.wu@intel.com>

Reviewer Tom Rix <trix@redhat.com>

Mailing list linux-fpga@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/sysfs-bus-dfl*   fpga/dfl   drivers/fpga/dfl* drivers/uio/uio_dfl.c include/linux/dfl.h include/uapi/linux/fpga-dfl.h

* FPGA MANAGER FRAMEWORK

Mail Moritz Fischer <mdf@kernel.org>, Wu Hao <hao.wu@intel.com>, Xu Yilun <yilun.xu@intel.com>

Reviewer Tom Rix <trix@redhat.com>

Mailing list linux-fpga@vger.kernel.org

Status Maintained

Patchwork http://patchwork.kernel.org/project/linux-fpga/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/fpga/linux-fpga.git

Files Documentation/devicetree/bindings/fpga/ Documentation/driver-api/fpga/ Documentation/fpga/ drivers/fpga/ include/linux/fpga/

* FPU EMULATOR

Mail Bill Metzenthen <billm@melbpc.org.au>

Status Maintained

Web-page http://floatingpoint.sourceforge.net/emulator/index.html

Files arch/x86/math-emu/

* FRAMEBUFFER CORE

Mail Daniel Vetter <daniel@ffwll.ch>

Files drivers/video/fbdev/core/

Status Odd Fixes

SCM git git://anongit.freedesktop.org/drm/drm-misc

* FRAMEBUFFER LAYER

Mail Helge Deller <deller@gmx.de>

Mailing list linux-fbdev@vger.kernel.org, dri-devel@lists.freedesktop.org

Status Maintained

Patchwork http://patchwork.kernel.org/project/linux-fbdev/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/deller/linux-fbdev.git

Files Documentation/fb/ drivers/video/ include/linux/fb.h include/uapi/
linux/fb.h include/uapi/video/ include/video/

* FREESCALE CAAM (Cryptographic Acceleration and Assurance Module) DRIVER

Mail Horia   Geantă   <horia.geanta@nxp.com>,   Pankaj   Gupta
<pankaj.gupta@nxp.com>, Gaurav Jain <gaurav.jain@nxp.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/crypto/fsl-sec4.txt   drivers/
crypto/caam/

* FREESCALE COLDFIRE M5441X MMC DRIVER

Mail Angelo Dureghello <angelo.dureghello@timesys.com>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

Files drivers/mmc/host/sdhci-esdhc-mcf.c   include/linux/platform_data/
mmc-esdhc-mcf.h

* FREESCALE DIU FRAMEBUFFER DRIVER

Mail Timur Tabi <timur@kernel.org>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files drivers/video/fbdev/fsl-diu-fb.*

* FREESCALE DMA DRIVER

Mail Li Yang <leoyang.li@nxp.com>, Zhang Wei <zw@zh-kernel.org>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Maintained

Files drivers/dma/fsldma.*

* FREESCALE DSPI DRIVER

Mail Vladimir Oltean <olteanv@gmail.com>

Mailing list linux-spi@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/spi/spi-fsl-dspi.txt   drivers/
spi/spi-fsl-dspi.c include/linux/spi/spi-fsl-dspi.h

* FREESCALE ENETC ETHERNET DRIVERS

Mail Claudiu Manoil <claudiu.manoil@nxp.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/freescale/enetc/

* FREESCALE eTSEC ETHERNET DRIVER (GIANFAR)

Mail Claudiu Manoil <claudiu.manoil@nxp.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/fsl-tsec-phy.txt   drivers/
net/ethernet/freescale/gianfar*

* FREESCALE GPMI NAND DRIVER

Mail Han Xu <han.xu@nxp.com>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Files drivers/mtd/nand/raw/gpmi-nand/*

* FREESCALE I2C CPM DRIVER

Mail Jochen Friedrich <jochen@scram.de>

Mailing list linuxppc-dev@lists.ozlabs.org, linux-i2c@vger.kernel.org

Status Maintained

Files drivers/i2c/busses/i2c-cpm.c

* FREESCALE IMX / MXC FEC DRIVER

Mail Joakim Zhang <qiangqing.zhang@nxp.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/fsl,fec.yaml   drivers/net/
ethernet/freescale/fec.h   drivers/net/ethernet/freescale/fec_main.c
drivers/net/ethernet/freescale/fec_ptp.c

* FREESCALE IMX / MXC FRAMEBUFFER DRIVER

Mail Sascha Hauer <s.hauer@pengutronix.de>

Reviewer Pengutronix Kernel Team <kernel@pengutronix.de>

Mailing list linux-fbdev@vger.kernel.org,   linux-arm-kernel@lists.infradead.org
(moderated for non-subscribers)

Status Maintained

Files drivers/video/fbdev/imxfb.c   include/linux/platform_data/
video-imxfb.h

* FREESCALE IMX DDR PMU DRIVER

Mail Frank Li <Frank.li@nxp.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files admin-guide/perf/imx-ddr   Documentation/devicetree/bindings/perf/ fsl-imx-ddr.yaml drivers/perf/fsl_imx8_ddr_perf.c

* FREESCALE IMX I2C DRIVER

Mail Oleksij Rempel <o.rempel@pengutronix.de>

Reviewer Pengutronix Kernel Team <kernel@pengutronix.de>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-imx.yaml   drivers/i2c/ busses/i2c-imx.c

* FREESCALE IMX LPI2C DRIVER

Mail Dong Aisheng <aisheng.dong@nxp.com>

Mailing list linux-i2c@vger.kernel.org, linux-imx@nxp.com

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-imx-lpi2c.yaml drivers/ i2c/busses/i2c-imx-lpi2c.c

* FREESCALE MPC I2C DRIVER

Mail Chris Packham <chris.packham@alliedtelesis.co.nz>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-mpc.yaml   drivers/i2c/ busses/i2c-mpc.c

* FREESCALE QORIQ DPAA ETHERNET DRIVER

Mail Madalin Bucur <madalin.bucur@nxp.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/freescale/dpaa

* FREESCALE QORIQ DPAA FMAN DRIVER

Mail Madalin Bucur <madalin.bucur@nxp.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/fsl-fman.txt   drivers/net/
    ethernet/freescale/fman

* FREESCALE QORIQ PTP CLOCK DRIVER

Mail Yangbo Lu <yangbo.lu@nxp.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/ptp/ptp-qoriq.txt   drivers/net/
    ethernet/freescale/dpaa2/dpaa2-ptp* drivers/net/ethernet/freescale/
    dpaa2/dprtc*   drivers/net/ethernet/freescale/enetc/enetc_ptp.c
    drivers/ptp/ptp_qoriq.c   drivers/ptp/ptp_qoriq_debugfs.c   include/
    linux/fsl/ptp_qoriq.h

* FREESCALE QUAD SPI DRIVER

Mail Han Xu <han.xu@nxp.com>

Mailing list linux-spi@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/spi/fsl,spi-fsl-qspi.yaml
    drivers/spi/spi-fsl-qspi.c

* FREESCALE QUICC ENGINE LIBRARY

Mail Qiang Zhao <qiang.zhao@nxp.com>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Maintained

Files drivers/soc/fsl/qe/ include/soc/fsl/qe/

* FREESCALE QUICC ENGINE UCC ETHERNET DRIVER

Mail Li Yang <leoyang.li@nxp.com>

Mailing list netdev@vger.kernel.org, linuxppc-dev@lists.ozlabs.org

Status Maintained

Files drivers/net/ethernet/freescale/ucc_geth*

* FREESCALE QUICC ENGINE UCC HDLC DRIVER

Mail Zhao Qiang <qiang.zhao@nxp.com>

Mailing list netdev@vger.kernel.org, linuxppc-dev@lists.ozlabs.org

Status Maintained

Files drivers/net/wan/fsl_ucc_hdlc*

* FREESCALE QUICC ENGINE UCC UART DRIVER

Mail Timur Tabi <timur@kernel.org>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Maintained

Files drivers/tty/serial/ucc_uart.c

* FREESCALE SOC DRIVERS

Mail Li Yang <leoyang.li@nxp.com>

Mailing list linuxppc-dev@lists.ozlabs.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/misc/fsl,dpaa2-console.yaml Documentation/devicetree/bindings/soc/fsl/ drivers/soc/fsl/ include/ linux/fsl/ include/soc/fsl/

* FREESCALE SOC FS_ENET DRIVER

Mail Pantelis Antoniou <pantelis.antoniou@gmail.com>

Mailing list linuxppc-dev@lists.ozlabs.org, netdev@vger.kernel.org

Status Maintained

Files `drivers/net/ethernet/freescale/fs_enet/ include/linux/fs_enet_pd.h`

* FREESCALE SOC SOUND DRIVERS

Mail Shengjiu Wang <shengjiu.wang@gmail.com>, Xiubo Li <Xiubo.Lee@gmail.com>

Reviewer Fabio Estevam <festevam@gmail.com>, Nicolin Chen <nicoleotsuka@gmail.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers), linuxppc-dev@lists.ozlabs.org

Status Maintained

Files `sound/soc/fsl/fsl* sound/soc/fsl/imx* sound/soc/fsl/mpc8610_hpcd.c`

* FREESCALE USB PERIPHERAL DRIVERS

Mail Li Yang <leoyang.li@nxp.com>

Mailing list linux-usb@vger.kernel.org, linuxppc-dev@lists.ozlabs.org

Status Maintained

Files `drivers/usb/gadget/udc/fsl*`

* FREESCALE USB PHY DRIVER

Mail Ran Wang <ran.wang_1@nxp.com>

Mailing list linux-usb@vger.kernel.org, linuxppc-dev@lists.ozlabs.org

Status Maintained

Files `drivers/usb/phy/phy-fsl-usb*`

* FREEVXFS FILESYSTEM

Mail Christoph Hellwig <hch@infradead.org>

Status Maintained

Web-page ftp://ftp.openlinux.org/pub/people/hch/vxfs

Files `fs/freevxfs/`

* FREEZER

Mail "Rafael J. Wysocki" <rafael@kernel.org>, Pavel Machek <pavel@ucw.cz>

Mailing list linux-pm@vger.kernel.org

Status Supported

Files power/freezing-of-tasks `include/linux/freezer.h kernel/freezer.c`

* FRONTSWAP API

Mail Konrad Rzeszutek Wilk <konrad.wilk@oracle.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files `include/linux/frontswap.h mm/frontswap.c`

* FS-CACHE: LOCAL CACHING FOR NETWORK FILESYSTEMS

Mail David Howells <dhowells@redhat.com>

Mailing list linux-cachefs@redhat.com (moderated for non-subscribers)

Status Supported

Files `Documentation/filesystems/caching/ fs/fscache/ include/linux/`
`fscache*.h`

* FSCRYPT: FILE SYSTEM LEVEL ENCRYPTION SUPPORT

Mail Theodore Y. Ts'o <tytso@mit.edu>, Jaegeuk Kim <jaegeuk@kernel.org>, Eric
Biggers <ebiggers@kernel.org>

Mailing list linux-fscrypt@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-fscrypt/list/

SCM git git://git.kernel.org/pub/scm/fs/fscrypt/fscrypt.git

Files filesystems/fscrypt `fs/crypto/ include/linux/fscrypt*.h include/uapi/`
`linux/fscrypt.h`

* FSI SUBSYSTEM

Mail Jeremy Kerr <jk@ozlabs.org>, Joel Stanley <joel@jms.id.au>

Reviewer Alistar Popple <alistair@popple.id.au>, Eddie James <eajames@linux.ibm.com>

Mailing list linux-fsi@lists.ozlabs.org

Status Supported

Patchwork http://patchwork.ozlabs.org/project/linux-fsi/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/joel/fsi.git

Files `drivers/fsi/ include/linux/fsi*.h include/trace/events/fsi*.h`

* FSI-ATTACHED I2C DRIVER

Mail Eddie James <eajames@linux.ibm.com>

Mailing list linux-i2c@vger.kernel.org, openbmc@lists.ozlabs.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/i2c/i2c-fsi.txt drivers/i2c/busses/i2c-fsi.c`

* FSI-ATTACHED SPI DRIVER

Mail Eddie James <eajames@linux.ibm.com>

Mailing list linux-spi@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/fsi/ibm,fsi2spi.yaml drivers/spi/spi-fsi.c`

* FSNOTIFY: FILESYSTEM NOTIFICATION INFRASTRUCTURE

Mail Jan Kara <jack@suse.cz>

Reviewer Amir Goldstein <amir73il@gmail.com>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jack/linux-fs.git fsnotify

Files `fs/notify/ include/linux/fsnotify*.h`

* FSVERITY: READ-ONLY FILE-BASED AUTHENTICITY PROTECTION

Mail Eric Biggers <ebiggers@kernel.org>, Theodore Y. Ts'o <tytso@mit.edu>

Mailing list linux-fscrypt@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-fscrypt/list/

SCM git git://git.kernel.org/pub/scm/fs/fscrypt/fscrypt.git fsverity

Files filesystems/fsverity fs/verity/ include/linux/fsverity.h include/uapi/
linux/fsverity.h

* FT260 FTDI USB-HID TO I2C BRIDGE DRIVER

Mail Michael Zaidman <michael.zaidman@gmail.com>

Mailing list linux-i2c@vger.kernel.org, linux-input@vger.kernel.org

Status Maintained

Files drivers/hid/hid-ft260.c

* FUJITSU LAPTOP EXTRAS

Mail Jonathan Woithe <jwoithe@just42.net>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/fujitsu-laptop.c

* FUJITSU M-5MO LS CAMERA ISP DRIVER

Mail Kyungmin Park <kyungmin.park@samsung.com>, Heungjun Kim <riverful.kim@samsung.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/m5mols/ include/media/i2c/m5mols.h

* FUJITSU TABLET EXTRAS

Mail Robert Gerlach <khnz@gmx.de>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/fujitsu-tablet.c

* FUNGIBLE ETHERNET DRIVERS

Mail Dimitris Michailidis <dmichail@fungible.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/fungible/

* FUSE: FILESYSTEM IN USERSPACE

Mail Miklos Szeredi <miklos@szeredi.hu>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

Web-page https://github.com/libfuse/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mszeredi/fuse.git

Files filesystems/fuse fs/fuse/ include/uapi/linux/fuse.h

* FUTEX SUBSYSTEM

Mail Thomas Gleixner <tglx@linutronix.de>, Ingo Molnar <mingo@redhat.com>

Reviewer Peter Zijlstra <peterz@infradead.org>, Darren Hart <dvhart@infradead.org>, Davidlohr Bueso <dave@stgolabs.net>, André Almeida <andrealmeid@igalia.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git locking/core

Files Documentation/locking/*futex* include/asm-generic/futex.h include/linux/futex.h include/uapi/linux/futex.h kernel/futex/* tools/perf/bench/futex* tools/testing/selftests/futex/

* GATEWORKS SYSTEM CONTROLLER (GSC) DRIVER

Mail Tim Harvey <tharvey@gateworks.com>, Robert Jones <rjones@gateworks.com>

Status Maintained

Files Documentation/devicetree/bindings/mfd/gateworks-gsc.yaml drivers/mfd/gateworks-gsc.c include/linux/mfd/gsc.h hwmon/gsc-hwmon drivers/hwmon/gsc-hwmon.c include/linux/platform_data/gsc_hwmon.h

* GCC PLUGINS

Mail Kees Cook <keescook@chromium.org>

Mailing list linux-hardening@vger.kernel.org

Status Maintained

Files kbuild/gcc-plugins `scripts/Makefile.gcc-plugins scripts/gcc-plugins/`

* GCOV BASED KERNEL PROFILING

Mail Peter Oberparleiter <oberpar@linux.ibm.com>

Status Maintained

Files dev-tools/gcov `kernel/gcov/`

* GDB KERNEL DEBUGGING HELPER SCRIPTS

Mail Jan Kiszka <jan.kiszka@siemens.com>, Kieran Bingham <kbingham@kernel.org>

Status Supported

Files `scripts/gdb/`

* GEMINI CRYPTO DRIVER

Mail Corentin Labbe <clabbe@baylibre.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files `drivers/crypto/gemini/`

* GEMTEK FM RADIO RECEIVER DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/radio/radio-gemtek*`

* GENERIC ARCHITECTURE TOPOLOGY

Mail Sudeep Holla <sudeep.holla@arm.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files `drivers/base/arch_topology.c include/linux/arch_topology.h`

* GENERIC ENTRY CODE

Mail Thomas Gleixner <tglx@linutronix.de>, Peter Zijlstra <peterz@infradead.org>, Andy Lutomirski <luto@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git core/entry

Files `include/linux/entry-common.h include/linux/entry-kvm.h kernel/entry/`

* GENERIC GPIO I2C DRIVER

Mail Wolfram Sang <wsa+renesas@sang-engineering.com>

Status Supported

Files `drivers/i2c/busses/i2c-gpio.c include/linux/platform_data/i2c-gpio.h`

* GENERIC GPIO I2C MULTIPLEXER DRIVER

Mail Peter Korsgaard <peter.korsgaard@barco.com>

Mailing list linux-i2c@vger.kernel.org

Status Supported

Files `i2c/muxes/i2c-mux-gpio drivers/i2c/muxes/i2c-mux-gpio.c include/linux/platform_data/i2c-mux-gpio.h`

* GENERIC HDLC (WAN) DRIVERS

Mail Krzysztof Halasa <khc@pm.waw.pl>

Status Maintained

Web-page http://www.kernel.org/pub/linux/utils/net/hdlc/

Files `drivers/net/wan/c101.c drivers/net/wan/hd6457* drivers/net/wan/hdlc* drivers/net/wan/n2.c drivers/net/wan/pc300too.c drivers/net/wan/pci200syn.c drivers/net/wan/wanxl*`

* GENERIC INCLUDE/ASM HEADER FILES

Mail Arnd Bergmann <arnd@arndb.de>

Mailing list linux-arch@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/arnd/asm-generic.git

Files include/asm-generic/ include/uapi/asm-generic/

* GENERIC PHY FRAMEWORK

Mail Kishon Vijay Abraham I <kishon@ti.com>, Vinod Koul <vkoul@kernel.org>

Mailing list linux-phy@lists.infradead.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-phy/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/phy/linux-phy.git

Files Documentation/devicetree/bindings/phy/ drivers/phy/ include/linux/phy/

* GENERIC PINCTRL I2C DEMULTIPLEXER DRIVER

Mail Wolfram Sang <wsa+renesas@sang-engineering.com>

Status Supported

Files drivers/i2c/muxes/i2c-demux-pinctrl.c

* GENERIC PM DOMAINS

Mail "Rafael J. Wysocki" <rafael@kernel.org>, Kevin Hilman <khilman@kernel.org>, Ulf Hansson <ulf.hansson@linaro.org>

Mailing list linux-pm@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/power/power?domain* drivers/base/power/domain*.c include/linux/pm_domain.h

* GENERIC RESISTIVE TOUCHSCREEN ADC DRIVER

Mail Eugen Hristev <eugen.hristev@microchip.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `drivers/input/touchscreen/resistive-adc-touch.c`

* GENERIC STRING LIBRARY

Reviewer Andy Shevchenko <andy@kernel.org>

Status Maintained

Files `lib/string.c    lib/string_helpers.c    lib/test_string.c    lib/test-string_helpers.c`

* GENERIC UIO DRIVER FOR PCI DEVICES

Mail "Michael S. Tsirkin" <mst@redhat.com>

Mailing list kvm@vger.kernel.org

Status Supported

Files `drivers/uio/uio_pci_generic.c`

* GENERIC VDSO LIBRARY

Mail Andy Lutomirski <luto@kernel.org>, Thomas Gleixner <tglx@linutronix.de>, Vincenzo Frascino <vincenzo.frascino@arm.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git timers/vdso

Files `include/asm-generic/vdso/vsyscall.h    include/vdso/    kernel/time/vsyscall.c lib/vdso/`

* GENWQE (IBM Generic Workqueue Card)

Mail Frank Haverkamp <haver@linux.ibm.com>

Status Supported

Files `drivers/misc/genwqe/`

* GET_MAINTAINER SCRIPT

Mail Joe Perches <joe@perches.com>

Status Maintained

Files scripts/get_maintainer.pl

* GFS2 FILE SYSTEM

Mail Bob Peterson <rpeterso@redhat.com>, Andreas Gruenbacher <agruenba@redhat.com>

Mailing list cluster-devel@redhat.com

Status Supported

bugs https://bugzilla.kernel.org/enter_bug.cgi?product=File%20System&component=gfs2

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gfs2/linux-gfs2.git

Files Documentation/filesystems/gfs2*   fs/gfs2/   include/uapi/linux/gfs2_ondisk.h

* GIGABYTE WMI DRIVER

Mail Thomas Weißschuh <thomas@weissschuh.net>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/gigabyte-wmi.c

* GNSS SUBSYSTEM

Mail Johan Hovold <johan@kernel.org>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/johan/gnss.git

Files Documentation/ABI/testing/sysfs-class-gnss   Documentation/devicetree/bindings/gnss/ drivers/gnss/ include/linux/gnss.h

* GO7007 MPEG CODEC

Mail Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/media/usb/go7007/`

* GOODIX TOUCHSCREEN

Mail Bastien Nocera <hadess@hadess.net>, Hans de Goede <hde-goede@redhat.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `drivers/input/touchscreen/goodix*`

* GOOGLE ETHERNET DRIVERS

Mail Jeroen de Borst <jeroendb@google.com>

Reviewer Catherine Sullivan <csully@google.com>, David Awogbemila <awogbemila@google.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files networking/device_drivers/ethernet/google/gve `drivers/net/ethernet/google`

* GPD POCKET FAN DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/gpd-pocket-fan.c`

* GPIO ACPI SUPPORT

Mail Mika Westerberg <mika.westerberg@linux.intel.com>, Andy Shevchenko <andriy.shevchenko@linux.intel.com>

Mailing list linux-gpio@vger.kernel.org, linux-acpi@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/andy/linux-gpio-intel.git

---

Files firmware-guide/acpi/gpio-properties `drivers/gpio/gpiolib-acpi.c`
`drivers/gpio/gpiolib-acpi.h`

* GPIO AGGREGATOR

Mail Geert Uytterhoeven <geert+renesas@glider.be>

Mailing list linux-gpio@vger.kernel.org

Status Supported

Files admin-guide/gpio/gpio-aggregator `drivers/gpio/gpio-aggregator.c`

* GPIO IR Transmitter

Mail Sean Young <sean@mess.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/media/rc/gpio-ir-tx.c`

* GPIO MOCKUP DRIVER

Mail Bamvor Jian Zhang <bamv2005@gmail.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files `drivers/gpio/gpio-mockup.c tools/testing/selftests/gpio/`

* GPIO REGMAP

Reviewer Michael Walle <michael@walle.cc>

Status Maintained

Files `drivers/gpio/gpio-regmap.c include/linux/gpio/regmap.h`

* GPIO SUBSYSTEM

Mail Linus Walleij <linus.walleij@linaro.org>, Bartosz Golaszewski <brgl@bgdev.pl>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/brgl/linux.git

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Files `Documentation/ABI/obsolete/sysfs-gpio` `Documentation/ABI/testing/` `gpio-cdev` `Documentation/admin-guide/gpio/` `Documentation/devicetree/` `bindings/gpio/` `Documentation/driver-api/gpio/` `drivers/gpio/` `include/` `asm-generic/gpio.h` `include/dt-bindings/gpio/` `include/linux/gpio.h` `include/linux/gpio/` `include/linux/of_gpio.h` `include/uapi/linux/gpio.` `h tools/gpio/`

* GRE DEMULTIPLEXER DRIVER

Mail Dmitry Kozlov <xeb@mail.ru>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `include/net/gre.h net/ipv4/gre_demux.c net/ipv4/gre_offload.c`

* GRETH 10/100/1G Ethernet MAC device driver

Mail Andreas Larsson <andreas@gaisler.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/ethernet/aeroflex/`

* GREYBUS AUDIO PROTOCOLS DRIVERS

Mail Vaibhav Agarwal <vaibhav.sr@gmail.com>, Mark Greer <mgreer@animalcreek.com>

Status Maintained

Files `drivers/staging/greybus/audio_apbridgea.c drivers/staging/greybus/` `audio_apbridgea.h` `drivers/staging/greybus/audio_codec.c` `drivers/` `staging/greybus/audio_codec.h` `drivers/staging/greybus/audio_gb.c` `drivers/staging/greybus/audio_manager.c` `drivers/staging/greybus/` `audio_manager.h` `drivers/staging/greybus/audio_manager_module.c` `drivers/staging/greybus/audio_manager_private.h` `drivers/staging/` `greybus/audio_manager_sysfs.c drivers/staging/greybus/audio_module.c` `drivers/staging/greybus/audio_topology.c`

* GREYBUS FW/HID/SPI PROTOCOLS DRIVERS

Mail Viresh Kumar <vireshk@kernel.org>

Status Maintained

Files `drivers/staging/greybus/authentication.c` `drivers/staging/` `greybus/bootrom.c` `drivers/staging/greybus/firmware.h` `drivers/` `staging/greybus/fw-core.c` `drivers/staging/greybus/fw-download.c` `drivers/staging/greybus/fw-management.c` `drivers/staging/greybus/` `greybus_authentication.h drivers/staging/greybus/greybus_firmware.h`

```
drivers/staging/greybus/hid.c drivers/staging/greybus/i2c.c drivers/
staging/greybus/spi.c    drivers/staging/greybus/spilib.c    drivers/
staging/greybus/spilib.h
```

* GREYBUS LOOPBACK DRIVER

Mail Bryan O'Donoghue <pure.logic@nexus-software.ie>

Status Maintained

Files `drivers/staging/greybus/loopback.c`

* GREYBUS PLATFORM DRIVERS

Mail Vaibhav Hiremath <hvaibhav.linux@gmail.com>

Status Maintained

Files `drivers/staging/greybus/arche-apb-ctrl.c  drivers/staging/greybus/`
`arche-platform.c drivers/staging/greybus/arche_platform.h`

* GREYBUS SDIO/GPIO/SPI PROTOCOLS DRIVERS

Mail Rui Miguel Silva <rmfrfs@gmail.com>

Status Maintained

Files `drivers/staging/greybus/gpio.c      drivers/staging/greybus/light.c`
`drivers/staging/greybus/power_supply.c drivers/staging/greybus/sdio.`
`c drivers/staging/greybus/spi.c drivers/staging/greybus/spilib.c`

* GREYBUS SUBSYSTEM

Mail Johan Hovold <johan@kernel.org>, Alex Elder <elder@kernel.org>, Greg
Kroah-Hartman <gregkh@linuxfoundation.org>

Mailing list greybus-dev@lists.linaro.org (moderated for non-subscribers)

Status Maintained

Files `drivers/greybus/  drivers/staging/greybus/  include/linux/greybus.h`
`include/linux/greybus/`

* GREYBUS UART PROTOCOLS DRIVERS

Mail David Lin <dtwlin@gmail.com>

Status Maintained

Files `drivers/staging/greybus/log.c drivers/staging/greybus/uart.c`

* GS1662 VIDEO SERIALIZER

Mail Charles-Antoine Couret <charles-antoine.couret@nexvision.fr>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/spi/gs1662.c

* GSPCA FINEPIX SUBDRIVER

Mail Frank Zago <frank@zago.net>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/usb/gspca/finepix.c

* GSPCA GL860 SUBDRIVER

Mail Olivier Lorin <o.lorin@laposte.net>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/usb/gspca/gl860/

* GSPCA M5602 SUBDRIVER

Mail Erik Andren <erik.andren@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/usb/gspca/m5602/

* GSPCA PAC207 SONIXB SUBDRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/usb/gspca/pac207.c`

* GSPCA SN9C20X SUBDRIVER

Mail Brian Johnson <brijohn@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/usb/gspca/sn9c20x.c`

* GSPCA T613 SUBDRIVER

Mail Leandro Costantino <lcostantino@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/usb/gspca/t613.c`

* GSPCA USB WEBCAM DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/usb/gspca/`

* GTP (GPRS Tunneling Protocol)

Mail Pablo Neira Ayuso <pablo@netfilter.org>, Harald Welte <laforge@gnumonks.org>

Mailing list osmocom-net-gprs@lists.osmocom.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pablo/gtp.git

Files `drivers/net/gtp.c`

* GUID PARTITION TABLE (GPT)

Mail Davidlohr Bueso <dave@stgolabs.net>

Mailing list linux-efi@vger.kernel.org

Status Maintained

Files `block/partitions/efi.*`

* HABANALABS PCI DRIVER

Mail Oded Gabbay <ogabbay@kernel.org>

Status Supported

SCM git https://git.kernel.org/pub/scm/linux/kernel/git/ogabbay/linux.git

Files `Documentation/ABI/testing/debugfs-driver-habanalabs` `Documentation/ABI/testing/sysfs-driver-habanalabs` `drivers/misc/habanalabs/` `include/uapi/misc/habanalabs.h`

* HACKRF MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/usb/hackrf/`

* HANTRO VPU CODEC DRIVER

Mail Ezequiel Garcia <ezequiel@vanguardiasur.com.ar>, Philipp Zabel <p.zabel@pengutronix.de>

Mailing list linux-media@vger.kernel.org, linux-rockchip@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/media/nxp,imx8mq-vpu.yaml Documentation/devicetree/bindings/media/rockchip-vpu.yaml drivers/ staging/media/hantro/

* HARD DRIVE ACTIVE PROTECTION SYSTEM (HDAPS) DRIVER

Mail Frank Seidel <frank@f-seidel.de>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Web-page http://www.kernel.org/pub/linux/kernel/people/fseidel/hdaps/

Files drivers/platform/x86/hdaps.c

* HARDWARE MONITORING

Mail Jean Delvare <jdelvare@suse.com>, Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Web-page http://hwmon.wiki.kernel.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/groeck/linux-staging.git

Files Documentation/ABI/testing/sysfs-class-hwmon Documentation/ devicetree/bindings/hwmon/ Documentation/hwmon/ drivers/hwmon/ include/linux/hwmon*.h include/trace/events/hwmon*.h

Content regex (devm_)?hwmon_device_(un)?register(|_with_groups|_with_info)

* HARDWARE RANDOM NUMBER GENERATOR CORE

Mail Matt Mackall <mpm@selenic.com>, Herbert Xu <herbert@gondor.apana.org.au>

Mailing list linux-crypto@vger.kernel.org

Status Odd fixes

Files admin-guide/hw_random Documentation/devicetree/bindings/rng/ drivers/char/hw_random/ include/linux/hw_random.h

* HARDWARE SPINLOCK CORE

Mail Ohad Ben-Cohen <ohad@wizery.com>, Bjorn Andersson <bjorn.andersson@linaro.org>

Reviewer Baolin Wang <baolin.wang7@gmail.com>

Mailing list linux-remoteproc@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/andersson/remoteproc.git hwspinlock-next

Files Documentation/devicetree/bindings/hwlock/ locking/hwspinlock drivers/ hwspinlock/ include/linux/hwspinlock.h

* HARDWARE TRACING FACILITIES

Mail Alexander Shishkin <alexander.shishkin@linux.intel.com>

Status Maintained

Files drivers/hwtracing/

* HARMONY SOUND DRIVER

Mailing list linux-parisc@vger.kernel.org

Status Maintained

Files sound/parisc/harmony.*

* HDPVR USB VIDEO ENCODER DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/usb/hdpvr/

* HEWLETT PACKARD ENTERPRISE ILO CHIF DRIVER

Mail Matt Hsiao <matt.hsiao@hpe.com>

Status Supported

Files `drivers/misc/hpilo.[ch]`

* HEWLETT PACKARD ENTERPRISE ILO NMI WATCHDOG DRIVER

Mail Jerry Hoemann <jerry.hoemann@hpe.com>

Status Supported

Files watchdog/hpwdt `drivers/watchdog/hpwdt.c`

* HEWLETT-PACKARD SMART ARRAY RAID DRIVER (hpsa)

Mail Don Brace <don.brace@microchip.com>

Mailing list storagedev@microchip.com, linux-scsi@vger.kernel.org

Status Supported

Files scsi/hpsa `drivers/scsi/hpsa*.[ch]  include/linux/cciss*.h  include/` `uapi/linux/cciss*.h`

* HFI1 DRIVER

Mail Dennis Dalessandro <dennis.dalessandro@cornelisnetworks.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Files `drivers/infiniband/hw/hfi1`

* HFS FILESYSTEM

Mailing list linux-fsdevel@vger.kernel.org

Status Orphan

Files filesystems/hfs `fs/hfs/`

* HFSPLUS FILESYSTEM

Mailing list linux-fsdevel@vger.kernel.org

Status Orphan

Files filesystems/hfsplus `fs/hfsplus/`

* HGA FRAMEBUFFER DRIVER

Mail Ferenc Bakonyi <fero@drama.obuda.kando.hu>

Mailing list linux-nvidia@lists.surfsouth.com

Status Maintained

Web-page http://drama.obuda.kando.hu/~fero/cgi-bin/hgafb.shtml

Files `drivers/video/fbdev/hgafb.c`

* HIBERNATION (aka Software Suspend, aka swsusp)

Mail "Rafael J. Wysocki" <rafael@kernel.org>, Pavel Machek <pavel@ucw.cz>

Mailing list linux-pm@vger.kernel.org

Status Supported

bugs https://bugzilla.kernel.org

Files `arch/*/include/asm/suspend*.h  arch/x86/power/  drivers/base/power/`
`include/linux/freezer.h  include/linux/pm.h  include/linux/suspend.h`
`kernel/power/`

* HID CORE LAYER

Mail Jiri Kosina <jikos@kernel.org>, Benjamin Tissoires <benjamin.tissoires@redhat.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/hid/hid.git

Files `drivers/hid/ include/linux/hid* include/uapi/linux/hid*`

* HID LOGITECH DRIVERS

Reviewer Filipe Laíns <lains@riseup.net>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `drivers/hid/hid-logitech-*`

* HID PLAYSTATION DRIVER

Mail Roderick Colenbrander <roderick.colenbrander@sony.com>

Mailing list linux-input@vger.kernel.org

Status Supported

Files `drivers/hid/hid-playstation.c`

* HID SENSOR HUB DRIVERS

Mail Jiri Kosina <jikos@kernel.org>, Jonathan Cameron <jic23@kernel.org>, Srinivas Pandruvada <srinivas.pandruvada@linux.intel.com>

Mailing list linux-input@vger.kernel.org, linux-iio@vger.kernel.org

Status Maintained

Files `Documentation/hid/hid-sensor* drivers/hid/hid-sensor-* drivers/iio/ */hid-* include/linux/hid-sensor-*`

* HID WACOM DRIVER

Mail Ping Cheng <ping.cheng@wacom.com>, Jason Gerecke <jason.gerecke@wacom.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `drivers/hid/wacom.h drivers/hid/wacom_*`

* HIGH-RESOLUTION TIMERS, CLOCKEVENTS

Mail Thomas Gleixner <tglx@linutronix.de>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git timers/core

Files `Documentation/timers/ include/linux/clockchips.h include/linux/ hrtimer.h kernel/time/clockevents.c kernel/time/hrtimer.c kernel/ time/timer_*.c`

* HIGH-SPEED SCC DRIVER FOR AX.25

Mailing list linux-hams@vger.kernel.org

Status Orphan

Files `drivers/net/hamradio/scc.c`

* HIGHPOINT ROCKETRAID 3xxx RAID DRIVER

Mail HighPoint Linux Team <linux@highpoint-tech.com>

Status Supported

Web-page http://www.highpoint-tech.com

Files scsi/hptiop `drivers/scsi/hptiop.c`

* HIPPI

Mail Jes Sorensen <jes@trained-monkey.org>

Mailing list linux-hippi@sunsite.dk

Status Maintained

Files `drivers/net/hippi/ include/linux/hippidevice.h include/uapi/linux/ if_hippi.h net/802/hippi.c`

* HIRSCHMANN HELLCREEK ETHERNET SWITCH DRIVER

Mail Kurt Kanzenbach <kurt@linutronix.de>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/net/dsa/hirschmann,hellcreek. yaml    drivers/net/dsa/hirschmann/*    include/linux/platform_data/ hirschmann-hellcreek.h net/dsa/tag_hellcreek.c`

* HISILICON DMA DRIVER

Mail Zhou Wang <wangzhou1@hisilicon.com>

Mailing list dmaengine@vger.kernel.org

Status Maintained

Files `drivers/dma/hisi_dma.c`

* HISILICON GPIO DRIVER

Mail Luo Jiaxing <luojiaxing@huawei.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files drivers/gpio/gpio-hisi.c

* HISILICON HIGH PERFORMANCE RSA ENGINE DRIVER (HPRE)

Mail Longfang Liu <liulongfang@huawei.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/debugfs-hisi-hpre   drivers/crypto/
    hisilicon/hpre/hpre.h   drivers/crypto/hisilicon/hpre/hpre_crypto.c
    drivers/crypto/hisilicon/hpre/hpre_main.c

* HISILICON I2C CONTROLLER DRIVER

Mail Yicong Yang <yangyicong@hisilicon.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Web-page https://www.hisilicon.com

Files drivers/i2c/busses/i2c-hisi.c

* HISILICON LPC BUS DRIVER

Mail john.garry@huawei.com

Status Maintained

Web-page http://www.hisilicon.com

Files Documentation/devicetree/bindings/arm/hisilicon/low-pin-count.yaml
    drivers/bus/hisi_lpc.c

* HISILICON NETWORK SUBSYSTEM 3 DRIVER (HNS3)

Mail Yisen   Zhuang   <yisen.zhuang@huawei.com>,   Salil   Mehta
    <salil.mehta@huawei.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Web-page http://www.hisilicon.com

Files drivers/net/ethernet/hisilicon/hns3/

* HISILICON NETWORK SUBSYSTEM DRIVER

Mail Yisen Zhuang <yisen.zhuang@huawei.com>, Salil Mehta <salil.mehta@huawei.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Web-page http://www.hisilicon.com

Files Documentation/devicetree/bindings/net/hisilicon*.txt drivers/net/
ethernet/hisilicon/

* HIKEY960 ONBOARD USB GPIO HUB DRIVER

Mail John Stultz <jstultz@google.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files drivers/misc/hisi_hikey_usb.c

* HISILICON PMU DRIVER

Mail Shaokun Zhang <zhangshaokun@hisilicon.com>, Qi Liu <liuqi115@huawei.com>

Status Supported

Web-page http://www.hisilicon.com

Files admin-guide/perf/hisi-pcie-pmu admin-guide/perf/hisi-pmu drivers/perf/
hisilicon

* HISILICON QM AND ZIP Controller DRIVER

Mail Zhou Wang <wangzhou1@hisilicon.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/debugfs-hisi-zip   drivers/crypto/
hisilicon/qm.c   drivers/crypto/hisilicon/sgl.c   drivers/crypto/
hisilicon/zip/ include/linux/hisi_acc_qm.h

* HISILICON ROCE DRIVER

Mail Wenpeng Liang <liangwenpeng@huawei.com>, Weihang Li <liwei-hang@huawei.com>

Mailing list linux-rdma@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/infiniband/hisilicon-hns-roce.txt drivers/infiniband/hw/hns/

* HISILICON SAS Controller

Mail John Garry <john.garry@huawei.com>

Status Supported

Web-page http://www.hisilicon.com

Files Documentation/devicetree/bindings/scsi/hisilicon-sas.txt drivers/scsi/hisi_sas/

* HISILICON SECURITY ENGINE V2 DRIVER (SEC2)

Mail Kai Ye <yekai13@huawei.com>, Longfang Liu <liulongfang@huawei.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/debugfs-hisi-sec drivers/crypto/hisilicon/sec2/sec.h drivers/crypto/hisilicon/sec2/sec_crypto.c drivers/crypto/hisilicon/sec2/sec_crypto.h drivers/crypto/hisilicon/sec2/sec_main.c

* HISILICON SPI Controller DRIVER FOR KUNPENG SOCS

Mail Jay Fang <f.fangjian@huawei.com>

Mailing list linux-spi@vger.kernel.org

Status Maintained

Web-page http://www.hisilicon.com

Files drivers/spi/spi-hisi-kunpeng.c

* HISILICON SPMI CONTROLLER DRIVER FOR HIKEY 970

Mail Mauro Carvalho Chehab <mchehab+huawei@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/spmi/hisilicon,
hisi-spmi-controller.yaml drivers/spmi/hisi-spmi-controller.c

* HISILICON SPMI PMIC DRIVER FOR HIKEY 6421v600

Mail Mauro Carvalho Chehab <mchehab+huawei@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/mfd/hisilicon,hi6421-spmi-pmic.
yaml drivers/mfd/hi6421-spmi-pmic.c

* HISILICON TRUE RANDOM NUMBER GENERATOR V2 SUPPORT

Mail Weili Qian <qianweili@huawei.com>

Status Maintained

Files drivers/crypto/hisilicon/trng/trng.c

* HISILICON V3XX SPI NOR FLASH Controller Driver

Mail John Garry <john.garry@huawei.com>

Status Maintained

Web-page http://www.hisilicon.com

Files drivers/spi/spi-hisi-sfc-v3xx.c

* HMM - Heterogeneous Memory Management

Mail Jérôme Glisse <jglisse@redhat.com>

Mailing list linux-mm@kvack.org

Status Maintained

Files vm/hmm include/linux/hmm* lib/test_hmm* mm/hmm* tools/testing/
selftests/vm/*hmm*

* HOST AP DRIVER

Mail Jouni Malinen <j@w1.fi>

Mailing list linux-wireless@vger.kernel.org

Status Obsolete

Web-page http://w1.fi/hostap-driver.html

Files drivers/net/wireless/intersil/hostap/

* HP COMPAQ TC1100 TABLET WMI EXTRAS DRIVER

Mailing list platform-driver-x86@vger.kernel.org

Status Orphan

Files drivers/platform/x86/tc1100-wmi.c

* HPET: High Precision Event Timers driver

Mail Clemens Ladisch <clemens@ladisch.de>

Status Maintained

Files timers/hpet drivers/char/hpet.c include/linux/hpet.h include/uapi/
   linux/hpet.h

* HPET: x86

Status Orphan

Files arch/x86/include/asm/hpet.h arch/x86/kernel/hpet.c

* HPFS FILESYSTEM

Mail Mikulas Patocka <mikulas@artax.karlin.mff.cuni.cz>

Status Maintained

Web-page http://artax.karlin.mff.cuni.cz/~mikulas/vyplody/hpfs/index-e.cgi

Files fs/hpfs/

* HSI SUBSYSTEM

Mail Sebastian Reichel <sre@kernel.org>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/sre/linux-hsi.git

Files Documentation/ABI/testing/sysfs-bus-hsi driver-api/hsi drivers/hsi/
include/linux/hsi/ include/uapi/linux/hsi/

* HSO 3G MODEM DRIVER

Mailing list linux-usb@vger.kernel.org

Status Orphan

Files drivers/net/usb/hso.c

* HSR NETWORK PROTOCOL

Mailing list netdev@vger.kernel.org

Status Orphan

Files net/hsr/

* HT16K33 LED CONTROLLER DRIVER

Mail Robin van der Gracht <robin@protonic.nl>

Status Maintained

Files Documentation/devicetree/bindings/auxdisplay/holtek,ht16k33.yaml
drivers/auxdisplay/ht16k33.c

* HTCPEN TOUCHSCREEN DRIVER

Mail Pau Oliva Fora <pof@eslack.org>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files drivers/input/touchscreen/htcpen.c

* HTE SUBSYSTEM

Mail Dipen Patel <dipenp@nvidia.com>

Status Maintained

Files Documentation/devicetree/bindings/timestamp/ Documentation/
driver-api/hte/ drivers/hte/ include/linux/hte.h

* HTS221 TEMPERATURE-HUMIDITY IIO DRIVER

Mail Lorenzo Bianconi <lorenzo@kernel.org>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Web-page http://www.st.com/

Files Documentation/devicetree/bindings/iio/humidity/st,hts221.yaml
drivers/iio/humidity/hts221*

* HUAWEI ETHERNET DRIVER

Mailing list netdev@vger.kernel.org

Status Orphan

Files networking/device_drivers/ethernet/huawei/hinic drivers/net/ethernet/
huawei/hinic/

* HUGETLB SUBSYSTEM

Mail Mike Kravetz <mike.kravetz@oracle.com>, Muchun Song <song-
muchun@bytedance.com>

Mailing list linux-mm@kvack.org

Status Maintained

Files Documentation/ABI/testing/sysfs-kernel-mm-hugepages admin-
guide/mm/hugetlbpage vm/hugetlbfs_reserv vm/vmemmap_dedup fs/
hugetlbfs/ include/linux/hugetlb.h mm/hugetlb.c mm/hugetlb_vmemmap.c
mm/hugetlb_vmemmap.h

* HVA ST MEDIA DRIVER

Mail Jean-Christophe Trotin <jean-christophe.trotin@foss.st.com>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/platform/st/sti/hva`

* HWPOISON MEMORY FAILURE HANDLING

Mail Naoya Horiguchi <naoya.horiguchi@nec.com>

Reviewer Miaohe Lin <linmiaohe@huawei.com>

Mailing list linux-mm@kvack.org

Status Maintained

Files `mm/hwpoison-inject.c mm/memory-failure.c`

* HYCON HY46XX TOUCHSCREEN SUPPORT

Mail Giulio Benetti <giulio.benetti@benettiengineering.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/input/touchscreen/hycon,hy46xx.yaml drivers/input/touchscreen/hycon-hy46xx.c`

* HYGON PROCESSOR SUPPORT

Mail Pu Wen <puwen@hygon.cn>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files `arch/x86/kernel/cpu/hygon.c`

* HYNIX HI556 SENSOR DRIVER

Mail Shawn Tu <shawnx.tu@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/hi556.c

* HYNIX HI846 SENSOR DRIVER

Mail Martin Kepplinger <martin.kepplinger@puri.sm>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/hi846.c

* HYNIX HI847 SENSOR DRIVER

Mail Shawn Tu <shawnx.tu@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/hi847.c

* Hyper-V/Azure CORE AND DRIVERS

Mail "K. Y. Srinivasan" <kys@microsoft.com>, Haiyang Zhang <haiyangz@microsoft.com>, Stephen Hemminger <sthemmin@microsoft.com>, Wei Liu <wei.liu@kernel.org>, Dexuan Cui <decui@microsoft.com>

Mailing list linux-hyperv@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/hyperv/linux.git

Files Documentation/ABI/stable/sysfs-bus-vmbus Documentation/ABI/testing/debugfs-hyperv networking/device_drivers/ethernet/microsoft/netvsc arch/arm64/hyperv arch/arm64/include/asm/hyperv-tlfs.h arch/arm64/include/asm/mshyperv.h arch/x86/hyperv arch/x86/include/asm/hyperv-tlfs.h arch/x86/include/asm/mshyperv.h arch/x86/include/asm/trace/hyperv.h arch/x86/kernel/cpu/mshyperv.c drivers/clocksource/hyperv_timer.c drivers/hid/hid-hyperv.c drivers/hv/ drivers/input/serio/hyperv-keyboard.c drivers/iommu/hyperv-iommu.c drivers/net/ethernet/microsoft/ drivers/net/hyperv/ drivers/pci/controller/pci-hyperv-intf.c drivers/pci/controller/pci-hyperv.c drivers/scsi/storvsc_drv.c drivers/uio/uio_hv_generic.c drivers/video/fbdev/

```
hyperv_fb.c  include/asm-generic/hyperv-tlfs.h  include/asm-generic/
mshyperv.h include/clocksource/hyperv_timer.h include/linux/hyperv.h
include/uapi/linux/hyperv.h net/vmw_vsock/hyperv_transport.c tools/
hv/
```

* HYPERBUS SUPPORT

Mail Vignesh Raghavendra <vigneshr@ti.com>

Mailing list linux-mtd@lists.infradead.org

Status Supported

Patchwork http://patchwork.ozlabs.org/project/linux-mtd/list/

chat irc://irc.oftc.net/mtd

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mtd/linux.git cfi/next

Files Documentation/devicetree/bindings/mtd/ti,am654-hbmc.yaml drivers/
 mtd/hyperbus/ include/linux/mtd/hyperbus.h

* HYPERVISOR VIRTUAL CONSOLE DRIVER

Mailing list linuxppc-dev@lists.ozlabs.org

Status Odd Fixes

Files drivers/tty/hvc/

* I2C ACPI SUPPORT

Mail Mika Westerberg <mika.westerberg@linux.intel.com>

Mailing list linux-i2c@vger.kernel.org, linux-acpi@vger.kernel.org

Status Maintained

Files drivers/i2c/i2c-core-acpi.c

* I2C CONTROLLER DRIVER FOR NVIDIA GPU

Mail Ajay Gupta <ajayg@nvidia.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files i2c/busses/i2c-nvidia-gpu drivers/i2c/busses/i2c-nvidia-gpu.c

* I2C MUXES

Mail Peter Rosin <peda@axentia.se>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-arb*　　Documentation/
devicetree/bindings/i2c/i2c-gate* Documentation/devicetree/bindings/
i2c/i2c-mux*　i2c/i2c-topology　Documentation/i2c/muxes/　drivers/i2c/
i2c-mux.c drivers/i2c/muxes/ include/linux/i2c-mux.h

* I2C MV64XXX MARVELL AND ALLWINNER DRIVER

Mail Gregory CLEMENT <gregory.clement@bootlin.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/i2c/marvell,mv64xxx-i2c.yaml
drivers/i2c/busses/i2c-mv64xxx.c

* I2C OVER PARALLEL PORT

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files i2c/busses/i2c-parport drivers/i2c/busses/i2c-parport.c

* I2C SUBSYSTEM

Mail Wolfram Sang <wsa@kernel.org>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Web-page https://i2c.wiki.kernel.org/

Patchwork https://patchwork.ozlabs.org/project/linux-i2c/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/wsa/linux.git

Files Documentation/devicetree/bindings/i2c/i2c.txt　　Documentation/i2c/
drivers/i2c/* include/dt-bindings/i2c/i2c.h include/linux/i2c-dev.h
include/linux/i2c-smbus.h　include/linux/i2c.h　include/uapi/linux/
i2c-*.h include/uapi/linux/i2c.h

* I2C SUBSYSTEM HOST DRIVERS

Mailing list linux-i2c@vger.kernel.org

Status Odd Fixes

Web-page https://i2c.wiki.kernel.org/

Patchwork https://patchwork.ozlabs.org/project/linux-i2c/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/wsa/linux.git

Files Documentation/devicetree/bindings/i2c/ drivers/i2c/algos/ drivers/i2c/busses/ include/dt-bindings/i2c/

* I2C-TAOS-EVM DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files i2c/busses/i2c-taos-evm `drivers/i2c/busses/i2c-taos-evm.c`

* I2C-TINY-USB DRIVER

Mail Till Harbaum <till@harbaum.org>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Web-page http://www.harbaum.org/till/i2c_tiny_usb

Files `drivers/i2c/busses/i2c-tiny-usb.c`

* I2C/SMBUS CONTROLLER DRIVERS FOR PC

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files i2c/busses/i2c-ali1535 i2c/busses/i2c-ali1563 i2c/busses/i2c-ali15x3 i2c/busses/i2c-amd756 i2c/busses/i2c-amd8111 i2c/busses/i2c-i801 i2c/busses/i2c-nforce2 i2c/busses/i2c-piix4 i2c/busses/i2c-sis5595 i2c/busses/i2c-sis630 i2c/busses/i2c-sis96x i2c/busses/i2c-via i2c/busses/i2c-viapro `drivers/i2c/busses/i2c-ali1535.c` `drivers/i2c/busses/i2c-ali1563.c` `drivers/i2c/busses/i2c-ali15x3.c` `drivers/i2c/busses/i2c-amd756-s4882.c` `drivers/i2c/busses/i2c-amd756.c` `drivers/i2c/busses/i2c-amd8111.c` `drivers/i2c/busses/i2c-i801.c` `drivers/i2c/busses/i2c-isch.c` `drivers/i2c/busses/i2c-nforce2-s4985.c` `drivers/i2c/busses/i2c-nforce2.c` `drivers/i2c/busses/i2c-piix4.c` `drivers/i2c/busses/i2c-sis5595.c` `drivers/i2c/busses/i2c-sis630.c` `drivers/i2c/busses/i2c-sis96x.c` `drivers/i2c/busses/i2c-via.c` `drivers/i2c/busses/i2c-viapro.c`

* I2C/SMBUS INTEL CHT WHISKEY COVE PMIC DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files drivers/i2c/busses/i2c-cht-wc.c

* I2C/SMBUS ISMT DRIVER

Mail Seth Heasley <seth.heasley@intel.com>, Neil Horman <nhorman@tuxdriver.com>

Mailing list linux-i2c@vger.kernel.org

Files i2c/busses/i2c-ismt drivers/i2c/busses/i2c-ismt.c

* I2C/SMBUS STUB DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files drivers/i2c/i2c-stub.c

* I3C DRIVER FOR CADENCE I3C MASTER IP

Mail Przemysław Gaj <pgaj@cadence.com>

Status Maintained

Files Documentation/devicetree/bindings/i3c/cdns,i3c-master.yaml drivers/i3c/master/i3c-master-cdns.c

* I3C DRIVER FOR SYNOPSYS DESIGNWARE

Mail Vitor Soares <vitor.soares@synopsys.com>

Status Maintained

Files Documentation/devicetree/bindings/i3c/snps,dw-i3c-master.yaml drivers/i3c/master/dw*

* I3C SUBSYSTEM

Mail Alexandre Belloni <alexandre.belloni@bootlin.com>

Mailing list linux-i3c@lists.infradead.org (moderated for non-subscribers)

Status Maintained

chat irc://chat.freenode.net/linux-i3c

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/i3c/linux.git

Files Documentation/ABI/testing/sysfs-bus-i3c Documentation/devicetree/
bindings/i3c/ Documentation/driver-api/i3c drivers/i3c/ include/
linux/i3c/

* IA64 (Itanium) PLATFORM

Mailing list linux-ia64@vger.kernel.org

Status Orphan

Files Documentation/ia64/ arch/ia64/

* IBM Power 842 compression accelerator

Mail Haren Myneni <haren@us.ibm.com>

Status Supported

Files crypto/842.c drivers/crypto/nx/Kconfig drivers/crypto/nx/Makefile
drivers/crypto/nx/nx-842* include/linux/sw842.h lib/842/

* IBM Power in-Nest Crypto Acceleration

Mail Breno Leitão <leitao@debian.org>, Nayna Jain <nayna@linux.ibm.com>,
Paulo Flabiano Smorigo <pfsmorigo@gmail.com>

Mailing list linux-crypto@vger.kernel.org

Status Supported

Files drivers/crypto/nx/Kconfig drivers/crypto/nx/Makefile drivers/
crypto/nx/nx-aes* drivers/crypto/nx/nx-sha* drivers/crypto/nx/nx.*
drivers/crypto/nx/nx_csbcpb.h drivers/crypto/nx/nx_debugfs.c

* IBM Power IO DLPAR Driver for RPA-compliant PPC64 platform

Mail Tyrel Datwyler <tyreld@linux.ibm.com>

Mailing list linux-pci@vger.kernel.org, linuxppc-dev@lists.ozlabs.org

Status Supported

Files drivers/pci/hotplug/rpadlpar*

* IBM Power Linux RAID adapter

Mail Brian King <brking@us.ibm.com>

Status Supported

Files drivers/scsi/ipr.*

* IBM Power PCI Hotplug Driver for RPA-compliant PPC64 platform

Mail Tyrel Datwyler <tyreld@linux.ibm.com>

Mailing list linux-pci@vger.kernel.org, linuxppc-dev@lists.ozlabs.org

Status Supported

Files drivers/pci/hotplug/rpaphp*

* IBM Power SRIOV Virtual NIC Device Driver

Mail Dany Madden <drt@linux.ibm.com>

Reviewer Thomas Falcon <tlfalcon@linux.ibm.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/ibm/ibmvnic.*

* IBM Power Virtual Accelerator Switchboard

Mailing list linuxppc-dev@lists.ozlabs.org

Status Supported

Files arch/powerpc/include/asm/vas.h   arch/powerpc/platforms/powernv/copy-paste.h arch/powerpc/platforms/powernv/vas*

* IBM Power Virtual Ethernet Device Driver

Mail Cristobal Forno <cforno12@linux.ibm.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/ibm/ibmveth.*

* IBM Power Virtual FC Device Drivers

Mail Tyrel Datwyler <tyreld@linux.ibm.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files drivers/scsi/ibmvscsi/ibmvfc*

* IBM Power Virtual Management Channel Driver

Mail Brad Warrum <bwarrum@linux.ibm.com>, Ritu Agarwal <rituagar@linux.ibm.com>

Status Supported

Files drivers/misc/ibmvmc.*

* IBM Power Virtual SCSI Device Drivers

Mail Tyrel Datwyler <tyreld@linux.ibm.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files drivers/scsi/ibmvscsi/ibmvscsi* include/scsi/viosrp.h

* IBM Power Virtual SCSI Device Target Driver

Mail Michael Cyr <mikecyr@linux.ibm.com>

Mailing list linux-scsi@vger.kernel.org, target-devel@vger.kernel.org

Status Supported

Files drivers/scsi/ibmvscsi_tgt/

* IBM Power VMX Cryptographic instructions

Mail Breno Leitão <leitao@debian.org>, Nayna Jain <nayna@linux.ibm.com>, Paulo Flabiano Smorigo <pfsmorigo@gmail.com>

Mailing list linux-crypto@vger.kernel.org

Status Supported

Files drivers/crypto/vmx/Kconfig drivers/crypto/vmx/Makefile drivers/crypto/vmx/aes* drivers/crypto/vmx/ghash* drivers/crypto/vmx/ppc-xlate.pl drivers/crypto/vmx/vmx.c

* IBM ServeRAID RAID DRIVER

Status Orphan

Files drivers/scsi/ips.*

* ICH LPC AND GPIO DRIVER

Mail Peter Tyser <ptyser@xes-inc.com>

Status Maintained

Files drivers/gpio/gpio-ich.c drivers/mfd/lpc_ich.c

* ICY I2C DRIVER

Mail Max Staudt <max@enpas.org>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files drivers/i2c/busses/i2c-icy.c

* IDEAPAD LAPTOP EXTRAS DRIVER

Mail Ike Panhc <ike.pan@canonical.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Web-page http://launchpad.net/ideapad-laptop

Files drivers/platform/x86/ideapad-laptop.c

* IDEAPAD LAPTOP SLIDEBAR DRIVER

Mail Andrey Moiseev <o2g.org.ru@gmail.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Web-page https://github.com/o2genum/ideapad-slidebar

Files `drivers/input/misc/ideapad_slidebar.c`

* IDMAPPED MOUNTS

Mail Christian Brauner <brauner@kernel.org>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/brauner/linux.git

Files filesystems/idmappings `tools/testing/selftests/mount_setattr/` `include/linux/mnt_idmapping.h`

* IDT VersaClock 5 CLOCK DRIVER

Mail Luca Ceresoli <luca@lucaceresoli.net>

Status Maintained

Files `Documentation/devicetree/bindings/clock/idt,versaclock5.yaml` `drivers/clk/clk-versaclock5.c`

* IEEE 802.15.4 SUBSYSTEM

Mail Alexander Aring <alex.aring@gmail.com>, Stefan Schmidt <stefan@datenfreihafen.org>

Mailing list linux-wpan@vger.kernel.org

Status Maintained

Web-page https://linux-wpan.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/sschmidt/wpan.git git git://git.kernel.org/pub/scm/linux/kernel/git/sschmidt/wpan-next.git

Files networking/ieee802154 `drivers/net/ieee802154/` `include/linux/ieee802154.h` `include/linux/nl802154.h` `include/net/af_ieee802154.h` `include/net/cfg802154.h` `include/net/ieee802154_netdev.h` `include/net/mac802154.h` `include/net/nl802154.h` `net/ieee802154/` `net/mac802154/`

* IFE PROTOCOL

Mail Yotam Gigi <yotam.gi@gmail.com>, Jamal Hadi Salim <jhs@mojatatu.com>

Files `include/net/ife.h include/uapi/linux/ife.h net/ife`

* IGORPLUG-USB IR RECEIVER

Mail Sean Young <sean@mess.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/media/rc/igorplugusb.c`

* IGUANAWORKS USB IR TRANSCEIVER

Mail Sean Young <sean@mess.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/media/rc/iguanair.c`

* IIO DIGITAL POTENTIOMETER DAC

Mail Peter Rosin <peda@axentia.se>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files `Documentation/ABI/testing/sysfs-bus-iio-dac-dpot-dac Documentation/devicetree/bindings/iio/dac/dpot-dac.yaml drivers/ iio/dac/dpot-dac.c`

* IIO ENVELOPE DETECTOR

Mail Peter Rosin <peda@axentia.se>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files `Documentation/ABI/testing/sysfs-bus-iio-adc-envelope-detector Documentation/devicetree/bindings/iio/adc/envelope-detector.yaml drivers/iio/adc/envelope-detector.c`

* IIO MULTIPLEXER

Mail Peter Rosin <peda@axentia.se>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/multiplexer/io-channel-mux.
yaml drivers/iio/multiplexer/iio-mux.c

* IIO SCMI BASED DRIVER

Mail Jyoti Bhayana <jbhayana@google.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files drivers/iio/common/scmi_sensors/scmi_iio.c

* IIO SUBSYSTEM AND DRIVERS

Mail Jonathan Cameron <jic23@kernel.org>

Reviewer Lars-Peter Clausen <lars@metafoo.de>

Mailing list linux-iio@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jic23/iio.git

Files Documentation/ABI/testing/configfs-iio* Documentation/ABI/testing/
sysfs-bus-iio* Documentation/devicetree/bindings/iio/ drivers/iio/
drivers/staging/iio/ include/linux/iio/ tools/iio/

* IIO UNIT CONVERTER

Mail Peter Rosin <peda@axentia.se>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/afe/current-sense-amplifier.
yaml Documentation/devicetree/bindings/iio/afe/current-sense-shunt.
yaml Documentation/devicetree/bindings/iio/afe/voltage-divider.yaml
drivers/iio/afe/iio-rescale.c

* IKANOS/ADI EAGLE ADSL USB DRIVER

Mail Matthieu Castet <castet.matthieu@free.fr>, Stanislaw Gruszka <stf_xl@wp.pl>

Status Maintained

Files drivers/usb/atm/ueagle-atm.c

* IMAGIS TOUCHSCREEN DRIVER

Mail Markuss Broks <markuss.broks@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/input/touchscreen/imagis, ist3038c.yaml drivers/input/touchscreen/imagis.c

* IMGTEC ASCII LCD DRIVER

Mail Paul Burton <paulburton@kernel.org>

Status Maintained

Files Documentation/devicetree/bindings/auxdisplay/img,ascii-lcd.yaml drivers/auxdisplay/img-ascii-lcd.c

* IMGTEC IR DECODER DRIVER

Status Orphan

Files drivers/media/rc/img-ir/

* IMON SOUNDGRAPH USB IR RECEIVER

Mail Sean Young <sean@mess.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/rc/imon.c drivers/media/rc/imon_raw.c

* IMS TWINTURBO FRAMEBUFFER DRIVER

Mailing list linux-fbdev@vger.kernel.org

Status Orphan

Files drivers/video/fbdev/imsttfb.c

* INA209 HARDWARE MONITOR DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/hwmon/ti,ina2xx.yaml hwmon/ina209 drivers/hwmon/ina209.c

* INA2XX HARDWARE MONITOR DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/ina2xx drivers/hwmon/ina2xx.c include/linux/platform_data/ina2xx.h

* INDUSTRY PACK SUBSYSTEM (IPACK)

Mail Samuel Iglesias Gonsalvez <siglesias@igalia.com>, Jens Taprogge <jens.taprogge@taprogge.org>, Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Mailing list industrypack-devel@lists.sourceforge.net

Status Maintained

Web-page http://industrypack.sourceforge.net

Files drivers/ipack/

* INFINEON DPS310 Driver

Mail Eddie James <eajames@linux.ibm.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files drivers/iio/pressure/dps310.c

* INFINIBAND SUBSYSTEM

Mail Jason Gunthorpe <jgg@nvidia.com>, Leon Romanovsky <leonro@nvidia.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Web-page https://github.com/linux-rdma/rdma-core

Patchwork http://patchwork.kernel.org/project/linux-rdma/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rdma/rdma.git

Files Documentation/devicetree/bindings/infiniband/   Documentation/
    infiniband/   drivers/infiniband/   include/rdma/   include/trace/
    events/ib_mad.h include/trace/events/ib_umad.h include/uapi/linux/
    if_infiniband.h include/uapi/rdma/ samples/bpf/ibumad_kern.c samples/
    bpf/ibumad_user.c

* INGENIC JZ4780 NAND DRIVER

Mail Harvey Hunt <harveyhuntnexus@gmail.com>

Mailing list linux-mtd@lists.infradead.org, linux-mips@vger.kernel.org

Status Maintained

Files drivers/mtd/nand/raw/ingenic/

* INGENIC JZ47xx SoCs

Mail Paul Cercueil <paul@crapouillou.net>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files arch/mips/boot/dts/ingenic/ arch/mips/generic/board-ingenic.c arch/
    mips/include/asm/mach-ingenic/ arch/mips/ingenic/Kconfig drivers/clk/
    ingenic/ drivers/dma/dma-jz4780.c drivers/gpu/drm/ingenic/ drivers/
    i2c/busses/i2c-jz4780.c   drivers/iio/adc/ingenic-adc.c   drivers/
    irqchip/irq-ingenic.c   drivers/memory/jz4780-nemc.c   drivers/mmc/
    host/jz4740_mmc.c   drivers/mtd/nand/raw/ingenic/   drivers/pinctrl/
    pinctrl-ingenic.c   drivers/power/supply/ingenic-battery.c   drivers/
    pwm/pwm-jz4740.c   drivers/remoteproc/ingenic_rproc.c   drivers/rtc/
    rtc-jz4740.c drivers/tty/serial/8250/8250_ingenic.c drivers/usb/musb/
    jz4740.c drivers/watchdog/jz4740_wdt.c include/dt-bindings/iio/adc/
    ingenic,adc.h include/linux/mfd/ingenic-tcu.h sound/soc/codecs/jz47*
    sound/soc/jz4740/

* INJOINIC IP5xxx POWER BANK IC DRIVER

Mail Samuel Holland <samuel@sholland.org>

Status Maintained

Files drivers/power/supply/ip5xxx_power.c

* INOTIFY

Mail Jan Kara <jack@suse.cz>

Reviewer Amir Goldstein <amir73il@gmail.com>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

Files filesystems/inotify fs/notify/inotify/ include/linux/inotify.h include/uapi/linux/inotify.h

* INPUT (KEYBOARD, MOUSE, JOYSTICK, TOUCHSCREEN) DRIVERS

Mail Dmitry Torokhov <dmitry.torokhov@gmail.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Patchwork http://patchwork.kernel.org/project/linux-input/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/dtor/input.git

Files Documentation/devicetree/bindings/input/ Documentation/devicetree/bindings/serio/ Documentation/input/ drivers/input/ include/linux/input.h include/linux/input/ include/uapi/linux/input-event-codes.h include/uapi/linux/input.h

* INPUT MULTITOUCH (MT) PROTOCOL

Mail Henrik Rydberg <rydberg@bitmath.org>

Mailing list linux-input@vger.kernel.org

Status Odd fixes

Files input/multi-touch-protocol drivers/input/input-mt.c

Content regex \b(ABS|SYN)_MT_

* INSIDE SECURE CRYPTO DRIVER

Mail Antoine Tenart <atenart@kernel.org>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files `drivers/crypto/inside-secure/`

* INTEGRITY MEASUREMENT ARCHITECTURE (IMA)

Mail Mimi Zohar <zohar@linux.ibm.com>, Dmitry Kasatkin <dmitry.kasatkin@gmail.com>

Mailing list linux-integrity@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/zohar/linux-integrity.git

Files `security/integrity/ima/ security/integrity/`

* INTEL 810/815 FRAMEBUFFER DRIVER

Mail Antonino Daplas <adaplas@gmail.com>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files `drivers/video/fbdev/i810/`

* INTEL ASoC DRIVERS

Mail Cezary Rojewski <cezary.rojewski@intel.com>, Pierre-Louis Bossart <pierre-louis.bossart@linux.intel.com>, Liam Girdwood <liam.r.girdwood@linux.intel.com>, Peter Ujfalusi <peter.ujfalusi@linux.intel.com>, Bard Liao <yung-chuan.liao@linux.intel.com>, Ranjani Sridharan <ranjani.sridharan@linux.intel.com>, Kai Vehmanen <kai.vehmanen@linux.intel.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Supported

Files `sound/soc/intel/`

* INTEL ATOMISP2 DUMMY / POWER-MANAGEMENT DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/intel/atomisp2/pm.c`

* INTEL ATOMISP2 LED DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/intel/atomisp2/led.c`

* INTEL BIOS SAR INT1092 DRIVER

Mail Shravan Sudhakar <s.shravan@intel.com>, Intel Corporation <linuxwwan@intel.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/intel/int1092/`

* INTEL BROXTON PMC DRIVER

Mail Mika Westerberg <mika.westerberg@linux.intel.com>, Zha Qipeng <qipeng.zha@intel.com>

Status Maintained

Files `drivers/mfd/intel_pmc_bxt.c include/linux/mfd/intel_pmc_bxt.h`

* INTEL C600 SERIES SAS CONTROLLER DRIVER

Mail Artur Paszkiewicz <artur.paszkiewicz@intel.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

SCM git git://git.code.sf.net/p/intel-sas/isci

Files `drivers/scsi/isci/`

* INTEL CPU family model numbers

Mail Tony Luck <tony.luck@intel.com>, x86@kernel.org

Mailing list linux-kernel@vger.kernel.org

Status Supported

Files arch/x86/include/asm/intel-family.h

* INTEL DRM DRIVERS (excluding Poulsbo, Moorestown and derivative chipsets)

Mail Jani Nikula <jani.nikula@linux.intel.com>, Joonas Lahtinen <joonas.lahtinen@linux.intel.com>, Rodrigo Vivi <rodrigo.vivi@intel.com>, Tvrtko Ursulin <tvrtko.ursulin@linux.intel.com>

Mailing list intel-gfx@lists.freedesktop.org

Status Supported

Web-page https://01.org/linuxgraphics/

Patchwork http://patchwork.freedesktop.org/project/intel-gfx/

bugs https://gitlab.freedesktop.org/drm/intel/-/wikis/How-to-file-i915-bugs

chat irc://irc.oftc.net/intel-gfx

SCM git git://anongit.freedesktop.org/drm-intel

Files gpu/i915 drivers/gpu/drm/i915/ include/drm/i915* include/uapi/drm/i915_drm.h

