Linux Process Documentation

The kernel development community

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CONTENTS

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 C11 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
> This file describes 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/process/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:

> https://lore.kernel.org/lkml/

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 at-

tachments 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 <jlee@linuxfoundation.org>.

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 Code of Conduct Committee consists of volunteer community members appointed by the TAB, as well as a professional mediator acting as a neutral third party. The processes the Code of Conduct committee will use to address reports is varied and will depend on the individual circumstance, however, this file serves as documentation for the general process used.

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 regarding enforcement recommendations 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.

Because how we interpret and enforce the Code of Conduct will evolve over time, this document will be updated when necessary to reflect any changes.

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. Please refer to the following link for the list of active long term kernel versions and their maintainers:

> https://www.kernel.org/category/releases.html

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 designated 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.

- Use interleaved ("inline") replies, which makes your response easier to read. (i.e. avoid top-posting -- the practice of putting your answer above the quoted text you are responding to.) For more details, see *Documentation/process/submitting-patches.rst*.

- 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* 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 an earlier discussion which leads to 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'.

If the URL points to a public bug report being fixed by the patch, use the "Closes:" tag instead:

```
Closes: https://example.com/issues/1234  optional-other-stuff
```

Some bug trackers have the ability to close issues automatically when a commit with such a tag is applied. Some bots monitoring mailing lists can also track such tags and take certain actions. Private bug trackers and invalid URLs are forbidden.

Another 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. Note, this tag should be followed by a Closes: tag pointing to the report, unless the report is not available on the web. The Link: tag can be used instead of Closes: if the patch fixes a part of the issue(s) being reported.

- 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, as only Cc: is appropriate for addition without the explicit permission of the person named; using Reported-by: is fine most of the time as well, but ask for permission if the bug was reported in private.

* 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.

- Be prepared for seemingly silly requests for coding style changes and requests to factor out some of your code to shared parts of the kernel. One job the maintainers 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.

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. Start with the top-level *process/howto.rst*; also read *process/submitting-patches.rst*. 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. 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. If the patch is a result of some earlier mailing list discussions 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.

In case your patch fixes a bug, use the 'Closes:' tag with a URL referencing the report in the mailing list archives or a public bug tracker. For example:

```
Closes: https://example.com/issues/1234
```

Some bug trackers have the ability to close issues automatically when a commit with such a tag is applied. Some bots monitoring mailing lists can also track such tags and take certain actions. Private bug trackers and invalid URLs are forbidden.

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) and list(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.

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. Please do not spam unrelated lists and unrelated people, 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 *Security bugs*.

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 against previous submission (see *The canonical patch format*).

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

* Use trimmed interleaved replies in email discussions

Top-posting is strongly discouraged in Linux kernel development discussions. Interleaved (or "inline") replies make conversations much easier to follow. For more details see: https://en.wikipedia.org/wiki/Posting_style#Interleaved_style

As is frequently quoted on the mailing list:

```
A: http://en.wikipedia.org/wiki/Top_post
Q: Were do I find info about this thing called top-posting?
A: Because it messes up the order in which people normally read text.
Q: Why is top-posting such a bad thing?
A: Top-posting.
Q: What is the most annoying thing in e-mail?
```

Similarly, please trim all unneeded quotations that aren't relevant to your reply. This makes responses easier to find, and saves time and space. For more details see: http://daringfireball.net/2007/07/on_top

```
A: No.
Q: Should I include quotations after my reply?
```

* 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 a known identity (sorry, no 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. The tag is intended for bugs; please do not use it to credit feature requests. The tag should be followed by a Closes: tag pointing to the report, unless the report is not available on the web. The Link: tag can be used instead of Closes: if the patch fixes a part of the issue(s) being reported. Please note that if the bug was reported in private, then ask for permission first before using the Reported-by tag.

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 messages

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.

Expectations and best practices for fixing regressions

As a Linux kernel developer, you are expected to give your best to prevent situations where a regression caused by a recent change of yours leaves users only these options:

- Run a kernel with a regression that impacts usage.

- Switch to an older or newer kernel series.

- Continue running an outdated and thus potentially insecure kernel for more than three weeks after the regression's culprit was identified. Ideally it should be less than two. And it ought to be just a few days, if the issue is severe or affects many users -- either in general or in prevalent environments.

How to realize that in practice depends on various factors. Use the following rules of thumb as a guide.

In general:

- Prioritize work on regressions over all other Linux kernel work, unless the latter concerns a severe issue (e.g. acute security vulnerability, data loss, bricked hardware, …).

- Expedite fixing mainline regressions that recently made it into a proper mainline, stable, or longterm release (either directly or via backport).

- Do not consider regressions from the current cycle as something that can wait till the end of the cycle, as the issue might discourage or prevent users and CI systems from testing mainline now or generally.

- Work with the required care to avoid additional or bigger damage, even if resolving an issue then might take longer than outlined below.

On timing once the culprit of a regression is known:

- Aim to mainline a fix within two or three days, if the issue is severe or bothering many users -- either in general or in prevalent conditions like a particular hardware environment, distribution, or stable/longterm series.

- Aim to mainline a fix by Sunday after the next, if the culprit made it into a recent mainline, stable, or longterm release (either directly or via backport); if the culprit became known early during a week and is simple to resolve, try to mainline the fix within the same week.

- For other regressions, aim to mainline fixes before the hindmost Sunday within the next three weeks. One or two Sundays later are acceptable, if the regression is something people can live with easily for a while -- like a mild performance regression.

- It's strongly discouraged to delay mainlining regression fixes till the next merge window, except when the fix is extraordinarily risky or when the culprit was mainlined more than a year ago.

On procedure:

- Always consider reverting the culprit, as it's often the quickest and least dangerous way to fix a regression. Don't worry about mainlining a fixed variant later: that should be straight-forward, as most of the code went through review once already.

- Try to resolve any regressions introduced in mainline during the past twelve months before the current development cycle ends: Linus wants such regressions to be handled like those from the current cycle, unless fixing bears unusual risks.

- Consider CCing Linus on discussions or patch review, if a regression seems tangly. Do the same in precarious or urgent cases -- especially if the subsystem maintainer might be unavailable. Also CC the stable team, when you know such a regression made it into a mainline, stable, or longterm release.

- For urgent regressions, consider asking Linus to pick up the fix straight from the mailing list: he is totally fine with that for uncontroversial fixes. Ideally though such requests should happen in accordance with the subsystem maintainers or come directly from them.

- In case you are unsure if a fix is worth the risk applying just days before a new mainline release, send Linus a mail with the usual lists and people in CC; in it, summarize the situation while asking him to consider picking up the fix straight from the list. He then himself can make the call and when needed even postpone the release. Such requests again should ideally happen in accordance with the subsystem maintainers or come directly from them.

Regarding stable and longterm kernels:

- You are free to leave regressions to the stable team, if they at no point in time occurred with mainline or were fixed there already.

- If a regression made it into a proper mainline release during the past twelve months, ensure to tag the fix with "Cc: stable@vger.kernel.org", as a "Fixes:" tag alone does not guarantee a backport. Please add the same tag, in case you know the culprit was back-ported to stable or longterm kernels.

- When receiving reports about regressions in recent stable or longterm kernel series, please evaluate at least briefly if the issue might happen in current mainline as well -- and if that seems likely, take hold of the report. If in doubt, ask the reporter to check mainline.

- Whenever you want to swiftly resolve a regression that recently also made it into a proper mainline, stable, or longterm release, fix it quickly in mainline; when appropriate thus

involve Linus to fast-track the fix (see above). That's because the stable team normally does neither revert nor fix any changes that cause the same problems in mainline.

- In case of urgent regression fixes you might want to ensure prompt backporting by dropping the stable team a note once the fix was mainlined; this is especially advisable during merge windows and shortly thereafter, as the fix otherwise might land at the end of a huge patch queue.

On patch flow:

- Developers, when trying to reach the time periods mentioned above, remember to account for the time it takes to get fixes tested, reviewed, and merged by Linus, ideally with them being in linux-next at least briefly. Hence, if a fix is urgent, make it obvious to ensure others handle it appropriately.

- Reviewers, you are kindly asked to assist developers in reaching the time periods mentioned above by reviewing regression fixes in a timely manner.

- Subsystem maintainers, you likewise are encouraged to expedite the handling of regression fixes. Thus evaluate if skipping linux-next is an option for the particular fix. Also consider sending git pull requests more often than usual when needed. And try to avoid holding onto regression fixes over weekends -- especially when the fix is marked for backporting.

* 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.

* 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.

* Rust

The kernel has experimental support for the Rust programming language [rust-language] under `CONFIG_RUST`. It is compiled with `rustc` [rustc] under `--edition=2021` [rust-editions]. Editions are a way to introduce small changes to the language that are not backwards compatible.

On top of that, some unstable features [rust-unstable-features] are used in the kernel. Unstable features may change in the future, thus it is an important goal to reach a point where only stable features are used.

Please refer to Documentation/rust/index.rst 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 ;)

```
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:

```
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:

```
#ifdef CONFIG_SOMETHING
...
#endif /* CONFIG_SOMETHING */
```

* 22) Do not crash the kernel

In general, the decision to crash the kernel belongs to the user, rather than to the kernel developer.

* Avoid panic()

panic() should be used with care and primarily only during system boot. panic() is, for example, acceptable when running out of memory during boot and not being able to continue.

* Use WARN() rather than BUG()

Do not add new code that uses any of the BUG() variants, such as BUG(), BUG_ON(), or VM_BUG_ON(). Instead, use a WARN*() variant, preferably WARN_ON_ONCE(), and possibly with recovery code. Recovery code is not required if there is no reasonable way to at least partially recover.

"I'm too lazy to do error handling" is not an excuse for using BUG(). Major internal corruptions with no way of continuing may still use BUG(), but need good justification.

* Use WARN_ON_ONCE() rather than WARN() or WARN_ON()

WARN_ON_ONCE() is generally preferred over WARN() or WARN_ON(), because it is common for a given warning condition, if it occurs at all, to occur multiple times. This can fill up and wrap the kernel log, and can even slow the system enough that the excessive logging turns into its own, additional problem.

* Do not WARN lightly

WARN*() is intended for unexpected, this-should-never-happen situations. WARN*() macros are not to be used for anything that is expected to happen during normal operation. These are not pre- or post-condition asserts, for example. Again: WARN*() must not be used for a condition that is expected to trigger easily, for example, by user space actions. pr_warn_once() is a possible alternative, if you need to notify the user of a problem.

* Do not worry about panic_on_warn users

A few more words about panic_on_warn: Remember that `panic_on_warn` is an available kernel option, and that many users set this option. This is why there is a "Do not WARN lightly" writeup, above. However, the existence of panic_on_warn users is not a valid reason to avoid the judicious use WARN*(). That is because, whoever enables panic_on_warn has explicitly asked the kernel to crash if a WARN*() fires, and such users must be prepared to deal with the consequences of a system that is somewhat more likely to crash.

* Use BUILD_BUG_ON() for compile-time assertions

The use of BUILD_BUG_ON() is acceptable and encouraged, because it is a compile-time assertion that has no effect at runtime.

* 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 CodingStyle, 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:

* Networking subsystem (netdev)

* 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

* netdev

netdev 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 and trees.

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.

* Development cycle

Here is 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.

To find out where we are now in the 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.

* git trees and patch flow

There are two networking 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

Relating that to kernel development: 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:

> https://netdev.bots.linux.dev/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.

* netdev patch review

Patch status

Status of a patch can be checked by looking at the main patchwork queue for netdev:

https://patchwork.kernel.org/project/netdevbpf/list/

The "State" field will tell you exactly where things are at with your patch:

Patch state	Description
New, Under review	pending review, patch is in the maintainer's queue for review; the two states are used interchangeably (depending on the exact co-maintainer handling patchwork at the time)
Accepted	patch was applied to the appropriate networking tree, this is usually set automatically by the pw-bot
Needs ACK	waiting for an ack from an area expert or testing
Changes requested	patch has not passed the review, new revision is expected with appropriate code and commit message changes
Rejected	patch has been rejected and new revision is not expected
Not applicable	patch is expected to be applied outside of the networking subsystem
Awaiting upstream	patch should be reviewed and handled by appropriate sub-maintainer, who will send it on to the networking trees; patches set to `Awaiting upstream` in netdev's patchwork will usually remain in this state, whether the sub-maintainer requested changes, accepted or rejected the patch
Deferred	patch needs to be reposted later, usually due to dependency or because it was posted for a closed tree
Superseded	new version of the patch was posted, usually set by the pw-bot
RFC	not to be applied, usually not in maintainer's review queue, pw-bot can automatically set patches to this state based on subject tags

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.

Updating patch status

Contributors and reviewers do not have the permissions to update patch state directly in patchwork. Patchwork doesn't expose much information about the history of the state of patches, therefore having multiple people update the state leads to confusion.

Instead of delegating patchwork permissions netdev uses a simple mail bot which looks for special commands/lines within the emails sent to the mailing list. For example to mark a series as Changes Requested one needs to send the following line anywhere in the email thread:

```
pw-bot: changes-requested
```

As a result the bot will set the entire series to Changes Requested. This may be useful when author discovers a bug in their own series and wants to prevent it from getting applied.

The use of the bot is entirely optional, if in doubt ignore its existence completely. Maintainers will classify and update the state of the patches themselves. No email should ever be sent to the list with the main purpose of communicating with the bot, the bot commands should be seen as metadata.

The use of the bot is restricted to authors of the patches (the `From:` header on patch submission and command must match!), maintainers of the modified code according to the MAINTAINERS file (again, `From:` must match the MAINTAINERS entry) and a handful of senior reviewers.

Bot records its activity here:

> https://netdev.bots.linux.dev/pw-bot.html

Review timelines

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.

Changes requested

Patches *marked* as `Changes Requested` need to be revised. The new version should come with a change log, preferably including links to previous postings, for example:

```
[PATCH net-next v3] net: make cows go moo

Even users who don't drink milk appreciate hearing the cows go "moo".

The amount of mooing will depend on packet rate so should match
the diurnal cycle quite well.

Signed-of-by: Joe Defarmer <joe@barn.org>
---
v3:
  - add a note about time-of-day mooing fluctuation to the commit message
v2: https://lore.kernel.org/netdev/123themessageid@barn.org/
  - fix missing argument in kernel doc for netif_is_bovine()
  - fix memory leak in netdev_register_cow()
v1: https://lore.kernel.org/netdev/456getstheclicks@barn.org/
```

The commit message should be revised to answer any questions reviewers had to ask in previous discussions. Occasionally the update of the commit message will be the only change in the new version.

Partial resends

Please always 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. Do not try to resend just the patches which changed.

Handling misapplied patches

Occasionally a patch series gets applied before receiving critical feedback, or the wrong version of a series gets applied.

Making the patch disappear once it is pushed out is not possible, the commit history in netdev trees is immutable. 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.

In cases where full revert is needed the revert has to be submitted as a patch to the list with a commit message explaining the technical problems with the reverted commit. Reverts should be used as a last resort, when original change is completely wrong; incremental fixes are preferred.

Stable tree

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!

Security fixes

Do not email netdev maintainers directly if you think you discovered a bug that might have possible security implications. 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.

Co-posting 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).

* Preparing changes

Attention to detail is important. 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.

Indicating target tree

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.

Dividing 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.

Multi-line comments

Comment style convention is slightly different for networking and most of the tree. 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
 */
```

Local variable ordering ("reverse xmas tree", "RCS")

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.

Format precedence

When working in existing code which uses nonstandard formatting make your code follow the most recent guidelines, so that eventually all code in the domain of netdev is in the preferred format.

Resending after review

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.

The new version of patches should be posted as a separate thread, not as a reply to the previous posting. Change log should include a link to the previous posting (see *Changes requested*).

* Testing

Expected level of testing

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`.

patchwork checks

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

Do not post your patches just to run them through the checks. 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

`netdevsim` is a test driver which can be used to exercise driver configuration APIs without requiring capable hardware. 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. You must also implement the new APIs in a real driver.

We give no guarantees that `netdevsim` won't change in the future in a way which would break what would normally be considered uAPI.

`netdevsim` is reserved for use by upstream tests only, so any new `netdevsim` features must be accompanied by selftests under `tools/testing/selftests/`.

* Testimonials / feedback

Some companies use peer feedback in employee performance reviews. Please feel free to request feedback from netdev maintainers, especially if you spend significant amount of time reviewing code and go out of your way to improve shared infrastructure.

The feedback must be requested by you, the contributor, and will always be shared with you (even if you request for it to be submitted to your manager).

* SoC Subsystem

* Overview

The SoC subsystem is a place of aggregation for SoC-specific code. The main components of the subsystem are:

- devicetrees for 32- & 64-bit ARM and RISC-V
- 32-bit ARM board files (arch/arm/mach*)
- 32- & 64-bit ARM defconfigs
- SoC-specific drivers across architectures, in particular for 32- & 64-bit ARM, RISC-V and Loongarch

These "SoC-specific drivers" do not include clock, GPIO etc drivers that have other top-level maintainers. The drivers/soc/ directory is generally meant for kernel-internal drivers that are

used by other drivers to provide SoC- specific functionality like identifying an SoC revision or interfacing with power domains.

The SoC subsystem also serves as an intermediate location for changes to drivers/bus, drivers/firmware, drivers/reset and drivers/memory. The addition of new platforms, or the removal of existing ones, often go through the SoC tree as a dedicated branch covering multiple subsystems.

The main SoC tree is housed on git.kernel.org:
https://git.kernel.org/pub/scm/linux/kernel/git/soc/soc.git/

Clearly this is quite a wide range of topics, which no one person, or even small group of people are capable of maintaining. Instead, the SoC subsystem is comprised of many submaintainers, each taking care of individual platforms and driver subdirectories. In this regard, "platform" usually refers to a series of SoCs from a given vendor, for example, Nvidia's series of Tegra SoCs. Many submaintainers operate on a vendor level, responsible for multiple product lines. For several reasons, including acquisitions/different business units in a company, things vary significantly here. The various submaintainers are documented in the MAINTAINERS file.

Most of these submaintainers have their own trees where they stage patches, sending pull requests to the main SoC tree. These trees are usually, but not always, listed in MAINTAINERS. The main SoC maintainers can be reached via the alias soc@kernel.org if there is no platform-specific maintainer, or if they are unresponsive.

What the SoC tree is not, however, is a location for architecture-specific code changes. Each architecture has its own maintainers that are responsible for architectural details, CPU errata and the like.

* Information for (new) Submaintainers

As new platforms spring up, they often bring with them new submaintainers, many of whom work for the silicon vendor, and may not be familiar with the process.

Devicetree ABI Stability

Perhaps one of the most important things to highlight is that dt-bindings document the ABI between the devicetree and the kernel. Please read Documentation/devicetree/bindings/ABI.rst.

If changes are being made to a devicetree that are incompatible with old kernels, the devicetree patch should not be applied until the driver is, or an appropriate time later. Most importantly, any incompatible changes should be clearly pointed out in the patch description and pull request, along with the expected impact on existing users, such as bootloaders or other operating systems.

Driver Branch Dependencies

A common problem is synchronizing changes between device drivers and devicetree files. Even if a change is compatible in both directions, this may require coordinating how the changes get merged through different maintainer trees.

Usually the branch that includes a driver change will also include the corresponding change to the devicetree binding description, to ensure they are in fact compatible. This means that the devicetree branch can end up causing warnings in the "make dtbs_check" step. If a devicetree change depends on missing additions to a header file in include/dt-bindings/, it will fail the "make dtbs" step and not get merged.

There are multiple ways to deal with this:

- Avoid defining custom macros in include/dt-bindings/ for hardware constants that can be derived from a datasheet -- binding macros in header files should only be used as a last resort if there is no natural way to define a binding

- Use literal values in the devicetree file in place of macros even when a header is required, and change them to the named representation in a following release

- Defer the devicetree changes to a release after the binding and driver have already been merged

- Change the bindings in a shared immutable branch that is used as the base for both the driver change and the devicetree changes

- Add duplicate defines in the devicetree file guarded by an #ifndef section, removing them in a later release

Devicetree Naming Convention

The general naming scheme for devicetree files is as follows. The aspects of a platform that are set at the SoC level, like CPU cores, are contained in a file named $soc.dtsi, for example, jh7100.dtsi. Integration details, that will vary from board to board, are described in $soc-$board.dts. An example of this is jh7100-beaglev-starlight.dts. Often many boards are variations on a theme, and frequently there are intermediate files, such as jh7100-common.dtsi, which sit between the $soc.dtsi and $soc-$board.dts files, containing the descriptions of common hardware.

Some platforms also have System on Modules, containing an SoC, which are then integrated into several different boards. For these platforms, $soc-$som.dtsi and $soc-$som-$board.dts are typical.

Directories are usually named after the vendor of the SoC at the time of its inclusion, leading to some historical directory names in the tree.

Validating Devicetree Files

`make dtbs_check` can be used to validate that devicetree files are compliant with the dt-bindings that describe the ABI. Please read the section "Running checks" of Documentation/devicetree/bindings/writing-schema.rst for more information on the validation of devicetrees.

For new platforms, or additions to existing ones, `make dtbs_check` should not add any new warnings. For RISC-V and Samsung SoC, `make dtbs_check W=1` is required to not add any new warnings. If in any doubt about a devicetree change, reach out to the devicetree maintainers.

Branches and Pull Requests

Just as the main SoC tree has several branches, it is expected that submaintainers will do the same. Driver, defconfig and devicetree changes should all be split into separate branches and appear in separate pull requests to the SoC maintainers. Each branch should be usable by itself and avoid regressions that originate from dependencies on other branches.

Small sets of patches can also be sent as separate emails to soc@kernel.org, grouped into the same categories.

If changes do not fit into the normal patterns, there can be additional top-level branches, e.g. for a treewide rework, or the addition of new SoC platforms including dts files and drivers.

Branches with a lot of changes can benefit from getting split up into separate topics branches, even if they end up getting merged into the same branch of the SoC tree. An example here would be one branch for devicetree warning fixes, one for a rework and one for newly added boards.

Another common way to split up changes is to send an early pull request with the majority of the changes at some point between rc1 and rc4, following up with one or more smaller pull requests towards the end of the cycle that can add late changes or address problems identified while testing the first set.

While there is no cut-off time for late pull requests, it helps to only send small branches as time gets closer to the merge window.

Pull requests for bugfixes for the current release can be sent at any time, but again having multiple smaller branches is better than trying to combine too many patches into one pull request.

The subject line of a pull request should begin with "[GIT PULL]" and made using a signed tag, rather than a branch. This tag should contain a short description summarising the changes in the pull request. For more detail on sending pull requests, please see Documentation/maintainer/pull-requests.rst.

* SoC Platforms with DTS Compliance Requirements

* Overview

SoC platforms or subarchitectures should follow all the rules from *SoC Subsystem*. This document referenced in MAINTAINERS impose additional requirements listed below.

* Strict DTS DT Schema and dtc Compliance

No changes to the SoC platform Devicetree sources (DTS files) should introduce new `make dtbs_check W=1` warnings. Warnings in a new board DTS, which are results of issues in an included DTSI file, are considered existing, not new warnings. The platform maintainers have automation in place which should point out any new warnings.

If a commit introducing new warnings gets accepted somehow, the resulting issues shall be fixed in reasonable time (e.g. within one release) or the commit reverted.

* 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 *Submitting patches guide*, 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 messages*.

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.

So called _urgent_ branches will be merged into mainline during the stabilization phase of each release.

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.'.

* KVM x86

* Foreword

KVM strives to be a welcoming community; contributions from newcomers are valued and encouraged. Please do not be discouraged or intimidated by the length of this document and the many rules/guidelines it contains. Everyone makes mistakes, and everyone was a newbie at some point. So long as you make an honest effort to follow KVM x86's guidelines, are receptive to feedback, and learn from any mistakes you make, you will be welcomed with open arms, not torches and pitchforks.

* TL;DR

Testing is mandatory. Be consistent with established styles and patterns.

* Trees

KVM x86 is currently in a transition period from being part of the main KVM tree, to being "just another KVM arch". As such, KVM x86 is split across the main KVM tree, `git.kernel.org/pub/scm/virt/kvm/kvm.git`, and a KVM x86 specific tree, `github.com/kvm-x86/linux.git`.

Generally speaking, fixes for the current cycle are applied directly to the main KVM tree, while all development for the next cycle is routed through the KVM x86 tree. In the unlikely event that a fix for the current cycle is routed through the KVM x86 tree, it will be applied to the `fixes` branch before making its way to the main KVM tree.

Note, this transition period is expected to last quite some time, i.e. will be the status quo for the foreseeable future.

Branches

The KVM x86 tree is organized into multiple topic branches. The purpose of using finer-grained topic branches is to make it easier to keep tabs on an area of development, and to limit the collateral damage of human errors and/or buggy commits, e.g. dropping the HEAD commit of a topic branch has no impact on other in-flight commits' SHA1 hashes, and having to reject a pull request due to bugs delays only that topic branch.

All topic branches, except for `next` and `fixes`, are rolled into `next` via a Cthulhu merge on an as-needed basis, i.e. when a topic branch is updated. As a result, force pushes to `next` are common.

Lifecycle

Fixes that target the current release, a.k.a. mainline, are typically applied directly to the main KVM tree, i.e. do not route through the KVM x86 tree.

Changes that target the next release are routed through the KVM x86 tree. Pull requests (from KVM x86 to main KVM) are sent for each KVM x86 topic branch, typically the week before Linus' opening of the merge window, e.g. the week following rc7 for "normal" releases. If all goes well, the topic branches are rolled into the main KVM pull request sent during Linus' merge window.

The KVM x86 tree doesn't have its own official merge window, but there's a soft close around rc5 for new features, and a soft close around rc6 for fixes (for the next release; see above for fixes that target the current release).

Timeline

Submissions are typically reviewed and applied in FIFO order, with some wiggle room for the size of a series, patches that are "cache hot", etc. Fixes, especially for the current release and or stable trees, get to jump the queue. Patches that will be taken through a non-KVM tree (most often through the tip tree) and/or have other acks/reviews also jump the queue to some extent.

Note, the vast majority of review is done between rc1 and rc6, give or take. The period between rc6 and the next rc1 is used to catch up on other tasks, i.e. radio silence during this period isn't unusual.

Pings to get a status update are welcome, but keep in mind the timing of the current release cycle and have realistic expectations. If you are pinging for acceptance, i.e. not just for feedback or an update, please do everything you can, within reason, to ensure that your patches are ready to be merged! Pings on series that break the build or fail tests lead to unhappy maintainers!

* Development

Base Tree/Branch

Fixes that target the current release, a.k.a. mainline, should be based on `git://git.kernel.org/pub/scm/virt/kvm/kvm.git master`. Note, fixes do not automatically warrant inclusion in the current release. There is no singular rule, but typically only fixes for bugs that are urgent, critical, and/or were introduced in the current release should target the current release.

Everything else should be based on `kvm-x86/next`, i.e. there is no need to select a specific topic branch as the base. If there are conflicts and/or dependencies across topic branches, it is the maintainer's job to sort them out.

The only exception to using `kvm-x86/next` as the base is if a patch/series is a multi-arch series, i.e. has non-trivial modifications to common KVM code and/or has more than superficial changes to other architectures' code. Multi- arch patch/series should instead be based on a common, stable point in KVM's history, e.g. the release candidate upon which `kvm-x86 next` is based. If you're unsure whether a patch/series is truly multi-arch, err on the side of caution and treat it as multi-arch, i.e. use a common base.

Coding Style

When it comes to style, naming, patterns, etc., consistency is the number one priority in KVM x86. If all else fails, match what already exists.

With a few caveats listed below, follow the tip tree maintainers' preferred *Coding style notes*, as patches/series often touch both KVM and non-KVM x86 files, i.e. draw the attention of KVM *and* tip tree maintainers.

Using reverse fir tree, a.k.a. reverse Christmas tree or reverse XMAS tree, for variable declarations isn't strictly required, though it is still preferred.

Except for a handful of special snowflakes, do not use kernel-doc comments for functions. The vast majority of "public" KVM functions aren't truly public as they are intended only for KVM-internal consumption (there are plans to privatize KVM's headers and exports to enforce this).

Comments

Write comments using imperative mood and avoid pronouns. Use comments to provide a high level overview of the code, and/or to explain why the code does what it does. Do not reiterate what the code literally does; let the code speak for itself. If the code itself is inscrutable, comments will not help.

SDM and APM References

Much of KVM's code base is directly tied to architectural behavior defined in Intel's Software Development Manual (SDM) and AMD's Architecture Programmer's Manual (APM). Use of "Intel's SDM" and "AMD's APM", or even just "SDM" or "APM", without additional context is a-ok.

Do not reference specific sections, tables, figures, etc. by number, especially not in comments. Instead, if necessary (see below), copy-paste the relevant snippet and reference sections/tables/figures by name. The layouts of the SDM and APM are constantly changing, and so the numbers/labels aren't stable.

Generally speaking, do not explicitly reference or copy-paste from the SDM or APM in comments. With few exceptions, KVM *must* honor architectural behavior, therefore it's implied that KVM behavior is emulating SDM and/or APM behavior. Note, referencing the SDM/APM in changelogs to justify the change and provide context is perfectly ok and encouraged.

Shortlog

The preferred prefix format is `KVM: <topic>:`, where `<topic>` is one of:

```
- x86
- x86/mmu
- x86/pmu
- x86/xen
- selftests
- SVM
- nSVM
- VMX
- nVMX
```

DO NOT use x86/kvm! `x86/kvm` is used exclusively for Linux-as-a-KVM-guest changes, i.e. for arch/x86/kernel/kvm.c. Do not use file names or complete file paths as the subject/shortlog prefix.

Note, these don't align with the topics branches (the topic branches care much more about code conflicts).

All names are case sensitive! `KVM: x86:` is good, `kvm: vmx:` is not.

Capitalize the first word of the condensed patch description, but omit ending punctuation. E.g.:

```
KVM: x86: Fix a null pointer dereference in function_xyz()
```

not:

```
kvm: x86: fix a null pointer dereference in function_xyz.
```

If a patch touches multiple topics, traverse up the conceptual tree to find the first common parent (which is often simply x86). When in doubt, `git log path/to/file` should provide a reasonable hint.

New topics do occasionally pop up, but please start an on-list discussion if you want to propose introducing a new topic, i.e. don't go rogue.

See *The canonical patch format* for more information, with one amendment: do not treat the 70-75 character limit as an absolute, hard limit. Instead, use 75 characters as a firm-but-not-hard limit, and use 80 characters as a hard limit. I.e. let the shortlog run a few characters over the standard limit if you have good reason to do so.

Changelog

Most importantly, write changelogs using imperative mood and avoid pronouns.

See *Describe your changes* for more information, with one amendment: lead with a short blurb on the actual changes, and then follow up with the context and background. Note! This order directly conflicts with the tip tree's preferred approach! Please follow the tip tree's preferred style when sending patches that primarily target arch/x86 code that is _NOT_ KVM code.

Stating what a patch does before diving into details is preferred by KVM x86 for several reasons. First and foremost, what code is actually being changed is arguably the most important information, and so that info should be easy to find. Changelogs that bury the "what's actually changing" in a one-liner after 3+ paragraphs of background make it very hard to find that information.

For initial review, one could argue the "what's broken" is more important, but for skimming logs and git archaeology, the gory details matter less and less. E.g. when doing a series of "git blame", the details of each change along the way are useless, the details only matter for the culprit. Providing the "what changed" makes it easy to quickly determine whether or not a commit might be of interest.

Another benefit of stating "what's changing" first is that it's almost always possible to state "what's changing" in a single sentence. Conversely, all but the most simple bugs require multiple sentences or paragraphs to fully describe the problem. If both the "what's changing" and "what's the bug" are super short then the order doesn't matter. But if one is shorter (almost always the "what's changing"), then covering the shorter one first is advantageous because it's less of an inconvenience for readers/reviewers that have a strict ordering preference. E.g. having to skip one sentence to get to the context is less painful than having to skip three paragraphs to get to "what's changing".

Fixes

If a change fixes a KVM/kernel bug, add a Fixes: tag even if the change doesn't need to be backported to stable kernels, and even if the change fixes a bug in an older release.

Conversely, if a fix does need to be backported, explicitly tag the patch with "Cc: stable@vger.kernel" (though the email itself doesn't need to Cc: stable); KVM x86 opts out of backporting Fixes: by default. Some auto-selected patches do get backported, but require explicit maintainer approval (search MANUALSEL).

Function References

When a function is mentioned in a comment, changelog, or shortlog (or anywhere for that matter), use the format `function_name()`. The parentheses provide context and disambiguate the reference.

* Testing

At a bare minimum, *all* patches in a series must build cleanly for KVM_INTEL=m KVM_AMD=m, and KVM_WERROR=y. Building every possible combination of Kconfigs isn't feasible, but the more the merrier. KVM_SMM, KVM_XEN, PROVE_LOCKING, and X86_64 are particularly interesting knobs to turn.

Running KVM selftests and KVM-unit-tests is also mandatory (and stating the obvious, the tests need to pass). The only exception is for changes that have negligible probability of affecting runtime behavior, e.g. patches that only modify comments. When possible and relevant, testing on both Intel and AMD is strongly preferred. Booting an actual VM is encouraged, but not mandatory.

For changes that touch KVM's shadow paging code, running with TDP (EPT/NPT) disabled is mandatory. For changes that affect common KVM MMU code, running with TDP disabled is strongly encouraged. For all other changes, if the code being modified depends on and/or interacts with a module param, testing with the relevant settings is mandatory.

Note, KVM selftests and KVM-unit-tests do have known failures. If you suspect a failure is not due to your changes, verify that the *exact same* failure occurs with and without your changes.

Changes that touch reStructured Text documentation, i.e. .rst files, must build htmldocs cleanly, i.e. with no new warnings or errors.

If you can't fully test a change, e.g. due to lack of hardware, clearly state what level of testing you were able to do, e.g. in the cover letter.

New Features

With one exception, new features *must* come with test coverage. KVM specific tests aren't strictly required, e.g. if coverage is provided by running a sufficiently enabled guest VM, or by running a related kernel selftest in a VM, but dedicated KVM tests are preferred in all cases. Negative testcases in particular are mandatory for enabling of new hardware features as error and exception flows are rarely exercised simply by running a VM.

The only exception to this rule is if KVM is simply advertising support for a feature via KVM_GET_SUPPORTED_CPUID, i.e. for instructions/features that KVM can't prevent a guest from using and for which there is no true enabling.

Note, "new features" does not just mean "new hardware features"! New features that can't be well validated using existing KVM selftests and/or KVM-unit-tests must come with tests.

Posting new feature development without tests to get early feedback is more than welcome, but such submissions should be tagged RFC, and the cover letter should clearly state what type of feedback is requested/expected. Do not abuse the RFC process; RFCs will typically not receive in-depth review.

Bug Fixes

Except for "obvious" found-by-inspection bugs, fixes must be accompanied by a reproducer for the bug being fixed. In many cases the reproducer is implicit, e.g. for build errors and test failures, but it should still be clear to readers what is broken and how to verify the fix. Some leeway is given for bugs that are found via non-public workloads/tests, but providing regression tests for such bugs is strongly preferred.

In general, regression tests are preferred for any bug that is not trivial to hit. E.g. even if the bug was originally found by a fuzzer such as syzkaller, a targeted regression test may be warranted if the bug requires hitting a one-in-a-million type race condition.

Note, KVM bugs are rarely urgent *and* non-trivial to reproduce. Ask yourself if a bug is really truly the end of the world before posting a fix without a reproducer.

* Posting

Links

Do not explicitly reference bug reports, prior versions of a patch/series, etc. via `In-Reply-To:` headers. Using `In-Reply-To:` becomes an unholy mess for large series and/or when the version count gets high, and `In-Reply-To:` is useless for anyone that doesn't have the original message, e.g. if someone wasn't Cc'd on the bug report or if the list of recipients changes between versions.

To link to a bug report, previous version, or anything of interest, use lore links. For referencing previous version(s), generally speaking do not include a Link: in the changelog as there is no need to record the history in git, i.e. put the link in the cover letter or in the section git ignores. Do provide a formal Link: for bug reports and/or discussions that led to the patch. The context of why a change was made is highly valuable for future readers.

Git Base

If you are using git version 2.9.0 or later (Googlers, this is all of you!), use `git format-patch` with the `--base` flag to automatically include the base tree information in the generated patches.

Note, `--base=auto` works as expected if and only if a branch's upstream is set to the base topic branch, e.g. it will do the wrong thing if your upstream is set to your personal repository for backup purposes. An alternative "auto" solution is to derive the names of your development branches based on their KVM x86 topic, and feed that into `--base`. E.g. `x86/pmu/my_branch_name`, and then write a small wrapper to extract `pmu` from the current branch name to yield `--base=x/pmu`, where `x` is whatever name your repository uses to track the KVM x86 remote.

Co-Posting Tests

KVM selftests that are associated with KVM changes, e.g. regression tests for bug fixes, should be posted along with the KVM changes as a single series. The standard kernel rules for bisection apply, i.e. KVM changes that result in test failures should be ordered after the selftests updates, and vice versa, new tests that fail due to KVM bugs should be ordered after the KVM fixes.

KVM-unit-tests should *always* be posted separately. Tools, e.g. b4 am, don't know that KVM-unit-tests is a separate repository and get confused when patches in a series apply on different trees. To tie KVM-unit-tests patches back to KVM patches, first post the KVM changes and then provide a lore Link: to the KVM patch/series in the KVM-unit-tests patch(es).

* Notifications

When a patch/series is officially accepted, a notification email will be sent in reply to the original posting (cover letter for multi-patch series). The notification will include the tree and topic branch, along with the SHA1s of the commits of applied patches.

If a subset of patches is applied, this will be clearly stated in the notification. Unless stated otherwise, it's implied that any patches in the series that were not accepted need more work and should be submitted in a new version.

If for some reason a patch is dropped after officially being accepted, a reply will be sent to the notification email explaining why the patch was dropped, as well as the next steps.

SHA1 Stability

SHA1s are not 100% guaranteed to be stable until they land in Linus' tree! A SHA1 is *usually* stable once a notification has been sent, but things happen. In most cases, an update to the notification email be provided if an applied patch's SHA1 changes. However, in some scenarios, e.g. if all KVM x86 branches need to be rebased, individual notifications will not be given.

* Vulnerabilities

Bugs that can be exploited by the guest to attack the host (kernel or userspace), or that can be exploited by a nested VM to *its* host (L2 attacking L1), are of particular interest to KVM. Please follow the protocol for *Security bugs* if you suspect a bug can lead to an escape, data leak, etc.

KERNEL MAINTAINER PGP GUIDE

Author

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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 2.2 or later

Your distro should already have GnuPG installed by default, you just need to verify that you are using a reasonably recent version of it. To check, run:

```
$ gpg --version | head -n1
```

If you have version 2.2 or above, then you are good to go. If you have a version that is prior than 2.2, then some commands from this guide may not work.

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.

* Protect your 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).

* Understanding PGP Subkeys

A PGP key rarely consists of a single keypair -- usually it is a collection of independent subkeys that can be used for different purposes based on their capabilities, assigned at their creation time. PGP defines four capabilities that a key can have:

- **[S]** keys can be used for signing
- **[E]** keys can be used for encryption
- **[A]** keys can be used for authentication
- **[C]** keys can be used for certifying other keys

The key with the **[C]** capability is often called the "master" key, but this terminology is misleading because it implies that the Certify key can be used in place of any of other subkey on the same chain (like a physical "master key" can be used to open locks made for other keys). Since this is not the case, this guide will refer to it as "the Certify key" to avoid any ambiguity.

It is critical to fully understand the following:

1. All subkeys are fully independent from each other. If you lose a private subkey, it cannot be restored or recreated from any other private key on your chain.

2. With the exception of the Certify key, there can be multiple subkeys with identical capabilities (e.g. you can have 2 valid encryption subkeys, 3 valid signing subkeys, but only one valid certification subkey). All subkeys are fully independent -- a message encrypted to one **[E]** subkey cannot be decrypted with any other **[E]** subkey you may also have.

3. A single subkey may have multiple capabilities (e.g. your **[C]** key can also be your **[S]** key).

The key carrying the **[C]** (certify) capability 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:

- One subkey 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   ed25519 2022-12-20 [SC] [expires: 2024-12-19]
      000000000000000000000000AAAABBBBCCCCDDDD
uid           [ultimate] Alice Dev <adev@kernel.org>
ssb   cv25519 2022-12-20 [E] [expires: 2024-12-19]
```

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 Certify 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
```

Note: ECC support in GnuPG

Note, that if you intend to use a hardware token that does not support ED25519 ECC keys, you should choose "nistp256" instead or "ed25519." See the section below on recommended hardware devices.

---

* Back up your Certify 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.

---

* 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 PGP 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:

```
$ 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 Certify 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)

---

*. Protect your PGP key

- 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 Certify 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 Certify key:

```
$ gpg --with-keygrip --list-key [fpr]
```

The output will be something like this:

```
pub   ed25519 2022-12-20 [SC] [expires: 2022-12-19]
      0000000000000000000000AAAABBBBCCCCDDDD
      Keygrip = 1111000000000000000000000000000000000000
uid           [ultimate] Alice Dev <adev@kernel.org>
sub   cv25519 2022-12-20 [E] [expires: 2022-12-19]
      Keygrip = 2222000000000000000000000000000000000000
sub   ed25519 2022-12-20 [S]
      Keygrip = 3333000000000000000000000000000000000000
```

Find the keygrip entry that is beneath the `pub` line (right under the Certify key fingerprint). This will correspond directly to a file in your `~/.gnupg` directory:

```
$ cd ~/.gnupg/private-keys-v1.d
$ ls
1111000000000000000000000000000000000000.key
2222000000000000000000000000000000000000.key
3333000000000000000000000000000000000000.key
```

All you have to do is simply remove the .key file that corresponds to the Certify key keygrip:

```
$ cd ~/.gnupg/private-keys-v1.d
$ rm 1111000000000000000000000000000000000000.key
```

Now, if you issue the `--list-secret-keys` command, it will show that the Certify key is missing (the # indicates it is not available):

```
$ gpg --list-secret-keys
sec#  ed25519 2022-12-20 [SC] [expires: 2024-12-19]
      0000000000000000000000AAAABBBBCCCCDDDD
uid           [ultimate] Alice Dev <adev@kernel.org>
ssb   cv25519 2022-12-20 [E] [expires: 2024-12-19]
ssb   ed25519 2022-12-20 [S]
```

You should also remove any `secring.gpg` files in the `~/.gnupg` directory, which may be left over from previous 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 Certify 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 NISTP and ED25519 ECC keys.

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  ed25519/AAAABBBBCCCCDDDD
     created: 2022-12-20  expires: 2024-12-19  usage: SC
     trust: ultimate      validity: ultimate
ssb  cv25519/1111222233334444
     created: 2022-12-20  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):

```
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#  ed25519 2022-12-20 [SC] [expires: 2024-12-19]
      000000000000000000000000AAAABBBBCCCCDDDD
uid           [ultimate] Alice Dev <adev@kernel.org>
ssb>  cv25519 2022-12-20 [E] [expires: 2024-12-19]
ssb>  ed25519 2022-12-20 [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 safe offline storage

You will need your Certify 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 Certify 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] 2025-07-01
```

Remember to send the updated key back to keyservers:

```
$ 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]
```

* 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 work with signed patches*" section below.

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 work with signed patches

It is possible to use your PGP key to sign patches sent to kernel developer mailing lists. Since existing email signature mechanisms (PGP-Mime or PGP-inline) tend to cause problems with regular code review tasks, you should use the tool kernel.org created for this purpose that puts cryptographic attestation signatures into message headers (a-la DKIM):

- Patatt Patch Attestation

Installing and configuring patatt

Patatt is packaged for many distributions already, so please check there first. You can also install it from pypi using "`pip install patatt`".

If you already have your PGP key configured with git (via the `user.signingKey` configuration parameter), then patatt requires no further configuration. You can start signing your patches by installing the git-send-email hook in the repository you want:

```
patatt install-hook
```

Now any patches you send with `git send-email` will be automatically signed with your cryptographic signature.

Checking patatt signatures

If you are using b4 to retrieve and apply patches, then it will automatically attempt to verify all DKIM and patatt signatures it encounters, for example:

```
$ b4 am 20220720205013.890942-1-broonie@kernel.org
[...]
Checking attestation on all messages, may take a moment...
---
  ✓ [PATCH v1 1/3] kselftest/arm64: Correct buffer allocation for SVE Z␣
↪registers
  ✓ [PATCH v1 2/3] arm64/sve: Document our actual ABI for clearing registers␣
↪on syscall
  ✓ [PATCH v1 3/3] kselftest/arm64: Enforce actual ABI for SVE syscalls
  ---
  ✓ Signed: openpgp/broonie@kernel.org
  ✓ Signed: DKIM/kernel.org
```

Note: Patatt and b4 are still in active development and you should check the latest documentation for these projects for any new or updated features.

* 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
```

* Using the kernel.org web of trust repository

Kernel.org maintains a git repository with developers' public keys as a replacement for replicating keyserver networks that have gone mostly dark in the past few years. The full documentation for how to set up that repository as your source of public keys can be found here:

- Kernel developer PGP Keyring

If you are a kernel developer, please consider submitting your key for inclusion into that keyring.

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.

After doing the modifications, this includes installing the extensions, you need to restart Thunderbird.

- Allow use of an external editor:

  The easiest thing to do with Thunderbird and patches is to use extensions which open your favorite external editor.

  Here are some example extensions which are capable of doing this.

  - "External Editor Revived"

    https://github.com/Frederick888/external-editor-revived

    https://addons.thunderbird.net/en-GB/thunderbird/addon/external-editor-revived/

It requires installing a "native messaging host". Please read the wiki which can be found here: https://github.com/Frederick888/external-editor-revived/wiki

- "External Editor"

  https://github.com/exteditor/exteditor

  To do this, download and install the extension, then open the *compose* window, add a button for it using *View→Toolbars→Customize...* then just click on the new button when you wish to use the external editor.

  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 --nofork"` (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 your main window and find the button for your main dropdown menu. *Main Menu→Preferences→General→Config Editor...* to bring up the thunderbird's registry editor.

  - Set `mailnews.send_plaintext_flowed` to `false`

  - Set `mailnews.wraplength` from `72` to `0`

- Don't write HTML messages! Go to the main window *Main Menu→Account Settings→youracc@server.something→Composition & Addressing*! There you can disable the option "Compose messages in HTML format".

- Open messages only as plain text! Go to the main window *Main Menu→View→Message Body As→Plain Text*!

* 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.

* Proton Mail

Proton Mail has a "feature" where it looks up keys using Web Key Directory (WKD) and encrypts mail to any recipients for which it finds a key. Kernel.org publishes the WKD for all developers who have kernel.org accounts. As a result, emails sent using Proton Mail to kernel.org addresses will be encrypted. Unfortunately, Proton Mail does not provide a mechanism to disable the automatic encryption, viewing it as a privacy feature. The automatic encryption feature is also enabled for mail sent via the Proton Mail Bridge, so this affects all outgoing messages, including patches sent with `git send-email`. Encrypted mail adds unnecessary friction, as other developers may not have mail clients, or tooling, configured for use with encrypted mail and some mail clients may encrypt responses to encrypted mail for all recipients, including the mailing lists. Unless a way to disable this "feature" is introduced, Proton Mail is unsuited to kernel development.

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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- Andrea Arcangeli
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- Pablo Neira Ayuso
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- Felipe Balbi
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- Rafael J. Wysocki
- Arvind Yadav
- Masahiro Yamada
- Wei Yongjun
- 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.

- Dave Airlie
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- Matt Mackall
- Paul Mackerras
- Roland McGrath
- Patrick McHardy
- Kyle McMartin
- Paul Menage
- Thierry Merle
- Eric Miao
- Akinobu Mita
- Ingo Molnar
- James Morris
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- Doug Thompson
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- Dmitry Torokhov
- Marcelo Tosatti
- Steven Toth
- Theodore Tso

- Matthias Urlichs
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- Ivo van Doorn
- Rik van Riel
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- Horst H. von Brand
- Dmitri Vorobiev
- Anton Vorontsov
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- Darrick J. Wong
- David Woodhouse
- Chris Wright
- Bryan Wu
- Rafael J. Wysocki
- Herbert Xu
- Vlad Yasevich
- Peter Zijlstra
- Bartlomiej Zolnierkiewicz

For security issues, see:

SECURITY BUGS

Linux kernel developers take security very seriously. As such, we'd like to know when a security bug is found so that it can be fixed and disclosed as quickly as possible. Please report security bugs to the Linux kernel security team.

* Contact

The Linux kernel security team can be contacted by email at <security@kernel.org>. This is a private list of security officers who will help verify the bug report and develop and release a fix. If you already have a fix, please include it with your report, as that can speed up the process considerably. It is possible that the security team will bring in extra help from area maintainers to understand and fix the security vulnerability.

As it is with any bug, the more information provided the easier it will be to diagnose and fix. Please review the procedure outlined in 'Documentation/admin-guide/reporting-issues.rst' if you are unclear about what information is helpful. Any exploit code is very helpful and will not be released without consent from the reporter unless it has already been made public.

Please send plain text emails without attachments where possible. It is much harder to have a context-quoted discussion about a complex issue if all the details are hidden away in attachments. Think of it like a *regular patch submission* (even if you don't have a patch yet): describe the problem and impact, list reproduction steps, and follow it with a proposed fix, all in plain text.

* Disclosure and embargoed information

The security list is not a disclosure channel. For that, see Coordination below.

Once a robust fix has been developed, the release process starts. Fixes for publicly known bugs are released immediately.

Although our preference is to release fixes for publicly undisclosed bugs as soon as they become available, this may be postponed at the request of the reporter or an affected party for up to 7 calendar days from the start of the release process, with an exceptional extension to 14 calendar days if it is agreed that the criticality of the bug requires more time. The only valid reason for deferring the publication of a fix is to accommodate the logistics of QA and large scale rollouts which require release coordination.

While embargoed information may be shared with trusted individuals in order to develop a fix, such information will not be published alongside the fix or on any other disclosure channel

without the permission of the reporter. This includes but is not limited to the original bug report and followup discussions (if any), exploits, CVE information or the identity of the reporter.

In other words our only interest is in getting bugs fixed. All other information submitted to the security list and any followup discussions of the report are treated confidentially even after the embargo has been lifted, in perpetuity.

* Coordination with other groups

The kernel security team strongly recommends that reporters of potential security issues NEVER contact the "linux-distros" mailing list until AFTER discussing it with the kernel security team. Do not Cc: both lists at once. You may contact the linux-distros mailing list after a fix has been agreed on and you fully understand the requirements that doing so will impose on you and the kernel community.

The different lists have different goals and the linux-distros rules do not contribute to actually fixing any potential security problems.

* CVE assignment

The security team does not assign CVEs, nor do we require them for reports or fixes, as this can needlessly complicate the process and may delay the bug handling. If a reporter wishes to have a CVE identifier assigned, they should find one by themselves, for example by contacting MITRE directly. However under no circumstances will a patch inclusion be delayed to wait for a CVE identifier to arrive.

* Non-disclosure agreements

The Linux kernel security team is not a formal body and therefore unable to enter any non-disclosure agreements.

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 developing fixes for 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 a fix 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 of fixes.

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.

List participants may not communicate about the issue outside of the private mailing list. List participants may not use any shared resources (e.g. employer build farms, CI systems, etc) when working on patches.

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. There is no pre-notification process: fixes are published in public and available to everyone at the same time.

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 <thomas.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>
RISC-V	Palmer Dabbelt <palmer@dabbelt.com>
Samsung	Javier González <javier.gonz@samsung.com>
Microsoft	James Morris <jamorris@linux.microsoft.com>
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>
Google	Kees Cook <keescook@chromium.org>
LLVM	Nick Desaulniers <ndesaulniers@google.com>

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.

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
Rust (optional)	1.73.0	rustc --version
bindgen (optional)	0.65.1	bindgen --version
GNU make	3.82	make --version
bash	4.2	bash --version
binutils	2.25	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

Table 1 – continued from previous page

Program	Minimal version	Command to check the 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
GNU tar	1.28	tar --version
gtags (optional)	6.6.5	gtags --version

* Kernel compilation

GCC

The gcc version requirements may vary depending on the type of CPU in your computer.

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.

Rust (optional)

A particular version of the Rust toolchain is required. Newer versions may or may not work because the kernel depends on some unstable Rust features, for the moment.

Each Rust toolchain comes with several "components", some of which are required (like `rustc`) and some that are optional. The `rust-src` component (which is optional) needs to be installed to build the kernel. Other components are useful for developing.

Please see Documentation/rust/quick-start.rst for instructions on how to satisfy the build requirements of Rust support. In particular, the `Makefile` target `rustavailable` is useful to check why the Rust toolchain may not be detected.

---

[1] Sphinx is needed only to build the Kernel documentation

bindgen (optional)

`bindgen` is used to generate the Rust bindings to the C side of the kernel. It depends on `libclang`.

Make

You will need GNU make 3.82 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 2.25 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.

Tar

GNU tar is needed if you want to enable access to the kernel headers via sysfs (CONFIG_IKHEADERS).

gtags / GNU GLOBAL (optional)

The kernel build requires GNU GLOBAL version 6.6.5 or later to generate tag files through `make gtags`. This is due to its use of the gtags `-C (--directory)` flag.

* 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.

rustdoc

rustdoc is used to generate the documentation for Rust code. Please see Documentation/rust/general-information.rst for more information.

* Getting updated software

* Kernel compilation

gcc

- <ftp://ftp.gnu.org/gnu/gcc/>

Clang/LLVM

- Getting LLVM.

Rust

- Documentation/rust/quick-start.rst.

bindgen

- Documentation/rust/quick-start.rst.

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

- <https://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

- <https://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

- <https://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

- <https://sourceforge.net/project/showfiles.php?group_id=14>
- <https://nfs.sourceforge.net/>

Iptables

- <https://netfilter.org/projects/iptables/index.html>

Ip-route2

- <https://www.kernel.org/pub/linux/utils/net/iproute2/>

OProfile

- <https://oprofile.sf.net/download/>

* Kernel documentation

Sphinx

- <https://www.sphinx-doc.org/>

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 :)

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.

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[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".

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[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 or an equivalent fix must already exist in Linus' tree (upstream).
- It must be obviously correct and tested.
- It cannot be bigger than 100 lines, with context.
- It must follow the *Documentation/process/submitting-patches.rst* rules.
- It must either fix a real bug that bothers people or just add a device ID. To elaborate on the former:
    - It fixes a problem like an oops, a hang, data corruption, a real security issue, a hardware quirk, a build error (but not for things marked CONFIG_BROKEN), or some "oh, that's not good" issue.
    - 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.
    - No "This could be a problem..." type of things like a "theoretical race condition", unless an explanation of how the bug can be exploited is also provided.
    - No "trivial" fixes without benefit for users (spelling changes, whitespace cleanups, etc).

* 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/process/security-bugs.rst*.

There are three options to submit a change to -stable trees:

1. Add a 'stable tag' to the description of a patch you then submit for mainline inclusion.
2. Ask the stable team to pick up a patch already mainlined.
3. Submit a patch to the stable team that is equivalent to a change already mainlined.

The sections below describe each of the options in more detail.

Option 1 is **strongly** preferred, it is the easiest and most common. *Option 2* is mainly meant for changes where backporting was not considered at the time of submission. *Option 3* is an alternative to the two earlier options for cases where a mainlined patch needs adjustments to apply in older series (for example due to API changes).

When using option 2 or 3 you can ask for your change to be included in specific stable series. When doing so, ensure the fix or an equivalent is applicable, submitted, or already present in all newer stable trees still supported. This is meant to prevent regressions that users might later encounter on updating, if e.g. a fix merged for 5.19-rc1 would be backported to 5.10.y, but not to 5.15.y.

* Option 1

To have a patch you submit for mainline inclusion later automatically picked up for stable trees, add the tag

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

in the sign-off area. Once the patch is mainlined it will be applied to the stable tree without anything else needing to be done by the author or subsystem maintainer.

To sent additional instructions to the stable team, use a shell-style inline comment:

- To specify any additional patch prerequisites for cherry picking use 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>
```

- For patches that may have kernel version prerequisites specify them using 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.

  Note, such tagging is unnecessary if the stable team can derive the appropriate versions from Fixes: tags.

- To delay pick up of patches, use the following format:

```
Cc: <stable@vger.kernel.org> # after 4 weeks in mainline
```

- For any other requests, just add a note to the stable tag. This for example can be used to point out known problems:

```
Cc: <stable@vger.kernel.org> # see patch description, needs adjustments␣
↪for <= 6.3
```

* Option 2

If the patch already has been merged to mainline, 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 versions 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 and mention the kernel versions you wish it to be applied to. When doing so, you must note the upstream commit ID in the changelog of your submission with a separate line above the commit text, like this:

```
commit <sha1> upstream.
```

or alternatively:

```
[ Upstream commit <sha1> ]
```

If the submitted patch deviates from the original upstream patch (for example because it had to be adjusted for the older API), this must be very clearly documented and justified in the patch description.

* 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 schedules of the stable team members.

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 FURTHER KERNEL DOCUMENTATION

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.

PLEASE, if you know any paper not listed here or write a new document, include a reference to it here, following the kernel's patch submission process. Any corrections, ideas or comments are also welcome.

All documents 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.

Note: The documents on each section of this document are ordered by its published date, from the newest to the oldest. The maintainer(s) should periodically retire resources as they become obsolete or outdated; with the exception of foundational books.

---

* 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: **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.

* Published books

- Title: **Linux Kernel Debugging: Leverage proven tools and advanced techniques to effectively debug Linux kernels and kernel modules**

  Author
  Kaiwan N Billimoria

  Publisher
  Packt Publishing Ltd

  Date
  August, 2022

  Pages
  638

ISBN
978-1801075039

Notes
Debugging book

- Title: **Linux Kernel Programming: A Comprehensive Guide to Kernel Internals, Writing Kernel Modules, and Kernel Synchronization**

    Author
    Kaiwan N Billimoria

    Publisher
    Packt Publishing Ltd

    Date
    March, 2021

    Pages
    754

    ISBN
    978-1789953435

- Title: **Linux Kernel Programming Part 2 - Char Device Drivers and Kernel Synchronization: Create user-kernel interfaces, work with peripheral I/O, and handle hardware interrupts**

    Author
    Kaiwan N Billimoria

    Publisher
    Packt Publishing Ltd

    Date
    March, 2021

    Pages
    452

    ISBN
    978-1801079518

- Title: **Linux System Programming: Talking Directly to the Kernel and C Library**

    Author
    Robert Love

    Publisher
    O'Reilly Media

    Date
    June, 2013

    Pages
    456

    ISBN
    978-1449339531

Notes
Foundational book

- Title: **Linux Kernel Development, 3rd Edition**

  Author
  Robert Love

  Publisher
  Addison-Wesley

  Date
  July, 2010

  Pages
  440

  ISBN
  978-0672329463

  Notes
  Foundational book

- Title: **Practical Linux System Administration: A Guide to Installation, Configuration, and Management, 1st Edition**

  Author
  Kenneth Hess

  Publisher
  O'Reilly Media

  Date
  May, 2023

  Pages
  246

  ISBN
  978-1098109035

  Notes
  System administration

- 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
Foundational book. Further information in http://www.oreilly.com/catalog/linuxdrive3/ PDF format, URL: https://lwn.net/Kernel/LDD3/

- Title: **The Design of the UNIX Operating System**

    Author
    Maurice J. Bach

    Publisher
    Prentice Hall

    Date
    1986

    Pages
    471

    ISBN
    0-13-201757-1

    Notes
    Foundational book

* 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.

- 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.

This document was originally based on:

https://www.dit.upm.es/~jmseyas/linux/kernel/hackers-docs.html

and written by Juan-Mariano de Goyeneche

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 = dma_alloc_coherent(dev, array_size(count, size), &dma, GFP_KERNEL);
```

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.

When the destination is required to be NUL-terminated, the 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, strtomem() should be used, and the destinations should be marked with the __nonstring attribute to avoid future compiler warnings. For cases still needing NUL-padding, strtomem_pad() can be used.

* 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();
```

Chapter 23. Deprecated Interfaces, Language Features, Attributes, and Conventions

```
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 mechanism 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));
```

There are two special cases of replacement where the DECLARE_FLEX_ARRAY() helper needs to be used. (Note that it is named __DECLARE_FLEX_ARRAY() for use in UAPI headers.) Those cases are when the flexible array is either alone in a struct or is part of a union. These are disallowed by the C99 specification, but for no technical reason (as can be seen by both the existing use of such arrays in those places and the work-around that DECLARE_FLEX_ARRAY() uses). For example, to convert this:

```
struct something {
        ...
        union {
                struct type1 one[0];
                struct type2 two[0];
        };
};
```

The helper must be used:

```
struct something {
        ...
        union {
                DECLARE_FLEX_ARRAY(struct type1, one);
                DECLARE_FLEX_ARRAY(struct type2, two);
        };
};
```

Chapter 23. Deprecated Interfaces, Language Features, Attributes, and Conventions

LIST OF MAINTAINERS

* 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>

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@kernel.org>, Latchesar Ionkov <lucho@ionkov.net>, Dominique Martinet <asmadeus@codewreck.org>

Reviewer
Christian Schoenebeck <linux_oss@crudebyte.com>

Mailing list
v9fs@lists.linux.dev

Status
    Maintained

Web-page
    http://github.com/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/

* A64FX DIAG DRIVER

Mail
    Hitomi Hasegawa <hasegawa-hitomi@fujitsu.com>

Status
    Supported

Files
    drivers/soc/fujitsu/a64fx-diag.c

* 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/`

* AB8500 BATTERY AND CHARGER DRIVERS

Mail
Linus Walleij <linus.walleij@linaro.org>

Files
`Documentation/devicetree/bindings/power/supply/*ab8500*` `drivers/power/supply/*ab8500*`

* ABI/API

Mailing list
linux-api@vger.kernel.org

Files
`include/linux/syscalls.h kernel/sys_ni.c`

Excluded
`arch/*/include/uapi/ 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 <william.gray@linaro.org>

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 <william.gray@linaro.org>

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 <william.gray@linaro.org>

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 <william.gray@linaro.org>

Mailing list
linux-iio@vger.kernel.org

Status
Maintained

Files
drivers/counter/104-quad-8.c

* ACCES IDIO-16 GPIO LIBRARY

Mail
William Breathitt Gray <william.gray@linaro.org>

Mailing list
linux-gpio@vger.kernel.org

Status
Maintained

Files
drivers/gpio/gpio-idio-16.c drivers/gpio/gpio-idio-16.h

* ACCES PCI-IDIO-16 GPIO DRIVER

Mail
William Breathitt Gray <william.gray@linaro.org>

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 <william.gray@linaro.org>

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

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/   arch/x86/kernel/
acpi/ arch/x86/pci/acpi.c 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, acpica-devel@lists.linuxfoundation.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 FOR RISC-V (ACPI/riscv)

Mail
Sunil V L <sunilvl@ventanamicro.com>

Mailing list
linux-acpi@vger.kernel.org, linux-riscv@lists.infradead.org

Status
Maintained

Files
drivers/acpi/riscv/

* 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 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 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

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

Mail
Armin Wolf <W_Armin@gmx.de>

Mailing list
platform-driver-x86@vger.kernel.org

Status
Maintained

Files
driver-api/wmi Documentation/wmi/ 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

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
Documentation/devicetree/bindings/input/adi,adp5588.yaml 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

    https://ez.analog.com/linux-software-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@redhat.com>

Mailing list
    dri-devel@lists.freedesktop.org

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

* ALIBABA ELASTIC RDMA DRIVER

Mail
Cheng   Xu   <chengyou@linux.alibaba.com>,   Kai   Shen
<kaishen@linux.alibaba.com>

Mailing list
linux-rdma@vger.kernel.org

Status
Supported

Files
drivers/infiniband/hw/erdma include/uapi/rdma/erdma-abi.h

* ALIBABA PMU DRIVER

Mail
Shuai Xue <xueshuai@linux.alibaba.com>

Status
Supported

Files
admin-guide/perf/alibaba_pmu drivers/perf/alibaba_uncore_drw_pmu.c

* ALIENWARE WMI DRIVER

Mailing list
Dell.Client.Kernel@dell.com

Status
Maintained

Files
drivers/platform/x86/dell/alienware-wmi.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 A31 CSI DRIVER

Mail
Yong Deng <yong.deng@magewell.com>, Paul Kocialkowski <paul.kocialkowski@bootlin.com>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

SCM
git git://linuxtv.org/media_tree.git

Files
Documentation/devicetree/bindings/media/allwinner,sun6i-a31-csi.
yaml drivers/media/platform/sunxi/sun6i-csi/

* ALLWINNER A31 ISP DRIVER

Mail
Paul Kocialkowski <paul.kocialkowski@bootlin.com>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

SCM
git git://linuxtv.org/media_tree.git

Files
Documentation/devicetree/bindings/media/allwinner,sun6i-a31-isp.
yaml drivers/staging/media/sunxi/sun6i-isp/ drivers/staging/media/
sunxi/sun6i-isp/uapi/sun6i-isp-config.h

* ALLWINNER A31 MIPI CSI-2 BRIDGE DRIVER

Mail
Paul Kocialkowski <paul.kocialkowski@bootlin.com>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

SCM
git git://linuxtv.org/media_tree.git

Files
Documentation/devicetree/bindings/media/allwinner,
sun6i-a31-mipi-csi2.yaml   drivers/media/platform/sunxi/
sun6i-mipi-csi2/

* 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 DMIC DRIVERS

Mail
Ban Tao <fengzheng923@gmail.com>

Mailing list
alsa-devel@alsa-project.org (moderated for non-subscribers)

Status
Maintained

Files
Documentation/devicetree/bindings/sound/allwinner,sun50i-h6-dmic.
yaml sound/soc/sunxi/sun50i-dmic.c

* 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   <richard.henderson@linaro.org>,   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

* 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
Michael Margolin <mrgolin@amazon.com>

Reviewer
Gal Pressman <gal.pressman@linux.dev>, 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 CDX BUS DRIVER

Mail
Nipun Gupta <nipun.gupta@amd.com>, Nikhil Agarwal <nikhil.agarwal@amd.com>

Status
Maintained

Files
Documentation/devicetree/bindings/bus/xlnx,versal-net-cdx.yaml
drivers/cdx/* include/linux/cdx/*

* 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 CRYPTOGRAPHIC COPROCESSOR (CCP) DRIVER - DBC SUPPORT

Mail
Mario Limonciello <mario.limonciello@amd.com>

Mailing list
linux-crypto@vger.kernel.org

Status
Supported

Files
drivers/crypto/ccp/dbc.c drivers/crypto/ccp/dbc.h drivers/crypto/ccp/
platform-access.c drivers/crypto/ccp/platform-access.h include/uapi/
linux/psp-dbc.h tools/crypto/ccp/*.c tools/crypto/ccp/*.py

* 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 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
arch/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 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 MP2 I2C DRIVER

Mail
Elie Morisse <syniurge@gmail.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 PDS CORE DRIVER

Mail
Shannon Nelson <shannon.nelson@amd.com>, Brett Creeley <brett.creeley@amd.com>

Mailing list
netdev@vger.kernel.org

Status
Supported

Files
networking/device_drivers/ethernet/amd/pds_core   drivers/net/ethernet/ amd/pds_core/ include/linux/pds/

* 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 PMF DRIVER

Mail
Shyam Sundar S K <Shyam-sundar.S-k@amd.com>

Mailing list
platform-driver-x86@vger.kernel.org

Status
Maintained

Files
Documentation/ABI/testing/sysfs-amd-pmf   drivers/platform/x86/amd/ pmf/

* 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* include/linux/
amd-pstate.h 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
Suravee Suthikulpanit <suravee.suthikulpanit@amd.com>, Tom Lendacky <thomas.lendacky@amd.com>

Status
Supported

Files
arch/arm64/boot/dts/amd/

* 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/

* AMD SPI DRIVER

Mail
Sanjay R Mehta <sanju.mehta@amd.com>

Status
Maintained

Files
drivers/spi/spi-amd.c

* AMD XGBE DRIVER

Mail
"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/

* AMLOGIC DDR PMU DRIVER

Mail
Jiucheng Xu <jiucheng.xu@amlogic.com>

Mailing list
linux-amlogic@lists.infradead.org

Status
Supported

Web-page
http://www.amlogic.com

Files
admin-guide/perf/meson-ddr-pmu Documentation/devicetree/bindings/perf/
amlogic,g12-ddr-pmu.yaml drivers/perf/amlogic/ include/soc/amlogic/

* AMPHION VPU CODEC V4L2 DRIVER

Mail
Ming Qian <ming.qian@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 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 AD4130 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/ABI/testing/sysfs-bus-iio-adc-ad4130   Documentation/
devicetree/bindings/iio/adc/adi,ad4130.yaml drivers/iio/adc/ad4130.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 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 AD74115 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,ad74115.yaml
drivers/iio/addac/ad74115.c

* ANALOG DEVICES INC AD74413R DRIVER

Mail
Cosmin Tanislav <cosmin.tanislav@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/addac/adi,ad74413r.yaml
drivers/iio/addac/ad74413r.c   include/dt-bindings/iio/addac/adi,
ad74413r.h

* 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 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 ADF4377 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,adf4377.yaml
drivers/iio/frequency/adf4377.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

Status
Supported

Web-page
https://ez.analog.com/linux-software-drivers

Files
Documentation/devicetree/bindings/iio/imu/adi,adis16475.yaml
drivers/iio/imu/adis16475.c

* 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 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 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 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
Documentation/devicetree/bindings/media/i2c/adv7180.yaml   drivers/
media/i2c/adv7180.c

* 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
Documentation/devicetree/bindings/media/i2c/adv7604.yaml   drivers/
media/i2c/adv7604*

* 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
    Documentation/devicetree/bindings/iio/gyroscope/adi,adxrs290.yaml
    drivers/iio/gyro/adxrs290.c

* 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/adc/lltc,ltc2496.yaml Documentation/
devicetree/bindings/iio/adc/lltc,ltc2497.yaml `drivers/iio/*/ad*`
`drivers/iio/adc/ltc249*` `drivers/iio/amplifiers/hmc425a.c` drivers/
`staging/iio/*/ad*`

Excluded
```
drivers/iio/*/adjd*
```

* ANALOG DEVICES INC MAX31760 DRIVER

Mail
Ibrahim Tilki <Ibrahim.Tilki@analog.com>

Status
Maintained

Web-page
http://wiki.analog.com/ https://ez.analog.com/linux-software-drivers

Files
Documentation/devicetree/bindings/hwmon/adi,max31760.yaml hwmon/max31760 `drivers/hwmon/max31760.c`