* INTEL ETHERNET DRIVERS

Mail Jesse Brandeburg <jesse.brandeburg@intel.com>, Tony Nguyen <anthony.l.nguyen@intel.com>

Mailing list intel-wired-lan@lists.osuosl.org (moderated for non-subscribers)

Status Supported

Web-page http://www.intel.com/support/feedback.htm http://e1000.sourceforge.net/

Patchwork http://patchwork.ozlabs.org/project/intel-wired-lan/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tnguy/net-queue.git git git://git.kernel.org/pub/scm/linux/kernel/git/tnguy/next-queue.git

Files Documentation/networking/device_drivers/ethernet/intel/ drivers/net/ethernet/intel/ drivers/net/ethernet/intel/*/ include/linux/avf/virtchnl.h include/linux/net/intel/iidc.h

* INTEL ETHERNET PROTOCOL DRIVER FOR RDMA

Mail Mustafa Ismail <mustafa.ismail@intel.com>, Shiraz Saleem <shiraz.saleem@intel.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Files `drivers/infiniband/hw/irdma/ include/uapi/rdma/irdma-abi.h`

* INTEL FRAMEBUFFER DRIVER (excluding 810 and 815)

Mail Maik Broemme <mbroemme@libmpq.org>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files fb/intelfb `drivers/video/fbdev/intelfb/`

* INTEL GPIO DRIVERS

Mail Andy Shevchenko <andy@kernel.org>

Mailing list linux-gpio@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/andy/linux-gpio-intel.git

Files `drivers/gpio/gpio-ich.c drivers/gpio/gpio-merrifield.c drivers/gpio/gpio-ml-ioh.c drivers/gpio/gpio-pch.c drivers/gpio/gpio-sch.c drivers/gpio/gpio-sodaville.c`

* INTEL GVT-g DRIVERS (Intel GPU Virtualization)

Mail Zhenyu Wang <zhenyuw@linux.intel.com>, Zhi Wang <zhi.a.wang@intel.com>

Mailing list intel-gvt-dev@lists.freedesktop.org, intel-gfx@lists.freedesktop.org

Status Supported

Web-page https://01.org/igvt-g

SCM git https://github.com/intel/gvt-linux.git

Files `drivers/gpu/drm/i915/gvt/`

* INTEL HID EVENT DRIVER

Mail Alex Hung <alex.hung@canonical.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/intel/hid.c

* INTEL I/OAT DMA DRIVER

Mail Dave Jiang <dave.jiang@intel.com>

Reviewer Dan Williams <dan.j.williams@intel.com>

Mailing list dmaengine@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-dmaengine/list/

Files drivers/dma/ioat*

* INTEL IADX DRIVER

Mail Dave Jiang <dave.jiang@intel.com>

Mailing list dmaengine@vger.kernel.org

Status Supported

Files drivers/dma/idxd/* include/uapi/linux/idxd.h

* INTEL IDLE DRIVER

Mail Jacob Pan <jacob.jun.pan@linux.intel.com>, Len Brown <lenb@kernel.org>

Mailing list linux-pm@vger.kernel.org

Status Supported

bugs https://bugzilla.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/lenb/linux.git

Files drivers/idle/intel_idle.c

* INTEL IN FIELD SCAN (IFS) DEVICE

Mail Jithu Joseph <jithu.joseph@intel.com>

Reviewer Ashok Raj <ashok.raj@intel.com>, Tony Luck <tony.luck@intel.com>

Status Maintained

Files `drivers/platform/x86/intel/ifs include/trace/events/intel_ifs.h`

* INTEL INTEGRATED SENSOR HUB DRIVER

Mail Srinivas Pandruvada <srinivas.pandruvada@linux.intel.com>, Jiri Kosina <jikos@kernel.org>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `drivers/hid/intel-ish-hid/`

* INTEL IOMMU (VT-d)

Mail David Woodhouse <dwmw2@infradead.org>, Lu Baolu <baolu.lu@linux.intel.com>

Mailing list iommu@lists.linux.dev

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/joro/iommu.git

Files `drivers/iommu/intel/ include/linux/intel-iommu.h include/linux/intel-svm.h`

* INTEL IOP-ADMA DMA DRIVER

Reviewer Dan Williams <dan.j.williams@intel.com>

Status Odd fixes

Files `drivers/dma/iop-adma.c`

* INTEL IPU3 CSI-2 CIO2 DRIVER

Mail Yong Zhi <yong.zhi@intel.com>, Sakari Ailus <sakari.ailus@linux.intel.com>, Bingbu Cao <bingbu.cao@intel.com>, Dan Scally <djrscally@gmail.com>

Reviewer Tianshu Qiu <tian.shu.qiu@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files userspace-api/media/v4l/pixfmt-srggb10-ipu3   drivers/media/pci/intel/ipu3/

* INTEL IPU3 CSI-2 IMGU DRIVER

Mail Sakari Ailus <sakari.ailus@linux.intel.com>

Reviewer Bingbu Cao <bingbu.cao@intel.com>, Tianshu Qiu <tian.shu.qiu@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files admin-guide/media/ipu3 Documentation/admin-guide/media/ipu3_rcb.svg userspace-api/media/v4l/pixfmt-meta-intel-ipu3 drivers/staging/media/ipu3/

* INTEL IXP4XX CRYPTO SUPPORT

Mail Corentin Labbe <clabbe@baylibre.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files drivers/crypto/ixp4xx_crypto.c

* INTEL ISHTP ECLITE DRIVER

Mail Sumesh K Naduvalath <sumesh.k.naduvalath@intel.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Supported

Files drivers/platform/x86/intel/ishtp_eclite.c

* INTEL IXP4XX QMGR, NPE, ETHERNET and HSS SUPPORT

Mail Krzysztof Halasa <khalasa@piap.pl>

Status Maintained

Files drivers/net/ethernet/xscale/ixp4xx_eth.c drivers/net/wan/ixp4xx_hss.c drivers/soc/ixp4xx/ixp4xx-npe.c drivers/soc/ixp4xx/ixp4xx-qmgr.c include/linux/soc/ixp4xx/npe.h include/linux/soc/ixp4xx/qmgr.h

* INTEL IXP4XX RANDOM NUMBER GENERATOR SUPPORT

Mail Deepak Saxena <dsaxena@plexity.net>

Status Maintained

Files Documentation/devicetree/bindings/rng/intel,ixp46x-rng.yaml
drivers/char/hw_random/ixp4xx-rng.c

* INTEL KEEM BAY DRM DRIVER

Mail Anitha Chrisanthus <anitha.chrisanthus@intel.com>, Edmund Dea <edmund.j.dea@intel.com>

Status Maintained

Files Documentation/devicetree/bindings/display/intel,keembay-display.
yaml drivers/gpu/drm/kmb/

* INTEL KEEM BAY OCS AES/SM4 CRYPTO DRIVER

Mail Daniele Alessandrelli <daniele.alessandrelli@intel.com>

Status Maintained

Files Documentation/devicetree/bindings/crypto/intel,keembay-ocs-aes.
yaml drivers/crypto/keembay/Kconfig drivers/crypto/keembay/Makefile
drivers/crypto/keembay/keembay-ocs-aes-core.c drivers/crypto/
keembay/ocs-aes.c drivers/crypto/keembay/ocs-aes.h

* INTEL KEEM BAY OCS ECC CRYPTO DRIVER

Mail Daniele Alessandrelli <daniele.alessandrelli@intel.com>, Prabhjot Khurana
<prabhjot.khurana@intel.com>, Mark Gross <mgross@linux.intel.com>

Status Maintained

Files Documentation/devicetree/bindings/crypto/intel,keembay-ocs-ecc.
yaml drivers/crypto/keembay/Kconfig drivers/crypto/keembay/Makefile
drivers/crypto/keembay/keembay-ocs-ecc.c

* INTEL KEEM BAY OCS HCU CRYPTO DRIVER

Mail Daniele Alessandrelli <daniele.alessandrelli@intel.com>, Declan Murphy <declan.murphy@intel.com>

Status Maintained

Files Documentation/devicetree/bindings/crypto/intel,keembay-ocs-hcu.
yaml drivers/crypto/keembay/Kconfig drivers/crypto/keembay/Makefile
drivers/crypto/keembay/keembay-ocs-hcu-core.c drivers/crypto/
keembay/ocs-hcu.c drivers/crypto/keembay/ocs-hcu.h

* INTEL THUNDER BAY EMMC PHY DRIVER

Mail Nandhini Srikandan <nandhini.srikandan@intel.com>, Rashmi A <rashmi.a@intel.com>

Status Maintained

Files `Documentation/devicetree/bindings/phy/intel,phy-thunderbay-emmc.yaml drivers/phy/intel/phy-intel-thunderbay-emmc.c`

* INTEL MANAGEMENT ENGINE (mei)

Mail Tomas Winkler <tomas.winkler@intel.com>

Mailing list linux-kernel@vger.kernel.org

Status Supported

Files `Documentation/driver-api/mei/* drivers/misc/mei/ drivers/watchdog/mei_wdt.c include/linux/mei_aux.h include/linux/mei_cl_bus.h include/uapi/linux/mei.h samples/mei/*`

* INTEL MAX 10 BMC MFD DRIVER

Mail Xu Yilun <yilun.xu@intel.com>

Reviewer Tom Rix <trix@redhat.com>

Status Maintained

Files `Documentation/ABI/testing/sysfs-driver-intel-m10-bmc hwmon/intel-m10-bmc-hwmon drivers/hwmon/intel-m10-bmc-hwmon.c drivers/mfd/intel-m10-bmc.c include/linux/mfd/intel-m10-bmc.h`

* INTEL MENLOW THERMAL DRIVER

Mail Sujith Thomas <sujith.thomas@intel.com>

Mailing list linux-pm@vger.kernel.org

Status Supported

Web-page https://01.org/linux-acpi

Files `drivers/thermal/intel/intel_menlow.c`

* INTEL P-Unit IPC DRIVER

Mail Zha Qipeng <qipeng.zha@intel.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files arch/x86/include/asm/intel_punit_ipc.h drivers/platform/x86/intel/
    punit_ipc.c

* INTEL PMC CORE DRIVER

Mail Rajneesh   Bhardwaj   <irenic.rajneesh@gmail.com>,   David   E   Box
    <david.e.box@intel.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/sysfs-platform-intel-pmc   drivers/
    platform/x86/intel/pmc/

* INTEL PMIC GPIO DRIVERS

Mail Andy Shevchenko <andy@kernel.org>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/andy/linux-gpio-intel.git

Files drivers/gpio/gpio-*cove.c

* INTEL PMIC MULTIFUNCTION DEVICE DRIVERS

Mail Andy Shevchenko <andy@kernel.org>

Status Maintained

Files drivers/mfd/intel_soc_pmic* include/linux/mfd/intel_soc_pmic*

* INTEL PMT DRIVERS

Mail David E. Box <david.e.box@linux.intel.com>

Status Supported

Files drivers/platform/x86/intel/pmt/

* INTEL PRO/WIRELESS 2100, 2200BG, 2915ABG NETWORK CONNECTION SUP-PORT

Mail Stanislav Yakovlev <stas.yakovlev@gmail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files networking/device_drivers/wifi/intel/ipw2100 networking/device_drivers/wifi/intel/ipw2200 `drivers/net/wireless/intel/ipw2x00/`

* INTEL PSTATE DRIVER

Mail Srinivas Pandruvada <srinivas.pandruvada@linux.intel.com>, Len Brown <lenb@kernel.org>

Mailing list linux-pm@vger.kernel.org

Status Supported

Files `drivers/cpufreq/intel_pstate.c`

* INTEL QUADRATURE ENCODER PERIPHERAL DRIVER

Mail Jarkko Nikula <jarkko.nikula@linux.intel.com>

Mailing list linux-iio@vger.kernel.org

Files `drivers/counter/intel-qep.c`

* INTEL SCU DRIVERS

Mail Mika Westerberg <mika.westerberg@linux.intel.com>

Status Maintained

Files `arch/x86/include/asm/intel_scu_ipc.h` `drivers/platform/x86/intel_scu_*`

* INTEL SDSI DRIVER

Mail David E. Box <david.e.box@linux.intel.com>

Status Supported

Files `drivers/platform/x86/intel/sdsi.c tools/arch/x86/intel_sdsi/ tools/testing/selftests/drivers/sdsi/`

* INTEL SKYLAKE INT3472 ACPI DEVICE DRIVER

Mail Daniel Scally <djrscally@gmail.com>

Status Maintained

Files `drivers/platform/x86/intel/int3472/`

* INTEL SPEED SELECT TECHNOLOGY

Mail Srinivas Pandruvada <srinivas.pandruvada@linux.intel.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/intel/speed_select_if/     include/uapi/linux/ isst_if.h tools/power/x86/intel-speed-select/`

* INTEL STRATIX10 FIRMWARE DRIVERS

Mail Dinh Nguyen <dinguyen@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files `Documentation/ABI/testing/sysfs-devices-platform-stratix10-rsu Documentation/devicetree/bindings/firmware/intel,stratix10-svc.txt drivers/firmware/stratix10-rsu.c    drivers/firmware/stratix10-svc.c include/linux/firmware/intel/stratix10-smc.h include/linux/firmware/ intel/stratix10-svc-client.h`

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/dinguyen/linux.git

* INTEL TELEMETRY DRIVER

Mail Rajneesh   Bhardwaj   <irenic.rajneesh@gmail.com>,   "David   E.   Box" <david.e.box@linux.intel.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `arch/x86/include/asm/intel_telemetry.h drivers/platform/x86/intel/ telemetry/`

* INTEL UNCORE FREQUENCY CONTROL

Mail Srinivas Pandruvada <srinivas.pandruvada@linux.intel.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files admin-guide/pm/intel_uncore_frequency_scaling drivers/platform/x86/
intel/uncore-frequency/

* INTEL VENDOR SPECIFIC EXTENDED CAPABILITIES DRIVER

Mail David E. Box <david.e.box@linux.intel.com>

Status Supported

Files drivers/platform/x86/intel/vsec.*

* INTEL VIRTUAL BUTTON DRIVER

Mail AceLan Kao <acelan.kao@canonical.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/intel/vbtn.c

* INTEL WIRELESS 3945ABG/BG, 4965AGN (iwlegacy)

Mail Stanislaw Gruszka <stf_xl@wp.pl>

Mailing list linux-wireless@vger.kernel.org

Status Supported

Files drivers/net/wireless/intel/iwlegacy/

* INTEL WIRELESS WIFI LINK (iwlwifi)

Mail Gregory Greenman <gregory.greenman@intel.com>

Mailing list linux-wireless@vger.kernel.org

Status Supported

Web-page https://wireless.wiki.kernel.org/en/users/drivers/iwlwifi

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/iwlwifi/iwlwifi.git

Files drivers/net/wireless/intel/iwlwifi/

* INTEL WMI SLIM BOOTLOADER (SBL) FIRMWARE UPDATE DRIVER

Mail Jithu Joseph <jithu.joseph@intel.com>

Reviewer Maurice Ma <maurice.ma@intel.com>

Status Maintained

Web-page https://slimbootloader.github.io/security/firmware-update.html

Files `drivers/platform/x86/intel/wmi/sbl-fw-update.c`

* INTEL WMI THUNDERBOLT FORCE POWER DRIVER

Mailing list Dell.Client.Kernel@dell.com

Status Maintained

Files `drivers/platform/x86/intel/wmi/thunderbolt.c`

* INTEL WWAN IOSM DRIVER

Mail M Chetan Kumar <m.chetan.kumar@intel.com>, Intel Corporation <linuxwwan@intel.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/wwan/iosm/`

* INTEL(R) TRACE HUB

Mail Alexander Shishkin <alexander.shishkin@linux.intel.com>

Status Supported

Files trace/intel_th `drivers/hwtracing/intel_th/ include/linux/intel_th.h`

* INTEL(R) TRUSTED EXECUTION TECHNOLOGY (TXT)

Mail Ning Sun <ning.sun@intel.com>

Mailing list tboot-devel@lists.sourceforge.net

Status Supported

Web-page http://tboot.sourceforge.net

SCM hg http://tboot.hg.sourceforge.net:8000/hgroot/tboot/tboot

Files x86/intel_txt `arch/x86/kernel/tboot.c include/linux/tboot.h`

* INTEL SGX

Mail Jarkko Sakkinen <jarkko@kernel.org>

Reviewer Dave Hansen <dave.hansen@linux.intel.com>

Mailing list linux-sgx@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/intel-sgx/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git x86/sgx

Files x86/sgx arch/x86/entry/vdso/vsgx.S arch/x86/include/asm/sgx.h arch/
    x86/include/uapi/asm/sgx.h arch/x86/kernel/cpu/sgx/* tools/testing/
    selftests/sgx/*

Content regex \bSGX_

* INTERCONNECT API

Mail Georgi Djakov <djakov@kernel.org>

Mailing list linux-pm@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/djakov/icc.git

Files Documentation/devicetree/bindings/interconnect/   driver-
    api/interconnect   drivers/interconnect/   include/dt-bindings/
    interconnect/ include/linux/interconnect-provider.h include/linux/
    interconnect.h

* INTERRUPT COUNTER DRIVER

Mail Oleksij Rempel <o.rempel@pengutronix.de>

Reviewer Pengutronix Kernel Team <kernel@pengutronix.de>

Mailing list linux-iio@vger.kernel.org

Files Documentation/devicetree/bindings/counter/interrupt-counter.yaml
    drivers/counter/interrupt-cnt.c

* INTERSIL ISL7998X VIDEO DECODER DRIVER

Mail Michael Tretter <m.tretter@pengutronix.de>

Reviewer Pengutronix Kernel Team <kernel@pengutronix.de>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/i2c/isil,isl79987.yaml
    drivers/media/i2c/isl7998x.c

* INVENSENSE ICM-426xx IMU DRIVER

Mail Jean-Baptiste Maneyrol <jmaneyrol@invensense.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Web-page https://invensense.tdk.com/

Files Documentation/devicetree/bindings/iio/imu/invensense,icm42600.yaml
drivers/iio/imu/inv_icm42600/

* INVENSENSE MPU-3050 GYROSCOPE DRIVER

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/gyroscope/invensense,
mpu3050.yaml drivers/iio/gyro/mpu3050*

* IOC3 ETHERNET DRIVER

Mail Ralf Baechle <ralf@linux-mips.org>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/sgi/ioc3-eth.c

* IOMAP FILESYSTEM LIBRARY

Mail Christoph Hellwig <hch@infradead.org>, Darrick J. Wong <dj-wong@kernel.org>

Mailing list linux-xfs@vger.kernel.org, linux-fsdevel@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/fs/xfs/xfs-linux.git

Files fs/iomap/ include/linux/iomap.h

* IOMMU DRIVERS

Mail Joerg Roedel <joro@8bytes.org>, Will Deacon <will@kernel.org>

Mailing list iommu@lists.linux.dev

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/joro/iommu.git

Files Documentation/devicetree/bindings/iommu/ userspace-api/iommu
drivers/iommu/ include/linux/iommu.h include/linux/iova.h include/
linux/of_iommu.h include/uapi/linux/iommu.h

* IOSYS-MAP HELPERS

Mail Thomas Zimmermann <tzimmermann@suse.de>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files include/linux/iosys-map.h

* IO_URING

Mail Jens Axboe <axboe@kernel.dk>

Reviewer Pavel Begunkov <asml.silence@gmail.com>

Mailing list io-uring@vger.kernel.org

Status Maintained

SCM git git://git.kernel.dk/linux-block git git://git.kernel.dk/liburing

Files io_uring/ include/linux/io_uring.h include/uapi/linux/io_uring.h
tools/io_uring/

* IPMI SUBSYSTEM

Mail Corey Minyard <minyard@acm.org>

Mailing list openipmi-developer@lists.sourceforge.net (moderated for non-
subscribers)

Status Supported

Web-page http://openipmi.sourceforge.net/

SCM git https://github.com/cminyard/linux-ipmi.git for-next

Files driver-api/ipmi Documentation/devicetree/bindings/ipmi/ drivers/char/
ipmi/ include/linux/ipmi* include/uapi/linux/ipmi*

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* IPS SCSI RAID DRIVER

Mail Adaptec OEM Raid Solutions <aacraid@microsemi.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Web-page http://www.adaptec.com/

Files drivers/scsi/ips*

* IPVS

Mail Simon Horman <horms@verge.net.au>, Julian Anastasov <ja@ssi.bg>

Mailing list netdev@vger.kernel.org, lvs-devel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/horms/ipvs-next.git git git://git.kernel.org/pub/scm/linux/kernel/git/horms/ipvs.git

Files networking/ipvs-sysctl include/net/ip_vs.h include/uapi/linux/ip_vs.h net/netfilter/ipvs/

* IPWIRELESS DRIVER

Mail Jiri Kosina <jikos@kernel.org>, David Sterba <dsterba@suse.com>

Status Odd Fixes

Files drivers/tty/ipwireless/

* IRQ DOMAINS (IRQ NUMBER MAPPING LIBRARY)

Mail Marc Zyngier <maz@kernel.org>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git irq/core

Files core-api/irq/irq-domain include/linux/irqdomain.h kernel/irq/ irqdomain.c kernel/irq/msi.c

* IRQ SUBSYSTEM

Mail Thomas Gleixner <tglx@linutronix.de>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git irq/core

Files kernel/irq/

* IRQCHIP DRIVERS

Mail Thomas Gleixner <tglx@linutronix.de>, Marc Zyngier <maz@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git irq/core

Files Documentation/devicetree/bindings/interrupt-controller/ drivers/ irqchip/

* ISA

Mail William Breathitt Gray <vilhelm.gray@gmail.com>

Status Maintained

Files driver-api/isa `drivers/base/isa.c include/linux/isa.h`

* ISA RADIO MODULE

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/radio/radio-isa*`

* ISAPNP

Mail Jaroslav Kysela <perex@perex.cz>

Status Maintained

Files driver-api/isapnp `drivers/pnp/isapnp/ include/linux/isapnp.h`

* ISCSI

Mail Lee Duncan <lduncan@suse.com>, Chris Leech <cleech@redhat.com>, Mike Christie <michael.christie@oracle.com>

Mailing list open-iscsi@googlegroups.com, linux-scsi@vger.kernel.org

Status Maintained

Web-page www.open-iscsi.com

Files `drivers/scsi/*iscsi* include/scsi/*iscsi*`

* iSCSI BOOT FIRMWARE TABLE (iBFT) DRIVER

Mail Peter Jones <pjones@redhat.com>, Konrad Rzeszutek Wilk <konrad@kernel.org>

Status Maintained

Files drivers/firmware/iscsi_ibft*

* ISCSI EXTENSIONS FOR RDMA (ISER) INITIATOR

Mail Sagi Grimberg <sagi@grimberg.me>, Max Gurtovoy <mgurtovoy@nvidia.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Web-page http://www.openfabrics.org www.open-iscsi.org

Patchwork http://patchwork.kernel.org/project/linux-rdma/list/

Files drivers/infiniband/ulp/iser/

* ISCSI EXTENSIONS FOR RDMA (ISER) TARGET

Mail Sagi Grimberg <sagi@grimberg.me>

Mailing list linux-rdma@vger.kernel.org, target-devel@vger.kernel.org

Status Supported

Web-page http://www.linux-iscsi.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/nab/target-pending.git master

Files drivers/infiniband/ulp/isert

* ISDN/CMTP OVER BLUETOOTH

Mail Karsten Keil <isdn@linux-pingi.de>

Mailing list isdn4linux@listserv.isdn4linux.de (subscribers-only), netdev@vger.kernel.org

Status Odd Fixes

Web-page http://www.isdn4linux.de

Files Documentation/isdn/ drivers/isdn/capi/ include/linux/isdn/ include/uapi/linux/isdn/ net/bluetooth/cmtp/

* ISDN/mISDN SUBSYSTEM

Mail Karsten Keil <isdn@linux-pingi.de>

Mailing list isdn4linux@listserv.isdn4linux.de (subscribers-only), net-dev@vger.kernel.org

Status Maintained

Web-page http://www.isdn4linux.de

Files drivers/isdn/Kconfig drivers/isdn/Makefile drivers/isdn/hardware/ drivers/isdn/mISDN/

* IT87 HARDWARE MONITORING DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/it87 drivers/hwmon/it87.c

* IT913X MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/tuners/it913x*

* ITE IT66121 HDMI BRIDGE DRIVER

Mail Phong LE <ple@baylibre.com>, Neil Armstrong <narmstrong@baylibre.com>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/bridge/ite,it66121.yaml drivers/gpu/drm/bridge/ite-it66121.c

* IVTV VIDEO4LINUX DRIVER

Mail Andy Walls <awalls@md.metrocast.net>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files Documentation/admin-guide/media/ivtv*   drivers/media/pci/ivtv/
    include/uapi/linux/ivtv*

* IX2505V MEDIA DRIVER

Mail Malcolm Priestley <tvboxspy@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

Files drivers/media/dvb-frontends/ix2505v*

* JAILHOUSE HYPERVISOR INTERFACE

Mail Jan Kiszka <jan.kiszka@siemens.com>

Mailing list jailhouse-dev@googlegroups.com

Status Maintained

Files arch/x86/include/asm/jailhouse_para.h arch/x86/kernel/jailhouse.c

* JC42.4 TEMPERATURE SENSOR DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/hwmon/jedec,jc42.yaml hwmon/jc42
    drivers/hwmon/jc42.c

* JFS FILESYSTEM

Mail Dave Kleikamp <shaggy@kernel.org>

Mailing list jfs-discussion@lists.sourceforge.net

Status Maintained

Web-page http://jfs.sourceforge.net/

SCM git git://github.com/kleikamp/linux-shaggy.git

Files admin-guide/jfs fs/jfs/

* JME NETWORK DRIVER

Mail Guo-Fu Tseng <cooldavid@cooldavid.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/ethernet/jme.*`

* JOURNALLING FLASH FILE SYSTEM V2 (JFFS2)

Mail David Woodhouse <dwmw2@infradead.org>, Richard Weinberger <richard@nod.at>

Mailing list linux-mtd@lists.infradead.org

Status Odd Fixes

Web-page http://www.linux-mtd.infradead.org/doc/jffs2.html

SCM git git://git.infradead.org/ubifs-2.6.git

Files `fs/jffs2/ include/uapi/linux/jffs2.h`

* JOURNALLING LAYER FOR BLOCK DEVICES (JBD2)

Mail "Theodore Ts'o" <tytso@mit.edu>, Jan Kara <jack@suse.com>

Mailing list linux-ext4@vger.kernel.org

Status Maintained

Files `fs/jbd2/ include/linux/jbd2.h`

* JPU V4L2 MEM2MEM DRIVER FOR RENESAS

Mail Mikhail Ulyanov <mikhail.ulyanov@cogentembedded.com>

Mailing list linux-media@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Maintained

Files drivers/media/platform/renesas/rcar_jpu.c

* JSM Neo PCI based serial card

Mailing list linux-serial@vger.kernel.org

Status Orphan

Files drivers/tty/serial/jsm/

* K10TEMP HARDWARE MONITORING DRIVER

Mail Clemens Ladisch <clemens@ladisch.de>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/k10temp drivers/hwmon/k10temp.c

* K8TEMP HARDWARE MONITORING DRIVER

Mail Rudolf Marek <r.marek@assembler.cz>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/k8temp drivers/hwmon/k8temp.c

* KASAN

Mail Andrey Ryabinin <ryabinin.a.a@gmail.com>

Reviewer Alexander Potapenko <glider@google.com>, Andrey Konovalov <andreyknvl@gmail.com>, Dmitry Vyukov <dvyukov@google.com>, Vincenzo Frascino <vincenzo.frascino@arm.com>

Mailing list kasan-dev@googlegroups.com

Status Maintained

Files dev-tools/kasan   arch/*/include/asm/*kasan.h   arch/*/mm/kasan_init* include/linux/kasan*.h lib/Kconfig.kasan lib/test_kasan*.c mm/kasan/ scripts/Makefile.kasan

* KCONFIG

Mail Masahiro Yamada <masahiroy@kernel.org>

Mailing list linux-kbuild@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/masahiroy/linux-kbuild.git kconfig

Files Documentation/kbuild/kconfig* scripts/Kconfig.include scripts/kconfig/

* KCOV

Reviewer Dmitry Vyukov <dvyukov@google.com>, Andrey Konovalov <andreyknvl@gmail.com>

Mailing list kasan-dev@googlegroups.com

Status Maintained

Files dev-tools/kcov include/linux/kcov.h include/uapi/linux/kcov.h kernel/kcov.c scripts/Makefile.kcov

* KCSAN

Mail Marco Elver <elver@google.com>

Reviewer Dmitry Vyukov <dvyukov@google.com>

Mailing list kasan-dev@googlegroups.com

Status Maintained

Files dev-tools/kcsan include/linux/kcsan*.h kernel/kcsan/ lib/Kconfig.kcsan scripts/Makefile.kcsan

* KDUMP

Mail Baoquan He <bhe@redhat.com>

Reviewer Vivek Goyal <vgoyal@redhat.com>, Dave Young <dyoung@redhat.com>

Mailing list kexec@lists.infradead.org

Status Maintained

Web-page http://lse.sourceforge.net/kdump/

Files Documentation/admin-guide/kdump/ fs/proc/vmcore.c include/linux/crash_core.h include/linux/crash_dump.h include/uapi/linux/vmcore.h kernel/crash_*.c

* KEENE FM RADIO TRANSMITTER DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/radio/radio-keene*`

* KERNEL AUTOMOUNTER

Mail Ian Kent <raven@themaw.net>

Mailing list autofs@vger.kernel.org

Status Maintained

Files `fs/autofs/`

* KERNEL BUILD + files below scripts/ (unless maintained elsewhere)

Mail Masahiro Yamada <masahiroy@kernel.org>, Michal Marek <michal.lkml@markovi.net>

Reviewer Nick Desaulniers <ndesaulniers@google.com>

Mailing list linux-kbuild@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/masahiroy/linux-kbuild.git

Files `Documentation/kbuild/ Makefile scripts/*vmlinux* scripts/Kbuild*`
`scripts/Makefile* scripts/basic/ scripts/dummy-tools/ scripts/mk*`
`scripts/mod/ scripts/package/`

* KERNEL JANITORS

Mailing list kernel-janitors@vger.kernel.org

Status Odd Fixes

Web-page http://kernelnewbies.org/KernelJanitors

* KERNEL NFSD, SUNRPC, AND LOCKD SERVERS

Mail Chuck Lever <chuck.lever@oracle.com>, Jeff Layton <jlayton@kernel.org>

Mailing list linux-nfs@vger.kernel.org

Status Supported

Web-page http://nfs.sourceforge.net/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/cel/linux.git

Files fs/lockd/ fs/nfs_common/ fs/nfsd/ include/linux/lockd/ include/linux/sunrpc/ include/uapi/linux/nfsd/ include/uapi/linux/sunrpc/ net/sunrpc/ Documentation/filesystems/nfs/

* KERNEL REGRESSIONS

Mail Thorsten Leemhuis <linux@leemhuis.info>

Mailing list regressions@lists.linux.dev

Status Supported

Files admin-guide/reporting-regressions *process/handling-regressions*

* KERNEL SELFTEST FRAMEWORK

Mail Shuah Khan <shuah@kernel.org>, Shuah Khan <skhan@linuxfoundation.org>

Mailing list linux-kselftest@vger.kernel.org

Status Maintained

Patchwork https://patchwork.kernel.org/project/linux-kselftest/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/shuah/linux-kselftest.git

Files Documentation/dev-tools/kselftest* tools/testing/selftests/

* KERNEL SMB3 SERVER (KSMBD)

Mail Namjae Jeon <linkinjeon@kernel.org>, Steve French <sfrench@samba.org>, Hyunchul Lee <hyc.lee@gmail.com>

Reviewer Sergey Senozhatsky <senozhatsky@chromium.org>

Mailing list linux-cifs@vger.kernel.org

Status Maintained

SCM git git://git.samba.org/ksmbd.git

Files fs/ksmbd/ fs/smbfs_common/

* KERNEL UNIT TESTING FRAMEWORK (KUnit)

Mail Brendan Higgins <brendanhiggins@google.com>

Mailing list linux-kselftest@vger.kernel.org, kunit-dev@googlegroups.com

Status Maintained

Web-page https://google.github.io/kunit-docs/third_party/kernel/docs/

Files `Documentation/dev-tools/kunit/   include/kunit/   lib/kunit/   tools/` `testing/kunit/`

* KERNEL USERMODE HELPER

Mail Luis Chamberlain <mcgrof@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files `include/linux/umh.h kernel/umh.c`

* KERNEL VIRTUAL MACHINE (KVM)

Mail Paolo Bonzini <pbonzini@redhat.com>

Mailing list kvm@vger.kernel.org

Status Supported

Web-page http://www.linux-kvm.org

SCM git git://git.kernel.org/pub/scm/virt/kvm/kvm.git

Files `Documentation/virt/kvm/    include/asm-generic/kvm*    include/kvm/` `iodev.h include/linux/kvm* include/trace/events/kvm.h include/uapi/` `asm-generic/kvm*  include/uapi/linux/kvm*  tools/kvm/  tools/testing/` `selftests/kvm/ virt/kvm/*`

* KERNEL VIRTUAL MACHINE FOR ARM64 (KVM/arm64)

Mail Marc Zyngier <maz@kernel.org>

Reviewer James Morse <james.morse@arm.com>, Alexandru Elisei <alexandru.elisei@arm.com>, Suzuki K Poulose <suzuki.poulose@arm.com>, Oliver Upton <oliver.upton@linux.dev>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), kvmarm@lists.cs.columbia.edu (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kvmarm/kvmarm.git

Files `arch/arm64/include/asm/kvm* arch/arm64/include/uapi/asm/kvm* arch/` `arm64/kvm/  include/kvm/arm_*  tools/testing/selftests/kvm/*/aarch64/` `tools/testing/selftests/kvm/aarch64/`

* KERNEL VIRTUAL MACHINE FOR MIPS (KVM/mips)

Mail Huacai Chen <chenhuacai@kernel.org>, Aleksandar Markovic <aleksandar.qemu.devel@gmail.com>

Mailing list linux-mips@vger.kernel.org, kvm@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/virt/kvm/kvm.git

Files `arch/mips/include/asm/kvm*  arch/mips/include/uapi/asm/kvm*  arch/ mips/kvm/`

* KERNEL VIRTUAL MACHINE FOR POWERPC (KVM/powerpc)

Mailing list linuxppc-dev@lists.ozlabs.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/powerpc/linux.git topic/ppc-kvm

Files `arch/powerpc/include/asm/kvm*   arch/powerpc/include/uapi/asm/kvm* arch/powerpc/kernel/kvm* arch/powerpc/kvm/`

* KERNEL VIRTUAL MACHINE FOR RISC-V (KVM/riscv)

Mail Anup Patel <anup@brainfault.org>

Reviewer Atish Patra <atishp@atishpatra.org>

Mailing list kvm@vger.kernel.org, kvm-riscv@lists.infradead.org, linux-riscv@lists.infradead.org

Status Maintained

SCM git git://github.com/kvm-riscv/linux.git

Files `arch/riscv/include/asm/kvm* arch/riscv/include/uapi/asm/kvm* arch/ riscv/kvm/ tools/testing/selftests/kvm/*/riscv/`

* KERNEL VIRTUAL MACHINE for s390 (KVM/s390)

Mail Christian Borntraeger <borntraeger@linux.ibm.com>, Janosch Frank <frankja@linux.ibm.com>, Claudio Imbrenda <imbrenda@linux.ibm.com>

Reviewer David Hildenbrand <david@redhat.com>

Mailing list kvm@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kvms390/linux.git

Files `Documentation/virt/kvm/s390*` `arch/s390/include/asm/gmap.h` `arch/` `s390/include/asm/kvm*` `arch/s390/include/uapi/asm/kvm*` `arch/s390/` `include/uapi/asm/uvdevice.h` `arch/s390/kernel/uv.c` `arch/s390/kvm/` `arch/s390/mm/gmap.c` `drivers/s390/char/uvdevice.c` `tools/testing/` `selftests/drivers/s390x/uvdevice/` `tools/testing/selftests/kvm/*/` `s390x/` `tools/testing/selftests/kvm/s390x/`

* KERNEL VIRTUAL MACHINE FOR X86 (KVM/x86)

Mail Sean Christopherson <seanjc@google.com>, Paolo Bonzini <pbonzini@redhat.com>

Mailing list kvm@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/virt/kvm/kvm.git

Files `arch/x86/include/asm/kvm*` `arch/x86/include/asm/svm.h` `arch/x86/` `include/asm/vmx*.h` `arch/x86/include/uapi/asm/kvm*` `arch/x86/include/` `uapi/asm/svm.h` `arch/x86/include/uapi/asm/vmx.h` `arch/x86/kvm/` `arch/` `x86/kvm/*/`

* KVM PARAVIRT (KVM/paravirt)

Mail Paolo Bonzini <pbonzini@redhat.com>

Reviewer Wanpeng Li <wanpengli@tencent.com>, Vitaly Kuznetsov <vkuznets@redhat.com>

Mailing list kvm@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/virt/kvm/kvm.git

Files `arch/x86/kernel/kvm.c` `arch/x86/kernel/kvmclock.c` `arch/x86/include/` `asm/pvclock-abi.h` `include/linux/kvm_para.h` `include/uapi/linux/` `kvm_para.h` `include/uapi/asm-generic/kvm_para.h` `include/asm-generic/` `kvm_para.h` `arch/um/include/asm/kvm_para.h` `arch/x86/include/asm/` `kvm_para.h` `arch/x86/include/uapi/asm/kvm_para.h`

* KVM X86 HYPER-V (KVM/hyper-v)

Mail Vitaly Kuznetsov <vkuznets@redhat.com>, Sean Christopherson <seanjc@google.com>, Paolo Bonzini <pbonzini@redhat.com>

Mailing list kvm@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/virt/kvm/kvm.git

Files `arch/x86/kvm/hyperv.*` `arch/x86/kvm/kvm_onhyperv.*` `arch/x86/kvm/svm/` `hyperv.*` `arch/x86/kvm/svm/svm_onhyperv.*` `arch/x86/kvm/vmx/evmcs.*`

* KERNFS

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>, Tejun Heo <tj@kernel.org>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/driver-core.git

Files `fs/kernfs/ include/linux/kernfs.h`

* KEXEC

Mail Eric Biederman <ebiederm@xmission.com>

Mailing list kexec@lists.infradead.org

Status Maintained

Web-page http://kernel.org/pub/linux/utils/kernel/kexec/

Files `include/linux/kexec.h include/uapi/linux/kexec.h kernel/kexec*`

* KEYS-ENCRYPTED

Mail Mimi Zohar <zohar@linux.ibm.com>

Mailing list linux-integrity@vger.kernel.org, keyrings@vger.kernel.org

Status Supported

Files `security/keys/trusted-encrypted include/keys/encrypted-type.h security/keys/encrypted-keys/`

* KEYS-TRUSTED

Mail James Bottomley <jejb@linux.ibm.com>, Jarkko Sakkinen <jarkko@kernel.org>, Mimi Zohar <zohar@linux.ibm.com>

Mailing list linux-integrity@vger.kernel.org, keyrings@vger.kernel.org

Status Supported

Files `security/keys/trusted-encrypted include/keys/trusted-type.h include/keys/trusted_tpm.h security/keys/trusted-keys/`

* **KEYS-TRUSTED-TEE**

Mail Sumit Garg <sumit.garg@linaro.org>

Mailing list linux-integrity@vger.kernel.org, keyrings@vger.kernel.org

Status Supported

Files `include/keys/trusted_tee.h security/keys/trusted-keys/trusted_tee.`
`c`

* **KEYS-TRUSTED-CAAM**

Mail Ahmad Fatoum <a.fatoum@pengutronix.de>

Reviewer Pengutronix Kernel Team <kernel@pengutronix.de>

Mailing list linux-integrity@vger.kernel.org, keyrings@vger.kernel.org

Status Maintained

Files `include/keys/trusted_caam.h          security/keys/trusted-keys/`
`trusted_caam.c`

* **KEYS/KEYRINGS**

Mail David Howells <dhowells@redhat.com>, Jarkko Sakkinen
<jarkko@kernel.org>

Mailing list keyrings@vger.kernel.org

Status Maintained

Files `security/keys/core  include/keys/  include/linux/key-type.h  include/`
`linux/key.h     include/linux/keyctl.h     include/uapi/linux/keyctl.h`
`security/keys/`

* **KEYS/KEYRINGS_INTEGRITY**

Mail Jarkko Sakkinen <jarkko@kernel.org>, Mimi Zohar <zohar@linux.ibm.com>

Mailing list linux-integrity@vger.kernel.org, keyrings@vger.kernel.org

Status Supported

Files `security/integrity/platform_certs`

* KFENCE

Mail Alexander Potapenko <glider@google.com>, Marco Elver <elver@google.com>

Reviewer Dmitry Vyukov <dvyukov@google.com>

Mailing list kasan-dev@googlegroups.com

Status Maintained

Files dev-tools/kfence `arch/*/include/asm/kfence.h` `include/linux/kfence.h` `lib/Kconfig.kfence mm/kfence/`

* KFIFO

Mail Stefani Seibold <stefani@seibold.net>

Status Maintained

Files `include/linux/kfifo.h lib/kfifo.c samples/kfifo/`

* KGDB / KDB /debug_core

Mail Jason Wessel <jason.wessel@windriver.com>, Daniel Thompson <daniel.thompson@linaro.org>

Reviewer Douglas Anderson <dianders@chromium.org>

Mailing list kgdb-bugreport@lists.sourceforge.net

Status Maintained

Web-page http://kgdb.wiki.kernel.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jwessel/kgdb.git

Files dev-tools/kgdb `drivers/misc/kgdbts.c` `drivers/tty/serial/kgdboc.c` `include/linux/kdb.h include/linux/kgdb.h kernel/debug/ kernel/module/ kdb.c`

* KHADAS MCU MFD DRIVER

Mail Neil Armstrong <narmstrong@baylibre.com>

Mailing list linux-amlogic@lists.infradead.org

Status Maintained

Files `Documentation/devicetree/bindings/mfd/khadas,mcu.yaml` `drivers/ mfd/khadas-mcu.c` `include/linux/mfd/khadas-mcu.h` `drivers/thermal/ khadas_mcu_fan.c`

* KMEMLEAK

Mail Catalin Marinas <catalin.marinas@arm.com>

Status Maintained

Files dev-tools/kmemleak include/linux/kmemleak.h mm/kmemleak.c samples/
kmemleak/kmemleak-test.c

* KMOD KERNEL MODULE LOADER - USERMODE HELPER

Mail Luis Chamberlain <mcgrof@kernel.org>

Mailing list linux-kernel@vger.kernel.org, linux-modules@vger.kernel.org

Status Maintained

Files include/linux/kmod.h kernel/kmod.c lib/test_kmod.c tools/testing/
selftests/kmod/

* KPROBES

Mail Naveen N. Rao <naveen.n.rao@linux.ibm.com>, Anil S Keshavamurthy
<anil.s.keshavamurthy@intel.com>, "David S. Miller" <davem@davemloft.net>,
Masami Hiramatsu <mhiramat@kernel.org>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rostedt/linux-trace.git

Files trace/kprobes include/asm-generic/kprobes.h include/linux/kprobes.h
kernel/kprobes.c lib/test_kprobes.c samples/kprobes

* KS0108 LCD CONTROLLER DRIVER

Mail Miguel Ojeda <ojeda@kernel.org>

Status Maintained

Files admin-guide/auxdisplay/ks0108 drivers/auxdisplay/ks0108.c include/
linux/ks0108.h

* KTD253 BACKLIGHT DRIVER

Mail Linus Walleij <linus.walleij@linaro.org>

Status Maintained

Files Documentation/devicetree/bindings/leds/backlight/kinetic,ktd253.
yaml drivers/video/backlight/ktd253-backlight.c

* KTEST

Mail Steven Rostedt <rostedt@goodmis.org>, John Hawley <warthog9@eaglescrag.net>

Status Maintained

Files `tools/testing/ktest`

* L3MDEV

Mail David Ahern <dsahern@kernel.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `include/net/l3mdev.h net/l3mdev`

* LANDLOCK SECURITY MODULE

Mail Mickaël Salaün <mic@digikod.net>

Mailing list linux-security-module@vger.kernel.org

Status Supported

Web-page https://landlock.io

SCM git https://github.com/landlock-lsm/linux.git

Files `security/landlock userspace-api/landlock include/uapi/linux/landlock.h samples/landlock/ security/landlock/ tools/testing/selftests/landlock/`

Content regex `landlock LANDLOCK`

* LANTIQ / INTEL Ethernet drivers

Mail Hauke Mehrtens <hauke@hauke-m.de>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/dsa/lantiq_gswip.c drivers/net/dsa/lantiq_pce.h drivers/net/ethernet/lantiq_xrx200.c net/dsa/tag_gswip.c`

* LANTIQ MIPS ARCHITECTURE

Mail John Crispin <john@phrozen.org>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files arch/mips/lantiq drivers/soc/lantiq

* LASI 53c700 driver for PARISC

Mail "James E.J. Bottomley" <James.Bottomley@HansenPartnership.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files scsi/53c700 drivers/scsi/53c700*

* LEAKING_ADDRESSES

Mail Tobin C. Harding <me@tobin.cc>, Tycho Andersen <tycho@tycho.pizza>

Mailing list linux-hardening@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tobin/leaks.git

Files scripts/leaking_addresses.pl

* LED SUBSYSTEM

Mail Pavel Machek <pavel@ucw.cz>

Mailing list linux-leds@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pavel/linux-leds.git

Files Documentation/devicetree/bindings/leds/   drivers/leds/   include/
    linux/leds.h

* LEGACY EEPROM DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Status Maintained

Files misc-devices/eeprom drivers/misc/eeprom/eeprom.c

* LEGO MINDSTORMS EV3

Reviewer David Lechner <david@lechnology.com>

Status Maintained

Files Documentation/devicetree/bindings/power/supply/lego,ev3-battery.
    yaml   arch/arm/boot/dts/da850-lego-ev3.dts   drivers/power/supply/
    lego_ev3_battery.c

* LEGO USB Tower driver

Mail Juergen Stuber <starblue@users.sourceforge.net>

Mailing list legousb-devel@lists.sourceforge.net

Status Maintained

Web-page http://legousb.sourceforge.net/

Files drivers/usb/misc/legousbtower.c

* LETSKETCH HID TABLET DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/hid/hid.git

Files drivers/hid/hid-letsketch.c

* LG LAPTOP EXTRAS

Mail Matan Ziv-Av <matan@svgalib.org>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/sysfs-platform-lg-laptop   admin-
    guide/laptops/lg-laptop drivers/platform/x86/lg-laptop.c

* LG2160 MEDIA DRIVER

Mail Michael Krufky <mkrufky@linuxtv.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://github.com/mkrufky

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/mkrufky/tuners.git

Files `drivers/media/dvb-frontends/lg2160.*`

* LGDT3305 MEDIA DRIVER

Mail Michael Krufky <mkrufky@linuxtv.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://github.com/mkrufky

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/mkrufky/tuners.git

Files `drivers/media/dvb-frontends/lgdt3305.*`

* LIBATA PATA ARASAN COMPACT FLASH CONTROLLER

Mail Viresh Kumar <vireshk@kernel.org>

Mailing list linux-ide@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/axboe/linux-block.git

Files `drivers/ata/pata_arasan_cf.c include/linux/pata_arasan_cf_data.h`

* LIBATA PATA DRIVERS

Reviewer Sergey Shtylyov <s.shtylyov@omp.ru>

Mailing list linux-ide@vger.kernel.org

Files `drivers/ata/ata_*.c drivers/ata/pata_*.c`

* LIBATA PATA FARADAY FTIDE010 AND GEMINI SATA BRIDGE DRIVERS

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-ide@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/axboe/linux-block.git

Files `drivers/ata/pata_ftide010.c drivers/ata/sata_gemini.c drivers/ata/sata_gemini.h`

* LIBATA SATA AHCI PLATFORM devices support

Mail Hans de Goede <hdegoede@redhat.com>, Jens Axboe <axboe@kernel.dk>

Mailing list linux-ide@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/axboe/linux-block.git

Files drivers/ata/ahci_platform.c drivers/ata/libahci_platform.c include/
linux/ahci_platform.h

* LIBATA SATA PROMISE TX2/TX4 CONTROLLER DRIVER

Mail Mikael Pettersson <mikpelinux@gmail.com>

Mailing list linux-ide@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/axboe/linux-block.git

Files drivers/ata/sata_promise.*

* LIBATA SUBSYSTEM (Serial and Parallel ATA drivers)

Mail Damien Le Moal <damien.lemoal@opensource.wdc.com>

Mailing list linux-ide@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/dlemoal/libata.git

Files Documentation/ABI/testing/sysfs-ata   Documentation/devicetree/
bindings/ata/ drivers/ata/ include/linux/ata.h include/linux/libata.h

* LIBNVDIMM BTT: BLOCK TRANSLATION TABLE

Mail Vishal   Verma   <vishal.l.verma@intel.com>,   Dan   Williams
<dan.j.williams@intel.com>, Dave Jiang <dave.jiang@intel.com>

Mailing list nvdimm@lists.linux.dev

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-nvdimm/list/

P nvdimm/maintainer-entry-profile

Files drivers/nvdimm/btt*

* LIBNVDIMM PMEM: PERSISTENT MEMORY DRIVER

Mail Dan Williams <dan.j.williams@intel.com>, Vishal Verma <vishal.l.verma@intel.com>, Dave Jiang <dave.jiang@intel.com>

Mailing list nvdimm@lists.linux.dev

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-nvdimm/list/

P nvdimm/maintainer-entry-profile

Files drivers/nvdimm/pmem*

* LIBNVDIMM: DEVICETREE BINDINGS

Mail Oliver O'Halloran <oohall@gmail.com>

Mailing list nvdimm@lists.linux.dev

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-nvdimm/list/

Files Documentation/devicetree/bindings/pmem/pmem-region.txt drivers/nvdimm/of_pmem.c

* LIBNVDIMM: NON-VOLATILE MEMORY DEVICE SUBSYSTEM

Mail Dan Williams <dan.j.williams@intel.com>, Vishal Verma <vishal.l.verma@intel.com>, Dave Jiang <dave.jiang@intel.com>, Ira Weiny <ira.weiny@intel.com>

Mailing list nvdimm@lists.linux.dev

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-nvdimm/list/

P nvdimm/maintainer-entry-profile

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/nvdimm/nvdimm.git

Files drivers/acpi/nfit/* drivers/nvdimm/* include/linux/libnvdimm.h include/linux/nd.h include/uapi/linux/ndctl.h tools/testing/nvdimm/

* LICENSES and SPDX stuff

Mail Thomas Gleixner <tglx@linutronix.de>, Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Mailing list linux-spdx@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/spdx.git

Files COPYING *process/license-rules* LICENSES/ scripts/spdxcheck-test.sh
scripts/spdxcheck.py

* LINEAR RANGES HELPERS

Mail Mark Brown <broonie@kernel.org>

Reviewer Matti Vaittinen <mazziesaccount@gmail.com>

Files lib/linear_ranges.c lib/test_linear_ranges.c include/linux/
linear_range.h

* LINUX FOR POWER MACINTOSH

Mail Benjamin Herrenschmidt <benh@kernel.crashing.org>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Odd Fixes

Files arch/powerpc/platforms/powermac/ drivers/macintosh/

* LINUX FOR POWERPC (32-BIT AND 64-BIT)

Mail Michael Ellerman <mpe@ellerman.id.au>

Reviewer Benjamin Herrenschmidt <benh@kernel.crashing.org>, Paul Mackerras
<paulus@samba.org>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Supported

Web-page https://github.com/linuxppc/wiki/wiki

Patchwork http://patchwork.ozlabs.org/project/linuxppc-dev/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/powerpc/linux.git

Files Documentation/ABI/stable/sysfs-firmware-opal-* Documentation/
devicetree/bindings/i2c/i2c-opal.txt Documentation/devicetree/
bindings/powerpc/ Documentation/devicetree/bindings/rtc/rtc-opal.txt
Documentation/powerpc/ arch/powerpc/ drivers/*/*/*pasemi* drivers/
*/*pasemi* drivers/char/tpm/tpm_ibmvtpm* drivers/crypto/nx/ drivers/
crypto/vmx/ drivers/i2c/busses/i2c-opal.c drivers/net/ethernet/ibm/
ibmveth.* drivers/net/ethernet/ibm/ibmvnic.* drivers/pci/hotplug/
pnv_php.c drivers/pci/hotplug/rpa* drivers/rtc/rtc-opal.c drivers/
scsi/ibmvscsi/ drivers/tty/hvc/hvc_opal.c drivers/watchdog/wdrtas.c
tools/testing/selftests/powerpc

Regex /pmac powermac powernv [^a-z0-9]ps3 pseries

* LINUX FOR POWERPC EMBEDDED MPC5XXX

Mail Anatolij Gustschin <agust@denx.de>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Odd Fixes

Files arch/powerpc/platforms/512x/ arch/powerpc/platforms/52xx/

* LINUX FOR POWERPC EMBEDDED PPC4XX

Mailing list linuxppc-dev@lists.ozlabs.org

Status Orphan

Files arch/powerpc/platforms/40x/ arch/powerpc/platforms/44x/

* LINUX FOR POWERPC EMBEDDED PPC83XX AND PPC85XX

Mail Scott Wood <oss@buserror.net>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Odd fixes

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/scottwood/linux.git

Files Documentation/devicetree/bindings/powerpc/fsl/ arch/powerpc/
platforms/83xx/ arch/powerpc/platforms/85xx/

* LINUX FOR POWERPC EMBEDDED PPC8XX

Mail Christophe Leroy <christophe.leroy@csgroup.eu>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Maintained

Files arch/powerpc/platforms/8xx/

* LINUX KERNEL DUMP TEST MODULE (LKDTM)

Mail Kees Cook <keescook@chromium.org>

Status Maintained

Files drivers/misc/lkdtm/* tools/testing/selftests/lkdtm/*

* LINUX KERNEL MEMORY CONSISTENCY MODEL (LKMM)

Mail Alan Stern <stern@rowland.harvard.edu>, Andrea Parri <parri.andrea@gmail.com>, Will Deacon <will@kernel.org>, Peter Zijlstra <peterz@infradead.org>, Boqun Feng <boqun.feng@gmail.com>, Nicholas Piggin <npiggin@gmail.com>, David Howells <dhowells@redhat.com>, Jade Alglave <j.alglave@ucl.ac.uk>, Luc Maranget <luc.maranget@inria.fr>, "Paul E. McKenney" <paulmck@kernel.org>

Reviewer Akira Yokosawa <akiyks@gmail.com>, Daniel Lustig <dlustig@nvidia.com>, Joel Fernandes <joel@joelfernandes.org>

Mailing list linux-kernel@vger.kernel.org, linux-arch@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/paulmck/linux-rcu.git dev

Files `Documentation/atomic_bitops.txt` `Documentation/atomic_t.txt` `core-api/refcount-vs-atomic` `Documentation/litmus-tests/` `Documentation/memory-barriers.txt tools/memory-model/`

* LIS3LV02D ACCELEROMETER DRIVER

Mail Eric Piel <eric.piel@tremplin-utc.net>

Status Maintained

Files `misc-devices/lis3lv02d drivers/misc/lis3lv02d/ drivers/platform/x86/hp_accel.c`

* LIST KUNIT TEST

Mail David Gow <davidgow@google.com>

Mailing list linux-kselftest@vger.kernel.org, kunit-dev@googlegroups.com

Status Maintained

Files `lib/list-test.c`

* LITEX PLATFORM

Mail Karol Gugala <kgugala@antmicro.com>, Mateusz Holenko <mholenko@antmicro.com>, Gabriel Somlo <gsomlo@gmail.com>, Joel Stanley <joel@jms.id.au>

Status Maintained

Files `Documentation/devicetree/bindings/*/litex,*.yaml arch/openrisc/boot/dts/or1klitex.dts include/linux/litex.h drivers/tty/serial/liteuart.c drivers/soc/litex/* drivers/net/ethernet/litex/* drivers/mmc/host/litex_mmc.c`

Regex `litex`

* LIVE PATCHING

Mail Josh Poimboeuf <jpoimboe@kernel.org>, Jiri Kosina <jikos@kernel.org>, Miroslav Benes <mbenes@suse.cz>, Petr Mladek <pmladek@suse.com>

Reviewer Joe Lawrence <joe.lawrence@redhat.com>

Mailing list live-patching@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/livepatching/livepatching.git

Files Documentation/ABI/testing/sysfs-kernel-livepatch   Documentation/
livepatch/   arch/powerpc/include/asm/livepatch.h   include/linux/
livepatch.h   kernel/livepatch/   kernel/module/livepatch.c   lib/
livepatch/ samples/livepatch/ tools/testing/selftests/livepatch/

* LLC (802.2)

Mailing list netdev@vger.kernel.org

Status Odd fixes

Files include/linux/llc.h include/net/llc* include/uapi/linux/llc.h net/
llc/

* LM73 HARDWARE MONITOR DRIVER

Mail Guillaume Ligneul <guillaume.ligneul@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files drivers/hwmon/lm73.c

* LM78 HARDWARE MONITOR DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/lm78 drivers/hwmon/lm78.c

* LM83 HARDWARE MONITOR DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/lm83 `drivers/hwmon/lm83.c`

* LM90 HARDWARE MONITOR DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/hwmon/national,lm90.yaml` hwmon/lm90 `drivers/hwmon/lm90.c include/dt-bindings/thermal/lm90.h`

* LM95234 HARDWARE MONITOR DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/lm95234 `drivers/hwmon/lm95234.c`

* LME2510 MEDIA DRIVER

Mail Malcolm Priestley <tvboxspy@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

Files `drivers/media/usb/dvb-usb-v2/lmedm04*`

* LOADPIN SECURITY MODULE

Mail Kees Cook <keescook@chromium.org>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git lsm/loadpin

Files admin-guide/LSM/LoadPin `security/loadpin/`

* LOCKING PRIMITIVES

Mail Peter Zijlstra <peterz@infradead.org>, Ingo Molnar <mingo@redhat.com>, Will Deacon <will@kernel.org>

Reviewer Waiman Long <longman@redhat.com>, Boqun Feng <boqun.feng@gmail.com> (LOCKDEP)

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git locking/core

Files Documentation/locking/ arch/*/include/asm/spinlock*.h include/linux/lockdep.h include/linux/mutex*.h include/linux/rwlock*.h include/linux/rwsem*.h include/linux/seqlock.h include/linux/spinlock*.h kernel/locking/ lib/locking*.[ch]

Excluded kernel/locking/locktorture.c

* LOGICAL DISK MANAGER SUPPORT (LDM, Windows 2000/XP/Vista Dynamic Disks)

Mail "Richard Russon (FlatCap)" <ldm@flatcap.org>

Mailing list linux-ntfs-dev@lists.sourceforge.net

Status Maintained

Web-page http://www.linux-ntfs.org/content/view/19/37/

Files admin-guide/ldm block/partitions/ldm.*

* LOGITECH HID GAMING KEYBOARDS

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/hid/hid.git

Files drivers/hid/hid-lg-g15.c

* LONTIUM LT8912B MIPI TO HDMI BRIDGE

Mail Adrien Grassein <adrien.grassein@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/display/bridge/lontium,lt8912b.yaml drivers/gpu/drm/bridge/lontium-lt8912b.c

* LOONGARCH

Mail Huacai Chen <chenhuacai@kernel.org>

Reviewer WANG Xuerui <kernel@xen0n.name>

Mailing list loongarch@lists.linux.dev

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/chenhuacai/linux-loongson.git

Files arch/loongarch/ drivers/*/*loongarch* Documentation/loongarch/
Documentation/translations/zh_CN/loongarch/

* LSILOGIC MPT FUSION DRIVERS (FC/SAS/SPI)

Mail Sathya Prakash <sathya.prakash@broadcom.com>, Sreekanth Reddy
<sreekanth.reddy@broadcom.com>, Suganath Prabu Subramani <suganath-
prabu.subramani@broadcom.com>

Mailing list MPT-FusionLinux.pdl@broadcom.com, linux-scsi@vger.kernel.org

Status Supported

Web-page http://www.avagotech.com/support/

Files drivers/message/fusion/ drivers/scsi/mpt3sas/

* LSILOGIC/SYMBIOS/NCR 53C8XX and 53C1010 PCI-SCSI drivers

Mail Matthew Wilcox <willy@infradead.org>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files drivers/scsi/sym53c8xx_2/

* LTC1660 DAC DRIVER

Mail Marcus Folkesson <marcus.folkesson@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/dac/lltc,ltc1660.yaml
drivers/iio/dac/ltc1660.c

* LTC2688 IIO DAC DRIVER

Mail Nuno Sá <nuno.sa@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page http://ez.analog.com/community/linux-device-drivers

Files Documentation/ABI/testing/sysfs-bus-iio-dac-ltc2688 Documentation/
  devicetree/bindings/iio/dac/adi,ltc2688.yaml   drivers/iio/dac/
  ltc2688.c

* LTC2947 HARDWARE MONITOR DRIVER

Mail Nuno Sá <nuno.sa@analog.com>

Mailing list linux-hwmon@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/hwmon/adi,ltc2947.yaml drivers/
  hwmon/ltc2947-core.c   drivers/hwmon/ltc2947-i2c.c   drivers/hwmon/
  ltc2947-spi.c drivers/hwmon/ltc2947.h

* LTC2983 IIO TEMPERATURE DRIVER

Mail Nuno Sá <nuno.sa@analog.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/iio/temperature/adi,ltc2983.yaml
  drivers/iio/temperature/ltc2983.c

* LTC4261 HARDWARE MONITOR DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/ltc4261 drivers/hwmon/ltc4261.c

* LTC4306 I2C MULTIPLEXER DRIVER

Mail Michael Hennerich <michael.hennerich@analog.com>

Mailing list linux-i2c@vger.kernel.org

Status Supported

Web-page https://ez.analog.com/linux-software-drivers

Files Documentation/devicetree/bindings/i2c/i2c-mux-ltc4306.txt drivers/
i2c/muxes/i2c-mux-ltc4306.c

* LTP (Linux Test Project)

Mail Mike Frysinger <vapier@gentoo.org>, Cyril Hrubis <chrubis@suse.cz>, Wan-
long Gao <wanlong.gao@gmail.com>, Jan Stancek <jstancek@redhat.com>,
Stanislav Kholmanskikh <stanislav.kholmanskikh@oracle.com>, Alexey Ko-
danev <alexey.kodanev@oracle.com>

Mailing list ltp@lists.linux.it (subscribers-only)

Status Maintained

Web-page http://linux-test-project.github.io/

SCM git git://github.com/linux-test-project/ltp.git

* LYNX 28G SERDES PHY DRIVER

Mail Ioana Ciornei <ioana.ciornei@nxp.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/phy/fsl,lynx-28g.yaml drivers/
phy/freescale/phy-fsl-lynx-28g.c

* LYNX PCS MODULE

Mail Ioana Ciornei <ioana.ciornei@nxp.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/pcs/pcs-lynx.c include/linux/pcs-lynx.h

* M68K ARCHITECTURE

Mail Geert Uytterhoeven <geert@linux-m68k.org>

Mailing list linux-m68k@lists.linux-m68k.org

Status Maintained

Web-page http://www.linux-m68k.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/geert/linux-m68k.git

Files `arch/m68k/ drivers/zorro/`

* M68K ON APPLE MACINTOSH

Mail Joshua Thompson <funaho@jurai.org>

Mailing list linux-m68k@lists.linux-m68k.org

Status Maintained

Web-page http://www.mac.linux-m68k.org/

Files `arch/m68k/mac/    drivers/macintosh/adb-iop.c    drivers/macintosh/`
`    via-macii.c`

* M68K ON HP9000/300

Mail Philip Blundell <philb@gnu.org>

Status Maintained

Web-page http://www.tazenda.demon.co.uk/phil/linux-hp

Files `arch/m68k/hp300/`

* M88DS3103 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/dvb-frontends/m88ds3103*`

* M88RS2000 MEDIA DRIVER

Mail Malcolm Priestley <tvboxspy@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

Files drivers/media/dvb-frontends/m88rs2000*

* MA901 MASTERKIT USB FM RADIO DRIVER

Mail Alexey Klimov <klimov.linux@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/radio/radio-ma901.c

* MAC80211

Mail Johannes Berg <johannes@sipsolutions.net>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/

Patchwork https://patchwork.kernel.org/project/linux-wireless/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/wireless/wireless.git git git://git.kernel.org/pub/scm/linux/kernel/git/wireless/wireless-next.git

Files networking/mac80211-injection networking/mac80211_hwsim/mac80211_hwsim drivers/net/wireless/mac80211_hwsim.[ch] include/net/mac80211.h net/ mac80211/

* MAILBOX API

Mail Jassi Brar <jassisinghbrar@gmail.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files drivers/mailbox/ include/linux/mailbox_client.h include/linux/ mailbox_controller.h include/dt-bindings/mailbox/ Documentation/ devicetree/bindings/mailbox/

* MAILBOX ARM MHUv2

Mail Viresh Kumar <viresh.kumar@linaro.org>, Tushar Khandelwal <Tushar.Khandelwal@arm.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files drivers/mailbox/arm_mhuv2.c include/linux/mailbox/ arm_mhuv2_message.h Documentation/devicetree/bindings/mailbox/arm, mhuv2.yaml

* MANAGEMENT COMPONENT TRANSPORT PROTOCOL (MCTP)

Mail Jeremy Kerr <jk@codeconstruct.com.au>, Matt Johnston <matt@codeconstruct.com.au>

Mailing list netdev@vger.kernel.org

Status Maintained

Files networking/mctp drivers/net/mctp/ include/net/mctp.h include/net/ mctpdevice.h include/net/netns/mctp.h net/mctp/

* MAN-PAGES: MANUAL PAGES FOR LINUX – Sections 2, 3, 4, 5, and 7

Mail Michael Kerrisk <mtk.manpages@gmail.com>

Mailing list linux-man@vger.kernel.org

Status Maintained

Web-page http://www.kernel.org/doc/man-pages

* MARDUK (CREATOR CI40) DEVICE TREE SUPPORT

Mail Rahul Bedarkar <rahulbedarkar89@gmail.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files arch/mips/boot/dts/img/pistachio*

* MARVELL 88E6XXX ETHERNET SWITCH FABRIC DRIVER

Mail Andrew Lunn <andrew@lunn.ch>, Vivien Didelot <vivien.didelot@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/dsa/marvell.txt networking/devlink/mv88e6xxx drivers/net/dsa/mv88e6xxx/ include/linux/dsa/ mv88e6xxx.h include/linux/platform_data/mv88e6xxx.h

* MARVELL ARMADA 3700 PHY DRIVERS

Mail Miquel Raynal <miquel.raynal@bootlin.com>

Status Maintained

Files Documentation/devicetree/bindings/phy/phy-mvebu-comphy.txt
    Documentation/devicetree/bindings/phy/marvell,armada-3700-utmi-phy.
    yaml   drivers/phy/marvell/phy-mvebu-a3700-comphy.c   drivers/phy/
    marvell/phy-mvebu-a3700-utmi.c

* MARVELL ARMADA 3700 SERIAL DRIVER

Mail Pali Rohár <pali@kernel.org>

Status Maintained

Files Documentation/devicetree/bindings/clock/marvell,
    armada-3700-uart-clock.yaml   Documentation/devicetree/bindings/
    serial/mvebu-uart.txt drivers/tty/serial/mvebu-uart.c

* MARVELL ARMADA DRM SUPPORT

Mail Russell King <linux@armlinux.org.uk>

Status Maintained

SCM git   git://git.armlinux.org.uk/~rmk/linux-arm.git   drm-armada-devel   git
    git://git.armlinux.org.uk/~rmk/linux-arm.git drm-armada-fixes

Files Documentation/devicetree/bindings/display/armada/ drivers/gpu/drm/
    armada/ include/uapi/drm/armada_drm.h

* MARVELL CRYPTO DRIVER

Mail Boris   Brezillon   <bbrezillon@kernel.org>,   Arnaud   Ebalard
    <arno@natisbad.org>, Srujana Challa <schalla@marvell.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files drivers/crypto/marvell/ include/linux/soc/marvell/octeontx2/

* MARVELL GIGABIT ETHERNET DRIVERS (skge/sky2)

Mail Mirko   Lindner   <mlindner@marvell.com>,   Stephen   Hemminger
    <stephen@networkplumber.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/marvell/sk*

* MARVELL LIBERTAS WIRELESS DRIVER

Mailing list libertas-dev@lists.infradead.org

Status Orphan

Files drivers/net/wireless/marvell/libertas/

* MARVELL MACCHIATOBIN SUPPORT

Mail Russell King <linux@armlinux.org.uk>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files arch/arm64/boot/dts/marvell/armada-8040-mcbin.dts

* MARVELL MV643XX ETHERNET DRIVER

Mail Sebastian Hesselbarth <sebastian.hesselbarth@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/marvell/mv643xx_eth.* include/linux/mv643xx.h

* MARVELL MV88X3310 PHY DRIVER

Mail Russell King <linux@armlinux.org.uk>, Marek Behún <kabel@kernel.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/phy/marvell10g.c

* MARVELL MVEBU THERMAL DRIVER

Mail Miquel Raynal <miquel.raynal@bootlin.com>

Status Maintained

Files drivers/thermal/armada_thermal.c

* MARVELL MVNETA ETHERNET DRIVER

Mail Thomas Petazzoni <thomas.petazzoni@bootlin.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/marvell/mvneta.*

* MARVELL MVPP2 ETHERNET DRIVER

Mail Marcin Wojtas <mw@semihalf.com>, Russell King <linux@armlinux.org.uk>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/marvell-pp2.txt drivers/net/
ethernet/marvell/mvpp2/

* MARVELL MWIFIEX WIRELESS DRIVER

Mail Amitkumar Karwar <amitkarwar@gmail.com>, Ganapathi Bhat <ganap-
athi017@gmail.com>, Sharvari Harisangam <sharvari.harisangam@nxp.com>,
Xinming Hu <huxinming820@gmail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files drivers/net/wireless/marvell/mwifiex/

* MARVELL MWL8K WIRELESS DRIVER

Mail Lennert Buytenhek <buytenh@wantstofly.org>

Mailing list linux-wireless@vger.kernel.org

Status Odd Fixes

Files drivers/net/wireless/marvell/mwl8k.c

* MARVELL NAND CONTROLLER DRIVER

Mail Miquel Raynal <miquel.raynal@bootlin.com>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/mtd/marvell-nand.txt   drivers/
mtd/nand/raw/marvell_nand.c