* ANALOGBITS PLL LIBRARIES

Mail
Paul Walmsley <paul.walmsley@sifive.com>

Status
Supported

Files
`drivers/clk/analogbits/*` `include/linux/clk/analogbits*`

* 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>, Carlos Llamas <cmllamas@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 <william.gray@linaro.org>

Mailing list
linux-iio@vger.kernel.org

Status
Maintained

Files
drivers/iio/addac/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>, John Johansen <john@apparmor.net>

Mailing list
apparmor@lists.ubuntu.com (moderated for non-subscribers)

Status
    Supported

Web-page
    apparmor.net

bugs
    https://gitlab.com/apparmor/apparmor-kernel

chat
    irc://irc.oftc.net/apparmor

SCM
    git   git://git.kernel.org/pub/scm/linux/kernel/git/jj/linux-apparmor
    https://gitlab.com/apparmor/apparmor-kernel.git

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*

* AR0521 ON SEMICONDUCTOR CAMERA SENSOR DRIVER

Mail
Krzysztof Hałasa <khalasa@piap.pl>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/media/i2c/onnn,ar0521.yaml
drivers/media/i2c/ar0521.c

* ARASAN NAND CONTROLLER DRIVER

Mail
Miquel Raynal <miquel.raynal@bootlin.com>

Reviewer
Michal Simek <michal.simek@amd.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 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

P
process/maintainer-soc

chat
irc://irc.libera.chat/armlinux

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/soc/soc.git

Files
Documentation/process/maintainer-soc*.rst arch/arm/boot/dts/Makefile arch/arm64/boot/dts/Makefile

* 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 GENERIC INTERRUPT CONTROLLER DRIVERS

Mail
Marc Zyngier <maz@kernel.org>

Mailing list
linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status
Maintained

Files
```
Documentation/devicetree/bindings/interrupt-controller/arm,gic*
arch/arm/include/asm/arch_gicv3.h arch/arm64/include/asm/arch_gicv3.
h   drivers/irqchip/irq-gic*.[ch]   include/linux/irqchip/arm-gic*.h
include/linux/irqchip/arm-vgic-info.h
```

* 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/arm,i2c-versatile.
yaml     Documentation/devicetree/bindings/interrupt-controller/arm,
versatile-fpga-irq.txt         Documentation/devicetree/bindings/mtd/
mtd-physmap.yaml   arch/arm/boot/dts/arm/arm-realview-*   arch/arm/
boot/dts/arm/integrator*   arch/arm/boot/dts/arm/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
Liviu Dudau <liviu.dudau@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>

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 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 PL35X NAND CONTROLLER DRIVER

Mail
Miquel Raynal <miquel.raynal@bootlin.com>

Reviewer
Michal Simek <michal.simek@amd.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>

Reviewer
Michal Simek <michal.simek@amd.com>

Mailing list
linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status
Maintained

Files
Documentation/devicetree/bindings/memory-controllers/arm,pl35x-smc.
yaml drivers/memory/pl353-smc.c

* 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 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/actions/  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/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), linux-sunxi@lists.linux.dev

Status
Maintained

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/sunxi/linux.git

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 sun[25]0i
```

* ARM/Amlogic Meson SoC CLOCK FRAMEWORK

Mail
Neil   Armstrong   <neil.armstrong@linaro.org>,   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/amlogic,a1*   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 <neil.armstrong@linaro.org>, 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
> Documentation/devicetree/bindings/phy/amlogic*   arch/arm/boot/dts/ amlogic/ arch/arm/mach-meson/ arch/arm64/boot/dts/amlogic/ drivers/ pmdomain/amlogic/   drivers/mmc/host/meson*   drivers/phy/amlogic/ 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/amazon/ arch/arm/mach-alpine/ arch/arm64/boot/dts/ amazon/ drivers/*/*alpine*

* ARM/APPLE MACHINE SOUND DRIVERS

Mail
Martin Povišer <povik+lin@cutebit.org>

Mailing list
asahi@lists.linux.dev, alsa-devel@alsa-project.org (moderated for non-subscribers)

Status
Maintained

Files
Documentation/devicetree/bindings/sound/adi,ssm3515.yaml
Documentation/devicetree/bindings/sound/apple,* sound/soc/apple/*
sound/soc/codecs/cs42l83-i2c.c sound/soc/codecs/ssm3515.c

* ARM/APPLE MACHINE SUPPORT

Mail
Hector Martin <marcan@marcan.st>, Sven Peter <sven@svenpeter.dev>

Reviewer
Alyssa Rosenzweig <alyssa@rosenzweig.io>

Mailing list
asahi@lists.linux.dev, 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/cpufreq/
apple,cluster-cpufreq.yaml Documentation/devicetree/bindings/
dma/apple,admac.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/net/bluetooth/brcm,
bcm4377-bluetooth.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/pwm/apple,s5l-fpwm.yaml Documentation/
devicetree/bindings/watchdog/apple,wdt.yaml arch/arm64/boot/dts/
apple/ drivers/bluetooth/hci_bcm4377.c drivers/clk/clk-apple-nco.
c drivers/cpufreq/apple-soc-cpufreq.c drivers/dma/apple-admac.c
drivers/pmdomain/apple/ drivers/i2c/busses/i2c-pasemi-core.c drivers/
i2c/busses/i2c-pasemi-platform.c drivers/iommu/apple-dart.c drivers/
iommu/io-pgtable-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/pwm/
pwm-apple.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/axis/ 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@codeconstruct.com.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/bmc.git

Files

    Documentation/devicetree/bindings/arm/aspeed/   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/calxeda/ arch/arm/mach-highbank/

* 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
```
Documentation/devicetree/bindings/iio/adc/cirrus,ep9301-adc.yaml
Documentation/devicetree/bindings/sound/cirrus,ep9301-*   arch/arm/
boot/compressed/misc-ep93xx.h arch/arm/mach-ep93xx/ drivers/iio/adc/
ep93xx_adc.c
```

* 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/cnxt/
> ```

Regex
> ```
> digicolor
> ```

* ARM/CORESIGHT FRAMEWORK AND DRIVERS

Mail
> Suzuki K Poulose <suzuki.poulose@arm.com>

Reviewer
> Mike Leach <mike.leach@linaro.org>, James Clark <james.clark@arm.com>, 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/arm,coresight-*.yaml
> Documentation/devicetree/bindings/arm/arm,embedded-trace-extension.
> yaml                    Documentation/devicetree/bindings/arm/arm,
> trace-buffer-extension.yaml       Documentation/devicetree/bindings/
> arm/qcom,coresight-*.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/tests/
> shell/coresight/* tools/perf/util/cs-etm-decoder/* tools/perf/util/
> cs-etm.*
> ```

* 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/gpio/gpio-moxtet.c drivers/
leds/leds-turris-omnia.c drivers/mailbox/armada-37xx-rwtm-mailbox.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/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

Files
`arch/arm/boot/dts/nxp/imx/` `arch/arm/boot/dts/nxp/mxs/`

Excluded
    arch/arm64/boot/dts/freescale/fsl-* arch/arm64/boot/dts/freescale/
    qoriq-* 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/nxp/ls/ 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/nxp/vf/ arch/arm/mach-imx/*vf610*

* 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/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 https://github.com/hisilicon/linux-hisi.git

Files
arch/arm/boot/dts/hisilicon/ 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/hwmon/hpe,gxp-fan-ctrl.yaml Documentation/devicetree/bindings/i2c/hpe,gxp-i2c.yaml Documentation/devicetree/bindings/spi/hpe,gxp-spifi.yaml Documentation/devicetree/bindings/timer/hpe,gxp-timer.yaml hwmon/gxp-fan-ctrl arch/arm/boot/dts/hpe/ arch/arm/mach-hpe/ drivers/clocksource/timer-gxp.c drivers/hwmon/gxp-fan-ctrl.c drivers/i2c/busses/i2c-gxp.c drivers/spi/spi-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/ti/omap/omap3-igep*

* ARM/INTEL IXP4XX ARM ARCHITECTURE

Mail
Linus Walleij <linusw@kernel.org>, Imre Kaloz <kaloz@openwrt.org>

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/gpio/intel,ixp4xx-gpio.txt Documentation/devicetree/bindings/interrupt-controller/intel,ixp4xx-interrupt.yaml Documentation/devicetree/bindings/memory-controllers/intel,ixp4xx-expansion* Documentation/devicetree/bindings/rng/intel,ixp46x-rng.yaml Documentation/devicetree/bindings/timer/intel,ixp4xx-timer.yaml arch/arm/boot/dts/intel/ixp/

```
arch/arm/mach-ixp4xx/   drivers/bus/intel-ixp4xx-eb.c   drivers/char/
hw_random/ixp4xx-rng.c drivers/clocksource/timer-ixp4xx.c drivers/
crypto/intel/ixp4xx/ixp4xx_crypto.c        drivers/gpio/gpio-ixp4xx.c
drivers/irqchip/irq-ixp4xx.c 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
```

* 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/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/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/nxp/lpc/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/
    nxp/lpc/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/Marvell Dove/MV78xx0/Orion SOC support

Mail
    Andrew   Lunn   <andrew@lunn.ch>,   Sebastian   Hesselbarth
    <sebastian.hesselbarth@gmail.com>,   Gregory   Clement   <gre-
    gory.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/arm/marvell/marvell,dove.txt
Documentation/devicetree/bindings/arm/marvell/marvell,orion5x.txt
Documentation/devicetree/bindings/soc/dove/   arch/arm/boot/dts/
marvell/dove* arch/arm/boot/dts/marvell/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

Documentation/devicetree/bindings/arm/marvell/   arch/arm/boot/dts/
marvell/armada*   arch/arm/boot/dts/marvell/kirkwood*   arch/arm/
configs/mvebu_*_defconfig   arch/arm/mach-mvebu/   arch/arm64/boot/
dts/marvell/armada*   arch/arm64/boot/dts/marvell/cn913*   drivers/
clk/mvebu/ 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>, AngeloGioacchino Del Regno <angelogioacchino.delregno@collabora.com>

Mailing list
linux-kernel@vger.kernel.org, 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://irc.libera.chat/linux-mediatek

Files
arch/arm/boot/dts/mediatek/ arch/arm/mach-mediatek/ arch/arm64/boot/dts/mediatek/ drivers/soc/mediatek/

Regex
`mtk mt[2678]`

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 (ARM64) SoC support

Mail

Conor Dooley <conor@kernel.org>, Nicolas Ferre <nicolas.ferre@microchip.com>, Claudiu Beznea <claudiu.beznea@tuxon.dev>

Mailing list

linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status

Supported

SCM

git https://git.kernel.org/pub/scm/linux/kernel/git/at91/linux.git

Files

arch/arm64/boot/dts/microchip/

* ARM/Microchip (AT91) SoC support

Mail

Nicolas Ferre <nicolas.ferre@microchip.com>, Alexandre Belloni <alexandre.belloni@bootlin.com>, Claudiu Beznea <claudiu.beznea@tuxon.dev>

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/microchip/at91* arch/arm/boot/dts/microchip/sama* 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>, Daniel Machon <daniel.machon@microchip.com>, UNGLinuxDriver@microchip.com

Mailing list
linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status
Supported

Files
```
arch/arm64/boot/dts/microchip/sparx* drivers/net/ethernet/microchip/
vcap/ drivers/pinctrl/pinctrl-microchip-sgpio.c
```

Regex
```
sparx5
```

* 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/socionext/milbeaut* arch/arm/mach-milbeaut/
```

Regex
```
milbeaut
```

* 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/sigmastar/ 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/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/st,
    nomadik-i2c.yaml arch/arm/boot/dts/st/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/pmdomain/st/
    ste-ux500-pm-domain.c 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 MA35 ARCHITECTURE

Mail
    Jacky   Huang   <ychuang3@nuvoton.com>,   Shan-Chun   Hung
    <schung@nuvoton.com>

Mailing list
    linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status
    Supported

Files
    Documentation/devicetree/bindings/*/*/*ma35*   Documentation/
    devicetree/bindings/*/*ma35*   arch/arm64/boot/dts/nuvoton/*ma35*
    drivers/*/*/*ma35* drivers/*/*ma35*

Content regex
  ma35d1

* 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/
  rtc/nuvoton,nct3018y.yaml   arch/arm/boot/dts/nuvoton/nuvoton-npcm*
  arch/arm/mach-npcm/ arch/arm64/boot/dts/nuvoton/ drivers/*/*/*npcm*
  drivers/*/*npcm*   drivers/rtc/rtc-nct3018y.c   include/dt-bindings/
  clock/nuvoton,npcm7xx-clock.h   include/dt-bindings/clock/nuvoton,
  npcm845-clk.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/nuvoton-wpcm450*   arch/arm/configs/wpcm450_defconfig   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/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/QUALCOMM CHROMEBOOK SUPPORT

Reviewer
cros-qcom-dts-watchers@chromium.org

Files
arch/arm64/boot/dts/qcom/sc7180*   arch/arm64/boot/dts/qcom/sc7280*
arch/arm64/boot/dts/qcom/sdm845-cheza*

* ARM/QUALCOMM SUPPORT

Mail
Andy Gross <agross@kernel.org>, Bjorn Andersson <andersson@kernel.org>, Konrad Dybcio <konrad.dybcio@linaro.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/ arch/arm/configs/
qcom_defconfig arch/arm/mach-qcom/ arch/arm64/boot/dts/qcom/ drivers/
//pm8???-* drivers/*/*/qcom* drivers/*/*/qcom/ 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/spi/spi-geni-qcom.c drivers/spi/spi-qcom-qspi.c
drivers/spi/spi-qup.c drivers/tty/serial/msm_serial.c drivers/ufs/
host/ufs-qcom* drivers/usb/dwc3/dwc3-qcom.c include/dt-bindings/*/
qcom* include/linux/*/qcom* include/linux/soc/qcom/

* 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.yaml Documentation/
devicetree/bindings/serial/rda,8810pl-uart.yaml Documentation/
devicetree/bindings/timer/rda,8810pl-timer.yaml arch/arm/boot/
dts/unisoc/ 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/realtek/ arch/arm/mach-realtek/ arch/arm64/boot/dts/realtek/

* ARM/RISC-V/RENESAS 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/hwinfo/renesas,prr.yaml
Documentation/devicetree/bindings/soc/renesas/   arch/arm/boot/dts/
renesas/ arch/arm/configs/shmobile_defconfig arch/arm/include/debug/
renesas-scif.S arch/arm/mach-shmobile/ arch/arm64/boot/dts/renesas/
arch/riscv/boot/dts/renesas/ drivers/pmdomain/renesas/ drivers/soc/
renesas/ include/linux/soc/renesas/

Content regex
\brenesas,

* 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/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/
rockchip/  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

P
process/maintainer-soc-clean-dts

Patchwork
https://patchwork.kernel.org/project/linux-samsung-soc/list/

bugs
mailto:linux-samsung-soc@vger.kernel.org

chat
irc://irc.libera.chat/linux-exynos

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/krzk/linux.git

Files
Documentation/arch/arm/samsung/ Documentation/devicetree/bindings/arm/samsung/ Documentation/devicetree/bindings/hwinfo/samsung,* Documentation/devicetree/bindings/power/pd-samsung.yaml Documentation/devicetree/bindings/soc/samsung/ arch/arm/boot/dts/samsung/ 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 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/cec/samsung,s5p-cec.yaml
    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
    Documentation/devicetree/bindings/media/samsung,s5pv210-jpeg.yaml
    drivers/media/platform/samsung/s5p-jpeg/

* ARM/SAMSUNG S5P SERIES Multi Format Codec (MFC) SUPPORT

Mail
    Marek   Szyprowski   <m.szyprowski@samsung.com>,   Andrzej   Hajda   <an-
    drzej.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/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/intel/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/st,sti-i2c.yaml Documentation/
    devicetree/bindings/spi/st,ssc-spi.yaml   arch/arm/boot/dts/st/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 <alexan-
    dre.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/st/stm32* arch/arm/mach-stm32/ arch/arm64/boot/dts/
    st/ drivers/clocksource/armv7m_systick.c

Regex
    stm32 stm

* ARM/SUNPLUS SP7021 SOC SUPPORT

Mail
Qin Jian <qinjian@cqplus1.com>

Mailing list
linux-arm-kernel@lists.infradead.org (moderated for mon-subscribers)

Status
Maintained

Web-page
https://sunplus-tibbo.atlassian.net/wiki/spaces/doc/overview

Files
Documentation/devicetree/bindings/arm/sunplus,sp7021.yaml
Documentation/devicetree/bindings/clock/sunplus,sp7021-clkc.
yaml   Documentation/devicetree/bindings/interrupt-controller/
sunplus,sp7021-intc.yaml   Documentation/devicetree/bindings/reset/
sunplus,reset.yaml   arch/arm/boot/dts/sunplus/   arch/arm/configs/
sp7021_*defconfig   arch/arm/mach-sunplus/   drivers/clk/clk-sp7021.c
drivers/irqchip/irq-sp7021-intc.c   drivers/reset/reset-sunplus.c
include/dt-bindings/clock/sunplus,sp7021-clkc.h include/dt-bindings/
reset/sunplus,sp7021-reset.h

* ARM/Synaptics SoC support

Mail
Jisheng   Zhang   <jszhang@kernel.org>,   Sebastian   Hesselbarth   <sebas-
tian.hesselbarth@gmail.com>

Mailing list
linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status
Maintained

Files
arch/arm/boot/dts/synaptics/ 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/cec/nvidia,tegra114-cec.
yaml 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/ti/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 Documentation/ devicetree/bindings/hwinfo/ti,k3-socinfo.yaml arch/arm64/boot/dts/ ti/Makefile arch/arm64/boot/dts/ti/k3-*

* 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/gpio/toshiba,gpio-visconti.yaml Documentation/devicetree/bindings/net/toshiba,visconti-dwmac.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/gpio/gpio-visconti.c      drivers/net/ethernet/stmicro/stmmac/
dwmac-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      Documentation/devicetree/bindings/soc/
socionext/socionext,uniphier*.yaml      arch/arm/boot/dts/socionext/
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
```

* 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

Regex
```
mps2 vexpress
```

Files
```
arch/arm/mach-versatile/      arch/arm64/boot/dts/arm/      drivers/
clocksource/timer-versatile.c
```

Excluded
```
drivers/cpufreq/vexpress-spc-cpufreq.c      Documentation/devicetree/
bindings/arm/arm,vexpress-juno.yaml
```

* 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/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/ZYNQ ARCHITECTURE

Mail
Michal Simek <michal.simek@amd.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/memory-controllers/
snps,dw-umctl2-ddrc.yaml          Documentation/devicetree/bindings/
memory-controllers/xlnx,zynq-ddrc-a05.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/arch/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/asahi-kasei,ak7375.yaml
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 CRYPTO DRIVER

Mail
Neal Liu <neal_liu@aspeedtech.com>

Mailing list
linux-aspeed@lists.ozlabs.org (moderated for non-subscribers)

Status
Maintained

Files
Documentation/devicetree/bindings/crypto/aspeed,* drivers/crypto/
aspeed/

* 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@codeconstruct.com.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@codeconstruct.com.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 USB UDC DRIVER

Mail
Neal Liu <neal_liu@aspeedtech.com>

Mailing list
linux-aspeed@lists.ozlabs.org (moderated for non-subscribers)

Status
Maintained

Files
```
Documentation/devicetree/bindings/usb/aspeed,ast2600-udc.yaml
drivers/usb/gadget/udc/aspeed_udc.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 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 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 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

* 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

* 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 Cio-
caltea <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), net-dev@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@tuxon.dev>

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

Mailing list
linux-wireless@vger.kernel.org

Status
Orphan

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
Documentation/atomic_*.txt arch/*/include/asm/atomic*.h include/*/
atomic*.h include/linux/refcount.h 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
audit@vger.kernel.org

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 BUS DRIVER

Mail
Greg Kroah-Hartman <gregkh@linuxfoundation.org>

Reviewer
Dave Ertman <david.m.ertman@intel.com>, Ira Weiny <ira.weiny@intel.com>

Status
Supported

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/driver-core.git

Files
```
driver-api/auxiliary_bus      drivers/base/auxiliary.c      include/linux/
auxiliary_bus.h
```

* 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
https://linux-ax25.in-berlin.de

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/microchip/at91-linea.dtsi arch/arm/boot/
dts/microchip/at91-natte.dtsi arch/arm/boot/dts/microchip/
at91-nattis-2-natte-2.dts arch/arm/boot/dts/microchip/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
Orphan

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@kernel.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@unimore.it>, 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/bitfield.h include/linux/bitmap.h include/linux/bits.h
include/linux/cpumask.h include/linux/find.h include/linux/nodemask.
h include/vdso/bits.h lib/bitmap.c lib/cpumask.c lib/cpumask_kunit.c
lib/find_bit.c  lib/find_bit_benchmark.c  lib/test_bitmap.c  tools/
include/linux/bitfield.h tools/include/linux/bitmap.h tools/include/
linux/bits.h  tools/include/linux/find.h  tools/include/vdso/bits.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
Documentation/devicetree/bindings/net/bluetooth/ 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>,   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 tools/testing/selftests/drivers/net/bonding/

* 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 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 <paulbur-
ton@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 [BTF]

Mail
Martin KaFai Lau <martin.lau@linux.dev>

Mailing list
bpf@vger.kernel.org

Status
Maintained

Files
include/linux/btf* kernel/bpf/btf.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
include/linux/bpf* include/linux/filter.h include/linux/tnum.h kernel/bpf/core.c kernel/bpf/dispatcher.c kernel/bpf/mprog.c kernel/bpf/syscall.c kernel/bpf/tnum.c kernel/bpf/trampoline.c kernel/bpf/verifier.c

* BPF [DOCUMENTATION] (Related to Standardization)

Reviewer
David Vernet <void@manifault.com>

Mailing list
bpf@vger.kernel.org, bpf@ietf.org

Status
Maintained

Files
Documentation/bpf/standardization/

* 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 <yonghong.song@linux.dev>, 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 [ITERATOR]

Mail
Yonghong Song <yonghong.song@linux.dev>

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 [MISC]

Mailing list
bpf@vger.kernel.org

Status
Odd Fixes

Content regex
(?:\b|_)bpf(?:\b|_)

* 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 [NETWORKING] (tcx & 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
    include/net/tcx.h   kernel/bpf/tcx.c   net/core/filter.c   net/sched/
    act_bpf.c net/sched/cls_bpf.c

* BPF [RINGBUF]

Mail
    Andrii Nakryiko <andrii@kernel.org>

Mailing list
    bpf@vger.kernel.org

Status
    Maintained

Files
    kernel/bpf/ringbuf.c

* BPF [SECURITY & LSM] (Security Audit and Enforcement using BPF)

Mail
    KP Singh <kpsingh@kernel.org>

Reviewer
    Florent   Revest   <revest@chromium.org>,   Brendan   Jackman   <jack-
    manb@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 [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 [STORAGE & CGROUPS]

Mail
Martin KaFai Lau <martin.lau@linux.dev>

Mailing list
bpf@vger.kernel.org

Status
Maintained

Files
kernel/bpf/*storage.c kernel/bpf/bpf_lru* kernel/bpf/cgroup.c

* 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 [TRACING]

Mail
Song Liu <song@kernel.org>

Reviewer
Jiri Olsa <jolsa@kernel.org>

Mailing list
bpf@vger.kernel.org

Status
Maintained

Files
kernel/bpf/stackmap.c kernel/trace/bpf_trace.c

* BROADCOM ASP 2.0 ETHERNET DRIVER

Mail
Justin Chen <justin.chen@broadcom.com>, Florian Fainelli <florian.fainelli@broadcom.com>