* MARVELL OCTEONTX2 PHYSICAL FUNCTION DRIVER

Mail Sunil Goutham <sgoutham@marvell.com>, Geetha sowjanya <gakula@marvell.com>, Subbaraya Sundeep <sbhatta@marvell.com>, hariprasad <hkelam@marvell.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/marvell/octeontx2/nic/ include/linux/soc/ marvell/octeontx2/

* MARVELL OCTEONTX2 RVU ADMIN FUNCTION DRIVER

Mail Sunil Goutham <sgoutham@marvell.com>, Linu Cherian <lcherian@marvell.com>, Geetha sowjanya <gakula@marvell.com>, Jerin Jacob <jerinj@marvell.com>, hariprasad <hkelam@marvell.com>, Subbaraya Sundeep <sbhatta@marvell.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files networking/device_drivers/ethernet/marvell/octeontx2 drivers/net/ ethernet/marvell/octeontx2/af/

* MARVELL PRESTERA ETHERNET SWITCH DRIVER

Mail Taras Chornyi <tchornyi@marvell.com>

Status Supported

Web-page https://github.com/Marvell-switching/switchdev-prestera

Files drivers/net/ethernet/marvell/prestera/

* MARVELL SOC MMC/SD/SDIO CONTROLLER DRIVER

Mail Nicolas Pitre <nico@fluxnic.net>

Status Odd Fixes

Files drivers/mmc/host/mvsdio.*

* MARVELL USB MDIO CONTROLLER DRIVER

Mail Tobias Waldekranz <tobias@waldekranz.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/marvell,mvusb.yaml   drivers/
    net/mdio/mdio-mvusb.c

* MARVELL XENON MMC/SD/SDIO HOST CONTROLLER DRIVER

Mail Hu Ziji <huziji@marvell.com>

Mailing list linux-mmc@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/mmc/marvell,xenon-sdhci.yaml
    drivers/mmc/host/sdhci-xenon*

* MARVELL OCTEON ENDPOINT DRIVER

Mail Veerasenareddy Burru <vburru@marvell.com>, Abhijit Ayarekar <aa-
    yarekar@marvell.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/marvell/octeon_ep

* MATROX FRAMEBUFFER DRIVER

Mailing list linux-fbdev@vger.kernel.org

Status Orphan

Files drivers/video/fbdev/matrox/matroxfb_* include/uapi/linux/matroxfb.
    h

* MAX15301 DRIVER

Mail Daniel Nilsson <daniel.nilsson@flex.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/max15301 drivers/hwmon/pmbus/max15301.c

* MAX16065 HARDWARE MONITOR DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `hwmon/max16065 drivers/hwmon/max16065.c`

* MAX2175 SDR TUNER DRIVER

Mail Ramesh Shanmugasundaram <rashanmu@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `Documentation/devicetree/bindings/media/i2c/max2175.txt` userspace-api/media/drivers/max2175 `drivers/media/i2c/max2175*` `include/uapi/linux/max2175.h`

* MAX6650 HARDWARE MONITOR AND FAN CONTROLLER DRIVER

Mailing list linux-hwmon@vger.kernel.org

Status Orphan

Files `hwmon/max6650 drivers/hwmon/max6650.c`

* MAX6697 HARDWARE MONITOR DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/hwmon/max6697.txt hwmon/max6697 drivers/hwmon/max6697.c include/linux/platform_data/max6697.h`

* MAX9286 QUAD GMSL DESERIALIZER DRIVER

Mail Jacopo Mondi <jacopo+renesas@jmondi.org>, Kieran Bingham <kieran.bingham+renesas@ideasonboard.com>, Laurent Pinchart <laurent.pinchart+renesas@ideasonboard.com>, Niklas Söderlund <niklas.soderlund+renesas@ragnatech.se>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/media/i2c/maxim,max9286.yaml drivers/media/i2c/max9286.c`

* MAX96712 QUAD GMSL2 DESERIALIZER DRIVER

Mail Niklas Söderlund <niklas.soderlund@ragnatech.se>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/staging/media/max96712/max96712.c`

* MAX9860 MONO AUDIO VOICE CODEC DRIVER

Mail Peter Rosin <peda@axentia.se>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/sound/max9860.txt` `sound/soc/codecs/max9860.*`

* MAXBOTIX ULTRASONIC RANGER IIO DRIVER

Mail Andreas Klinger <ak@it-klinger.de>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/iio/proximity/maxbotix,mb1232.yaml` `drivers/iio/proximity/mb1232.c`

* MAXIM MAX17040 FAMILY FUEL GAUGE DRIVERS

Reviewer Iskren Chernev <iskren.chernev@gmail.com>, Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, Marek Szyprowski <m.szyprowski@samsung.com>, Matheus Castello <matheus@castello.eng.br>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/power/supply/maxim,max17040.yaml` `drivers/power/supply/max17040_battery.c`

* MAXIM MAX17042 FAMILY FUEL GAUGE DRIVERS

Reviewer Hans de Goede <hdegoede@redhat.com>, Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, Marek Szyprowski <m.szyprowski@samsung.com>, Sebastian Krzyszkowiak <sebastian.krzyszkowiak@puri.sm>, Purism Kernel Team <kernel@puri.sm>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/power/supply/maxim,max17042.yaml
drivers/power/supply/max17042_battery.c

* MAXIM MAX20086 CAMERA POWER PROTECTOR DRIVER

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/regulator/maxim,max20086.yaml
drivers/regulator/max20086-regulator.c

* MAXIM MAX77650 PMIC MFD DRIVER

Mail Bartosz Golaszewski <brgl@bgdev.pl>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/*/*max77650.yaml Documentation/
devicetree/bindings/*/max77650*.yaml   drivers/gpio/gpio-max77650.c
drivers/input/misc/max77650-onkey.c   drivers/leds/leds-max77650.
c   drivers/mfd/max77650.c   drivers/power/supply/max77650-charger.c
drivers/regulator/max77650-regulator.c include/linux/mfd/max77650.h

* MAXIM MAX77714 PMIC MFD DRIVER

Mail Luca Ceresoli <luca@lucaceresoli.net>

Status Maintained

Files Documentation/devicetree/bindings/mfd/maxim,max77714.yaml drivers/
mfd/max77714.c include/linux/mfd/max77714.h

* MAXIM MAX77802 PMIC REGULATOR DEVICE DRIVER

Mail Javier Martinez Canillas <javier@dowhile0.org>

Mailing list linux-kernel@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/*/*max77802.yaml   drivers/
regulator/max77802-regulator.c include/dt-bindings/*/*max77802.h

* MAXIM MAX77976 BATTERY CHARGER

Mail Luca Ceresoli <luca@lucaceresoli.net>

Status Supported

Files Documentation/devicetree/bindings/power/supply/maxim,max77976.yaml
drivers/power/supply/max77976_charger.c

* MAXIM MUIC CHARGER DRIVERS FOR EXYNOS BASED BOARDS

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, Bartlomiej Zolnierkiewicz <b.zolnierkie@samsung.com>

Mailing list linux-pm@vger.kernel.org

Status Supported

bugs mailto:linux-samsung-soc@vger.kernel.org

Files Documentation/devicetree/bindings/power/supply/maxim,max14577.
yaml Documentation/devicetree/bindings/power/supply/maxim,max77693.
yaml drivers/power/supply/max14577_charger.c drivers/power/supply/
max77693_charger.c

* MAXIM PMIC AND MUIC DRIVERS FOR EXYNOS BASED BOARDS

Mail Chanwoo Choi <cw00.choi@samsung.com>, Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, Bartlomiej Zolnierkiewicz <b.zolnierkie@samsung.com>

Mailing list linux-kernel@vger.kernel.org

Status Supported

bugs mailto:linux-samsung-soc@vger.kernel.org

Files Documentation/devicetree/bindings/*/maxim,max14577.yaml
Documentation/devicetree/bindings/*/maxim,max77686.yaml
Documentation/devicetree/bindings/*/maxim,max77693.yaml
Documentation/devicetree/bindings/*/maxim,max77843.yaml
Documentation/devicetree/bindings/clock/maxim,max77686.txt
Documentation/devicetree/bindings/mfd/max77693.txt   drivers/
*/*max77843.c   drivers/*/max14577*.c   drivers/*/max77686*.c
drivers/*/max77693*.c   drivers/clk/clk-max77686.c   drivers/extcon/
extcon-max14577.c   drivers/extcon/extcon-max77693.c   drivers/rtc/
rtc-max77686.c   include/linux/mfd/max14577*.h   include/linux/mfd/
max77686*.h include/linux/mfd/max77693*.h

* MAXIRADIO FM RADIO RECEIVER DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/radio/radio-maxiradio*

* MAXLINEAR ETHERNET PHY DRIVER

Mail Xu Liang <lxu@maxlinear.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/phy/mxl-gpy.c

* MCBA MICROCHIP CAN BUS ANALYZER TOOL DRIVER

Reviewer Yasushi SHOJI <yashi@spacecubics.com>

Mailing list linux-can@vger.kernel.org

Status Maintained

Files drivers/net/can/usb/mcba_usb.c

* MCAN MMIO DEVICE DRIVER

Mail Chandrasekar Ramakrishnan <rcsekar@samsung.com>

Mailing list linux-can@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/can/bosch,m_can.yaml
    drivers/net/can/m_can/m_can.c drivers/net/can/m_can/m_can.h drivers/
    net/can/m_can/m_can_platform.c

* MCP2221A MICROCHIP USB-HID TO I2C BRIDGE DRIVER

Mail Rishi Gupta <gupt21@gmail.com>

Mailing list linux-i2c@vger.kernel.org, linux-input@vger.kernel.org

Status Maintained

Files drivers/hid/hid-mcp2221.c

* MCP251XFD SPI-CAN NETWORK DRIVER

Mail Marc Kleine-Budde <mkl@pengutronix.de>, Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Reviewer Thomas Kopp <thomas.kopp@microchip.com>

Mailing list linux-can@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/can/microchip,mcp251xfd.yaml
drivers/net/can/spi/mcp251xfd/

* MCP4018 AND MCP4531 MICROCHIP DIGITAL POTENTIOMETER DRIVERS

Mail Peter Rosin <peda@axentia.se>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/sysfs-bus-iio-potentiometer-mcp4531
drivers/iio/potentiometer/mcp4018.c   drivers/iio/potentiometer/
mcp4531.c

* MCR20A IEEE-802.15.4 RADIO DRIVER

Mail Xue Liu <liuxuenetmail@gmail.com>

Mailing list linux-wpan@vger.kernel.org

Status Maintained

Web-page https://github.com/xueliu/mcr20a-linux

Files Documentation/devicetree/bindings/net/ieee802154/mcr20a.txt
drivers/net/ieee802154/mcr20a.c drivers/net/ieee802154/mcr20a.h

* MEASUREMENT COMPUTING CIO-DAC IIO DRIVER

Mail William Breathitt Gray <vilhelm.gray@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files drivers/iio/dac/cio-dac.c

* MEDIA CONTROLLER FRAMEWORK

Mail Sakari Ailus <sakari.ailus@linux.intel.com>, Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://www.linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/mc/ include/media/media-*.h include/uapi/linux/media.h`

* MEDIA DRIVER FOR FREESCALE IMX PXP

Mail Philipp Zabel <p.zabel@pengutronix.de>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/platform/nxp/imx-pxp.[ch]`

* MEDIA DRIVERS FOR ASCOT2E

Mail Sergey Kozlov <serjk@netup.ru>, Abylay Ospan <aospan@netup.ru>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://linuxtv.org http://netup.tv/

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/dvb-frontends/ascot2e*`

* MEDIA DRIVERS FOR CXD2099AR CI CONTROLLERS

Mail Jasmin Jessich <jasmin@anw.at>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/dvb-frontends/cxd2099*`

* MEDIA DRIVERS FOR CXD2841ER

Mail Sergey Kozlov <serjk@netup.ru>, Abylay Ospan <aospan@netup.ru>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://linuxtv.org http://netup.tv/

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/dvb-frontends/cxd2841er*

* MEDIA DRIVERS FOR CXD2880

Mail Yasunari Takiguchi <Yasunari.Takiguchi@sony.com>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page http://linuxtv.org/

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/dvb-frontends/cxd2880/* drivers/media/spi/cxd2880*

* MEDIA DRIVERS FOR DIGITAL DEVICES PCIE DEVICES

Mailing list linux-media@vger.kernel.org

Status Orphan

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/pci/ddbridge/*

* MEDIA DRIVERS FOR FREESCALE IMX

Mail Steve Longerbeam <slongerbeam@gmail.com>, Philipp Zabel <p.zabel@pengutronix.de>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files admin-guide/media/imx Documentation/devicetree/bindings/media/imx.
txt drivers/staging/media/imx/ include/linux/imx-media.h include/
media/imx.h

* MEDIA DRIVERS FOR FREESCALE IMX7

Mail Rui Miguel Silva <rmfrfs@gmail.com>, Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files admin-guide/media/imx7 Documentation/devicetree/bindings/media/ nxp,imx-mipi-csi2.yaml Documentation/devicetree/bindings/media/nxp, imx7-csi.yaml drivers/media/platform/nxp/imx-mipi-csis.c drivers/ staging/media/imx/imx7-media-csi.c

* MEDIA DRIVERS FOR HELENE

Mail Abylay Ospan <aospan@netup.ru>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://linuxtv.org http://netup.tv/

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/dvb-frontends/helene*

* MEDIA DRIVERS FOR HORUS3A

Mail Sergey Kozlov <serjk@netup.ru>, Abylay Ospan <aospan@netup.ru>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://linuxtv.org http://netup.tv/

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/dvb-frontends/horus3a*

* MEDIA DRIVERS FOR LNBH25

Mail Sergey Kozlov <serjk@netup.ru>, Abylay Ospan <aospan@netup.ru>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://linuxtv.org http://netup.tv/

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/dvb-frontends/lnbh25*

* MEDIA DRIVERS FOR MXL5XX TUNER DEMODULATORS

Mailing list linux-media@vger.kernel.org

Status Orphan

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/dvb-frontends/mxl5xx*

* MEDIA DRIVERS FOR NETUP PCI UNIVERSAL DVB devices

Mail Sergey Kozlov <serjk@netup.ru>, Abylay Ospan <aospan@netup.ru>

Mailing list linux-media@vger.kernel.org

Status Supported

Web-page https://linuxtv.org http://netup.tv/

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/pci/netup_unidvb/*

* MEDIA DRIVERS FOR NVIDIA TEGRA - VDE

Mail Dmitry Osipenko <digetx@gmail.com>

Mailing list linux-media@vger.kernel.org, linux-tegra@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/nvidia,tegra-vde.yaml
  drivers/media/platform/nvidia/tegra-vde/

* MEDIA DRIVERS FOR RENESAS - CEU

Mail Jacopo Mondi <jacopo@jmondi.org>

Mailing list linux-media@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Supported

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/renesas,ceu.yaml drivers/
  media/platform/renesas/renesas-ceu.c   include/media/drv-intf/
  renesas-ceu.h

---

* MEDIA DRIVERS FOR RENESAS - DRIF

Mail Fabrizio Castro <fabrizio.castro.jz@renesas.com>

Mailing list linux-media@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Supported

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/renesas,drif.yaml drivers/
media/platform/renesas/rcar_drif.c

* MEDIA DRIVERS FOR RENESAS - FCP

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Supported

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/renesas,fcp.yaml drivers/
media/platform/renesas/rcar-fcp.c include/media/rcar-fcp.h

* MEDIA DRIVERS FOR RENESAS - FDP1

Mail Kieran Bingham <kieran.bingham+renesas@ideasonboard.com>

Mailing list linux-media@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Supported

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/renesas,fdp1.yaml drivers/
media/platform/renesas/rcar_fdp1.c

* MEDIA DRIVERS FOR RENESAS - VIN

Mail Niklas Söderlund <niklas.soderlund@ragnatech.se>

Mailing list linux-media@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Supported

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/renesas,csi2.yaml
Documentation/devicetree/bindings/media/renesas,isp.yaml
Documentation/devicetree/bindings/media/renesas,vin.yaml   drivers/
media/platform/renesas/rcar-isp.c   drivers/media/platform/renesas/
rcar-vin/

* MEDIA DRIVERS FOR RENESAS - VSP1

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>, Kieran Bingham <kieran.bingham+renesas@ideasonboard.com>

Mailing list linux-media@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Supported

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/renesas,vsp1.yaml drivers/ media/platform/renesas/vsp1/

* MEDIA DRIVERS FOR ST STV0910 DEMODULATOR ICs

Mailing list linux-media@vger.kernel.org

Status Orphan

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/dvb-frontends/stv0910*

* MEDIA DRIVERS FOR ST STV6111 TUNER ICs

Mailing list linux-media@vger.kernel.org

Status Orphan

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/dvb-frontends/stv6111*

* MEDIA DRIVERS FOR STM32 - DCMI

Mail Hugues Fruchet <hugues.fruchet@foss.st.com>

Mailing list linux-media@vger.kernel.org

Status Supported

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/st,stm32-dcmi.yaml drivers/media/platform/st/stm32/stm32-dcmi.c

* MEDIA INPUT INFRASTRUCTURE (V4L/DVB)

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.kernel.org/project/linux-media/list/

SCM git git://linuxtv.org/media_tree.git

Files Documentation/admin-guide/media/ Documentation/devicetree/
bindings/media/ Documentation/driver-api/media/ Documentation/
userspace-api/media/ drivers/media/ drivers/staging/media/ include/
linux/platform_data/media/ include/media/ include/uapi/linux/dvb/
include/uapi/linux/ivtv* include/uapi/linux/media.h include/uapi/
linux/meye.h include/uapi/linux/uvcvideo.h include/uapi/linux/v4l2-*
include/uapi/linux/videodev2.h

* MEDIATEK BLUETOOTH DRIVER

Mail Sean Wang <sean.wang@mediatek.com>

Mailing list linux-bluetooth@vger.kernel.org, linux-mediatek@lists.infradead.org
(moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/net/mediatek-bluetooth.txt
drivers/bluetooth/btmtkuart.c

* MEDIATEK BOARD LEVEL SHUTDOWN DRIVERS

Mail Sean Wang <sean.wang@mediatek.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/power/reset/mt6323-poweroff.txt
drivers/power/reset/mt6323-poweroff.c

* MEDIATEK CIR DRIVER

Mail Sean Wang <sean.wang@mediatek.com>

Status Maintained

Files drivers/media/rc/mtk-cir.c

* MEDIATEK DMA DRIVER

Mail Sean Wang <sean.wang@mediatek.com>

Mailing list dmaengine@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-mediatek@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/dma/mtk-* drivers/dma/mediatek/

* MEDIATEK ETHERNET DRIVER

Mail Felix Fietkau <nbd@nbd.name>, John Crispin <john@phrozen.org>, Sean Wang <sean.wang@mediatek.com>, Mark Lee <Mark-MC.Lee@mediatek.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/mediatek/

* MEDIATEK I2C CONTROLLER DRIVER

Mail Qii Wang <qii.wang@mediatek.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-mt65xx.yaml drivers/i2c/busses/i2c-mt65xx.c

* MEDIATEK IOMMU DRIVER

Mail Yong Wu <yong.wu@mediatek.com>

Mailing list iommu@lists.linux.dev, linux-mediatek@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files Documentation/devicetree/bindings/iommu/mediatek* drivers/iommu/mtk_iommu* include/dt-bindings/memory/mt*-port.h

* MEDIATEK JPEG DRIVER

Mail Bin Liu <bin.liu@mediatek.com>

Status Supported

Files Documentation/devicetree/bindings/media/mediatek-jpeg-*.yaml
    drivers/media/platform/mediatek/jpeg/

* MEDIATEK MDP DRIVER

Mail Minghsiu Tsai <minghsiu.tsai@mediatek.com>, Houlong Wei <houlong.wei@mediatek.com>, Andrew-CT Chen <andrew-ct.chen@mediatek.com>

Status Supported

Files Documentation/devicetree/bindings/media/mediatek-mdp.txt drivers/
    media/platform/mediatek/mdp/ drivers/media/platform/mediatek/vpu/

* MEDIATEK MEDIA DRIVER

Mail Tiffany Lin <tiffany.lin@mediatek.com>, Andrew-CT Chen <andrew-ct.chen@mediatek.com>

Status Supported

Files Documentation/devicetree/bindings/media/mediatek,vcodec*.yaml
    Documentation/devicetree/bindings/media/mediatek-vpu.txt   drivers/
    media/platform/mediatek/vcodec/ drivers/media/platform/mediatek/vpu/

* MEDIATEK MMC/SD/SDIO DRIVER

Mail Chaotian Jing <chaotian.jing@mediatek.com>

Status Maintained

Files Documentation/devicetree/bindings/mmc/mtk-sd.yaml   drivers/mmc/
    host/mtk-sd.c

* MEDIATEK MT76 WIRELESS LAN DRIVER

Mail Felix Fietkau <nbd@nbd.name>, Lorenzo Bianconi <lorenzo@kernel.org>, Ryder Lee <ryder.lee@mediatek.com>

Reviewer Shayne Chen <shayne.chen@mediatek.com>, Sean Wang <sean.wang@mediatek.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/wireless/mediatek,mt76.yaml
    drivers/net/wireless/mediatek/mt76/

* MEDIATEK MT7601U WIRELESS LAN DRIVER

Mail Jakub Kicinski <kubakici@wp.pl>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files drivers/net/wireless/mediatek/mt7601u/

* MEDIATEK MT7621 CLOCK DRIVER

Mail Sergio Paracuellos <sergio.paracuellos@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/clock/mediatek,mt7621-sysc.yaml
    drivers/clk/ralink/clk-mt7621.c

* MEDIATEK MT7621/28/88 I2C DRIVER

Mail Stefan Roese <sr@denx.de>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-mt7621.txt drivers/i2c/
    busses/i2c-mt7621.c

* MEDIATEK MT7621 PCIE CONTROLLER DRIVER

Mail Sergio Paracuellos <sergio.paracuellos@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/pci/mediatek,mt7621-pcie.yaml
    drivers/pci/controller/pcie-mt7621.c

* MEDIATEK MT7621 PHY PCI DRIVER

Mail Sergio Paracuellos <sergio.paracuellos@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/phy/mediatek,mt7621-pci-phy.yaml
    drivers/phy/ralink/phy-mt7621-pci.c

* MEDIATEK NAND CONTROLLER DRIVER

Mailing list linux-mtd@lists.infradead.org

Status Orphan

Files Documentation/devicetree/bindings/mtd/mtk-nand.txt   drivers/mtd/
nand/raw/mtk_*

* MEDIATEK PMIC LED DRIVER

Mail Sean Wang <sean.wang@mediatek.com>

Status Maintained

Files Documentation/devicetree/bindings/leds/leds-mt6323.txt   drivers/
leds/leds-mt6323.c

* MEDIATEK RANDOM NUMBER GENERATOR SUPPORT

Mail Sean Wang <sean.wang@mediatek.com>

Status Maintained

Files drivers/char/hw_random/mtk-rng.c

* MEDIATEK SMI DRIVER

Mail Yong Wu <yong.wu@mediatek.com>

Mailing list linux-mediatek@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files Documentation/devicetree/bindings/memory-controllers/mediatek,smi*
drivers/memory/mtk-smi.c include/soc/mediatek/smi.h

* MEDIATEK SWITCH DRIVER

Mail Sean   Wang   <sean.wang@mediatek.com>,   Landen   Chao   <Landen.Chao@mediatek.com>, DENG Qingfang <dqfext@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/dsa/mt7530.* net/dsa/tag_mtk.c

* MEDIATEK T7XX 5G WWAN MODEM DRIVER

Mail Chandrashekar Devegowda <chandrashekar.devegowda@intel.com>, Intel Corporation <linuxwwan@intel.com>

Reviewer Chiranjeevi Rapolu <chiranjeevi.rapolu@linux.intel.com>, Liu Haijun <haijun.liu@mediatek.com>, M Chetan Kumar <m.chetan.kumar@linux.intel.com>, Ricardo Martinez <ricardo.martinez@linux.intel.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files `drivers/net/wwan/t7xx/`

* MEDIATEK USB3 DRD IP DRIVER

Mail Chunfeng Yun <chunfeng.yun@mediatek.com>

Mailing list linux-usb@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-mediatek@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/usb/mediatek,*` `drivers/usb/host/xhci-mtk*` `drivers/usb/mtu3/`

* MEGACHIPS STDPXXXX-GE-B850V3-FW LVDS/DP++ BRIDGES

Mail Peter Senna Tschudin <peter.senna@gmail.com>, Martin Donnelly <martin.donnelly@ge.com>, Martyn Welch <martyn.welch@collabora.co.uk>

Status Maintained

Files `Documentation/devicetree/bindings/display/bridge/megachips-stdpxxxx-ge-b850v3-fw.txt` `drivers/gpu/drm/bridge/megachips-stdpxxxx-ge-b850v3-fw.c`

* MEGARAID SCSI/SAS DRIVERS

Mail Kashyap Desai <kashyap.desai@broadcom.com>, Sumit Saxena <sumit.saxena@broadcom.com>, Shivasharan S <shivasharan.srikanteshwara@broadcom.com>

Mailing list megaraidlinux.pdl@broadcom.com, linux-scsi@vger.kernel.org

Status Maintained

Web-page http://www.avagotech.com/support/

Files scsi/megaraid `drivers/scsi/megaraid.*` `drivers/scsi/megaraid/`

* MELEXIS MLX90614 DRIVER

Mail Crt Mori <cmo@melexis.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page http://www.melexis.com

Files drivers/iio/temperature/mlx90614.c

* MELEXIS MLX90632 DRIVER

Mail Crt Mori <cmo@melexis.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Web-page http://www.melexis.com

Files drivers/iio/temperature/mlx90632.c

* MELFAS MIP4 TOUCHSCREEN DRIVER

Mail Sangwon Jee <jeesw@melfas.com>

Status Supported

Web-page http://www.melfas.com

Files Documentation/devicetree/bindings/input/touchscreen/melfas_mip4.
txt drivers/input/touchscreen/melfas_mip4.c

* MELLANOX BLUEFIELD I2C DRIVER

Mail Khalil Blaiech <kblaiech@nvidia.com>

Mailing list linux-i2c@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/i2c/mellanox,i2c-mlxbf.yaml
drivers/i2c/busses/i2c-mlxbf.c

* MELLANOX ETHERNET DRIVER (mlx4_en)

Mail Tariq Toukan <tariqt@nvidia.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.mellanox.com

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/

Files drivers/net/ethernet/mellanox/mlx4/en_*

* MELLANOX ETHERNET DRIVER (mlx5e)

Mail Saeed Mahameed <saeedm@nvidia.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.mellanox.com

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/

Files drivers/net/ethernet/mellanox/mlx5/core/en_*

* MELLANOX ETHERNET INNOVA DRIVERS

Reviewer Boris Pismenny <borisp@nvidia.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.mellanox.com

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/

Files drivers/net/ethernet/mellanox/mlx5/core/en_accel/*   drivers/net/ethernet/mellanox/mlx5/core/fpga/* include/linux/mlx5/mlx5_ifc_fpga.h

* MELLANOX ETHERNET SWITCH DRIVERS

Mail Ido Schimmel <idosch@nvidia.com>, Petr Machata <petrm@nvidia.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.mellanox.com

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/

Files drivers/net/ethernet/mellanox/mlxsw/   tools/testing/selftests/drivers/net/mlxsw/

* MELLANOX FIRMWARE FLASH LIBRARY (mlxfw)

Mail mlxsw@nvidia.com

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.mellanox.com

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/

Files `drivers/net/ethernet/mellanox/mlxfw/`

* MELLANOX HARDWARE PLATFORM SUPPORT

Mail Hans de Goede <hdegoede@redhat.com>, Mark Gross <mark-gross@kernel.org>, Vadim Pasternak <vadimp@nvidia.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Supported

Files `Documentation/ABI/testing/sysfs-platform-mellanox-bootctl drivers/ platform/mellanox/ include/linux/platform_data/mlxreg.h`

* MELLANOX MLX4 core VPI driver

Mail Tariq Toukan <tariqt@nvidia.com>

Mailing list netdev@vger.kernel.org, linux-rdma@vger.kernel.org

Status Supported

Web-page http://www.mellanox.com

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/

Files `drivers/net/ethernet/mellanox/mlx4/ include/linux/mlx4/`

* MELLANOX MLX4 IB driver

Mail Yishai Hadas <yishaih@nvidia.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Web-page http://www.mellanox.com

Patchwork http://patchwork.kernel.org/project/linux-rdma/list/

Files `drivers/infiniband/hw/mlx4/ include/linux/mlx4/ include/uapi/rdma/ mlx4-abi.h`

* MELLANOX MLX5 core VPI driver

Mail Saeed Mahameed <saeedm@nvidia.com>, Leon Romanovsky <leonro@nvidia.com>

Mailing list netdev@vger.kernel.org, linux-rdma@vger.kernel.org

Status Supported

Web-page http://www.mellanox.com

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/

Files Documentation/networking/device_drivers/ethernet/mellanox/ drivers/net/ethernet/mellanox/mlx5/core/ include/linux/mlx5/

* MELLANOX MLX5 IB driver

Mail Leon Romanovsky <leonro@nvidia.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Web-page http://www.mellanox.com

Patchwork http://patchwork.kernel.org/project/linux-rdma/list/

Files drivers/infiniband/hw/mlx5/ include/linux/mlx5/ include/uapi/rdma/ mlx5-abi.h

* MELLANOX MLXCPLD I2C AND MUX DRIVER

Mail Vadim Pasternak <vadimp@nvidia.com>, Michael Shych <michaelsh@nvidia.com>

Mailing list linux-i2c@vger.kernel.org

Status Supported

Files i2c/busses/i2c-mlxcpld drivers/i2c/busses/i2c-mlxcpld.c drivers/i2c/ muxes/i2c-mux-mlxcpld.c

* MELLANOX MLXCPLD LED DRIVER

Mail Vadim Pasternak <vadimp@nvidia.com>

Mailing list linux-leds@vger.kernel.org

Status Supported

Files leds/leds-mlxcpld drivers/leds/leds-mlxcpld.c drivers/leds/ leds-mlxreg.c

* MELLANOX PLATFORM DRIVER

Mail Vadim Pasternak <vadimp@nvidia.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Supported

Files drivers/platform/x86/mlx-platform.c

* MEMBARRIER SUPPORT

Mail Mathieu Desnoyers <mathieu.desnoyers@efficios.com>, "Paul E. McKenney" <paulmck@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Supported

Files arch/powerpc/include/asm/membarrier.h   include/uapi/linux/ membarrier.h kernel/sched/membarrier.c

* MEMBLOCK

Mail Mike Rapoport <rppt@kernel.org>

Mailing list linux-mm@kvack.org

Status Maintained

Files core-api/boot-time-mm include/linux/memblock.h mm/memblock.c tools/ testing/memblock/

* MEMORY CONTROLLER DRIVERS

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

bugs mailto:krzysztof.kozlowski@linaro.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/krzk/linux-mem-ctrl.git

Files Documentation/devicetree/bindings/memory-controllers/   drivers/ memory/ include/dt-bindings/memory/ include/memory/

* MEMORY FREQUENCY SCALING DRIVERS FOR NVIDIA TEGRA

Mail Dmitry Osipenko <digetx@gmail.com>

Mailing list linux-pm@vger.kernel.org, linux-tegra@vger.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/chanwoo/linux.git

Status Maintained

Files drivers/devfreq/tegra30-devfreq.c

* MEMORY MANAGEMENT

Mail Andrew Morton <akpm@linux-foundation.org>

Mailing list linux-mm@kvack.org

Status Maintained

Web-page http://www.linux-mm.org

SCM git://git.kernel.org/pub/scm/linux/kernel/git/akpm/mm   quilt git://git.kernel.org/pub/scm/linux/kernel/git/akpm/25-new

Files include/linux/gfp.h include/linux/memory_hotplug.h include/linux/
   mm.h include/linux/mmzone.h include/linux/pagewalk.h include/linux/
   vmalloc.h mm/ tools/testing/selftests/vm/

* MEMORY HOT(UN)PLUG

Mail David   Hildenbrand   <david@redhat.com>,   Oscar   Salvador   <osal-
   vador@suse.de>

Mailing list linux-mm@kvack.org

Status Maintained

Files admin-guide/mm/memory-hotplug core-api/memory-hotplug drivers/base/
   memory.c include/linux/memory_hotplug.h mm/memory_hotplug.c tools/
   testing/selftests/memory-hotplug/

* MEMORY TECHNOLOGY DEVICES (MTD)

Mail Miquel   Raynal   <miquel.raynal@bootlin.com>,   Richard   Weinberger
   <richard@nod.at>, Vignesh Raghavendra <vigneshr@ti.com>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Web-page http://www.linux-mtd.infradead.org/

Patchwork http://patchwork.ozlabs.org/project/linux-mtd/list/

chat irc://irc.oftc.net/mtd

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mtd/linux.git mtd/fixes git git://git.kernel.org/pub/scm/linux/kernel/git/mtd/linux.git mtd/next

Files Documentation/devicetree/bindings/mtd/ drivers/mtd/ include/linux/ mtd/ include/uapi/mtd/

* MEN A21 WATCHDOG DRIVER

Mail Johannes Thumshirn <morbidrsa@gmail.com>

Mailing list linux-watchdog@vger.kernel.org

Status Maintained

Files drivers/watchdog/mena21_wdt.c

* MEN CHAMELEON BUS (mcb)

Mail Johannes Thumshirn <morbidrsa@gmail.com>

Status Maintained

Files driver-api/men-chameleon-bus drivers/mcb/ include/linux/mcb.h

* MEN F21BMC (Board Management Controller)

Mail Andreas Werner <andreas.werner@men.de>

Status Supported

Files hwmon/menf21bmc drivers/hwmon/menf21bmc_hwmon.c drivers/ leds/leds-menf21bmc.c drivers/mfd/menf21bmc.c drivers/watchdog/ menf21bmc_wdt.c

* MEN Z069 WATCHDOG DRIVER

Mail Johannes Thumshirn <jth@kernel.org>

Mailing list linux-watchdog@vger.kernel.org

Status Maintained

Files drivers/watchdog/menz69_wdt.c

* MESON AO CEC DRIVER FOR AMLOGIC SOCS

Mail Neil Armstrong <narmstrong@baylibre.com>

Mailing list linux-media@vger.kernel.org, linux-amlogic@lists.infradead.org

Status Supported

Web-page http://linux-meson.com/

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/amlogic,meson-gx-ao-cec.
 yaml drivers/media/cec/platform/meson/ao-cec-g12a.c drivers/media/
 cec/platform/meson/ao-cec.c

* MESON GE2D DRIVER FOR AMLOGIC SOCS

Mail Neil Armstrong <narmstrong@baylibre.com>

Mailing list linux-media@vger.kernel.org, linux-amlogic@lists.infradead.org

Status Supported

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/amlogic,axg-ge2d.yaml
 drivers/media/platform/amlogic/meson-ge2d/

* MESON NAND CONTROLLER DRIVER FOR AMLOGIC SOCS

Mail Liang Yang <liang.yang@amlogic.com>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/mtd/amlogic,meson-nand.txt
 drivers/mtd/nand/raw/meson_*

* MESON VIDEO DECODER DRIVER FOR AMLOGIC SOCS

Mail Neil Armstrong <narmstrong@baylibre.com>

Mailing list linux-media@vger.kernel.org, linux-amlogic@lists.infradead.org

Status Supported

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/amlogic,gx-vdec.yaml
 drivers/staging/media/meson/vdec/

* METHODE UDPU SUPPORT

Mail Vladimir Vid <vladimir.vid@sartura.hr>

Status Maintained

Files arch/arm64/boot/dts/marvell/armada-3720-uDPU.dts

* MHI BUS

Mail Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Reviewer Hemant Kumar <quic_hemantk@quicinc.com>

Mailing list mhi@lists.linux.dev, linux-arm-msm@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mani/mhi.git

Files Documentation/ABI/stable/sysfs-bus-mhi Documentation/mhi/ drivers/
bus/mhi/ include/linux/mhi.h

* MICROBLAZE ARCHITECTURE

Mail Michal Simek <monstr@monstr.eu>

Status Supported

Web-page http://www.monstr.eu/fdt/

SCM git git://git.monstr.eu/linux-2.6-microblaze.git

Files arch/microblaze/

* MICROCHIP AT91 DMA DRIVERS

Mail Ludovic Desroches <ludovic.desroches@microchip.com>, Tudor Ambarus <tudor.ambarus@microchip.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers),
dmaengine@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/dma/atmel-dma.txt drivers/
dma/at_hdmac.c drivers/dma/at_hdmac_regs.h drivers/dma/at_xdmac.c
include/dt-bindings/dma/at91.h

* MICROCHIP AT91 SERIAL DRIVER

Mail Richard Genoud <richard.genoud@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/mfd/atmel-usart.txt drivers/tty/
serial/atmel_serial.c drivers/tty/serial/atmel_serial.h

* MICROCHIP AT91 USART MFD DRIVER

Mail Radu Pirea <radu_nicolae.pirea@upb.ro>

Mailing list linux-kernel@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/mfd/atmel-usart.txt drivers/mfd/
at91-usart.c include/dt-bindings/mfd/at91-usart.h

* MICROCHIP AT91 USART SPI DRIVER

Mail Radu Pirea <radu_nicolae.pirea@upb.ro>

Mailing list linux-spi@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/mfd/atmel-usart.txt drivers/spi/
spi-at91-usart.c

* MICROCHIP AUDIO ASOC DRIVERS

Mail Codrin Ciubotariu <codrin.ciubotariu@microchip.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Supported

Files sound/soc/atmel

* MICROCHIP CSI2DC DRIVER

Mail Eugen Hristev <eugen.hristev@microchip.com>

Mailing list linux-media@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/media/microchip,csi2dc.yaml
drivers/media/platform/atmel/microchip-csi2dc.c

* MICROCHIP ECC DRIVER

Mail Tudor Ambarus <tudor.ambarus@microchip.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files drivers/crypto/atmel-ecc.*

* MICROCHIP EIC DRIVER

> **Mail** Claudiu Beznea <claudiu.beznea@microchip.com>
>
> **Mailing list** linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)
>
> **Status** Supported
>
> **Files** drivers/irqchip/irq-mchp-eic.c

* MICROCHIP I2C DRIVER

> **Mail** Codrin Ciubotariu <codrin.ciubotariu@microchip.com>
>
> **Mailing list** linux-i2c@vger.kernel.org
>
> **Status** Supported
>
> **Files** drivers/i2c/busses/i2c-at91-*.c drivers/i2c/busses/i2c-at91.h

* MICROCHIP ISC DRIVER

> **Mail** Eugen Hristev <eugen.hristev@microchip.com>
>
> **Mailing list** linux-media@vger.kernel.org
>
> **Status** Supported
>
> **Files** Documentation/devicetree/bindings/media/atmel,isc.yaml Documentation/devicetree/bindings/media/microchip,xisc.yaml drivers/media/platform/atmel/atmel-isc* drivers/media/platform/atmel/atmel-sama*-isc* include/linux/atmel-isc-media.h

* MICROCHIP ISI DRIVER

> **Mail** Eugen Hristev <eugen.hristev@microchip.com>
>
> **Mailing list** linux-media@vger.kernel.org
>
> **Status** Supported
>
> **Files** drivers/media/platform/atmel/atmel-isi.c drivers/media/platform/atmel/atmel-isi.h

* MICROCHIP KSZ SERIES ETHERNET SWITCH DRIVER

> **Mail** Woojung Huh <woojung.huh@microchip.com>, UNGLinux-Driver@microchip.com
>
> **Mailing list** netdev@vger.kernel.org
>
> **Status** Maintained
>
> **Files** Documentation/devicetree/bindings/net/dsa/microchip,ksz.yaml drivers/net/dsa/microchip/* include/linux/platform_data/microchip-ksz.h net/dsa/tag_ksz.c

* MICROCHIP LAN87xx/LAN937x T1 PHY DRIVER

Mail Arun Ramadoss <arun.ramadoss@microchip.com>

Reviewer UNGLinuxDriver@microchip.com

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/phy/microchip_t1.c

* MICROCHIP LAN743X ETHERNET DRIVER

Mail Bryan Whitehead <bryan.whitehead@microchip.com>, UNGLinux-Driver@microchip.com

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/microchip/lan743x_*

* MICROCHIP LAN966X ETHERNET DRIVER

Mail Horatiu Vultur <horatiu.vultur@microchip.com>, UNGLinux-Driver@microchip.com

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/microchip/lan966x/*

* MICROCHIP LCDFB DRIVER

Mail Nicolas Ferre <nicolas.ferre@microchip.com>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files drivers/video/fbdev/atmel_lcdfb.c include/video/atmel_lcdc.h

* MICROCHIP MCP16502 PMIC DRIVER

Mail Claudiu Beznea <claudiu.beznea@microchip.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files Documentation/devicetree/bindings/regulator/mcp16502-regulator.txt
drivers/regulator/mcp16502.c

* MICROCHIP MCP3911 ADC DRIVER

Mail Marcus Folkesson <marcus.folkesson@gmail.com>, Kent Gustavsson <kent@minoris.se>

Mailing list linux-iio@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/iio/adc/microchip,mcp3911.yaml
    drivers/iio/adc/mcp3911.c

* MICROCHIP MMC/SD/SDIO MCI DRIVER

Mail Ludovic Desroches <ludovic.desroches@microchip.com>

Status Maintained

Files drivers/mmc/host/atmel-mci.c

* MICROCHIP NAND DRIVER

Mail Tudor Ambarus <tudor.ambarus@microchip.com>

Mailing list linux-mtd@lists.infradead.org

Status Supported

Files Documentation/devicetree/bindings/mtd/atmel-nand.txt drivers/mtd/
    nand/raw/atmel/*

* MICROCHIP PWM DRIVER

Mail Claudiu Beznea <claudiu.beznea@microchip.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers),
    linux-pwm@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/pwm/atmel,at91sam-pwm.yaml
    drivers/pwm/pwm-atmel.c

* MICROCHIP SAMA5D2-COMPATIBLE ADC DRIVER

Mail Eugen Hristev <eugen.hristev@microchip.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/iio/adc/atmel,sama5d2-adc.yaml
    drivers/iio/adc/at91-sama5d2_adc.c   include/dt-bindings/iio/adc/
    at91-sama5d2_adc.h

* MICROCHIP SAMA5D2-COMPATIBLE SHUTDOWN CONTROLLER

Mail Claudiu Beznea <claudiu.beznea@microchip.com>

Status Supported

Files `drivers/power/reset/at91-sama5d2_shdwc.c`

* MICROCHIP SPI DRIVER

Mail Tudor Ambarus <tudor.ambarus@microchip.com>

Status Supported

Files `drivers/spi/spi-atmel.*`

* MICROCHIP SSC DRIVER

Mail Codrin Ciubotariu <codrin.ciubotariu@microchip.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files `drivers/misc/atmel-ssc.c include/linux/atmel-ssc.h`

* MICROCHIP USB251XB DRIVER

Mail Richard Leitner <richard.leitner@skidata.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/usb/usb251xb.txt    drivers/usb/misc/usb251xb.c`

* MICROCHIP USBA UDC DRIVER

Mail Cristian Birsan <cristian.birsan@microchip.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files `drivers/usb/gadget/udc/atmel_usba_udc.*`

* MICROCHIP WILC1000 WIFI DRIVER

Mail Ajay Singh <ajay.kathat@microchip.com>, Claudiu Beznea <claudiu.beznea@microchip.com>

Mailing list linux-wireless@vger.kernel.org

Status Supported

Files `drivers/net/wireless/microchip/wilc1000/`

* MICROSEMI MIPS SOCS

Mail Alexandre Belloni <alexandre.belloni@bootlin.com>, UNGLinux-Driver@microchip.com

Mailing list linux-mips@vger.kernel.org

Status Supported

Files `Documentation/devicetree/bindings/mips/mscc.txt Documentation/devicetree/bindings/power/reset/ocelot-reset.txt arch/mips/boot/dts/mscc/ arch/mips/configs/generic/board-ocelot.config arch/mips/generic/board-ocelot.c`

* MICROSEMI SMART ARRAY SMARTPQI DRIVER (smartpqi)

Mail Don Brace <don.brace@microchip.com>

Mailing list storagedev@microchip.com, linux-scsi@vger.kernel.org

Status Supported

Files `scsi/smartpqi drivers/scsi/smartpqi/Kconfig drivers/scsi/smartpqi/Makefile drivers/scsi/smartpqi/smartpqi*.[ch] include/linux/cciss*.h include/uapi/linux/cciss*.h`

* MICROSOFT SURFACE BATTERY AND AC DRIVERS

Mail Maximilian Luz <luzmaximilian@gmail.com>

Mailing list linux-pm@vger.kernel.org, platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/power/supply/surface_battery.c drivers/power/supply/surface_charger.c`

* MICROSOFT SURFACE DTX DRIVER

Mail Maximilian Luz <luzmaximilian@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files driver-api/surface_aggregator/clients/dtx   drivers/platform/surface/
surface_dtx.c include/uapi/linux/surface_aggregator/dtx.h

* MICROSOFT SURFACE GPE LID SUPPORT DRIVER

Mail Maximilian Luz <luzmaximilian@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/surface/surface_gpe.c

* MICROSOFT SURFACE HARDWARE PLATFORM SUPPORT

Mail Hans de Goede <hdegoede@redhat.com>, Mark Gross <mark-gross@kernel.org>, Maximilian Luz <luzmaximilian@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pdx86/platform-drivers-x86.git

Files drivers/platform/surface/

* MICROSOFT SURFACE HID TRANSPORT DRIVER

Mail Maximilian Luz <luzmaximilian@gmail.com>

Mailing list linux-input@vger.kernel.org, platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/hid/surface-hid/

* MICROSOFT SURFACE HOT-PLUG DRIVER

Mail Maximilian Luz <luzmaximilian@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/surface/surface_hotplug.c

* MICROSOFT SURFACE PLATFORM PROFILE DRIVER

Mail Maximilian Luz <luzmaximilian@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/surface/surface_platform_profile.c

* MICROSOFT SURFACE PRO 3 BUTTON DRIVER

Mail Chen Yu <yu.c.chen@intel.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Supported

Files drivers/platform/surface/surfacepro3_button.c

* MICROSOFT SURFACE SYSTEM AGGREGATOR SUBSYSTEM

Mail Maximilian Luz <luzmaximilian@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Web-page https://github.com/linux-surface/surface-aggregator-module

chat irc://irc.libera.chat/linux-surface

Files Documentation/driver-api/surface_aggregator/   drivers/platform/
surface/aggregator/   drivers/platform/surface/surface_acpi_notify.
c   drivers/platform/surface/surface_aggregator_cdev.c   drivers/
platform/surface/surface_aggregator_registry.c   include/linux/
surface_acpi_notify.h   include/linux/surface_aggregator/   include/
uapi/linux/surface_aggregator/

* MICROTEK X6 SCANNER

Mail Oliver Neukum <oliver@neukum.org>

Status Maintained

Files drivers/usb/image/microtek.*

* MIKROTIK CRS3XX 98DX3236 BOARD SUPPORT

Mail Luka Kovacic <luka.kovacic@sartura.hr>, Luka Perkov <luka.perkov@sartura.hr>

Status Maintained

Files arch/arm/boot/dts/armada-xp-crs305-1g-4s-bit.dts arch/arm/boot/dts/armada-xp-crs305-1g-4s.dts arch/arm/boot/dts/armada-xp-crs326-24g-2s-bit.dts arch/arm/boot/dts/armada-xp-crs326-24g-2s.dts arch/arm/boot/dts/armada-xp-crs328-4c-20s-4s-bit.dts arch/arm/boot/dts/armada-xp-crs328-4c-20s-4s.dts

* MIPI CCS, SMIA AND SMIA++ IMAGE SENSOR DRIVER

Mail Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/i2c/mipi-ccs.yaml Documentation/driver-api/media/drivers/ccs/ userspace-api/media/drivers/ccs drivers/media/i2c/ccs-pll.c drivers/media/i2c/ccs-pll.h drivers/media/i2c/ccs/ include/uapi/linux/ccs.h include/uapi/linux/smiapp.h

* MIPS

Mail Thomas Bogendoerfer <tsbogend@alpha.franken.de>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Web-page http://www.linux-mips.org/

Patchwork https://patchwork.kernel.org/project/linux-mips/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mips/linux.git

Files Documentation/devicetree/bindings/mips/ Documentation/mips/ arch/mips/ drivers/platform/mips/

* MIPS BOSTON DEVELOPMENT BOARD

Mail Paul Burton <paulburton@kernel.org>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/clock/img,boston-clock.txt arch/`
`mips/boot/dts/img/boston.dts arch/mips/configs/generic/board-boston.`
`config   drivers/clk/imgtec/clk-boston.c   include/dt-bindings/clock/`
`boston-clock.h`

* MIPS CORE DRIVERS

Mail Thomas   Bogendoerfer   <tsbogend@alpha.franken.de>,   Serge   Semin
<fancer.lancer@gmail.com>

Mailing list linux-mips@vger.kernel.org

Status Supported

Files `drivers/bus/mips_cdmm.c        drivers/clocksource/mips-gic-timer.c`
`drivers/cpuidle/cpuidle-cps.c drivers/irqchip/irq-mips-cpu.c drivers/`
`irqchip/irq-mips-gic.c`

* MIPS GENERIC PLATFORM

Mail Paul Burton <paulburton@kernel.org>

Mailing list linux-mips@vger.kernel.org

Status Supported

Files `Documentation/devicetree/bindings/power/mti,mips-cpc.yaml    arch/`
`mips/generic/ arch/mips/tools/generic-board-config.sh`

* MIPS RINT INSTRUCTION EMULATION

Mail Aleksandar Markovic <aleksandar.markovic@mips.com>

Mailing list linux-mips@vger.kernel.org

Status Supported

Files `arch/mips/math-emu/dp_rint.c arch/mips/math-emu/sp_rint.c`

* MIPS/LOONGSON1 ARCHITECTURE

Mail Keguang Zhang <keguang.zhang@gmail.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files `arch/mips/include/asm/mach-loongson32/        arch/mips/loongson32/`
`drivers/*/*/*loongson1* drivers/*/*loongson1*`

* MIPS/LOONGSON2EF ARCHITECTURE

Mail Jiaxun Yang <jiaxun.yang@flygoat.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files arch/mips/include/asm/mach-loongson2ef/   arch/mips/loongson2ef/
    drivers/cpufreq/loongson2_cpufreq.c

* MIPS/LOONGSON64 ARCHITECTURE

Mail Huacai   Chen   <chenhuacai@kernel.org>,   Jiaxun   Yang   <jiaxun.yang@flygoat.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files arch/mips/include/asm/mach-loongson64/   arch/mips/loongson64/
    drivers/irqchip/irq-loongson* drivers/platform/mips/cpu_hwmon.c

* MIROSOUND PCM20 FM RADIO RECEIVER DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/radio/radio-miropcm20*

* MMP SUPPORT

Reviewer Lubomir Rintel <lkundrak@v3.sk>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Odd Fixes

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/lkundrak/linux-mmp.git

Files arch/arm/boot/dts/mmp* arch/arm/mach-mmp/ include/linux/soc/mmp/

* MMP USB PHY DRIVERS

Reviewer Lubomir Rintel <lkundrak@v3.sk>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `drivers/phy/marvell/phy-mmp3-usb.c` `drivers/phy/marvell/phy-pxa-usb.c`

* MMU GATHER AND TLB INVALIDATION

Mail Will Deacon <will@kernel.org>, "Aneesh Kumar K.V" <aneesh.kumar@linux.ibm.com>, Andrew Morton <akpm@linux-foundation.org>, Nick Piggin <npiggin@gmail.com>, Peter Zijlstra <peterz@infradead.org>

Mailing list linux-arch@vger.kernel.org, linux-mm@kvack.org

Status Maintained

Files `arch/*/include/asm/tlb.h include/asm-generic/tlb.h mm/mmu_gather.c`

* MN88472 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

Files `drivers/media/dvb-frontends/mn88472*`

* MN88473 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

Files `drivers/media/dvb-frontends/mn88473*`

* MODULE SUPPORT

Mail Luis Chamberlain <mcgrof@kernel.org>

Mailing list linux-modules@vger.kernel.org, linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mcgrof/linux.git modules-next

Files `include/linux/module.h kernel/module/`

* MONOLITHIC POWER SYSTEM PMIC DRIVER

Mail Saravanan Sekar <sravanhome@gmail.com>

Status Maintained

Files `Documentation/devicetree/bindings/mfd/mps,mp2629.yaml Documentation/devicetree/bindings/regulator/mps,mp*.yaml drivers/ iio/adc/mp2629_adc.c drivers/mfd/mp2629.c drivers/power/supply/ mp2629_charger.c drivers/regulator/mp5416.c drivers/regulator/ mpq7920.c drivers/regulator/mpq7920.h include/linux/mfd/mp2629.h`

* MOTION EYE VAIO PICTUREBOOK CAMERA DRIVER

Status Orphan

Web-page http://popies.net/meye/

Files `Documentation/userspace-api/media/drivers/meye* drivers/media/pci/ meye/ include/uapi/linux/meye.h`

* MOTORCOMM PHY DRIVER

Mail Peter Geis <pgwipeout@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/phy/motorcomm.c`

* MOXA SMARTIO/INDUSTIO/INTELLIO SERIAL CARD

Mail Jiri Slaby <jirislaby@kernel.org>

Status Maintained

Files driver-api/tty/moxa-smartio `drivers/tty/mxser.*`

* MR800 AVERMEDIA USB FM RADIO DRIVER

Mail Alexey Klimov <klimov.linux@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/radio/radio-mr800.c`

* MRF24J40 IEEE 802.15.4 RADIO DRIVER

Mail Alan Ott <alan@signal11.us>

Mailing list linux-wpan@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/net/ieee802154/mrf24j40.txt`
`drivers/net/ieee802154/mrf24j40.c`

* MSI LAPTOP SUPPORT

Mail "Lee, Chun-Yi" <jlee@suse.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/msi-laptop.c`

* MSI WMI SUPPORT

Mailing list platform-driver-x86@vger.kernel.org

Status Orphan

Files `drivers/platform/x86/msi-wmi.c`

* MSI001 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/tuners/msi001*`

* MSI2500 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/usb/msi2500/`

* MSTAR INTERRUPT CONTROLLER DRIVER

Mail Mark-PK Tsai <mark-pk.tsai@mediatek.com>, Daniel Palmer <daniel@thingy.jp>

Status Maintained

Files `Documentation/devicetree/bindings/interrupt-controller/mstar, mst-intc.yaml drivers/irqchip/irq-mst-intc.c`

* MSYSTEMS DISKONCHIP G3 MTD DRIVER

Mail Robert Jarzmik <robert.jarzmik@free.fr>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Files `drivers/mtd/devices/docg3*`

* MT9M032 APTINA SENSOR DRIVER

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/i2c/mt9m032.c include/media/i2c/mt9m032.h`

* MT9P031 APTINA CAMERA SENSOR

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/aptina,mt9p031.yaml
    drivers/media/i2c/mt9p031.c include/media/i2c/mt9p031.h

* MT9T001 APTINA CAMERA SENSOR

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/mt9t001.c include/media/i2c/mt9t001.h

* MT9T112 APTINA CAMERA SENSOR

Mail Jacopo Mondi <jacopo@jmondi.org>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/mt9t112.c include/media/i2c/mt9t112.h

* MT9V032 APTINA CAMERA SENSOR

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/mt9v032.txt   drivers/
    media/i2c/mt9v032.c include/media/i2c/mt9v032.h

* MT9V111 APTINA CAMERA SENSOR

Mail Jacopo Mondi <jacopo@jmondi.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/aptina,mt9v111.yaml
    drivers/media/i2c/mt9v111.c

* MULTIFUNCTION DEVICES (MFD)

Mail Lee Jones <lee.jones@linaro.org>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/lee/mfd.git

Files Documentation/devicetree/bindings/mfd/   drivers/mfd/   include/
    dt-bindings/mfd/ include/linux/mfd/

* MULTIMEDIA CARD (MMC) ETC. OVER SPI

Status Orphan

Files drivers/mmc/host/mmc_spi.c include/linux/spi/mmc_spi.h

* MULTIMEDIA CARD (MMC), SECURE DIGITAL (SD) AND SDIO SUBSYSTEM

Mail Ulf Hansson <ulf.hansson@linaro.org>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/ulfh/mmc.git

Files Documentation/devicetree/bindings/mmc/ drivers/mmc/ include/linux/
    mmc/ include/uapi/linux/mmc/

* MULTIPLEXER SUBSYSTEM

Mail Peter Rosin <peda@axentia.se>

Status Maintained

Files Documentation/ABI/testing/sysfs-class-mux*   Documentation/
    devicetree/bindings/mux/   drivers/mux/   include/dt-bindings/mux/
    include/linux/mux/

* MUSB MULTIPOINT HIGH SPEED DUAL-ROLE CONTROLLER

Mail Bin Liu <b-liu@ti.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files drivers/usb/musb/

* MXL301RF MEDIA DRIVER

Mail Akihiro Tsukada <tskd08@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Files drivers/media/tuners/mxl301rf*

* MXL5007T MEDIA DRIVER

Mail Michael Krufky <mkrufky@linuxtv.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://github.com/mkrufky

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/mkrufky/tuners.git

Files drivers/media/tuners/mxl5007t.*

* MXSFB DRM DRIVER

Mail Marek Vasut <marex@denx.de>, Stefan Agner <stefan@agner.ch>

Mailing list dri-devel@lists.freedesktop.org

Status Supported

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files Documentation/devicetree/bindings/display/fsl,lcdif.yaml drivers/
    gpu/drm/mxsfb/

* MYLEX DAC960 PCI RAID Controller

Mail Hannes Reinecke <hare@kernel.org>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files `drivers/scsi/myrb.* drivers/scsi/myrs.*`

* MYRICOM MYRI-10G 10GbE DRIVER (MYRI10GE)

Mail Chris Lee <christopher.lee@cspi.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page https://www.cspi.com/ethernet-products/support/downloads/

Files `drivers/net/ethernet/myricom/myri10ge/`

* NAND FLASH SUBSYSTEM

Mail Miquel Raynal <miquel.raynal@bootlin.com>

Reviewer Richard Weinberger <richard@nod.at>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Web-page http://www.linux-mtd.infradead.org/

Patchwork http://patchwork.ozlabs.org/project/linux-mtd/list/

chat irc://irc.oftc.net/mtd

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mtd/linux.git nand/next

Files `drivers/mtd/nand/ include/linux/mtd/*nand*.h`

* NATIVE INSTRUMENTS USB SOUND INTERFACE DRIVER

Mail Daniel Mack <zonque@gmail.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Web-page http://www.native-instruments.com

Files `sound/usb/caiaq/`

* NATSEMI ETHERNET DRIVER (DP8381x)

Status Orphan

Files `drivers/net/ethernet/natsemi/natsemi.c`

* NCR 5380 SCSI DRIVERS

Mail Finn Thain <fthain@linux-m68k.org>, Michael Schmitz <schmitzmic@gmail.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files `scsi/g_NCR5380 drivers/scsi/NCR5380.* drivers/scsi/arm/cumana_1.c drivers/scsi/arm/oak.c drivers/scsi/atari_scsi.* drivers/scsi/dmx3191d.c drivers/scsi/g_NCR5380.* drivers/scsi/mac_scsi.* drivers/scsi/sun3_scsi.* drivers/scsi/sun3_scsi_vme.c`

* NCSI LIBRARY

Mail Samuel Mendoza-Jonas <sam@mendozajonas.com>

Status Maintained

Files `net/ncsi/`

* NCT6775 HARDWARE MONITOR DRIVER - CORE & PLATFORM DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `hwmon/nct6775 drivers/hwmon/nct6775-core.c drivers/hwmon/nct6775-platform.c drivers/hwmon/nct6775.h`

* NCT6775 HARDWARE MONITOR DRIVER - I2C DRIVER

Mail Zev Weiss <zev@bewilderbeest.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/hwmon/nuvoton,nct6775.yaml drivers/hwmon/nct6775-i2c.c`

* NETDEVSIM

Mail Jakub Kicinski <kuba@kernel.org>

Status Maintained

Files drivers/net/netdevsim/*

* NETEM NETWORK EMULATOR

Mail Stephen Hemminger <stephen@networkplumber.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files net/sched/sch_netem.c

* NETERION 10GbE DRIVERS (s2io/vxge)

Mail Jon Mason <jdmason@kudzu.us>

Mailing list netdev@vger.kernel.org

Status Supported

Files networking/device_drivers/ethernet/neterion/s2io   networking/device_drivers/ethernet/neterion/vxge drivers/net/ethernet/neterion/

* NETFILTER

Mail Pablo   Neira   Ayuso   <pablo@netfilter.org>,   Jozsef   Kadlecsik <kadlec@netfilter.org>, Florian Westphal <fw@strlen.de>

Mailing list netfilter-devel@vger.kernel.org, coreteam@netfilter.org

Status Maintained

Web-page http://www.netfilter.org/ http://www.iptables.org/ http://www.nftables.org/

Patchwork http://patchwork.ozlabs.org/project/netfilter-devel/list/

chat irc://irc.libera.chat/netfilter

SCM git   git://git.kernel.org/pub/scm/linux/kernel/git/netfilter/nf.git   git git://git.kernel.org/pub/scm/linux/kernel/git/netfilter/nf-next.git

Files include/linux/netfilter*   include/linux/netfilter/   include/ net/netfilter/   include/uapi/linux/netfilter*   include/uapi/ linux/netfilter/ net/*/netfilter.c net/*/netfilter/ net/bridge/ br_netfilter*.c net/netfilter/

* NETROM NETWORK LAYER

Mail Ralf Baechle <ralf@linux-mips.org>

Mailing list linux-hams@vger.kernel.org

Status Maintained

Web-page http://www.linux-ax25.org/

Files `include/net/netrom.h include/uapi/linux/netrom.h net/netrom/`

* NETRONIX EMBEDDED CONTROLLER

Mail Jonathan Neuschäfer <j.neuschaefer@gmx.net>

Status Maintained

Files `Documentation/devicetree/bindings/mfd/netronix,ntxec.yaml drivers/ mfd/ntxec.c drivers/pwm/pwm-ntxec.c drivers/rtc/rtc-ntxec.c include/ linux/mfd/ntxec.h`

* NETRONOME ETHERNET DRIVERS

Mail Simon Horman <simon.horman@corigine.com>

Reviewer Jakub Kicinski <kuba@kernel.org>

Mailing list oss-drivers@corigine.com

Status Maintained

Files `drivers/net/ethernet/netronome/`

* NETWORK BLOCK DEVICE (NBD)

Mail Josef Bacik <josef@toxicpanda.com>

Mailing list linux-block@vger.kernel.org, nbd@other.debian.org

Status Maintained

Files `admin-guide/blockdev/nbd  drivers/block/nbd.c  include/trace/events/ nbd.h include/uapi/linux/nbd.h`

* NETWORK DROP MONITOR

Mail Neil Horman <nhorman@tuxdriver.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Web-page https://fedorahosted.org/dropwatch/

Files `include/uapi/linux/net_dropmon.h net/core/drop_monitor.c`

* NETWORKING DRIVERS

Mail "David S. Miller" <davem@davemloft.net>, Eric Dumazet <edumazet@google.com>, Jakub Kicinski <kuba@kernel.org>, Paolo Abeni <pabeni@redhat.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/netdev/net.git git git://git.kernel.org/pub/scm/linux/kernel/git/netdev/net-next.git

Files Documentation/devicetree/bindings/net/ drivers/connector/ drivers/net/ include/dt-bindings/net/ include/linux/etherdevice.h include/linux/fcdevice.h include/linux/fddidevice.h include/linux/hippidevice.h include/linux/if_* include/linux/inetdevice.h include/linux/netdevice.h include/uapi/linux/if_* include/uapi/linux/netdevice.h

* NETWORKING DRIVERS (WIRELESS)

Mail Kalle Valo <kvalo@kernel.org>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/

Patchwork https://patchwork.kernel.org/project/linux-wireless/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/wireless/wireless.git git git://git.kernel.org/pub/scm/linux/kernel/git/wireless/wireless-next.git

Files Documentation/devicetree/bindings/net/wireless/ drivers/net/wireless/

* NETWORKING [DSA]

Mail Andrew Lunn <andrew@lunn.ch>, Vivien Didelot <vivien.didelot@gmail.com>, Florian Fainelli <f.fainelli@gmail.com>, Vladimir Oltean <olteanv@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/net/dsa/ drivers/net/dsa/ include/linux/dsa/ include/linux/platform_data/dsa.h include/net/dsa.h net/dsa/ tools/testing/selftests/drivers/net/dsa/

* NETWORKING [GENERAL]

Mail "David S. Miller" <davem@davemloft.net>, Eric Dumazet <edu-mazet@google.com>, Jakub Kicinski <kuba@kernel.org>, Paolo Abeni <pabeni@redhat.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Patchwork https://patchwork.kernel.org/project/netdevbpf/list/

bugs mailto:netdev@vger.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/netdev/net.git git git://git.kernel.org/pub/scm/linux/kernel/git/netdev/net-next.git

Files Documentation/networking/ *process/maintainer-netdev* include/linux/
in.h include/linux/net.h include/linux/netdevice.h include/net/
include/uapi/linux/in.h include/uapi/linux/net.h include/uapi/linux/
net_namespace.h include/uapi/linux/netdevice.h lib/net_utils.c lib/
random32.c net/ tools/testing/selftests/net/

* NETWORKING [IPSEC]

Mail Steffen Klassert <steffen.klassert@secunet.com>, Herbert Xu <her-bert@gondor.apana.org.au>, "David S. Miller" <davem@davemloft.net>

Mailing list netdev@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/klassert/ipsec.git git git://git.kernel.org/pub/scm/linux/kernel/git/klassert/ipsec-next.git

Files include/net/xfrm.h include/uapi/linux/xfrm.h net/ipv4/ah4.c net/
ipv4/esp4* net/ipv4/ip_vti.c net/ipv4/ipcomp.c net/ipv4/xfrm* net/
ipv6/ah6.c net/ipv6/esp6* net/ipv6/ip6_vti.c net/ipv6/ipcomp6.c net/
ipv6/xfrm* net/key/ net/xfrm/ tools/testing/selftests/net/ipsec.c

* NETWORKING [IPv4/IPv6]

Mail "David S. Miller" <davem@davemloft.net>, Hideaki YOSHIFUJI <yoshfuji@linux-ipv6.org>, David Ahern <dsahern@kernel.org>

Mailing list netdev@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/netdev/net.git

Files arch/x86/net/* include/linux/ip.h include/linux/ipv6* include/net/
fib* include/net/ip* include/net/route.h net/ipv4/ net/ipv6/

* NETWORKING [LABELED] (NetLabel, Labeled IPsec, SECMARK)

Mail Paul Moore <paul@paul-moore.com>

Mailing list netdev@vger.kernel.org, linux-security-module@vger.kernel.org

Status Maintained

Web-page https://github.com/netlabel

Files Documentation/netlabel/ include/net/calipso.h include/net/
cipso_ipv4.h include/net/netlabel.h include/uapi/linux/netfilter/
xt_CONNSECMARK.h include/uapi/linux/netfilter/xt_SECMARK.h net/ipv4/
cipso_ipv4.c net/ipv6/calipso.c net/netfilter/xt_CONNSECMARK.c net/
netfilter/xt_SECMARK.c net/netlabel/

* NETWORKING [MPTCP]

Mail Mat Martineau <mathew.j.martineau@linux.intel.com>, Matthieu Baerts
<matthieu.baerts@tessares.net>

Mailing list netdev@vger.kernel.org, mptcp@lists.linux.dev

Status Maintained

Web-page https://github.com/multipath-tcp/mptcp_net-next/wiki

bugs https://github.com/multipath-tcp/mptcp_net-next/issues

Files networking/mptcp-sysctl include/net/mptcp.h include/trace/events/
mptcp.h include/uapi/linux/mptcp.h net/mptcp/ tools/testing/
selftests/bpf/*/*mptcp*.c tools/testing/selftests/net/mptcp/

* NETWORKING [TCP]

Mail Eric Dumazet <edumazet@google.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files include/linux/tcp.h include/net/tcp.h include/trace/events/tcp.h
include/uapi/linux/tcp.h net/ipv4/syncookies.c net/ipv4/tcp*.c net/
ipv6/syncookies.c net/ipv6/tcp*.c

* NETWORKING [TLS]

Mail Boris Pismenny <borisp@nvidia.com>, John Fastabend
<john.fastabend@gmail.com>, Jakub Kicinski <kuba@kernel.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files include/net/tls.h include/uapi/linux/tls.h net/tls/*

* NETXEN (1/10) GbE SUPPORT

Mail Manish Chopra <manishc@marvell.com>, Rahul Verma <rahulv@marvell.com>, GR-Linux-NIC-Dev@marvell.com

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/qlogic/netxen/

* NET_FAILOVER MODULE

Mail Sridhar Samudrala <sridhar.samudrala@intel.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files networking/net_failover drivers/net/net_failover.c include/net/ net_failover.h

* NEXTHOP

Mail David Ahern <dsahern@kernel.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files include/net/netns/nexthop.h include/net/nexthop.h include/uapi/ linux/nexthop.h net/ipv4/nexthop.c

* NFC SUBSYSTEM

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>

Mailing list linux-nfc@lists.01.org (subscribers-only), netdev@vger.kernel.org

Status Maintained

bugs mailto:linux-nfc@lists.01.org

Files Documentation/devicetree/bindings/net/nfc/ drivers/nfc/ include/ linux/platform_data/nfcmrvl.h include/net/nfc/ include/uapi/linux/ nfc.h net/nfc/

* NFC VIRTUAL NCI DEVICE DRIVER

Mail Bongsu Jeon <bongsu.jeon@samsung.com>

Mailing list netdev@vger.kernel.org, linux-nfc@lists.01.org (subscribers-only)

Status Supported

Files drivers/nfc/virtual_ncidev.c tools/testing/selftests/nci/

* NFS, SUNRPC, AND LOCKD CLIENTS

Mail Trond Myklebust <trond.myklebust@hammerspace.com>, Anna Schumaker <anna@kernel.org>

Mailing list linux-nfs@vger.kernel.org

Status Maintained

Web-page http://client.linux-nfs.org

SCM git git://git.linux-nfs.org/projects/trondmy/linux-nfs.git

Files fs/lockd/ fs/nfs/ fs/nfs_common/ include/linux/lockd/ include/linux/ nfs* include/linux/sunrpc/ include/uapi/linux/nfs* include/uapi/ linux/sunrpc/ net/sunrpc/ Documentation/filesystems/nfs/

* NILFS2 FILESYSTEM

Mail Ryusuke Konishi <konishi.ryusuke@gmail.com>

Mailing list linux-nilfs@vger.kernel.org

Status Supported

Web-page https://nilfs.sourceforge.io/ https://nilfs.osdn.jp/

SCM git git://github.com/konis/nilfs2.git

Files filesystems/nilfs2 fs/nilfs2/ include/trace/events/nilfs2.h include/ uapi/linux/nilfs2_api.h include/uapi/linux/nilfs2_ondisk.h

* NINJA SCSI-3 / NINJA SCSI-32Bi (16bit/CardBus) PCMCIA SCSI HOST ADAPTER DRIVER

Mail YOKOTA Hiroshi <yokota@netlab.is.tsukuba.ac.jp>

Status Maintained

Web-page http://www.netlab.is.tsukuba.ac.jp/~yokota/izumi/ninja/

Files scsi/NinjaSCSI drivers/scsi/pcmcia/nsp_*

* NINJA SCSI-32Bi/UDE PCI/CARDBUS SCSI HOST ADAPTER DRIVER

Mail GOTO Masanori <gotom@debian.or.jp>, YOKOTA Hiroshi <yokota@netlab.is.tsukuba.ac.jp>

Status Maintained

Web-page http://www.netlab.is.tsukuba.ac.jp/~yokota/izumi/ninja/

Files scsi/NinjaSCSI `drivers/scsi/nsp32*`

* NINTENDO HID DRIVER

Mail Daniel J. Ogorchock <djogorchock@gmail.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `drivers/hid/hid-nintendo*`

* NIOS2 ARCHITECTURE

Mail Dinh Nguyen <dinguyen@kernel.org>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/dinguyen/linux.git

Files `arch/nios2/`

* NITRO ENCLAVES (NE)

Mail Andra Paraschiv <andraprs@amazon.com>, Alexandru Vasile <lexnv@amazon.com>, Alexandru Ciobotaru <alcioa@amazon.com>

Mailing list linux-kernel@vger.kernel.org

Status Supported

Web-page https://aws.amazon.com/ec2/nitro/nitro-enclaves/

Files virt/ne_overview `drivers/virt/nitro_enclaves/` `include/linux/nitro_enclaves.h` `include/uapi/linux/nitro_enclaves.h` `samples/nitro_enclaves/`

* NOHZ, DYNTICKS SUPPORT

Mail Frederic Weisbecker <fweisbec@gmail.com>, Thomas Gleixner <tglx@linutronix.de>, Ingo Molnar <mingo@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git timers/nohz

Files `include/linux/sched/nohz.h include/linux/tick.h kernel/time/tick*.*`

* NOKIA N900 CAMERA SUPPORT (ET8EK8 SENSOR, AD5820 FOCUS)

Mail Pavel Machek <pavel@ucw.cz>, Sakari Ailus <sakari.ailus@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/media/i2c/ad5820.c drivers/media/i2c/et8ek8`

* NOKIA N900 POWER SUPPLY DRIVERS

Reviewer Pali Rohár <pali@kernel.org>

Files `drivers/power/supply/bq2415x_charger.c drivers/power/supply/bq27xxx_battery.c drivers/power/supply/bq27xxx_battery_i2c.c drivers/power/supply/isp1704_charger.c drivers/power/supply/rx51_battery.c include/linux/power/bq2415x_charger.h include/linux/power/bq27xxx_battery.h`

* NOLIBC HEADER FILE

Mail Willy Tarreau <w@1wt.eu>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/wtarreau/nolibc.git

Files `tools/include/nolibc/`

* NSDEPS

Mail Matthias Maennich <maennich@google.com>

Status Maintained

Files core-api/symbol-namespaces `scripts/nsdeps`

* NTB AMD DRIVER

Mail Sanjay R Mehta <sanju.mehta@amd.com>, Shyam Sundar S K <Shyam-sundar.S-k@amd.com>

Mailing list ntb@lists.linux.dev

Status Supported

Files drivers/ntb/hw/amd/

* NTB DRIVER CORE

Mail Jon Mason <jdmason@kudzu.us>, Dave Jiang <dave.jiang@intel.com>, Allen Hubbe <allenbh@gmail.com>

Mailing list ntb@lists.linux.dev

Status Supported

Web-page https://github.com/jonmason/ntb/wiki

SCM git git://github.com/jonmason/ntb.git

Files drivers/net/ntb_netdev.c drivers/ntb/ include/linux/ntb.h include/linux/ntb_transport.h tools/testing/selftests/ntb/

* NTB IDT DRIVER

Mail Serge Semin <fancer.lancer@gmail.com>

Mailing list ntb@lists.linux.dev

Status Supported

Files drivers/ntb/hw/idt/

* NTB INTEL DRIVER

Mail Dave Jiang <dave.jiang@intel.com>

Mailing list ntb@lists.linux.dev

Status Supported

Web-page https://github.com/davejiang/linux/wiki

SCM git https://github.com/davejiang/linux.git

Files drivers/ntb/hw/intel/

* NTFS FILESYSTEM

Mail Anton Altaparmakov <anton@tuxera.com>

Mailing list linux-ntfs-dev@lists.sourceforge.net

Status Supported

Web-page http://www.tuxera.com/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/aia21/ntfs.git

Files filesystems/ntfs `fs/ntfs/`

* NTFS3 FILESYSTEM

Mail Konstantin Komarov <almaz.alexandrovich@paragon-software.com>

Mailing list ntfs3@lists.linux.dev

Status Supported

Web-page http://www.paragon-software.com/

SCM git https://github.com/Paragon-Software-Group/linux-ntfs3.git

Files filesystems/ntfs3 `fs/ntfs3/`

* NUBUS SUBSYSTEM

Mail Finn Thain <fthain@linux-m68k.org>

Mailing list linux-m68k@lists.linux-m68k.org

Status Maintained

Files `arch/*/include/asm/nubus.h   drivers/nubus/   include/linux/nubus.h     include/uapi/linux/nubus.h`

* NVIDIA (rivafb and nvidiafb) FRAMEBUFFER DRIVER

Mail Antonino Daplas <adaplas@gmail.com>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files `drivers/video/fbdev/nvidia/ drivers/video/fbdev/riva/`

* NVIDIA WMI EC BACKLIGHT DRIVER

Mail Daniel Dadap <ddadap@nvidia.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Supported

Files `drivers/platform/x86/nvidia-wmi-ec-backlight.c`

* NVM EXPRESS DRIVER

Mail Keith Busch <kbusch@kernel.org>, Jens Axboe <axboe@fb.com>, Christoph Hellwig <hch@lst.de>, Sagi Grimberg <sagi@grimberg.me>

Mailing list linux-nvme@lists.infradead.org

Status Supported

Web-page http://git.infradead.org/nvme.git

SCM git://git.infradead.org/nvme.git

Files `drivers/nvme/host/` `include/linux/nvme.h` `include/uapi/linux/nvme_ioctl.h`

* NVM EXPRESS FC TRANSPORT DRIVERS

Mail James Smart <james.smart@broadcom.com>

Mailing list linux-nvme@lists.infradead.org

Status Supported

Files `drivers/nvme/host/fc.c` `drivers/nvme/target/fc.c` `drivers/nvme/target/fcloop.c` `include/linux/nvme-fc-driver.h` `include/linux/nvme-fc.h`

* NVM EXPRESS TARGET DRIVER

Mail Christoph Hellwig <hch@lst.de>, Sagi Grimberg <sagi@grimberg.me>, Chaitanya Kulkarni <kch@nvidia.com>

Mailing list linux-nvme@lists.infradead.org

Status Supported

Web-page http://git.infradead.org/nvme.git

SCM git://git.infradead.org/nvme.git

Files `drivers/nvme/target/`

* NVMEM FRAMEWORK

Mail Srinivas Kandagatla <srinivas.kandagatla@linaro.org>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/srini/nvmem.git

Files Documentation/ABI/stable/sysfs-bus-nvmem Documentation/devicetree/
bindings/nvmem/ drivers/nvmem/ include/linux/nvmem-consumer.h
include/linux/nvmem-provider.h

* NXP C45 TJA11XX PHY DRIVER

Mail Radu Pirea <radu-nicolae.pirea@oss.nxp.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/phy/nxp-c45-tja11xx.c

* NXP FSPI DRIVER

Mail Han Xu <han.xu@nxp.com>, Haibo Chen <haibo.chen@nxp.com>

Reviewer Yogesh Gaur <yogeshgaur.83@gmail.com>

Mailing list linux-spi@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/spi/spi-nxp-fspi.yaml drivers/
spi/spi-nxp-fspi.c

* NXP FXAS21002C DRIVER

Mail Rui Miguel Silva <rmfrfs@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/gyroscope/nxp,fxas21002c.
yaml drivers/iio/gyro/fxas21002c.h drivers/iio/gyro/fxas21002c_core.c
drivers/iio/gyro/fxas21002c_i2c.c drivers/iio/gyro/fxas21002c_spi.c

* NXP i.MX CLOCK DRIVERS

Mail Abel Vesa <abelvesa@kernel.org>

Mailing list linux-clk@vger.kernel.org, linux-imx@nxp.com

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/abelvesa/linux.git clk/imx

Files Documentation/devicetree/bindings/clock/imx*   drivers/clk/imx/
    include/dt-bindings/clock/imx*

* NXP i.MX 8MQ DCSS DRIVER

Mail Laurentiu Palcu <laurentiu.palcu@oss.nxp.com>

Reviewer Lucas Stach <l.stach@pengutronix.de>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

Files Documentation/devicetree/bindings/display/imx/nxp,imx8mq-dcss.yaml
    drivers/gpu/drm/imx/dcss/

* NXP i.MX 8QXP ADC DRIVER

Mail Cai Huoqing <cai.huoqing@linux.dev>, Haibo Chen <haibo.chen@nxp.com>

Mailing list linux-imx@nxp.com, linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/adc/nxp,imx8qxp-adc.yaml
    drivers/iio/adc/imx8qxp-adc.c

* NXP i.MX 7D/6SX/6UL AND VF610 ADC DRIVER

Mail Haibo Chen <haibo.chen@nxp.com>

Mailing list linux-iio@vger.kernel.org, linux-imx@nxp.com

Status Maintained

Files Documentation/devicetree/bindings/iio/adc/fsl,imx7d-adc.yaml
    Documentation/devicetree/bindings/iio/adc/fsl,vf610-adc.yaml
    drivers/iio/adc/imx7d_adc.c drivers/iio/adc/vf610_adc.c

* NXP PF8100/PF8121A/PF8200 PMIC REGULATOR DEVICE DRIVER

Mail Jagan Teki <jagan@amarulasolutions.com>

Status Maintained

Files Documentation/devicetree/bindings/regulator/nxp,pf8x00-regulator.
yaml drivers/regulator/pf8x00-regulator.c

* NXP PTN5150A CC LOGIC AND EXTCON DRIVER

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/extcon/extcon-ptn5150.yaml
drivers/extcon/extcon-ptn5150.c

* NXP SGTL5000 DRIVER

Mail Fabio Estevam <festevam@gmail.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/sound/sgtl5000.yaml   sound/soc/
codecs/sgtl5000*

* NXP SJA1105 ETHERNET SWITCH DRIVER

Mail Vladimir Oltean <olteanv@gmail.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files drivers/net/dsa/sja1105 drivers/net/pcs/pcs-xpcs-nxp.c

* NXP TDA998X DRM DRIVER

Mail Russell King <linux@armlinux.org.uk>

Status Maintained

SCM git   git://git.armlinux.org.uk/~rmk/linux-arm.git   drm-tda998x-devel   git
git://git.armlinux.org.uk/~rmk/linux-arm.git drm-tda998x-fixes

Files drivers/gpu/drm/i2c/tda998x_drv.c   include/drm/i2c/tda998x.h
include/dt-bindings/display/tda998x.h

Content regex "nxp,tda998x"

* NXP TFA9879 DRIVER

Mail Peter Rosin <peda@axentia.se>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/sound/tfa9879.txt   sound/soc/
codecs/tfa9879*

* NXP/Goodix TFA989X (TFA1) DRIVER

Mail Stephan Gerhold <stephan@gerhold.net>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/sound/nxp,tfa989x.yaml   sound/
soc/codecs/tfa989x.c

* NXP-NCI NFC DRIVER

Mailing list linux-nfc@lists.01.org (subscribers-only)

Status Orphan

Files Documentation/devicetree/bindings/net/nfc/nxp,nci.yaml   drivers/
nfc/nxp-nci

* NXP i.MX 8QXP/8QM JPEG V4L2 DRIVER

Mail Mirela Rabulea <mirela.rabulea@nxp.com>

Reviewer NXP Linux Team <linux-imx@nxp.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/nxp,imx8-jpeg.yaml
drivers/media/platform/nxp/imx-jpeg

* NZXT-KRAKEN2 HARDWARE MONITORING DRIVER

Mail Jonas Malaco <jonas@protocubo.io>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/nzxt-kraken2 drivers/hwmon/nzxt-kraken2.c

* NZXT-SMART2 HARDWARE MONITORING DRIVER

Mail Aleksandr Mezin <mezin.alexander@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/nzxt-smart2 `drivers/hwmon/nzxt-smart2.c`

* OBJAGG

Mail Jiri Pirko <jiri@nvidia.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files `include/linux/objagg.h lib/objagg.c lib/test_objagg.c`

* OBJTOOL

Mail Josh Poimboeuf <jpoimboe@kernel.org>, Peter Zijlstra <peterz@infradead.org>

Status Supported

Files `tools/objtool/ include/linux/objtool.h`

* OCELOT ETHERNET SWITCH DRIVER

Mail Vladimir Oltean <vladimir.oltean@nxp.com>, Claudiu Manoil <claudiu.manoil@nxp.com>, Alexandre Belloni <alexandre.belloni@bootlin.com>, UNGLinuxDriver@microchip.com

Mailing list netdev@vger.kernel.org

Status Supported

Files `drivers/net/dsa/ocelot/* drivers/net/ethernet/mscc/ include/soc/ mscc/ocelot* net/dsa/tag_ocelot.c net/dsa/tag_ocelot_8021q.c tools/ testing/selftests/drivers/net/ocelot/*`

* OCXL (Open Coherent Accelerator Processor Interface OpenCAPI) DRIVER

Mail Frederic Barrat <fbarrat@linux.ibm.com>, Andrew Donnellan <ajd@linux.ibm.com>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Supported

Files userspace-api/accelerators/ocxl `arch/powerpc/include/asm/pnv-ocxl.h arch/powerpc/platforms/powernv/ocxl.c drivers/misc/ocxl/ include/ misc/ocxl* include/uapi/misc/ocxl.h`

* OMAP AUDIO SUPPORT

Mail Peter Ujfalusi <peter.ujfalusi@gmail.com>, Jarkko Nikula <jarkko.nikula@bitmer.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers), linux-omap@vger.kernel.org

Status Maintained

Files `sound/soc/ti/n810.c sound/soc/ti/omap* sound/soc/ti/rx51.c sound/soc/ti/sdma-pcm.*`

* OMAP CLOCK FRAMEWORK SUPPORT

Mail Paul Walmsley <paul@pwsan.com>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Files `arch/arm/*omap*/*clock*`

* OMAP DEVICE TREE SUPPORT

Mail Benoît Cousson <bcousson@baylibre.com>, Tony Lindgren <tony@atomide.com>

Mailing list linux-omap@vger.kernel.org, devicetree@vger.kernel.org

Status Maintained

Files `arch/arm/boot/dts/*am3* arch/arm/boot/dts/*am4* arch/arm/boot/dts/*am5* arch/arm/boot/dts/*dra7* arch/arm/boot/dts/*omap* arch/arm/boot/dts/logicpd-som-lv* arch/arm/boot/dts/logicpd-torpedo*`

* OMAP DISPLAY SUBSYSTEM and FRAMEBUFFER SUPPORT (DSS2)

Mailing list linux-omap@vger.kernel.org, linux-fbdev@vger.kernel.org

Status Orphan

Files `arm/omap/dss drivers/video/fbdev/omap2/`

* OMAP FRAMEBUFFER SUPPORT

Mailing list linux-fbdev@vger.kernel.org, linux-omap@vger.kernel.org

Status Orphan

Files `drivers/video/fbdev/omap/`

* OMAP GENERAL PURPOSE MEMORY CONTROLLER SUPPORT

Mail Roger Quadros <rogerq@kernel.org>, Tony Lindgren <tony@atomide.com>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Files arch/arm/mach-omap2/*gpmc* drivers/memory/omap-gpmc.c

* OMAP GPIO DRIVER

Mail Grygorii Strashko <grygorii.strashko@ti.com>, Santosh Shilimkar <ssantosh@kernel.org>, Kevin Hilman <khilman@kernel.org>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/gpio/ti,omap-gpio.yaml drivers/
gpio/gpio-omap.c

* OMAP HARDWARE SPINLOCK SUPPORT

Mail Ohad Ben-Cohen <ohad@wizery.com>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Files drivers/hwspinlock/omap_hwspinlock.c

* OMAP HS MMC SUPPORT

Mailing list linux-mmc@vger.kernel.org, linux-omap@vger.kernel.org

Status Orphan

Files drivers/mmc/host/omap_hsmmc.c

* OMAP HWMOD DATA

Mail Paul Walmsley <paul@pwsan.com>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Files arch/arm/mach-omap2/omap_hwmod*data*

* OMAP HWMOD SUPPORT

Mail Benoît Cousson <bcousson@baylibre.com>, Paul Walmsley <paul@pwsan.com>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Files `arch/arm/mach-omap2/omap_hwmod.*`

* OMAP I2C DRIVER

Mail Vignesh R <vigneshr@ti.com>

Mailing list linux-omap@vger.kernel.org, linux-i2c@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/i2c/ti,omap4-i2c.yaml` `drivers/i2c/busses/i2c-omap.c`

* OMAP IMAGING SUBSYSTEM (OMAP3 ISP and OMAP4 ISS)

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/media/ti,omap3isp.txt` `drivers/media/platform/ti/omap3isp/` `drivers/staging/media/omap4iss/`

* OMAP MMC SUPPORT

Mail Aaro Koskinen <aaro.koskinen@iki.fi>

Mailing list linux-omap@vger.kernel.org

Status Odd Fixes

Files `drivers/mmc/host/omap.c`

* OMAP POWER MANAGEMENT SUPPORT

Mail Kevin Hilman <khilman@kernel.org>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Files `arch/arm/*omap*/*pm*` `drivers/cpufreq/omap-cpufreq.c`

* OMAP POWERDOMAIN SOC ADAPTATION LAYER SUPPORT

Mail Paul Walmsley <paul@pwsan.com>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Files arch/arm/mach-omap2/prm*

* OMAP RANDOM NUMBER GENERATOR SUPPORT

Mail Deepak Saxena <dsaxena@plexity.net>

Status Maintained

Files drivers/char/hw_random/omap-rng.c

* OMAP USB SUPPORT

Mailing list linux-usb@vger.kernel.org, linux-omap@vger.kernel.org

Status Orphan

Files arch/arm/*omap*/usb* drivers/usb/*/*omap*

* OMAP/NEWFLOW NANOBONE MACHINE SUPPORT

Mail Mark Jackson <mpfj@newflow.co.uk>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Files arch/arm/boot/dts/am335x-nano.dts

* OMAP1 SUPPORT

Mail Aaro Koskinen <aaro.koskinen@iki.fi>, Janusz Krzysztofik <jmkrzyszt@gmail.com>, Tony Lindgren <tony@atomide.com>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Patchwork http://patchwork.kernel.org/project/linux-omap/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tmlind/linux-omap.git

Files arch/arm/configs/omap1_defconfig arch/arm/mach-omap1/ arch/arm/ plat-omap/ drivers/i2c/busses/i2c-omap.c include/linux/platform_data/ ams-delta-fiq.h include/linux/platform_data/i2c-omap.h

* OMAP2+ SUPPORT

Mail Tony Lindgren <tony@atomide.com>

Mailing list linux-omap@vger.kernel.org

Status Maintained

Web-page http://www.muru.com/linux/omap/ http://linux.omap.com/

Patchwork http://patchwork.kernel.org/project/linux-omap/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tmlind/linux-omap.git

Files `arch/arm/configs/omap2plus_defconfig` `arch/arm/mach-omap2/` `arch/arm/plat-omap/` `drivers/bus/ti-sysc.c` `drivers/i2c/busses/i2c-omap.c` `drivers/irqchip/irq-omap-intc.c` `drivers/mfd/*omap*.c` `drivers/mfd/menelaus.c` `drivers/mfd/palmas.c` `drivers/mfd/tps65217.c` `drivers/mfd/tps65218.c` `drivers/mfd/tps65910.c` `drivers/mfd/twl-core.[ch]` `drivers/mfd/twl4030*.c` `drivers/mfd/twl6030*.c` `drivers/mfd/twl6040*.c` `drivers/regulator/palmas-regulator*.c` `drivers/regulator/pbias-regulator.c` `drivers/regulator/tps65217-regulator.c` `drivers/regulator/tps65218-regulator.c` `drivers/regulator/tps65910-regulator.c` `drivers/regulator/twl-regulator.c` `drivers/regulator/twl6030-regulator.c` `include/linux/platform_data/i2c-omap.h` `include/linux/platform_data/ti-sysc.h`

* OMFS FILESYSTEM

Mail Bob Copeland <me@bobcopeland.com>

Mailing list linux-karma-devel@lists.sourceforge.net

Status Maintained

Files filesystems/omfs `fs/omfs/`

* OMNIKEY CARDMAN 4000 DRIVER

Mail Harald Welte <laforge@gnumonks.org>

Status Maintained

Files `drivers/char/pcmcia/cm4000_cs.c` `include/linux/cm4000_cs.h` `include/uapi/linux/cm4000_cs.h`

* OMNIKEY CARDMAN 4040 DRIVER

Mail Harald Welte <laforge@gnumonks.org>

Status Maintained

Files drivers/char/pcmcia/cm4040_cs.*

* OMNIVISION OG01A1B SENSOR DRIVER

Mail Shawn Tu <shawnx.tu@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/og01a1b.c

* OMNIVISION OV02A10 SENSOR DRIVER

Mail Dongchun Zhu <dongchun.zhu@mediatek.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/ovti,ov02a10.yaml
  drivers/media/i2c/ov02a10.c

* OMNIVISION OV08D10 SENSOR DRIVER

Mail Jimmy Su <jimmy.su@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/ov08d10.c

* OMNIVISION OV13858 SENSOR DRIVER

Mail Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/ov13858.c

* OMNIVISION OV13B10 SENSOR DRIVER

Mail Arec Kao <arec.kao@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/ov13b10.c

* OMNIVISION OV2680 SENSOR DRIVER

Mail Rui Miguel Silva <rmfrfs@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/ovti,ov2680.yaml
    drivers/media/i2c/ov2680.c

* OMNIVISION OV2685 SENSOR DRIVER

Mail Shunqian Zheng <zhengsq@rock-chips.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/ov2685.c

* OMNIVISION OV2740 SENSOR DRIVER

Mail Tianshu Qiu <tian.shu.qiu@intel.com>

Reviewer Shawn Tu <shawnx.tu@intel.com>, Bingbu Cao <bingbu.cao@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/ov2740.c

* OMNIVISION OV5640 SENSOR DRIVER

Mail Steve Longerbeam <slongerbeam@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/ov5640.c

* OMNIVISION OV5647 SENSOR DRIVER

Mail Dave Stevenson <dave.stevenson@raspberrypi.com>, Jacopo Mondi <jacopo@jmondi.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/ovti,ov5647.yaml
    drivers/media/i2c/ov5647.c

* OMNIVISION OV5670 SENSOR DRIVER

Mail Chiranjeevi Rapolu <chiranjeevi.rapolu@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/ov5670.c

* OMNIVISION OV5675 SENSOR DRIVER

Mail Shawn Tu <shawnx.tu@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/ov5675.c

* OMNIVISION OV5693 SENSOR DRIVER

Mail Daniel Scally <djrscally@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/i2c/ov5693.c`

* OMNIVISION OV5695 SENSOR DRIVER

Mail Shunqian Zheng <zhengsq@rock-chips.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/i2c/ov5695.c`

* OMNIVISION OV7670 SENSOR DRIVER

Mailing list linux-media@vger.kernel.org

Status Orphan

SCM git git://linuxtv.org/media_tree.git

Files `Documentation/devicetree/bindings/media/i2c/ov7670.txt    drivers/`
`    media/i2c/ov7670.c`

* OMNIVISION OV772x SENSOR DRIVER

Mail Jacopo Mondi <jacopo@jmondi.org>

Mailing list linux-media@vger.kernel.org

Status Odd fixes

SCM git git://linuxtv.org/media_tree.git

Files `Documentation/devicetree/bindings/media/i2c/ovti,ov772x.yaml`
`    drivers/media/i2c/ov772x.c include/media/i2c/ov772x.h`

* OMNIVISION OV7740 SENSOR DRIVER

Mail Wenyou Yang <wenyou.yang@microchip.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/ov7740.txt   drivers/
      media/i2c/ov7740.c

* OMNIVISION OV8856 SENSOR DRIVER

Mail Dongchun Zhu <dongchun.zhu@mediatek.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/ov8856.yaml   drivers/
      media/i2c/ov8856.c

* OMNIVISION OV9282 SENSOR DRIVER

Mail Paul   J.   Murphy   <paul.j.murphy@intel.com>,   Daniele   Alessandrelli
      <daniele.alessandrelli@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/ovti,ov9282.yaml
      drivers/media/i2c/ov9282.c

* OMNIVISION OV9640 SENSOR DRIVER

Mail Petr Cvek <petrcvekcz@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/i2c/ov9640.*

* OMNIVISION OV9650 SENSOR DRIVER

Mail Sakari Ailus <sakari.ailus@linux.intel.com>

Reviewer Akinobu Mita <akinobu.mita@gmail.com>, Sylwester Nawrocki <s.nawrocki@samsung.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/ov9650.txt   drivers/media/i2c/ov9650.c

* OMNIVISION OV9734 SENSOR DRIVER

Mail Tianshu Qiu <tian.shu.qiu@intel.com>

Reviewer Bingbu Cao <bingbu.cao@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/ov9734.c

* ONENAND FLASH DRIVER

Mail Kyungmin Park <kyungmin.park@samsung.com>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Files drivers/mtd/nand/onenand/ include/linux/mtd/onenand*.h

* ONION OMEGA2+ BOARD

Mail Harvey Hunt <harveyhuntnexus@gmail.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files arch/mips/boot/dts/ralink/omega2p.dts

* OP-TEE DRIVER

Mail Jens Wiklander <jens.wiklander@linaro.org>

Mailing list op-tee@lists.trustedfirmware.org

Status Maintained

Files Documentation/ABI/testing/sysfs-bus-optee-devices   drivers/tee/
optee/

* OP-TEE RANDOM NUMBER GENERATOR (RNG) DRIVER

Mail Sumit Garg <sumit.garg@linaro.org>

Mailing list op-tee@lists.trustedfirmware.org

Status Maintained

Files drivers/char/hw_random/optee-rng.c

* OP-TEE RTC DRIVER

Mail Clément Léger <clement.leger@bootlin.com>

Mailing list linux-rtc@vger.kernel.org

Status Maintained

Files drivers/rtc/rtc-optee.c

* OPA-VNIC DRIVER

Mail Dennis Dalessandro <dennis.dalessandro@cornelisnetworks.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Files drivers/infiniband/ulp/opa_vnic

* OPEN FIRMWARE AND DEVICE TREE OVERLAYS

Mail Pantelis   Antoniou   <pantelis.antoniou@konsulko.com>,   Frank   Rowand
<frowand.list@gmail.com>

Mailing list devicetree@vger.kernel.org

Status Maintained

Files devicetree/dynamic-resolution-notes devicetree/overlay-notes drivers/of/
overlay.c drivers/of/resolver.c

Content regex of_overlay_notifier_

* OPEN FIRMWARE AND FLATTENED DEVICE TREE

Mail Rob Herring <robh+dt@kernel.org>, Frank Rowand <frowand.list@gmail.com>

Mailing list devicetree@vger.kernel.org

Status Maintained

chat irc://irc.libera.chat/devicetree

Web-page http://www.devicetree.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/robh/linux.git

Files Documentation/ABI/testing/sysfs-firmware-ofw drivers/of/ include/
   linux/of*.h scripts/dtc/

* OPEN FIRMWARE AND FLATTENED DEVICE TREE BINDINGS

Mail Rob Herring <robh+dt@kernel.org>, Krzysztof Kozlowski <krzysztof.kozlowski+dt@linaro.org>

Mailing list devicetree@vger.kernel.org

Status Maintained

chat irc://irc.libera.chat/devicetree

Patchwork http://patchwork.ozlabs.org/project/devicetree-bindings/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/robh/linux.git

Files Documentation/devicetree/ arch/*/boot/dts/ include/dt-bindings/

* OPENCOMPUTE PTP CLOCK DRIVER

Mail Jonathan Lemon <jonathan.lemon@gmail.com>, Vadim Fedorenko <vadfed@fb.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/ptp/ptp_ocp.c

* OPENCORES I2C BUS DRIVER

Mail Peter Korsgaard <peter@korsgaard.com>, Andrew Lunn <andrew@lunn.ch>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-ocores.txt i2c/busses/i2c-
   ocores drivers/i2c/busses/i2c-ocores.c include/linux/platform_data/
   i2c-ocores.h

* OPENRISC ARCHITECTURE

Mail Jonas Bonn <jonas@southpole.se>, Stefan Kristiansson <stefan.kristiansson@saunalahti.fi>, Stafford Horne <shorne@gmail.com>

Mailing list openrisc@lists.librecores.org

Status Maintained

Web-page http://openrisc.io

SCM git git://github.com/openrisc/linux.git

Files Documentation/devicetree/bindings/openrisc/ Documentation/openrisc/ arch/openrisc/ drivers/irqchip/irq-ompic.c drivers/irqchip/irq-or1k-*

* OPENVSWITCH

Mail Pravin B Shelar <pshelar@ovn.org>

Mailing list netdev@vger.kernel.org, dev@openvswitch.org

Status Maintained

Web-page http://openvswitch.org

Files include/uapi/linux/openvswitch.h net/openvswitch/

* OPERATING PERFORMANCE POINTS (OPP)

Mail Viresh Kumar <vireshk@kernel.org>, Nishanth Menon <nm@ti.com>, Stephen Boyd <sboyd@kernel.org>

Mailing list linux-pm@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/vireshk/pm.git

Files Documentation/devicetree/bindings/opp/ power/opp drivers/opp/ include/linux/pm_opp.h

* OPL4 DRIVER

Mail Clemens Ladisch <clemens@ladisch.de>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tiwai/sound.git

Files sound/drivers/opl4/

* ORACLE CLUSTER FILESYSTEM 2 (OCFS2)

Mail Mark Fasheh <mark@fasheh.com>, Joel Becker <jlbec@evilplan.org>, Joseph Qi <joseph.qi@linux.alibaba.com>

Mailing list ocfs2-devel@oss.oracle.com (moderated for non-subscribers)

Status Supported

Web-page http://ocfs2.wiki.kernel.org

Files filesystems/dlmfs filesystems/ocfs2 `fs/ocfs2/`

* ORANGEFS FILESYSTEM

Mail Mike Marshall <hubcap@omnibond.com>

Reviewer Martin Brandenburg <martin@omnibond.com>

Mailing list devel@lists.orangefs.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/hubcap/linux.git

Files filesystems/orangefs `fs/orangefs/`

* ORINOCO DRIVER

Mailing list linux-wireless@vger.kernel.org

Status Orphan

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/orinoco http://www.nongnu.org/orinoco/

Files `drivers/net/wireless/intersil/orinoco/`

* OV2659 OMNIVISION SENSOR DRIVER

Mail "Lad, Prabhakar" <prabhakar.csengg@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/mhadli/v4l-dvb-davinci_devices.git

Files `drivers/media/i2c/ov2659.c include/media/i2c/ov2659.h`

* OVERLAY FILESYSTEM

Mail Miklos Szeredi <miklos@szeredi.hu>

Mailing list linux-unionfs@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mszeredi/vfs.git

Files filesystems/overlayfs `fs/overlayfs/`

* P54 WIRELESS DRIVER

Mail Christian Lamparter <chunkeey@googlemail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/p54

Files `drivers/net/wireless/intersil/p54/`

* PACKING

Mail Vladimir Oltean <olteanv@gmail.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files core-api/packing `include/linux/packing.h lib/packing.c`

* PADATA PARALLEL EXECUTION MECHANISM

Mail Steffen Klassert <steffen.klassert@secunet.com>, Daniel Jordan <daniel.m.jordan@oracle.com>

Mailing list linux-crypto@vger.kernel.org, linux-kernel@vger.kernel.org

Status Maintained

Files core-api/padata `include/linux/padata.h kernel/padata.c`

* PAGE CACHE

Mail Matthew Wilcox (Oracle) <willy@infradead.org>

Mailing list linux-fsdevel@vger.kernel.org

Status Supported

SCM git git://git.infradead.org/users/willy/pagecache.git

Files filesystems/locking filesystems/vfs `include/linux/pagemap.h mm/filemap.c mm/page-writeback.c mm/readahead.c mm/truncate.c`

* PAGE POOL

Mail Jesper Dangaard Brouer <hawk@kernel.org>, Ilias Apalodimas <ilias.apalodimas@linaro.org>

Mailing list netdev@vger.kernel.org

Status Supported

Files networking/page_pool include/net/page_pool.h include/trace/events/page_pool.h net/core/page_pool.c

* PAGE TABLE CHECK

Mail Pasha Tatashin <pasha.tatashin@soleen.com>, Andrew Morton <akpm@linux-foundation.org>

Mailing list linux-mm@kvack.org

Status Maintained

Files vm/page_table_check   include/linux/page_table_check.h   mm/page_table_check.c

* PANASONIC LAPTOP ACPI EXTRAS DRIVER

Mail Kenneth Chan <kenneth.t.chan@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/panasonic-laptop.c

* PARALLAX PING IIO SENSOR DRIVER

Mail Andreas Klinger <ak@it-klinger.de>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/proximity/parallax-ping.yaml drivers/iio/proximity/ping.c

* PARALLEL LCD/KEYPAD PANEL DRIVER

Mail Willy Tarreau <willy@haproxy.com>, Ksenija Stanojevic <ksenija.stanojevic@gmail.com>

Status Odd Fixes

Files admin-guide/lcd-panel-cgram drivers/auxdisplay/panel.c

* PARALLEL PORT SUBSYSTEM

Mail Sudip Mukherjee <sudipm.mukherjee@gmail.com>, Sudip Mukherjee <sudip.mukherjee@codethink.co.uk>

Mailing list linux-parport@lists.infradead.org (subscribers-only)

Status Maintained

Files Documentation/driver-api/parport*.rst drivers/char/ppdev.c drivers/ parport/ include/linux/parport*.h include/uapi/linux/ppdev.h

* PARAVIRT_OPS INTERFACE

Mail Juergen Gross <jgross@suse.com>, Srivatsa S. Bhat (VMware) <srivatsa@csail.mit.edu>

Reviewer Alexey Makhalov <amakhalov@vmware.com>, VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list virtualization@lists.linux-foundation.org, x86@kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git x86/core

Files virt/paravirt_ops arch/*/include/asm/paravirt*.h arch/*/kernel/ paravirt* include/linux/hypervisor.h

* PARIDE DRIVERS FOR PARALLEL PORT IDE DEVICES

Mail Tim Waugh <tim@cyberelk.net>

Mailing list linux-parport@lists.infradead.org (subscribers-only)

Status Maintained

Files admin-guide/blockdev/paride drivers/block/paride/

* PARISC ARCHITECTURE

Mail "James E.J. Bottomley" <James.Bottomley@HansenPartnership.com>, Helge Deller <deller@gmx.de>

Mailing list linux-parisc@vger.kernel.org

Status Maintained

Web-page https://parisc.wiki.kernel.org

Patchwork http://patchwork.kernel.org/project/linux-parisc/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jejb/parisc-2.6.git git git://git.kernel.org/pub/scm/linux/kernel/git/deller/parisc-linux.git

Files Documentation/parisc/ arch/parisc/ drivers/char/agp/parisc-agp.c
   drivers/input/misc/hp_sdc_rtc.c drivers/input/serio/gscps2.c drivers/
   input/serio/hp_sdc* drivers/parisc/ drivers/parport/parport_gsc.
   * drivers/tty/serial/8250/8250_gsc.c drivers/video/console/sti*
   drivers/video/fbdev/sti* drivers/video/logo/logo_parisc* include/
   linux/hp_sdc.h

* PARMAN

Mail Jiri Pirko <jiri@nvidia.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files include/linux/parman.h lib/parman.c lib/test_parman.c

* PC ENGINES APU BOARD DRIVER

Mail Enrico Weigelt, metux IT consult <info@metux.net>

Status Maintained

Files drivers/platform/x86/pcengines-apuv2.c

* PC87360 HARDWARE MONITORING DRIVER

Mail Jim Cromie <jim.cromie@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/pc87360 drivers/hwmon/pc87360.c

* PC8736x GPIO DRIVER

Mail Jim Cromie <jim.cromie@gmail.com>

Status Maintained

Files drivers/char/pc8736x_gpio.c

* PC87427 HARDWARE MONITORING DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/pc87427 drivers/hwmon/pc87427.c

* PCA9532 LED DRIVER

Mail Riku Voipio <riku.voipio@iki.fi>

Status Maintained

Files `drivers/leds/leds-pca9532.c include/linux/leds-pca9532.h`

* PCA9541 I2C BUS MASTER SELECTOR DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files `drivers/i2c/muxes/i2c-mux-pca9541.c`

* PCDP - PRIMARY CONSOLE AND DEBUG PORT

Mail Khalid Aziz <khalid@gonehiking.org>

Status Maintained

Files `drivers/firmware/pcdp.*`

* PCI DRIVER FOR AARDVARK (Marvell Armada 3700)

Mail Thomas Petazzoni <thomas.petazzoni@bootlin.com>, Pali Rohár <pali@kernel.org>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/pci/aardvark-pci.txt drivers/ pci/controller/pci-aardvark.c`

* PCI DRIVER FOR ALTERA PCIE IP

Mail Joyce Ooi <joyce.ooi@intel.com>

Mailing list linux-pci@vger.kernel.org

Status Supported

Files `Documentation/devicetree/bindings/pci/altera-pcie.txt drivers/pci/ controller/pcie-altera.c`

* PCI DRIVER FOR APPLIEDMICRO XGENE

Mail Toan Le <toan@os.amperecomputing.com>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/pci/xgene-pci.txt   drivers/pci/controller/pci-xgene.c

* PCI DRIVER FOR ARM VERSATILE PLATFORM

Mail Rob Herring <robh@kernel.org>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/pci/versatile.yaml drivers/pci/controller/pci-versatile.c

* PCI DRIVER FOR ARMADA 8K

Mail Thomas Petazzoni <thomas.petazzoni@bootlin.com>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/pci/pci-armada8k.txt   drivers/pci/controller/dwc/pcie-armada8k.c

* PCI DRIVER FOR CADENCE PCIE IP

Mail Tom Joseph <tjoseph@cadence.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pci/cdns,*   drivers/pci/controller/cadence/

* PCI DRIVER FOR FREESCALE LAYERSCAPE

Mail Minghuan Lian <minghuan.Lian@nxp.com>, Mingkai Hu <mingkai.hu@nxp.com>, Roy Zang <roy.zang@nxp.com>

Mailing list linuxppc-dev@lists.ozlabs.org, linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `drivers/pci/controller/dwc/*layerscape*`

* PCI DRIVER FOR GENERIC OF HOSTS

Mail Will Deacon <will@kernel.org>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/pci/host-generic-pci.yaml drivers/pci/controller/pci-host-common.c drivers/pci/controller/pci-host-generic.c`

* PCI DRIVER FOR IMX6

Mail Richard Zhu <hongxing.zhu@nxp.com>, Lucas Stach <l.stach@pengutronix.de>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/pci/fsl,imx6q-pcie.yaml drivers/pci/controller/dwc/*imx6*`

* PCI DRIVER FOR FU740

Mail Paul Walmsley <paul.walmsley@sifive.com>, Greentime Hu <greentime.hu@sifive.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/pci/sifive,fu740-pcie.yaml drivers/pci/controller/dwc/pcie-fu740.c`

* PCI DRIVER FOR INTEL IXP4XX

Mail Linus Walleij <linus.walleij@linaro.org>

Status Maintained

Files Documentation/devicetree/bindings/pci/intel,ixp4xx-pci.yaml
    drivers/pci/controller/pci-ixp4xx.c

* PCI DRIVER FOR INTEL VOLUME MANAGEMENT DEVICE (VMD)

Mail Nirmal Patel <nirmal.patel@linux.intel.com>

Reviewer Jonathan Derrick <jonathan.derrick@linux.dev>

Mailing list linux-pci@vger.kernel.org

Status Supported

Files drivers/pci/controller/vmd.c

* PCI DRIVER FOR MICROSEMI SWITCHTEC

Mail Kurt Schwemmer <kurt.schwemmer@microsemi.com>, Logan Gunthorpe <logang@deltatee.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/sysfs-class-switchtec driver-api/switchtec
    drivers/ntb/hw/mscc/ drivers/pci/switch/switchtec* include/linux/
    switchtec.h include/uapi/linux/switchtec_ioctl.h

* PCI DRIVER FOR MOBIVEIL PCIE IP

Mail Karthikeyan Mitran <m.karthikeyan@mobiveil.co.in>, Hou Zhiqiang
    <Zhiqiang.Hou@nxp.com>

Mailing list linux-pci@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/pci/mobiveil-pcie.txt drivers/
    pci/controller/mobiveil/pcie-mobiveil*

* PCI DRIVER FOR MVEBU (Marvell Armada 370 and Armada XP SOC support)

Mail Thomas Petazzoni <thomas.petazzoni@bootlin.com>, Pali Rohár <pali@kernel.org>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `drivers/pci/controller/*mvebu*`

* PCI DRIVER FOR NVIDIA TEGRA

Mail Thierry Reding <thierry.reding@gmail.com>

Mailing list linux-tegra@vger.kernel.org, linux-pci@vger.kernel.org

Status Supported

Files `Documentation/devicetree/bindings/pci/nvidia,tegra20-pcie.txt` `drivers/pci/controller/pci-tegra.c`

* PCI DRIVER FOR NXP LAYERSCAPE GEN4 CONTROLLER

Mail Hou Zhiqiang <Zhiqiang.Hou@nxp.com>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/pci/layerscape-pcie-gen4.txt` `drivers/pci/controller/mobiveil/pcie-layerscape-gen4.c`

* PCI DRIVER FOR RENESAS R-CAR

Mail Marek Vasut <marek.vasut+renesas@gmail.com>, Yoshihiro Shimoda <yoshihiro.shimoda.uh@renesas.com>

Mailing list linux-pci@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/pci/*rcar*` `drivers/pci/controller/*rcar*`

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* PCI DRIVER FOR SAMSUNG EXYNOS

Mail Jingoo Han <jingoohan1@gmail.com>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-samsung-soc@vger.kernel.org

Status Maintained

Files `drivers/pci/controller/dwc/pci-exynos.c`

* PCI DRIVER FOR SYNOPSYS DESIGNWARE

Mail Jingoo Han <jingoohan1@gmail.com>, Gustavo Pimentel <gustavo.pimentel@synopsys.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/pci/snps,dw-pcie.yaml Documentation/devicetree/bindings/pci/snps,dw-pcie-ep.yaml drivers/ pci/controller/dwc/*designware*`

* PCI DRIVER FOR TI DRA7XX/J721E

Mail Kishon Vijay Abraham I <kishon@ti.com>

Mailing list linux-omap@vger.kernel.org, linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files `Documentation/devicetree/bindings/pci/ti-pci.txt drivers/ pci/controller/cadence/pci-j721e.c drivers/pci/controller/dwc/ pci-dra7xx.c`

* PCI DRIVER FOR V3 SEMICONDUCTOR V360EPC

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/pci/v3-v360epc-pci.txt drivers/ pci/controller/pci-v3-semi.c`

* PCI ENDPOINT SUBSYSTEM

Mail Kishon Vijay Abraham I <kishon@ti.com>, Lorenzo Pieralisi <lpieralisi@kernel.org>

Reviewer Krzysztof Wilczyński <kw@linux.com>

Mailing list linux-pci@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-pci/list/

bugs https://bugzilla.kernel.org

chat irc://irc.oftc.net/linux-pci

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/lpieralisi/pci.git

Files Documentation/PCI/endpoint/* misc-devices/pci-endpoint-test drivers/ misc/pci_endpoint_test.c drivers/pci/endpoint/ tools/pci/

* PCI ENHANCED ERROR HANDLING (EEH) FOR POWERPC

Mail Russell Currey <ruscur@russell.cc>, Oliver O'Halloran <oohall@gmail.com>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Supported

Files PCI/pci-error-recovery powerpc/eeh-pci-error-recovery arch/powerpc/ include/*/eeh*.h arch/powerpc/kernel/eeh*.c arch/powerpc/platforms/ */eeh*.c drivers/pci/pcie/aer.c drivers/pci/pcie/dpc.c drivers/pci/ pcie/err.c

* PCI ERROR RECOVERY

Mail Linas Vepstas <linasvepstas@gmail.com>

Mailing list linux-pci@vger.kernel.org

Status Supported

Files PCI/pci-error-recovery

* PCI PEER-TO-PEER DMA (P2PDMA)

Mail Bjorn Helgaas <bhelgaas@google.com>, Logan Gunthorpe <logang@deltatee.com>

Mailing list linux-pci@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-pci/list/

bugs https://bugzilla.kernel.org

chat irc://irc.oftc.net/linux-pci

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/helgaas/pci.git

Files driver-api/pci/p2pdma `drivers/pci/p2pdma.c include/linux/pci-p2pdma.h`

* PCI MSI DRIVER FOR ALTERA MSI IP

Mail Joyce Ooi <joyce.ooi@intel.com>

Mailing list linux-pci@vger.kernel.org

Status Supported

Files `Documentation/devicetree/bindings/pci/altera-pcie-msi.txt drivers/pci/controller/pcie-altera-msi.c`

* PCI MSI DRIVER FOR APPLIEDMICRO XGENE

Mail Toan Le <toan@os.amperecomputing.com>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/pci/xgene-pci-msi.txt drivers/pci/controller/pci-xgene-msi.c`

* PCI NATIVE HOST BRIDGE AND ENDPOINT DRIVERS

Mail Lorenzo Pieralisi <lpieralisi@kernel.org>

Reviewer Rob Herring <robh@kernel.org>, Krzysztof Wilczyński <kw@linux.com>

Mailing list linux-pci@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-pci/list/

bugs https://bugzilla.kernel.org

chat irc://irc.oftc.net/linux-pci

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/lpieralisi/pci.git

Files `drivers/pci/controller/ drivers/pci/pci-bridge-emul.c drivers/pci/pci-bridge-emul.h`

* PCI SUBSYSTEM

Mail Bjorn Helgaas <bhelgaas@google.com>

Mailing list linux-pci@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-pci/list/

bugs https://bugzilla.kernel.org

chat irc://irc.oftc.net/linux-pci

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/helgaas/pci.git

Files Documentation/PCI/ Documentation/devicetree/bindings/pci/ arch/x86/
    kernel/early-quirks.c arch/x86/kernel/quirks.c arch/x86/pci/ drivers/
    acpi/pci* drivers/pci/ include/asm-generic/pci* include/linux/of_pci.
    h include/linux/pci* include/uapi/linux/pci* lib/pci*

* PCIE DRIVER FOR AMAZON ANNAPURNA LABS

Mail Jonathan Chocron <jonnyc@amazon.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pci/pcie-al.txt   drivers/pci/
    controller/dwc/pcie-al.c

* PCIE DRIVER FOR AMLOGIC MESON

Mail Yue Wang <yue.wang@Amlogic.com>

Mailing list linux-pci@vger.kernel.org, linux-amlogic@lists.infradead.org

Status Maintained

Files drivers/pci/controller/dwc/pci-meson.c

* PCIE DRIVER FOR AXIS ARTPEC

Mail Jesper Nilsson <jesper.nilsson@axis.com>

Mailing list linux-arm-kernel@axis.com, linux-pci@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pci/axis,artpec*   drivers/pci/
    controller/dwc/*artpec*

* PCIE DRIVER FOR CAVIUM THUNDERX

Mail Robert Richter <rric@kernel.org>

Mailing list linux-pci@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Odd Fixes

Files drivers/pci/controller/pci-thunder-*

* PCIE DRIVER FOR HISILICON

Mail Zhou Wang <wangzhou1@hisilicon.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files drivers/pci/controller/dwc/pcie-hisi.c

* PCIE DRIVER FOR HISILICON KIRIN

Mail Xiaowei Song <songxiaowei@hisilicon.com>, Binghui Wang <wang-binghui@hisilicon.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pci/hisilicon,kirin-pcie.yaml
drivers/pci/controller/dwc/pcie-kirin.c

* PCIE DRIVER FOR HISILICON STB

Mail Shawn Guo <shawn.guo@linaro.org>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pci/hisilicon-histb-pcie.txt
drivers/pci/controller/dwc/pcie-histb.c

* PCIE DRIVER FOR INTEL KEEM BAY

Mail Srikanth Thokala <srikanth.thokala@intel.com>

Mailing list linux-pci@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/pci/intel,keembay-pcie* drivers/pci/controller/dwc/pcie-keembay.c

* PCIE DRIVER FOR INTEL LGM GW SOC

Mail Rahul Tanwar <rtanwar@maxlinear.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pci/intel-gw-pcie.yaml drivers/
    pci/controller/dwc/pcie-intel-gw.c

* PCIE DRIVER FOR MEDIATEK

Mail Ryder   Lee   <ryder.lee@mediatek.com>,   Jianjun   Wang   <jian-
    jun.wang@mediatek.com>

Mailing list linux-pci@vger.kernel.org, linux-mediatek@lists.infradead.org (moder-
    ated for non-subscribers)

Status Supported

Files Documentation/devicetree/bindings/pci/mediatek*   drivers/pci/
    controller/*mediatek*

* PCIE DRIVER FOR MICROCHIP

Mail Daire McNamara <daire.mcnamara@microchip.com>

Mailing list linux-pci@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/pci/microchip*   drivers/pci/
    controller/*microchip*

* PCIE DRIVER FOR QUALCOMM MSM

Mail Stanimir Varbanov <svarbanov@mm-sol.com>

Mailing list linux-pci@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status Maintained

Files drivers/pci/controller/dwc/pcie-qcom.c

* PCIE ENDPOINT DRIVER FOR QUALCOMM

Mail Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Mailing list linux-pci@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pci/qcom,pcie-ep.yaml   drivers/
    pci/controller/dwc/pcie-qcom-ep.c

* PCIE DRIVER FOR ROCKCHIP

Mail Shawn Lin <shawn.lin@rock-chips.com>

Mailing list linux-pci@vger.kernel.org, linux-rockchip@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/pci/rockchip-pcie* drivers/pci/
controller/pcie-rockchip*

* PCIE DRIVER FOR SOCIONEXT UNIPHIER

Mail Kunihiko Hayashi <hayashi.kunihiko@socionext.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pci/socionext,uniphier-pcie*
drivers/pci/controller/dwc/pcie-uniphier*

* PCIE DRIVER FOR ST SPEAR13XX

Mail Pratyush Anand <pratyush.anand@gmail.com>

Mailing list linux-pci@vger.kernel.org

Status Maintained

Files drivers/pci/controller/dwc/*spear*

* PCMCIA SUBSYSTEM

Mail Dominik Brodowski <linux@dominikbrodowski.net>

Status Odd Fixes

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/brodo/linux.git

Files Documentation/pcmcia/ drivers/pcmcia/ include/pcmcia/ tools/pcmcia/

* PCNET32 NETWORK DRIVER

Mail Don Fry <pcnet32@frontier.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/amd/pcnet32.c

* PCRYPT PARALLEL CRYPTO ENGINE

Mail Steffen Klassert <steffen.klassert@secunet.com>

Mailing list linux-crypto@vger.kernel.org

Status Maintained

Files `crypto/pcrypt.c include/crypto/pcrypt.h`

* PEAQ WMI HOTKEYS DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/peaq-wmi.c`

* PECI HARDWARE MONITORING DRIVERS

Mail Iwona Winiarska <iwona.winiarska@intel.com>

Mailing list linux-hwmon@vger.kernel.org

Status Supported

Files hwmon/peci-cputemp hwmon/peci-dimmtemp `drivers/hwmon/peci/`

* PECI SUBSYSTEM

Mail Iwona Winiarska <iwona.winiarska@intel.com>

Mailing list openbmc@lists.ozlabs.org (moderated for non-subscribers)

Status Supported

Files `Documentation/devicetree/bindings/peci/` Documentation/peci/ `drivers/peci/ include/linux/peci-cpu.h include/linux/peci.h`

* PENSANDO ETHERNET DRIVERS

Mail Shannon Nelson <snelson@pensando.io>, drivers@pensando.io

Mailing list netdev@vger.kernel.org

Status Supported

Files networking/device_drivers/ethernet/pensando/ionic `drivers/net/ethernet/pensando/`

* PER-CPU MEMORY ALLOCATOR

Mail Dennis Zhou <dennis@kernel.org>, Tejun Heo <tj@kernel.org>, Christoph Lameter <cl@linux.com>

Mailing list linux-mm@kvack.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/dennis/percpu.git

Files `arch/*/include/asm/percpu.h include/linux/percpu*.h lib/percpu*.c mm/percpu*.c`

* PER-TASK DELAY ACCOUNTING

Mail Balbir Singh <bsingharora@gmail.com>

Status Maintained

Files `include/linux/delayacct.h kernel/delayacct.c`

* PERFORMANCE EVENTS SUBSYSTEM

Mail Peter Zijlstra <peterz@infradead.org>, Ingo Molnar <mingo@redhat.com>, Arnaldo Carvalho de Melo <acme@kernel.org>

Reviewer Mark Rutland <mark.rutland@arm.com>, Alexander Shishkin <alexander.shishkin@linux.intel.com>, Jiri Olsa <jolsa@kernel.org>, Namhyung Kim <namhyung@kernel.org>

Mailing list linux-perf-users@vger.kernel.org, linux-kernel@vger.kernel.org

Status Supported

Web-page https://perf.wiki.kernel.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git perf/core

Files `arch/*/events/* arch/*/events/*/* arch/*/include/asm/perf_event.h arch/*/kernel/*/*/perf_event*.c arch/*/kernel/*/perf_event*.c arch/ */kernel/perf_callchain.c arch/*/kernel/perf_event*.c include/linux/ perf_event.h include/uapi/linux/perf_event.h kernel/events/* tools/ lib/perf/ tools/perf/`

* PERFORMANCE EVENTS TOOLING ARM64

Reviewer John Garry <john.garry@huawei.com>, Will Deacon <will@kernel.org>, James Clark <james.clark@arm.com>, Mike Leach <mike.leach@linaro.org>, Leo Yan <leo.yan@linaro.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files `tools/build/feature/test-libopencsd.c tools/perf/arch/arm*/ tools/`
`perf/pmu-events/arch/arm64/ tools/perf/util/arm-spe* tools/perf/util/`
`cs-etm*`

* PERSONALITY HANDLING

Mail Christoph Hellwig <hch@infradead.org>

Mailing list linux-abi-devel@lists.sourceforge.net

Status Maintained

Files `include/linux/personality.h include/uapi/linux/personality.h`

* PHOENIX RC FLIGHT CONTROLLER ADAPTER

Mail Marcus Folkesson <marcus.folkesson@gmail.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `input/devices/pxrc drivers/input/joystick/pxrc.c`

* PHONET PROTOCOL

Mail Remi Denis-Courmont <courmisch@gmail.com>

Status Supported

Files `networking/phonet include/linux/phonet.h include/net/phonet/ include/`
`uapi/linux/phonet.h net/phonet/`

* PHRAM MTD DRIVER

Mail Joern Engel <joern@lazybastard.org>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Files `drivers/mtd/devices/phram.c`

* PICOLCD HID DRIVER

Mail Bruno Prémont <bonbons@linux-vserver.org>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `drivers/hid/hid-picolcd*`

* PIDFD API

Mail Christian Brauner <christian@brauner.io>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/brauner/linux.git

Files samples/pidfd/ tools/testing/selftests/clone3/ tools/testing/
selftests/pid_namespace/ tools/testing/selftests/pidfd/

Content regex (?i)pidfd (?i)clone3 \b(clone_args|kernel_clone_args)\b

* PIN CONTROL SUBSYSTEM

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/linusw/linux-pinctrl.git

Files Documentation/devicetree/bindings/pinctrl/ driver-api/pin-control
drivers/pinctrl/ include/linux/pinctrl/

* PIN CONTROLLER - AMD

Mail Basavaraj Natikar <Basavaraj.Natikar@amd.com>, Shyam Sundar S K
<Shyam-sundar.S-k@amd.com>

Status Maintained

Files drivers/pinctrl/pinctrl-amd.c

* PIN CONTROLLER - FREESCALE

Mail Dong Aisheng <aisheng.dong@nxp.com>, Fabio Estevam <feste-
vam@gmail.com>, Shawn Guo <shawnguo@kernel.org>, Jacky Bai
<ping.bai@nxp.com>

Reviewer Pengutronix Kernel Team <kernel@pengutronix.de>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pinctrl/fsl,* drivers/pinctrl/
freescale/

* PIN CONTROLLER - INTEL

Mail Mika Westerberg <mika.westerberg@linux.intel.com>, Andy Shevchenko <andy@kernel.org>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pinctrl/intel.git

Files drivers/pinctrl/intel/

* PIN CONTROLLER - KEEMBAY

Mail Lakshmi Sowjanya D <lakshmi.sowjanya.d@intel.com>

Status Supported

Files drivers/pinctrl/pinctrl-keembay*

* PIN CONTROLLER - MEDIATEK

Mail Sean Wang <sean.wang@kernel.org>

Mailing list linux-mediatek@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/pinctrl/mediatek,mt65xx-pinctrl. yaml Documentation/devicetree/bindings/pinctrl/mediatek, mt6797-pinctrl.yaml Documentation/devicetree/bindings/pinctrl/ mediatek,mt7622-pinctrl.yaml Documentation/devicetree/bindings/ pinctrl/mediatek,mt8183-pinctrl.yaml drivers/pinctrl/mediatek/

* PIN CONTROLLER - MICROCHIP AT91

Mail Ludovic Desroches <ludovic.desroches@microchip.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-gpio@vger.kernel.org

Status Supported

Files drivers/gpio/gpio-sama5d2-piobu.c drivers/pinctrl/pinctrl-at91*

* PIN CONTROLLER - QUALCOMM

Mail Bjorn Andersson <bjorn.andersson@linaro.org>

Mailing list linux-arm-msm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/pinctrl/qcom,*.txt drivers/ pinctrl/qcom/

* PIN CONTROLLER - RENESAS

Mail Geert Uytterhoeven <geert+renesas@glider.be>

Mailing list linux-renesas-soc@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/geert/renesas-drivers.git renesas-pinctrl

Files Documentation/devicetree/bindings/pinctrl/renesas,* drivers/pinctrl/renesas/

* PIN CONTROLLER - SAMSUNG

Mail Tomasz Figa <tomasz.figa@gmail.com>, Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, Sylwester Nawrocki <s.nawrocki@samsung.com>

Reviewer Alim Akhtar <alim.akhtar@samsung.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-samsung-soc@vger.kernel.org

Status Maintained

chat irc://irc.libera.chat/linux-exynos

Patchwork https://patchwork.kernel.org/project/linux-samsung-soc/list/

bugs mailto:linux-samsung-soc@vger.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pinctrl/samsung.git

Files Documentation/devicetree/bindings/pinctrl/samsung,pinctrl*yaml drivers/pinctrl/samsung/ include/dt-bindings/pinctrl/samsung.h

* PIN CONTROLLER - SINGLE

Mail Tony Lindgren <tony@atomide.com>, Haojian Zhuang <haojian.zhuang@linaro.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-omap@vger.kernel.org

Status Maintained

Files drivers/pinctrl/pinctrl-single.c

* PIN CONTROLLER - THUNDERBAY

Mail Lakshmi Sowjanya D <lakshmi.sowjanya.d@intel.com>

Status Supported

Files `drivers/pinctrl/pinctrl-thunderbay.c`

* PIN CONTROLLER - SUNPLUS / TIBBO

Mail Dvorkin Dmitry <dvorkin@tibbo.com>, Wells Lu <wellslutw@gmail.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page https://sunplus.atlassian.net/wiki/spaces/doc/overview

Files `Documentation/devicetree/bindings/pinctrl/sunplus,*` `drivers/pinctrl/sunplus/ include/dt-bindings/pinctrl/sppctl*.h`

* PKTCDVD DRIVER

Mail linux-block@vger.kernel.org

Status Orphan

Files `drivers/block/pktcdvd.c include/linux/pktcdvd.h include/uapi/linux/pktcdvd.h`

* PLANTOWER PMS7003 AIR POLLUTION SENSOR DRIVER

Mail Tomasz Duszynski <tduszyns@gmail.com>

Status Maintained

Files `Documentation/devicetree/bindings/iio/chemical/plantower,pms7003.yaml drivers/iio/chemical/pms7003.c`

* PLATFORM FEATURE INFRASTRUCTURE

Mail Juergen Gross <jgross@suse.com>

Status Maintained

Files `arch/*/include/asm/platform-feature.h include/asm-generic/platform-feature.h include/linux/platform-feature.h kernel/platform-feature.c`

* PLDMFW LIBRARY

Mail Jacob Keller <jacob.e.keller@intel.com>

Status Maintained

Files `Documentation/driver-api/pldmfw/ include/linux/pldmfw.h lib/pldmfw/`

* PLX DMA DRIVER

Mail Logan Gunthorpe <logang@deltatee.com>

Status Maintained

Files `drivers/dma/plx_dma.c`

* PM6764TR DRIVER

Mail Charles Hsu <hsu.yungteng@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `hwmon/pm6764tr` `drivers/hwmon/pmbus/pm6764tr.c`

* PM-GRAPH UTILITY

Mail "Todd E Brandt" <todd.e.brandt@linux.intel.com>

Mailing list linux-pm@vger.kernel.org

Status Supported

Web-page https://01.org/pm-graph

bugs https://bugzilla.kernel.org/buglist.cgi?component=pm-graph&product=Tools

SCM git git://github.com/intel/pm-graph

Files `tools/power/pm-graph`

* PMBUS HARDWARE MONITORING DRIVERS

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Web-page http://hwmon.wiki.kernel.org/ http://www.roeck-us.net/linux/drivers/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/groeck/linux-staging.git

Files Documentation/devicetree/bindings/hwmon/ltc2978.txt Documentation/
devicetree/bindings/hwmon/max31785.txt hwmon/adm1275 hwmon/ibm-
cffps hwmon/ir35221 hwmon/lm25066 hwmon/ltc2978 hwmon/ltc3815 hw-
mon/max16064 hwmon/max20751 hwmon/max31785 hwmon/max34440

hwmon/max8688 hwmon/pmbus-core hwmon/pmbus hwmon/tps40422 hw-mon/ucd9000 hwmon/ucd9200 hwmon/zl6100 `drivers/hwmon/pmbus/ include/ linux/pmbus.h`

* PMC SIERRA MaxRAID DRIVER

Mailing list linux-scsi@vger.kernel.org

Status Orphan

Web-page http://www.pmc-sierra.com/

Files `drivers/scsi/pmcraid.*`

* PMC SIERRA PM8001 DRIVER

Mail Jack Wang <jinpu.wang@cloud.ionos.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files `drivers/scsi/pm8001/`

* PNI RM3100 IIO DRIVER

Mail Song Qiang <songqiang1304521@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/iio/magnetometer/pni,rm3100.yaml drivers/iio/magnetometer/rm3100*`

* PNP SUPPORT

Mail "Rafael J. Wysocki" <rafael.j.wysocki@intel.com>

Mailing list linux-acpi@vger.kernel.org

Status Maintained

Files `drivers/pnp/ include/linux/pnp.h`

* POSIX CLOCKS and TIMERS

Mail Thomas Gleixner <tglx@linutronix.de>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git timers/core

Files `fs/timerfd.c  include/linux/time_namespace.h  include/linux/timer*`
`kernel/time/*timer* kernel/time/namespace.c`

* POWER MANAGEMENT CORE

Mail "Rafael J. Wysocki" <rafael@kernel.org>

Mailing list linux-pm@vger.kernel.org

Status Supported

bugs https://bugzilla.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rafael/linux-pm

Files `drivers/base/power/  drivers/powercap/  include/linux/intel_rapl.`
`h  include/linux/pm.h  include/linux/pm_*  include/linux/powercap.h`
`kernel/configs/nopm.config`

* DYNAMIC THERMAL POWER MANAGEMENT (DTPM)

Mail Daniel Lezcano <daniel.lezcano@kernel.org>

Mailing list linux-pm@vger.kernel.org

Status Supported

bugs https://bugzilla.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rafael/linux-pm

Files `drivers/powercap/dtpm* include/linux/dtpm.h`

* POWER STATE COORDINATION INTERFACE (PSCI)

Mail Mark Rutland <mark.rutland@arm.com>, Lorenzo Pieralisi <lpieralisi@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `drivers/firmware/psci/  include/linux/psci.h  include/uapi/linux/`
`psci.h`

* POWER SUPPLY CLASS/SUBSYSTEM and DRIVERS

Mail Sebastian Reichel <sre@kernel.org>

Mailing list linux-pm@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/sre/linux-power-supply.git

Files Documentation/ABI/testing/sysfs-class-power   Documentation/
    devicetree/bindings/power/supply/ drivers/power/supply/ include/
    linux/power/ include/linux/power_supply.h

* POWERNV OPERATOR PANEL LCD DISPLAY DRIVER

Mail Suraj Jitindar Singh <sjitindarsingh@gmail.com>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Maintained

Files drivers/char/powernv-op-panel.c

* PPP OVER ATM (RFC 2364)

Mail Mitchell Blank Jr <mitch@sfgoth.com>

Status Maintained

Files include/uapi/linux/atmppp.h net/atm/pppoatm.c

* PPP OVER ETHERNET

Mail Michal Ostrowski <mostrows@earthlink.net>

Status Maintained

Files drivers/net/ppp/pppoe.c drivers/net/ppp/pppox.c

* PPP OVER L2TP

Mail James Chapman <jchapman@katalix.com>

Status Maintained

Files include/linux/if_pppol2tp.h include/uapi/linux/if_pppol2tp.h net/
    l2tp/l2tp_ppp.c

* PPP PROTOCOL DRIVERS AND COMPRESSORS

Mail Paul Mackerras <paulus@samba.org>

Mailing list linux-ppp@vger.kernel.org

Status Maintained

Files drivers/net/ppp/ppp_*

* PPS SUPPORT

Mail Rodolfo Giometti <giometti@enneenne.com>

Mailing list linuxpps@ml.enneenne.com (subscribers-only)

Status Maintained

Web-page http://wiki.enneenne.com/index.php/LinuxPPS_support

Files Documentation/ABI/testing/sysfs-pps   Documentation/devicetree/
    bindings/pps/pps-gpio.txt driver-api/pps drivers/pps/ include/linux/
    pps*.h include/uapi/linux/pps.h

* PPTP DRIVER

Mail Dmitry Kozlov <xeb@mail.ru>

Mailing list netdev@vger.kernel.org

Status Maintained

Web-page http://sourceforge.net/projects/accel-pptp

Files drivers/net/ppp/pptp.c

* PRESSURE STALL INFORMATION (PSI)

Mail Johannes   Weiner   <hannes@cmpxchg.org>,   Suren   Baghdasaryan
    <surenb@google.com>

Status Maintained

Files include/linux/psi* kernel/sched/psi.c

* PRINTK

Mail Petr   Mladek   <pmladek@suse.com>,   Sergey   Senozhatsky
    <senozhatsky@chromium.org>

Reviewer Steven   Rostedt   <rostedt@goodmis.org>,   John   Ogness
    <john.ogness@linutronix.de>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/printk/linux.git

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Files `include/linux/printk.h kernel/printk/`

* PRINTK INDEXING

Reviewer Chris Down <chris@chrisdown.name>

Status Maintained

Files core-api/printk-index `kernel/printk/index.c`

Content regex `printk_index`

* PROC FILESYSTEM

Mailing list linux-kernel@vger.kernel.org, linux-fsdevel@vger.kernel.org

Status Maintained

Files filesystems/proc `fs/proc/ include/linux/proc_fs.h tools/testing/` `selftests/proc/`

* PROC SYSCTL

Mail Luis Chamberlain <mcgrof@kernel.org>, Kees Cook <keescook@chromium.org>, Iurii Zaikin <yzaikin@google.com>

Mailing list linux-kernel@vger.kernel.org, linux-fsdevel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mcgrof/linux.git sysctl-next

Files `fs/proc/proc_sysctl.c include/linux/sysctl.h kernel/sysctl-test.c` `kernel/sysctl.c tools/testing/selftests/sysctl/`

* PS3 NETWORK SUPPORT

Mail Geoff Levand <geoff@infradead.org>

Mailing list netdev@vger.kernel.org, linuxppc-dev@lists.ozlabs.org

Status Maintained

Files `drivers/net/ethernet/toshiba/ps3_gelic_net.*`

* PS3 PLATFORM SUPPORT

Mail Geoff Levand <geoff@infradead.org>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Maintained

Files arch/powerpc/boot/ps3* arch/powerpc/include/asm/lv1call.h arch/
   powerpc/include/asm/ps3*.h arch/powerpc/platforms/ps3/ drivers/*/ps3*
   drivers/ps3/ drivers/rtc/rtc-ps3.c drivers/usb/host/*ps3.c sound/ppc/
   snd_ps3*

* PS3VRAM DRIVER

Mail Jim Paris <jim@jtan.com>, Geoff Levand <geoff@infradead.org>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Maintained

Files drivers/block/ps3vram.c

* PSAMPLE PACKET SAMPLING SUPPORT

Mail Yotam Gigi <yotam.gi@gmail.com>

Status Maintained

Files include/net/psample.h include/uapi/linux/psample.h net/psample

* PSTORE FILESYSTEM

Mail Kees   Cook   <keescook@chromium.org>,   Anton   Vorontsov   <an-
   ton@enomsg.org>,   Colin   Cross   <ccross@android.com>,   Tony   Luck
   <tony.luck@intel.com>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git for-next/pstore