Mailing list
bcm-kernel-feedback-list@broadcom.com, netdev@vger.kernel.org

Status
Supported

Files
Documentation/devicetree/bindings/net/brcm,asp-v2.0.yaml drivers/net/ethernet/broadcom/asp2/

* 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 <florian.fainelli@broadcom.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 BCM2711/BCM2835 ARM ARCHITECTURE

Mail
Florian Fainelli <florian.fainelli@broadcom.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 https://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 <florian.fainelli@broadcom.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 https://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 <florian.fainelli@broadcom.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/broadcom/bcm-ns.dtsi arch/arm/boot/dts/broadcom/bcm470* arch/arm/boot/dts/broadcom/bcm5301* arch/arm/boot/dts/broadcom/bcm953012* arch/arm/mach-bcm/bcm_5301x.c

* BROADCOM BCM53573 ARM ARCHITECTURE

Mail
Florian Fainelli <florian.fainelli@broadcom.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/broadcom/bcm47189* arch/arm/boot/dts/broadcom/bcm53573*

* 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 <florian.fainelli@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 https://github.com/broadcom/stblinux.git

Files
Documentation/devicetree/bindings/pci/brcm,stb-pcie.yaml   arch/arm/boot/dts/broadcom/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 BCMBCA ARM ARCHITECTURE

Mail
William   Zhang   <william.zhang@broadcom.com>,   Anand   Gore <anand.gore@broadcom.com>, Kursad Oney <kursad.oney@broadcom.com>, Florian   Fainelli   <florian.fainelli@broadcom.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

SCM
git https://github.com/broadcom/stblinux.git

Files
Documentation/devicetree/bindings/arm/bcm/brcm,bcmbca.yaml   arch/arm64/boot/dts/broadcom/bcmbca/*

Regex
bcmbca bcm[9]?47622 bcm[9]?4912 bcm[9]?63138 bcm[9]?63146 bcm[9]?63148

```
bcm[9]?63158 bcm[9]?63178 bcm[9]?6756 bcm[9]?6813 bcm[9]?6846 bcm[9]?
6855 bcm[9]?6856 bcm[9]?6858 bcm[9]?6878
```

* BROADCOM BDC DRIVER

Mail
Justin Chen <justin.chen@broadcom.com>, 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,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 <florian.fainelli@broadcom.com>

Reviewer
Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list
linux-mips@vger.kernel.org

Status
Maintained

SCM
git https://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/irqchip/
irq-bcm63* drivers/irqchip/irq-bcm7* drivers/irqchip/irq-brcmstb*
drivers/pmdomain/bcm/bcm63xx-power.c 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   <mran-
gankar@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 <florian.fainelli@broadcom.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 <kamal.dasu@broadcom.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
Justin Chen <justin.chen@broadcom.com>, 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
Justin Chen <justin.chen@broadcom.com>, 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 Broadband SoC High Speed SPI Controller DRIVER

Mail
William Zhang <william.zhang@broadcom.com>, Kursad Oney <kursad.oney@broadcom.com>, Jonas Gorski <jonas.gorski@gmail.com>

Reviewer
Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list
linux-spi@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/spi/brcm,bcm63xx-hsspi.yaml
drivers/spi/spi-bcm63xx-hsspi.c drivers/spi/spi-bcmbca-hsspi.c

* BROADCOM BCM6348/BCM6358 SPI controller DRIVER

Mail
Jonas Gorski <jonas.gorski@gmail.com>

Mailing list
linux-spi@vger.kernel.org

Status
Odd Fixes

Files
Documentation/devicetree/bindings/spi/brcm,bcm63xx-spi.yaml drivers/
spi/spi-bcm63xx.c

* BROADCOM ETHERNET PHY DRIVERS

Mail
Florian Fainelli <florian.fainelli@broadcom.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 <florian.fainelli@broadcom.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 https://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.yaml 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 <florian.fainelli@broadcom.com>

Reviewer
Broadcom internal kernel review list <bcm-kernel-feedback-list@broadcom.com>

Mailing list
linux-pm@vger.kernel.org

Status
Maintained

SCM
git https://github.com/broadcom/stblinux.git

Files
drivers/pmdomain/bcm/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 <kamal.dasu@broadcom.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 <kamal.dasu@broadcom.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 <florian.fainelli@broadcom.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 <florian.fainelli@broadcom.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,systemport.yaml drivers/
net/ethernet/broadcom/bcmsysport.* drivers/net/ethernet/broadcom/
unimac.h

* 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
https://btrfs.readthedocs.io

Patchwork
https://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/trace/events/
btrfs.h 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/interconnect/samsung,exynos-bus.
    yaml 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.*

* BXCAN CAN NETWORK DRIVER

Mail
    Dario Binacchi <dario.binacchi@amarulasolutions.com>

Mailing list
    linux-can@vger.kernel.org

Status
    Maintained

Files
    Documentation/devicetree/bindings/net/can/st,stm32-bxcan.yaml
    drivers/net/can/bxcan.c

* 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

* 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/

* CACHESTAT: PAGE CACHE STATS FOR A FILE

Mail
   Nhat Pham <nphamcs@gmail.com>, Johannes Weiner <hannes@cmpxchg.org>

Mailing list
   linux-mm@kvack.org

Status
   Maintained

Files
   tools/testing/selftests/cachestat/test_cachestat.c

* 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   Documentation/
   devicetree/bindings/media/cdns,csi2rx.yaml   drivers/media/platform/
   cadence/cdns-csi2*

* 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>

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 USBHS DRIVER

Mail
Pawel Laszczak <pawell@cadence.com>

Mailing list
linux-usb@vger.kernel.org

Status
Maintained

Files
drivers/usb/gadget/udc/cdns2

* 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/

* CANAAN/KENDRYTE K210 SOC FPIOA DRIVER

Mail
Damien Le Moal <dlemoal@kernel.org>

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 <dlemoal@kernel.org>

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 <dlemoal@kernel.org>

Mailing list
linux-riscv@lists.infradead.org

Status
Maintained

Files
Documentation/devicetree/bindings/mfd/canaan,k210-sysctl.yaml
drivers/soc/canaan/ include/soc/canaan/

* 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>

Mailing list
> netdev@vger.kernel.org

Status
> Maintained

Files
> net/sched/sch_cbs.c net/sched/sch_etf.c net/sched/sch_taprio.c

* CC2520 IEEE-802.15.4 RADIO DRIVER

Mail
> Stefan Schmidt <stefan@datenfreihafen.org>

Mailing list
> linux-wpan@vger.kernel.org

Status
> Odd Fixes

Files
> Documentation/devicetree/bindings/net/ieee802154/cc2520.txt drivers/
> net/ieee802154/cc2520.c

* 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

Web-page
> https://developer.arm.com/products/system-ip/trustzone-cryptocell/
> cryptocell-700-family

Files
> Documentation/devicetree/bindings/rng/arm-cctrng.yaml drivers/char/
> hw_random/cctrng.c drivers/char/hw_random/cctrng.h

* 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/cec-common.yaml 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/cec-gpio.yaml   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 https://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 https://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/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>, Tzung-Bi Shih <tzungbi@kernel.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@kernel.org>

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 UART DRIVER

Mail
Bhanu Prakash Maiya <bhanumaiya@chromium.org>

Reviewer
Benson Leung <bleung@chromium.org>, Tzung-Bi Shih <tzungbi@kernel.org>

Status
Maintained

Files
drivers/platform/chrome/cros_ec_uart.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

* 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.* drivers/platform/chrome/
cros_typec_switch.c drivers/platform/chrome/cros_typec_vdm.*

* CHROMEOS HPS DRIVER

Mail
Dan Callaghan <dcallagh@chromium.org>

Reviewer
Sami Kyöstilä <skyostil@chromium.org>

Status
Maintained

Files
drivers/platform/chrome/cros_hps_i2c.c

* 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>, 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* drivers/mfd/
cs42l43* drivers/pinctrl/cirrus/pinctrl-cs42l43* drivers/spi/
spi-cs42l43* include/dt-bindings/sound/cs* include/linux/mfd/cs42l43*
include/sound/cs* sound/pci/hda/cs* sound/pci/hda/hda_cs_dsp_ctl.*
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/clock/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 <sebaddel@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>, Satish Kharat <satishkh@cisco.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 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/hardening

Files
include/linux/cfi.h kernel/cfi.c

* 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 <nde-saulniers@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

* 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 and SMB3)

Mail
Steve French <sfrench@samba.org>

Reviewer
Paulo Alcantara <pc@manguebit.com> (DFS, global name space), Ronnie
Sahlberg <lsahlber@redhat.com> (directory leases, sparse files), Shyam Prasad
N <sprasad@microsoft.com> (multichannel), Tom Talpey <tom@talpey.com>
(RDMA, smbdirect)

Mailing list
linux-cifs@vger.kernel.org, samba-technical@lists.samba.org (moderated for
non-subscribers)

Status
Supported

Web-page
https://wiki.samba.org/index.php/LinuxCIFS

SCM
git git://git.samba.org/sfrench/cifs-2.6.git

Files
Documentation/admin-guide/cifs/   fs/smb/client/   fs/smb/common/
include/uapi/linux/cifs

* 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
Davidlohr Bueso <dave@stgolabs.net>, Jonathan Cameron <jonathan.cameron@huawei.com>, Dave Jiang <dave.jiang@intel.com>, Alison Schofield <alison.schofield@intel.com>, Vishal Verma <vishal.l.verma@intel.com>, Ira Weiny <ira.weiny@intel.com>, 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

* COMPUTE EXPRESS LINK PMU (CPMU)

Mail
Jonathan Cameron <jonathan.cameron@huawei.com>

Mailing list
linux-cxl@vger.kernel.org

Status
Maintained

Files
admin-guide/perf/cxl `drivers/perf/cxl_pmu.c`

* 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>, "Paul E. McKenney" <paulmck@kernel.org>

Status
Maintained

Files
include/linux/context_tracking* kernel/context_tracking.c

* 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>, Josef Bacik <josef@toxicpanda.com>, 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-iocost.c block/blk-iolatency.c block/blk-throttle.c include/linux/blk-cgroup.h

* CONTROL GROUP - CPUSET

Mail
Waiman Long <longman@redhat.com>, 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 tools/testing/selftests/cgroup/test_cpuset.c tools/testing/
selftests/cgroup/test_cpuset_prs.sh

* 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 <muchun.song@linux.dev>

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 <william.gray@linaro.org>

Mailing list
linux-iio@vger.kernel.org

Status
Maintained

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/wbg/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 HOTPLUG

Mail
Thomas Gleixner <tglx@linutronix.de>, 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 smp/core

Files
include/linux/cpu.h include/linux/cpuhotplug.h include/linux/smpboot. h kernel/cpu.c kernel/smpboot.*

* 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
Daniel Lezcano <daniel.lezcano@linaro.org>, Kukjin Kim <kgene@kernel.org>

Reviewer
Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>

Mailing list
linux-pm@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status
Maintained

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-domain.c drivers/cpuidle/cpuidle-psci.h

* 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/

* CTU CAN FD DRIVER

Mail
Pavel Pisa <pisa@cmp.felk.cvut.cz>, Ondrej Ille <ondrej.ille@gmail.com>

Mailing list
linux-can@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/net/can/ctu,ctucanfd.yaml drivers/net/can/ctucanfd/

* CW1200 WLAN driver

Status
Orphan

Files
drivers/net/wireless/st/cw1200/

* CX18 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
drivers/media/pci/cx18/ include/uapi/linux/ivtv*

* CX2341X MPEG ENCODER HELPER 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/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
    Varun Prakash <varun@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>

Mailing list
    linux-crypto@vger.kernel.org

Status
    Supported

Web-page
    http://www.chelsio.com

Files
    drivers/crypto/chelsio

* 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 INLINE CRYPTO DRIVER

Mail
    Ayush Sawal <ayush.sawal@chelsio.com>

Mailing list
    netdev@vger.kernel.org

Status
    Supported

Web-page
    http://www.chelsio.com

Files
    drivers/net/ethernet/chelsio/inline_crypto/

* CXGB4 ISCSI DRIVER (CXGB4I)

Mail
Varun Prakash <varun@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 CY8C95X0 PINCTRL DRIVER

Mail
    Patrick Rudolph <patrick.rudolph@9elements.com>

Mailing list
    linux-gpio@vger.kernel.org

Status
    Maintained

Files
    drivers/pinctrl/pinctrl-cy8c95x0.c

* 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

* 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*

* 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

Web-page
https://damonitor.github.io

P
mm/damon/maintainer-profile

SCM
git   git://git.kernel.org/pub/scm/linux/kernel/git/akpm/mm   quilt
git://git.kernel.org/pub/scm/linux/kernel/git/akpm/25-new   git
git://git.kernel.org/pub/scm/linux/kernel/git/sj/linux.git damon/next

Files
Documentation/ABI/testing/sysfs-kernel-mm-damon   Documentation/
admin-guide/mm/damon/ Documentation/mm/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>

Status
Maintained

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/

* DEBUGOBJECTS:

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 core/debugobjects

Files
include/linux/debugobjects.h lib/debugobjects.c

* 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 DDV DRIVER

Mail
Armin Wolf <W_Armin@gmx.de>

Status
Maintained

Files
Documentation/ABI/testing/debugfs-dell-wmi-ddv   Documentation/ABI/
testing/sysfs-platform-dell-wmi-ddv wmi/devices/dell-wmi-ddv drivers/
platform/x86/dell/dell-wmi-ddv.c

* DELL WMI DESCRIPTOR DRIVER

Mailing list
Dell.Client.Kernel@dell.com

Status
Maintained

Files
drivers/platform/x86/dell/dell-wmi-descriptor.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

* 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 SYSMAN DRIVER

Mail
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/

* 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

* 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

* DENALI NAND DRIVER

Mailing list
linux-mtd@lists.infradead.org

Status
Orphan

Files
drivers/mtd/nand/raw/denali*

* DESIGNWARE EDMA CORE IP DRIVER

Mail
Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Reviewer
Gustavo   Pimentel   <gustavo.pimentel@synopsys.com>,   Serge   Semin
<fancer.lancer@gmail.com>

Mailing list
dmaengine@vger.kernel.org

Status
Maintained

Files
drivers/dma/dw-edma/ include/linux/dma/edma.h

* 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
Thinh Nguyen <Thinh.Nguyen@synopsys.com>

Mailing list
linux-usb@vger.kernel.org

Status
Maintained

Files
drivers/usb/dwc3/

* 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

* 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, linux-cxl@vger.kernel.org

Status
> Supported

Files
> drivers/dax/

* DEVICE FREQUENCY (DEVFREQ)

Mail
> MyungJoo Ham <myungjoo.ham@samsung.com>, Kyungmin Park <kyungmin.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/ Documentation/devicetree/bindings/interconnect/mediatek,cci.yaml 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 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@lists.linux.dev

Mailing list
dm-devel@lists.linux.dev

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@resnulli.us>

Mailing list
netdev@vger.kernel.org

Status
Supported

Files
```
Documentation/networking/devlink include/net/devlink.h include/uapi/
linux/devlink.h net/devlink/
```

* DH ELECTRONICS IMX6 DHCOM/DHCOR BOARD SUPPORT

Mail
Christoph Niedermaier <cniedermaier@dh-electronics.com>

Mailing list
kernel@dh-electronics.com

Status
Maintained

Files
```
arch/arm/boot/dts/nxp/imx/imx6*-dhcom-*   arch/arm/boot/dts/nxp/imx/
imx6*-dhcor-*
```

* 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/st/stm32mp1*-dhcom-*        arch/arm/boot/dts/st/
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/mfd/dlg,da90*.yaml        Documentation/devicetree/
bindings/regulator/da92*.txt        Documentation/devicetree/bindings/
regulator/dlg,da9*.yaml Documentation/devicetree/bindings/regulator/
dlg,slg51000.yaml   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 <william.gray@linaro.org>

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
gfs2@lists.linux.dev

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/dt-bindings/dma/ include/linux/dma/
include/linux/dmaengine.h include/linux/of_dma.h

* 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 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-map-ops.h    include/linux/dma-mapping.h    include/linux/
swiotlb.h kernel/dma/
```

* DMA-BUF HEAPS FRAMEWORK

Mail
Sumit Semwal <sumit.semwal@linaro.org>

Reviewer
Benjamin Gaignard <benjamin.gaignard@collabora.com>, Brian Starkey <Brian.Starkey@arm.com>, John Stultz <jstultz@google.com>, T.J. Mercier <tjmercier@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@proton.me>

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/netlink/` `Documentation/power/ Documentation/spi/ Documentation/userspace-api/media/`

* DOCUMENTATION PROCESS

Mail
Jonathan Corbet <corbet@lwn.net>

Mailing list
workflows@vger.kernel.org

Status
Maintained

Files
Documentation/maintainer/ Documentation/process/

* DOCUMENTATION REPORTING ISSUES

Mail
Thorsten Leemhuis <linux@leemhuis.info>

Mailing list
linux-doc@vger.kernel.org

Status
Maintained

Files
admin-guide/quickly-build-trimmed-linux 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.yaml
drivers/media/i2c/dw9714.c

* DONGWOON DW9719 LENS VOICE COIL 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/dw9719.c

* DONGWOON DW9768 LENS VOICE COIL DRIVER

Mailing list
linux-media@vger.kernel.org

Status
Orphan

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/dpaa2-xsk* 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*

* 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/ include/
linux/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/fwnode.h include/linux/kobj* include/linux/
property.h 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 ACCEL DRIVERS FOR INTEL VPU

Mail
> Jacek Lawrynowicz <jacek.lawrynowicz@linux.intel.com>, Stanislaw Gruszka <stanislaw.gruszka@linux.intel.com>

Mailing list
> dri-devel@lists.freedesktop.org

Status
> Supported

SCM
> git git://anongit.freedesktop.org/drm/drm-misc

Files
> drivers/accel/ivpu/ include/uapi/drm/ivpu_accel.h

* DRM COMPUTE ACCELERATORS DRIVERS AND FRAMEWORK

Mail
> Oded Gabbay <ogabbay@kernel.org>

Mailing list
> dri-devel@lists.freedesktop.org

Status
> Maintained

chat
> irc://irc.oftc.net/dri-devel

SCM
> git https://git.kernel.org/pub/scm/linux/kernel/git/ogabbay/accel.git

Files
> Documentation/accel/ drivers/accel/ include/drm/drm_accel.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>,   Jocelyn   Falempe
<jfalempe@redhat.com>

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 EBBG FT8719 PANEL

Mail
Joel Selvaraj <jo@jsfamily.in>

Status
Maintained

SCM
git git://anongit.freedesktop.org/drm/drm-misc

Files
Documentation/devicetree/bindings/display/panel/ebbg,ft8719.yaml
drivers/gpu/drm/panel/panel-ebbg-ft8719.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 FIRMWARE FRAMEBUFFERS

Mail
Thomas Zimmermann <tzimmermann@suse.de>, Javier Martinez Canillas
<javierm@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_aperture.c drivers/gpu/drm/tiny/ofdrm.c drivers/
gpu/drm/tiny/simpledrm.c   drivers/video/aperture.c   drivers/video/
nomodeset.c   include/drm/drm_aperture.h   include/linux/aperture.h
include/video/nomodeset.h

* DRM DRIVER FOR GENERIC EDP PANELS

Reviewer

Douglas Anderson <dianders@chromium.org>

Files

Documentation/devicetree/bindings/display/panel/panel-edp.yaml
drivers/gpu/drm/panel/panel-edp.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 HIMAX HX8394 MIPI-DSI LCD panels

Mail

Ondrej Jirman <megi@xff.cz>, Javier Martinez Canillas <javierm@redhat.com>

Status

Maintained

SCM

git git://anongit.freedesktop.org/drm/drm-misc

Files

Documentation/devicetree/bindings/display/panel/himax,hx8394.yaml
drivers/gpu/drm/panel/panel-himax-hx8394.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 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 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 JADARD JD9365DA-H3 MIPI-DSI LCD PANELS

Mail
Jagan Teki <jagan@edgeble.ai>

Status
Maintained

Files
Documentation/devicetree/bindings/display/panel/jadard,jd9365da-h3.
yaml drivers/gpu/drm/panel/panel-jadard-jd9365da-h3.c

* DRM DRIVER FOR LOGICVC DISPLAY CONTROLLER

Mail
Paul Kocialkowski <paul.kocialkowski@bootlin.com>

Status
Supported

SCM
git git://anongit.freedesktop.org/drm/drm-misc

Files
drivers/gpu/drm/logicvc/

* DRM DRIVER FOR LVDS PANELS

Mail
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/lvds.yaml   Documentation/
devicetree/bindings/display/panel/panel-lvds.yaml   drivers/gpu/drm/
panel/panel-lvds.c

* 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 MGA G200 GRAPHICS CHIPS

Mail
Dave Airlie <airlied@redhat.com>

Reviewer
Thomas   Zimmermann   <tzimmermann@suse.de>,   Jocelyn   Falempe
<jfalempe@redhat.com>

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>, Marijn Suijten <marijn.suijten@somainline.org>

Mailing list
linux-arm-msm@vger.kernel.org, dri-devel@lists.freedesktop.org, freedreno@lists.freedesktop.org

Status
Maintained

bugs
https://gitlab.freedesktop.org/drm/msm/-/issues

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 NT36523 PANELS

Mail
> Jianhua Lu <lujianhua000@gmail.com>

Status
> Maintained

SCM
> git git://anongit.freedesktop.org/drm/drm-misc

Files
> Documentation/devicetree/bindings/display/panel/novatek,nt36523.
> yaml drivers/gpu/drm/panel/panel-novatek-nt36523.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
> Karol Herbst <kherbst@redhat.com>, Lyude Paul <lyude@redhat.com>, Danilo Krummrich <dakr@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 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 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 MIPI DSIM BRIDGE

Mail
> Inki Dae <inki.dae@samsung.com>, Jagan Teki <jagan@amarulasolutions.com>, Marek Szyprowski <m.szyprowski@samsung.com>

Status
> Maintained

SCM
> git git://anongit.freedesktop.org/drm/drm-misc

Files
> Documentation/devicetree/bindings/display/bridge/samsung,mipi-dsim.
> yaml drivers/gpu/drm/bridge/samsung-dsim.c include/drm/bridge/
> samsung-dsim.h

* 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 SAMSUNG S6D7AA0 PANELS

Mail
Artur Weber <aweber.kernel@gmail.com>

Status
Maintained

Files
Documentation/devicetree/bindings/display/panel/samsung,s6d7aa0.
yaml drivers/gpu/drm/panel/panel-samsung-s6d7aa0.c

* 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 ST7703 PANELS

Mail
> Guido Günther <agx@sigxcpu.org>

Reviewer
> Purism Kernel Team <kernel@puri.sm>, Ondrej Jirman <megi@xff.cz>

Status
> Maintained

Files
> Documentation/devicetree/bindings/display/panel/rocktech,
> jh057n00900.yaml drivers/gpu/drm/panel/panel-sitronix-st7703.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 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 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 TI DLPC3433 MIPI DSI TO DMD BRIDGE

Mail
Jagan Teki <jagan@amarulasolutions.com>

Status
Maintained

Files
Documentation/devicetree/bindings/display/bridge/ti,dlpc3433.yaml
drivers/gpu/drm/bridge/ti-dlpc3433.c

* 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 <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/udl/

* DRM DRIVER FOR VIRTUAL KERNEL MODESETTING (VKMS)

Mail
Rodrigo Siqueira <rodrigosiqueiramelo@gmail.com>, Melissa Wen <melissa.srw@gmail.com>, Maíra Canal <mairacanal@riseup.net>

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@gmail.com>, 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 <neil.armstrong@linaro.org>

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
<neil.armstrong@linaro.org>, Robert Foss <rfoss@kernel.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/ drivers/gpu/drm/drm_bridge.c include/drm/drm_bridge.h

* DRM DRIVERS FOR EXYNOS

Mail
Inki   Dae   <inki.dae@samsung.com>,   Seung-Woo   Kim
<sw0312.kim@samsung.com>,   Kyungmin   Park   <kyung-
min.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/
    ipuv3/ drivers/gpu/ipu-v3/

* DRM DRIVERS FOR FREESCALE IMX BRIDGE

Mail
    Liu Ying <victor.liu@nxp.com>

Mailing list
    dri-devel@lists.freedesktop.org

Status
    Maintained

Files
    Documentation/devicetree/bindings/display/bridge/fsl,imx8qxp-ldb.
    yaml   Documentation/devicetree/bindings/display/bridge/fsl,
    imx8qxp-pixel-combiner.yaml   Documentation/devicetree/bindings/
    display/bridge/fsl,imx8qxp-pixel-link.yaml Documentation/devicetree/
    bindings/display/bridge/fsl,imx8qxp-pxl2dpi.yaml   drivers/gpu/drm/
    bridge/imx/

* 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
    Xinwei   Kong   <kong.kongxinwei@hisilicon.com>,   Sumit   Semwal
    <sumit.semwal@linaro.org>, Yongqin Liu <yongqin.liu@linaro.org>, John
    Stultz <jstultz@google.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 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 LOONGSON

Mail
  Sui Jingfeng <suijingfeng@loongson.cn>

Mailing list
  dri-devel@lists.freedesktop.org

Status
  Supported

SCM
  git git://anongit.freedesktop.org/drm/drm-misc

Files
  drivers/gpu/drm/loongson/

* 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-dp.c drivers/phy/mediatek/
phy-mtk-hdmi* drivers/phy/mediatek/phy-mtk-mipi*

* DRM DRIVERS FOR NVIDIA TEGRA

Mail
Thierry Reding <thierry.reding@gmail.com>, Mikko Perttunen <mperttunen@nvidia.com>

Mailing list
dri-devel@lists.freedesktop.org, linux-tegra@vger.kernel.org

Status
Supported

SCM
git https://gitlab.freedesktop.org/drm/tegra.git

Files
Documentation/devicetree/bindings/display/tegra/nvidia,
tegra20-host1x.yaml 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/renesas/ 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 <tomi.valkeinen@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/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>, Tomi Valkeinen <tomi.valkeinen@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/tilcdc/   drivers/gpu/drm/
tilcdc/

* DRM DRIVERS FOR TI OMAP

Mail
Tomi Valkeinen <tomi.valkeinen@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/ti/   drivers/gpu/drm/
omapdrm/

* DRM DRIVERS FOR V3D

Mail
Emma Anholt <emma@anholt.net>, Melissa Wen <mwen@igalia.com>

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
> 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 GPU SCHEDULER

Mail
Luben Tuikov <luben.tuikov@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

* DRM PANEL DRIVERS

Mail
Neil Armstrong <neil.armstrong@linaro.org>

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 AUTOMATED TESTING

Mail
Helen Koike <helen.koike@collabora.com>

Mailing list
dri-devel@lists.freedesktop.org

Status
Maintained

SCM
git git://anongit.freedesktop.org/drm/drm-misc

Files
gpu/automated_testing drivers/gpu/drm/ci/

* 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>, Jim Cromie <jim.cromie@gmail.com>

Status
Maintained

Files
include/linux/dynamic_debug.h   lib/dynamic_debug.c   lib/
test_dynamic_debug.c

* DYNAMIC INTERRUPT MODERATION

Mail
Tal Gilboa <talgi@nvidia.com>

Status
Maintained

Files
networking/net_dim include/linux/dim.h lib/dim/

* 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

* 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>, Tony Luck <tony.luck@intel.com>

Reviewer
James Morse <james.morse@arm.com>, Mauro Carvalho Chehab <mchehab@kernel.org>, 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-NPCM

Mail
    Marvin Lin <kflin@nuvoton.com>, Stanley Chu <yschu@nuvoton.com>

Mailing list
    linux-edac@vger.kernel.org

Status
    Maintained

Files
    Documentation/devicetree/bindings/memory-controllers/nuvoton,
    npcm-memory-controller.yaml drivers/edac/npcm_edac.c

* 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
Manivannan Sadhasivam <manivannan.sadhasivam@linaro.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
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/

* ELM327 CAN NETWORK DRIVER

Mail
Max Staudt <max@enpas.org>

Mailing list
linux-can@vger.kernel.org

Status
Maintained

Files
networking/device_drivers/can/can327 drivers/net/can/can327.c

* 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/

* 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
    Supported

Files
    drivers/mmc/host/cqhci*

* EMS CPC-PCI CAN DRIVER

Mail
    Gerhard Uttenthaler <uttenthaler@ems-wuensche.com>, support@ems-wuensche.com

Mailing list
    linux-can@vger.kernel.org

Status
    Maintained

Files
    drivers/net/can/sja1000/ems_pci.c

* 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 Basavap-
> atna <sriharsha.basavapatna@broadcom.com>, Somnath Kotur <som-
> nath.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 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/

* EMULEX 10Gbps NIC BE2, BE3-R, Lancer, Skyhawk-R DRIVER (be2net)

* 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/

* 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>

Reviewer
Yue Hu <huyue2@coolpad.com>, Jeffle Xu <jefflexu@linux.alibaba.com>

Mailing list
linux-erofs@lists.ozlabs.org

Status
Maintained

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/xiang/erofs.git

Files
`Documentation/ABI/testing/sysfs-fs-erofs   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`

* ESD CAN/USB DRIVERS

Mail
Frank Jungclaus <frank.jungclaus@esd.eu>

Reviewer
socketcan@esd.eu

Mailing list
linux-can@vger.kernel.org

Status
Maintained

Files
drivers/net/can/usb/esd_usb.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
networking/devlink/etas_es58x 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/*mdio*.h include/linux/linkmode.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/phylib_stubs.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
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

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/linkinjeon/exfat.git

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
> include/uapi/linux/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/ security/integrity/evm/

* 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/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>

Mailing list
    linux-kernel@vger.kernel.org, linux-trace-kernel@vger.kernel.org

Status
    Maintained

Patchwork
    https://patchwork.kernel.org/project/linux-trace-kernel/list/

SCM
    git git://git.kernel.org/pub/scm/linux/kernel/git/trace/linux-trace.git

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/

Patchwork
https://patchwork.kernel.org/project/f2fs/list/

bugs
https://bugzilla.kernel.org/enter_bug.cgi?product=File%20System&
component=f2fs

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

* **FARADAY FOTG210 USB2 DUAL-ROLE CONTROLLER**

Mail
Linus Walleij <linus.walleij@linaro.org>

Mailing list
linux-usb@vger.kernel.org

Status
Maintained

Files
drivers/usb/fotg210/

* 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>, Christian Brauner <brauner@kernel.org>

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

* FINTEK F81604 USB to 2xCANBUS DEVICE DRIVER

Mail
Ji-Ze Hong (Peter Hong) <peter_hong@fintek.com.tw>

Mailing list
linux-can@vger.kernel.org

Status
Maintained

Files
drivers/net/can/usb/f81604.c

* 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
Takashi Sakamoto <o-takashi@sakamocchi.jp>, Takashi Sakamoto <takaswie@kernel.org>

Mailing list
linux1394-devel@lists.sourceforge.net

Status
Maintained

Web-page
http://ieee1394.docs.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
    <russ.weight@linux.dev>

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_scarlett2.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

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git for-next/hardening

Files
```
include/linux/fortify-string.h lib/fortify_kunit.c lib/memcpy_kunit.
c lib/strcat_kunit.c lib/strscpy_kunit.c 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
    https://floatingpoint.billm.au/