Files admin-guide/ramoops admin-guide/pstore-blk Documentation/devicetree/
   bindings/reserved-memory/ramoops.yaml   drivers/acpi/apei/erst.c
   drivers/firmware/efi/efi-pstore.c fs/pstore/ include/linux/pstore*

Content regex \b(pstore|ramoops)

* PTP HARDWARE CLOCK SUPPORT

Mail Richard Cochran <richardcochran@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Web-page http://linuxptp.sourceforge.net/

Files Documentation/ABI/testing/sysfs-ptp driver-api/ptp drivers/net/phy/
    dp83640* drivers/ptp/* include/linux/ptp_cl*

* PTP VIRTUAL CLOCK SUPPORT

Mail Yangbo Lu <yangbo.lu@nxp.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/ptp/ptp_vclock.c net/ethtool/phc_vclocks.c

* PTRACE SUPPORT

Mail Oleg Nesterov <oleg@redhat.com>

Status Maintained

Files arch/*/*/ptrace*.c arch/*/include/asm/ptrace*.h arch/*/ptrace*.c
    include/asm-generic/syscall.h include/linux/ptrace.h include/linux/
    regset.h include/uapi/linux/ptrace.h kernel/ptrace.c

* PULSE8-CEC DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files admin-guide/media/pulse8-cec drivers/media/cec/usb/pulse8/

* PURELIFI PLFXLC DRIVER

Mail Srinivasan Raju <srini.raju@purelifi.com>

Mailing list linux-wireless@vger.kernel.org

Status Supported

Files drivers/net/wireless/purelifi/plfxlc/

* PVRUSB2 VIDEO4LINUX DRIVER

Mail Mike Isely <isely@pobox.com>

Mailing list pvrusb2@isely.net (subscribers-only), linux-media@vger.kernel.org

Status Maintained

Web-page http://www.isely.net/pvrusb2/

SCM git git://linuxtv.org/media_tree.git

Files Documentation/driver-api/media/drivers/pvrusb2* drivers/media/usb/ pvrusb2/

* PWC WEBCAM DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/usb/pwc/* include/trace/events/pwc.h

* PWM FAN DRIVER

Mail Bartlomiej Zolnierkiewicz <b.zolnierkie@samsung.com>

Mailing list linux-hwmon@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/hwmon/pwm-fan.txt hwmon/pwm-fan drivers/hwmon/pwm-fan.c

* PWM IR Transmitter

Mail Sean Young <sean@mess.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/rc/pwm-ir-tx.c

* PWM SUBSYSTEM

Mail Thierry Reding <thierry.reding@gmail.com>

Reviewer Uwe Kleine-König <u.kleine-koenig@pengutronix.de>

Mail Lee Jones <lee.jones@linaro.org>

Mailing list linux-pwm@vger.kernel.org

Status Maintained

Patchwork https://patchwork.ozlabs.org/project/linux-pwm/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/thierry.reding/linux-pwm.git

Files Documentation/devicetree/bindings/gpio/gpio-mvebu.txt
Documentation/devicetree/bindings/pwm/ driver-api/pwm drivers/gpio/
gpio-mvebu.c drivers/pwm/ drivers/video/backlight/pwm_bl.c include/
linux/pwm.h include/linux/pwm_backlight.h

Content regex pwm_(config|apply_state|ops)

* PXA GPIO DRIVER

Mail Robert Jarzmik <robert.jarzmik@free.fr>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files drivers/gpio/gpio-pxa.c

* PXA MMCI DRIVER

Status Orphan

* PXA RTC DRIVER

Mail Robert Jarzmik <robert.jarzmik@free.fr>

Mailing list linux-rtc@vger.kernel.org

Status Maintained

* PXA2xx/PXA3xx SUPPORT

Mail Daniel Mack <daniel@zonque.org>, Haojian Zhuang <haojian.zhuang@gmail.com>, Robert Jarzmik <robert.jarzmik@free.fr>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://github.com/hzhuang1/linux.git git git://github.com/rjarzmik/linux.git

Files `arch/arm/boot/dts/pxa* arch/arm/mach-pxa/ drivers/dma/pxa* drivers/ pcmcia/pxa2xx* drivers/pinctrl/pxa/ drivers/spi/spi-pxa2xx* drivers/ usb/gadget/udc/pxa2* include/sound/pxa2xx-lib.h sound/arm/pxa* sound/ soc/pxa/`

* QAT DRIVER

Mail Giovanni Cabiddu <giovanni.cabiddu@intel.com>

Mailing list qat-linux@intel.com

Status Supported

Files `drivers/crypto/qat/`

* QCOM AUDIO (ASoC) DRIVERS

Mail Srinivas Kandagatla <srinivas.kandagatla@linaro.org>, Banajit Goswami <bgoswami@quicinc.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Supported

Files `sound/soc/codecs/lpass-va-macro.c                 sound/soc/codecs/ lpass-wsa-macro.*  sound/soc/codecs/msm8916-wcd-analog.c  sound/soc/ codecs/msm8916-wcd-digital.c  sound/soc/codecs/wcd9335.*  sound/soc/ codecs/wcd934x.c  sound/soc/codecs/wcd-clsh-v2.*  sound/soc/codecs/ wsa881x.c sound/soc/qcom/`

* QCOM EMBEDDED USB DEBUGGER (EUD)

Mail Souradeep Chowdhury <quic_schowdhu@quicinc.com>

Mailing list linux-arm-msm@vger.kernel.org

Status Maintained

Files `Documentation/ABI/testing/sysfs-driver-eud              Documentation/ devicetree/bindings/soc/qcom/qcom,eud.yaml         drivers/usb/misc/ qcom_eud.c`

* QCOM IPA DRIVER

Mail Alex Elder <elder@kernel.org>

Mailing list netdev@vger.kernel.org

Status Supported

Files `drivers/net/ipa/`

* QEMU MACHINE EMULATOR AND VIRTUALIZER SUPPORT

Mail Gabriel Somlo <somlo@cmu.edu>, "Michael S. Tsirkin" <mst@redhat.com>

Mailing list qemu-devel@nongnu.org

Status Maintained

Files drivers/firmware/qemu_fw_cfg.c include/uapi/linux/qemu_fw_cfg.h

* QIB DRIVER

Mail Dennis Dalessandro <dennis.dalessandro@cornelisnetworks.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Files drivers/infiniband/hw/qib/

* QLOGIC QL41xxx FCOE DRIVER

Mail Saurav Kashyap <skashyap@marvell.com>, Javed Hasan <jhasan@marvell.com>, GR-QLogic-Storage-Upstream@marvell.com

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files drivers/scsi/qedf/

* QLOGIC QL41xxx ISCSI DRIVER

Mail Nilesh Javali <njavali@marvell.com>, Manish Rangankar <mrangankar@marvell.com>, GR-QLogic-Storage-Upstream@marvell.com

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files drivers/scsi/qedi/

* QLOGIC QL4xxx ETHERNET DRIVER

Mail Ariel Elior <aelior@marvell.com>, Manish Chopra <manishc@marvell.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/qlogic/qed/ drivers/net/ethernet/qlogic/qede/ include/linux/qed/

* QLOGIC QL4xxx RDMA DRIVER

Mail Michal Kalderon <mkalderon@marvell.com>, Ariel Elior <aelior@marvell.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Files `drivers/infiniband/hw/qedr/ include/uapi/rdma/qedr-abi.h`

* QLOGIC QLA1280 SCSI DRIVER

Mail Michael Reed <mdr@sgi.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files `drivers/scsi/qla1280.[ch]`

* QLOGIC QLA2XXX FC-SCSI DRIVER

Mail Nilesh Javali <njavali@marvell.com>, GR-QLogic-Storage-Upstream@marvell.com

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files `drivers/scsi/qla2xxx/`

* QLOGIC QLA3XXX NETWORK DRIVER

Mail GR-Linux-NIC-Dev@marvell.com

Mailing list netdev@vger.kernel.org

Status Supported

Files `drivers/net/ethernet/qlogic/qla3xxx.*`

* QLOGIC QLA4XXX iSCSI DRIVER

Mail Nilesh Javali <njavali@marvell.com>, Manish Rangankar <mrangankar@marvell.com>, GR-QLogic-Storage-Upstream@marvell.com

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files `drivers/scsi/qla4xxx/`

* QLOGIC QLCNIC (1/10)Gb ETHERNET DRIVER

Mail Shahed Shaikh <shshaikh@marvell.com>, Manish Chopra <man-ishc@marvell.com>, GR-Linux-NIC-Dev@marvell.com

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/qlogic/qlcnic/

* QLOGIC QLGE 10Gb ETHERNET DRIVER

Mail Manish Chopra <manishc@marvell.com>, GR-Linux-NIC-Dev@marvell.com, Coiby Xu <coiby.xu@gmail.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files networking/device_drivers/qlogic/qlge drivers/staging/qlge/

* QM1D1B0004 MEDIA DRIVER

Mail Akihiro Tsukada <tskd08@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Files drivers/media/tuners/qm1d1b0004*

* QM1D1C0042 MEDIA DRIVER

Mail Akihiro Tsukada <tskd08@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Files drivers/media/tuners/qm1d1c0042*

* QNX4 FILESYSTEM

Mail Anders Larsen <al@alarsen.net>

Status Maintained

Web-page http://www.alarsen.net/linux/qnx4fs/

Files fs/qnx4/ include/uapi/linux/qnx4_fs.h include/uapi/linux/qnxtypes.h

* QORIQ DPAA2 FSL-MC BUS DRIVER

Mail Stuart Yoder <stuyoder@gmail.com>, Laurentiu Tudor <laurentiu.tudor@nxp.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files Documentation/ABI/stable/sysfs-bus-fsl-mc   Documentation/
devicetree/bindings/misc/fsl,qoriq-mc.txt   network-
ing/device_drivers/ethernet/freescale/dpaa2/overview   drivers/bus/fsl-mc/
include/uapi/linux/fsl_mc.h

* QT1010 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/tuners/qt1010*

* QUALCOMM ATHEROS ATH10K WIRELESS DRIVER

Mail Kalle Valo <kvalo@kernel.org>

Mailing list ath10k@lists.infradead.org

Status Supported

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/ath10k

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kvalo/ath.git

Files drivers/net/wireless/ath/ath10k/   Documentation/devicetree/
bindings/net/wireless/qcom,ath10k.txt

* QUALCOMM ATHEROS ATH11K WIRELESS DRIVER

Mail Kalle Valo <kvalo@kernel.org>

Mailing list ath11k@lists.infradead.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kvalo/ath.git

Files Documentation/devicetree/bindings/net/wireless/qcom,ath11k.yaml
drivers/net/wireless/ath/ath11k/

* QUALCOMM ATHEROS ATH9K WIRELESS DRIVER

Mail Toke Høiland-Jørgensen <toke@toke.dk>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/ath9k

Files Documentation/devicetree/bindings/net/wireless/qca,ath9k.yaml
   drivers/net/wireless/ath/ath9k/

* QUALCOMM BAM-DMUX WWAN NETWORK DRIVER

Mail Stephan Gerhold <stephan@gerhold.net>

Mailing list netdev@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/qcom,bam-dmux.yaml   drivers/
   net/wwan/qcom_bam_dmux.c

* QUALCOMM CAMERA SUBSYSTEM DRIVER

Mail Robert Foss <robert.foss@linaro.org>, Todor Tomov <todor.too@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files admin-guide/media/qcom_camss   Documentation/devicetree/bindings/
   media/*camss* drivers/media/platform/qcom/camss/

* QUALCOMM CLOCK DRIVERS

Mail Bjorn Andersson <bjorn.andersson@linaro.org>

Mailing list linux-arm-msm@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/qcom/linux.git

Files Documentation/devicetree/bindings/clock/qcom,*   drivers/clk/qcom/
   include/dt-bindings/clock/qcom,*

* QUALCOMM CORE POWER REDUCTION (CPR) AVS DRIVER

Mail Niklas Cassel <nks@flawful.org>

Mailing list linux-pm@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/power/avs/qcom,cpr.yaml drivers/
soc/qcom/cpr.c

* QUALCOMM CPUFREQ DRIVER MSM8996/APQ8096

Mail Ilia Lin <ilia.lin@kernel.org>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/cpufreq/qcom-cpufreq-nvmem.yaml
Documentation/devicetree/bindings/opp/opp-v2-kryo-cpu.yaml drivers/
cpufreq/qcom-cpufreq-nvmem.c

* QUALCOMM CRYPTO DRIVERS

Mail Thara Gopinath <thara.gopinath@gmail.com>

Mailing list linux-crypto@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status Maintained

Files drivers/crypto/qce/

* QUALCOMM EMAC GIGABIT ETHERNET DRIVER

Mail Timur Tabi <timur@kernel.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/qualcomm/emac/

* QUALCOMM ETHQOS ETHERNET DRIVER

Mail Vinod Koul <vkoul@kernel.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/qcom,ethqos.txt drivers/net/
ethernet/stmicro/stmmac/dwmac-qcom-ethqos.c

* QUALCOMM FASTRPC DRIVER

Mail Srinivas Kandagatla <srinivas.kandagatla@linaro.org>, Amol Maheshwari <amahesh@qti.qualcomm.com>

Mailing list linux-arm-msm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/misc/qcom,fastrpc.txt   drivers/ misc/fastrpc.c include/uapi/misc/fastrpc.h

* QUALCOMM HEXAGON ARCHITECTURE

Mail Brian Cain <bcain@quicinc.com>

Mailing list linux-hexagon@vger.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/bcain/linux.git

Status Supported

Files arch/hexagon/

* QUALCOMM HIDMA DRIVER

Mail Sinan Kaya <okaya@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), linux-arm-msm@vger.kernel.org, dmaengine@vger.kernel.org

Status Supported

Files drivers/dma/qcom/hidma*

* QUALCOMM I2C CCI DRIVER

Mail Loic Poulain <loic.poulain@linaro.org>, Robert Foss <robert.foss@linaro.org>

Mailing list linux-i2c@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-qcom-cci.txt   drivers/ i2c/busses/i2c-qcom-cci.c

* QUALCOMM IOMMU

Mail Rob Clark <robdclark@gmail.com>

Mailing list iommu@lists.linux.dev, linux-arm-msm@vger.kernel.org

Status Maintained

Files `drivers/iommu/arm/arm-smmu/qcom_iommu.c`

* QUALCOMM IPC ROUTER (QRTR) DRIVER

Mail Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Mailing list linux-arm-msm@vger.kernel.org

Status Maintained

Files `include/trace/events/qrtr.h include/uapi/linux/qrtr.h net/qrtr/`

* QUALCOMM IPCC MAILBOX DRIVER

Mail Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Mailing list linux-arm-msm@vger.kernel.org

Status Supported

Files `Documentation/devicetree/bindings/mailbox/qcom-ipcc.yaml    drivers/ mailbox/qcom-ipcc.c include/dt-bindings/mailbox/qcom-ipcc.h`

* QUALCOMM IPQ4019 USB PHY DRIVER

Mail Robert Marko <robert.marko@sartura.hr>, Luka Perkov <luka.perkov@sartura.hr>

Mailing list linux-arm-msm@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/phy/qcom-usb-ipq4019-phy.yaml drivers/phy/qualcomm/phy-qcom-ipq4019-usb.c`

* QUALCOMM IPQ4019 VQMMC REGULATOR DRIVER

Mail Robert Marko <robert.marko@sartura.hr>, Luka Perkov <luka.perkov@sartura.hr>

Mailing list linux-arm-msm@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/regulator/vqmmc-ipq4019-regulator. yaml drivers/regulator/vqmmc-ipq4019-regulator.c`

* QUALCOMM NAND CONTROLLER DRIVER

Mail Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Mailing list linux-mtd@lists.infradead.org, linux-arm-msm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/mtd/qcom,nandc.yaml drivers/mtd/
nand/raw/qcom_nandc.c

* QUALCOMM RMNET DRIVER

Mail Subash Abhinov Kasiviswanathan <quic_subashab@quicinc.com>, Sean
Tranchetti <quic_stranche@quicinc.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files networking/device_drivers/cellular/qualcomm/rmnet drivers/net/ethernet/
qualcomm/rmnet/ include/linux/if_rmnet.h

* QUALCOMM TSENS THERMAL DRIVER

Mail Amit Kucheria <amitk@kernel.org>, Thara Gopinath
<thara.gopinath@gmail.com>

Mailing list linux-pm@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/thermal/qcom-tsens.yaml drivers/
thermal/qcom/

* QUALCOMM VENUS VIDEO ACCELERATOR DRIVER

Mail Stanimir Varbanov <stanimir.varbanov@linaro.org>

Mailing list linux-media@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/*venus* drivers/media/
platform/qcom/venus/

* QUALCOMM WCN36XX WIRELESS DRIVER

Mail Loic Poulain <loic.poulain@linaro.org>

Mailing list wcn36xx@lists.infradead.org

Status Supported

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/wcn36xx

Files drivers/net/wireless/ath/wcn36xx/

* QUANTENNA QTNFMAC WIRELESS DRIVER

Mail Igor Mitsyanko <imitsyanko@quantenna.com>

Reviewer Sergey Matyukevich <geomatsi@gmail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files drivers/net/wireless/quantenna

* RADEON and AMDGPU DRM DRIVERS

Mail Alex Deucher <alexander.deucher@amd.com>, Christian König <christian.koenig@amd.com>, Pan, Xinhui <Xinhui.Pan@amd.com>

Mailing list amd-gfx@lists.freedesktop.org

Status Supported

SCM git https://gitlab.freedesktop.org/agd5f/linux.git

bugs https://gitlab.freedesktop.org/drm/amd/-/issues

chat irc://irc.oftc.net/radeon

Files Documentation/gpu/amdgpu/ drivers/gpu/drm/amd/ drivers/gpu/drm/radeon/ include/uapi/drm/amdgpu_drm.h include/uapi/drm/radeon_drm.h

* RADEON FRAMEBUFFER DISPLAY DRIVER

Mail Benjamin Herrenschmidt <benh@kernel.crashing.org>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files drivers/video/fbdev/aty/radeon* include/uapi/linux/radeonfb.h

* RADIOSHARK RADIO DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/radio/radio-shark.c`

* RADIOSHARK2 RADIO DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/radio/radio-shark2.c` `drivers/media/radio/radio-tea5777.c`

* RADOS BLOCK DEVICE (RBD)

Mail Ilya Dryomov <idryomov@gmail.com>

Reviewer Dongsheng Yang <dongsheng.yang@easystack.cn>

Mailing list ceph-devel@vger.kernel.org

Status Supported

Web-page http://ceph.com/

SCM git git://github.com/ceph/ceph-client.git

Files `Documentation/ABI/testing/sysfs-bus-rbd` `drivers/block/rbd.c` `drivers/block/rbd_types.h`

* RAGE128 FRAMEBUFFER DISPLAY DRIVER

Mail Paul Mackerras <paulus@samba.org>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files `drivers/video/fbdev/aty/aty128fb.c`

* RAINSHADOW-CEC DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/cec/usb/rainshadow/`

* RALINK MIPS ARCHITECTURE

Mail John Crispin <john@phrozen.org>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files `arch/mips/ralink`

* RALINK MT7621 MIPS ARCHITECTURE

Mail Arınç ÜNAL <arinc.unal@arinc9.com>, Sergio Paracuellos <sergio.paracuellos@gmail.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files `arch/mips/boot/dts/ralink/mt7621*`

* RALINK PINCTRL DRIVER

Mail Arınç ÜNAL <arinc.unal@arinc9.com>, Sergio Paracuellos <sergio.paracuellos@gmail.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files `drivers/pinctrl/ralink/`

* RALINK RT2X00 WIRELESS LAN DRIVER

Mail Stanislaw Gruszka <stf_xl@wp.pl>, Helmut Schaa <helmut.schaa@googlemail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files `drivers/net/wireless/ralink/rt2x00/`

* RAMDISK RAM BLOCK DEVICE DRIVER

Mail Jens Axboe <axboe@kernel.dk>

Status Maintained

Files admin-guide/blockdev/ramdisk `drivers/block/brd.c`

* RANCHU VIRTUAL BOARD FOR MIPS

Mail Miodrag Dinic <miodrag.dinic@mips.com>

Mailing list linux-mips@vger.kernel.org

Status Supported

Files `arch/mips/configs/generic/board-ranchu.config` `arch/mips/generic/board-ranchu.c`

* RANDOM NUMBER DRIVER

Mail "Theodore Ts'o" <tytso@mit.edu>, Jason A. Donenfeld <Jason@zx2c4.com>

SCM git https://git.kernel.org/pub/scm/linux/kernel/git/crng/random.git

Status Maintained

Files `drivers/char/random.c drivers/virt/vmgenid.c`

* RAPIDIO SUBSYSTEM

Mail Matt Porter <mporter@kernel.crashing.org>, Alexandre Bounine <alex.bou9@gmail.com>

Status Maintained

Files `drivers/rapidio/`

* RAS INFRASTRUCTURE

Mail Tony Luck <tony.luck@intel.com>, Borislav Petkov <bp@alien8.de>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files admin-guide/ras `drivers/ras/` `include/linux/ras.h` `include/ras/ras_event.h`

* RAYLINK/WEBGEAR 802.11 WIRELESS LAN DRIVER

Mailing list linux-wireless@vger.kernel.org

Status Orphan

Files drivers/net/wireless/ray*

* RC-CORE / LIRC FRAMEWORK

Mail Sean Young <sean@mess.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page http://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files driver-api/media/rc-core   Documentation/userspace-api/media/rc/
drivers/media/rc/   include/media/rc-map.h   include/media/rc-core.h
include/uapi/linux/lirc.h

* RCMM REMOTE CONTROLS DECODER

Mail Patrick Lerda <patrick9876@free.fr>

Status Maintained

Files drivers/media/rc/ir-rcmm-decoder.c

* RCUTORTURE TEST FRAMEWORK

Mail "Paul   E.   McKenney"   <paulmck@kernel.org>,   Josh   Triplett
<josh@joshtriplett.org>

Reviewer Steven Rostedt <rostedt@goodmis.org>, Mathieu Desnoyers <mathieu.desnoyers@efficios.com>, Lai Jiangshan <jiangshanlai@gmail.com>

Mailing list rcu@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/paulmck/linux-rcu.git dev

Files tools/testing/selftests/rcutorture

* RDACM20 Camera Sensor

Mail Jacopo Mondi <jacopo+renesas@jmondi.org>, Kieran Bingham <kieran.bingham+renesas@ideasonboard.com>, Laurent Pinchart <laurent.pinchart+renesas@ideasonboard.com>, Niklas Söderlund <niklas.soderlund+renesas@ragnatech.se>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/i2c/imi,rdacm2x-gmsl.yaml
drivers/media/i2c/max9271.c drivers/media/i2c/max9271.h drivers/
media/i2c/rdacm20.c

* RDACM21 Camera Sensor

Mail Jacopo Mondi <jacopo+renesas@jmondi.org>, Kieran Bingham <kieran.bingham+renesas@ideasonboard.com>, Laurent Pinchart <laurent.pinchart+renesas@ideasonboard.com>, Niklas Söderlund <niklas.soderlund+renesas@ragnatech.se>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/media/i2c/imi,rdacm2x-gmsl.yaml
drivers/media/i2c/max9271.c drivers/media/i2c/max9271.h drivers/
media/i2c/rdacm21.c

* RDC R-321X SoC

Mail Florian Fainelli <florian@openwrt.org>

Status Maintained

* RDC R6040 FAST ETHERNET DRIVER

Mail Florian Fainelli <f.fainelli@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/rdc/r6040.c

* RDMAVT - RDMA verbs software

Mail Dennis Dalessandro <dennis.dalessandro@cornelisnetworks.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Files drivers/infiniband/sw/rdmavt

* RDS - RELIABLE DATAGRAM SOCKETS

Mail Santosh Shilimkar <santosh.shilimkar@oracle.com>

Mailing list netdev@vger.kernel.org,   linux-rdma@vger.kernel.org,   rds-devel@oss.oracle.com (moderated for non-subscribers)

Status Supported

Web-page https://oss.oracle.com/projects/rds/

Files networking/rds net/rds/

* RDT - RESOURCE ALLOCATION

Mail Fenghua   Yu   <fenghua.yu@intel.com>,   Reinette   Chatre <reinette.chatre@intel.com>

Mailing list linux-kernel@vger.kernel.org

Status Supported

Files Documentation/x86/resctrl* arch/x86/include/asm/resctrl.h arch/x86/ kernel/cpu/resctrl/ tools/testing/selftests/resctrl/

* READ-COPY UPDATE (RCU)

Mail "Paul   E.   McKenney"   <paulmck@kernel.org>,   Frederic   Weis-becker   <frederic@kernel.org>   (kernel/rcu/tree_nocb.h),   Neeraj   Upad-hyay   <quic_neeraju@quicinc.com>   (kernel/rcu/tasks.h),   Josh   Triplett <josh@joshtriplett.org>

Reviewer Steven Rostedt <rostedt@goodmis.org>, Mathieu Desnoyers <mathieu.desnoyers@efficios.com>, Lai Jiangshan <jiangshanlai@gmail.com>, Joel Fernandes <joel@joelfernandes.org>

Mailing list rcu@vger.kernel.org

Status Supported

Web-page http://www.rdrop.com/users/paulmck/RCU/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/paulmck/linux-rcu.git dev

Files Documentation/RCU/ include/linux/rcu* kernel/rcu/

Excluded RCU/torture include/linux/srcu*.h kernel/rcu/srcu*.c

* REAL TIME CLOCK (RTC) SUBSYSTEM

Mail Alessandro Zummo <a.zummo@towertech.it>, Alexandre Belloni <alexandre.belloni@bootlin.com>

Mailing list linux-rtc@vger.kernel.org

Status Maintained

Patchwork http://patchwork.ozlabs.org/project/rtc-linux/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/abelloni/linux.git

Files admin-guide/rtc Documentation/devicetree/bindings/rtc/ drivers/rtc/ include/linux/platform_data/rtc-* include/linux/rtc.h include/linux/ rtc/ include/uapi/linux/rtc.h tools/testing/selftests/rtc/

* REALTEK AUDIO CODECS

Mail Oder Chiou <oder_chiou@realtek.com>

Status Maintained

Files include/sound/rt*.h sound/soc/codecs/rt*

* REALTEK OTTO WATCHDOG

Mail Sander Vanheule <sander@svanheule.net>

Mailing list linux-watchdog@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/watchdog/realtek,otto-wdt.yaml drivers/watchdog/realtek_otto_wdt.c

* REALTEK RTL83xx SMI DSA ROUTER CHIPS

Mail Linus Walleij <linus.walleij@linaro.org>, Alvin Šipraga <alsi@bang-olufsen.dk>

Status Maintained

Files Documentation/devicetree/bindings/net/dsa/realtek.yaml drivers/ net/dsa/realtek/*

* REALTEK WIRELESS DRIVER (rtlwifi family)

Mail Ping-Ke Shih <pkshih@realtek.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/linville/wireless-testing.git

Files drivers/net/wireless/realtek/rtlwifi/

* REALTEK WIRELESS DRIVER (rtw88)

Mail Yan-Hsuan Chuang <tony0620emma@gmail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files drivers/net/wireless/realtek/rtw88/

* REALTEK WIRELESS DRIVER (rtw89)

Mail Ping-Ke Shih <pkshih@realtek.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files drivers/net/wireless/realtek/rtw89/

* REDPINE WIRELESS DRIVER

Mail Amitkumar Karwar <amitkarwar@gmail.com>, Siva Rebbagondla <siva8118@gmail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files drivers/net/wireless/rsi/

* REGISTER MAP ABSTRACTION

Mail Mark Brown <broonie@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/broonie/regmap.git

Files Documentation/devicetree/bindings/regmap/ drivers/base/regmap/ include/linux/regmap.h

* REISERFS FILE SYSTEM

Mailing list reiserfs-devel@vger.kernel.org

Status Supported

Files `fs/reiserfs/`

* REMOTE PROCESSOR (REMOTEPROC) SUBSYSTEM

Mail Bjorn Andersson <bjorn.andersson@linaro.org>, Mathieu Poirier <mathieu.poirier@linaro.org>

Mailing list linux-remoteproc@vger.kernel.org

Status Maintained

SCM git https://git.kernel.org/pub/scm/linux/kernel/git/remoteproc/linux.git rproc-next

Files `Documentation/ABI/testing/sysfs-class-remoteproc` `Documentation/devicetree/bindings/remoteproc/` `staging/remoteproc` `drivers/remoteproc/` `include/linux/remoteproc.h` `include/linux/remoteproc/`

* REMOTE PROCESSOR MESSAGING (RPMSG) SUBSYSTEM

Mail Bjorn Andersson <bjorn.andersson@linaro.org>, Mathieu Poirier <mathieu.poirier@linaro.org>

Mailing list linux-remoteproc@vger.kernel.org

Status Maintained

SCM git https://git.kernel.org/pub/scm/linux/kernel/git/remoteproc/linux.git rpmsg-next

Files `Documentation/ABI/testing/sysfs-bus-rpmsg` `staging/rpmsg` `drivers/rpmsg/` `include/linux/rpmsg.h` `include/linux/rpmsg/` `include/uapi/linux/rpmsg.h` `samples/rpmsg/`

* REMOTE PROCESSOR MESSAGING (RPMSG) WWAN CONTROL DRIVER

Mail Stephan Gerhold <stephan@gerhold.net>

Mailing list netdev@vger.kernel.org, linux-remoteproc@vger.kernel.org

Status Maintained

Files `drivers/net/wwan/rpmsg_wwan_ctrl.c`

* RENESAS CLOCK DRIVERS

Mail Geert Uytterhoeven <geert+renesas@glider.be>

Mailing list linux-renesas-soc@vger.kernel.org

Status Supported

SCM git   git://git.kernel.org/pub/scm/linux/kernel/git/geert/renesas-drivers.git renesas-clk

Files Documentation/devicetree/bindings/clock/renesas,*   drivers/clk/
    renesas/

* RENESAS EMEV2 I2C DRIVER

Mail Wolfram Sang <wsa+renesas@sang-engineering.com>

Mailing list linux-renesas-soc@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/i2c/renesas,iic-emev2.yaml
    drivers/i2c/busses/i2c-emev2.c

* RENESAS ETHERNET DRIVERS

Reviewer Sergey Shtylyov <s.shtylyov@omp.ru>

Mailing list netdev@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Files Documentation/devicetree/bindings/net/renesas,*.yaml drivers/net/
    ethernet/renesas/ include/linux/sh_eth.h

* RENESAS R-CAR GYROADC DRIVER

Mail Marek Vasut <marek.vasut@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/iio/adc/renesas,rcar-gyroadc.
    yaml drivers/iio/adc/rcar-gyroadc.c

* RENESAS R-CAR I2C DRIVERS

Mail Wolfram Sang <wsa+renesas@sang-engineering.com>

Mailing list linux-renesas-soc@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/i2c/renesas,rcar-i2c.yaml
    Documentation/devicetree/bindings/i2c/renesas,rmobile-iic.yaml
    drivers/i2c/busses/i2c-rcar.c drivers/i2c/busses/i2c-sh_mobile.c

* RENESAS R-CAR SATA DRIVER

Reviewer Sergey Shtylyov <s.shtylyov@omp.ru>

Status Supported

Mailing list linux-ide@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Files Documentation/devicetree/bindings/ata/renesas,rcar-sata.yaml
    drivers/ata/sata_rcar.c

* RENESAS R-CAR THERMAL DRIVERS

Mail Niklas Söderlund <niklas.soderlund@ragnatech.se>

Mailing list linux-renesas-soc@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/thermal/rcar-gen3-thermal.yaml
    Documentation/devicetree/bindings/thermal/rcar-thermal.yaml drivers/
    thermal/rcar_gen3_thermal.c drivers/thermal/rcar_thermal.c

* RENESAS RIIC DRIVER

Mail Chris Brandt <chris.brandt@renesas.com>

Mailing list linux-renesas-soc@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/i2c/renesas,riic.yaml   drivers/
    i2c/busses/i2c-riic.c

* RENESAS USB PHY DRIVER

Mail Yoshihiro Shimoda <yoshihiro.shimoda.uh@renesas.com>

Mailing list linux-renesas-soc@vger.kernel.org

Status Maintained

Files drivers/phy/renesas/phy-rcar-gen3-usb*.c

* RENESAS RZ/G2L A/D DRIVER

Mail Lad Prabhakar <prabhakar.mahadev-lad.rj@bp.renesas.com>

Mailing list linux-iio@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/iio/adc/renesas,rzg2l-adc.yaml
    drivers/iio/adc/rzg2l_adc.c

* RENESAS RZ/N1 RTC CONTROLLER DRIVER

Mail Miquel Raynal <miquel.raynal@bootlin.com>

Mailing list linux-rtc@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/rtc/renesas,rzn1-rtc.yaml
drivers/rtc/rtc-rzn1.c

* RENESAS R-CAR GEN3 & RZ/N1 NAND CONTROLLER DRIVER

Mail Miquel Raynal <miquel.raynal@bootlin.com>

Mailing list linux-mtd@lists.infradead.org, linux-renesas-soc@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/mtd/renesas-nandc.yaml   drivers/
mtd/nand/raw/renesas-nand-controller.c

* RESET CONTROLLER FRAMEWORK

Mail Philipp Zabel <p.zabel@pengutronix.de>

Status Maintained

SCM git git://git.pengutronix.de/git/pza/linux

Files Documentation/devicetree/bindings/reset/   driver-api/reset   drivers/
reset/   include/dt-bindings/reset/   include/linux/reset-controller.h
include/linux/reset.h include/linux/reset/

Content regex \b(?:devm_|of_)?reset_control(?:ler_[a-z]+|_[a-z_]+)?\b

* RESTARTABLE SEQUENCES SUPPORT

Mail Mathieu Desnoyers <mathieu.desnoyers@efficios.com>, Peter Zijlstra <peterz@infradead.org>, "Paul E. McKenney" <paulmck@kernel.org>, Boqun Feng <boqun.feng@gmail.com>

Mailing list linux-kernel@vger.kernel.org

Status Supported

Files include/trace/events/rseq.h include/uapi/linux/rseq.h kernel/rseq.c
tools/testing/selftests/rseq/

* RFKILL

Mail Johannes Berg <johannes@sipsolutions.net>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/

Patchwork https://patchwork.kernel.org/project/linux-wireless/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/wireless/wireless.git git git://git.kernel.org/pub/scm/linux/kernel/git/wireless/wireless-next.git

Files Documentation/ABI/stable/sysfs-class-rfkill driver-api/rfkill include/linux/rfkill.h include/uapi/linux/rfkill.h net/rfkill/

* RHASHTABLE

Mail Thomas Graf <tgraf@suug.ch>, Herbert Xu <herbert@gondor.apana.org.au>

Mailing list netdev@vger.kernel.org

Status Maintained

Files include/linux/rhashtable-types.h include/linux/rhashtable.h lib/rhashtable.c lib/test_rhashtable.c

* RICOH R5C592 MEMORYSTICK DRIVER

Mail Maxim Levitsky <maximlevitsky@gmail.com>

Status Maintained

Files drivers/memstick/host/r592.*

* RICOH SMARTMEDIA/XD DRIVER

Mail Maxim Levitsky <maximlevitsky@gmail.com>

Status Maintained

Files drivers/mtd/nand/raw/r852.c drivers/mtd/nand/raw/r852.h

* RISC-V PMU DRIVERS

Mail Atish Patra <atishp@atishpatra.org>

Reviewer Anup Patel <anup@brainfault.org>

Mailing list linux-riscv@lists.infradead.org

Status Supported

Files drivers/perf/riscv_pmu.c drivers/perf/riscv_pmu_legacy.c drivers/perf/riscv_pmu_sbi.c

* RISC-V ARCHITECTURE

Mail Paul Walmsley <paul.walmsley@sifive.com>, Palmer Dabbelt <palmer@dabbelt.com>, Albert Ou <aou@eecs.berkeley.edu>

Mailing list linux-riscv@lists.infradead.org

Status Supported

P *riscv/patch-acceptance*

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/riscv/linux.git

Files arch/riscv/

Regex riscv

Content regex riscv

* RISC-V/MICROCHIP POLARFIRE SOC SUPPORT

Mail Conor Dooley <conor.dooley@microchip.com>, Daire McNamara <daire.mcnamara@microchip.com>

Mailing list linux-riscv@lists.infradead.org

Status Supported

Files arch/riscv/boot/dts/microchip/ drivers/char/hw_random/mpfs-rng.c drivers/clk/microchip/clk-mpfs.c drivers/mailbox/mailbox-mpfs.c drivers/pci/controller/pcie-microchip-host.c drivers/soc/microchip/ include/soc/microchip/mpfs.h

* RNBD BLOCK DRIVERS

Mail Md. Haris Iqbal <haris.iqbal@ionos.com>, Jack Wang <jinpu.wang@ionos.com>

Mailing list linux-block@vger.kernel.org

Status Maintained

Files drivers/block/rnbd/

* ROCCAT DRIVERS

Mail Stefan Achatz <erazor_de@users.sourceforge.net>

Status Maintained

Web-page http://sourceforge.net/projects/roccat/

Files Documentation/ABI/*/sysfs-driver-hid-roccat* drivers/hid/ hid-roccat* include/linux/hid-roccat*

* ROCKCHIP I2S TDM DRIVER

Mail Nicolas Frattaroli <frattaroli.nicolas@gmail.com>

Mailing list linux-rockchip@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/sound/rockchip,i2s-tdm.yaml
sound/soc/rockchip/rockchip_i2s_tdm.*

* ROCKCHIP ISP V1 DRIVER

Mail Dafna Hirschfeld <dafna@fastmail.com>

Mailing list linux-media@vger.kernel.org, linux-rockchip@lists.infradead.org

Status Maintained

Files admin-guide/media/rkisp1   Documentation/devicetree/bindings/media/
rockchip-isp1.yaml   userspace-api/media/v4l/pixfmt-meta-rkisp1   drivers/
media/platform/rockchip/rkisp1 include/uapi/linux/rkisp1-config.h

* ROCKCHIP RASTER 2D GRAPHIC ACCELERATION UNIT DRIVER

Mail Jacob   Chen   <jacob-chen@iotwrt.com>,   Ezequiel   Garcia   <ezequiel@vanguardiasur.com.ar>

Mailing list linux-media@vger.kernel.org, linux-rockchip@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/media/rockchip-rga.yaml drivers/
media/platform/rockchip/rga/

* ROCKCHIP VIDEO DECODER DRIVER

Mail Ezequiel Garcia <ezequiel@vanguardiasur.com.ar>

Mailing list linux-media@vger.kernel.org, linux-rockchip@lists.infradead.org

Status Maintained

Files Documentation/devicetree/bindings/media/rockchip,vdec.yaml
drivers/staging/media/rkvdec/

* ROCKER DRIVER

Mail Jiri Pirko <jiri@resnulli.us>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/rocker/

* ROCKETPORT EXPRESS/INFINITY DRIVER

Mail Kevin Cernekee <cernekee@gmail.com>

Mailing list linux-serial@vger.kernel.org

Status Odd Fixes

Files drivers/tty/serial/rp2.*

* ROHM BD99954 CHARGER IC

Reviewer Matti Vaittinen <mazziesaccount@gmail.com>

Status Supported

Files drivers/power/supply/bd99954-charger.c   drivers/power/supply/bd99954-charger.h

* ROHM BH1750 AMBIENT LIGHT SENSOR DRIVER

Mail Tomasz Duszynski <tduszyns@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/iio/light/bh1750.yaml   drivers/iio/light/bh1750.c

* ROHM MULTIFUNCTION BD9571MWV-M PMIC DEVICE DRIVERS

Mail Marek Vasut <marek.vasut+renesas@gmail.com>

Mailing list linux-kernel@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/mfd/rohm,bd9571mwv.yaml drivers/gpio/gpio-bd9571mwv.c   drivers/mfd/bd9571mwv.c   drivers/regulator/bd9571mwv-regulator.c include/linux/mfd/bd9571mwv.h

* ROHM POWER MANAGEMENT IC DEVICE DRIVERS

Reviewer Matti Vaittinen <mazziesaccount@gmail.com>

Status Supported

Files `drivers/clk/clk-bd718x7.c   drivers/gpio/gpio-bd71815.c   drivers/gpio/gpio-bd71828.c   drivers/mfd/rohm-bd71828.c   drivers/mfd/rohm-bd718x7.c   drivers/mfd/rohm-bd9576.c   drivers/regulator/bd71815-regulator.c drivers/regulator/bd71828-regulator.c drivers/regulator/bd718x7-regulator.c   drivers/regulator/bd9576-regulator.c drivers/regulator/rohm-regulator.c drivers/rtc/rtc-bd70528.c drivers/watchdog/bd9576_wdt.c include/linux/mfd/rohm-bd71815.h include/linux/mfd/rohm-bd71828.h include/linux/mfd/rohm-bd718x7.h include/linux/mfd/rohm-bd957x.h include/linux/mfd/rohm-generic.h include/linux/mfd/rohm-shared.h`

* ROSE NETWORK LAYER

Mail Ralf Baechle <ralf@linux-mips.org>

Mailing list linux-hams@vger.kernel.org

Status Maintained

Web-page http://www.linux-ax25.org/

Files `include/net/rose.h include/uapi/linux/rose.h net/rose/`

* ROTATION DRIVER FOR ALLWINNER A83T

Mail Jernej Skrabec <jernej.skrabec@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `Documentation/devicetree/bindings/media/allwinner, sun8i-a83t-de2-rotate.yaml           drivers/media/platform/sunxi/sun8i-rotate/`

* RPMSG TTY DRIVER

Mail Arnaud Pouliquen <arnaud.pouliquen@foss.st.com>

Mailing list linux-remoteproc@vger.kernel.org

Status Maintained

Files `drivers/tty/rpmsg_tty.c`

* RTL2830 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/dvb-frontends/rtl2830*

* RTL2832 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/dvb-frontends/rtl2832*

* RTL2832_SDR MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/dvb-frontends/rtl2832_sdr*

* RTL8180 WIRELESS DRIVER

Mailing list linux-wireless@vger.kernel.org

Status Orphan

Web-page https://wireless.wiki.kernel.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/linville/wireless-testing.git

Files drivers/net/wireless/realtek/rtl818x/rtl8180/

* RTL8187 WIRELESS DRIVER

Mail Herton Ronaldo Krzesinski <herton@canonical.com>, Hin-Tak Leung <htl10@users.sourceforge.net>, Larry Finger <Larry.Finger@lwfinger.net>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Web-page https://wireless.wiki.kernel.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/linville/wireless-testing.git

Files drivers/net/wireless/realtek/rtl818x/rtl8187/

* RTL8XXXU WIRELESS DRIVER (rtl8xxxu)

Mail Jes Sorensen <Jes.Sorensen@gmail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jes/linux.git rtl8xxxu-devel

Files drivers/net/wireless/realtek/rtl8xxxu/

* RTRS TRANSPORT DRIVERS

Mail Md. Haris Iqbal <haris.iqbal@ionos.com>, Jack Wang <jinpu.wang@ionos.com>

Mailing list linux-rdma@vger.kernel.org

Status Maintained

Files drivers/infiniband/ulp/rtrs/

* RXRPC SOCKETS (AF_RXRPC)

Mail David Howells <dhowells@redhat.com>, Marc Dionne <marc.dionne@auristor.com>

Mailing list linux-afs@lists.infradead.org

Status Supported

Web-page https://www.infradead.org/~dhowells/kafs/

Files networking/rxrpc include/keys/rxrpc-type.h include/net/af_rxrpc.h include/trace/events/rxrpc.h include/uapi/linux/rxrpc.h net/rxrpc/

* S3 SAVAGE FRAMEBUFFER DRIVER

Mail Antonino Daplas <adaplas@gmail.com>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files drivers/video/fbdev/savage/

* S390

Mail Heiko Carstens <hca@linux.ibm.com>, Vasily Gorbik <gor@linux.ibm.com>, Alexander Gordeev <agordeev@linux.ibm.com>

Reviewer Christian Borntraeger <borntraeger@linux.ibm.com>, Sven Schnelle <svens@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/s390/linux.git

Files driver-api/s390-drivers Documentation/s390/ arch/s390/ drivers/s390/

* S390 COMMON I/O LAYER

Mail Vineeth Vijayan <vneethv@linux.ibm.com>, Peter Oberparleiter <oberpar@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

Files drivers/s390/cio/

* S390 DASD DRIVER

Mail Stefan Haberland <sth@linux.ibm.com>, Jan Hoeppner <hoeppner@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

Files block/partitions/ibm.c drivers/s390/block/dasd* include/linux/dasd_mod.h

* S390 IOMMU (PCI)

Mail Matthew Rosato <mjrosato@linux.ibm.com>, Gerald Schaefer <gerald.schaefer@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

Files `drivers/iommu/s390-iommu.c`

* S390 IUCV NETWORK LAYER

Mail Alexandra Winter <wintera@linux.ibm.com>, Wenjia Zhang <wenjia@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org, netdev@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

Files `drivers/s390/net/*iucv* include/net/iucv/ net/iucv/`

* S390 NETWORK DRIVERS

Mail Alexandra Winter <wintera@linux.ibm.com>, Wenjia Zhang <wenjia@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org, netdev@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

Files `drivers/s390/net/`

* S390 PCI SUBSYSTEM

Mail Niklas Schnelle <schnelle@linux.ibm.com>, Gerald Schaefer <gerald.schaefer@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

Files `arch/s390/pci/ drivers/pci/hotplug/s390_pci_hpc.c s390/pci`

* S390 VFIO AP DRIVER

Mail Tony Krowiak <akrowiak@linux.ibm.com>, Halil Pasic <pasic@linux.ibm.com>, Jason Herne <jjherne@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

Files s390/vfio-ap `drivers/s390/crypto/vfio_ap*`

* S390 VFIO-CCW DRIVER

Mail Eric Farman <farman@linux.ibm.com>, Matthew Rosato <mjrosato@linux.ibm.com>

Reviewer Halil Pasic <pasic@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org, kvm@vger.kernel.org

Status Supported

Files s390/vfio-ccw `drivers/s390/cio/vfio_ccw*` `include/uapi/linux/vfio_ccw.h`

* S390 VFIO-PCI DRIVER

Mail Matthew Rosato <mjrosato@linux.ibm.com>, Eric Farman <farman@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org, kvm@vger.kernel.org

Status Supported

Files `drivers/vfio/pci/vfio_pci_zdev.c include/uapi/linux/vfio_zdev.h`

* S390 ZCRYPT DRIVER

Mail Harald Freudenberger <freude@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

Files `drivers/s390/crypto/`

* S390 ZFCP DRIVER

Mail Steffen Maier <maier@linux.ibm.com>, Benjamin Block <bblock@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

Files `drivers/s390/scsi/zfcp_*`

* S3C ADC BATTERY DRIVER

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>

Mailing list linux-samsung-soc@vger.kernel.org

Status Odd Fixes

Files `drivers/power/supply/s3c_adc_battery.c` `include/linux/s3c_adc_battery.h`

* S3C24XX SD/MMC Driver

Mail Ben Dooks <ben-linux@fluff.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

Files `drivers/mmc/host/s3cmci.*`

* SAA6588 RDS RECEIVER DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/i2c/saa6588*`

* SAA7134 VIDEO4LINUX DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Odd fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files Documentation/driver-api/media/drivers/saa7134* drivers/media/pci/
saa7134/

* SAA7146 VIDEO4LINUX-2 DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/common/saa7146/` `drivers/media/pci/saa7146/` `include/`
`media/drv-intf/saa7146*`

* SAFESETID SECURITY MODULE

Mail Micah Morton <mortonm@chromium.org>

Status Supported

Files admin-guide/LSM/SafeSetID `security/safesetid/`

* SAMSUNG AUDIO (ASoC) DRIVERS

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, Sylwester Nawrocki
<s.nawrocki@samsung.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Supported

bugs mailto:linux-samsung-soc@vger.kernel.org

Files `Documentation/devicetree/bindings/sound/samsung*` `sound/soc/`
`samsung/`

* SAMSUNG EXYNOS PSEUDO RANDOM NUMBER GENERATOR (RNG) DRIVER

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>

Mailing list linux-crypto@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/rng/samsung,exynos4-rng.yaml
    drivers/crypto/exynos-rng.c

* SAMSUNG EXYNOS TRUE RANDOM NUMBER GENERATOR (TRNG) DRIVER

Mail Łukasz Stelmach <l.stelmach@samsung.com>

Mailing list linux-samsung-soc@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/rng/samsung,exynos5250-trng.yaml
    drivers/char/hw_random/exynos-trng.c

* SAMSUNG FRAMEBUFFER DRIVER

Mail Jingoo Han <jingoohan1@gmail.com>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files drivers/video/fbdev/s3c-fb.c

* SAMSUNG INTERCONNECT DRIVERS

Mail Sylwester Nawrocki <s.nawrocki@samsung.com>, Artur Świgoń <a.swigon@samsung.com>

Mailing list linux-pm@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status Supported

Files drivers/interconnect/samsung/

* SAMSUNG LAPTOP DRIVER

Mail Corentin Chary <corentin.chary@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/samsung-laptop.c

* SAMSUNG MULTIFUNCTION PMIC DEVICE DRIVERS

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, Bartlomiej Zolnierkiewicz <b.zolnierkie@samsung.com>

Mailing list linux-kernel@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status Supported

bugs mailto:linux-samsung-soc@vger.kernel.org

Files Documentation/devicetree/bindings/clock/samsung,s2mps11.
yaml   Documentation/devicetree/bindings/mfd/samsung,s2m*.
yaml   Documentation/devicetree/bindings/mfd/samsung,s5m*.yaml
Documentation/devicetree/bindings/regulator/samsung,s2m*.yaml
Documentation/devicetree/bindings/regulator/samsung,s5m*.yaml
drivers/clk/clk-s2mps11.c drivers/mfd/sec*.c drivers/regulator/s2m*.
c drivers/regulator/s5m*.c drivers/rtc/rtc-s5m.c include/linux/mfd/
samsung/

* SAMSUNG S3C24XX/S3C64XX SOC SERIES CAMIF DRIVER

Mail Sylwester Nawrocki <sylvester.nawrocki@gmail.com>

Mailing list linux-media@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status Maintained

Files drivers/media/platform/samsung/s3c-camif/ include/media/drv-intf/
s3c_camif.h

* SAMSUNG S3FWRN5 NFC DRIVER

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, Krzysztof Opasiak <k.opasiak@samsung.com>

Mailing list linux-nfc@lists.01.org (subscribers-only)

Status Maintained

Files Documentation/devicetree/bindings/net/nfc/samsung,s3fwrn5.yaml
drivers/nfc/s3fwrn5

* SAMSUNG S5C73M3 CAMERA DRIVER

Mail Sylwester Nawrocki <s.nawrocki@samsung.com>, Andrzej Hajda <andrzej.hajda@intel.com>

Mailing list linux-media@vger.kernel.org

Status Supported

Files drivers/media/i2c/s5c73m3/*

* SAMSUNG S5K5BAF CAMERA DRIVER

Mail Sylwester Nawrocki <s.nawrocki@samsung.com>, Andrzej Hajda <andrzej.hajda@intel.com>

Mailing list linux-media@vger.kernel.org

Status Supported

Files drivers/media/i2c/s5k5baf.c

* SAMSUNG S5P Security SubSystem (SSS) DRIVER

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, Vladimir Zapolskiy <vz@mleia.com>

Mailing list linux-crypto@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/crypto/samsung-slimsss.yaml Documentation/devicetree/bindings/crypto/samsung-sss.yaml drivers/crypto/s5p-sss.c

* SAMSUNG S5P/EXYNOS4 SOC SERIES CAMERA SUBSYSTEM DRIVERS

Mail Sylwester Nawrocki <s.nawrocki@samsung.com>

Mailing list linux-media@vger.kernel.org

Status Supported

Patchwork https://patchwork.linuxtv.org/project/linux-media/list/

Files drivers/media/platform/samsung/exynos4-is/

* SAMSUNG SOC CLOCK DRIVERS

Mail Sylwester Nawrocki <s.nawrocki@samsung.com>, Tomasz Figa <tomasz.figa@gmail.com>, Chanwoo Choi <cw00.choi@samsung.com>

Reviewer Alim Akhtar <alim.akhtar@samsung.com>

Mailing list linux-samsung-soc@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/snawrocki/clk.git

Files Documentation/devicetree/bindings/clock/samsung,*.yaml Documentation/devicetree/bindings/clock/samsung,s3c* drivers/clk/samsung/ include/dt-bindings/clock/exynos*.h include/dt-bindings/clock/s3c*.h include/dt-bindings/clock/s5p*.h include/dt-bindings/clock/samsung,*.h include/linux/clk/samsung.h include/linux/platform_data/clk-s3c2410.h

* SAMSUNG SPI DRIVERS

Mail Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, Andi Shyti <andi@etezian.org>

Mailing list linux-spi@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/spi/samsung,spi*.yaml drivers/
spi/spi-s3c* include/linux/platform_data/spi-s3c64xx.h include/linux/
spi/s3c24xx-fiq.h

* SAMSUNG SXGBE DRIVERS

Mail Byungho An <bh74.an@samsung.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/samsung/sxgbe/

* SAMSUNG THERMAL DRIVER

Mail Bartlomiej Zolnierkiewicz <bzolnier@gmail.com>, Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>

Mailing list linux-pm@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/thermal/samsung,exynos-thermal.
yaml drivers/thermal/samsung/

* SAMSUNG USB2 PHY DRIVER

Mail Sylwester Nawrocki <s.nawrocki@samsung.com>

Mailing list linux-kernel@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/phy/samsung,usb2-phy.yaml
driver-api/phy/samsung-usb2 drivers/phy/samsung/phy-exynos4210-usb2.
c drivers/phy/samsung/phy-exynos4x12-usb2.c drivers/phy/samsung/
phy-exynos5250-usb2.c drivers/phy/samsung/phy-s5pv210-usb2.c drivers/
phy/samsung/phy-samsung-usb2.c drivers/phy/samsung/phy-samsung-usb2.
h

* SANCLOUD BEAGLEBONE ENHANCED DEVICE TREE

Mail Paul Barker <paul.barker@sancloud.com>

Reviewer Marc Murphy <marc.murphy@sancloud.com>

Status Supported

Files `arch/arm/boot/dts/am335x-sancloud*`

* SC1200 WDT DRIVER

Mail Zwane Mwaikambo <zwanem@gmail.com>

Status Maintained

Files `drivers/watchdog/sc1200wdt.c`

* SCHEDULER

Mail Ingo Molnar <mingo@redhat.com>, Peter Zijlstra <peterz@infradead.org>, Juri Lelli <juri.lelli@redhat.com> (SCHED_DEADLINE), Vincent Guittot <vincent.guittot@linaro.org> (SCHED_NORMAL)

Reviewer Dietmar Eggemann <dietmar.eggemann@arm.com> (SCHED_NORMAL), Steven Rostedt <rostedt@goodmis.org> (SCHED_FIFO/SCHED_RR), Ben Segall <bsegall@google.com> (CONFIG_CFS_BANDWIDTH), Mel Gorman <mgorman@suse.de> (CONFIG_NUMA_BALANCING), Daniel Bristot de Oliveira <bristot@redhat.com> (SCHED_DEADLINE), Valentin Schneider <vschneid@redhat.com> (TOPOLOGY)

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git sched/core

Files `include/linux/preempt.h include/linux/sched.h include/linux/wait.h include/uapi/linux/sched.h kernel/sched/`

* SCR24X CHIP CARD INTERFACE DRIVER

Mail Lubomir Rintel <lkundrak@v3.sk>

Status Supported

Files `drivers/char/pcmcia/scr24x_cs.c`

* SCSI RDMA PROTOCOL (SRP) INITIATOR

Mail Bart Van Assche <bvanassche@acm.org>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Patchwork http://patchwork.kernel.org/project/linux-rdma/list/

Files drivers/infiniband/ulp/srp/ include/scsi/srp.h

* SCSI RDMA PROTOCOL (SRP) TARGET

Mail Bart Van Assche <bvanassche@acm.org>

Mailing list linux-rdma@vger.kernel.org, target-devel@vger.kernel.org

Status Supported

Patchwork http://patchwork.kernel.org/project/linux-rdma/list/

Files drivers/infiniband/ulp/srpt/

* SCSI SG DRIVER

Mail Doug Gilbert <dgilbert@interlog.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Web-page http://sg.danny.cz/sg

Files scsi/scsi-generic drivers/scsi/sg.c include/scsi/sg.h

* SCSI SUBSYSTEM

Mail "James E.J. Bottomley" <jejb@linux.ibm.com>, "Martin K. Petersen" <martin.petersen@oracle.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Patchwork https://patchwork.kernel.org/project/linux-scsi/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jejb/scsi.git git git://git.kernel.org/pub/scm/linux/kernel/git/mkp/scsi.git

Files Documentation/devicetree/bindings/scsi/ drivers/scsi/ drivers/ufs/ include/scsi/

* SCSI TAPE DRIVER

Mail Kai Mäkisara <Kai.Makisara@kolumbus.fi>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files scsi/st `drivers/scsi/st.*` `drivers/scsi/st_*.h`

* SCSI TARGET CORE USER DRIVER

Mail Bodo Stroesser <bostroesser@gmail.com>

Mailing list linux-scsi@vger.kernel.org, target-devel@vger.kernel.org

Status Supported

Files target/tcmu-design `drivers/target/target_core_user.c` `include/uapi/`
`linux/target_core_user.h`

* SCSI TARGET SUBSYSTEM

Mail "Martin K. Petersen" <martin.petersen@oracle.com>

Mailing list linux-scsi@vger.kernel.org, target-devel@vger.kernel.org

Status Supported

Web-page http://www.linux-iscsi.org

Patchwork https://patchwork.kernel.org/project/target-devel/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mkp/scsi.git

Files `Documentation/target/` `drivers/target/` `include/target/`

* SCTP PROTOCOL

Mail Vlad Yasevich <vyasevich@gmail.com>, Neil Horman <nhor-man@tuxdriver.com>, Marcelo Ricardo Leitner <marcelo.leitner@gmail.com>

Mailing list linux-sctp@vger.kernel.org

Status Maintained

Web-page http://lksctp.sourceforge.net

Files networking/sctp `include/linux/sctp.h` `include/net/sctp/` `include/uapi/`
`linux/sctp.h` `net/sctp/`

* SCx200 CPU SUPPORT

Mail Jim Cromie <jim.cromie@gmail.com>

Status Odd Fixes

Files i2c/busses/scx200_acb arch/x86/platform/scx200/ drivers/i2c/busses/
scx200*   drivers/mtd/maps/scx200_docflash.c   drivers/watchdog/
scx200_wdt.c include/linux/scx200.h

* SCx200 GPIO DRIVER

Mail Jim Cromie <jim.cromie@gmail.com>

Status Maintained

Files drivers/char/scx200_gpio.c include/linux/scx200_gpio.h

* SCx200 HRT CLOCKSOURCE DRIVER

Mail Jim Cromie <jim.cromie@gmail.com>

Status Maintained

Files drivers/clocksource/scx200_hrt.c

* SDRICOH_CS MMC/SD HOST CONTROLLER INTERFACE DRIVER

Mail Sascha Sommer <saschasommer@freenet.de>

Mailing list sdricohcs-devel@lists.sourceforge.net (subscribers-only)

Status Maintained

Files drivers/mmc/host/sdricoh_cs.c

* SECO BOARDS CEC DRIVER

Mail Ettore Chimenti <ek5.chimenti@gmail.com>

Status Maintained

Files drivers/media/cec/platform/seco/seco-cec.c   drivers/media/cec/
platform/seco/seco-cec.h

cook@chromium.org>

* SECURE COMPUTING

Mail Kees Cook <keescook@chromium.org>

Reviewer Andy Lutomirski <luto@amacapital.net>, Will Drewry <wad@chromium.org>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git seccomp

Files userspace-api/seccomp_filter include/linux/seccomp.h include/uapi/linux/seccomp.h kernel/seccomp.c tools/testing/selftests/kselftest_harness.h tools/testing/selftests/seccomp/*

Content regex \bsecure_computing \bTIF_SECCOMP\b

* SECURE DIGITAL HOST CONTROLLER INTERFACE (SDHCI) Broadcom BRCMSTB DRIVER

Mail Al Cooper <alcooperx@gmail.com>

Reviewer Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

Files drivers/mmc/host/sdhci-brcmstb*

* SECURE DIGITAL HOST CONTROLLER INTERFACE (SDHCI) DRIVER

Mail Adrian Hunter <adrian.hunter@intel.com>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

Files drivers/mmc/host/sdhci*

* SECURE DIGITAL HOST CONTROLLER INTERFACE (SDHCI) MICROCHIP DRIVER

Mail Eugen Hristev <eugen.hristev@microchip.com>

Mailing list linux-mmc@vger.kernel.org

Status Supported

Files drivers/mmc/host/sdhci-of-at91.c

* SECURE DIGITAL HOST CONTROLLER INTERFACE (SDHCI) SAMSUNG DRIVER

Mail Ben Dooks <ben-linux@fluff.org>, Jaehoon Chung <jh80.chung@samsung.com>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

Files drivers/mmc/host/sdhci-s3c*

* SECURE DIGITAL HOST CONTROLLER INTERFACE (SDHCI) ST SPEAR DRIVER

Mail Viresh Kumar <vireshk@kernel.org>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

Files drivers/mmc/host/sdhci-spear.c

* SECURE DIGITAL HOST CONTROLLER INTERFACE (SDHCI) TI OMAP DRIVER

Mail Kishon Vijay Abraham I <kishon@ti.com>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

Files drivers/mmc/host/sdhci-omap.c

* SECURE DIGITAL HOST CONTROLLER INTERFACE (SDHCI) NXP i.MX DRIVER

Mail Haibo Chen <haibo.chen@nxp.com>

Mailing list linux-imx@nxp.com, linux-mmc@vger.kernel.org

Status Maintained

Files drivers/mmc/host/sdhci-esdhc-imx.c

* SECURE ENCRYPTING DEVICE (SED) OPAL DRIVER

Mail Jonathan Derrick <jonathan.derrick@intel.com>, Revanth Rajashekar <revanth.rajashekar@intel.com>

Mailing list linux-block@vger.kernel.org

Status Supported

Files block/opal_proto.h block/sed* include/linux/sed* include/uapi/linux/sed*

* SECURITY CONTACT

Mail Security Officers <security@kernel.org>

Status Supported

Files admin-guide/security-bugs

* SECURITY SUBSYSTEM

Mail James Morris <jmorris@namei.org>, "Serge E. Hallyn" <serge@hallyn.com>

Mailing list linux-security-module@vger.kernel.org (suggested Cc:)

Status Supported

Web-page http://kernsec.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jmorris/linux-security.git

Files `security/`

Excluded `security/selinux/`

* SELINUX SECURITY MODULE

Mail Paul Moore <paul@paul-moore.com>, Stephen Smalley <stephen.smalley.work@gmail.com>, Eric Paris <eparis@parisplace.org>

Mailing list selinux@vger.kernel.org

Status Supported

Web-page https://selinuxproject.org https://github.com/SELinuxProject

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pcmoore/selinux.git

Files `Documentation/ABI/obsolete/sysfs-selinux-checkreqprot` `Documentation/ABI/obsolete/sysfs-selinux-disable` admin-guide/LSM/SELinux `include/trace/events/avc.h` `include/uapi/linux/selinux_netlink.h scripts/selinux/ security/selinux/`

* SENSABLE PHANTOM

Mail Jiri Slaby <jirislaby@kernel.org>

Status Maintained

Files `drivers/misc/phantom.c include/uapi/linux/phantom.h`

* SENSEAIR SUNRISE 006-0-0007

Mail Jacopo Mondi <jacopo@jmondi.org>

Status Maintained

Files `Documentation/ABI/testing/sysfs-bus-iio-chemical-sunrise-co2`
`Documentation/devicetree/bindings/iio/chemical/senseair,sunrise.`
`yaml drivers/iio/chemical/sunrise_co2.c`

* SENSIRION SCD30 CARBON DIOXIDE SENSOR DRIVER

Mail Tomasz Duszynski <tomasz.duszynski@octakon.com>

Status Maintained

Files `Documentation/devicetree/bindings/iio/chemical/sensirion,scd30.`
`yaml drivers/iio/chemical/scd30.h drivers/iio/chemical/scd30_core.c`
`drivers/iio/chemical/scd30_i2c.c drivers/iio/chemical/scd30_serial.c`

* SENSIRION SCD4X CARBON DIOXIDE SENSOR DRIVER

Mail Roan van Dijk <roan@protonic.nl>

Status Maintained

Files `Documentation/devicetree/bindings/iio/chemical/sensirion,scd4x.`
`yaml drivers/iio/chemical/scd4x.c`

* SENSIRION SGP40 GAS SENSOR DRIVER

Mail Andreas Klinger <ak@it-klinger.de>

Status Maintained

Files `Documentation/ABI/testing/sysfs-bus-iio-chemical-sgp40    drivers/`
`iio/chemical/sgp40.c`

* SENSIRION SPS30 AIR POLLUTION SENSOR DRIVER

Mail Tomasz Duszynski <tduszyns@gmail.com>

Status Maintained

Files `Documentation/devicetree/bindings/iio/chemical/sensirion,sps30.`
`yaml  drivers/iio/chemical/sps30.c  drivers/iio/chemical/sps30_i2c.c`
`drivers/iio/chemical/sps30_serial.c`

* SERIAL DEVICE BUS

Mail Rob Herring <robh@kernel.org>

Mailing list linux-serial@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/serial/serial.yaml drivers/tty/
  serdev/ include/linux/serdev.h

* SERIAL DRIVERS

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Mailing list linux-serial@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/serial/ drivers/tty/serial/

* SERIAL IR RECEIVER

Mail Sean Young <sean@mess.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/rc/serial_ir.c

* SERIAL LOW-POWER INTER-CHIP MEDIA BUS (SLIMbus)

Mail Srinivas Kandagatla <srinivas.kandagatla@linaro.org>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/slimbus/   drivers/slimbus/
  include/linux/slimbus.h

* SFC NETWORK DRIVER

Mail Edward   Cree   <ecree.xilinx@gmail.com>,   Martin   Habets   <ha-
  betsm.xilinx@gmail.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/sfc/

* SFF/SFP/SFP+ MODULE SUPPORT

Mail Russell King <linux@armlinux.org.uk>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/phy/phylink.c drivers/net/phy/sfp* include/linux/mdio/ mdio-i2c.h include/linux/phylink.h include/linux/sfp.h`

Content regex `phylink\.h|struct\s+phylink|\.phylink|>phylink_|phylink_(autoneg|cl`

* SGI GRU DRIVER

Mail Dimitri Sivanich <dimitri.sivanich@hpe.com>

Status Maintained

Files `drivers/misc/sgi-gru/`

* SGI XP/XPC/XPNET DRIVER

Mail Robin Holt <robinmholt@gmail.com>, Steve Wahl <steve.wahl@hpe.com>

Reviewer Mike Travis <mike.travis@hpe.com>

Status Maintained

Files `drivers/misc/sgi-xp/`

* SHARED MEMORY COMMUNICATIONS (SMC) SOCKETS

Mail Karsten Graul <kgraul@linux.ibm.com>, Wenjia Zhang <wenjia@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org

Status Supported

Web-page http://www.ibm.com/developerworks/linux/linux390/

Files `net/smc/`

* SHARP GP2AP002A00F/GP2AP002S00F SENSOR DRIVER

Mail Linus Walleij <linus.walleij@linaro.org>

Mailing list linux-iio@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jic23/iio.git

Files `Documentation/devicetree/bindings/iio/light/sharp,gp2ap002.yaml drivers/iio/light/gp2ap002.c`

* SHARP RJ54N1CB0C SENSOR DRIVER

Mail Jacopo Mondi <jacopo@jmondi.org>

Mailing list linux-media@vger.kernel.org

Status Odd fixes

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/i2c/rj54n1cb0c.c include/media/i2c/rj54n1cb0c.h`

* SH_VOU V4L2 OUTPUT DRIVER

Mailing list linux-media@vger.kernel.org

Status Orphan

Files `drivers/media/platform/renesas/sh_vou.c    include/media/drv-intf/ sh_vou.h`

* SI2157 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/tuners/si2157*`

* SI2165 MEDIA DRIVER

Mail Matthias Schwarzott <zzam@gentoo.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

Files `drivers/media/dvb-frontends/si2165*`

* SI2168 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files `drivers/media/dvb-frontends/si2168*`

* SI470X FM RADIO RECEIVER I2C DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/radio/si470x/radio-si470x-i2c.c`

* SI470X FM RADIO RECEIVER USB DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/radio/si470x/radio-si470x-common.c     drivers/media/radio/si470x/radio-si470x-usb.c         drivers/media/radio/si470x/radio-si470x.h`

* SI4713 FM RADIO TRANSMITTER I2C DRIVER

Mail Eduardo Valentin <edubezval@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/radio/si4713/si4713.?`

* SI4713 FM RADIO TRANSMITTER PLATFORM DRIVER

Mail Eduardo Valentin <edubezval@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/radio/si4713/radio-platform-si4713.c

* SI4713 FM RADIO TRANSMITTER USB DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/radio/si4713/radio-usb-si4713.c

* SIANO DVB DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Odd fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/common/siano/ drivers/media/mmc/siano/ drivers/media/
usb/siano/ drivers/media/usb/siano/

* SIFIVE DRIVERS

Mail Palmer Dabbelt <palmer@dabbelt.com>, Paul Walmsley
<paul.walmsley@sifive.com>

Mailing list linux-riscv@lists.infradead.org

Status Supported

SCM git git://github.com/sifive/riscv-linux.git

Regex sifive

Content regex [^@]sifive

* SIFIVE FU540 SYSTEM-ON-CHIP

Mail Paul Walmsley <paul.walmsley@sifive.com>, Palmer Dabbelt <palmer@dabbelt.com>

Mailing list linux-riscv@lists.infradead.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pjw/sifive.git

Regex `fu540`

Content regex `fu540`

* SIFIVE PDMA DRIVER

Mail Green Wan <green.wan@sifive.com>

Status Maintained

Files `Documentation/devicetree/bindings/dma/sifive,fu540-c000-pdma.yaml`
`drivers/dma/sf-pdma/`

* SILEAD TOUCHSCREEN DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-input@vger.kernel.org, platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/input/touchscreen/silead.c` `drivers/platform/x86/`
`touchscreen_dmi.c`

* SILICON LABS WIRELESS DRIVERS (for WFxxx series)

Mail Jérôme Pouiller <jerome.pouiller@silabs.com>

Status Supported

Files `Documentation/devicetree/bindings/net/wireless/silabs,wfx.yaml`
`drivers/net/wireless/silabs/wfx/`

* SILICON MOTION SM712 FRAME BUFFER DRIVER

Mail Sudip Mukherjee <sudipm.mukherjee@gmail.com>, Teddy Wang <teddy.wang@siliconmotion.com>, Sudip Mukherjee <sudip.mukherjee@codethink.co.uk>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files `fb/sm712fb drivers/video/fbdev/sm712*`

* SILVACO I3C DUAL-ROLE MASTER

Mail Miquel Raynal <miquel.raynal@bootlin.com>, Conor Culhane <conor.culhane@silvaco.com>

Mailing list linux-i3c@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/i3c/silvaco,i3c-master.yaml drivers/i3c/master/svc-i3c-master.c

* SIMPLEFB FB DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/display/simple-framebuffer.yaml drivers/video/fbdev/simplefb.c include/linux/platform_data/simplefb.h

* SIMTEC EB110ATX (Chalice CATS)

Mail Simtec Linux Team <linux@simtec.co.uk>

Status Supported

Web-page http://www.simtec.co.uk/products/EB110ATX/

* SIMTEC EB2410ITX (BAST)

Mail Simtec Linux Team <linux@simtec.co.uk>

Status Supported

Web-page http://www.simtec.co.uk/products/EB2410ITX/

Files arch/arm/mach-s3c/bast-ide.c arch/arm/mach-s3c/bast-irq.c arch/arm/mach-s3c/mach-bast.c

* SIOX

Mail Thorsten Scherer <t.scherer@eckelmann.de>, Uwe Kleine-König <u.kleine-koenig@pengutronix.de>

Reviewer Pengutronix Kernel Team <kernel@pengutronix.de>

Status Supported

Files drivers/gpio/gpio-siox.c drivers/siox/* include/trace/events/siox.h

* SIPHASH PRF ROUTINES

Mail Jason A. Donenfeld <Jason@zx2c4.com>

Status Maintained

Files `include/linux/siphash.h lib/siphash.c lib/test_siphash.c`

* SIS 190 ETHERNET DRIVER

Mail Francois Romieu <romieu@fr.zoreil.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/ethernet/sis/sis190.c`

* SIS 900/7016 FAST ETHERNET DRIVER

Mail Daniele Venzano <venza@brownhat.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Web-page http://www.brownhat.org/sis900.html

Files `drivers/net/ethernet/sis/sis900.*`

* SIS FRAMEBUFFER DRIVER

Mail Thomas Winischhofer <thomas@winischhofer.net>

Status Maintained

Web-page http://www.winischhofer.net/linuxsisvga.shtml

Files `fb/sisfb drivers/video/fbdev/sis/ include/video/sisfb.h`

* SIS I2C TOUCHSCREEN DRIVER

Mail Mika Penttilä <mika.penttila@nextfour.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/input/touchscreen/sis_i2c.txt drivers/input/touchscreen/sis_i2c.c`

* SIS USB2VGA DRIVER

Mail Thomas Winischhofer <thomas@winischhofer.net>

Status Maintained

Web-page http://www.winischhofer.at/linuxsisusbvga.shtml

Files drivers/usb/misc/sisusbvga/

* SL28 CPLD MFD DRIVER

Mail Michael Walle <michael@walle.cc>

Status Maintained

Files Documentation/devicetree/bindings/gpio/kontron,sl28cpld-gpio.yaml
  Documentation/devicetree/bindings/hwmon/kontron,sl28cpld-hwmon.yaml
  Documentation/devicetree/bindings/interrupt-controller/kontron,
  sl28cpld-intc.yaml   Documentation/devicetree/bindings/mfd/kontron,
  sl28cpld.yaml   Documentation/devicetree/bindings/pwm/kontron,
  sl28cpld-pwm.yaml   Documentation/devicetree/bindings/watchdog/
  kontron,sl28cpld-wdt.yaml   drivers/gpio/gpio-sl28cpld.c   drivers/
  hwmon/sl28cpld-hwmon.c drivers/irqchip/irq-sl28cpld.c drivers/pwm/
  pwm-sl28cpld.c drivers/watchdog/sl28cpld_wdt.c

* SLAB ALLOCATOR

Mail Christoph Lameter <cl@linux.com>, Pekka Enberg <penberg@kernel.org>,
  David Rientjes <rientjes@google.com>, Joonsoo Kim <iamjoon-
  soo.kim@lge.com>, Andrew Morton <akpm@linux-foundation.org>, Vlastimil
  Babka <vbabka@suse.cz>

Reviewer Roman Gushchin <roman.gushchin@linux.dev>, Hyeonggon Yoo
  <42.hyeyoo@gmail.com>

Mailing list linux-mm@kvack.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/vbabka/slab.git

Files include/linux/sl?b*.h mm/sl?b*

* SLEEPABLE READ-COPY UPDATE (SRCU)

Mail Lai Jiangshan <jiangshanlai@gmail.com>, "Paul E. McKenney"
  <paulmck@kernel.org>, Josh Triplett <josh@joshtriplett.org>

Reviewer Steven Rostedt <rostedt@goodmis.org>, Mathieu Desnoyers <math-
  ieu.desnoyers@efficios.com>

Mailing list rcu@vger.kernel.org

Status Supported

Web-page http://www.rdrop.com/users/paulmck/RCU/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/paulmck/linux-rcu.git dev

Files `include/linux/srcu*.h kernel/rcu/srcu*.c`

* SMACK SECURITY MODULE

Mail Casey Schaufler <casey@schaufler-ca.com>

Mailing list linux-security-module@vger.kernel.org

Status Maintained

Web-page http://schaufler-ca.com

SCM git git://github.com/cschaufler/smack-next

Files admin-guide/LSM/Smack `security/smack/`

* SMC91x ETHERNET DRIVER

Mail Nicolas Pitre <nico@fluxnic.net>

Status Odd Fixes

Files `drivers/net/ethernet/smsc/smc91x.*`

* SECURE MONITOR CALL(SMC) CALLING CONVENTION (SMCCC)

Mail Mark Rutland <mark.rutland@arm.com>, Lorenzo Pieralisi <lpieralisi@kernel.org>, Sudeep Holla <sudeep.holla@arm.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `drivers/firmware/smccc/ include/linux/arm-smccc.h`

* SMM665 HARDWARE MONITOR DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/smm665 `drivers/hwmon/smm665.c`

* SMSC EMC2103 HARDWARE MONITOR DRIVER

Mail Steve Glendinning <steve.glendinning@shawell.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/emc2103 `drivers/hwmon/emc2103.c`

* SMSC SCH5627 HARDWARE MONITOR DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-hwmon@vger.kernel.org

Status Supported

Files hwmon/sch5627 `drivers/hwmon/sch5627.c`

* SMSC UFX6000 and UFX7000 USB to VGA DRIVER

Mail Steve Glendinning <steve.glendinning@shawell.net>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files `drivers/video/fbdev/smscufx.c`

* SMSC47B397 HARDWARE MONITOR DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/smsc47b397 `drivers/hwmon/smsc47b397.c`

* SMSC911x ETHERNET DRIVER

Mail Steve Glendinning <steve.glendinning@shawell.net>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/ethernet/smsc/smsc911x.* include/linux/smsc911x.h`

* SMSC9420 PCI ETHERNET DRIVER

Mail Steve Glendinning <steve.glendinning@shawell.net>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/smsc/smsc9420.*

* SOCIONEXT (SNI) AVE NETWORK DRIVER

Mail Kunihiko Hayashi <hayashi.kunihiko@socionext.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/socionext,uniphier-ave4.yaml
    drivers/net/ethernet/socionext/sni_ave.c

* SOCIONEXT (SNI) NETSEC NETWORK DRIVER

Mail Jassi   Brar   <jaswinder.singh@linaro.org>,   Ilias   Apalodimas   <ilias.apalodimas@linaro.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/socionext-netsec.txt
    drivers/net/ethernet/socionext/netsec.c

* SOCIONEXT (SNI) Synquacer SPI DRIVER

Mail Masahisa   Kojima   <masahisa.kojima@linaro.org>,   Jassi   Brar
    <jaswinder.singh@linaro.org>

Mailing list linux-spi@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/spi/spi-synquacer.txt   drivers/
    spi/spi-synquacer.c

* SOCIONEXT SYNQUACER I2C DRIVER

Mail Ard Biesheuvel <ardb@kernel.org>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/i2c/i2c-synquacer.txt   drivers/
    i2c/busses/i2c-synquacer.c

* SOCIONEXT UNIPHIER SOUND DRIVER

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Orphan

Files sound/soc/uniphier/

* SOEKRIS NET48XX LED SUPPORT

Mail Chris Boot <bootc@bootc.net>

Status Maintained

Files drivers/leds/leds-net48xx.c

* SOFT-IWARP DRIVER (siw)

Mail Bernard Metzler <bmt@zurich.ibm.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Files drivers/infiniband/sw/siw/ include/uapi/rdma/siw-abi.h

* SOFT-ROCE DRIVER (rxe)

Mail Zhu Yanjun <zyjzyj2000@gmail.com>

Mailing list linux-rdma@vger.kernel.org

Status Supported

Files drivers/infiniband/sw/rxe/ include/uapi/rdma/rdma_user_rxe.h

* SOFTLOGIC 6x10 MPEG CODEC

Mail Bluecherry Maintainers <maintainers@bluecherrydvr.com>, Anton Sviridenko <anton@corp.bluecherry.net>, Andrey Utkin <andrey_utkin@fastmail.com>, Ismael Luceno <ismael@iodev.co.uk>

Mailing list linux-media@vger.kernel.org

Status Supported

Files drivers/media/pci/solo6x10/

* SOFTWARE DELEGATED EXCEPTION INTERFACE (SDEI)

Mail James Morse <james.morse@arm.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/arm/firmware/sdei.txt   drivers/
firmware/arm_sdei.c   include/linux/arm_sdei.h   include/uapi/linux/
arm_sdei.h

* SOFTWARE NODES AND DEVICE PROPERTIES

Reviewer Andy Shevchenko <andriy.shevchenko@linux.intel.com>, Daniel Scally
<djrscally@gmail.com>, Heikki Krogerus <heikki.krogerus@linux.intel.com>,
Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list linux-acpi@vger.kernel.org

Status Maintained

Files drivers/base/property.c drivers/base/swnode.c include/linux/fwnode.
h include/linux/property.h

* SOFTWARE RAID (Multiple Disks) SUPPORT

Mail Song Liu <song@kernel.org>

Mailing list linux-raid@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/song/md.git

Files drivers/md/Kconfig drivers/md/Makefile drivers/md/md* drivers/md/
raid* include/linux/raid/ include/uapi/linux/raid/

* SOLIDRUN CLEARFOG SUPPORT

Mail Russell King <linux@armlinux.org.uk>

Status Maintained

Files arch/arm/boot/dts/armada-388-clearfog*   arch/arm/boot/dts/
armada-38x-solidrun-*

* SOLIDRUN CUBOX-I/HUMMINGBOARD SUPPORT

Mail Russell King <linux@armlinux.org.uk>

Status Maintained

Files arch/arm/boot/dts/imx6*-cubox-i*   arch/arm/boot/dts/
   imx6*-hummingboard* arch/arm/boot/dts/imx6*-sr-*

* SONIC NETWORK DRIVER

Mail Thomas Bogendoerfer <tsbogend@alpha.franken.de>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/natsemi/sonic.*

* SONICS SILICON BACKPLANE DRIVER (SSB)

Mail Michael Buesch <m@bues.ch>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files drivers/ssb/ include/linux/ssb/

* SONY IMX208 SENSOR DRIVER

Mail Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/imx208.c

* SONY IMX214 SENSOR DRIVER

Mail Ricardo Ribalda <ribalda@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/sony,imx214.yaml
   drivers/media/i2c/imx214.c

* SONY IMX219 SENSOR DRIVER

Mail Dave Stevenson <dave.stevenson@raspberrypi.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/imx219.yaml   drivers/
    media/i2c/imx219.c

* SONY IMX258 SENSOR DRIVER

Mail Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/imx258.yaml   drivers/
    media/i2c/imx258.c

* SONY IMX274 SENSOR DRIVER

Mail Leon Luo <leonl@leopardimaging.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/sony,imx274.yaml
    drivers/media/i2c/imx274.c

* SONY IMX290 SENSOR DRIVER

Mail Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/imx290.txt   drivers/
    media/i2c/imx290.c

* SONY IMX319 SENSOR DRIVER

Mail Bingbu Cao <bingbu.cao@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/imx319.c

* SONY IMX334 SENSOR DRIVER

Mail Paul J. Murphy <paul.j.murphy@intel.com>, Daniele Alessandrelli <daniele.alessandrelli@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/sony,imx334.yaml
drivers/media/i2c/imx334.c

* SONY IMX335 SENSOR DRIVER

Mail Paul J. Murphy <paul.j.murphy@intel.com>, Daniele Alessandrelli <daniele.alessandrelli@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/sony,imx335.yaml
drivers/media/i2c/imx335.c

* SONY IMX355 SENSOR DRIVER

Mail Tianshu Qiu <tian.shu.qiu@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/imx355.c

* SONY IMX412 SENSOR DRIVER

Mail Paul J. Murphy <paul.j.murphy@intel.com>, Daniele Alessandrelli <daniele.alessandrelli@intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/sony,imx412.yaml
drivers/media/i2c/imx412.c

* SONY MEMORYSTICK SUBSYSTEM

Mail Maxim Levitsky <maximlevitsky@gmail.com>, Alex Dubov <oakad@yahoo.com>, Ulf Hansson <ulf.hansson@linaro.org>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/ulfh/mmc.git

Files drivers/memstick/ include/linux/memstick.h

* SONY VAIO CONTROL DEVICE DRIVER

Mail Mattia Dongili <malattia@linux.it>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Web-page http://www.linux.it/~malattia/wiki/index.php/Sony_drivers

Files admin-guide/laptops/sony-laptop drivers/char/sonypi.c drivers/platform/x86/sony-laptop.c include/linux/sony-laptop.h

* SOUND

Mail Jaroslav Kysela <perex@perex.cz>, Takashi Iwai <tiwai@suse.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Web-page http://www.alsa-project.org/

Patchwork http://patchwork.kernel.org/project/alsa-devel/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tiwai/sound.git

Files Documentation/sound/ include/sound/ include/uapi/sound/ sound/ tools/testing/selftests/alsa

* SOUND - COMPRESSED AUDIO

Mail Vinod Koul <vkoul@kernel.org>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tiwai/sound.git

Files sound/designs/compress-offload   include/sound/compress_driver.h
include/uapi/sound/compress_* sound/core/compress_offload.c sound/
soc/soc-compress.c

* SOUND - DMAENGINE HELPERS

Mail Lars-Peter Clausen <lars@metafoo.de>

Status Supported

Files include/sound/dmaengine_pcm.h sound/core/pcm_dmaengine.c sound/soc/
soc-generic-dmaengine-pcm.c

* SOUND - ALSA SELFTESTS

Mail Mark Brown <broonie@kernel.org>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers), linux-
kselftest@vger.kernel.org

Status Supported

Files tools/testing/selftests/alsa

* SOUND - SOC LAYER / DYNAMIC AUDIO POWER MANAGEMENT (ASoC)

Mail Liam Girdwood <lgirdwood@gmail.com>, Mark Brown <broonie@kernel.org>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Supported

Web-page http://alsa-project.org/main/index.php/ASoC

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/broonie/sound.git

Files Documentation/devicetree/bindings/sound/ Documentation/sound/soc/
include/dt-bindings/sound/ include/sound/soc* sound/soc/

* SOUND - SOUND OPEN FIRMWARE (SOF) DRIVERS

Mail Pierre-Louis Bossart <pierre-louis.bossart@linux.intel.com>, Liam Girdwood <lgirdwood@gmail.com>, Peter Ujfalusi <peter.ujfalusi@linux.intel.com>, Bard Liao <yung-chuan.liao@linux.intel.com>, Ranjani Sridharan <ranjani.sridharan@linux.intel.com>

Reviewer Kai Vehmanen <kai.vehmanen@linux.intel.com>

Mail Daniel Baluta <daniel.baluta@nxp.com>

Mailing list sound-open-firmware@alsa-project.org (moderated for non-subscribers)

Status Supported

Web-page https://github.com/thesofproject/linux/

Files sound/soc/sof/

* SOUNDWIRE SUBSYSTEM

Mail Vinod Koul <vkoul@kernel.org>, Bard Liao <yung-chuan.liao@linux.intel.com>

Reviewer Pierre-Louis Bossart <pierre-louis.bossart@linux.intel.com>, Sanyog Kale <sanyog.r.kale@intel.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/vkoul/soundwire.git

Files Documentation/driver-api/soundwire/ drivers/soundwire/ include/ linux/soundwire/

* SP2 MEDIA DRIVER

Mail Olli Salonen <olli.salonen@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

Files drivers/media/dvb-frontends/sp2*

* SPARC + UltraSPARC (sparc/sparc64)

Mail "David S. Miller" <davem@davemloft.net>

Mailing list sparclinux@vger.kernel.org

Status Maintained

Patchwork http://patchwork.ozlabs.org/project/sparclinux/list/

SCM git   git://git.kernel.org/pub/scm/linux/kernel/git/davem/sparc.git   git git://git.kernel.org/pub/scm/linux/kernel/git/davem/sparc-next.git

Files arch/sparc/ drivers/sbus/

* SPARC SERIAL DRIVERS

Mail "David S. Miller" <davem@davemloft.net>

Mailing list sparclinux@vger.kernel.org

Status Maintained

SCM git   git://git.kernel.org/pub/scm/linux/kernel/git/davem/sparc.git   git git://git.kernel.org/pub/scm/linux/kernel/git/davem/sparc-next.git

Files drivers/tty/serial/suncore.c drivers/tty/serial/sunhv.c drivers/ tty/serial/sunsab.c drivers/tty/serial/sunsab.h drivers/tty/serial/ sunsu.c drivers/tty/serial/sunzilog.c drivers/tty/serial/sunzilog.h drivers/tty/vcc.c include/linux/sunserialcore.h

* SPARSE CHECKER

Mail "Luc Van Oostenryck" <luc.vanoostenryck@gmail.com>

Mailing list linux-sparse@vger.kernel.org

Status Maintained

Web-page https://sparse.docs.kernel.org/

SCM git git://git.kernel.org/pub/scm/devel/sparse/sparse.git

Patchwork https://patchwork.kernel.org/project/linux-sparse/list/

bugs https://bugzilla.kernel.org/enter_bug.cgi?component=Sparse&product=Tools

Files include/linux/compiler.h

* SPEAKUP CONSOLE SPEECH DRIVER

Mail William Hubbs <w.d.hubbs@gmail.com>, Chris Brannon <chris@the-brannons.com>, Kirk Reiser <kirk@reisers.ca>, Samuel Thibault <samuel.thibault@ens-lyon.org>

Mailing list speakup@linux-speakup.org

Status Odd Fixes

Web-page http://www.linux-speakup.org/   https://github.com/linux-speakup/speakup

bugs https://github.com/linux-speakup/speakup/issues

Files drivers/accessibility/speakup/

* SPEAR PLATFORM/CLOCK/PINCTRL SUPPORT

Mail Viresh Kumar <vireshk@kernel.org>, Shiraz Hashim <shiraz.linux.kernel@gmail.com>, soc@kernel.org

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Web-page http://www.st.com/spear

Files arch/arm/boot/dts/spear* arch/arm/mach-spear/ drivers/clk/spear/ drivers/pinctrl/spear/

* SPI NOR SUBSYSTEM

Mail Tudor Ambarus <tudor.ambarus@microchip.com>, Pratyush Yadav <p.yadav@ti.com>

Reviewer Michael Walle <michael@walle.cc>

Mailing list linux-mtd@lists.infradead.org

Status Maintained

Web-page http://www.linux-mtd.infradead.org/

Patchwork http://patchwork.ozlabs.org/project/linux-mtd/list/

chat irc://irc.oftc.net/mtd

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mtd/linux.git spi-nor/next

Files Documentation/devicetree/bindings/mtd/jedec,spi-nor.yaml drivers/mtd/spi-nor/ include/linux/mtd/spi-nor.h

* SPI SUBSYSTEM

Mail Mark Brown <broonie@kernel.org>

Mailing list linux-spi@vger.kernel.org

Status Maintained

Patchwork http://patchwork.kernel.org/project/spi-devel-general/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/broonie/spi.git

Files Documentation/devicetree/bindings/spi/ Documentation/spi/ drivers/
    spi/ include/linux/spi/ include/uapi/linux/spi/ tools/spi/

* SPIDERNET NETWORK DRIVER for CELL

Mail Ishizaki Kou <kou.ishizaki@toshiba.co.jp>, Geoff Levand <geoff@infradead.org>

Mailing list netdev@vger.kernel.org, linuxppc-dev@lists.ozlabs.org

Status Maintained

Files networking/device_drivers/ethernet/toshiba/spider_net drivers/net/
    ethernet/toshiba/spider_net*

* SPMI SUBSYSTEM

Mail Stephen Boyd <sboyd@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/sboyd/spmi.git

Files Documentation/devicetree/bindings/spmi/ drivers/spmi/ include/
    dt-bindings/spmi/spmi.h include/linux/spmi.h include/trace/events/
    spmi.h

* SPU FILE SYSTEM

Mail Jeremy Kerr <jk@ozlabs.org>

Mailing list linuxppc-dev@lists.ozlabs.org

Status Supported

Web-page http://www.ibm.com/developerworks/power/cell/

Files filesystems/spufs/spufs arch/powerpc/platforms/cell/spufs/

* SQUASHFS FILE SYSTEM

Mail Phillip Lougher <phillip@squashfs.org.uk>

Mailing list squashfs-devel@lists.sourceforge.net (subscribers-only)

Status Maintained

Web-page http://squashfs.org.uk

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pkl/squashfs-next.git

Files filesystems/squashfs fs/squashfs/

* SRM (Alpha) environment access

Mail Jan-Benedict Glaw <jbglaw@lug-owl.de>

Status Maintained

Files arch/alpha/kernel/srm_env.c

* ST LSM6DSx IMU IIO DRIVER

Mail Lorenzo Bianconi <lorenzo@kernel.org>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Web-page http://www.st.com/

Files Documentation/devicetree/bindings/iio/imu/st,lsm6dsx.yaml drivers/
    iio/imu/st_lsm6dsx/

* ST MIPID02 CSI-2 TO PARALLEL BRIDGE DRIVER

Mail Benjamin Mugnier <benjamin.mugnier@foss.st.com>, Sylvain Petinot <sylvain.petinot@foss.st.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/i2c/st,st-mipid02.txt
    drivers/media/i2c/st-mipid02.c

* ST STM32 I2C/SMBUS DRIVER

Mail Pierre-Yves MORDRET <pierre-yves.mordret@foss.st.com>, Alain Volmat <alain.volmat@foss.st.com>

Mailing list linux-i2c@vger.kernel.org

Status Maintained

Files drivers/i2c/busses/i2c-stm32*

* ST STM32 SPI DRIVER

Mail Alain Volmat <alain.volmat@foss.st.com>

Mailing list linux-spi@vger.kernel.org

Status Maintained

Files drivers/spi/spi-stm32.c

* ST STPDDC60 DRIVER

Mail Daniel Nilsson <daniel.nilsson@flex.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/stpddc60 drivers/hwmon/pmbus/stpddc60.c

* ST VL53L0X ToF RANGER(I2C) IIO DRIVER

Mail Song Qiang <songqiang1304521@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/proximity/st,vl53l0x.yaml drivers/iio/proximity/vl53l0x-i2c.c

* STABLE BRANCH

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>, Sasha Levin <sashal@kernel.org>

Mailing list stable@vger.kernel.org

Status Supported

Files *process/stable-kernel-rules*

* STAGING - ATOMISP DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Reviewer Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/staging/media/atomisp/

* STAGING - FIELDBUS SUBSYSTEM

Mail Sven Van Asbroeck <TheSven73@gmail.com>

Status Maintained

Files drivers/staging/fieldbus/* drivers/staging/fieldbus/Documentation/

* STAGING - HMS ANYBUS-S BUS

Mail Sven Van Asbroeck <TheSven73@gmail.com>

Status Maintained

Files drivers/staging/fieldbus/anybuss/

* STAGING - INDUSTRIAL IO

Mail Jonathan Cameron <jic23@kernel.org>

Mailing list linux-iio@vger.kernel.org

Status Odd Fixes

Files Documentation/devicetree/bindings/staging/iio/   drivers/staging/
iio/

* STAGING - NVIDIA COMPLIANT EMBEDDED CONTROLLER INTERFACE (nvec)

Mail Marc Dietrich <marvin24@gmx.de>

Mailing list ac100@lists.launchpad.net (moderated for non-subscribers), linux-
tegra@vger.kernel.org

Status Maintained

Files drivers/staging/nvec/

* STAGING - OLPC SECONDARY DISPLAY CONTROLLER (DCON)

Mail Jens Frederich <jfrederich@gmail.com>, Jon Nettleton <jon.nettleton@gmail.com>

Status Maintained

Web-page http://wiki.laptop.org/go/DCON

Files drivers/staging/olpc_dcon/

* STAGING - REALTEK RTL8188EU DRIVERS

Mail Larry Finger <Larry.Finger@lwfinger.net>, Phillip Potter <phil@philpotter.co.uk>

Status Supported

Files drivers/staging/r8188eu/

* STAGING - REALTEK RTL8712U DRIVERS

Mail Larry Finger <Larry.Finger@lwfinger.net>, Florian Schilhabel <florian.c.schilhabel@googlemail.com>.

Status Odd Fixes

Files drivers/staging/rtl8712/

* STAGING - SEPS525 LCD CONTROLLER DRIVERS

Mail Michael Hennerich <michael.hennerich@analog.com>

Mailing list linux-fbdev@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/iio/adc/adi,ad7606.yaml drivers/staging/fbtft/fb_seps525.c

* STAGING - SILICON MOTION SM750 FRAME BUFFER DRIVER

Mail Sudip Mukherjee <sudipm.mukherjee@gmail.com>, Teddy Wang <teddy.wang@siliconmotion.com>, Sudip Mukherjee <sudip.mukherjee@codethink.co.uk>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files drivers/staging/sm750fb/

* STAGING - VIA VT665X DRIVERS

Mail Forest Bond <forest@alittletooquiet.net>

Status Odd Fixes

Files `drivers/staging/vt665?/`

* STAGING SUBSYSTEM

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Mailing list linux-staging@lists.linux.dev

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/staging.git

Files `drivers/staging/`

* STARFIRE/DURALAN NETWORK DRIVER

Mail Ion Badulescu <ionut@badula.org>

Status Odd Fixes

Files `drivers/net/ethernet/adaptec/starfire*`

* STARFIVE JH7100 CLOCK DRIVERS

Mail Emil Renner Berthing <kernel@esmil.dk>

Status Maintained

Files `Documentation/devicetree/bindings/clock/starfive,jh7100-*.yaml drivers/clk/starfive/clk-starfive-jh7100* include/dt-bindings/clock/starfive-jh7100*.h`

* STARFIVE JH7100 PINCTRL DRIVER

Mail Emil Renner Berthing <kernel@esmil.dk>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/pinctrl/starfive,jh7100-pinctrl.yaml drivers/pinctrl/pinctrl-starfive.c include/dt-bindings/pinctrl/pinctrl-starfive.h`

* STARFIVE JH7100 RESET CONTROLLER DRIVER

Mail Emil Renner Berthing <kernel@esmil.dk>

Status Maintained

Files Documentation/devicetree/bindings/reset/starfive,jh7100-reset.yaml drivers/reset/reset-starfive-jh7100.c include/dt-bindings/reset/ starfive-jh7100.h

* STATIC BRANCH/CALL

Mail Peter Zijlstra <peterz@infradead.org>, Josh Poimboeuf <jpoim-boe@kernel.org>, Jason Baron <jbaron@akamai.com>

Reviewer Steven Rostedt <rostedt@goodmis.org>, Ard Biesheuvel <ardb@kernel.org>

Status Supported

Files arch/*/include/asm/jump_label*.h arch/*/include/asm/static_call*. h arch/*/kernel/jump_label.c arch/*/kernel/static_call.c include/ linux/jump_label*.h include/linux/static_call*.h kernel/jump_label.c kernel/static_call.c

* STI AUDIO (ASoC) DRIVERS

Mail Arnaud Pouliquen <arnaud.pouliquen@foss.st.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/sound/st,sti-asoc-card.txt sound/soc/sti/

* STI CEC DRIVER

Mail Alain Volmat <alain.volmat@foss.st.com>

Status Maintained

Files Documentation/devicetree/bindings/media/stih-cec.txt drivers/ media/cec/platform/sti/

* STK1160 USB VIDEO CAPTURE DRIVER

Mail Ezequiel Garcia <ezequiel@vanguardiasur.com.ar>

Mailing list linux-media@vger.kernel.org

Status Maintained

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/usb/stk1160/`

* STM32 AUDIO (ASoC) DRIVERS

Mail Olivier Moysan <olivier.moysan@foss.st.com>, Arnaud Pouliquen <arnaud.pouliquen@foss.st.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/iio/adc/st,stm32-dfsdm-adc.yaml` `Documentation/devicetree/bindings/sound/st,stm32-*.yaml` `sound/soc/stm/`

* STM32 TIMER/LPTIMER DRIVERS

Mail Fabrice Gasnier <fabrice.gasnier@foss.st.com>

Status Maintained

Files `Documentation/ABI/testing/*timer-stm32` `Documentation/devicetree/bindings/*/*stm32-*timer*` `drivers/*/stm32-*timer*` `drivers/pwm/pwm-stm32*` `include/linux/*/stm32-*tim*`

* STMMAC ETHERNET DRIVER

Mail Giuseppe Cavallaro <peppe.cavallaro@st.com>, Alexandre Torgue <alexandre.torgue@foss.st.com>, Jose Abreu <joabreu@synopsys.com>

Mailing list netdev@vger.kernel.org

Status Supported

Web-page http://www.stlinux.com

Files `Documentation/networking/device_drivers/ethernet/stmicro/` `drivers/net/ethernet/stmicro/stmmac/`

* SUN3/3X

Mail Sam Creasey <sammy@sammy.net>

Status Maintained

Web-page http://sammy.net/sun3/

Files arch/m68k/include/asm/sun3* arch/m68k/kernel/*sun3* arch/m68k/sun3*/ drivers/net/ethernet/i825xx/sun3*

* SUN4I LOW RES ADC ATTACHED TABLET KEYS DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/input/allwinner, sun4i-a10-lradc-keys.yaml drivers/input/keyboard/sun4i-lradc-keys.c

* SUNDANCE NETWORK DRIVER

Mail Denis Kirjanov <kda@linux-powerpc.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/dlink/sundance.c

* SUNPLUS ETHERNET DRIVER

Mail Wells Lu <wellslutw@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Web-page https://sunplus.atlassian.net/wiki/spaces/doc/overview

Files Documentation/devicetree/bindings/net/sunplus,sp7021-emac.yaml drivers/net/ethernet/sunplus/

* SUNPLUS OCOTP DRIVER

Mail Vincent Shih <vincent.sunplus@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/nvmem/sunplus,sp7021-ocotp.yaml drivers/nvmem/sunplus-ocotp.c

* SUNPLUS PWM DRIVER

Mail Hammer Hsieh <hammerh0314@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/pwm/sunplus,sp7021-pwm.yaml
    drivers/pwm/pwm-sunplus.c

* SUNPLUS RTC DRIVER

Mail Vincent Shih <vincent.sunplus@gmail.com>

Mailing list linux-rtc@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/rtc/sunplus,sp7021-rtc.yaml
    drivers/rtc/rtc-sunplus.c

* SUNPLUS SPI CONTROLLER INTERFACE DRIVER

Mail Li-hao Kuo <lhjeff911@gmail.com>

Mailing list linux-spi@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/spi/spi-sunplus-sp7021.yaml
    drivers/spi/spi-sunplus-sp7021.c

* SUNPLUS UART DRIVER

Mail Hammer Hsieh <hammerh0314@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/serial/sunplus,sp7021-uart.yaml
    drivers/tty/serial/sunplus-uart.c

* SUNPLUS WATCHDOG DRIVER

Mail Xiantao Hu <xt.hu@cqplus1.com>

Mailing list linux-watchdog@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/watchdog/sunplus,sp7021-wdt.yaml
    drivers/watchdog/sunplus_wdt.c

* SUPERH

Mail Yoshinori Sato <ysato@users.sourceforge.jp>, Rich Felker <dalias@libc.org>

Mailing list linux-sh@vger.kernel.org

Status Maintained

Patchwork http://patchwork.kernel.org/project/linux-sh/list/

Files Documentation/sh/ arch/sh/ drivers/sh/

* SUSPEND TO RAM

Mail "Rafael J. Wysocki" <rafael@kernel.org>, Len Brown <len.brown@intel.com>, Pavel Machek <pavel@ucw.cz>

Mailing list linux-pm@vger.kernel.org

Status Supported

bugs https://bugzilla.kernel.org

Files Documentation/power/ arch/x86/kernel/acpi/ drivers/base/power/ include/linux/freezer.h include/linux/pm.h include/linux/suspend.h kernel/power/

* SVGA HANDLING

Mail Martin Mares <mj@ucw.cz>

Mailing list linux-video@atrey.karlin.mff.cuni.cz

Status Maintained

Files admin-guide/svga arch/x86/boot/video*

* SWIOTLB SUBSYSTEM

Mail Christoph Hellwig <hch@infradead.org>

Mailing list iommu@lists.linux.dev

Status Supported

Web-page http://git.infradead.org/users/hch/dma-mapping.git

SCM git git://git.infradead.org/users/hch/dma-mapping.git

Files arch/*/kernel/pci-swiotlb.c include/linux/swiotlb.h kernel/dma/ swiotlb.c

* SWITCHDEV

Mail Jiri Pirko <jiri@resnulli.us>, Ivan Vecera <ivecera@redhat.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files `include/net/switchdev.h net/switchdev/`

* SY8106A REGULATOR DRIVER

Mail Icenowy Zheng <icenowy@aosc.io>

Status Maintained

Files `Documentation/devicetree/bindings/regulator/silergy,sy8106a.yaml`
`drivers/regulator/sy8106a-regulator.c`

* SYNC FILE FRAMEWORK

Mail Sumit Semwal <sumit.semwal@linaro.org>

Reviewer Gustavo Padovan <gustavo@padovan.org>

Mailing list linux-media@vger.kernel.org, dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files `driver-api/sync_file    drivers/dma-buf/dma-fence*    drivers/dma-buf/`
`sw_sync.c drivers/dma-buf/sync_* include/linux/sync_file.h include/`
`uapi/linux/sync_file.h`

* SYNOPSYS ARC ARCHITECTURE

Mail Vineet Gupta <vgupta@kernel.org>

Mailing list linux-snps-arc@lists.infradead.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/vgupta/arc.git

Files `Documentation/arc/          Documentation/devicetree/bindings/arc/*`
`Documentation/devicetree/bindings/interrupt-controller/snps,arc*`
`arch/arc/     drivers/clocksource/arc_timer.c      drivers/tty/serial/`
`arc_uart.c`

* SYNOPSYS ARC HSDK SDP pll clock driver

Mail Eugeniy Paltsev <Eugeniy.Paltsev@synopsys.com>

Status Supported

Files Documentation/devicetree/bindings/clock/snps,hsdk-pll-clock.txt
     drivers/clk/clk-hsdk-pll.c

* SYNOPSYS ARC SDP clock driver

Mail Eugeniy Paltsev <Eugeniy.Paltsev@synopsys.com>

Status Supported

Files Documentation/devicetree/bindings/clock/snps,pll-clock.txt
     drivers/clk/axs10x/*

* SYNOPSYS ARC SDP platform support

Mail Alexey Brodkin <abrodkin@synopsys.com>

Status Supported

Files Documentation/devicetree/bindings/arc/axs10* arch/arc/boot/dts/ax*
     arch/arc/plat-axs10x

* SYNOPSYS AXS10x RESET CONTROLLER DRIVER

Mail Eugeniy Paltsev <Eugeniy.Paltsev@synopsys.com>

Status Supported

Files Documentation/devicetree/bindings/reset/snps,axs10x-reset.yaml
     drivers/reset/reset-axs10x.c

* SYNOPSYS CREG GPIO DRIVER

Mail Eugeniy Paltsev <Eugeniy.Paltsev@synopsys.com>

Status Maintained

Files Documentation/devicetree/bindings/gpio/snps,creg-gpio.txt drivers/
     gpio/gpio-creg-snps.c

* SYNOPSYS DESIGNWARE 8250 UART DRIVER

Reviewer Andy Shevchenko <andriy.shevchenko@linux.intel.com>

Status Maintained

Files `drivers/tty/serial/8250/8250_dw.c` `drivers/tty/serial/8250/8250_dwlib.* drivers/tty/serial/8250/8250_lpss.c`

* SYNOPSYS DESIGNWARE APB GPIO DRIVER

Mail Hoan Tran <hoan@os.amperecomputing.com>, Serge Semin <fancer.lancer@gmail.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/gpio/snps,dw-apb-gpio.yaml drivers/gpio/gpio-dwapb.c`

* SYNOPSYS DESIGNWARE APB SSI DRIVER

Mail Serge Semin <fancer.lancer@gmail.com>

Mailing list linux-spi@vger.kernel.org

Status Supported

Files `Documentation/devicetree/bindings/spi/snps,dw-apb-ssi.yaml drivers/spi/spi-dw*`

* SYNOPSYS DESIGNWARE AXI DMAC DRIVER

Mail Eugeniy Paltsev <Eugeniy.Paltsev@synopsys.com>

Status Maintained

Files `Documentation/devicetree/bindings/dma/snps,dw-axi-dmac.yaml drivers/dma/dw-axi-dmac/`

* SYNOPSYS DESIGNWARE DMAC DRIVER

Mail Viresh Kumar <vireshk@kernel.org>

Reviewer Andy Shevchenko <andriy.shevchenko@linux.intel.com>

Status Maintained

Files `Documentation/devicetree/bindings/dma/renesas,rzn1-dmamux.yaml Documentation/devicetree/bindings/dma/snps,dma-spear1340.yaml drivers/dma/dw/ include/dt-bindings/dma/dw-dmac.h include/linux/dma/dw.h include/linux/platform_data/dma-dw.h`

* SYNOPSYS DESIGNWARE ENTERPRISE ETHERNET DRIVER

Mail Jose Abreu <Jose.Abreu@synopsys.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/synopsys/

* SYNOPSYS DESIGNWARE ETHERNET XPCS DRIVER

Mail Jose Abreu <Jose.Abreu@synopsys.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/pcs/pcs-xpcs.c   drivers/net/pcs/pcs-xpcs.h   include/
    linux/pcs/pcs-xpcs.h

* SYNOPSYS DESIGNWARE I2C DRIVER

Mail Jarkko Nikula <jarkko.nikula@linux.intel.com>

Reviewer Andy Shevchenko <andriy.shevchenko@linux.intel.com>, Mika Wester-
    berg <mika.westerberg@linux.intel.com>, Jan Dabros <jsd@semihalf.com>

Mailing list linux-i2c@vger.kernel.org

Status Supported

Files drivers/i2c/busses/i2c-designware-*

* SYNOPSYS DESIGNWARE MMC/SD/SDIO DRIVER

Mail Jaehoon Chung <jh80.chung@samsung.com>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

Files drivers/mmc/host/dw_mmc*

* SYNOPSYS HSDK RESET CONTROLLER DRIVER

Mail Eugeniy Paltsev <Eugeniy.Paltsev@synopsys.com>

Status Supported

Files Documentation/devicetree/bindings/reset/snps,hsdk-reset.txt
    drivers/reset/reset-hsdk.c   include/dt-bindings/reset/snps,
    hsdk-reset.h

* SYNOPSYS SDHCI COMPLIANT DWC MSHC DRIVER

Mail Prabu Thangamuthu <prabu.t@synopsys.com>, Manjunath M B <man-jumb@synopsys.com>

Mailing list linux-mmc@vger.kernel.org

Status Maintained

Files `drivers/mmc/host/sdhci-pci-dwc-mshc.c`

* SYSTEM CONFIGURATION (SYSCON)

Mail Lee Jones <lee.jones@linaro.org>, Arnd Bergmann <arnd@arndb.de>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/lee/mfd.git

Files `drivers/mfd/syscon.c`

* SYSTEM CONTROL & POWER/MANAGEMENT INTERFACE (SCPI/SCMI) Message Protocol drivers

Mail Sudeep Holla <sudeep.holla@arm.com>

Reviewer Cristian Marussi <cristian.marussi@arm.com>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `Documentation/devicetree/bindings/firmware/arm,sc[mp]i.yaml drivers/clk/clk-sc[mp]i.c drivers/cpufreq/sc[mp]i-cpufreq.c drivers/firmware/arm_scmi/ drivers/firmware/arm_scpi.c drivers/regulator/scmi-regulator.c drivers/reset/reset-scmi.c include/linux/sc[mp]i_protocol.h include/trace/events/scmi.h include/uapi/linux/virtio_scmi.h`

* SYSTEM RESET/SHUTDOWN DRIVERS

Mail Sebastian Reichel <sre@kernel.org>

Mailing list linux-pm@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/sre/linux-power-supply.git

Files `Documentation/devicetree/bindings/power/reset/ drivers/power/reset/`

* SYSTEM TRACE MODULE CLASS

Mail Alexander Shishkin <alexander.shishkin@linux.intel.com>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/ash/stm.git

Files trace/stm `drivers/hwtracing/stm/ include/linux/stm.h include/uapi/ linux/stm.h`

* SYSTEM76 ACPI DRIVER

Mail Jeremy Soller <jeremy@system76.com>, System76 Product Development <productdev@system76.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/system76_acpi.c`

* SYSV FILESYSTEM

Mail Christoph Hellwig <hch@infradead.org>

Status Maintained

Files filesystems/sysv-fs `fs/sysv/ include/linux/sysv_fs.h`

* TASKSTATS STATISTICS INTERFACE

Mail Balbir Singh <bsingharora@gmail.com>

Status Maintained

Files `Documentation/accounting/taskstats* include/linux/taskstats* kernel/taskstats.c`

* TC subsystem

Mail Jamal Hadi Salim <jhs@mojatatu.com>, Cong Wang <xiyou.wangcong@gmail.com>, Jiri Pirko <jiri@resnulli.us>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `include/net/pkt_cls.h include/net/pkt_sched.h include/net/tc_act/ include/uapi/linux/pkt_cls.h include/uapi/linux/pkt_sched.h include/ uapi/linux/tc_act/ include/uapi/linux/tc_ematch/ net/sched/ tools/ testing/selftests/tc-testing`

* TC90522 MEDIA DRIVER

Mail Akihiro Tsukada <tskd08@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Files drivers/media/dvb-frontends/tc90522*

* TCP LOW PRIORITY MODULE

Mail "Wong Hoi Sing, Edison" <hswong3i@gmail.com>, "Hung Hing Lun, Mike" <hlhung3i@gmail.com>

Status Maintained

Web-page http://tcp-lp-mod.sourceforge.net/

Files net/ipv4/tcp_lp.c

* TDA10071 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/dvb-frontends/tda10071*

* TDA18212 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/tuners/tda18212*

* TDA18218 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/tuners/tda18218*

* TDA18250 MEDIA DRIVER

Mail Olli Salonen <olli.salonen@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/tuners/tda18250*

* TDA18271 MEDIA DRIVER

Mail Michael Krufky <mkrufky@linuxtv.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://github.com/mkrufky

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/mkrufky/tuners.git

Files drivers/media/tuners/tda18271*

* TDA1997x MEDIA DRIVER

Mail Tim Harvey <tharvey@gateworks.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

Files drivers/media/i2c/tda1997x.*

* TDA827x MEDIA DRIVER

Mail Michael Krufky <mkrufky@linuxtv.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://github.com/mkrufky

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/mkrufky/tuners.git

Files drivers/media/tuners/tda8290.*

* TDA8290 MEDIA DRIVER

Mail Michael Krufky <mkrufky@linuxtv.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://github.com/mkrufky

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/mkrufky/tuners.git

Files drivers/media/tuners/tda8290.*

* TDA9840 MEDIA DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/i2c/tda9840*

* TEA5761 TUNER DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Odd fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/tuners/tea5761.*

* TEA5767 TUNER DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/tuners/tea5767.*`

* TEA6415C MEDIA DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/i2c/tea6415c*`

* TEA6420 MEDIA DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/i2c/tea6420*`

* TEAM DRIVER

Mail Jiri Pirko <jiri@resnulli.us>

Mailing list netdev@vger.kernel.org

Status Supported

Files `drivers/net/team/    include/linux/if_team.h    include/uapi/linux/`
`    if_team.h`

* TECHNOLOGIC SYSTEMS TS-5500 PLATFORM SUPPORT

Mail "Savoir-faire Linux Inc." <kernel@savoirfairelinux.com>

Status Maintained

Files arch/x86/platform/ts5500/

* TECHNOTREND USB IR RECEIVER

Mail Sean Young <sean@mess.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files drivers/media/rc/ttusbir.c

* TECHWELL TW9910 VIDEO DECODER

Mailing list linux-media@vger.kernel.org

Status Orphan

Files drivers/media/i2c/tw9910.c include/media/i2c/tw9910.h

* TEE SUBSYSTEM

Mail Jens Wiklander <jens.wiklander@linaro.org>

Reviewer Sumit Garg <sumit.garg@linaro.org>

Mailing list op-tee@lists.trustedfirmware.org

Status Maintained

Files staging/tee drivers/tee/ include/linux/tee_drv.h include/uapi/linux/tee.h

* TEGRA ARCHITECTURE SUPPORT

Mail Thierry Reding <thierry.reding@gmail.com>, Jonathan Hunter <jonathanh@nvidia.com>

Mailing list linux-tegra@vger.kernel.org

Status Supported

Patchwork http://patchwork.ozlabs.org/project/linux-tegra/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tegra/linux.git

Regex [^a-z]tegra

* TEGRA CLOCK DRIVER

Mail Peter De Schrijver <pdeschrijver@nvidia.com>, Prashant Gaikwad <pgaikwad@nvidia.com>

Status Supported

Files drivers/clk/tegra/

* TEGRA DMA DRIVERS

Mail Laxman Dewangan <ldewangan@nvidia.com>, Jon Hunter <jonathanh@nvidia.com>

Status Supported

Files drivers/dma/tegra*

* TEGRA I2C DRIVER

Mail Laxman Dewangan <ldewangan@nvidia.com>

Reviewer Dmitry Osipenko <digetx@gmail.com>

Status Supported

Files drivers/i2c/busses/i2c-tegra.c

* TEGRA IOMMU DRIVERS

Mail Thierry Reding <thierry.reding@gmail.com>

Reviewer Krishna Reddy <vdumpa@nvidia.com>

Mailing list linux-tegra@vger.kernel.org

Status Supported

Files drivers/iommu/arm/arm-smmu/arm-smmu-nvidia.c drivers/iommu/tegra*

* TEGRA KBC DRIVER

Mail Laxman Dewangan <ldewangan@nvidia.com>

Status Supported

Files drivers/input/keyboard/tegra-kbc.c

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* TEGRA NAND DRIVER

Mail Stefan Agner <stefan@agner.ch>, Lucas Stach <dev@lynxeye.de>

Status Maintained

Files Documentation/devicetree/bindings/mtd/nvidia-tegra20-nand.txt
    drivers/mtd/nand/raw/tegra_nand.c

* TEGRA PWM DRIVER

Mail Thierry Reding <thierry.reding@gmail.com>

Status Supported

Files drivers/pwm/pwm-tegra.c

* TEGRA SERIAL DRIVER

Mail Laxman Dewangan <ldewangan@nvidia.com>

Status Supported

Files drivers/tty/serial/serial-tegra.c

* TEGRA SPI DRIVER

Mail Laxman Dewangan <ldewangan@nvidia.com>

Status Supported

Files drivers/spi/spi-tegra*

* TEGRA QUAD SPI DRIVER

Mail Thierry Reding <thierry.reding@gmail.com>, Jonathan Hunter
    <jonathanh@nvidia.com>, Sowjanya Komatineni <skomatineni@nvidia.com>

Mailing list linux-tegra@vger.kernel.org

Status Maintained

Files drivers/spi/spi-tegra210-quad.c

* TEGRA VIDEO DRIVER

Mail Thierry Reding <thierry.reding@gmail.com>, Jonathan Hunter
    <jonathanh@nvidia.com>, Sowjanya Komatineni <skomatineni@nvidia.com>

Mailing list linux-media@vger.kernel.org, linux-tegra@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/display/tegra/nvidia,
    tegra20-host1x.txt drivers/staging/media/tegra-video/

* TEGRA XUSB PADCTL DRIVER

Mail JC Kuo <jckuo@nvidia.com>

Status Supported

Files drivers/phy/tegra/xusb*

* TEHUTI ETHERNET DRIVER

Mail Andy Gospodarek <andy@greyhouse.net>

Mailing list netdev@vger.kernel.org

Status Supported

Files drivers/net/ethernet/tehuti/*

* TELECOM CLOCK DRIVER FOR MCPL0010

Mail Mark Gross <markgross@kernel.org>

Status Supported

Files drivers/char/tlclk.c

* TEMPO SEMICONDUCTOR DRIVERS

Mail Steven Eckhoff <steven.eckhoff.opensource@gmail.com>

Status Maintained

Files Documentation/devicetree/bindings/sound/tscs*.txt   sound/soc/
codecs/tscs*.c sound/soc/codecs/tscs*.h

* TENSILICA XTENSA PORT (xtensa)

Mail Chris Zankel <chris@zankel.net>, Max Filippov <jcmvbkbc@gmail.com>

Mailing list linux-xtensa@linux-xtensa.org

Status Maintained

SCM git git://github.com/czankel/xtensa-linux.git

Files arch/xtensa/ drivers/irqchip/irq-xtensa-*

* TEXAS INSTRUMENTS ASoC DRIVERS

Mail Peter Ujfalusi <peter.ujfalusi@gmail.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/sound/davinci-mcasp-audio.yaml
  sound/soc/ti/

* TEXAS INSTRUMENTS' DAC7612 DAC DRIVER

Mail Ricardo Ribalda <ribalda@kernel.org>

Mailing list linux-iio@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/iio/dac/ti,dac7612.yaml drivers/
  iio/dac/ti-dac7612.c

* TEXAS INSTRUMENTS DMA DRIVERS

Mail Peter Ujfalusi <peter.ujfalusi@gmail.com>

Mailing list dmaengine@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/dma/ti-dma-crossbar.txt
  Documentation/devicetree/bindings/dma/ti-edma.txt   Documentation/
  devicetree/bindings/dma/ti/ drivers/dma/ti/

Excluded drivers/dma/ti/cppi41.c

Files include/linux/dma/k3-udma-glue.h   include/linux/dma/ti-cppi5.h
  include/linux/dma/k3-psil.h

* TEXAS INSTRUMENTS' SYSTEM CONTROL INTERFACE (TISCI) PROTOCOL DRIVER

Mail Nishanth Menon <nm@ti.com>, Tero Kristo <kristo@kernel.org>, Santosh
  Shilimkar <ssantosh@kernel.org>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/arm/keystone/ti,k3-sci-common.
  yaml   Documentation/devicetree/bindings/arm/keystone/ti,sci.
  yaml   Documentation/devicetree/bindings/clock/ti,sci-clk.yaml
  Documentation/devicetree/bindings/interrupt-controller/ti,sci-inta.
  yaml   Documentation/devicetree/bindings/interrupt-controller/ti,
  sci-intr.yaml Documentation/devicetree/bindings/reset/ti,sci-reset.
  yaml   Documentation/devicetree/bindings/soc/ti/sci-pm-domain.yaml

```
drivers/clk/keystone/sci-clk.c   drivers/firmware/ti_sci*   drivers/
irqchip/irq-ti-sci-inta.c drivers/irqchip/irq-ti-sci-intr.c drivers/
reset/reset-ti-sci.c   drivers/soc/ti/ti_sci_inta_msi.c   drivers/soc/
ti/ti_sci_pm_domains.c        include/dt-bindings/soc/ti,sci_pm_domain.
h     include/linux/soc/ti/ti_sci_inta_msi.h       include/linux/soc/ti/
ti_sci_protocol.h
```

* TEXAS INSTRUMENTS TPS23861 PoE PSE DRIVER

Mail Robert Marko <robert.marko@sartura.hr>, Luka Perkov <luka.perkov@sartura.hr>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/hwmon/ti,tps23861.yaml hwmon/tps23861 drivers/hwmon/tps23861.c

* TEXAS INSTRUMENTS' TMP117 TEMPERATURE SENSOR DRIVER

Mail Puranjay Mohan <puranjay12@gmail.com>

Mailing list linux-iio@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/iio/temperature/ti,tmp117.yaml drivers/iio/temperature/tmp117.c

* THANKO'S RAREMONO AM/FM/SW RADIO RECEIVER USB DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/radio/radio-raremono.c

* THERMAL

Mail Rafael J. Wysocki <rafael@kernel.org>, Daniel Lezcano <daniel.lezcano@linaro.org>

Reviewer Amit Kucheria <amitk@kernel.org>, Zhang Rui <rui.zhang@intel.com>

Mailing list linux-pm@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-pm/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rafael/linux-pm.git thermal

Files Documentation/ABI/testing/sysfs-class-thermal   Documentation/
    devicetree/bindings/thermal/   Documentation/driver-api/thermal/
    drivers/thermal/ include/linux/cpu_cooling.h include/linux/thermal.h
    include/uapi/linux/thermal.h tools/lib/thermal/ tools/thermal/

* THERMAL DRIVER FOR AMLOGIC SOCS

Mail Guillaume La Roque <glaroque@baylibre.com>

Mailing list linux-pm@vger.kernel.org, linux-amlogic@lists.infradead.org

Status Supported

Web-page http://linux-meson.com/

Files Documentation/devicetree/bindings/thermal/amlogic,thermal.yaml
    drivers/thermal/amlogic_thermal.c

* THERMAL/CPU_COOLING

Mail Amit   Daniel   Kachhap   <amit.kachhap@gmail.com>,   Daniel   Lezcano
    <daniel.lezcano@linaro.org>, Viresh Kumar <viresh.kumar@linaro.org>

Reviewer Lukasz Luba <lukasz.luba@arm.com>

Mailing list linux-pm@vger.kernel.org

Status Supported

Files driver-api/thermal/cpu-cooling-api   driver-api/thermal/cpu-idle-cooling
    drivers/thermal/cpufreq_cooling.c   drivers/thermal/cpuidle_cooling.c
    include/linux/cpu_cooling.h

* THERMAL/POWER_ALLOCATOR

Mail Lukasz Luba <lukasz.luba@arm.com>

Mailing list linux-pm@vger.kernel.org

Status Maintained

Files driver-api/thermal/power_allocator drivers/thermal/gov_power_allocator.
    c include/trace/events/thermal_power_allocator.h

* THINKPAD ACPI EXTRAS DRIVER

Mail Henrique de Moraes Holschuh <hmh@hmh.eng.br>

Mailing list ibm-acpi-devel@lists.sourceforge.net, platform-driver-x86@vger.kernel.org

Status Maintained

Web-page http://ibm-acpi.sourceforge.net http://thinkwiki.org/wiki/Ibm-acpi

SCM git git://repo.or.cz/linux-2.6/linux-acpi-2.6/ibm-acpi-2.6.git

Files `drivers/platform/x86/thinkpad_acpi.c`

* THINKPAD LMI DRIVER

Mail Mark Pearson <markpearson@lenovo.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `Documentation/ABI/testing/sysfs-class-firmware-attributes drivers/platform/x86/think-lmi.?`

* THUNDERBOLT DMA TRAFFIC TEST DRIVER

Mail Isaac Hazan <isaac.hazan@intel.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `drivers/thunderbolt/dma_test.c`

* THUNDERBOLT DRIVER

Mail Andreas Noever <andreas.noever@gmail.com>, Michael Jamet <michael.jamet@intel.com>, Mika Westerberg <mika.westerberg@linux.intel.com>, Yehezkel Bernat <YehezkelShB@gmail.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/westeri/thunderbolt.git

Files `admin-guide/thunderbolt drivers/thunderbolt/ include/linux/thunderbolt.h`

* THUNDERBOLT NETWORK DRIVER

Mail Michael Jamet <michael.jamet@intel.com>, Mika Westerberg <mika.westerberg@linux.intel.com>, Yehezkel Bernat <YehezkelShB@gmail.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/thunderbolt.c

* THUNDERX GPIO DRIVER

Mail Robert Richter <rric@kernel.org>

Status Odd Fixes

Files drivers/gpio/gpio-thunderx.c

* TI ADS131E0X ADC SERIES DRIVER

Mail Tomislav Denis <tomislav.denis@avl.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/adc/ti,ads131e08.yaml
drivers/iio/adc/ti-ads131e08.c

* TI AM437X VPFE DRIVER

Mail "Lad, Prabhakar" <prabhakar.csengg@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/mhadli/v4l-dvb-davinci_devices.git

Files drivers/media/platform/ti/am437x/

* TI BANDGAP AND THERMAL DRIVER

Mail Eduardo Valentin <edubezval@gmail.com>, Keerthy <j-keerthy@ti.com>

Mailing list linux-pm@vger.kernel.org, linux-omap@vger.kernel.org

Status Maintained

Files `drivers/thermal/ti-soc-thermal/`

* TI BQ27XXX POWER SUPPLY DRIVER

Files `drivers/power/supply/bq27xxx_battery.c` `drivers/power/supply/bq27xxx_battery_i2c.c include/linux/power/bq27xxx_battery.h`

* TI CDCE706 CLOCK DRIVER

Mail Max Filippov <jcmvbkbc@gmail.com>

Status Maintained

Files `drivers/clk/clk-cdce706.c`

* TI CLOCK DRIVER

Mail Tero Kristo <kristo@kernel.org>

Mailing list linux-omap@vger.kernel.org

Status Odd Fixes

Files `drivers/clk/ti/ include/linux/clk/ti.h`

* TI DAVINCI MACHINE SUPPORT

Mail Sekhar Nori <nsekhar@ti.com>

Reviewer Bartosz Golaszewski <brgl@bgdev.pl>

Mailing list linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/nsekhar/linux-davinci.git

Files `Documentation/devicetree/bindings/i2c/i2c-davinci.txt arch/arm/boot/dts/da850* arch/arm/mach-davinci/ drivers/i2c/busses/i2c-davinci.c`

* TI DAVINCI SERIES CLOCK DRIVER

Mail David Lechner <david@lechnology.com>

Reviewer Sekhar Nori <nsekhar@ti.com>

Status Maintained

Files Documentation/devicetree/bindings/clock/ti/davinci/ drivers/clk/ davinci/

* TI DAVINCI SERIES GPIO DRIVER

Mail Keerthy <j-keerthy@ti.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/gpio/gpio-davinci.yaml drivers/ gpio/gpio-davinci.c

* TI DAVINCI SERIES MEDIA DRIVER

Mail "Lad, Prabhakar" <prabhakar.csengg@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/mhadli/v4l-dvb-davinci_devices.git

Files drivers/media/platform/ti/davinci/ include/media/davinci/

* TI ENHANCED QUADRATURE ENCODER PULSE (eQEP) DRIVER

Reviewer David Lechner <david@lechnology.com>

Mailing list linux-iio@vger.kernel.org

Files Documentation/devicetree/bindings/counter/ti-eqep.yaml drivers/ counter/ti-eqep.c

* TI ETHERNET SWITCH DRIVER (CPSW)

Reviewer Grygorii Strashko <grygorii.strashko@ti.com>

Mailing list linux-omap@vger.kernel.org, netdev@vger.kernel.org

Status Maintained

Files drivers/net/ethernet/ti/cpsw* drivers/net/ethernet/ti/davinci*

* TI FLASH MEDIA MEMORYSTICK/MMC DRIVERS

Mail Alex Dubov <oakad@yahoo.com>

Status Maintained

Web-page http://tifmxx.berlios.de/

Files drivers/memstick/host/tifm_ms.c drivers/misc/tifm* drivers/mmc/host/tifm_sd.c include/linux/tifm.h

* TI KEYSTONE MULTICORE NAVIGATOR DRIVERS

Mail Nishanth Menon <nm@ti.com>, Santosh Shilimkar <ssantosh@kernel.org>

Mailing list linux-kernel@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/ti/linux.git

Files drivers/soc/ti/*

* TI LM49xxx FAMILY ASoC CODEC DRIVERS

Mail M R Swami Reddy <mr.swami.reddy@ti.com>, Vishwas A Deshpande <vishwas.a.deshpande@ti.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files sound/soc/codecs/isabelle* sound/soc/codecs/lm49453*

* TI PCM3060 ASoC CODEC DRIVER

Mail Kirill Marinushkin <kmarinushkin@birdec.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files Documentation/devicetree/bindings/sound/pcm3060.txt sound/soc/codecs/pcm3060*

* TI TAS571X FAMILY ASoC CODEC DRIVER

Mail Kevin Cernekee <cernekee@chromium.org>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Odd Fixes

Files sound/soc/codecs/tas571x*

* TI TRF7970A NFC DRIVER

Mail Mark Greer <mgreer@animalcreek.com>

Mailing list linux-wireless@vger.kernel.org, linux-nfc@lists.01.org (subscribers-only)

Status Supported

Files Documentation/devicetree/bindings/net/nfc/ti,trf7970a.yaml drivers/nfc/trf7970a.c

* TI TSC2046 ADC DRIVER

Mail Oleksij Rempel <o.rempel@pengutronix.de>

Reviewer kernel@pengutronix.de

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/adc/ti,tsc2046.yaml drivers/iio/adc/ti-tsc2046.c

* TI TWL4030 SERIES SOC CODEC DRIVER

Mail Peter Ujfalusi <peter.ujfalusi@gmail.com>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files sound/soc/codecs/twl4030*

* TI VPE/CAL DRIVERS

Mail Benoit Parrot <bparrot@ti.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page http://linuxtv.org/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

Files `Documentation/devicetree/bindings/media/ti,cal.yaml Documentation/`
`devicetree/bindings/media/ti,vpe.yaml drivers/media/platform/ti/cal/`
`drivers/media/platform/ti/vpe/`

* TI WILINK WIRELESS DRIVERS

Mailing list linux-wireless@vger.kernel.org

Status Orphan

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/wl12xx https://wireless.
wiki.kernel.org/en/users/Drivers/wl1251

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/luca/wl12xx.git

Files `drivers/net/wireless/ti/ include/linux/wl12xx.h`

* TIMEKEEPING, CLOCKSOURCE CORE, NTP, ALARMTIMER

Mail John Stultz <jstultz@google.com>, Thomas Gleixner <tglx@linutronix.de>

Reviewer Stephen Boyd <sboyd@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git timers/core

Files `include/linux/clocksource.h   include/linux/time.h   include/linux/`
`timex.h include/uapi/linux/time.h include/uapi/linux/timex.h kernel/`
`time/alarmtimer.c kernel/time/clocksource.c kernel/time/ntp.c kernel/`
`time/time*.c tools/testing/selftests/timers/`

* TIPC NETWORK LAYER

Mail Jon Maloy <jmaloy@redhat.com>, Ying Xue <ying.xue@windriver.com>

Mailing list netdev@vger.kernel.org   (core   kernel   code),   tipc-
discussion@lists.sourceforge.net (user apps, general discussion)

Status Maintained

Web-page http://tipc.sourceforge.net/

Files `include/uapi/linux/tipc*.h net/tipc/`

* TLAN NETWORK DRIVER

Mail Samuel Chessman <chessman@tux.org>

Mailing list tlan-devel@lists.sourceforge.net (subscribers-only)

Status Maintained

Web-page http://sourceforge.net/projects/tlan/

Files networking/device_drivers/ethernet/ti/tlan `drivers/net/ethernet/ti/tlan.*`

* TM6000 VIDEO4LINUX DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Odd fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `Documentation/admin-guide/media/tm6000* drivers/media/usb/tm6000/`

* TMIO/SDHI MMC DRIVER

Mail Wolfram Sang <wsa+renesas@sang-engineering.com>

Mailing list linux-mmc@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status Supported

Files `drivers/mmc/host/renesas_sdhi* drivers/mmc/host/tmio_mmc* include/ linux/mfd/tmio.h`

* TMP401 HARDWARE MONITOR DRIVER

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/hwmon/ti,tmp401.yaml` hwmon/tmp401 `drivers/hwmon/tmp401.c`

* TMP464 HARDWARE MONITOR DRIVER

Mail Agathe Porte <agathe.porte@nokia.com>, Guenter Roeck <linux@roeck-us.net>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/hwmon/ti,tmp464.yaml hwmon/tmp464 drivers/hwmon/tmp464.c

* TMP513 HARDWARE MONITOR DRIVER

Mail Eric Tremblay <etremblay@distech-controls.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/tmp513 drivers/hwmon/tmp513.c

* TMPFS (SHMEM FILESYSTEM)

Mail Hugh Dickins <hughd@google.com>

Mailing list linux-mm@kvack.org

Status Maintained

Files include/linux/shmem_fs.h mm/shmem.c

* TOMOYO SECURITY MODULE

Mail Kentaro Takeda <takedakn@nttdata.co.jp>, Tetsuo Handa <penguin-kernel@I-love.SAKURA.ne.jp>

Mailing list tomoyo-dev-en@lists.osdn.me (subscribers-only, for developers in English), tomoyo-users-en@lists.osdn.me (subscribers-only, for users in English), tomoyo-dev@lists.osdn.me (subscribers-only, for developers in Japanese), tomoyo-users@lists.osdn.me (subscribers-only, for users in Japanese)

Status Maintained

Web-page https://tomoyo.osdn.jp/

Files security/tomoyo/

* TOPSTAR LAPTOP EXTRAS DRIVER

Mail Herton Ronaldo Krzesinski <herton@canonical.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/topstar-laptop.c

* TORTURE-TEST MODULES

Mail Davidlohr Bueso <dave@stgolabs.net>, "Paul E. McKenney" <paulmck@kernel.org>, Josh Triplett <josh@joshtriplett.org>

Mailing list linux-kernel@vger.kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/paulmck/linux-rcu.git dev

Files RCU/torture   kernel/locking/locktorture.c   kernel/rcu/rcuscale.c kernel/rcu/rcutorture.c kernel/rcu/refscale.c kernel/torture.c

* TOSHIBA ACPI EXTRAS DRIVER

Mail Azael Avalos <coproscefalo@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/toshiba_acpi.c

* TOSHIBA BLUETOOTH DRIVER

Mail Azael Avalos <coproscefalo@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/toshiba_bluetooth.c

* TOSHIBA HDD ACTIVE PROTECTION SENSOR DRIVER

Mail Azael Avalos <coproscefalo@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files drivers/platform/x86/toshiba_haps.c

* TOSHIBA SMM DRIVER

Mail Jonathan Buzzard <jonathan@buzzard.org.uk>

Status Maintained

Web-page http://www.buzzard.org.uk/toshiba/

Files `drivers/char/toshiba.c include/linux/toshiba.h include/uapi/linux/toshiba.h`

* TOSHIBA TC358743 DRIVER

Mail Mats Randgaard <matrandg@cisco.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/media/i2c/tc358743* include/media/i2c/tc358743.h`

* TOSHIBA WMI HOTKEYS DRIVER

Mail Azael Avalos <coproscefalo@gmail.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/toshiba-wmi.c`

* TPM DEVICE DRIVER

Mail Peter Huewe <peterhuewe@gmx.de>, Jarkko Sakkinen <jarkko@kernel.org>

Reviewer Jason Gunthorpe <jgg@ziepe.ca>

Mailing list linux-integrity@vger.kernel.org

Status Maintained

Web-page https://kernsec.org/wiki/index.php/Linux_Kernel_Integrity

Patchwork https://patchwork.kernel.org/project/linux-integrity/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/jarkko/linux-tpmdd.git

Files `drivers/char/tpm/`

* TRACING

Mail Steven Rostedt <rostedt@goodmis.org>, Ingo Molnar <mingo@redhat.com>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rostedt/linux-trace.git

Files trace/ftrace   arch/*/*/*/*ftrace*   arch/*/*/*ftrace*   fs/tracefs/
include/*/ftrace.h include/linux/trace*.h include/trace/ kernel/
trace/ tools/testing/selftests/ftrace/

* TRACING MMIO ACCESSES (MMIOTRACE)

Mail Steven Rostedt <rostedt@goodmis.org>, Ingo Molnar <mingo@kernel.org>

Reviewer Karol Herbst <karolherbst@gmail.com>, Pekka Paalanen <ppaala-nen@gmail.com>

Mailing list linux-kernel@vger.kernel.org, nouveau@lists.freedesktop.org

Status Maintained

Files arch/x86/mm/kmmio.c   arch/x86/mm/mmio-mod.c   arch/x86/mm/
testmmiotrace.c   include/linux/mmiotrace.h   kernel/trace/
trace_mmiotrace.c

* TRACING OS NOISE / LATENCY TRACERS

Mail Steven Rostedt <rostedt@goodmis.org>, Daniel Bristot de Oliveira <bristot@kernel.org>

Status Maintained

Files kernel/trace/trace_osnoise.c   include/trace/events/osnoise.h
kernel/trace/trace_hwlat.c   kernel/trace/trace_irqsoff.c   kernel/
trace/trace_sched_wakeup.c   trace/osnoise-tracer   trace/timerlat-tracer
trace/hwlat_detector arch/*/kernel/trace.c

* Real-time Linux Analysis (RTLA) tools

Mail Daniel Bristot de Oliveira <bristot@kernel.org>, Steven Rostedt <rostedt@goodmis.org>

Mailing list linux-trace-devel@vger.kernel.org

Status Maintained

Files Documentation/tools/rtla/ tools/tracing/rtla/

* TRADITIONAL CHINESE DOCUMENTATION

Mail Hu Haowen <src.res@email.cn>

Mailing list linux-doc-tw-discuss@lists.sourceforge.net

Status Maintained

Web-page https://github.com/srcres258/linux-doc

SCM git git://github.com/srcres258/linux-doc.git doc-zh-tw

Files Documentation/translations/zh_TW/

* TTY LAYER

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>, Jiri Slaby <jiris-laby@kernel.org>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/tty.git

Files Documentation/driver-api/serial/ drivers/tty/ drivers/tty/serial/ serial_core.c include/linux/selection.h include/linux/serial.h include/linux/serial_core.h include/linux/sysrq.h include/linux/tty*. h include/linux/vt.h include/linux/vt_*.h include/uapi/linux/serial.h include/uapi/linux/serial_core.h include/uapi/linux/tty.h

* TUA9001 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org http://palosaari.fi/linux/