Files
    arch/x86/math-emu/

* FRAMEBUFFER CORE

Mail
    Daniel Vetter <daniel@ffwll.ch>

Status
    Odd Fixes

SCM
    git git://anongit.freedesktop.org/drm/drm-misc

Files
    drivers/video/fbdev/core/

* 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,sec-v4.0*   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>,   Vladimir   Oltean
<vladimir.oltean@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
    Wei Fang <wei.fang@nxp.com>

Reviewer
    Shenwei   Wang   <shenwei.wang@nxp.com>,   Clark   Wang   <xiaon-
    ing.wang@nxp.com>, NXP Linux Team <linux-imx@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

* 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>

Reviewer
Sean Anderson <sean.anderson@seco.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 QMC DRIVER

Mail
Herve Codina <herve.codina@bootlin.com>

Mailing list
linuxppc-dev@lists.ozlabs.org

Status
Maintained

Files
Documentation/devicetree/bindings/soc/fsl/cpm_qe/fsl,cpm1-scc-qmc.
yaml drivers/soc/fsl/qe/qmc.c include/soc/fsl/qe/qmc.h

* FREESCALE QUICC ENGINE TSA DRIVER

Mail
Herve Codina <herve.codina@bootlin.com>

Mailing list
linuxppc-dev@lists.ozlabs.org

Status
Maintained

Files
Documentation/devicetree/bindings/soc/fsl/cpm_qe/fsl,cpm1-tsa.
yaml   drivers/soc/fsl/qe/tsa.c   drivers/soc/fsl/qe/tsa.h   include/
dt-bindings/soc/cpm1-fsl,tsa.h

* 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/

* 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 SOC SOUND QMC DRIVER

Mail
Herve Codina <herve.codina@bootlin.com>

Mailing list
alsa-devel@alsa-project.org (moderated for non-subscribers), linuxppc-dev@lists.ozlabs.org

Status
Maintained

Files
Documentation/devicetree/bindings/sound/fsl,qmc-audio.yaml sound/soc/fsl/fsl_qmc_audio.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`

* 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
Eric Biggers <ebiggers@kernel.org>, Theodore Y. Ts'o <tytso@mit.edu>, Jaegeuk Kim <jaegeuk@kernel.org>

Mailing list
linux-fscrypt@vger.kernel.org

Status
Supported

Patchwork
https://patchwork.kernel.org/project/linux-fscrypt/list/

SCM
git https://git.kernel.org/pub/scm/fs/fscrypt/linux.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
> fsverity@lists.linux.dev

Status
> Supported

Patchwork
> https://patchwork.kernel.org/project/fsverity/list/

SCM
> git https://git.kernel.org/pub/scm/fs/fsverity/linux.git

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 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
```

* FUNCTION HOOKS (FTRACE)

Mail
Steven Rostedt <rostedt@goodmis.org>, Masami Hiramatsu <mhiramat@kernel.org>

Reviewer
Mark Rutland <mark.rutland@arm.com>

Mailing list
linux-kernel@vger.kernel.org, linux-trace-kernel@vger.kernel.org

Status
Maintained

Patchwork
https://patchwork.kernel.org/project/linux-trace-kernel/list/

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/trace/linux-trace.git

Files
```
Documentation/trace/ftrace*  arch/*/*/*/*ftrace*  arch/*/*/*ftrace*
include/*/ftrace.h    kernel/trace/fgraph.c    kernel/trace/ftrace*
samples/ftrace
```

* 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>

Status
Maintained

Files
Documentation/devicetree/bindings/mfd/gateworks-gsc.yaml hwmon/gsc-hwmon drivers/hwmon/gsc-hwmon.c drivers/mfd/gateworks-gsc.c include/linux/mfd/gsc.h include/linux/platform_data/gsc_hwmon.h

* GCC PLUGINS

Mail
Kees Cook <keescook@chromium.org>

Mailing list
linux-hardening@vger.kernel.org

Status
Maintained

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git for-next/hardening

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
    Vinod Koul <vkoul@kernel.org>, Kishon Vijay Abraham I <kishon@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/
    dt-bindings/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 PM DOMAIN PROVIDERS

Mail
Ulf Hansson <ulf.hansson@linaro.org>

Mailing list
linux-pm@vger.kernel.org

Status
Supported

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/ulfh/linux-pm.git

Files
```
drivers/pmdomain/
```

* 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

Mail
Kees Cook <keescook@chromium.org>

Reviewer
Andy Shevchenko <andy@kernel.org>

Mailing list
linux-hardening@vger.kernel.org

Status
Supported

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git for-next/hardening

Files
```
include/linux/string.h    include/linux/string_choices.h    include/
linux/string_helpers.h   lib/string.c   lib/string_helpers.c   lib/
test-string_helpers.c lib/test_string.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 <agru-enba@redhat.com>

Mailing list
gfs2@lists.linux.dev

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>, Praveen Kaligineedi <pkaligi-needi@google.com>

Reviewer
Shailend Chand <shailend@google.com>

Mailing list
netdev@vger.kernel.org

Status
Supported

Files
networking/device_drivers/ethernet/google/gve drivers/net/ethernet/google

* GOOGLE FIRMWARE DRIVERS

Mail
Tzung-Bi Shih <tzungbi@kernel.org>

Reviewer
Brian Norris <briannorris@chromium.org>, Julius Werner <jwerner@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/firmware/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
`Documentation/devicetree/bindings/leds/irled/gpio-ir-tx.yaml`
`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

Mail
Michael Walle <michael@walle.cc>

Status
Maintained

Files
`drivers/gpio/gpio-regmap.c include/linux/gpio/regmap.h`

Content regex
```
(devm_)?gpio_regmap_(un)?register
```

* GPIO SUBSYSTEM

Mail
Linus Walleij <linus.walleij@linaro.org>, Bartosz Golaszewski <brgl@bgdev.pl>

Reviewer
Andy Shevchenko <andy@kernel.org>

Mailing list
linux-gpio@vger.kernel.org

Status
Maintained

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/brgl/linux.git

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/
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>

Mailing list
dri-devel@lists.freedesktop.org

Status
Supported

chat
irc://irc.oftc.net/dri-devel

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/accel/habanalabs/
include/trace/events/habanalabs.h include/uapi/drm/habanalabs_accel.
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/

* HANDSHAKE UPCALL FOR TRANSPORT LAYER SECURITY

Mail
        Chuck Lever <chuck.lever@oracle.com>

Mailing list
        kernel-tls-handshake@lists.linux.dev, netdev@vger.kernel.org

Status
        Maintained

Files
        Documentation/netlink/specs/handshake.yaml   networking/tls-handshake
        include/net/handshake.h   include/trace/events/handshake.h   net/
        handshake/

* 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,rk3568-vepu.yaml
        Documentation/devicetree/bindings/media/rockchip-vpu.yaml   drivers/
        media/platform/verisilicon/

* 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
Olivia   Mackall   <olivia@selenic.com>,   Herbert   Xu   <her-
bert@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   <anders-
son@kernel.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
    Documentation/hid/ drivers/hid/ include/linux/hid* include/uapi/
    linux/hid* samples/hid/ tools/testing/selftests/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 NVIDIA SHIELD DRIVER

Mail
    Rahul Rameshbabu <rrameshbabu@nvidia.com>

Mailing list
    linux-input@vger.kernel.org

Status
    Maintained

Files
    drivers/hid/hid-nvidia-shield.c

* HID PHOENIX RC FLIGHT CONTROLLER

Mail
Marcus Folkesson <marcus.folkesson@gmail.com>

Mailing list
linux-input@vger.kernel.org

Status
Maintained

Files
drivers/hid/hid-pxrc.c

* 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>, Srini-
vas 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 VRC-2 CAR CONTROLLER DRIVER

Mail
Marcus Folkesson <marcus.folkesson@gmail.com>

Mailing list
linux-input@vger.kernel.org

Status
Maintained

Files
    drivers/hid/hid-vrc2.c

* 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_*

* HID++ LOGITECH DRIVERS

Reviewer
    Filipe Laíns <lains@riseup.net>, Bastien Nocera <hadess@hadess.net>

Mailing list
    linux-input@vger.kernel.org

Status
    Maintained

Files
    drivers/hid/hid-logitech-hidpp.c

* 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

* 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

* HIMAX HX83112B TOUCHSCREEN SUPPORT

Mail
Job Noorman <job@noorman.info>

Mailing list
linux-input@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/input/touchscreen/himax,hx83112b.
yaml drivers/input/touchscreen/himax_hx83112b.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>, Jie Hai <haijie1@huawei.com>

Mailing list
dmaengine@vger.kernel.org

Status
Maintained

Files
drivers/dma/hisi_dma.c

* HISILICON GPIO DRIVER

Mail
Jay Fang <f.fangjian@huawei.com>

Mailing list
linux-gpio@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/gpio/hisilicon,ascend910-gpio.
yaml 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 HNS3 PMU DRIVER

Mail
Jijie Shao <shaojijie@huawei.com>

Status
Supported

Files
admin-guide/perf/hns3-pmu drivers/perf/hisilicon/hns3_pmu.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
Documentation/devicetree/bindings/i2c/hisilicon,ascend910-i2c.yaml
drivers/i2c/busses/i2c-hisi.c

* HISILICON KUNPENG SOC HCCS DRIVER

Mail
Huisong Li <lihuisong@huawei.com>

Status
Maintained

Files
Documentation/ABI/testing/sysfs-devices-platform-kunpeng_hccs
drivers/soc/hisilicon/kunpeng_hccs.c   drivers/soc/hisilicon/
kunpeng_hccs.h

* HISILICON LPC BUS DRIVER

Mail
Jay Fang <f.fangjian@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/

* HISILICON PMU DRIVER

Mail
Yicong Yang <yangyicong@hisilicon.com>, Jonathan Cameron
<jonathan.cameron@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 PTT DRIVER

Mail
Yicong Yang <yangyicong@hisilicon.com>, Jonathan Cameron
<jonathan.cameron@huawei.com>

Mailing list
linux-kernel@vger.kernel.org

Status
Maintained

Files
Documentation/ABI/testing/sysfs-devices-hisi_ptt trace/hisi-ptt drivers/
hwtracing/ptt/ tools/perf/arch/arm64/util/hisi-ptt.c tools/perf/util/
hisi-ptt* tools/perf/util/hisi-ptt-decoder/*

* HISILICON QM DRIVER

Mail
Weili Qian <qianweili@huawei.com>, Zhou Wang <wangzhou1@hisilicon.com>

Mailing list
linux-crypto@vger.kernel.org

Status
Maintained

Files
drivers/crypto/hisilicon/Kconfig   drivers/crypto/hisilicon/Makefile
drivers/crypto/hisilicon/qm.c drivers/crypto/hisilicon/sgl.c include/
linux/hisi_acc_qm.h

* HISILICON ROCE DRIVER

Mail
Junxian Huang <huangjunxian6@hisilicon.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
Xiang Chen <chenxiang66@hisilicon.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
Jay Fang <f.fangjian@huawei.com>

Status
Maintained

Web-page
http://www.hisilicon.com

Files
drivers/spi/spi-hisi-sfc-v3xx.c

* HISILICON ZIP Controller DRIVER

Mail
Yang   Shen   <shenyang39@huawei.com>,   Zhou   Wang
<wangzhou1@hisilicon.com>

Mailing list
linux-crypto@vger.kernel.org

Status
Maintained

Files
Documentation/ABI/testing/debugfs-hisi-zip drivers/crypto/hisilicon/
zip/

* HMM - Heterogeneous Memory Management

Mail
Jérôme Glisse <jglisse@redhat.com>

Mailing list
linux-mm@kvack.org

Status
Maintained

Files
mm/hmm include/linux/hmm* lib/test_hmm* mm/hmm* tools/testing/
selftests/mm/*hmm*

* HONEYWELL MPRLS0025PA PRESSURE SENSOR SERIES IIO DRIVER

Mail
Andreas Klinger <ak@it-klinger.de>

Mailing list
linux-iio@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/iio/pressure/honeywell,
mprls0025pa.yaml drivers/iio/pressure/mprls0025pa.c

* HOST AP DRIVER

Mailing list
linux-wireless@vger.kernel.org

Status
Obsolete

Files
drivers/net/wireless/intersil/hostap/

* HP BIOSCFG DRIVER

Mail
Jorge Lopez <jorge.lopez2@hp.com>

Mailing list
platform-driver-x86@vger.kernel.org

Status
Maintained

Files
drivers/platform/x86/hp/hp-bioscfg/

* HP COMPAQ TC1100 TABLET WMI EXTRAS DRIVER

Mailing list
platform-driver-x86@vger.kernel.org

Status
Orphan

Files
drivers/platform/x86/hp/tc1100-wmi.c

* HP WMI HARDWARE MONITOR DRIVER

Mail
James Seo <james@equiv.tech>

Mailing list
linux-hwmon@vger.kernel.org

Status
Maintained

Files
hwmon/hp-wmi-sensors drivers/hwmon/hp-wmi-sensors.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/`

* HS3001 Hardware Temperature and Humidity Sensor

Mail
Andre Werner <andre.werner@systec-electronic.com>

Mailing list
linux-hwmon@vger.kernel.org

Status
Maintained

Files
`drivers/hwmon/hs3001.c`

* 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>

Mailing list
timestamp@lists.linux.dev

Status
Maintained

Patchwork
https://patchwork.kernel.org/project/timestamp/list/

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/pateldipen1984/linux.git

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

Mail
Cai Huoqing <cai.huoqing@linux.dev>

Mailing list
netdev@vger.kernel.org

Status
Maintained

Files
networking/device_drivers/ethernet/huawei/hinic   drivers/net/ethernet/
huawei/hinic/

* HUGETLB SUBSYSTEM

Mail
Mike   Kravetz   <mike.kravetz@oracle.com>,   Muchun   Song
<muchun.song@linux.dev>

Mailing list
linux-mm@kvack.org

Status
Maintained

Files
Documentation/ABI/testing/sysfs-kernel-mm-hugepages   admin-
guide/mm/hugetlbpage   mm/hugetlbfs_reserv   mm/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
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/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
Sakari Ailus <sakari.ailus@linux.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>, 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   Documentation/devicetree/bindings/bus/
microsoft,vmbus.yaml   networking/device_drivers/ethernet/microsoft/netvsc
Documentation/virt/hyperv   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/net/mana include/uapi/linux/hyperv.h
net/vmw_vsock/hyperv_transport.c tools/hv/

* HYPERBUS SUPPORT

Mail
Vignesh Raghavendra <vigneshr@ti.com>

Reviewer
Tudor Ambarus <tudor.ambarus@linaro.org>

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 ADDRESS TRANSLATOR (ATR)

Mail
Tomi Valkeinen <tomi.valkeinen@ideasonboard.com>

Reviewer
Luca Ceresoli <luca.ceresoli@bootlin.com>

Mailing list
linux-i2c@vger.kernel.org

Status
Maintained

Files
drivers/i2c/i2c-atr.c include/linux/i2c-atr.h

* 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

Mail
> Andi Shyti <andi.shyti@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/ 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 ASPEED AST2600

Mail
Jeremy Kerr <jk@codeconstruct.com.au>

Status
Maintained

Files
Documentation/devicetree/bindings/i3c/aspeed,ast2600-i3c.yaml
drivers/i3c/master/ast2600-i3c-master.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

Status
Orphan

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/arch/ia64/ arch/ia64/

* IBM Operation Panel Input Driver

Mail
Eddie James <eajames@linux.ibm.com>

Mailing list
linux-input@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/input/ibm,op-panel.yaml   drivers/
input/misc/ibm-panel.c

* 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
Haren   Myneni   <haren@linux.ibm.com>,   Rick   Lindsley   <rick-lind@linux.ibm.com>

Reviewer
Nick   Child   <nnac123@linux.ibm.com>,   Dany   Madden   <danymadden@us.ibm.com>, Thomas Falcon <tlfalcon@linux.ibm.com>