Patchwork http://patchwork.linuxtv.org/project/linux-media/list/

SCM git git://linuxtv.org/anttip/media_tree.git

Files drivers/media/tuners/tua9001*

* TULIP NETWORK DRIVERS

Mailing list netdev@vger.kernel.org, linux-parisc@vger.kernel.org

Status Orphan

Files drivers/net/ethernet/dec/tulip/

* TUN/TAP driver

Mail Maxim Krasnyansky <maxk@qti.qualcomm.com>

Status Maintained

Web-page http://vtun.sourceforge.net/tun

Files networking/tuntap `arch/um/os-Linux/drivers/`

* TURBOCHANNEL SUBSYSTEM

Mail "Maciej W. Rozycki" <macro@orcam.me.uk>, Ralf Baechle <ralf@linux-mips.org>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Patchwork http://patchwork.linux-mips.org/project/linux-mips/list/

Files `drivers/tc/ include/linux/tc.h`

* TURBOSTAT UTILITY

Mail "Len Brown" <lenb@kernel.org>

Mailing list linux-pm@vger.kernel.org

Status Supported

Patchwork https://patchwork.kernel.org/project/linux-pm/list/

bugs https://bugzilla.kernel.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/lenb/linux.git turbostat

Files `tools/power/x86/turbostat/`

* TW5864 VIDEO4LINUX DRIVER

Mail Bluecherry Maintainers <maintainers@bluecherrydvr.com>, Anton Sviridenko <anton@corp.bluecherry.net>, Andrey Utkin <andrey.utkin@corp.bluecherry.net>, Andrey Utkin <andrey_utkin@fastmail.com>

Mailing list linux-media@vger.kernel.org

Status Supported

Files `drivers/media/pci/tw5864/`

* TW68 VIDEO4LINUX DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Odd Fixes

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/pci/tw68/

* TW686X VIDEO4LINUX DRIVER

Mail Ezequiel Garcia <ezequiel@vanguardiasur.com.ar>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page http://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/pci/tw686x/

* U-BOOT ENVIRONMENT VARIABLES

Mail Rafał Miłecki <rafal@milecki.pl>

Status Maintained

Files Documentation/devicetree/bindings/nvmem/u-boot,env.yaml

* UACCE ACCELERATOR FRAMEWORK

Mail Zhangfei Gao <zhangfei.gao@linaro.org>, Zhou Wang <wangzhou1@hisilicon.com>

Mailing list linux-accelerators@lists.ozlabs.org, linux-kernel@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/sysfs-driver-uacce misc-devices/uacce drivers/misc/uacce/ include/linux/uacce.h include/uapi/misc/uacce/

* UBI FILE SYSTEM (UBIFS)

Mail Richard Weinberger <richard@nod.at>

Mailing list linux-mtd@lists.infradead.org

Status Supported

Web-page http://www.linux-mtd.infradead.org/doc/ubifs.html

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rw/ubifs.git next git git://git.kernel.org/pub/scm/linux/kernel/git/rw/ubifs.git fixes

Files Documentation/ABI/testing/sysfs-fs-ubifs filesystems/ubifs-authentication filesystems/ubifs fs/ubifs/

* UCLINUX (M68KNOMMU AND COLDFIRE)

Mail Greg Ungerer <gerg@linux-m68k.org>

Mailing list linux-m68k@lists.linux-m68k.org, uclinux-dev@uclinux.org (subscribers-only)

Status Maintained

Web-page http://www.linux-m68k.org/ http://www.uclinux.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gerg/m68knommu.git

Files arch/m68k/*/*_no.* arch/m68k/68*/ arch/m68k/coldfire/ arch/m68k/include/asm/*_no.*

* UDF FILESYSTEM

Mail Jan Kara <jack@suse.com>

Status Maintained

Files filesystems/udf fs/udf/

* UDRAW TABLET

Mail Bastien Nocera <hadess@hadess.net>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files drivers/hid/hid-udraw-ps3.c

* UFS FILESYSTEM

Mail Evgeniy Dushistov <dushistov@mail.ru>

Status Maintained

Files admin-guide/ufs fs/ufs/

* UHID USERSPACE HID IO DRIVER

Mail David Rheinsberg <david.rheinsberg@gmail.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files drivers/hid/uhid.c include/uapi/linux/uhid.h

* ULPI BUS

Mail Heikki Krogerus <heikki.krogerus@linux.intel.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files drivers/usb/common/ulpi.c include/linux/ulpi/

* UNICODE SUBSYSTEM

Mail Gabriel Krisman Bertazi <krisman@collabora.com>

Mailing list linux-fsdevel@vger.kernel.org

Status Supported

Files fs/unicode/

* UNIFDEF

Mail Tony Finch <dot@dotat.at>

Status Maintained

Web-page http://dotat.at/prog/unifdef

Files scripts/unifdef.c

Linux Process Documentation

* UNIFORM CDROM DRIVER

Mail Phillip Potter <phil@philpotter.co.uk>

Status Maintained

Files Documentation/cdrom/ drivers/cdrom/cdrom.c include/linux/cdrom.h
include/uapi/linux/cdrom.h

* UNIVERSAL FLASH STORAGE HOST CONTROLLER DRIVER

Reviewer Alim Akhtar <alim.akhtar@samsung.com>, Avri Altman
<avri.altman@wdc.com>, Bart Van Assche <bvanassche@acm.org>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/ufs/ scsi/ufs drivers/ufs/core/

* UNIVERSAL FLASH STORAGE HOST CONTROLLER DRIVER DWC HOOKS

Mail Pedro Sousa <pedrom.sousa@synopsys.com>

Mailing list linux-scsi@vger.kernel.org

Status Supported

Files drivers/ufs/host/*dwc*

* UNIVERSAL FLASH STORAGE HOST CONTROLLER DRIVER MEDIATEK HOOKS

Mail Stanley Chu <stanley.chu@mediatek.com>

Mailing list linux-scsi@vger.kernel.org, linux-mediatek@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files drivers/ufs/host/ufs-mediatek*

* UNSORTED BLOCK IMAGES (UBI)

Mail Richard Weinberger <richard@nod.at>

Mailing list linux-mtd@lists.infradead.org

Status Supported

Web-page http://www.linux-mtd.infradead.org/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/rw/ubifs.git next git
git://git.kernel.org/pub/scm/linux/kernel/git/rw/ubifs.git fixes

Files drivers/mtd/ubi/ include/linux/mtd/ubi.h include/uapi/mtd/ubi-user.h

* USB "USBNET" DRIVER FRAMEWORK

Mail Oliver Neukum <oneukum@suse.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Web-page http://www.linux-usb.org/usbnet

Files drivers/net/usb/usbnet.c include/linux/usb/usbnet.h

* USB ACM DRIVER

Mail Oliver Neukum <oneukum@suse.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files usb/acm drivers/usb/class/cdc-acm.*

* USB APPLE MFI FASTCHARGE DRIVER

Mail Bastien Nocera <hadess@hadess.net>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files drivers/usb/misc/apple-mfi-fastcharge.c

* USB AR5523 WIRELESS DRIVER

Mail Pontus Fuchs <pontus.fuchs@gmail.com>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files drivers/net/wireless/ath/ar5523/

* USB ATTACHED SCSI

Mail Oliver Neukum <oneukum@suse.com>

Mailing list linux-usb@vger.kernel.org, linux-scsi@vger.kernel.org

Status Maintained

Files drivers/usb/storage/uas.c

* USB CDC ETHERNET DRIVER

Mail Oliver Neukum <oliver@neukum.org>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `drivers/net/usb/cdc_*.c include/uapi/linux/usb/cdc.h`

* USB CHAOSKEY DRIVER

Mail Keith Packard <keithp@keithp.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `drivers/usb/misc/chaoskey.c`

* USB CYPRESS C67X00 DRIVER

Mailing list linux-usb@vger.kernel.org

Status Orphan

Files `drivers/usb/c67x00/`

* USB DAVICOM DM9601 DRIVER

Mail Peter Korsgaard <peter@korsgaard.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Web-page http://www.linux-usb.org/usbnet

Files `drivers/net/usb/dm9601.c`

* USB EHCI DRIVER

Mail Alan Stern <stern@rowland.harvard.edu>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files usb/ehci `drivers/usb/host/ehci*`

* USB GADGET/PERIPHERAL SUBSYSTEM

Mail Felipe Balbi <balbi@kernel.org>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Web-page http://www.linux-usb.org/gadget

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/balbi/usb.git

Files `drivers/usb/gadget/ include/linux/usb/gadget*`

* USB HID/HIDBP DRIVERS (USB KEYBOARDS, MICE, REMOTE CONTROLS, …)

Mail Jiri Kosina <jikos@kernel.org>, Benjamin Tissoires <benjamin.tissoires@redhat.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/hid/hid.git

Files `hid/hiddev drivers/hid/usbhid/`

* USB INTEL XHCI ROLE MUX DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `drivers/usb/roles/intel-xhci-usb-role-switch.c`

* USB IP DRIVER FOR HISILICON KIRIN 960

Mail Yu Chen <chenyu56@huawei.com>, Binghui Wang <wangbinghui@hisilicon.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `Documentation/devicetree/bindings/phy/hisilicon,hi3660-usb3.yaml drivers/phy/hisilicon/phy-hi3660-usb3.c`

* USB IP DRIVER FOR HISILICON KIRIN 970

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/phy/hisilicon,hi3670-usb3.yaml
drivers/phy/hisilicon/phy-hi3670-usb3.c

* USB ISP116X DRIVER

Mail Olav Kongas <ok@artecdesign.ee>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files drivers/usb/host/isp116x* include/linux/usb/isp116x.h

* USB ISP1760 DRIVER

Mail Rui Miguel Silva <rui.silva@linaro.org>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files drivers/usb/isp1760/*   Documentation/devicetree/bindings/usb/nxp,
isp1760.yaml

* USB LAN78XX ETHERNET DRIVER

Mail Woojung   Huh   <woojung.huh@microchip.com>,   UNGLinux-
Driver@microchip.com

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/microchip,lan78xx.txt
drivers/net/usb/lan78xx.* include/dt-bindings/net/microchip-lan78xx.
h

* USB MASS STORAGE DRIVER

Mail Alan Stern <stern@rowland.harvard.edu>

Mailing list linux-usb@vger.kernel.org, usb-storage@lists.one-eyed-alien.net

Status Maintained

Files drivers/usb/storage/

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* USB MIDI DRIVER

Mail Clemens Ladisch <clemens@ladisch.de>

Mailing list alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tiwai/sound.git

Files `sound/usb/midi.*`

* USB NETWORKING DRIVERS

Mailing list linux-usb@vger.kernel.org

Status Odd Fixes

Files `drivers/net/usb/`

* USB OHCI DRIVER

Mail Alan Stern <stern@rowland.harvard.edu>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files usb/ohci `drivers/usb/host/ohci*`

* USB OTG FSM (Finite State Machine)

Mail Peter Chen <peter.chen@kernel.org>

Mailing list linux-usb@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/peter.chen/usb.git

Files `drivers/usb/common/usb-otg-fsm.c`

* USB OVER IP DRIVER

Mail Valentina Manea <valentina.manea.m@gmail.com>, Shuah Khan <shuah@kernel.org>, Shuah Khan <skhan@linuxfoundation.org>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files usb/usbip_protocol `drivers/usb/usbip/` `tools/testing/selftests/` `drivers/usb/usbip/` `tools/usb/usbip/`

* USB PEGASUS DRIVER

Mail Petko Manolov <petkan@nucleusys.com>

Mailing list linux-usb@vger.kernel.org, netdev@vger.kernel.org

Status Maintained

Web-page https://github.com/petkan/pegasus

SCM git git://github.com/petkan/pegasus.git

Files drivers/net/usb/pegasus.*

* USB PHY LAYER

Mail Felipe Balbi <balbi@kernel.org>

Mailing list linux-usb@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/balbi/usb.git

Files drivers/usb/phy/

* USB PRINTER DRIVER (usblp)

Mail Pete Zaitcev <zaitcev@redhat.com>

Mailing list linux-usb@vger.kernel.org

Status Supported

Files drivers/usb/class/usblp.c

* USB RAW GADGET DRIVER

Reviewer Andrey Konovalov <andreyknvl@gmail.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files usb/raw-gadget drivers/usb/gadget/legacy/raw_gadget.c include/uapi/
linux/usb/raw_gadget.h

* USB QMI WWAN NETWORK DRIVER

Mail Bjørn Mork <bjorn@mork.no>

Mailing list netdev@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/sysfs-class-net-qmi   drivers/net/usb/ qmi_wwan.c

* USB RTL8150 DRIVER

Mail Petko Manolov <petkan@nucleusys.com>

Mailing list linux-usb@vger.kernel.org, netdev@vger.kernel.org

Status Maintained

Web-page https://github.com/petkan/rtl8150

SCM git git://github.com/petkan/rtl8150.git

Files drivers/net/usb/rtl8150.c

* USB SERIAL SUBSYSTEM

Mail Johan Hovold <johan@kernel.org>

Mailing list linux-usb@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/johan/usb-serial.git

Files usb/usb-serial drivers/usb/serial/ include/linux/usb/serial.h

* USB SMSC75XX ETHERNET DRIVER

Mail Steve Glendinning <steve.glendinning@shawell.net>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/usb/smsc75xx.*

* USB SMSC95XX ETHERNET DRIVER

Mail Steve Glendinning <steve.glendinning@shawell.net>, UNGLinux-Driver@microchip.com

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/usb/smsc95xx.*`

* USB SUBSYSTEM

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Mailing list linux-usb@vger.kernel.org

Status Supported

Web-page http://www.linux-usb.org

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/usb.git

Files `Documentation/devicetree/bindings/usb/ Documentation/usb/ drivers/ usb/ include/dt-bindings/usb/ include/linux/usb.h include/linux/usb/`

* USB TYPEC BUS FOR ALTERNATE MODES

Mail Heikki Krogerus <heikki.krogerus@linux.intel.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `Documentation/ABI/testing/sysfs-bus-typec` driver-api/usb/typec_bus `drivers/usb/typec/altmodes/ include/linux/usb/typec_altmode.h`

* USB TYPEC CLASS

Mail Heikki Krogerus <heikki.krogerus@linux.intel.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `Documentation/ABI/testing/sysfs-class-typec` driver-api/usb/typec `drivers/usb/typec/ include/linux/usb/typec.h`

* USB TYPEC INTEL PMC MUX DRIVER

Mail Heikki Krogerus <heikki.krogerus@linux.intel.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files firmware-guide/acpi/intel-pmc-mux `drivers/usb/typec/mux/intel_pmc_mux.c`

* USB TYPEC PI3USB30532 MUX DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `drivers/usb/typec/mux/pi3usb30532.c`

* USB TYPEC PORT CONTROLLER DRIVERS

Mail Guenter Roeck <linux@roeck-us.net>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `drivers/usb/typec/tcpm/`

* USB UHCI DRIVER

Mail Alan Stern <stern@rowland.harvard.edu>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `drivers/usb/host/uhci*`

* USB VIDEO CLASS

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page http://www.ideasonboard.org/uvc/

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/usb/uvc/` `include/uapi/linux/uvcvideo.h`

* USB WEBCAM GADGET

Mail Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-usb@vger.kernel.org

Status Maintained

Files `drivers/usb/gadget/function/*uvc*` `drivers/usb/gadget/legacy/` `webcam.c include/uapi/linux/usb/g_uvc.h`

* USB WIRELESS RNDIS DRIVER (rndis_wlan)

Mail Jussi Kivilinna <jussi.kivilinna@iki.fi>

Mailing list linux-wireless@vger.kernel.org

Status Maintained

Files `drivers/net/wireless/rndis_wlan.c`

* USB XHCI DRIVER

Mail Mathias Nyman <mathias.nyman@intel.com>

Mailing list linux-usb@vger.kernel.org

Status Supported

Files `drivers/usb/host/pci-quirks* drivers/usb/host/xhci*`

* USB ZD1201 DRIVER

Mailing list linux-wireless@vger.kernel.org

Status Orphan

Web-page http://linux-lc100020.sourceforge.net

Files `drivers/net/wireless/zydas/zd1201.*`

* USB ZR364XX DRIVER

Mail Antoine Jacquet <royale@zerezo.com>

Mailing list linux-usb@vger.kernel.org, linux-media@vger.kernel.org

Status Maintained

Web-page http://royale.zerezo.com/zr364xx/

SCM git git://linuxtv.org/media_tree.git

Files `Documentation/admin-guide/media/zr364xx*` `drivers/media/usb/` `zr364xx/`

* USER-MODE LINUX (UML)

Mail Richard Weinberger <richard@nod.at>, Anton Ivanov <anton.ivanov@cambridgegreys.com>, Johannes Berg <johannes@sipsolutions.net>

Mailing list linux-um@lists.infradead.org

Status Maintained

Web-page http://user-mode-linux.sourceforge.net

Patchwork https://patchwork.ozlabs.org/project/linux-um/list/

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/uml/linux.git next git git://git.kernel.org/pub/scm/linux/kernel/git/uml/linux.git fixes

Files Documentation/virt/uml/ arch/um/ arch/x86/um/ fs/hostfs/

* USERSPACE COPYIN/COPYOUT (UIOVEC)

Mail Alexander Viro <viro@zeniv.linux.org.uk>

Status Maintained

Files include/linux/uio.h lib/iov_iter.c

* USERSPACE DMA BUFFER DRIVER

Mail Gerd Hoffmann <kraxel@redhat.com>

Mailing list dri-devel@lists.freedesktop.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files drivers/dma-buf/udmabuf.c include/uapi/linux/udmabuf.h

* USERSPACE I/O (UIO)

Mail Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/char-misc.git

Files driver-api/uio-howto drivers/uio/ include/linux/uio_driver.h

* UTIL-LINUX PACKAGE

Mail Karel Zak <kzak@redhat.com>

Mailing list util-linux@vger.kernel.org

Status Maintained

Web-page http://en.wikipedia.org/wiki/Util-linux

SCM git git://git.kernel.org/pub/scm/utils/util-linux/util-linux.git

* UUID HELPERS

Mail Christoph Hellwig <hch@lst.de>

Reviewer Andy Shevchenko <andriy.shevchenko@linux.intel.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.infradead.org/users/hch/uuid.git

Files `include/linux/uuid.h include/uapi/linux/uuid.h lib/test_uuid.c lib/uuid.c`

* UV SYSFS DRIVER

Mail Justin Ernst <justin.ernst@hpe.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

Files `drivers/platform/x86/uv_sysfs.c`

* UVESAFB DRIVER

Mail Michal Januszewski <spock@gentoo.org>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Web-page https://github.com/mjanusz/v86d

Files `fb/uvesafb drivers/video/fbdev/uvesafb.*`

* Ux500 CLOCK DRIVERS

Mail Ulf Hansson <ulf.hansson@linaro.org>

Mailing list linux-clk@vger.kernel.org, linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status Maintained

Files `drivers/clk/ux500/`

* VF610 NAND DRIVER

Mail Stefan Agner <stefan@agner.ch>

Mailing list linux-mtd@lists.infradead.org

Status Supported

Files `drivers/mtd/nand/raw/vf610_nfc.c`

* VFAT/FAT/MSDOS FILESYSTEM

Mail OGAWA Hirofumi <hirofumi@mail.parknet.co.jp>

Status Maintained

Files filesystems/vfat `fs/fat/`

* VFIO DRIVER

Mail Alex Williamson <alex.williamson@redhat.com>

Reviewer Cornelia Huck <cohuck@redhat.com>

Mailing list kvm@vger.kernel.org

Status Maintained

SCM git git://github.com/awilliam/linux-vfio.git

Files driver-api/vfio `drivers/vfio/` `include/linux/vfio.h` `include/linux/vfio_pci_core.h` `include/uapi/linux/vfio.h`

* VFIO FSL-MC DRIVER

Mail Diana Craciun <diana.craciun@oss.nxp.com>

Mailing list kvm@vger.kernel.org

Status Maintained

Files `drivers/vfio/fsl-mc/`

* VFIO HISILICON PCI DRIVER

Mail Longfang Liu <liulongfang@huawei.com>, Shameer Kolothum <shameer-ali.kolothum.thodi@huawei.com>

Mailing list kvm@vger.kernel.org

Status Maintained

Files drivers/vfio/pci/hisilicon/

* VFIO MEDIATED DEVICE DRIVERS

Mail Kirti Wankhede <kwankhede@nvidia.com>

Mailing list kvm@vger.kernel.org

Status Maintained

Files driver-api/vfio-mediated-device drivers/vfio/mdev/ include/linux/mdev.h samples/vfio-mdev/

* VFIO PCI DEVICE SPECIFIC DRIVERS

Reviewer Jason Gunthorpe <jgg@nvidia.com>, Yishai Hadas <yishaih@nvidia.com>, Shameer Kolothum <shameer-ali.kolothum.thodi@huawei.com>, Kevin Tian <kevin.tian@intel.com>

Mailing list kvm@vger.kernel.org

Status Maintained

P driver-api/vfio-pci-device-specific-driver-acceptance

Files drivers/vfio/pci/*/

* VFIO PLATFORM DRIVER

Mail Eric Auger <eric.auger@redhat.com>

Mailing list kvm@vger.kernel.org

Status Maintained

Files drivers/vfio/platform/

* VFIO MLX5 PCI DRIVER

Mail Yishai Hadas <yishaih@nvidia.com>

Mailing list kvm@vger.kernel.org

Status Maintained

Files drivers/vfio/pci/mlx5/

* VGA_SWITCHEROO

Reviewer Lukas Wunner <lukas@wunner.de>

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files gpu/vga-switcheroo drivers/gpu/vga/vga_switcheroo.c include/linux/vga_switcheroo.h

* VIA RHINE NETWORK DRIVER

Status Maintained

Mail Kevin Brace <kevinbrace@bracecomputerlab.com>

Files drivers/net/ethernet/via/via-rhine.c

* VIA SD/MMC CARD CONTROLLER DRIVER

Mail Bruce Chang <brucechang@via.com.tw>, Harald Welte <Harald-Welte@viatech.com>

Status Maintained

Files drivers/mmc/host/via-sdmmc.c

* VIA UNICHROME(PRO)/CHROME9 FRAMEBUFFER DRIVER

Mail Florian Tobias Schandinat <FlorianSchandinat@gmx.de>

Mailing list linux-fbdev@vger.kernel.org

Status Maintained

Files drivers/video/fbdev/via/ include/linux/via-core.h include/linux/via-gpio.h include/linux/via_i2c.h

* VIA VELOCITY NETWORK DRIVER

Mail Francois Romieu <romieu@fr.zoreil.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files `drivers/net/ethernet/via/via-velocity.*`

* VICODEC VIRTUAL CODEC DRIVER

Mail Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/test-drivers/vicodec/*`

* VIDEO I2C POLLING DRIVER

Mail Matt Ranostay <matt.ranostay@konsulko.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/media/i2c/video-i2c.c`

* VIDEO MULTIPLEXER DRIVER

Mail Philipp Zabel <p.zabel@pengutronix.de>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/media/platform/video-mux.c`

* VIDEOBUF2 FRAMEWORK

Mail Tomasz Figa <tfiga@chromium.org>, Marek Szyprowski <m.szyprowski@samsung.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Files `drivers/media/common/videobuf2/* include/media/videobuf2-*`

* VIMC VIRTUAL MEDIA CONTROLLER DRIVER

Mail Shuah Khan <skhan@linuxfoundation.org>

Reviewer Kieran Bingham <kieran.bingham@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files `drivers/media/test-drivers/vimc/*`

* VIRT LIB

Mail Alex Williamson <alex.williamson@redhat.com>, Paolo Bonzini <pbonzini@redhat.com>

Mailing list kvm@vger.kernel.org

Status Supported

Files `virt/lib/`

* VIRTIO AND VHOST VSOCK DRIVER

Mail Stefan Hajnoczi <stefanha@redhat.com>, Stefano Garzarella <sgarzare@redhat.com>

Mailing list kvm@vger.kernel.org, virtualization@lists.linux-foundation.org, netdev@vger.kernel.org

Status Maintained

Files `drivers/vhost/vsock.c include/linux/virtio_vsock.h include/uapi/ linux/virtio_vsock.h net/vmw_vsock/virtio_transport.c net/vmw_vsock/ virtio_transport_common.c`

* VIRTIO BLOCK AND SCSI DRIVERS

Mail "Michael S. Tsirkin" <mst@redhat.com>, Jason Wang <jasowang@redhat.com>

Reviewer Paolo Bonzini <pbonzini@redhat.com>, Stefan Hajnoczi <stefanha@redhat.com>

Mailing list virtualization@lists.linux-foundation.org

Status Maintained

Files `drivers/block/virtio_blk.c drivers/scsi/virtio_scsi.c drivers/ vhost/scsi.c include/uapi/linux/virtio_blk.h include/uapi/linux/ virtio_scsi.h`

* VIRTIO CONSOLE DRIVER

Mail Amit Shah <amit@kernel.org>

Mailing list virtualization@lists.linux-foundation.org

Status Maintained

Files `drivers/char/virtio_console.c` `include/linux/virtio_console.h` `include/uapi/linux/virtio_console.h`

* VIRTIO CORE AND NET DRIVERS

Mail "Michael S. Tsirkin" <mst@redhat.com>, Jason Wang <jasowang@redhat.com>

Mailing list virtualization@lists.linux-foundation.org

Status Maintained

Files `Documentation/ABI/testing/sysfs-bus-vdpa Documentation/devicetree/ bindings/virtio/ drivers/block/virtio_blk.c drivers/crypto/virtio/ drivers/net/virtio_net.c drivers/vdpa/ drivers/virtio/ include/linux/ vdpa.h include/linux/virtio*.h include/uapi/linux/virtio_*.h tools/ virtio/`

* VIRTIO BALLOON

Mail "Michael S. Tsirkin" <mst@redhat.com>, David Hildenbrand <david@redhat.com>

Mailing list virtualization@lists.linux-foundation.org

Status Maintained

Files `drivers/virtio/virtio_balloon.c include/uapi/linux/virtio_balloon. h include/linux/balloon_compaction.h mm/balloon_compaction.c`

* VIRTIO CRYPTO DRIVER

Mail Gonglei <arei.gonglei@huawei.com>

Mailing list virtualization@lists.linux-foundation.org, linux-crypto@vger.kernel.org

Status Maintained

Files `drivers/crypto/virtio/ include/uapi/linux/virtio_crypto.h`

* VIRTIO DRIVERS FOR S390

Mail Cornelia Huck <cohuck@redhat.com>, Halil Pasic <pasic@linux.ibm.com>, Eric Farman <farman@linux.ibm.com>

Mailing list linux-s390@vger.kernel.org, virtualization@lists.linux-foundation.org, kvm@vger.kernel.org

Status Supported

Files `arch/s390/include/uapi/asm/virtio-ccw.h drivers/s390/virtio/`

* VIRTIO FILE SYSTEM

Mail Vivek Goyal <vgoyal@redhat.com>, Stefan Hajnoczi <stefanha@redhat.com>, Miklos Szeredi <miklos@szeredi.hu>

Mailing list virtualization@lists.linux-foundation.org, linux-fsdevel@vger.kernel.org

Status Supported

Web-page https://virtio-fs.gitlab.io/

Files `filesystems/virtiofs fs/fuse/virtio_fs.c include/uapi/linux/virtio_fs.h`

* VIRTIO GPIO DRIVER

Mail Enrico Weigelt, metux IT consult <info@metux.net>, Viresh Kumar <vireshk@kernel.org>

Mailing list linux-gpio@vger.kernel.org, virtualization@lists.linux-foundation.org

Status Maintained

Files `drivers/gpio/gpio-virtio.c include/uapi/linux/virtio_gpio.h`

* VIRTIO GPU DRIVER

Mail David Airlie <airlied@linux.ie>, Gerd Hoffmann <kraxel@redhat.com>

Reviewer Gurchetan Singh <gurchetansingh@chromium.org>, Chia-I Wu <olvaffe@gmail.com>

Mailing list dri-devel@lists.freedesktop.org, virtualization@lists.linux-foundation.org

Status Maintained

SCM git git://anongit.freedesktop.org/drm/drm-misc

Files `drivers/gpu/drm/virtio/ include/uapi/linux/virtio_gpu.h`

Linux Process Documentation

* VIRTIO HOST (VHOST)

Mail "Michael S. Tsirkin" <mst@redhat.com>, Jason Wang <jasowang@redhat.com>

Mailing list kvm@vger.kernel.org, virtualization@lists.linux-foundation.org, netdev@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/mst/vhost.git

Files `drivers/vhost/` `include/linux/vhost_iotlb.h` `include/uapi/linux/vhost.h`

* VIRTIO INPUT DRIVER

Mail Gerd Hoffmann <kraxel@redhat.com>

Status Maintained

Files `drivers/virtio/virtio_input.c include/uapi/linux/virtio_input.h`

* VIRTIO IOMMU DRIVER

Mail Jean-Philippe Brucker <jean-philippe@linaro.org>

Mailing list virtualization@lists.linux-foundation.org

Status Maintained

Files `drivers/iommu/virtio-iommu.c include/uapi/linux/virtio_iommu.h`

* VIRTIO MEM DRIVER

Mail David Hildenbrand <david@redhat.com>

Mailing list virtualization@lists.linux-foundation.org

Status Maintained

Web-page https://virtio-mem.gitlab.io/

Files `drivers/virtio/virtio_mem.c include/uapi/linux/virtio_mem.h`

* VIRTIO SOUND DRIVER

Mail Anton Yakovlev <anton.yakovlev@opensynergy.com>, "Michael S. Tsirkin" <mst@redhat.com>

Mailing list virtualization@lists.linux-foundation.org, alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Maintained

Files `include/uapi/linux/virtio_snd.h sound/virtio/*`

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* VIRTIO I2C DRIVER

Mail Conghui Chen <conghui.chen@intel.com>, Viresh Kumar <viresh.kumar@linaro.org>

Mailing list linux-i2c@vger.kernel.org, virtualization@lists.linux-foundation.org

Status Maintained

Files `drivers/i2c/busses/i2c-virtio.c include/uapi/linux/virtio_i2c.h`

* VIRTIO PMEM DRIVER

Mail Pankaj Gupta <pankaj.gupta.linux@gmail.com>

Mailing list virtualization@lists.linux-foundation.org

Status Maintained

Files `drivers/nvdimm/virtio_pmem.c drivers/nvdimm/nd_virtio.c`

* VIRTUAL BOX GUEST DEVICE DRIVER

Mail Hans de Goede <hdegoede@redhat.com>, Arnd Bergmann <arnd@arndb.de>, Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Status Maintained

Files `drivers/virt/vboxguest/  include/linux/vbox_utils.h  include/uapi/linux/vbox*.h`

* VIRTUAL BOX SHARED FOLDER VFS DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

Files `fs/vboxsf/*`

* VIRTUAL SERIO DEVICE DRIVER

Mail Stephen Chandler Paul <thatslyude@gmail.com>

Status Maintained

Files `drivers/input/serio/userio.c include/uapi/linux/userio.h`

* VIVID VIRTUAL VIDEO DRIVER

Mail Hans Verkuil <hverkuil@xs4all.nl>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/test-drivers/vivid/*

* VIDTV VIRTUAL DIGITAL TV DRIVER

Mail Daniel W. S. Almeida <dwlsalmeida@gmail.com>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/test-drivers/vidtv/*

* VLYNQ BUS

Mail Florian Fainelli <f.fainelli@gmail.com>

Mailing list openwrt-devel@lists.openwrt.org (subscribers-only)

Status Maintained

Files drivers/vlynq/vlynq.c include/linux/vlynq.h

* VME SUBSYSTEM

Mail Martyn Welch <martyn@welchs.me.uk>, Manohar Vanga <manohar.vanga@gmail.com>, Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/char-misc.git

Files driver-api/vme drivers/staging/vme_user/ drivers/vme/ include/linux/vme*

* VM SOCKETS (AF_VSOCK)

Mail Stefano Garzarella <sgarzare@redhat.com>

Mailing list virtualization@lists.linux-foundation.org, netdev@vger.kernel.org

Status Maintained

Files drivers/net/vsockmon.c include/net/af_vsock.h include/uapi/linux/
    vm_sockets.h include/uapi/linux/vm_sockets_diag.h include/uapi/linux/
    vsockmon.h net/vmw_vsock/ tools/testing/vsock/

* VMWARE BALLOON DRIVER

Mail Nadav Amit <namit@vmware.com>

Reviewer VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files drivers/misc/vmw_balloon.c

* VMWARE HYPERVISOR INTERFACE

Mail Srivatsa S. Bhat (VMware) <srivatsa@csail.mit.edu>, Alexey Makhalov
    <amakhalov@vmware.com>

Reviewer VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list virtualization@lists.linux-foundation.org, x86@kernel.org

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git x86/vmware

Files arch/x86/include/asm/vmware.h arch/x86/kernel/cpu/vmware.c

* VMWARE PVRDMA DRIVER

Mail Bryan Tan <bryantan@vmware.com>, Vishnu Dasa <vdasa@vmware.com>

Reviewer VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list linux-rdma@vger.kernel.org

Status Maintained

Files drivers/infiniband/hw/vmw_pvrdma/

* VMware PVSCSI driver

Mail Vishal Bhakta <vbhakta@vmware.com>

Reviewer VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list linux-scsi@vger.kernel.org

Status Maintained

Files `drivers/scsi/vmw_pvscsi.c drivers/scsi/vmw_pvscsi.h`

* VMWARE VIRTUAL PTP CLOCK DRIVER

Mail Vivek Thampi <vithampi@vmware.com>

Reviewer VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list netdev@vger.kernel.org

Status Supported

Files `drivers/ptp/ptp_vmw.c`

* VMWARE VMCI DRIVER

Mail Bryan Tan <bryantan@vmware.com>, Rajesh Jalisatgi <rjalisatgi@vmware.com>, Vishnu Dasa <vdasa@vmware.com>

Reviewer VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files `drivers/misc/vmw_vmci/`

* VMWARE VMMOUSE SUBDRIVER

Mail Zack Rusin <zackr@vmware.com>

Reviewer VMware Graphics Reviewers <linux-graphics-maintainer@vmware.com>, VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files `drivers/input/mouse/vmmouse.c drivers/input/mouse/vmmouse.h`

* VMWARE VMXNET3 ETHERNET DRIVER

Mail Ronak Doshi <doshir@vmware.com>

Reviewer VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/vmxnet3/

* VOCORE VOCORE2 BOARD

Mail Harvey Hunt <harveyhuntnexus@gmail.com>

Mailing list linux-mips@vger.kernel.org

Status Maintained

Files arch/mips/boot/dts/ralink/vocore2.dts

* VOLTAGE AND CURRENT REGULATOR FRAMEWORK

Mail Liam Girdwood <lgirdwood@gmail.com>, Mark Brown <broonie@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Supported

Web-page http://www.slimlogic.co.uk/?p=48

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/broonie/regulator.git

Files Documentation/devicetree/bindings/regulator/   Documentation/power/
regulator/ drivers/regulator/ include/dt-bindings/regulator/ include/
linux/regulator/

Content regex regulator_get_optional

* VOLTAGE AND CURRENT REGULATOR IRQ HELPERS

Reviewer Matti Vaittinen <mazziesaccount@gmail.com>

Files drivers/regulator/irq_helpers.c

* VRF

Mail David Ahern <dsahern@kernel.org>

Mailing list netdev@vger.kernel.org

Status Maintained

Files networking/vrf drivers/net/vrf.c

* VSPRINTF

Mail Petr Mladek <pmladek@suse.com>, Steven Rostedt <rostedt@goodmis.org>, Sergey Senozhatsky <senozhatsky@chromium.org>

Reviewer Andy Shevchenko <andriy.shevchenko@linux.intel.com>, Rasmus Villemoes <linux@rasmusvillemoes.dk>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/printk/linux.git

Files core-api/printk-formats   `lib/test_printf.c`   `lib/test_scanf.c`   `lib/ vsprintf.c`

* VT1211 HARDWARE MONITOR DRIVER

Mail Juerg Haefliger <juergh@gmail.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/vt1211 `drivers/hwmon/vt1211.c`

* VT8231 HARDWARE MONITOR DRIVER

Mail Roger Lucas <vt8231@hiddenengine.co.uk>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files `drivers/hwmon/vt8231.c`

* VUB300 USB to SDIO/SD/MMC bridge chip

Mailing list linux-mmc@vger.kernel.org

Status Orphan

Files `drivers/mmc/host/vub300.c`

* W1 DALLAS'S 1-WIRE BUS

Mail Evgeniy Polyakov <zbr@ioremap.net>

Status Maintained

Files `Documentation/devicetree/bindings/w1/ Documentation/w1/ drivers/w1/ include/linux/w1.h`

* W83791D HARDWARE MONITORING DRIVER

Mail Marc Hulsman <m.hulsman@tudelft.nl>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/w83791d drivers/hwmon/w83791d.c

* W83793 HARDWARE MONITORING DRIVER

Mail Rudolf Marek <r.marek@assembler.cz>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files hwmon/w83793 drivers/hwmon/w83793.c

* W83795 HARDWARE MONITORING DRIVER

Mail Jean Delvare <jdelvare@suse.com>

Mailing list linux-hwmon@vger.kernel.org

Status Maintained

Files drivers/hwmon/w83795.c

* W83L51xD SD/MMC CARD INTERFACE DRIVER

Mail Pierre Ossman <pierre@ossman.eu>

Status Maintained

Files drivers/mmc/host/wbsd.*

* WACOM PROTOCOL 4 SERIAL TABLETS

Mail Julian Squires <julian@cipht.net>, Hans de Goede <hdegoede@redhat.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files drivers/input/tablet/wacom_serial4.c

* WATCHDOG DEVICE DRIVERS

Mail Wim Van Sebroeck <wim@linux-watchdog.org>, Guenter Roeck <linux@roeck-us.net>

Mailing list linux-watchdog@vger.kernel.org

Status Maintained

Web-page http://www.linux-watchdog.org/

SCM git git://www.linux-watchdog.org/linux-watchdog.git

Files Documentation/devicetree/bindings/watchdog/ Documentation/ watchdog/ drivers/watchdog/ include/linux/watchdog.h include/uapi/ linux/watchdog.h

* WHISKEYCOVE PMIC GPIO DRIVER

Mail Kuppuswamy Sathyanarayanan <sathyanarayanan.kuppuswamy@linux.intel.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files drivers/gpio/gpio-wcove.c

* WHWAVE RTC DRIVER

Mail Dianlong Li <long17.cool@163.com>

Mailing list linux-rtc@vger.kernel.org

Status Maintained

Files drivers/rtc/rtc-sd3078.c

* WIIMOTE HID DRIVER

Mail David Rheinsberg <david.rheinsberg@gmail.com>

Mailing list linux-input@vger.kernel.org

Status Maintained

Files drivers/hid/hid-wiimote*

* WILOCITY WIL6210 WIRELESS DRIVER

Mailing list linux-wireless@vger.kernel.org

Status Orphan

Web-page https://wireless.wiki.kernel.org/en/users/Drivers/wil6210

Files drivers/net/wireless/ath/wil6210/

* WINBOND CIR DRIVER

Mail David Härdeman <david@hardeman.nu>

Status Maintained

Files drivers/media/rc/winbond-cir.c

* WINSYSTEMS EBC-C384 WATCHDOG DRIVER

Mail William Breathitt Gray <vilhelm.gray@gmail.com>

Mailing list linux-watchdog@vger.kernel.org

Status Maintained

Files drivers/watchdog/ebc-c384_wdt.c

* WINSYSTEMS WS16C48 GPIO DRIVER

Mail William Breathitt Gray <vilhelm.gray@gmail.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files drivers/gpio/gpio-ws16c48.c

* WIREGUARD SECURE NETWORK TUNNEL

Mail Jason A. Donenfeld <Jason@zx2c4.com>

Mailing list wireguard@lists.zx2c4.com, netdev@vger.kernel.org

Status Maintained

Files drivers/net/wireguard/ tools/testing/selftests/wireguard/

* WISTRON LAPTOP BUTTON DRIVER

Mail Miloslav Trmac <mitr@volny.cz>

Status Maintained

Files drivers/input/misc/wistron_btns.c

* WL3501 WIRELESS PCMCIA CARD DRIVER

Mailing list linux-wireless@vger.kernel.org

Status Odd fixes

Files drivers/net/wireless/wl3501*

* WOLFSON MICROELECTRONICS DRIVERS

Mailing list patches@opensource.cirrus.com

Status Supported

Web-page https://github.com/CirrusLogic/linux-drivers/wiki

SCM git https://github.com/CirrusLogic/linux-drivers.git

Files Documentation/devicetree/bindings/extcon/wlf,arizona.
yaml   Documentation/devicetree/bindings/mfd/wlf,arizona.yaml
Documentation/devicetree/bindings/mfd/wm831x.txt   Documentation/
devicetree/bindings/regulator/wlf,arizona.yaml   Documentation/
devicetree/bindings/sound/wlf,*.yaml   Documentation/devicetree/
bindings/sound/wm* Documentation/hwmon/wm83??.rst arch/arm/mach-s3c/
mach-crag6410*   drivers/clk/clk-wm83*.c   drivers/gpio/gpio-*wm*.c
drivers/gpio/gpio-arizona.c drivers/hwmon/wm83??-hwmon.c drivers/
input/misc/wm831x-on.c drivers/input/touchscreen/wm831x-ts.c drivers/
input/touchscreen/wm97*.c   drivers/leds/leds-wm83*.c   drivers/mfd/
arizona* drivers/mfd/cs47l24* drivers/mfd/wm*.c drivers/power/supply/
wm83*.c drivers/regulator/arizona* drivers/regulator/wm8*.c drivers/
rtc/rtc-wm83*.c drivers/video/backlight/wm83*_bl.c drivers/watchdog/
wm83*_wdt.c   include/linux/mfd/arizona/   include/linux/mfd/wm831x/
include/linux/mfd/wm8350/ include/linux/mfd/wm8400* include/linux/
regulator/arizona*   include/linux/wm97xx.h   include/sound/wm????.h
sound/soc/codecs/arizona* sound/soc/codecs/cs47l24* sound/soc/codecs/
wm*

* WORKQUEUE

Mail Tejun Heo <tj@kernel.org>

Reviewer Lai Jiangshan <jiangshanlai@gmail.com>

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tj/wq.git

Files core-api/workqueue include/linux/workqueue.h kernel/workqueue.c

* WWAN DRIVERS

Mail Loic Poulain <loic.poulain@linaro.org>, Sergey Ryazanov <ryazanov.s.a@gmail.com>

Reviewer Johannes Berg <johannes@sipsolutions.net>

Mailing list netdev@vger.kernel.org

Status Maintained

Files drivers/net/wwan/ include/linux/wwan.h include/uapi/linux/wwan.h

* X-POWERS AXP288 PMIC DRIVERS

Mail Hans de Goede <hdegoede@redhat.com>

Status Maintained

Files drivers/acpi/pmic/intel_pmic_xpower.c

Regex axp288

* X-POWERS MULTIFUNCTION PMIC DEVICE DRIVERS

Mail Chen-Yu Tsai <wens@csie.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Regex axp[128]

* X.25 STACK

Mail Martin Schiller <ms@dev.tdt.de>

Mailing list linux-x25@vger.kernel.org

Status Maintained

Files networking/lapb-module Documentation/networking/x25* drivers/net/wan/hdlc_x25.c drivers/net/wan/lapbether.c include/*/lapb.h include/net/x25* include/uapi/linux/x25.h net/lapb/ net/x25/

* X86 ARCHITECTURE (32-BIT AND 64-BIT)

Mail Thomas Gleixner <tglx@linutronix.de>, Ingo Molnar <mingo@redhat.com>, Borislav Petkov <bp@alien8.de>, Dave Hansen <dave.hansen@linux.intel.com>, x86@kernel.org

Reviewer "H. Peter Anvin" <hpa@zytor.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git x86/core

Files Documentation/devicetree/bindings/x86/ Documentation/x86/ arch/x86/

* X86 ENTRY CODE

Mail Andy Lutomirski <luto@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git x86/asm

Files arch/x86/entry/

* X86 MCE INFRASTRUCTURE

Mail Tony Luck <tony.luck@intel.com>, Borislav Petkov <bp@alien8.de>

Mailing list linux-edac@vger.kernel.org

Status Maintained

Files Documentation/ABI/testing/sysfs-mce x86/x86_64/machinecheck arch/x86/kernel/cpu/mce/*

* X86 MICROCODE UPDATE SUPPORT

Mail Borislav Petkov <bp@alien8.de>

Status Maintained

Files arch/x86/kernel/cpu/microcode/*

* X86 MM

Mail Dave Hansen <dave.hansen@linux.intel.com>, Andy Lutomirski <luto@kernel.org>, Peter Zijlstra <peterz@infradead.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git x86/mm

Files arch/x86/mm/

* X86 PLATFORM ANDROID TABLETS DSDT FIXUP DRIVER

Mail Hans de Goede <hdegoede@redhat.com>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pdx86/platform-drivers-x86.git

Files drivers/platform/x86/x86-android-tablets.c

* X86 PLATFORM DRIVERS

Mail Hans de Goede <hdegoede@redhat.com>, Mark Gross <mark-gross@kernel.org>

Mailing list platform-driver-x86@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/pdx86/platform-drivers-x86.git

Files drivers/platform/olpc/ drivers/platform/x86/

* X86 PLATFORM DRIVERS - ARCH

Reviewer Darren Hart <dvhart@infradead.org>, Andy Shevchenko <andy@infradead.org>

Mailing list platform-driver-x86@vger.kernel.org, x86@kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git x86/core

Files arch/x86/platform

* X86 PLATFORM UV HPE SUPERDOME FLEX

Mail Steve Wahl <steve.wahl@hpe.com>

Reviewer Mike Travis <mike.travis@hpe.com>, Dimitri Sivanich <dimitri.sivanich@hpe.com>, Russ Anderson <russ.anderson@hpe.com>

Status Supported

Files arch/x86/include/asm/uv/ arch/x86/kernel/apic/x2apic_uv_x.c arch/x86/platform/uv/

* X86 STACK UNWINDING

Mail Josh Poimboeuf <jpoimboe@kernel.org>, Peter Zijlstra <peterz@infradead.org>

Status Supported

Files arch/x86/include/asm/unwind*.h arch/x86/kernel/dumpstack.c arch/x86/kernel/stacktrace.c arch/x86/kernel/unwind_*.c

* X86 VDSO

Mail Andy Lutomirski <luto@kernel.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/tip/tip.git x86/vdso

Files arch/x86/entry/vdso/

* XARRAY

Mail Matthew Wilcox <willy@infradead.org>

Mailing list linux-fsdevel@vger.kernel.org

Status Supported

Files core-api/xarray include/linux/idr.h include/linux/xarray.h lib/idr.c lib/xarray.c tools/testing/radix-tree

* XBOX DVD IR REMOTE

Mail Benjamin Valentin <benpicco@googlemail.com>

Status Maintained

Files drivers/media/rc/keymaps/rc-xbox-dvd.c drivers/media/rc/xbox_remote.c

* XC2028/3028 TUNER DRIVER

Mail Mauro Carvalho Chehab <mchehab@kernel.org>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org

SCM git git://linuxtv.org/media_tree.git

Files drivers/media/tuners/xc2028.*

* XDP (eXpress Data Path)

Mail Alexei Starovoitov <ast@kernel.org>, Daniel Borkmann <daniel@iogearbox.net>, David S. Miller <davem@davemloft.net>, Jakub Kicinski <kuba@kernel.org>, Jesper Dangaard Brouer <hawk@kernel.org>, John Fastabend <john.fastabend@gmail.com>

Mailing list netdev@vger.kernel.org, bpf@vger.kernel.org

Status Supported

Files include/net/xdp.h include/net/xdp_priv.h include/trace/events/xdp. h kernel/bpf/cpumap.c kernel/bpf/devmap.c net/core/xdp.c samples/bpf/ xdp* tools/testing/selftests/bpf/*xdp* tools/testing/selftests/bpf/ */*xdp* drivers/net/ethernet/*/*/*/*xdp* drivers/net/ethernet/*/*/ *xdp*

Content regex (?:\b|_)xdp(?:\b|_)

* XDP SOCKETS (AF_XDP)

Mail Björn Töpel <bjorn@kernel.org>, Magnus Karlsson <magnus.karlsson@intel.com>, Maciej Fijalkowski <maciej.fijalkowski@intel.com>

Reviewer Jonathan Lemon <jonathan.lemon@gmail.com>

Mailing list netdev@vger.kernel.org, bpf@vger.kernel.org

Status Maintained

Files networking/af_xdp include/net/xdp_sock* include/net/xsk_buff_pool.h include/uapi/linux/if_xdp.h include/uapi/linux/xdp_diag.h include/ net/netns/xdp.h net/xdp/ samples/bpf/xdpsock* tools/lib/bpf/xsk*

* XEN BLOCK SUBSYSTEM

Mail Roger Pau Monné <roger.pau@citrix.com>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers)

Status Supported

Files `drivers/block/xen* drivers/block/xen-blkback/*`

* XEN HYPERVISOR ARM

Mail Stefano Stabellini <sstabellini@kernel.org>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers)

Status Maintained

Files `arch/arm/include/asm/xen/ arch/arm/xen/`

* XEN HYPERVISOR ARM64

Mail Stefano Stabellini <sstabellini@kernel.org>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers)

Status Maintained

Files `arch/arm64/include/asm/xen/ arch/arm64/xen/`

* XEN HYPERVISOR INTERFACE

Mail Juergen Gross <jgross@suse.com>, Stefano Stabellini <sstabellini@kernel.org>

Reviewer Oleksandr Tyshchenko <oleksandr_tyshchenko@epam.com>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers)

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/xen/tip.git

Files `Documentation/ABI/stable/sysfs-hypervisor-xen   Documentation/ABI/ testing/sysfs-hypervisor-xen   drivers/*/xen-*front.c   drivers/xen/ include/uapi/xen/ include/xen/`

* XEN HYPERVISOR X86

Mail Juergen Gross <jgross@suse.com>

Reviewer Boris Ostrovsky <boris.ostrovsky@oracle.com>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers)

Status Supported

Files `arch/x86/include/asm/pvclock-abi.h arch/x86/include/asm/xen/ arch/x86/platform/pvh/ arch/x86/xen/`

* XEN NETWORK BACKEND DRIVER

Mail Wei Liu <wei.liu@kernel.org>, Paul Durrant <paul@xen.org>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers), netdev@vger.kernel.org

Status Supported

Files `drivers/net/xen-netback/*`

* XEN PCI SUBSYSTEM

Mail Juergen Gross <jgross@suse.com>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers)

Status Supported

Files `arch/x86/pci/*xen* drivers/pci/*xen*`

* XEN PVSCSI DRIVERS

Mail Juergen Gross <jgross@suse.com>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers), linux-scsi@vger.kernel.org

Status Supported

Files `drivers/scsi/xen-scsifront.c  drivers/xen/xen-scsiback.c  include/xen/interface/io/vscsiif.h`

* XEN PVUSB DRIVER

Mail Juergen Gross <jgross@suse.com>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers), linux-usb@vger.kernel.org

Status Supported

Files `drivers/usb/host/xen* include/xen/interface/io/usbif.h`

* XEN SOUND FRONTEND DRIVER

Mail Oleksandr Andrushchenko <oleksandr_andrushchenko@epam.com>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers), alsa-devel@alsa-project.org (moderated for non-subscribers)

Status Supported

Files `sound/xen/*`

* XEN SWIOTLB SUBSYSTEM

Mail Juergen Gross <jgross@suse.com>, Stefano Stabellini <sstabellini@kernel.org>

Mailing list xen-devel@lists.xenproject.org (moderated for non-subscribers), iommu@lists.linux.dev

Status Supported

Files `arch/x86/xen/*swiotlb* drivers/xen/*swiotlb*`

* XFS FILESYSTEM

chat irc://irc.oftc.net/xfs

Mail Darrick J. Wong <djwong@kernel.org>

Mailing list linux-xfs@vger.kernel.org

Status Supported

Web-page http://xfs.org/

SCM git git://git.kernel.org/pub/scm/fs/xfs/xfs-linux.git

Files `Documentation/ABI/testing/sysfs-fs-xfs` admin-guide/xfs filesystems/xfs-delayed-logging-design filesystems/xfs-self-describing-metadata `fs/xfs/ include/uapi/linux/dqblk_xfs.h include/uapi/linux/fsmap.h`

* XILINX AMS DRIVER

Mail Anand Ashok Dumbre <anand.ashok.dumbre@xilinx.com>

Mailing list linux-iio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/iio/adc/xlnx,zynqmp-ams.yaml
    drivers/iio/adc/xilinx-ams.c

* XILINX AXI ETHERNET DRIVER

Mail Radhey Shyam Pandey <radhey.shyam.pandey@xilinx.com>

Status Maintained

Files drivers/net/ethernet/xilinx/xilinx_axienet*

* XILINX CAN DRIVER

Mail Appana Durga Kedareswara rao <appana.durga.rao@xilinx.com>

Reviewer Naga Sureshkumar Relli <naga.sureshkumar.relli@xilinx.com>

Mailing list linux-can@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/net/can/xilinx,can.yaml drivers/
    net/can/xilinx_can.c

* XILINX GPIO DRIVER

Mail Shubhrajyoti Datta <shubhrajyoti.datta@xilinx.com>

Reviewer Srinivas Neeli <srinivas.neeli@xilinx.com>, Michal Simek
    <michal.simek@xilinx.com>

Status Maintained

Files Documentation/devicetree/bindings/gpio/gpio-xilinx.txt
    Documentation/devicetree/bindings/gpio/gpio-zynq.yaml drivers/gpio/
    gpio-xilinx.c drivers/gpio/gpio-zynq.c

* XILINX SD-FEC IP CORES

Mail Derek Kiernan <derek.kiernan@xilinx.com>, Dragan Cvetic <dragan.cvetic@xilinx.com>

Status Maintained

Files Documentation/devicetree/bindings/misc/xlnx,sd-fec.txt   misc-
    devices/xilinx_sdfec drivers/misc/Kconfig drivers/misc/Makefile drivers/
    misc/xilinx_sdfec.c include/uapi/misc/xilinx_sdfec.h

* XILINX PWM DRIVER

Mail Sean Anderson <sean.anderson@seco.com>

Status Maintained

Files drivers/pwm/pwm-xilinx.c include/clocksource/timer-xilinx.h

* XILINX UARTLITE SERIAL DRIVER

Mail Peter Korsgaard <jacmet@sunsite.dk>

Mailing list linux-serial@vger.kernel.org

Status Maintained

Files drivers/tty/serial/uartlite.c

* XILINX VIDEO IP CORES

Mail Hyun Kwon <hyun.kwon@xilinx.com>, Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-media@vger.kernel.org

Status Supported

SCM git git://linuxtv.org/media_tree.git

Files Documentation/devicetree/bindings/media/xilinx/ drivers/media/ platform/xilinx/ include/uapi/linux/xilinx-v4l2-controls.h

* XILINX ZYNQMP DPDMA DRIVER

Mail Hyun Kwon <hyun.kwon@xilinx.com>, Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list dmaengine@vger.kernel.org

Status Supported

Files Documentation/devicetree/bindings/dma/xilinx/xlnx,zynqmp-dpdma. yaml drivers/dma/xilinx/xilinx_dpdma.c include/dt-bindings/dma/ xlnx-zynqmp-dpdma.h

* XILINX ZYNQMP PSGTR PHY DRIVER

Mail Anurag Kumar Vulisha <anurag.kumar.vulisha@xilinx.com>, Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list linux-kernel@vger.kernel.org

Status Supported

SCM git https://github.com/Xilinx/linux-xlnx.git

Files Documentation/devicetree/bindings/phy/xlnx,zynqmp-psgtr.yaml
drivers/phy/xilinx/phy-zynqmp.c

* XILINX ZYNQMP SHA3 DRIVER

Mail Harsha <harsha.harsha@xilinx.com>

Status Maintained

Files drivers/crypto/xilinx/zynqmp-sha.c

* XILINX EVENT MANAGEMENT DRIVER

Mail Abhyuday Godhasara <abhyuday.godhasara@xilinx.com>

Status Maintained

Files drivers/soc/xilinx/xlnx_event_manager.c   include/linux/firmware/
xlnx-event-manager.h

* XILLYBUS DRIVER

Mail Eli Billauer <eli.billauer@gmail.com>

Mailing list linux-kernel@vger.kernel.org

Status Supported

Files drivers/char/xillybus/

* XLP9XX I2C DRIVER

Mail George Cherian <gcherian@marvell.com>

Mailing list linux-i2c@vger.kernel.org

Status Supported

Web-page http://www.marvell.com

Files drivers/i2c/busses/i2c-xlp9xx.c

* XRA1403 GPIO EXPANDER

Mail Nandor Han <nandor.han@ge.com>, Semi Malinen <semi.malinen@ge.com>

Mailing list linux-gpio@vger.kernel.org

Status Maintained

Files Documentation/devicetree/bindings/gpio/gpio-xra1403.txt   drivers/
gpio/gpio-xra1403.c

* XTENSA XTFPGA PLATFORM SUPPORT

Mail Max Filippov <jcmvbkbc@gmail.com>

Mailing list linux-xtensa@linux-xtensa.org

Status Maintained

Files `drivers/spi/spi-xtensa-xtfpga.c sound/soc/xtensa/xtfpga-i2s.c`

* YAM DRIVER FOR AX.25

Mail Jean-Paul Roubelat <jpr@f6fbb.org>

Mailing list linux-hams@vger.kernel.org

Status Maintained

Files `drivers/net/hamradio/yam* include/linux/yam.h`

* YAMA SECURITY MODULE

Mail Kees Cook <keescook@chromium.org>

Status Supported

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git yama/tip

Files admin-guide/LSM/Yama `security/yama/`

* YEALINK PHONE DRIVER

Mail Henk Vergonet <Henk.Vergonet@gmail.com>

Mailing list usbb2k-api-dev@nongnu.org

Status Maintained

Files input/devices/yealink `drivers/input/misc/yealink.*`

* Z8530 DRIVER FOR AX.25

Mail Joerg Reuter <jreuter@yaina.de>

Mailing list linux-hams@vger.kernel.org

Status Maintained

Web-page http://yaina.de/jreuter/ http://www.qsl.net/dl1bke/

Files networking/device_drivers/hamradio/z8530drv `drivers/net/hamradio/*scc.c drivers/net/hamradio/z8530.h`

* ZBUD COMPRESSED PAGE ALLOCATOR

Mail Seth Jennings <sjenning@redhat.com>, Dan Streetman <ddstreet@ieee.org>

Mailing list linux-mm@kvack.org

Status Maintained

Files mm/zbud.c

* Z3FOLD COMPRESSED PAGE ALLOCATOR

Mail Vitaly Wool <vitaly.wool@konsulko.com>

Reviewer Miaohe Lin <linmiaohe@huawei.com>

Mailing list linux-mm@kvack.org

Status Maintained

Files mm/z3fold.c

* ZD1211RW WIRELESS DRIVER

Mail Ulrich Kunitz <kune@deine-taler.de>

Mailing list linux-wireless@vger.kernel.org,   zd1211-devs@lists.sourceforge.net (subscribers-only)

Status Maintained

Web-page http://zd1211.ath.cx/wiki/DriverRewrite

Files drivers/net/wireless/zydas/zd1211rw/

* ZD1301 MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org/ http://palosaari.fi/linux/

Patchwork https://patchwork.linuxtv.org/project/linux-media/list/

Files drivers/media/usb/dvb-usb-v2/zd1301*

* ZD1301_DEMOD MEDIA DRIVER

Mail Antti Palosaari <crope@iki.fi>

Mailing list linux-media@vger.kernel.org

Status Maintained

Web-page https://linuxtv.org/ http://palosaari.fi/linux/

Patchwork https://patchwork.linuxtv.org/project/linux-media/list/

Files `drivers/media/dvb-frontends/zd1301_demod*`

* ZHAOXIN PROCESSOR SUPPORT

Mail Tony W Wang-oc <TonyWWang-oc@zhaoxin.com>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files `arch/x86/kernel/cpu/zhaoxin.c`

* ZONEFS FILESYSTEM

Mail Damien Le Moal <damien.lemoal@opensource.wdc.com>, Naohiro Aota <naohiro.aota@wdc.com>

Reviewer Johannes Thumshirn <jth@kernel.org>

Mailing list linux-fsdevel@vger.kernel.org

Status Maintained

SCM git git://git.kernel.org/pub/scm/linux/kernel/git/dlemoal/zonefs.git

Files filesystems/zonefs `fs/zonefs/`

* ZPOOL COMPRESSED PAGE STORAGE API

Mail Dan Streetman <ddstreet@ieee.org>

Mailing list linux-mm@kvack.org

Status Maintained

Files `include/linux/zpool.h mm/zpool.c`

* ZR36067 VIDEO FOR LINUX DRIVER

Mail Corentin Labbe <clabbe@baylibre.com>

Mailing list mjpeg-users@lists.sourceforge.net, linux-media@vger.kernel.org

Status Maintained

Web-page http://mjpeg.sourceforge.net/driver-zoran/

Patchwork https://patchwork.linuxtv.org/project/linux-media/list/

Files driver-api/media/drivers/zoran drivers/staging/media/zoran/

* ZRAM COMPRESSED RAM BLOCK DEVICE DRVIER

Mail Minchan Kim <minchan@kernel.org>, Nitin Gupta <ngupta@vflare.org>

Reviewer Sergey Senozhatsky <senozhatsky@chromium.org>

Mailing list linux-kernel@vger.kernel.org

Status Maintained

Files admin-guide/blockdev/zram drivers/block/zram/

* ZS DECSTATION Z85C30 SERIAL DRIVER

Mail "Maciej W. Rozycki" <macro@orcam.me.uk>

Status Maintained

Files drivers/tty/serial/zs.*

* ZSMALLOC COMPRESSED SLAB MEMORY ALLOCATOR

Mail Minchan Kim <minchan@kernel.org>, Nitin Gupta <ngupta@vflare.org>

Reviewer Sergey Senozhatsky <senozhatsky@chromium.org>

Mailing list linux-mm@kvack.org

Status Maintained

Files vm/zsmalloc include/linux/zsmalloc.h mm/zsmalloc.c

* ZSTD

Mail Nick Terrell <terrelln@fb.com>

Status Maintained

bugs https://github.com/facebook/zstd/issues

SCM git git://github.com/terrelln/linux.git

Files include/linux/zstd* lib/zstd/ lib/decompress_unzstd.c crypto/zstd.c

Regex zstd

> **Content regex** `zstd`

* ZSWAP COMPRESSED SWAP CACHING

> **Mail** Seth Jennings <sjenning@redhat.com>, Dan Streetman <ddstreet@ieee.org>,
> Vitaly Wool <vitaly.wool@konsulko.com>
>
> **Mailing list** linux-mm@kvack.org
>
> **Status** Maintained
>
> **Files** `mm/zswap.c`

* THE REST

> **Mail** Linus Torvalds <torvalds@linux-foundation.org>
>
> **Mailing list** linux-kernel@vger.kernel.org
>
> **Status** Buried alive in reporters
>
> **SCM** git git://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git
>
> **Files** `* */`

RESEARCHER GUIDELINES

The Linux kernel community welcomes transparent research on the Linux kernel, the activities involved in producing it, and any other byproducts of its development. Linux benefits greatly from this kind of research, and most aspects of Linux are driven by research in one form or another.

The community greatly appreciates if researchers can share preliminary findings before making their results public, especially if such research involves security. Getting involved early helps both improve the quality of research and ability for Linux to improve from it. In any case, sharing open access copies of the published research with the community is recommended.

This document seeks to clarify what the Linux kernel community considers acceptable and non-acceptable practices when conducting such research. At the very least, such research and related activities should follow standard research ethics rules. For more background on research ethics generally, ethics in technology, and research of developer communities in particular, see:

- History of Research Ethics

- IEEE Ethics

- Developer and Researcher Views on the Ethics of Experiments on Open-Source Projects

The Linux kernel community expects that everyone interacting with the project is participating in good faith to make Linux better. Research on any publicly-available artifact (including, but not limited to source code) produced by the Linux kernel community is welcome, though research on developers must be distinctly opt-in.

Passive research that is based entirely on publicly available sources, including posts to public mailing lists and commits to public repositories, is clearly permissible. Though, as with any research, standard ethics must still be followed.

Active research on developer behavior, however, must be done with the explicit agreement of, and full disclosure to, the individual developers involved. Developers cannot be interacted with/experimented on without consent; this, too, is standard research ethics.

To help clarify: sending patches to developers *is* interacting with them, but they have already consented to receiving *good faith contributions*. Sending intentionally flawed/vulnerable patches or contributing misleading information to discussions is not consented to. Such communication can be damaging to the developer (e.g. draining time, effort, and morale) and damaging to the project by eroding the entire developer community's trust in the contributor (and the contributor's organization as a whole), undermining efforts to provide constructive feedback to contributors, and putting end users at risk of software flaws.

Participation in the development of Linux itself by researchers, as with anyone, is welcomed and encouraged. Research into Linux code is a common practice, especially when it comes to developing or running analysis tools that produce actionable results.

When engaging with the developer community, sending a patch has traditionally been the best way to make an impact. Linux already has plenty of known bugs – what's much more helpful is having vetted fixes. Before contributing, carefully read the appropriate documentation:

- *A guide to the Kernel Development Process*
- *Submitting patches: the essential guide to getting your code into the kernel*
- Documentation/admin-guide/reporting-issues.rst
- Documentation/admin-guide/security-bugs.rst

Then send a patch (including a commit log with all the details listed below) and follow up on any feedback from other developers.

When sending patches produced from research, the commit logs should contain at least the following details, so that developers have appropriate context for understanding the contribution. Answer:

- What is the specific problem that has been found?
- How could the problem be reached on a running system?
- What effect would encountering the problem have on the system?
- How was the problem found? Specifically include details about any testing, static or dynamic analysis programs, and any other tools or methods used to perform the work.
- Which version of Linux was the problem found on? Using the most recent release or a recent linux-next branch is strongly preferred (see *HOWTO do Linux kernel development*).
- What was changed to fix the problem, and why it is believed to be correct?
- How was the change build tested and run-time tested?
- What prior commit does this change fix? This should go in a "Fixes:" tag as the documentation describes.
- Who else has reviewed this patch? This should go in appropriate "Reviewed-by:" tags; see below.

For example:

```
From: Author <author@email>
Subject: [PATCH] drivers/foo_bar: Add missing kfree()

The error path in foo_bar driver does not correctly free the allocated
struct foo_bar_info. This can happen if the attached foo_bar device
rejects the initialization packets sent during foo_bar_probe(). This
would result in a 64 byte slab memory leak once per device attach,
wasting memory resources over time.

This flaw was found using an experimental static analysis tool we are
developing, LeakMagic[1], which reported the following warning when
analyzing the v5.15 kernel release:
```

```
 path/to/foo_bar.c:187: missing kfree() call?

Add the missing kfree() to the error path. No other references to
this memory exist outside the probe function, so this is the only
place it can be freed.

x86_64 and arm64 defconfig builds with CONFIG_FOO_BAR=y using GCC
11.2 show no new warnings, and LeakMagic no longer warns about this
code path. As we don't have a FooBar device to test with, no runtime
testing was able to be performed.

[1] https://url/to/leakmagic/details


Reported-by: Researcher <researcher@email>
Fixes: aaaabbbbccccdddd ("Introduce support for FooBar")
Signed-off-by: Author <author@email>
Reviewed-by: Reviewer <reviewer@email>
```

If you are a first time contributor it is recommended that the patch itself be vetted by others privately before being posted to public lists. (This is required if you have been explicitly told your patches need more careful internal review.) These people are expected to have their "Reviewed-by" tag included in the resulting patch. Finding another developer familiar with Linux contribution, especially within your own organization, and having them help with reviews before sending them to the public mailing lists tends to significantly improve the quality of the resulting patches, and there by reduces the burden on other developers.

If no one can be found to internally review patches and you need help finding such a person, or if you have any other questions related to this document and the developer community's expectations, please reach out to the private Technical Advisory Board mailing list: <tech-board@lists.linux-foundation.org>.

These are some overall technical guides that have been put here for now for lack of a better place.

APPLYING PATCHES TO THE LINUX KERNEL

Original by: Jesper Juhl, August 2005

Note: This document is obsolete. In most cases, rather than using `patch` manually, you'll almost certainly want to look at using Git instead.

A frequently asked question on the Linux Kernel Mailing List is how to apply a patch to the kernel or, more specifically, what base kernel a patch for one of the many trees/branches should be applied to. Hopefully this document will explain this to you.

In addition to explaining how to apply and revert patches, a brief description of the different kernel trees (and examples of how to apply their specific patches) is also provided.

* What is a patch?

A patch is a small text document containing a delta of changes between two different versions of a source tree. Patches are created with the `diff` program.

To correctly apply a patch you need to know what base it was generated from and what new version the patch will change the source tree into. These should both be present in the patch file metadata or be possible to deduce from the filename.

* How do I apply or revert a patch?

You apply a patch with the `patch` program. The patch program reads a diff (or patch) file and makes the changes to the source tree described in it.

Patches for the Linux kernel are generated relative to the parent directory holding the kernel source dir.

This means that paths to files inside the patch file contain the name of the kernel source directories it was generated against (or some other directory names like "a/" and "b/").

Since this is unlikely to match the name of the kernel source dir on your local machine (but is often useful info to see what version an otherwise unlabeled patch was generated against) you should change into your kernel source directory and then strip the first element of the path from filenames in the patch file when applying it (the `-p1` argument to `patch` does this).

To revert a previously applied patch, use the -R argument to patch. So, if you applied a patch like this:

```
patch -p1 < ../patch-x.y.z
```

You can revert (undo) it like this:

```
patch -R -p1 < ../patch-x.y.z
```

* How do I feed a patch/diff file to `patch`?

This (as usual with Linux and other UNIX like operating systems) can be done in several different ways.

In all the examples below I feed the file (in uncompressed form) to patch via stdin using the following syntax:

```
patch -p1 < path/to/patch-x.y.z
```

If you just want to be able to follow the examples below and don't want to know of more than one way to use patch, then you can stop reading this section here.

Patch can also get the name of the file to use via the -i argument, like this:

```
patch -p1 -i path/to/patch-x.y.z
```

If your patch file is compressed with gzip or xz and you don't want to uncompress it before applying it, then you can feed it to patch like this instead:

```
xzcat path/to/patch-x.y.z.xz | patch -p1
bzcat path/to/patch-x.y.z.gz | patch -p1
```

If you wish to uncompress the patch file by hand first before applying it (what I assume you've done in the examples below), then you simply run gunzip or xz on the file – like this:

```
gunzip patch-x.y.z.gz
xz -d patch-x.y.z.xz
```

Which will leave you with a plain text patch-x.y.z file that you can feed to patch via stdin or the `-i` argument, as you prefer.