Mailing list
netdev@vger.kernel.org

Status
Supported

Files
drivers/net/ethernet/ibm/ibmvnic.*

* IBM Power VFIO Support

Mail
Timothy Pearson <tpearson@raptorengineering.com>

Status
Supported

Files
drivers/vfio/vfio_iommu_spapr_tce.c

* IBM Power Virtual Ethernet Device Driver

Mail
Nick Child <nnac123@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>, Seth Forshee <sforshee@kernel.org>

Mailing list
linux-fsdevel@vger.kernel.org

Status
Maintained

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/vfs/idmapping.git

Files
filesystems/idmappings include/linux/mnt_idmapping.* tools/testing/selftests/mount_setattr/

* 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>, Miquel Raynal <miquel.raynal@bootlin.com>

Mailing list
linux-wpan@vger.kernel.org

Status
Maintained

Web-page
https://linux-wpan.org/

Patchwork
https://patchwork.kernel.org/project/linux-wpan/list/

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/wpan/wpan.git git
git://git.kernel.org/pub/scm/linux/kernel/git/wpan/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/

* IFCVF VIRTIO DATA PATH ACCELERATOR

Reviewer
Zhu Lingshan <lingshan.zhu@intel.com>

Files
drivers/vdpa/ifcvf/

* 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 LIGHT SENSOR GAIN-TIME-SCALE HELPERS

Mail
Matti Vaittinen <mazziesaccount@gmail.com>

Mailing list
linux-iio@vger.kernel.org

Status
Maintained

Files
drivers/iio/light/gain-time-scale-helper.c   drivers/iio/light/
gain-time-scale-helper.h

* 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/dt-bindings/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

---

* INDEX OF FURTHER KERNEL DOCUMENTATION

Mail
Carlos Bilbao <carlos.bilbao@amd.com>

Status
Maintained

Files
process/kernel-docs

* INDUSTRY PACK SUBSYSTEM (IPACK)

Mail
Vaibhav Gupta <vaibhavgupta40@gmail.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

* INFINEON PEB2466 ASoC CODEC

Mail
Herve Codina <herve.codina@bootlin.com>

Mailing list
alsa-devel@alsa-project.org (moderated for non-subscribers)

Status
Maintained

Files
Documentation/devicetree/bindings/sound/infineon,peb2466.yaml sound/soc/codecs/peb2466.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/trace/misc/rdma.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/
dt-bindings/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/ security/integrity/ima/

* 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 8254 COUNTER DRIVER

Mail
William Breathitt Gray <william.gray@linaro.org>

Mailing list
linux-iio@vger.kernel.org

Status
Maintained

Files
drivers/counter/i8254.c include/linux/i8254.h

* INTEL 8255 GPIO DRIVER

Mail
William Breathitt Gray <william.gray@linaro.org>

Mailing list
linux-gpio@vger.kernel.org

Status
Maintained

Files
drivers/gpio/gpio-i8255.c drivers/gpio/gpio-i8255.h

* INTEL ASoC DRIVERS

Mail
Cezary Rojewski <cezary.rojewski@intel.com>, Pierre-Louis Bossart <pierre-louis.bossart@linux.intel.com>, Liam Gird-wood <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
    Documentation/ABI/testing/sysfs-driver-intel-i915-hwmon   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
  https://www.intel.com/content/www/us/en/support.html

Patchwork
  https://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-elkhartlake.c 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 drivers/gpio/
gpio-tangier.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 <alexhung@gmail.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 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 IDXD DRIVER

Mail
Fenghua Yu <fenghua.yu@intel.com>, Dave Jiang <dave.jiang@intel.com>

Mailing list
dmaengine@vger.kernel.org

Status
Supported

Files
drivers/dma/idxd/* include/uapi/linux/idxd.h

* 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/

* 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/metafmt-intel-ipu3 drivers/staging/media/ipu3/

* 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 CRYPTO SUPPORT

Mail
> Corentin Labbe <clabbe@baylibre.com>

Mailing list
> linux-crypto@vger.kernel.org

Status
> Maintained

Files
> drivers/crypto/intel/ixp4xx/ixp4xx_crypto.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/intel/keembay/Kconfig drivers/crypto/intel/keembay/Makefile drivers/crypto/intel/keembay/keembay-ocs-aes-core.c drivers/crypto/intel/keembay/ocs-aes.c drivers/crypto/intel/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/intel/keembay/Kconfig   drivers/crypto/intel/keembay/
Makefile drivers/crypto/intel/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/intel/keembay/Kconfig   drivers/crypto/intel/keembay/
Makefile drivers/crypto/intel/keembay/keembay-ocs-hcu-core.c drivers/
crypto/intel/keembay/ocs-hcu.c drivers/crypto/intel/keembay/ocs-hcu.
h

* 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 include/uapi/linux/mei_uuid.h include/uapi/linux/
uuid.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* include/linux/mfd/intel-m10-bmc.h

* INTEL MAX10 BMC SECURE UPDATES

Mail
> Peter Colberg <peter.colberg@intel.com>

Mailing list
> linux-fpga@vger.kernel.org

Status
> Maintained

Files
> Documentation/ABI/testing/sysfs-driver-intel-m10-bmc-sec-update
> drivers/fpga/intel-m10-bmc-sec-update.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
Supported

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 PTP DFL ToD DRIVER

Mail
Tianfei Zhang <tianfei.zhang@intel.com>

Mailing list
linux-fpga@vger.kernel.org, netdev@vger.kernel.org

Status
Maintained

Files
drivers/ptp/ptp_dfl_tod.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 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
arch/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_

* 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

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/dinguyen/linux.git

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

* 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 TPMI DRIVER

Mail
Srinivas Pandruvada <srinivas.pandruvada@linux.intel.com>

Mailing list
platform-driver-x86@vger.kernel.org

Status
Maintained

Files
Documentation/ABI/testing/debugfs-tpmi   drivers/platform/x86/intel/
tpmi.c include/linux/intel_tpmi.h

* 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
arch/x86/intel_txt arch/x86/kernel/tboot.c include/linux/tboot.h

* 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
Darrick J. Wong <djwong@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 DMA-API LAYER

Mail
Robin Murphy <robin.murphy@arm.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/dma-iommu.c  drivers/iommu/dma-iommu.h  drivers/iommu/
iova.c include/linux/iova.h
```

* IOMMU SUBSYSTEM

Mail
Joerg Roedel <joro@8bytes.org>, Will Deacon <will@kernel.org>

Reviewer
Robin Murphy <robin.murphy@arm.com>

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
```

* IOMMUFD

Mail
Jason Gunthorpe <jgg@nvidia.com>, Kevin Tian <kevin.tian@intel.com>

Mailing list
iommu@lists.linux.dev

Status
Maintained

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/jgg/iommufd.git

Files
```
userspace-api/iommufd  drivers/iommu/iommufd/  include/linux/iommufd.h
include/uapi/linux/iommufd.h tools/testing/selftests/iommu/
```

* 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
```
include/linux/io_uring.h   include/linux/io_uring_types.h   include/
trace/events/io_uring.h include/uapi/linux/io_uring.h 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
Documentation/devicetree/bindings/ipmi/ driver-api/ipmi drivers/char/ipmi/ include/linux/ipmi* include/uapi/linux/ipmi*

* 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/

* IRON DEVICE AUDIO CODEC DRIVERS

Mail
Kiseok Jo <kiseok.jo@irondevice.com>

Mailing list
alsa-devel@alsa-project.org (moderated for non-subscribers)

Status
Maintained

Files
Documentation/devicetree/bindings/sound/irondevice,* sound/soc/ codecs/sma*

* IRQ DOMAINS (IRQ NUMBER MAPPING LIBRARY)

Mail
Thomas Gleixner <tglx@linutronix.de>

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
include/linux/group_cpus.h kernel/irq/ lib/group_cpus.c

* IRQCHIP DRIVERS

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
Documentation/devicetree/bindings/interrupt-controller/ drivers/
irqchip/

* ISA

Mail
William Breathitt Gray <william.gray@linaro.org>

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), netdev@vger.kernel.org

Status
> Maintained

Web-page
http://www.isdn4linux.de

Files
drivers/isdn/Kconfig drivers/isdn/Makefile drivers/isdn/hardware/
drivers/isdn/mISDN/

* ISOFS FILESYSTEM

Mail
Jan Kara <jack@suse.cz>

Mailing list
linux-fsdevel@vger.kernel.org

Status
Maintained

Files
filesystems/isofs fs/isofs/

* 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 <neil.armstrong@linaro.org>

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
> Odd Fixes

Web-page
> http://jfs.sourceforge.net/

SCM
> git https://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 mm/kasan/ scripts/Makefile. kasan

* KCONFIG

Mail
Masahiro Yamada <masahiroy@kernel.org>

Mailing list
linux-kbuild@vger.kernel.org

Status
Maintained

Patchwork
https://patchwork.kernel.org/project/linux-kbuild/list/

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/masahiroy/linux-kbuild.git kbuild

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>

Reviewer
    Nathan   Chancellor   <nathan@kernel.org>,   Nick   Desaulniers   <nde-
    saulniers@google.com>, Nicolas Schier <nicolas@fjasle.eu>

Mailing list
    linux-kbuild@vger.kernel.org

Status
    Maintained

Patchwork
    https://patchwork.kernel.org/project/linux-kbuild/list/

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/ usr/

* KERNEL HARDENING (not covered by other areas)

Mail
Kees Cook <keescook@chromium.org>

Mailing list
linux-hardening@vger.kernel.org

Status
Supported

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git for-next/hardening

Files
Documentation/ABI/testing/sysfs-kernel-oops_count Documentation/ABI/
testing/sysfs-kernel-warn_count   include/linux/overflow.h   include/
linux/randomize_kstack.h mm/usercopy.c

Content regex
\b(add|choose)_random_kstack_offset\b \b__check_(object_size|heap_object)\
b

* 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>

Reviewer
Neil Brown <neilb@suse.de>, Olga Kornievskaia <kolga@netapp.com>, Dai Ngo
<Dai.Ngo@oracle.com>, Tom Talpey <tom@talpey.com>

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
> Documentation/filesystems/nfs/ fs/exportfs/ fs/lockd/ fs/nfs_common/
> fs/nfsd/ include/linux/lockd/ include/linux/sunrpc/ include/trace/
> events/rpcgss.h include/trace/events/rpcrdma.h include/trace/events/
> sunrpc.h include/trace/misc/fs.h include/trace/misc/nfs.h include/
> trace/misc/sunrpc.h include/uapi/linux/nfsd/ include/uapi/linux/
> sunrpc/ net/sunrpc/

* 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>

Reviewer
> Sergey Senozhatsky <senozhatsky@chromium.org>, Tom Talpey
> <tom@talpey.com>

Mailing list
> linux-cifs@vger.kernel.org

Status
Maintained

SCM
git git://git.samba.org/ksmbd.git

Files
filesystems/smb/ksmbd `fs/smb/common/ fs/smb/server/`

* KERNEL UNIT TESTING FRAMEWORK (KUnit)

Mail
Brendan Higgins <brendanhiggins@google.com>, David Gow <david-gow@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/

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/shuah/linux-kselftest.git kunit git git://git.kernel.org/pub/scm/linux/kernel/git/shuah/linux-kselftest.git kunit-fixes

Files
`Documentation/dev-tools/kunit/ include/kunit/ lib/kunit/ rust/kernel/`
`kunit.rs scripts/rustdoc_test_* 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>, Oliver Upton <oliver.upton@linux.dev>

Reviewer
James Morse <james.morse@arm.com>, Suzuki K Poulose
<suzuki.poulose@arm.com>, Zenghui Yu <yuzenghui@huawei.com>

Mailing list
linux-arm-kernel@lists.infradead.org (moderated for non-subscribers), kv-
marm@lists.linux.dev

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>

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)

Mail
Michael Ellerman <mpe@ellerman.id.au>

Reviewer
Nicholas Piggin <npiggin@gmail.com>

Mailing list
linuxppc-dev@lists.ozlabs.org, kvm@vger.kernel.org

Status
Maintained (Book3S 64-bit HV) Odd fixes (Book3S 64-bit PR) Orphan (Book3E and 32-bit)

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 https://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

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

P

process/maintainer-kvm-x86

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/*/   tools/testing/selftests/kvm/*/x86_64/   tools/testing/
selftests/kvm/x86_64/
```

* 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-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-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/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 <neil.armstrong@linaro.org>

Mailing list
linux-amlogic@lists.infradead.org

Status
Maintained

Files
Documentation/devicetree/bindings/mfd/khadas,mcu.yaml   drivers/mfd/
khadas-mcu.c   drivers/thermal/khadas_mcu_fan.c   include/linux/mfd/
khadas-mcu.h

* KIONIX/ROHM KX022A ACCELEROMETER

Mail
Matti Vaittinen <mazziesaccount@gmail.com>

Mailing list
linux-iio@vger.kernel.org

Status
Supported

Files
drivers/iio/accel/kionix-kx022a*

* 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

* KMSAN

Mail
Alexander Potapenko <glider@google.com>

Reviewer
Marco Elver <elver@google.com>, Dmitry Vyukov <dvyukov@google.com>

Mailing list
kasan-dev@googlegroups.com

Status
Maintained

Files
dev-tools/kmsan arch/*/include/asm/kmsan.h arch/*/mm/kmsan_* include/
linux/kmsan*.h lib/Kconfig.kmsan mm/kmsan/ scripts/Makefile.kmsan

* 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>

Mailing list
linux-kernel@vger.kernel.org, linux-trace-kernel@vger.kernel.org

Status
    Maintained

Patchwork
    https://patchwork.kernel.org/project/linux-trace-kernel/list/

SCM
    git git://git.kernel.org/pub/scm/linux/kernel/git/trace/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

* KTZ8866 BACKLIGHT DRIVER

Mail
Jianhua Lu <lujianhua000@gmail.com>

Status
Maintained

Files
Documentation/devicetree/bindings/leds/backlight/kinetic,ktz8866.
yaml drivers/video/backlight/ktz8866.c

* 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/um/include/asm/kvm_para.h arch/x86/include/asm/kvm_para.h arch/
x86/include/asm/pvclock-abi.h arch/x86/include/uapi/asm/kvm_para.h
arch/x86/kernel/kvm.c arch/x86/kernel/kvmclock.c include/asm-generic/
kvm_para.h include/linux/kvm_para.h include/uapi/asm-generic/
kvm_para.h include/uapi/linux/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/hyperv.*

* KVM X86 Xen (KVM/Xen)

Mail
David Woodhouse <dwmw2@infradead.org>, Paul Durrant <paul@xen.org>, 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/xen.*
```

* 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://git.kernel.org/pub/scm/linux/kernel/git/mic/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>, Lee Jones <lee@kernel.org>

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/ Documentation/leds/ drivers/
leds/ include/dt-bindings/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/ti/davinci/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 AHCI SYNOPSYS DWC CONTROLLER DRIVER

Mail
Serge Semin <fancer.lancer@gmail.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/devicetree/bindings/ata/baikal,bt1-ahci.yaml
Documentation/devicetree/bindings/ata/snps,dwc-ahci.yaml   drivers/
ata/ahci_dwc.c

* 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 <dlemoal@kernel.org>

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 scripts/spdxexclude

* LINEAR RANGES HELPERS

Mail
Mark Brown <broonie@kernel.org>

Reviewer
Matti Vaittinen <mazziesaccount@gmail.com>

Files
include/linux/linear_range.h lib/linear_ranges.c lib/test_linear_ranges.c

* LINUX FOR POWER MACINTOSH

Mailing list
linuxppc-dev@lists.ozlabs.org

Status
Orphan

Files
arch/powerpc/platforms/powermac/ drivers/macintosh/

Excluded
drivers/macintosh/adb-iop.c drivers/macintosh/via-macii.c

* LINUX FOR POWERPC (32-BIT AND 64-BIT)

Mail
Michael Ellerman <mpe@ellerman.id.au>

Reviewer
Nicholas Piggin <npiggin@gmail.com>, Christophe Leroy <christophe.leroy@csgroup.eu>

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/cache/freescale-l2cache.txt
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/

* LINUX-NEXT TREE

Mail
Stephen Rothwell <sfr@canb.auug.org.au>

Mailing list
linux-next@vger.kernel.org

Status
Supported

bugs
mailto:linux-next@vger.kernel.org and the appropriate development tree

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/next/linux-next.git/

* LIS3LV02D ACCELEROMETER DRIVER

Mail
Eric Piel <eric.piel@tremplin-utc.net>

Status
Maintained

Files
misc-devices/lis3lv02d drivers/misc/lis3lv02d/ drivers/platform/x86/hp/
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 drivers/mmc/host/litex_mmc.c drivers/net/ethernet/
litex/* drivers/soc/litex/* drivers/tty/serial/liteuart.c include/
linux/litex.h

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 for-next/hardening

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
Documentation/arch/loongarch/ Documentation/translations/zh_CN/arch/
loongarch/ arch/loongarch/ drivers/*/*loongarch*

* LOONGSON GPIO DRIVER

Mail
Yinbo Zhu <zhuyinbo@loongson.cn>

Mailing list
linux-gpio@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/gpio/loongson,ls-gpio.yaml
drivers/gpio/gpio-loongson-64bit.c

* LOONGSON LS2X I2C DRIVER

Mail
Binbin Zhou <zhoubinbin@loongson.cn>

Mailing list
linux-i2c@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/i2c/loongson,ls2x-i2c.yaml
drivers/i2c/busses/i2c-ls2x.c

* LOONGSON-2 SOC SERIES CLOCK DRIVER

Mail
Yinbo Zhu <zhuyinbo@loongson.cn>

Mailing list
linux-clk@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/clock/loongson,ls2k-clk.yaml
drivers/clk/clk-loongson2.c   include/dt-bindings/clock/loongson,
ls2k-clk.h

* LOONGSON SPI DRIVER

Mail
Yinbo Zhu <zhuyinbo@loongson.cn>

Mailing list
linux-spi@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/spi/loongson,ls2k-spi.yaml
drivers/spi/spi-loongson-core.c   drivers/spi/spi-loongson-pci.c
drivers/spi/spi-loongson-plat.c drivers/spi/spi-loongson.h

* LOONGSON-2 SOC SERIES GUTS DRIVER

Mail
Yinbo Zhu <zhuyinbo@loongson.cn>

Mailing list
loongarch@lists.linux.dev

Status
Maintained

Files
Documentation/devicetree/bindings/hwinfo/loongson,ls2k-chipid.yaml
drivers/soc/loongson/loongson2_guts.c

* LOONGSON-2 SOC SERIES PM DRIVER

Mail
Yinbo Zhu <zhuyinbo@loongson.cn>

Mailing list
linux-pm@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/soc/loongson/loongson,ls2k-pmc.
yaml drivers/soc/loongson/loongson2_pm.c

* LOONGSON-2 SOC SERIES PINCTRL DRIVER

Mail
zhanghongchen <zhanghongchen@loongson.cn>, Yinbo Zhu <zhuy-inbo@loongson.cn>

Mailing list
linux-gpio@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/pinctrl/loongson,ls2k-pinctrl.
yaml drivers/pinctrl/pinctrl-loongson2.c

* LOONGSON-2 SOC SERIES THERMAL DRIVER

Mail
zhanghongchen <zhanghongchen@loongson.cn>, Yinbo Zhu <zhuy-inbo@loongson.cn>

Mailing list
linux-pm@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/thermal/loongson,ls2k-thermal.
yaml drivers/thermal/loongson2_thermal.c

* 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
https://ez.analog.com/linux-software-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 Kodanev <alexey.kodanev@oracle.com>

Mailing list
ltp@lists.linux.it (subscribers-only)

Status
Maintained

Web-page
http://linux-test-project.github.io/

SCM
git https://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/virtual/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
Documentation/devicetree/bindings/mailbox/ drivers/mailbox/ include/
dt-bindings/mailbox/ include/linux/mailbox_client.h include/linux/
mailbox_controller.h

* 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
Documentation/devicetree/bindings/mailbox/arm,mhuv2.yaml   drivers/
mailbox/arm_mhuv2.c include/linux/mailbox/arm_mhuv2_message.h

* 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

* 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/

* MAPLE TREE

Mail
Liam R. Howlett <Liam.Howlett@oracle.com>

Mailing list
maple-tree@lists.infradead.org, linux-mm@kvack.org

Status
Supported

Files
core-api/maple_tree include/linux/maple_tree.h include/trace/events/ maple_tree.h lib/maple_tree.c lib/test_maple_tree.c tools/testing/ radix-tree/linux/maple_tree.h tools/testing/radix-tree/maple.c

* 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>

Mailing list
netdev@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/net/dsa/marvell.txt network-ing/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/marvell,armada-3700-utmi-phy. yaml Documentation/devicetree/bindings/phy/phy-mvebu-comphy.txt 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.yaml drivers/net/
ethernet/marvell/mvpp2/

* MARVELL MWIFIEX WIRELESS DRIVER

Mail
Brian Norris <briannorris@chromium.org>

Mailing list
linux-wireless@vger.kernel.org

Status
Odd Fixes

Files
drivers/net/wireless/marvell/mwifiex/

* MARVELL MWL8K WIRELESS DRIVER

Mailing list
linux-wireless@vger.kernel.org

Status
Orphan

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
drivers/mtd/nand/raw/marvell_nand.c

* MARVELL OCTEON ENDPOINT DRIVER

Mail
Veerasenareddy Burru <vburru@marvell.com>, Sathesh Edara <sedara@marvell.com>

Mailing list
netdev@vger.kernel.org

Status
Supported

Files
drivers/net/ethernet/marvell/octeon_ep

* 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 <taras.chornyi@plvision.eu>

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*

* 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

* MAX31827 TEMPERATURE SWITCH DRIVER

Mail
> Daniel Matyas <daniel.matyas@analog.com>

Mailing list
> linux-hwmon@vger.kernel.org

Status
> Supported

Web-page
> http://ez.analog.com/community/linux-device-drivers

Files
> Documentation/devicetree/bindings/hwmon/adi,max31827.yaml   hw-
> mon/max31827 drivers/hwmon/max31827.c

* 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 MAX11205 DRIVER

Mail
Ramona Bolboaca <ramona.bolboaca@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/maxim,max11205.yaml
drivers/iio/adc/max11205.c

* MAXIM MAX17040 FAMILY FUEL GAUGE DRIVERS

Reviewer
Iskren Chernev <iskren.chernev@gmail.com>, Krzysztof Ko-
zlowski <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 Ko-
zlowski <krzysztof.kozlowski@linaro.org>, Marek Szyprowski
<m.szyprowski@samsung.com>, Sebastian Krzyszkowiak <sebas-
tian.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 MAX30208 TEMPERATURE SENSOR DRIVER

Mail
    Rajat Khandelwal <rajat.khandelwal@linux.intel.com>

Mailing list
    linux-iio@vger.kernel.org

Status
    Maintained

Files
    drivers/iio/temperature/max30208.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>

Mailing list
linux-pm@vger.kernel.org

Status
Maintained

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>

Mailing list
linux-kernel@vger.kernel.org

Status
Maintained

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
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

* 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

* 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

* 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 <mani-vannan.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
    Stefan Schmidt <stefan@datenfreihafen.org>

Mailing list
    linux-wpan@vger.kernel.org

Status
    Odd Fixes

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

* MDIO REGMAP DRIVER

Mail
Maxime Chevallier <maxime.chevallier@bootlin.com>

Mailing list
netdev@vger.kernel.org

Status
Maintained

Files
drivers/net/mdio/mdio-regmap.c include/linux/mdio/mdio-regmap.h

* MEASUREMENT COMPUTING CIO-DAC IIO DRIVER

Mail
William Breathitt Gray <william.gray@linaro.org>

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 IMX7/8

Mail

Rui Miguel Silva <rmfrfs@gmail.com>, Laurent Pinchart <laurent.pinchart@ideasonboard.com>, Martin Kepplinger <martin.kepplinger@puri.sm>

Reviewer

Purism Kernel Team <kernel@puri.sm>

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 Documentation/devicetree/bindings/media/nxp, imx8mq-mipi-csi2.yaml drivers/media/platform/nxp/imx-mipi-csis.c drivers/media/platform/nxp/imx7-media-csi.c drivers/media/platform/ nxp/imx8mq-mipi-csi2.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/dt-bindings/
media/  include/linux/platform_data/media/  include/media/  include/
uapi/linux/dvb/  include/uapi/linux/ivtv* include/uapi/linux/media.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>, Lorenzo Bianconi <lorenzo@kernel.org>

Mailing list
netdev@vger.kernel.org

Status
Maintained

Files
  drivers/net/ethernet/mediatek/

* MEDIATEK ETHERNET PCS DRIVER

Mail
  Alexander Couzens <lynxis@fe80.eu>, Daniel Golle <daniel@makrotopia.org>

Mailing list
  netdev@vger.kernel.org

Status
  Maintained

Files
  drivers/net/pcs/pcs-mtk-lynxi.c include/linux/pcs/pcs-mtk-lynxi.h

* MEDIATEK ETHERNET PHY DRIVERS

Mail
  Daniel Golle <daniel@makrotopia.org>, Qingfang Deng <dqfext@gmail.com>,
  SkyLake Huang <SkyLake.Huang@mediatek.com>

Mailing list
  netdev@vger.kernel.org

Status
  Maintained

Files
  drivers/net/phy/mediatek-ge-soc.c drivers/net/phy/mediatek-ge.c

* 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/mediatek,mt*-port.h 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 KEYPAD DRIVER

Mail
Mattijs Korpershoek <mkorpershoek@baylibre.com>

Status
Supported

Files
Documentation/devicetree/bindings/input/mediatek,mt6779-keypad.yaml drivers/input/keyboard/mt6779-keypad.c

* 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>, Yunfei Dong <yunfei.dong@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

SCM
git https://github.com/nbd168/wireless

Files
Documentation/devicetree/bindings/net/wireless/mediatek,mt76.yaml
drivers/net/wireless/mediatek/mt76/

* MEDIATEK MT7601U WIRELESS LAN DRIVER

Mail
Jakub Kicinski <kuba@kernel.org>

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 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 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/mediatek,mt7621-i2c.yaml
drivers/i2c/busses/i2c-mt7621.c

* MEDIATEK MTMIPS CLOCK DRIVER

Mail
Sergio Paracuellos <sergio.paracuellos@gmail.com>

Status
Maintained

Files
Documentation/devicetree/bindings/clock/mediatek,mtmips-sysc.yaml
drivers/clk/ralink/clk-mtmips.c

* MEDIATEK NAND CONTROLLER DRIVER

Mailing list
linux-mtd@lists.infradead.org

Status
Orphan

Files
Documentation/devicetree/bindings/mtd/mediatek,mtk-nfc.yaml 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
Arınç ÜNAL <arinc.unal@arinc9.com>, Daniel Golle <daniel@makrotopia.org>,
Landen Chao <Landen.Chao@mediatek.com>, DENG Qingfang
<dqfext@gmail.com>, Sean Wang <sean.wang@mediatek.com>

Mailing list
netdev@vger.kernel.org

Status
Maintained

Files
drivers/net/dsa/mt7530-mdio.c drivers/net/dsa/mt7530-mmio.c 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>, Asmaa Mnebhi <asmaa@nvidia.com>

Mailing list
linux-i2c@vger.kernel.org

Status
Supported

Files
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>,	Ilpo	Järvinen
	<ilpo.jarvinen@linux.intel.com>, Mark Gross <markgross@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 AND MEMORY MANAGEMENT INITIALIZATION

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 mm/mm_init.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

Status
Maintained

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/chanwoo/linux.git

Files
```
drivers/devfreq/tegra30-devfreq.c
```

* MEMORY HOT(UN)PLUG

Mail
David Hildenbrand <david@redhat.com>, Oscar Salvador <osalvador@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 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://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/gfp_types.h include/linux/memory_hotplug.h include/linux/mm.h include/linux/mmzone.h include/