A few other nice arguments for patch are `-s` which causes patch to be silent except for errors which is nice to prevent errors from scrolling out of the screen too fast, and `--dry-run` which causes patch to just print a listing of what would happen, but doesn't actually make any changes. Finally `--verbose` tells patch to print more information about the work being done.

* Common errors when patching

When patch applies a patch file it attempts to verify the sanity of the file in different ways.

Checking that the file looks like a valid patch file and checking the code around the bits being modified matches the context provided in the patch are just two of the basic sanity checks patch does.

If patch encounters something that doesn't look quite right it has two options. It can either refuse to apply the changes and abort or it can try to find a way to make the patch apply with a few minor changes.

One example of something that's not 'quite right' that patch will attempt to fix up is if all the context matches, the lines being changed match, but the line numbers are different. This can happen, for example, if the patch makes a change in the middle of the file but for some reasons a few lines have been added or removed near the beginning of the file. In that case everything looks good it has just moved up or down a bit, and patch will usually adjust the line numbers and apply the patch.

Whenever patch applies a patch that it had to modify a bit to make it fit it'll tell you about it by saying the patch applied with **fuzz**. You should be wary of such changes since even though patch probably got it right it doesn't /always/ get it right, and the result will sometimes be wrong.

When patch encounters a change that it can't fix up with fuzz it rejects it outright and leaves a file with a `.rej` extension (a reject file). You can read this file to see exactly what change couldn't be applied, so you can go fix it up by hand if you wish.

If you don't have any third-party patches applied to your kernel source, but only patches from kernel.org and you apply the patches in the correct order, and have made no modifications yourself to the source files, then you should never see a fuzz or reject message from patch. If you do see such messages anyway, then there's a high risk that either your local source tree or the patch file is corrupted in some way. In that case you should probably try re-downloading the patch and if things are still not OK then you'd be advised to start with a fresh tree downloaded in full from kernel.org.

Let's look a bit more at some of the messages patch can produce.

If patch stops and presents a `File to patch:` prompt, then patch could not find a file to be patched. Most likely you forgot to specify -p1 or you are in the wrong directory. Less often, you'll find patches that need to be applied with `-p0` instead of `-p1` (reading the patch file should reveal if this is the case – if so, then this is an error by the person who created the patch but is not fatal).

If you get `Hunk #2 succeeded at 1887 with fuzz 2 (offset 7 lines).` or a message similar to that, then it means that patch had to adjust the location of the change (in this example it needed to move 7 lines from where it expected to make the change to make it fit).

The resulting file may or may not be OK, depending on the reason the file was different than expected.

This often happens if you try to apply a patch that was generated against a different kernel version than the one you are trying to patch.

If you get a message like `Hunk #3 FAILED at 2387.`, then it means that the patch could not be applied correctly and the patch program was unable to fuzz its way through. This will generate

---

a `.rej` file with the change that caused the patch to fail and also a `.orig` file showing you the original content that couldn't be changed.

If you get `Reversed (or previously applied) patch detected! Assume -R? [n]` then patch detected that the change contained in the patch seems to have already been made.

If you actually did apply this patch previously and you just re-applied it in error, then just say [n]o and abort this patch. If you applied this patch previously and actually intended to revert it, but forgot to specify -R, then you can say [**y**]es here to make patch revert it for you.

This can also happen if the creator of the patch reversed the source and destination directories when creating the patch, and in that case reverting the patch will in fact apply it.

A message similar to `patch: **** unexpected end of file in patch` or `patch unexpectedly ends in middle of line` means that patch could make no sense of the file you fed to it. Either your download is broken, you tried to feed patch a compressed patch file without uncompressing it first, or the patch file that you are using has been mangled by a mail client or mail transfer agent along the way somewhere, e.g., by splitting a long line into two lines. Often these warnings can easily be fixed by joining (concatenating) the two lines that had been split.

As I already mentioned above, these errors should never happen if you apply a patch from kernel.org to the correct version of an unmodified source tree. So if you get these errors with kernel.org patches then you should probably assume that either your patch file or your tree is broken and I'd advise you to start over with a fresh download of a full kernel tree and the patch you wish to apply.

* Are there any alternatives to `patch`?

Yes there are alternatives.

You can use the `interdiff` program (http://cyberelk.net/tim/patchutils/) to generate a patch representing the differences between two patches and then apply the result.

This will let you move from something like 5.7.2 to 5.7.3 in a single step. The -z flag to interdiff will even let you feed it patches in gzip or bzip2 compressed form directly without the use of zcat or bzcat or manual decompression.

Here's how you'd go from 5.7.2 to 5.7.3 in a single step:

```
interdiff -z ../patch-5.7.2.gz ../patch-5.7.3.gz | patch -p1
```

Although interdiff may save you a step or two you are generally advised to do the additional steps since interdiff can get things wrong in some cases.

Another alternative is `ketchup`, which is a python script for automatic downloading and applying of patches (https://www.selenic.com/ketchup/).

Other nice tools are diffstat, which shows a summary of changes made by a patch; lsdiff, which displays a short listing of affected files in a patch file, along with (optionally) the line numbers of the start of each patch; and grepdiff, which displays a list of the files modified by a patch where the patch contains a given regular expression.

* Where can I download the patches?

The patches are available at https://kernel.org/ Most recent patches are linked from the front page, but they also have specific homes.

The 5.x.y (-stable) and 5.x patches live at

> https://www.kernel.org/pub/linux/kernel/v5.x/

The 5.x.y incremental patches live at

> https://www.kernel.org/pub/linux/kernel/v5.x/incr/

The -rc patches are not stored on the webserver but are generated on demand from git tags such as

> https://git.kernel.org/torvalds/p/v5.1-rc1/v5.0

The stable -rc patches live at

> https://www.kernel.org/pub/linux/kernel/v5.x/stable-review/

* The 5.x kernels

These are the base stable releases released by Linus. The highest numbered release is the most recent.

If regressions or other serious flaws are found, then a -stable fix patch will be released (see below) on top of this base. Once a new 5.x base kernel is released, a patch is made available that is a delta between the previous 5.x kernel and the new one.

To apply a patch moving from 5.6 to 5.7, you'd do the following (note that such patches do **NOT** apply on top of 5.x.y kernels but on top of the base 5.x kernel – if you need to move from 5.x.y to 5.x+1 you need to first revert the 5.x.y patch).

Here are some examples:

```
# moving from 5.6 to 5.7

$ cd ~/linux-5.6                 # change to kernel source dir
$ patch -p1 < ../patch-5.7       # apply the 5.7 patch
$ cd ..
$ mv linux-5.6 linux-5.7         # rename source dir


# moving from 5.6.1 to 5.7

$ cd ~/linux-5.6.1               # change to kernel source dir
$ patch -p1 -R < ../patch-5.6.1  # revert the 5.6.1 patch
                                 # source dir is now 5.6
$ patch -p1 < ../patch-5.7       # apply new 5.7 patch
$ cd ..
$ mv linux-5.6.1 linux-5.7       # rename source dir
```

* The 5.x.y kernels

Kernels with 3-digit versions are -stable kernels. They contain small(ish) critical fixes for security problems or significant regressions discovered in a given 5.x kernel.

This is the recommended branch for users who want the most recent stable kernel and are not interested in helping test development/experimental versions.

If no 5.x.y kernel is available, then the highest numbered 5.x kernel is the current stable kernel.

The -stable team provides normal as well as incremental patches. Below is how to apply these patches.

* Normal patches

These patches are not incremental, meaning that for example the 5.7.3 patch does not apply on top of the 5.7.2 kernel source, but rather on top of the base 5.7 kernel source.

So, in order to apply the 5.7.3 patch to your existing 5.7.2 kernel source you have to first back out the 5.7.2 patch (so you are left with a base 5.7 kernel source) and then apply the new 5.7.3 patch.

Here's a small example:

```
$ cd ~/linux-5.7.2              # change to the kernel source dir
$ patch -p1 -R < ../patch-5.7.2 # revert the 5.7.2 patch
$ patch -p1 < ../patch-5.7.3    # apply the new 5.7.3 patch
$ cd ..
$ mv linux-5.7.2 linux-5.7.3    # rename the kernel source dir
```

* Incremental patches

Incremental patches are different: instead of being applied on top of base 5.x kernel, they are applied on top of previous stable kernel (5.x.y-1).

Here's the example to apply these:

```
$ cd ~/linux-5.7.2              # change to the kernel source dir
$ patch -p1 < ../patch-5.7.2-3  # apply the new 5.7.3 patch
$ cd ..
$ mv linux-5.7.2 linux-5.7.3    # rename the kernel source dir
```

* The -rc kernels

These are release-candidate kernels. These are development kernels released by Linus whenever he deems the current git (the kernel's source management tool) tree to be in a reasonably sane state adequate for testing.

These kernels are not stable and you should expect occasional breakage if you intend to run them. This is however the most stable of the main development branches and is also what will

eventually turn into the next stable kernel, so it is important that it be tested by as many people as possible.

This is a good branch to run for people who want to help out testing development kernels but do not want to run some of the really experimental stuff (such people should see the sections about -next and -mm kernels below).

The -rc patches are not incremental, they apply to a base 5.x kernel, just like the 5.x.y patches described above. The kernel version before the -rcN suffix denotes the version of the kernel that this -rc kernel will eventually turn into.

So, 5.8-rc5 means that this is the fifth release candidate for the 5.8 kernel and the patch should be applied on top of the 5.7 kernel source.

Here are 3 examples of how to apply these patches:

```
# first an example of moving from 5.7 to 5.8-rc3

$ cd ~/linux-5.7                        # change to the 5.7 source dir
$ patch -p1 < ../patch-5.8-rc3          # apply the 5.8-rc3 patch
$ cd ..
$ mv linux-5.7 linux-5.8-rc3            # rename the source dir

# now let's move from 5.8-rc3 to 5.8-rc5

$ cd ~/linux-5.8-rc3                     # change to the 5.8-rc3 dir
$ patch -p1 -R < ../patch-5.8-rc3        # revert the 5.8-rc3 patch
$ patch -p1 < ../patch-5.8-rc5           # apply the new 5.8-rc5 patch
$ cd ..
$ mv linux-5.8-rc3 linux-5.8-rc5         # rename the source dir

# finally let's try and move from 5.7.3 to 5.8-rc5

$ cd ~/linux-5.7.3                       # change to the kernel source dir
$ patch -p1 -R < ../patch-5.7.3          # revert the 5.7.3 patch
$ patch -p1 < ../patch-5.8-rc5           # apply new 5.8-rc5 patch
$ cd ..
$ mv linux-5.7.3 linux-5.8-rc5           # rename the kernel source dir
```

* The -mm patches and the linux-next tree

The -mm patches are experimental patches released by Andrew Morton.

In the past, -mm tree were used to also test subsystem patches, but this function is now done via the *linux-next* (https://www.kernel.org/doc/man-pages/linux-next.html) tree. The Subsystem maintainers push their patches first to linux-next, and, during the merge window, sends them directly to Linus.

The -mm patches serve as a sort of proving ground for new features and other experimental patches that aren't merged via a subsystem tree. Once such patches has proved its worth in -mm for a while Andrew pushes it on to Linus for inclusion in mainline.

The linux-next tree is daily updated, and includes the -mm patches. Both are in constant flux and

contains many experimental features, a lot of debugging patches not appropriate for mainline etc., and is the most experimental of the branches described in this document.

These patches are not appropriate for use on systems that are supposed to be stable and they are more risky to run than any of the other branches (make sure you have up-to-date backups – that goes for any experimental kernel but even more so for -mm patches or using a Kernel from the linux-next tree).

Testing of -mm patches and linux-next is greatly appreciated since the whole point of those are to weed out regressions, crashes, data corruption bugs, build breakage (and any other bug in general) before changes are merged into the more stable mainline Linus tree.

But testers of -mm and linux-next should be aware that breakages are more common than in any other tree.

This concludes this list of explanations of the various kernel trees. I hope you are now clear on how to apply the various patches and help testing the kernel.

Thank you's to Randy Dunlap, Rolf Eike Beer, Linus Torvalds, Bodo Eggert, Johannes Stezenbach, Grant Coady, Pavel Machek and others that I may have forgotten for their reviews and contributions to this document.

ADDING A NEW SYSTEM CALL

This document describes what's involved in adding a new system call to the Linux kernel, over and above the normal submission advice in *Documentation/process/submitting-patches.rst*.

* System Call Alternatives

The first thing to consider when adding a new system call is whether one of the alternatives might be suitable instead. Although system calls are the most traditional and most obvious interaction points between userspace and the kernel, there are other possibilities – choose what fits best for your interface.

- If the operations involved can be made to look like a filesystem-like object, it may make more sense to create a new filesystem or device. This also makes it easier to encapsulate the new functionality in a kernel module rather than requiring it to be built into the main kernel.

  - If the new functionality involves operations where the kernel notifies userspace that something has happened, then returning a new file descriptor for the relevant object allows userspace to use `poll/select/epoll` to receive that notification.

  - However, operations that don't map to *read(2)/write(2)*-like operations have to be implemented as *ioctl(2)* requests, which can lead to a somewhat opaque API.

- If you're just exposing runtime system information, a new node in sysfs (see `Documentation/filesystems/sysfs.rst`) or the `/proc` filesystem may be more appropriate. However, access to these mechanisms requires that the relevant filesystem is mounted, which might not always be the case (e.g. in a namespaced/sandboxed/chrooted environment). Avoid adding any API to debugfs, as this is not considered a 'production' interface to userspace.

- If the operation is specific to a particular file or file descriptor, then an additional *fcntl(2)* command option may be more appropriate. However, *fcntl(2)* is a multiplexing system call that hides a lot of complexity, so this option is best for when the new function is closely analogous to existing *fcntl(2)* functionality, or the new functionality is very simple (for example, getting/setting a simple flag related to a file descriptor).

- If the operation is specific to a particular task or process, then an additional *prctl(2)* command option may be more appropriate. As with *fcntl(2)*, this system call is a complicated multiplexor so is best reserved for near-analogs of existing `prctl()` commands or getting/setting a simple flag related to a process.

* Designing the API: Planning for Extension

A new system call forms part of the API of the kernel, and has to be supported indefinitely. As such, it's a very good idea to explicitly discuss the interface on the kernel mailing list, and it's important to plan for future extensions of the interface.

(The syscall table is littered with historical examples where this wasn't done, together with the corresponding follow-up system calls – eventfd/eventfd2, dup2/dup3, inotify_init/inotify_init1, pipe/pipe2, renameat/renameat2 – so learn from the history of the kernel and plan for extensions from the start.)

For simpler system calls that only take a couple of arguments, the preferred way to allow for future extensibility is to include a flags argument to the system call. To make sure that userspace programs can safely use flags between kernel versions, check whether the flags value holds any unknown flags, and reject the system call (with EINVAL) if it does:

```
if (flags & ~(THING_FLAG1 | THING_FLAG2 | THING_FLAG3))
    return -EINVAL;
```

(If no flags values are used yet, check that the flags argument is zero.)

For more sophisticated system calls that involve a larger number of arguments, it's preferred to encapsulate the majority of the arguments into a structure that is passed in by pointer. Such a structure can cope with future extension by including a size argument in the structure:

```
struct xyzzy_params {
    u32 size; /* userspace sets p->size = sizeof(struct xyzzy_params) */
    u32 param_1;
    u64 param_2;
    u64 param_3;
};
```

As long as any subsequently added field, say `param_4`, is designed so that a zero value gives the previous behaviour, then this allows both directions of version mismatch:

- To cope with a later userspace program calling an older kernel, the kernel code should check that any memory beyond the size of the structure that it expects is zero (effectively checking that `param_4 == 0`).

- To cope with an older userspace program calling a newer kernel, the kernel code can zero-extend a smaller instance of the structure (effectively setting `param_4 = 0`).

See *perf_event_open(2)* and the `perf_copy_attr()` function (in `kernel/events/core.c`) for an example of this approach.

* Designing the API: Other Considerations

If your new system call allows userspace to refer to a kernel object, it should use a file descriptor as the handle for that object – don't invent a new type of userspace object handle when the kernel already has mechanisms and well-defined semantics for using file descriptors.

If your new *xyzzy(2)* system call does return a new file descriptor, then the flags argument should include a value that is equivalent to setting O_CLOEXEC on the new FD. This makes it possible for userspace to close the timing window between xyzzy() and calling fcntl(fd, F_SETFD, FD_CLOEXEC), where an unexpected fork() and execve() in another thread could leak a descriptor to the exec'ed program. (However, resist the temptation to re-use the actual value of the O_CLOEXEC constant, as it is architecture-specific and is part of a numbering space of O_* flags that is fairly full.)

If your system call returns a new file descriptor, you should also consider what it means to use the *poll(2)* family of system calls on that file descriptor. Making a file descriptor ready for reading or writing is the normal way for the kernel to indicate to userspace that an event has occurred on the corresponding kernel object.

If your new *xyzzy(2)* system call involves a filename argument:

```
int sys_xyzzy(const char __user *path, ..., unsigned int flags);
```

you should also consider whether an *xyzzyat(2)* version is more appropriate:

```
int sys_xyzzyat(int dfd, const char __user *path, ..., unsigned int flags);
```

This allows more flexibility for how userspace specifies the file in question; in particular it allows userspace to request the functionality for an already-opened file descriptor using the AT_EMPTY_PATH flag, effectively giving an *fxyzzy(3)* operation for free:

```
- xyzzyat(AT_FDCWD, path, ..., 0) is equivalent to xyzzy(path,...)
- xyzzyat(fd, "", ..., AT_EMPTY_PATH) is equivalent to fxyzzy(fd, ...)
```

(For more details on the rationale of the *at() calls, see the *openat(2)* man page; for an example of AT_EMPTY_PATH, see the *fstatat(2)* man page.)

If your new *xyzzy(2)* system call involves a parameter describing an offset within a file, make its type loff_t so that 64-bit offsets can be supported even on 32-bit architectures.

If your new *xyzzy(2)* system call involves privileged functionality, it needs to be governed by the appropriate Linux capability bit (checked with a call to capable()), as described in the *capabilities(7)* man page. Choose an existing capability bit that governs related functionality, but try to avoid combining lots of only vaguely related functions together under the same bit, as this goes against capabilities' purpose of splitting the power of root. In particular, avoid adding new uses of the already overly-general CAP_SYS_ADMIN capability.

If your new *xyzzy(2)* system call manipulates a process other than the calling process, it should be restricted (using a call to ptrace_may_access()) so that only a calling process with the same permissions as the target process, or with the necessary capabilities, can manipulate the target process.

Finally, be aware that some non-x86 architectures have an easier time if system call parameters that are explicitly 64-bit fall on odd-numbered arguments (i.e. parameter 1, 3, 5), to allow use

of contiguous pairs of 32-bit registers. (This concern does not apply if the arguments are part of a structure that's passed in by pointer.)

* Proposing the API

To make new system calls easy to review, it's best to divide up the patchset into separate chunks. These should include at least the following items as distinct commits (each of which is described further below):

- The core implementation of the system call, together with prototypes, generic numbering, Kconfig changes and fallback stub implementation.

- Wiring up of the new system call for one particular architecture, usually x86 (including all of x86_64, x86_32 and x32).

- A demonstration of the use of the new system call in userspace via a selftest in `tools/testing/selftests/`.

- A draft man-page for the new system call, either as plain text in the cover letter, or as a patch to the (separate) man-pages repository.

New system call proposals, like any change to the kernel's API, should always be cc'ed to linux-api@vger.kernel.org.

* Generic System Call Implementation

The main entry point for your new *xyzzy(2)* system call will be called `sys_xyzzy()`, but you add this entry point with the appropriate `SYSCALL_DEFINEn()` macro rather than explicitly. The 'n' indicates the number of arguments to the system call, and the macro takes the system call name followed by the (type, name) pairs for the parameters as arguments. Using this macro allows metadata about the new system call to be made available for other tools.

The new entry point also needs a corresponding function prototype, in `include/linux/syscalls.h`, marked as asmlinkage to match the way that system calls are invoked:

```
asmlinkage long sys_xyzzy(...);
```

Some architectures (e.g. x86) have their own architecture-specific syscall tables, but several other architectures share a generic syscall table. Add your new system call to the generic list by adding an entry to the list in `include/uapi/asm-generic/unistd.h`:

```
#define __NR_xyzzy 292
__SYSCALL(__NR_xyzzy, sys_xyzzy)
```

Also update the __NR_syscalls count to reflect the additional system call, and note that if multiple new system calls are added in the same merge window, your new syscall number may get adjusted to resolve conflicts.

The file `kernel/sys_ni.c` provides a fallback stub implementation of each system call, returning `-ENOSYS`. Add your new system call here too:

```
COND_SYSCALL(xyzzy);
```

Your new kernel functionality, and the system call that controls it, should normally be optional, so add a CONFIG option (typically to `init/Kconfig`) for it. As usual for new CONFIG options:

- Include a description of the new functionality and system call controlled by the option.
- Make the option depend on EXPERT if it should be hidden from normal users.
- Make any new source files implementing the function dependent on the CONFIG option in the Makefile (e.g. `obj-$(CONFIG_XYZZY_SYSCALL) += xyzzy.o`).
- Double check that the kernel still builds with the new CONFIG option turned off.

To summarize, you need a commit that includes:

- CONFIG option for the new function, normally in `init/Kconfig`
- `SYSCALL_DEFINEn(xyzzy, ...)` for the entry point
- corresponding prototype in `include/linux/syscalls.h`
- generic table entry in `include/uapi/asm-generic/unistd.h`
- fallback stub in `kernel/sys_ni.c`

* x86 System Call Implementation

To wire up your new system call for x86 platforms, you need to update the master syscall tables. Assuming your new system call isn't special in some way (see below), this involves a "common" entry (for x86_64 and x32) in arch/x86/entry/syscalls/syscall_64.tbl:

```
333    common    xyzzy        sys_xyzzy
```

and an "i386" entry in `arch/x86/entry/syscalls/syscall_32.tbl`:

```
380    i386    xyzzy        sys_xyzzy
```

Again, these numbers are liable to be changed if there are conflicts in the relevant merge window.

* Compatibility System Calls (Generic)

For most system calls the same 64-bit implementation can be invoked even when the userspace program is itself 32-bit; even if the system call's parameters include an explicit pointer, this is handled transparently.

However, there are a couple of situations where a compatibility layer is needed to cope with size differences between 32-bit and 64-bit.

The first is if the 64-bit kernel also supports 32-bit userspace programs, and so needs to parse areas of (__user) memory that could hold either 32-bit or 64-bit values. In particular, this is needed whenever a system call argument is:

- a pointer to a pointer
- a pointer to a struct containing a pointer (e.g. `struct iovec __user *`)

- a pointer to a varying sized integral type (`time_t`, `off_t`, `long`, …)

- a pointer to a struct containing a varying sized integral type.

The second situation that requires a compatibility layer is if one of the system call's arguments has a type that is explicitly 64-bit even on a 32-bit architecture, for example `loff_t` or `__u64`. In this case, a value that arrives at a 64-bit kernel from a 32-bit application will be split into two 32-bit values, which then need to be re-assembled in the compatibility layer.

(Note that a system call argument that's a pointer to an explicit 64-bit type does **not** need a compatibility layer; for example, *splice(2)*'s arguments of type `loff_t __user *` do not trigger the need for a `compat_` system call.)

The compatibility version of the system call is called `compat_sys_xyzzy()`, and is added with the `COMPAT_SYSCALL_DEFINEn()` macro, analogously to SYSCALL_DEFINEn. This version of the implementation runs as part of a 64-bit kernel, but expects to receive 32-bit parameter values and does whatever is needed to deal with them. (Typically, the `compat_sys_` version converts the values to 64-bit versions and either calls on to the `sys_` version, or both of them call a common inner implementation function.)

The compat entry point also needs a corresponding function prototype, in `include/linux/compat.h`, marked as asmlinkage to match the way that system calls are invoked:

```
asmlinkage long compat_sys_xyzzy(...);
```

If the system call involves a structure that is laid out differently on 32-bit and 64-bit systems, say `struct xyzzy_args`, then the include/linux/compat.h header file should also include a compat version of the structure (`struct compat_xyzzy_args`) where each variable-size field has the appropriate `compat_` type that corresponds to the type in `struct xyzzy_args`. The `compat_sys_xyzzy()` routine can then use this `compat_` structure to parse the arguments from a 32-bit invocation.

For example, if there are fields:

```
struct xyzzy_args {
    const char __user *ptr;
    __kernel_long_t varying_val;
    u64 fixed_val;
    /* ... */
};
```

in struct xyzzy_args, then struct compat_xyzzy_args would have:

```
struct compat_xyzzy_args {
    compat_uptr_t ptr;
    compat_long_t varying_val;
    u64 fixed_val;
    /* ... */
};
```

The generic system call list also needs adjusting to allow for the compat version; the entry in include/uapi/asm-generic/unistd.h should use __SC_COMP rather than __SYSCALL:

```
#define __NR_xyzzy 292
__SC_COMP(__NR_xyzzy, sys_xyzzy, compat_sys_xyzzy)
```

To summarize, you need:

- a `COMPAT_SYSCALL_DEFINEn(xyzzy, ...)` for the compat entry point
- corresponding prototype in `include/linux/compat.h`
- (if needed) 32-bit mapping struct in `include/linux/compat.h`
- instance of `__SC_COMP` not `__SYSCALL` in `include/uapi/asm-generic/unistd.h`

* Compatibility System Calls (x86)

To wire up the x86 architecture of a system call with a compatibility version, the entries in the syscall tables need to be adjusted.

First, the entry in `arch/x86/entry/syscalls/syscall_32.tbl` gets an extra column to indicate that a 32-bit userspace program running on a 64-bit kernel should hit the compat entry point:

```
380     i386       xyzzy       sys_xyzzy       __ia32_compat_sys_xyzzy
```

Second, you need to figure out what should happen for the x32 ABI version of the new system call. There's a choice here: the layout of the arguments should either match the 64-bit version or the 32-bit version.

If there's a pointer-to-a-pointer involved, the decision is easy: x32 is ILP32, so the layout should match the 32-bit version, and the entry in `arch/x86/entry/syscalls/syscall_64.tbl` is split so that x32 programs hit the compatibility wrapper:

```
333     64         xyzzy       sys_xyzzy
...
555     x32        xyzzy       __x32_compat_sys_xyzzy
```

If no pointers are involved, then it is preferable to re-use the 64-bit system call for the x32 ABI (and consequently the entry in arch/x86/entry/syscalls/syscall_64.tbl is unchanged).

In either case, you should check that the types involved in your argument layout do indeed map exactly from x32 (-mx32) to either the 32-bit (-m32) or 64-bit (-m64) equivalents.

* System Calls Returning Elsewhere

For most system calls, once the system call is complete the user program continues exactly where it left off – at the next instruction, with the stack the same and most of the registers the same as before the system call, and with the same virtual memory space.

However, a few system calls do things differently. They might return to a different location (`rt_sigreturn`) or change the memory space (`fork/vfork/clone`) or even architecture (`execve/execveat`) of the program.

To allow for this, the kernel implementation of the system call may need to save and restore additional registers to the kernel stack, allowing complete control of where and how execution continues after the system call.

This is arch-specific, but typically involves defining assembly entry points that save/restore additional registers and invoke the real system call entry point.

For x86_64, this is implemented as a `stub_xyzzy` entry point in `arch/x86/entry/entry_64.S`, and the entry in the syscall table (`arch/x86/entry/syscalls/syscall_64.tbl`) is adjusted to match:

```
333    common    xyzzy        stub_xyzzy
```

The equivalent for 32-bit programs running on a 64-bit kernel is normally called `stub32_xyzzy` and implemented in `arch/x86/entry/entry_64_compat.S`, with the corresponding syscall table adjustment in `arch/x86/entry/syscalls/syscall_32.tbl`:

```
380    i386      xyzzy        sys_xyzzy      stub32_xyzzy
```

If the system call needs a compatibility layer (as in the previous section) then the `stub32_` version needs to call on to the `compat_sys_` version of the system call rather than the native 64-bit version. Also, if the x32 ABI implementation is not common with the x86_64 version, then its syscall table will also need to invoke a stub that calls on to the `compat_sys_` version.

For completeness, it's also nice to set up a mapping so that user-mode Linux still works – its syscall table will reference stub_xyzzy, but the UML build doesn't include `arch/x86/entry/entry_64.S` implementation (because UML simulates registers etc). Fixing this is as simple as adding a #define to `arch/x86/um/sys_call_table_64.c`:

```
#define stub_xyzzy sys_xyzzy
```

* Other Details

Most of the kernel treats system calls in a generic way, but there is the occasional exception that may need updating for your particular system call.

The audit subsystem is one such special case; it includes (arch-specific) functions that classify some special types of system call – specifically file open (`open/openat`), program execution (`execve/exeveat`) or socket multiplexor (`socketcall`) operations. If your new system call is analogous to one of these, then the audit system should be updated.

More generally, if there is an existing system call that is analogous to your new system call, it's worth doing a kernel-wide grep for the existing system call to check there are no other special cases.

* Testing

A new system call should obviously be tested; it is also useful to provide reviewers with a demonstration of how user space programs will use the system call. A good way to combine these aims is to include a simple self-test program in a new directory under `tools/testing/selftests/`.

For a new system call, there will obviously be no libc wrapper function and so the test will need to invoke it using `syscall()`; also, if the system call involves a new userspace-visible structure, the corresponding header will need to be installed to compile the test.

Make sure the selftest runs successfully on all supported architectures. For example, check that it works when compiled as an x86_64 (-m64), x86_32 (-m32) and x32 (-mx32) ABI program.

For more extensive and thorough testing of new functionality, you should also consider adding tests to the Linux Test Project, or to the xfstests project for filesystem-related changes.

- https://linux-test-project.github.io/

- git://git.kernel.org/pub/scm/fs/xfs/xfstests-dev.git

* Man Page

All new system calls should come with a complete man page, ideally using groff markup, but plain text will do. If groff is used, it's helpful to include a pre-rendered ASCII version of the man page in the cover email for the patchset, for the convenience of reviewers.

The man page should be cc'ed to linux-man@vger.kernel.org For more details, see https://www.kernel.org/doc/man-pages/patches.html

* Do not call System Calls in the Kernel

System calls are, as stated above, interaction points between userspace and the kernel. Therefore, system call functions such as `sys_xyzzy()` or `compat_sys_xyzzy()` should only be called from userspace via the syscall table, but not from elsewhere in the kernel. If the syscall functionality is useful to be used within the kernel, needs to be shared between an old and a new syscall, or needs to be shared between a syscall and its compatibility variant, it should be implemented by means of a "helper" function (such as `ksys_xyzzy()`). This kernel function may then be called within the syscall stub (`sys_xyzzy()`), the compatibility syscall stub (`compat_sys_xyzzy()`), and/or other kernel code.

At least on 64-bit x86, it will be a hard requirement from v4.17 onwards to not call system call functions in the kernel. It uses a different calling convention for system calls where `struct pt_regs` is decoded on-the-fly in a syscall wrapper which then hands processing over to the actual syscall function. This means that only those parameters which are actually needed for a specific syscall are passed on during syscall entry, instead of filling in six CPU registers with random user space content all the time (which may cause serious trouble down the call chain).

Moreover, rules on how data may be accessed may differ between kernel data and user data. This is another reason why calling `sys_xyzzy()` is generally a bad idea.

Exceptions to this rule are only allowed in architecture-specific overrides, architecture-specific compatibility wrappers, or other code in arch/.

* References and Sources

- LWN article from Michael Kerrisk on use of flags argument in system calls: https://lwn.net/Articles/585415/

- LWN article from Michael Kerrisk on how to handle unknown flags in a system call: https://lwn.net/Articles/588444/

- LWN article from Jake Edge describing constraints on 64-bit system call arguments: https://lwn.net/Articles/311630/

- Pair of LWN articles from David Drysdale that describe the system call implementation paths in detail for v3.14:

    - https://lwn.net/Articles/604287/

    - https://lwn.net/Articles/604515/

- Architecture-specific requirements for system calls are discussed in the *syscall(2)* man-page: http://man7.org/linux/man-pages/man2/syscall.2.html#NOTES

- Collated emails from Linus Torvalds discussing the problems with `ioctl()`: https://yarchive.net/comp/linux/ioctl.html

- "How to not invent kernel interfaces", Arnd Bergmann, https://www.ukuug.org/events/linux2007/2007/papers/Bergmann.pdf

- LWN article from Michael Kerrisk on avoiding new uses of CAP_SYS_ADMIN: https://lwn.net/Articles/486306/

- Recommendation from Andrew Morton that all related information for a new system call should come in the same email thread: https://lore.kernel.org/r/20140724144747.3041b208832bbdf9fbce5d96@linux-foundation.org

- Recommendation from Michael Kerrisk that a new system call should come with a man page: https://lore.kernel.org/r/CAKgNAkgMA39AfoSoA5Pe1r9N+ZzfYQNvNPvcRN7tOvRb8+v06Q@mail.gmail.com

- Suggestion from Thomas Gleixner that x86 wire-up should be in a separate commit: https://lore.kernel.org/r/alpine.DEB.2.11.1411191249560.3909@nanos

- Suggestion from Greg Kroah-Hartman that it's good for new system calls to come with a man-page & selftest: https://lore.kernel.org/r/20140320025530.GA25469@kroah.com

- Discussion from Michael Kerrisk of new system call vs. *prctl(2)* extension: https://lore.kernel.org/r/CAHO5Pa3F2MjfTtfNxa8LbnkeeU8=YJ+9tDqxZpw7Gz59E-4AUg@mail.gmail.com

- Suggestion from Ingo Molnar that system calls that involve multiple arguments should encapsulate those arguments in a struct, which includes a size field for future extensibility: https://lore.kernel.org/r/20150730083831.GA22182@gmail.com

- Numbering oddities arising from (re-)use of O_* numbering space flags:

    - commit 75069f2b5bfb ("vfs: renumber FMODE_NONOTIFY and add to uniqueness check")

    - commit 12ed2e36c98a ("fanotify: FMODE_NONOTIFY and __O_SYNC in sparc conflict")

    - commit bb458c644a59 ("Safer ABI for O_TMPFILE")

- Discussion from Matthew Wilcox about restrictions on 64-bit arguments: https://lore.kernel.org/r/20081212152929.GM26095@parisc-linux.org

- Recommendation from Greg Kroah-Hartman that unknown flags should be policed: https://lore.kernel.org/r/20140717193330.GB4703@kroah.com

- Recommendation from Linus Torvalds that x32 system calls should prefer compatibility with 64-bit versions rather than 32-bit versions: https://lore.kernel.org/r/CA+55aFxfmwfB7jbbrXxa=K7VBYPfAvmu3XOkGrLbB1UFjX1+Ew@mail.gmail.com

LINUX MAGIC NUMBERS

This file is a registry of magic numbers which are in use. When you add a magic number to a structure, you should also add it to this file, since it is best if the magic numbers used by various structures are unique.

It is a **very** good idea to protect kernel data structures with magic numbers. This allows you to check at run time whether (a) a structure has been clobbered, or (b) you've passed the wrong structure to a routine. This last is especially useful — particularly when you are passing pointers to structures via a void * pointer. The tty code, for example, does this frequently to pass driver-specific and line discipline-specific structures back and forth.

The way to use magic numbers is to declare them at the beginning of the structure, like so:

```
struct tty_ldisc {
        int     magic;
        ...
};
```

Please follow this discipline when you are adding future enhancements to the kernel! It has saved me countless hours of debugging, especially in the screwy cases where an array has been overrun and structures following the array have been overwritten. Using this discipline, these cases get detected quickly and safely.

Changelog:

```
                              Theodore Ts'o
                              31 Mar 94

The magic table is current to Linux 2.1.55.


                              Michael Chastain
                              <mailto:mec@shout.net>
                              22 Sep 1997

Now it should be up to date with Linux 2.1.112. Because
we are in feature freeze time it is very unlikely that
something will change before 2.2.x. The entries are
sorted by number field.


                              Krzysztof G. Baranowski
                              <mailto: kgb@knm.org.pl>
                              29 Jul 1998
```

Updated the magic table to Linux 2.5.45. Right over the feature freeze,
but it is possible that some new magic numbers will sneak into the
kernel before 2.6.x yet.

> Petr Baudis
> <pasky@ucw.cz>
> 03 Nov 2002

Updated the magic table to Linux 2.5.74.

> Fabian Frederick
> <ffrederick@users.sourceforge.net>
> 09 Jul 2003

Magic Name	Number	Structure	File
PG_MAGIC	'P'	pg_{read,write}_hdr	include/linux/pg.
CMAGIC	0x0111	user	include/linux/a.c
MKISS_DRIVER_MAGIC	0x04bf	mkiss_channel	drivers/net/mkiss
HDLC_MAGIC	0x239e	n_hdlc	drivers/char/n_hc
APM_BIOS_MAGIC	0x4101	apm_user	arch/x86/kernel/a
DB_MAGIC	0x4442	fc_info	drivers/net/iph55
DL_MAGIC	0x444d	fc_info	drivers/net/iph55
FASYNC_MAGIC	0x4601	fasync_struct	include/linux/fs.
FF_MAGIC	0x4646	fc_info	drivers/net/iph55
PTY_MAGIC	0x5001		drivers/char/pty.
PPP_MAGIC	0x5002	ppp	include/linux/if_
SSTATE_MAGIC	0x5302	serial_state	include/linux/ser
SLIP_MAGIC	0x5302	slip	drivers/net/slip.
STRIP_MAGIC	0x5303	strip	drivers/net/strip
SIXPACK_MAGIC	0x5304	sixpack	drivers/net/hamra
AX25_MAGIC	0x5316	ax_disp	drivers/net/mkiss
TTY_MAGIC	0x5401	tty_struct	include/linux/tty
MGSL_MAGIC	0x5401	mgsl_info	drivers/char/sync
TTY_DRIVER_MAGIC	0x5402	tty_driver	include/linux/tty
MGSLPC_MAGIC	0x5402	mgslpc_info	drivers/char/pcmc
USB_SERIAL_MAGIC	0x6702	usb_serial	drivers/usb/seria
FULL_DUPLEX_MAGIC	0x6969		drivers/net/ether
USB_BLUETOOTH_MAGIC	0x6d02	usb_bluetooth	drivers/usb/class
RFCOMM_TTY_MAGIC	0x6d02		net/bluetooth/rfc
USB_SERIAL_PORT_MAGIC	0x7301	usb_serial_port	drivers/usb/seria
CG_MAGIC	0x00090255	ufs_cylinder_group	include/linux/ufs
LSEMAGIC	0x05091998	lse	drivers/fc4/fc.c
RIEBL_MAGIC	0x09051990		drivers/net/atari
NBD_REQUEST_MAGIC	0x12560953	nbd_request	include/linux/nbc
RED_MAGIC2	0x170fc2a5	(any)	mm/slab.c
BAYCOM_MAGIC	0x19730510	baycom_state	drivers/net/baycc
ISDN_X25IFACE_MAGIC	0x1e75a2b9	isdn_x25iface_proto_data	drivers/isdn/isdr

Table 1 – continued from previous page

Magic Name	Number	Structure	File
ECP_MAGIC	0x21504345	cdkecpsig	include/linux/cdk
LSOMAGIC	0x27091997	lso	drivers/fc4/fc.c
LSMAGIC	0x2a3b4d2a	ls	drivers/fc4/fc.c
WANPIPE_MAGIC	0x414C4453	sdla_{dump,exec}	include/linux/war
CS_CARD_MAGIC	0x43525553	cs_card	sound/oss/cs46xx.
LABELCL_MAGIC	0x4857434c	labelcl_info_s	include/asm/ia64/
ISDN_ASYNC_MAGIC	0x49344C01	modem_info	include/linux/isd
CTC_ASYNC_MAGIC	0x49344C01	ctc_tty_info	drivers/s390/net/
ISDN_NET_MAGIC	0x49344C02	isdn_net_local_s	drivers/isdn/i4l/
SAVEKMSG_MAGIC2	0x4B4D5347	savekmsg	arch/*/amiga/conf
CS_STATE_MAGIC	0x4c4f4749	cs_state	sound/oss/cs46xx.
SLAB_C_MAGIC	0x4f17a36d	kmem_cache	mm/slab.c
COW_MAGIC	0x4f4f4f4d	cow_header_v1	arch/um/drivers/u
I810_CARD_MAGIC	0x5072696E	i810_card	sound/oss/i810_au
TRIDENT_CARD_MAGIC	0x5072696E	trident_card	sound/oss/trident
ROUTER_MAGIC	0x524d4157	wan_device	[in wanrouter.h pre
SAVEKMSG_MAGIC1	0x53415645	savekmsg	arch/*/amiga/conf
GDA_MAGIC	0x58464552	gda	arch/mips/include
RED_MAGIC1	0x5a2cf071	(any)	mm/slab.c
EEPROM_MAGIC_VALUE	0x5ab478d2	lanai_dev	drivers/atm/lanai
HDLCDRV_MAGIC	0x5ac6e778	hdlcdrv_state	include/linux/hdl
PCXX_MAGIC	0x5c6df104	channel	drivers/char/pcxx
KV_MAGIC	0x5f4b565f	kernel_vars_s	arch/mips/include
I810_STATE_MAGIC	0x63657373	i810_state	sound/oss/i810_au
TRIDENT_STATE_MAGIC	0x63657373	trient_state	sound/oss/trident
M3_CARD_MAGIC	0x646e6f50	m3_card	sound/oss/maestro
FW_HEADER_MAGIC	0x65726F66	fw_header	drivers/atm/fore2
SLOT_MAGIC	0x67267321	slot	drivers/hotplug/c
SLOT_MAGIC	0x67267322	slot	drivers/hotplug/a
LO_MAGIC	0x68797548	nbd_device	include/linux/nbd
M3_STATE_MAGIC	0x734d724d	m3_state	sound/oss/maestro
VMALLOC_MAGIC	0x87654320	snd_alloc_track	sound/core/memory
KMALLOC_MAGIC	0x87654321	snd_alloc_track	sound/core/memory
PWC_MAGIC	0x89DC10AB	pwc_device	drivers/usb/media
NBD_REPLY_MAGIC	0x96744668	nbd_reply	include/linux/nbd
ENI155_MAGIC	0xa54b872d	midway_eprom	drivers/atm/eni.h
CODA_MAGIC	0xC0DAC0DA	coda_file_info	fs/coda/coda_fs_i
YAM_MAGIC	0xF10A7654	yam_port	drivers/net/hamra
CCB_MAGIC	0xf2691ad2	ccb	drivers/scsi/ncr5
QUEUE_MAGIC_FREE	0xf7e1c9a3	queue_entry	drivers/scsi/arm/
QUEUE_MAGIC_USED	0xf7e1cc33	queue_entry	drivers/scsi/arm/
HTB_CMAGIC	0xFEFAFEF1	htb_class	net/sched/sch_htb
NMI_MAGIC	0x48414d4d455201	nmi_s	arch/mips/include

Note that there are also defined special per-driver magic numbers in sound memory management. See `include/sound/sndmagic.h` for complete list of them. Many OSS sound drivers have their magic numbers constructed from the soundcard PCI ID - these are not listed here as well.

HFS is another larger user of magic numbers - you can find them in `fs/hfs/hfs.h`.

WHY THE "VOLATILE" TYPE CLASS SHOULD NOT BE USED

C programmers have often taken volatile to mean that the variable could be changed outside of the current thread of execution; as a result, they are sometimes tempted to use it in kernel code when shared data structures are being used. In other words, they have been known to treat volatile types as a sort of easy atomic variable, which they are not. The use of volatile in kernel code is almost never correct; this document describes why.

The key point to understand with regard to volatile is that its purpose is to suppress optimization, which is almost never what one really wants to do. In the kernel, one must protect shared data structures against unwanted concurrent access, which is very much a different task. The process of protecting against unwanted concurrency will also avoid almost all optimization-related problems in a more efficient way.

Like volatile, the kernel primitives which make concurrent access to data safe (spinlocks, mutexes, memory barriers, etc.) are designed to prevent unwanted optimization. If they are being used properly, there will be no need to use volatile as well. If volatile is still necessary, there is almost certainly a bug in the code somewhere. In properly-written kernel code, volatile can only serve to slow things down.

Consider a typical block of kernel code:

```
spin_lock(&the_lock);
do_something_on(&shared_data);
do_something_else_with(&shared_data);
spin_unlock(&the_lock);
```

If all the code follows the locking rules, the value of shared_data cannot change unexpectedly while the_lock is held. Any other code which might want to play with that data will be waiting on the lock. The spinlock primitives act as memory barriers - they are explicitly written to do so - meaning that data accesses will not be optimized across them. So the compiler might think it knows what will be in shared_data, but the spin_lock() call, since it acts as a memory barrier, will force it to forget anything it knows. There will be no optimization problems with accesses to that data.

If shared_data were declared volatile, the locking would still be necessary. But the compiler would also be prevented from optimizing access to shared_data _within_ the critical section, when we know that nobody else can be working with it. While the lock is held, shared_data is not volatile. When dealing with shared data, proper locking makes volatile unnecessary - and potentially harmful.

The volatile storage class was originally meant for memory-mapped I/O registers. Within the kernel, register accesses, too, should be protected by locks, but one also does not want the compiler "optimizing" register accesses within a critical section. But, within the kernel, I/O

memory accesses are always done through accessor functions; accessing I/O memory directly through pointers is frowned upon and does not work on all architectures. Those accessors are written to prevent unwanted optimization, so, once again, volatile is unnecessary.

Another situation where one might be tempted to use volatile is when the processor is busy-waiting on the value of a variable. The right way to perform a busy wait is:

```
while (my_variable != what_i_want)
    cpu_relax();
```

The cpu_relax() call can lower CPU power consumption or yield to a hyperthreaded twin processor; it also happens to serve as a compiler barrier, so, once again, volatile is unnecessary. Of course, busy- waiting is generally an anti-social act to begin with.

There are still a few rare situations where volatile makes sense in the kernel:

- The above-mentioned accessor functions might use volatile on architectures where direct I/O memory access does work. Essentially, each accessor call becomes a little critical section on its own and ensures that the access happens as expected by the programmer.

- Inline assembly code which changes memory, but which has no other visible side effects, risks being deleted by GCC. Adding the volatile keyword to asm statements will prevent this removal.

- The jiffies variable is special in that it can have a different value every time it is referenced, but it can be read without any special locking. So jiffies can be volatile, but the addition of other variables of this type is strongly frowned upon. Jiffies is considered to be a "stupid legacy" issue (Linus's words) in this regard; fixing it would be more trouble than it is worth.

- Pointers to data structures in coherent memory which might be modified by I/O devices can, sometimes, legitimately be volatile. A ring buffer used by a network adapter, where that adapter changes pointers to indicate which descriptors have been processed, is an example of this type of situation.

For most code, none of the above justifications for volatile apply. As a result, the use of volatile is likely to be seen as a bug and will bring additional scrutiny to the code. Developers who are tempted to use volatile should take a step back and think about what they are truly trying to accomplish.

Patches to remove volatile variables are generally welcome - as long as they come with a justification which shows that the concurrency issues have been properly thought through.

* References

[1] https://lwn.net/Articles/233481/

[2] https://lwn.net/Articles/233482/

* Credits

Original impetus and research by Randy Dunlap

Written by Jonathan Corbet

Improvements via comments from Satyam Sharma, Johannes Stezenbach, Jesper Juhl, Heikki Orsila, H. Peter Anvin, Philipp Hahn, and Stefan Richter.

(HOW TO AVOID) BOTCHING UP IOCTLS

From: https://blog.ffwll.ch/2013/11/botching-up-ioctls.html

By: Daniel Vetter, Copyright © 2013 Intel Corporation

One clear insight kernel graphics hackers gained in the past few years is that trying to come up with a unified interface to manage the execution units and memory on completely different GPUs is a futile effort. So nowadays every driver has its own set of ioctls to allocate memory and submit work to the GPU. Which is nice, since there's no more insanity in the form of fake-generic, but actually only used once interfaces. But the clear downside is that there's much more potential to screw things up.

To avoid repeating all the same mistakes again I've written up some of the lessons learned while botching the job for the drm/i915 driver. Most of these only cover technicalities and not the big-picture issues like what the command submission ioctl exactly should look like. Learning these lessons is probably something every GPU driver has to do on its own.

* Prerequisites

First the prerequisites. Without these you have already failed, because you will need to add a 32-bit compat layer:

- Only use fixed sized integers. To avoid conflicts with typedefs in userspace the kernel has special types like __u32, __s64. Use them.

- Align everything to the natural size and use explicit padding. 32-bit platforms don't necessarily align 64-bit values to 64-bit boundaries, but 64-bit platforms do. So we always need padding to the natural size to get this right.

- Pad the entire struct to a multiple of 64-bits if the structure contains 64-bit types - the structure size will otherwise differ on 32-bit versus 64-bit. Having a different structure size hurts when passing arrays of structures to the kernel, or if the kernel checks the structure size, which e.g. the drm core does.

- Pointers are __u64, cast from/to a uintprt_t on the userspace side and from/to a void __user * in the kernel. Try really hard not to delay this conversion or worse, fiddle the raw __u64 through your code since that diminishes the checking tools like sparse can provide. The macro u64_to_user_ptr can be used in the kernel to avoid warnings about integers and pointers of different sizes.

* Basics

With the joys of writing a compat layer avoided we can take a look at the basic fumbles. Neglecting these will make backward and forward compatibility a real pain. And since getting things wrong on the first attempt is guaranteed you will have a second iteration or at least an extension for any given interface.

- Have a clear way for userspace to figure out whether your new ioctl or ioctl extension is supported on a given kernel. If you can't rely on old kernels rejecting the new flags/modes or ioctls (since doing that was botched in the past) then you need a driver feature flag or revision number somewhere.

- Have a plan for extending ioctls with new flags or new fields at the end of the structure. The drm core checks the passed-in size for each ioctl call and zero-extends any mismatches between kernel and userspace. That helps, but isn't a complete solution since newer userspace on older kernels won't notice that the newly added fields at the end get ignored. So this still needs a new driver feature flags.

- Check all unused fields and flags and all the padding for whether it's 0, and reject the ioctl if that's not the case. Otherwise your nice plan for future extensions is going right down the gutters since someone will submit an ioctl struct with random stack garbage in the yet unused parts. Which then bakes in the ABI that those fields can never be used for anything else but garbage. This is also the reason why you must explicitly pad all structures, even if you never use them in an array - the padding the compiler might insert could contain garbage.

- Have simple testcases for all of the above.

* Fun with Error Paths

Nowadays we don't have any excuse left any more for drm drivers being neat little root exploits. This means we both need full input validation and solid error handling paths - GPUs will die eventually in the oddmost corner cases anyway:

- The ioctl must check for array overflows. Also it needs to check for over/underflows and clamping issues of integer values in general. The usual example is sprite positioning values fed directly into the hardware with the hardware just having 12 bits or so. Works nicely until some odd display server doesn't bother with clamping itself and the cursor wraps around the screen.

- Have simple testcases for every input validation failure case in your ioctl. Check that the error code matches your expectations. And finally make sure that you only test for one single error path in each subtest by submitting otherwise perfectly valid data. Without this an earlier check might reject the ioctl already and shadow the codepath you actually want to test, hiding bugs and regressions.

- Make all your ioctls restartable. First X really loves signals and second this will allow you to test 90% of all error handling paths by just interrupting your main test suite constantly with signals. Thanks to X's love for signal you'll get an excellent base coverage of all your error paths pretty much for free for graphics drivers. Also, be consistent with how you handle ioctl restarting - e.g. drm has a tiny drmIoctl helper in its userspace library. The i915 driver botched this with the set_tiling ioctl, now we're stuck forever with some arcane semantics in both the kernel and userspace.

- If you can't make a given codepath restartable make a stuck task at least killable. GPUs just die and your users won't like you more if you hang their entire box (by means of an unkillable X process). If the state recovery is still too tricky have a timeout or hangcheck safety net as a last-ditch effort in case the hardware has gone bananas.

- Have testcases for the really tricky corner cases in your error recovery code - it's way too easy to create a deadlock between your hangcheck code and waiters.

* Time, Waiting and Missing it

GPUs do most everything asynchronously, so we have a need to time operations and wait for outstanding ones. This is really tricky business; at the moment none of the ioctls supported by the drm/i915 get this fully right, which means there's still tons more lessons to learn here.

- Use CLOCK_MONOTONIC as your reference time, always. It's what alsa, drm and v4l use by default nowadays. But let userspace know which timestamps are derived from different clock domains like your main system clock (provided by the kernel) or some independent hardware counter somewhere else. Clocks will mismatch if you look close enough, but if performance measuring tools have this information they can at least compensate. If your userspace can get at the raw values of some clocks (e.g. through in-command-stream performance counter sampling instructions) consider exposing those also.

- Use __s64 seconds plus __u64 nanoseconds to specify time. It's not the most convenient time specification, but it's mostly the standard.

- Check that input time values are normalized and reject them if not. Note that the kernel native struct ktime has a signed integer for both seconds and nanoseconds, so beware here.

- For timeouts, use absolute times. If you're a good fellow and made your ioctl restartable relative timeouts tend to be too coarse and can indefinitely extend your wait time due to rounding on each restart. Especially if your reference clock is something really slow like the display frame counter. With a spec lawyer hat on this isn't a bug since timeouts can always be extended - but users will surely hate you if their neat animations starts to stutter due to this.

- Consider ditching any synchronous wait ioctls with timeouts and just deliver an asynchronous event on a pollable file descriptor. It fits much better into event driven applications' main loop.

- Have testcases for corner-cases, especially whether the return values for already-completed events, successful waits and timed-out waits are all sane and suiting to your needs.

* Leaking Resources, Not

A full-blown drm driver essentially implements a little OS, but specialized to the given GPU platforms. This means a driver needs to expose tons of handles for different objects and other resources to userspace. Doing that right entails its own little set of pitfalls:

- Always attach the lifetime of your dynamically created resources to the lifetime of a file descriptor. Consider using a 1:1 mapping if your resource needs to be shared across processes - fd-passing over unix domain sockets also simplifies lifetime management for userspace.

- Always have O_CLOEXEC support.

- Ensure that you have sufficient insulation between different clients. By default pick a private per-fd namespace which forces any sharing to be done explicitly. Only go with a more global per-device namespace if the objects are truly device-unique. One counterexample in the drm modeset interfaces is that the per-device modeset objects like connectors share a namespace with framebuffer objects, which mostly are not shared at all. A separate namespace, private by default, for framebuffers would have been more suitable.

- Think about uniqueness requirements for userspace handles. E.g. for most drm drivers it's a userspace bug to submit the same object twice in the same command submission ioctl. But then if objects are shareable userspace needs to know whether it has seen an imported object from a different process already or not. I haven't tried this myself yet due to lack of a new class of objects, but consider using inode numbers on your shared file descriptors as unique identifiers - it's how real files are told apart, too. Unfortunately this requires a full-blown virtual filesystem in the kernel.

* Last, but not Least

Not every problem needs a new ioctl:

- Think hard whether you really want a driver-private interface. Of course it's much quicker to push a driver-private interface than engaging in lengthy discussions for a more generic solution. And occasionally doing a private interface to spearhead a new concept is what's required. But in the end, once the generic interface comes around you'll end up maintainer two interfaces. Indefinitely.

- Consider other interfaces than ioctls. A sysfs attribute is much better for per-device settings, or for child objects with fairly static lifetimes (like output connectors in drm with all the detection override attributes). Or maybe only your testsuite needs this interface, and then debugfs with its disclaimer of not having a stable ABI would be better.

Finally, the name of the game is to get it right on the first attempt, since if your driver proves popular and your hardware platforms long-lived then you'll be stuck with a given ioctl essentially forever. You can try to deprecate horrible ioctls on newer iterations of your hardware, but generally it takes years to accomplish this. And then again years until the last user able to complain about regressions disappears, too.

CLANG-FORMAT

clang-format is a tool to format C/C++/... code according to a set of rules and heuristics. Like most tools, it is not perfect nor covers every single case, but it is good enough to be helpful.

clang-format can be used for several purposes:

- Quickly reformat a block of code to the kernel style. Specially useful when moving code around and aligning/sorting. See *clangformatreformat*.

- Spot style mistakes, typos and possible improvements in files you maintain, patches you review, diffs, etc. See *clangformatreview*.

- Help you follow the coding style rules, specially useful for those new to kernel development or working at the same time in several projects with different coding styles.

Its configuration file is .clang-format in the root of the kernel tree. The rules contained there try to approximate the most common kernel coding style. They also try to follow *Documentation/process/coding-style.rst* as much as possible. Since not all the kernel follows the same style, it is possible that you may want to tweak the defaults for a particular subsystem or folder. To do so, you can override the defaults by writing another .clang-format file in a subfolder.

The tool itself has already been included in the repositories of popular Linux distributions for a long time. Search for clang-format in your repositories. Otherwise, you can either download pre-built LLVM/clang binaries or build the source code from:

> https://releases.llvm.org/download.html

See more information about the tool at:

> https://clang.llvm.org/docs/ClangFormat.html

> https://clang.llvm.org/docs/ClangFormatStyleOptions.html

* Review files and patches for coding style

By running the tool in its inline mode, you can review full subsystems, folders or individual files for code style mistakes, typos or improvements.

To do so, you can run something like:

```
# Make sure your working directory is clean!
clang-format -i kernel/*.[ch]
```

And then take a look at the git diff.

Counting the lines of such a diff is also useful for improving/tweaking the style options in the configuration file; as well as testing new `clang-format` features/versions.

`clang-format` also supports reading unified diffs, so you can review patches and git diffs easily. See the documentation at:

> https://clang.llvm.org/docs/ClangFormat.html#script-for-patch-reformatting

To avoid `clang-format` formatting some portion of a file, you can do:

```
int formatted_code;
// clang-format off
    void    unformatted_code  ;
// clang-format on
void formatted_code_again;
```

While it might be tempting to use this to keep a file always in sync with `clang-format`, specially if you are writing new files or if you are a maintainer, please note that people might be running different `clang-format` versions or not have it available at all. Therefore, you should probably refrain yourself from using this in kernel sources; at least until we see if `clang-format` becomes commonplace.

* Reformatting blocks of code

By using an integration with your text editor, you can reformat arbitrary blocks (selections) of code with a single keystroke. This is specially useful when moving code around, for complex code that is deeply intended, for multi-line macros (and aligning their backslashes), etc.

Remember that you can always tweak the changes afterwards in those cases where the tool did not do an optimal job. But as a first approximation, it can be very useful.

There are integrations for many popular text editors. For some of them, like vim, emacs, BBEdit and Visual Studio you can find support built-in. For instructions, read the appropriate section at:

> https://clang.llvm.org/docs/ClangFormat.html

For Atom, Eclipse, Sublime Text, Visual Studio Code, XCode and other editors and IDEs you should be able to find ready-to-use plugins.

For this use case, consider using a secondary `.clang-format` so that you can tweak a few options. See *clangformatextra*.

* Missing support

`clang-format` is missing support for some things that are common in kernel code. They are easy to remember, so if you use the tool regularly, you will quickly learn to avoid/ignore those.

In particular, some very common ones you will notice are:

- Aligned blocks of one-line `#defines`, e.g.:

```
#define TRACING_MAP_BITS_DEFAULT        11
#define TRACING_MAP_BITS_MAX            17
#define TRACING_MAP_BITS_MIN            7
```

vs.:

```
#define TRACING_MAP_BITS_DEFAULT 11
#define TRACING_MAP_BITS_MAX 17
#define TRACING_MAP_BITS_MIN 7
```

- Aligned designated initializers, e.g.:

```
static const struct file_operations uprobe_events_ops = {
        .owner          = THIS_MODULE,
        .open           = probes_open,
        .read           = seq_read,
        .llseek         = seq_lseek,
        .release        = seq_release,
        .write          = probes_write,
};
```

vs.:

```
static const struct file_operations uprobe_events_ops = {
        .owner = THIS_MODULE,
        .open = probes_open,
        .read = seq_read,
        .llseek = seq_lseek,
        .release = seq_release,
        .write = probes_write,
};
```

* Extra features/options

Some features/style options are not enabled by default in the configuration file in order to minimize the differences between the output and the current code. In other words, to make the difference as small as possible, which makes reviewing full-file style, as well diffs and patches as easy as possible.

In other cases (e.g. particular subsystems/folders/files), the kernel style might be different and enabling some of these options may approximate better the style there.

For instance:

- Aligning assignments (`AlignConsecutiveAssignments`).

- Aligning declarations (`AlignConsecutiveDeclarations`).

- Reflowing text in comments (`ReflowComments`).

- Sorting #includes (`SortIncludes`).

They are typically useful for block re-formatting, rather than full-file. You might want to create another `.clang-format` file and use that one from your editor/IDE instead.

ARCH/RISCV MAINTENANCE GUIDELINES FOR DEVELOPERS

* Overview

The RISC-V instruction set architecture is developed in the open: in-progress drafts are available for all to review and to experiment with implementations. New module or extension drafts can change during the development process - sometimes in ways that are incompatible with previous drafts. This flexibility can present a challenge for RISC-V Linux maintenance. Linux maintainers disapprove of churn, and the Linux development process prefers well-reviewed and tested code over experimental code. We wish to extend these same principles to the RISC-V-related code that will be accepted for inclusion in the kernel.

* Submit Checklist Addendum

We'll only accept patches for new modules or extensions if the specifications for those modules or extensions are listed as being "Frozen" or "Ratified" by the RISC-V Foundation. (Developers may, of course, maintain their own Linux kernel trees that contain code for any draft extensions that they wish.)

Additionally, the RISC-V specification allows implementors to create their own custom extensions. These custom extensions aren't required to go through any review or ratification process by the RISC-V Foundation. To avoid the maintenance complexity and potential performance impact of adding kernel code for implementor-specific RISC-V extensions, we'll only to accept patches for extensions that have been officially frozen or ratified by the RISC-V Foundation. (Implementors, may, of course, maintain their own Linux kernel trees containing code for any custom extensions that they wish.)

UNALIGNED MEMORY ACCESSES

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Linux runs on a wide variety of architectures which have varying behaviour when it comes to
memory access. This document presents some details about unaligned accesses, why you need
to write code that doesn't cause them, and how to write such code!

* The definition of an unaligned access

Unaligned memory accesses occur when you try to read N bytes of data starting from an address
that is not evenly divisible by N (i.e. addr % N != 0). For example, reading 4 bytes of data
from address 0x10004 is fine, but reading 4 bytes of data from address 0x10005 would be an
unaligned memory access.

The above may seem a little vague, as memory access can happen in different ways. The context
here is at the machine code level: certain instructions read or write a number of bytes to or from
memory (e.g. movb, movw, movl in x86 assembly). As will become clear, it is relatively easy
to spot C statements which will compile to multiple-byte memory access instructions, namely
when dealing with types such as u16, u32 and u64.

* Natural alignment

The rule mentioned above forms what we refer to as natural alignment: When accessing N
bytes of memory, the base memory address must be evenly divisible by N, i.e. addr % N == 0.

When writing code, assume the target architecture has natural alignment requirements.

In reality, only a few architectures require natural alignment on all sizes of memory access.
However, we must consider ALL supported architectures; writing code that satisfies natural
alignment requirements is the easiest way to achieve full portability.

* Why unaligned access is bad

The effects of performing an unaligned memory access vary from architecture to architecture. It would be easy to write a whole document on the differences here; a summary of the common scenarios is presented below:

- Some architectures are able to perform unaligned memory accesses transparently, but there is usually a significant performance cost.

- Some architectures raise processor exceptions when unaligned accesses happen. The exception handler is able to correct the unaligned access, at significant cost to performance.

- Some architectures raise processor exceptions when unaligned accesses happen, but the exceptions do not contain enough information for the unaligned access to be corrected.

- Some architectures are not capable of unaligned memory access, but will silently perform a different memory access to the one that was requested, resulting in a subtle code bug that is hard to detect!

It should be obvious from the above that if your code causes unaligned memory accesses to happen, your code will not work correctly on certain platforms and will cause performance problems on others.

* Code that does not cause unaligned access

At first, the concepts above may seem a little hard to relate to actual coding practice. After all, you don't have a great deal of control over memory addresses of certain variables, etc.

Fortunately things are not too complex, as in most cases, the compiler ensures that things will work for you. For example, take the following structure:

```
struct foo {
        u16 field1;
        u32 field2;
        u8 field3;
};
```

Let us assume that an instance of the above structure resides in memory starting at address 0x10000. With a basic level of understanding, it would not be unreasonable to expect that accessing field2 would cause an unaligned access. You'd be expecting field2 to be located at offset 2 bytes into the structure, i.e. address 0x10002, but that address is not evenly divisible by 4 (remember, we're reading a 4 byte value here).

Fortunately, the compiler understands the alignment constraints, so in the above case it would insert 2 bytes of padding in between field1 and field2. Therefore, for standard structure types you can always rely on the compiler to pad structures so that accesses to fields are suitably aligned (assuming you do not cast the field to a type of different length).

Similarly, you can also rely on the compiler to align variables and function parameters to a naturally aligned scheme, based on the size of the type of the variable.

At this point, it should be clear that accessing a single byte (u8 or char) will never cause an unaligned access, because all memory addresses are evenly divisible by one.

On a related topic, with the above considerations in mind you may observe that you could reorder the fields in the structure in order to place fields where padding would otherwise be inserted, and hence reduce the overall resident memory size of structure instances. The optimal layout of the above example is:

```
struct foo {
        u32 field2;
        u16 field1;
        u8 field3;
};
```

For a natural alignment scheme, the compiler would only have to add a single byte of padding at the end of the structure. This padding is added in order to satisfy alignment constraints for arrays of these structures.

Another point worth mentioning is the use of __attribute__((packed)) on a structure type. This GCC-specific attribute tells the compiler never to insert any padding within structures, useful when you want to use a C struct to represent some data that comes in a fixed arrangement 'off the wire'.

You might be inclined to believe that usage of this attribute can easily lead to unaligned accesses when accessing fields that do not satisfy architectural alignment requirements. However, again, the compiler is aware of the alignment constraints and will generate extra instructions to perform the memory access in a way that does not cause unaligned access. Of course, the extra instructions obviously cause a loss in performance compared to the non-packed case, so the packed attribute should only be used when avoiding structure padding is of importance.

* Code that causes unaligned access

With the above in mind, let's move onto a real life example of a function that can cause an unaligned memory access. The following function taken from include/linux/etherdevice.h is an optimized routine to compare two ethernet MAC addresses for equality:

```
bool ether_addr_equal(const u8 *addr1, const u8 *addr2)
{
#ifdef CONFIG_HAVE_EFFICIENT_UNALIGNED_ACCESS
	u32 fold = ((*(const u32 *)addr1) ^ (*(const u32 *)addr2)) |
                ((*(const u16 *)(addr1 + 4)) ^ (*(const u16 *)(addr2 + 4)));

	return fold == 0;
#else
	const u16 *a = (const u16 *)addr1;
	const u16 *b = (const u16 *)addr2;
	return ((a[0] ^ b[0]) | (a[1] ^ b[1]) | (a[2] ^ b[2])) == 0;
#endif
}
```

In the above function, when the hardware has efficient unaligned access capability, there is no issue with this code. But when the hardware isn't able to access memory on arbitrary boundaries, the reference to a[0] causes 2 bytes (16 bits) to be read from memory starting at address addr1.

Think about what would happen if addr1 was an odd address such as 0x10003. (Hint: it'd be an unaligned access.)

Despite the potential unaligned access problems with the above function, it is included in the kernel anyway but is understood to only work normally on 16-bit-aligned addresses. It is up to the caller to ensure this alignment or not use this function at all. This alignment-unsafe function is still useful as it is a decent optimization for the cases when you can ensure alignment, which is true almost all of the time in ethernet networking context.

Here is another example of some code that could cause unaligned accesses:

```
void myfunc(u8 *data, u32 value)
{
        [...]
        *((u32 *) data) = cpu_to_le32(value);
        [...]
}
```

This code will cause unaligned accesses every time the data parameter points to an address that is not evenly divisible by 4.

In summary, the 2 main scenarios where you may run into unaligned access problems involve:

1. Casting variables to types of different lengths

2. Pointer arithmetic followed by access to at least 2 bytes of data

* Avoiding unaligned accesses

The easiest way to avoid unaligned access is to use the get_unaligned() and put_unaligned() macros provided by the <asm/unaligned.h> header file.

Going back to an earlier example of code that potentially causes unaligned access:

```
void myfunc(u8 *data, u32 value)
{
        [...]
        *((u32 *) data) = cpu_to_le32(value);
        [...]
}
```

To avoid the unaligned memory access, you would rewrite it as follows:

```
void myfunc(u8 *data, u32 value)
{
        [...]
        value = cpu_to_le32(value);
        put_unaligned(value, (u32 *) data);
        [...]
}
```

The get_unaligned() macro works similarly. Assuming 'data' is a pointer to memory and you wish to avoid unaligned access, its usage is as follows:

```
u32 value = get_unaligned((u32 *) data);
```

These macros work for memory accesses of any length (not just 32 bits as in the examples above). Be aware that when compared to standard access of aligned memory, using these macros to access unaligned memory can be costly in terms of performance.

If use of such macros is not convenient, another option is to use memcpy(), where the source or destination (or both) are of type u8* or unsigned char*. Due to the byte-wise nature of this operation, unaligned accesses are avoided.

* Alignment vs. Networking

On architectures that require aligned loads, networking requires that the IP header is aligned on a four-byte boundary to optimise the IP stack. For regular ethernet hardware, the constant NET_IP_ALIGN is used. On most architectures this constant has the value 2 because the normal ethernet header is 14 bytes long, so in order to get proper alignment one needs to DMA to an address which can be expressed as 4*n + 2. One notable exception here is powerpc which defines NET_IP_ALIGN to 0 because DMA to unaligned addresses can be very expensive and dwarf the cost of unaligned loads.

For some ethernet hardware that cannot DMA to unaligned addresses like 4*n+2 or non-ethernet hardware, this can be a problem, and it is then required to copy the incoming frame into an aligned buffer. Because this is unnecessary on architectures that can do unaligned accesses, the code can be made dependent on CONFIG_HAVE_EFFICIENT_UNALIGNED_ACCESS like so:

```
#ifdef CONFIG_HAVE_EFFICIENT_UNALIGNED_ACCESS
        skb = original skb
#else
        skb = copy skb
#endif
```

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