```
linux/pagewalk.h include/linux/rmap.h include/trace/events/ksm.h mm/
tools/mm/ tools/testing/selftests/mm/
```

* 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/

* MEMSENSING MICROSYSTEMS MSA311 DRIVER

Mail
Dmitry Rokosov <ddrokosov@sberdevices.ru>

Mailing list
linux-iio@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/iio/accel/memsensing,msa311.yaml drivers/iio/accel/msa311.c

* 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 <neil.armstrong@linaro.org>

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/cec/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 <neil.armstrong@linaro.org>

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.yaml
drivers/mtd/nand/raw/meson_*

* MESON VIDEO DECODER DRIVER FOR AMLOGIC SOCS

Mail
   Neil Armstrong <neil.armstrong@linaro.org>

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
   Robert Marko <robert.marko@sartura.hr>

Status
   Maintained

Files
   arch/arm64/boot/dts/marvell/armada-3720-eDPU.dts   arch/arm64/boot/
   dts/marvell/armada-3720-uDPU.*

* MHI BUS

Mail
   Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

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/ drivers/pci/endpoint/functions/pci-epf-mhi.c 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/

* MICROBLAZE TMR INJECT

Mail
Appana Durga Kedareswara rao <appana.durga.kedareswara.rao@amd.com>

Status
Supported

Files
Documentation/devicetree/bindings/misc/xlnx,tmr-inject.yaml drivers/
misc/xilinx_tmr_inject.c

* MICROBLAZE TMR MANAGER

Mail
Appana Durga Kedareswara rao <appana.durga.kedareswara.rao@amd.com>

Status
Supported

Files
Documentation/ABI/testing/sysfs-driver-xilinx-tmr-manager
Documentation/devicetree/bindings/misc/xlnx,tmr-manager.yaml
drivers/misc/xilinx_tmr_manager.c

* MICROCHIP AT91 DMA DRIVERS

Mail
Ludovic Desroches <ludovic.desroches@microchip.com>, Tudor Ambarus <tudor.ambarus@linaro.org>

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_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/serial/atmel,at91-usart.yaml
    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/serial/atmel,at91-usart.yaml
    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/serial/atmel,at91-usart.yaml
    drivers/spi/spi-at91-usart.c

* MICROCHIP AUDIO ASOC DRIVERS

Mail
Claudiu Beznea <claudiu.beznea@tuxon.dev>

Mailing list
alsa-devel@alsa-project.org (moderated for non-subscribers)

Status
Supported

Files
```
Documentation/devicetree/bindings/sound/atmel*        Documentation/
devicetree/bindings/sound/axentia,tse850-pcm5142.txt  Documentation/
devicetree/bindings/sound/microchip,sama7g5-*         Documentation/
devicetree/bindings/sound/mikroe,mikroe-proto.txt 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/microchip/microchip-csi2dc.c
```

* MICROCHIP ECC DRIVER

Mail
Tudor Ambarus <tudor.ambarus@linaro.org>

Mailing list
linux-crypto@vger.kernel.org

Status
Maintained

Files
```
drivers/crypto/atmel-ecc.*
```

* MICROCHIP EIC DRIVER

Mail
Claudiu Beznea <claudiu.beznea@tuxon.dev>

Mailing list
linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status
Supported

Files
```
Documentation/devicetree/bindings/interrupt-controller/microchip,
sama7g5-eic.yaml 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/microchip/microchip-isc*        drivers/media/
platform/microchip/microchip-sama*-isc*        drivers/staging/media/
deprecated/atmel/atmel-isc*  drivers/staging/media/deprecated/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
Documentation/devicetree/bindings/net/dsa/microchip,lan937x.yaml
drivers/net/dsa/microchip/* include/linux/dsa/ksz_common.h include/
linux/platform_data/microchip-ksz.h net/dsa/tag_ksz.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 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 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@tuxon.dev>

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
Maintained

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@linaro.org>

Mailing list
linux-mtd@lists.infradead.org

Status
Supported

Files
   Documentation/devicetree/bindings/mtd/atmel-nand.txt   drivers/mtd/
   nand/raw/atmel/*

* MICROCHIP OTPC DRIVER

Mail
   Claudiu Beznea <claudiu.beznea@tuxon.dev>

Mailing list
   linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status
   Supported

Files
   Documentation/devicetree/bindings/nvmem/microchip,sama7g5-otpc.yaml
   drivers/nvmem/microchip-otpc.c include/dt-bindings/nvmem/microchip,
   sama7g5-otpc.h

* MICROCHIP PCI1XXXX GP DRIVER

Mail
   Vaibhaav Ram T.L <vaibhaavram.tl@microchip.com>, Kumaravel Thiagarajan
   <kumaravel.thiagarajan@microchip.com>

Mailing list
   linux-gpio@vger.kernel.org

Status
   Supported

Files
   drivers/misc/mchp_pci1xxxx/mchp_pci1xxxx_gp.c   drivers/
   misc/mchp_pci1xxxx/mchp_pci1xxxx_gp.h   drivers/misc/
   mchp_pci1xxxx/mchp_pci1xxxx_gpio.c   drivers/misc/mchp_pci1xxxx/
   mchp_pci1xxxx_otpe2p.c

* MICROCHIP PCI1XXXX I2C DRIVER

Mail
   Tharun Kumar P <tharunkumar.pasumarthi@microchip.com>, Kumaravel Thia-
   garajan <kumaravel.thiagarajan@microchip.com>, Microchip Linux Driver Sup-
   port <UNGLinuxDriver@microchip.com>

Mailing list
   linux-i2c@vger.kernel.org

Status
   Maintained

Files
   drivers/i2c/busses/i2c-mchp-pci1xxxx.c

* MICROCHIP PCIe UART DRIVER

Mail
Kumaravel Thiagarajan <kumaravel.thiagarajan@microchip.com>, Tharun Kumar P <tharunkumar.pasumarthi@microchip.com>

Mailing list
linux-serial@vger.kernel.org

Status
Maintained

Files
drivers/tty/serial/8250/8250_pci1xxxx.c

* MICROCHIP POLARFIRE FPGA DRIVERS

Mail
Conor Dooley <conor.dooley@microchip.com>

Reviewer
Vladimir Georgiev <v.georgiev@metrotek.ru>

Mailing list
linux-fpga@vger.kernel.org

Status
Supported

Files
Documentation/devicetree/bindings/fpga/microchip,mpf-spi-fpga-mgr.yaml drivers/fpga/microchip-spi.c

* MICROCHIP PWM DRIVER

Mail
Claudiu Beznea <claudiu.beznea@tuxon.dev>

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@tuxon.dev>

Status
Supported

Files
Documentation/devicetree/bindings/power/reset/atmel,sama5d2-shdwc.
yaml drivers/power/reset/at91-sama5d2_shdwc.c

* MICROCHIP SOC DRIVERS

Mail
Conor Dooley <conor@kernel.org>

Status
Supported

SCM
git https://git.kernel.org/pub/scm/linux/kernel/git/conor/linux.git/

Files
drivers/soc/microchip/

* MICROCHIP SPI DRIVER

Mail
Ryan Wanner <ryan.wanner@microchip.com>

Status
Supported

Files
drivers/spi/spi-atmel.*

* MICROCHIP SSC DRIVER

Mail
Claudiu Beznea <claudiu.beznea@tuxon.dev>

Mailing list
linux-arm-kernel@lists.infradead.org (moderated for non-subscribers)

Status
Supported

Files
Documentation/devicetree/bindings/misc/atmel-ssc.txt   drivers/misc/
atmel-ssc.c include/linux/atmel-ssc.h

* 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

* 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.yaml   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@tuxon.dev>

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/phy/mscc,vsc7514-serdes.yaml 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 MANA RDMA DRIVER

Mail
Long Li <longli@microsoft.com>, Ajay Sharma <sharmaajay@microsoft.com>

Mailing list
linux-rdma@vger.kernel.org

Status
Supported

Files
drivers/infiniband/hw/mana/   include/net/mana   include/uapi/rdma/
mana-abi.h

* MICROSOFT SURFACE AGGREGATOR TABLET-MODE SWITCH

Mail
Maximilian Luz <luzmaximilian@gmail.com>

Mailing list
platform-driver-x86@vger.kernel.org

Status
Maintained

Files
drivers/platform/surface/surface_aggregator_tabletsw.c

* 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>, Ilpo Järvinen
<ilpo.jarvinen@linux.intel.com>, Mark Gross <markgross@kernel.org>, Maxi-
milian 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 HUB DRIVER

Mail
Maximilian Luz <luzmaximilian@gmail.com>

Mailing list
platform-driver-x86@vger.kernel.org

Status
Maintained

Files
drivers/platform/surface/surface_aggregator_hub.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/marvell/armada-xp-crs305-1g-4s-bit.dts arch/
arm/boot/dts/marvell/armada-xp-crs305-1g-4s.dts arch/arm/boot/
dts/marvell/armada-xp-crs326-24g-2s-bit.dts arch/arm/boot/dts/
marvell/armada-xp-crs326-24g-2s.dts arch/arm/boot/dts/marvell/
armada-xp-crs328-4c-20s-4s-bit.dts arch/arm/boot/dts/marvell/
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/arch/mips/
> arch/mips/ drivers/platform/mips/ include/dt-bindings/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*

* 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/marvell/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 <pe-
terz@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/kmod.h   include/linux/module.h   kernel/module/   lib/
test_kmod.c scripts/module* tools/testing/selftests/kmod/

* 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/hwmon/pmbus/
mpq7932.c 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

* MOST(R) TECHNOLOGY DRIVER

Mail
Parthiban Veerasooran <parthiban.veerasooran@microchip.com>, Christian
Gromm <christian.gromm@microchip.com>

Status
Maintained

Files
Documentation/ABI/testing/configfs-most   Documentation/ABI/testing/
sysfs-bus-most drivers/most/ drivers/staging/most/ include/linux/
most.h

* MOTORCOMM PHY DRIVER

Mail
Peter Geis <pgwipeout@gmail.com>, Frank <Frank.Sae@motor-comm.com>

Mailing list
netdev@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/net/motorcomm,yt8xxx.yaml 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
Stefan Schmidt <stefan@datenfreihafen.org>

Mailing list
linux-wpan@vger.kernel.org

Status
Odd Fixes

Files
`Documentation/devicetree/bindings/net/ieee802154/mrf24j40.txt`
`drivers/net/ieee802154/mrf24j40.c`

* MSI EC DRIVER

Mail
Nikita Kravets <teackot@gmail.com>

Mailing list
platform-driver-x86@vger.kernel.org

Status
Maintained

Web-page
    https://github.com/BeardOverflow/msi-ec

Files
    drivers/platform/x86/msi-ec.*

* 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*

* 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

* 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@kernel.org>

Status
Maintained

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)

Mail
> Jon Mason <jdmason@kudzu.us>

Mailing list
> netdev@vger.kernel.org

Status
> Supported

Files
> networking/device_drivers/ethernet/neterion/s2io   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
https://linux-ax25.in-berlin.de

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
Louis Peens <louis.peens@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
```

Excluded
```
drivers/net/wireless/
```

* 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>, Florian Fainelli <f.fainelli@gmail.com>,
Vladimir Oltean <olteanv@gmail.com>

Status
Maintained

Files
```
Documentation/devicetree/bindings/net/dsa/ Documentation/devicetree/
bindings/net/ethernet-switch-port.yaml    Documentation/devicetree/
bindings/net/ethernet-switch.yaml  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 <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/

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
core-api/netlink Documentation/netlink/ Documentation/networking/ *process/maintainer-netdev* Documentation/userspace-api/netlink/ 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/net/ tools/testing/selftests/net/

Excluded
net/bluetooth/

* NETWORKING [IPSEC]

Mail
Steffen Klassert <steffen.klassert@secunet.com>, Herbert Xu <herbert@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>, 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
Supported

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 [MACSEC]

Mail
Sabrina Dubroca <sd@queasysnail.net>

Mailing list
netdev@vger.kernel.org

Status
Maintained

Files
```
drivers/net/macsec.c      include/net/macsec.h      include/uapi/linux/
if_macsec.h
```

Content regex
```
macsec \bmdo_
```

* NETWORKING [MPTCP]

Mail
Matthieu   Baerts   <matttbe@kernel.org>,   Mat   Martineau   <martineau@kernel.org>

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

SCM
git https://github.com/multipath-tcp/mptcp_net-next.git export-net git https://github.com/multipath-tcp/mptcp_net-next.git export

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
netdev@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/net/nfc/ drivers/nfc/ 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

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
Documentation/filesystems/nfs/ 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/

* 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 https://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
Alexandru Ciobotaru <alcioa@amazon.com>

Mailing list
linux-kernel@vger.kernel.org, The AWS Nitro Enclaves Team <aws-nitro-enclaves-devel@amazon.com>

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 <frederic@kernel.org>, 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>, Thomas Weißschuh <linux@weissschuh.net>

Status
Maintained

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/nolibc/linux-nolibc.git

Files
tools/include/nolibc/ tools/testing/selftests/nolibc/

* NOVATEK NVT-TS I2C TOUCHSCREEN DRIVER

Mail
Hans de Goede <hdegoede@redhat.com>

Mailing list
linux-input@vger.kernel.org

Status
Maintained

Files
drivers/input/touchscreen/novatek-nvt-ts.c

* 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 https://github.com/jonmason/ntb.git

Files
```
drivers/net/ntb_netdev.c drivers/ntb/ drivers/pci/endpoint/functions/
pci-epf-*ntb.c   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>

Reviewer
Namjae Jeon <linkinjeon@kernel.org>

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   include/linux/
platform_data/x86/nvidia-wmi-ec-backlight.h

* 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://git.infradead.org/nvme.git

Files
Documentation/nvme/ drivers/nvme/common/ drivers/nvme/host/ include/
linux/nvme-*.h include/linux/nvme.h include/uapi/linux/nvme_ioctl.h

* NVM EXPRESS FABRICS AUTHENTICATION

Mail
Hannes Reinecke <hare@suse.de>

Mailing list
linux-nvme@lists.infradead.org

Status
Supported

Files
drivers/nvme/host/auth.c drivers/nvme/target/auth.c drivers/nvme/
target/fabrics-cmd-auth.c include/linux/nvme-auth.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 HARDWARE MONITORING SUPPORT

Mail
Guenter Roeck <linux@roeck-us.net>

Mailing list
linux-nvme@lists.infradead.org

Status
Supported

Files
drivers/nvme/host/hwmon.c

* 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://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 BLUETOOTH WIRELESS DRIVERS

Mail
    Amitkumar   Karwar   <amitkumar.karwar@nxp.com>,   Neeraj   Kale
    <neeraj.sanjaykale@nxp.com>

Status
    Maintained

Files
    Documentation/devicetree/bindings/net/bluetooth/nxp,88w8987-bt.yaml
    drivers/bluetooth/btnxpuart.c

* 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 7D/6SX/6UL/93 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
Documentation/devicetree/bindings/iio/adc/nxp,imx93-adc.yaml
drivers/iio/adc/imx7d_adc.c   drivers/iio/adc/imx93_adc.c   drivers/
iio/adc/vf610_adc.c

* NXP i.MX 8M ISI DRIVER

Mail
Laurent Pinchart <laurent.pinchart@ideasonboard.com>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/media/nxp,imx8-isi.yaml drivers/
media/platform/nxp/imx8-isi/

* NXP i.MX 8MP DW100 V4L2 DRIVER

Mail
Xavier Roumegue <xavier.roumegue@oss.nxp.com>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/media/nxp,dw100.yaml userspace-
api/media/drivers/dw100 drivers/media/platform/nxp/dw100/ include/
uapi/linux/dw100.h

* 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 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

* NXP i.MX CLOCK DRIVERS

Mail
> Abel Vesa <abelvesa@kernel.org>

Reviewer
> Peng Fan <peng.fan@nxp.com>

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 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-NCI NFC DRIVER

Status
Orphan

Files
Documentation/devicetree/bindings/net/nfc/nxp,nci.yaml drivers/nfc/nxp-nci

* 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

* 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@resnulli.us>

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
    include/linux/objtool*.h tools/objtool/

* OCELOT ETHERNET SWITCH DRIVER

Mail
    Vladimir   Oltean   <vladimir.oltean@nxp.com>,   Claudiu   Manoil
    <claudiu.manoil@nxp.com>,   Alexandre   Belloni   <alexan-
    dre.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/*

* OCELOT EXTERNAL SWITCH CONTROL

Mail
    Colin Foster <colin.foster@in-advantage.com>

Status
    Supported

Files
    Documentation/devicetree/bindings/mfd/mscc,ocelot.yaml drivers/mfd/
    ocelot* drivers/net/dsa/ocelot/ocelot_ext.c include/linux/mfd/ocelot.
    h

* 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/ti/omap/

* OMAP DISPLAY SUBSYSTEM and FRAMEBUFFER SUPPORT (DSS2)

Mailing list
linux-omap@vger.kernel.org, linux-fbdev@vger.kernel.org

Status
Orphan

Files
arch/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/ti/omap/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/   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

Documentation/devicetree/bindings/arm/ti/omap.yaml arch/arm/configs/ omap2plus_defconfig arch/arm/mach-omap2/ drivers/bus/ti-sysc.c drivers/gpio/gpio-tps65219.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/tps65219.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/tps65219-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/

* OMNIVISION OG01A1B SENSOR DRIVER

Mail

Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list

linux-media@vger.kernel.org

Status

Maintained

Files

drivers/media/i2c/og01a1b.c

* OMNIVISION OV01A10 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/ov01a10.c

* OMNIVISION OV02A10 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/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 OV08X40 SENSOR DRIVER

Mail
Jason Chen <jason.z.chen@intel.com>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

SCM
git git://linuxtv.org/media_tree.git

Files
drivers/media/i2c/ov08x40.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>, Hans de Goede <hansg@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/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
Documentation/devicetree/bindings/media/i2c/ovti,ov2685.yaml
drivers/media/i2c/ov2685.c

* OMNIVISION OV2740 SENSOR DRIVER

Mail
Tianshu Qiu <tian.shu.qiu@intel.com>

Reviewer
Sakari Ailus <sakari.ailus@linux.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 OV4689 SENSOR DRIVER

Mail
Mikhail Rudenko <mike.rudenko@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,ov4689.yaml
drivers/media/i2c/ov5647.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
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/ovti,ov5670.yaml
drivers/media/i2c/ov5670.c

* OMNIVISION OV5675 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/ovti,ov5675.yaml
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
Documentation/devicetree/bindings/media/i2c/ovti,ov5693.yaml
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

Mailing list
linux-media@vger.kernel.org

Status
Orphan

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
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/ov8856.yaml drivers/
media/i2c/ov8856.c

* OMNIVISION OV8858 SENSOR DRIVER

Mail
Jacopo Mondi <jacopo.mondi@ideasonboard.com>, Nicholas Roth
<nicholas@rothemail.net>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

SCM
git git://linuxtv.org/media_tree.git

Files
Documentation/devicetree/bindings/media/i2c/ovti,ov8858.yaml
drivers/media/i2c/ov8858.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

* ONBOARD USB HUB DRIVER

Mail
Matthias Kaehlcke <mka@chromium.org>

Mailing list
linux-usb@vger.kernel.org

Status
Maintained

Files
Documentation/ABI/testing/sysfs-bus-platform-onboard-usb-hub
drivers/usb/misc/onboard_usb_hub.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

* ONEXPLAYER FAN DRIVER

Mail
Derek John Clark <derekjohn.clark@gmail.com>, Joaquín Ignacio Aramendía <samsagax@gmail.com>

Mailing list
linux-hwmon@vger.kernel.org

Status
Maintained

Files
drivers/hwmon/oxp-sensors.c

* ONIE TLV NVMEM LAYOUT DRIVER

Mail
Miquel Raynal <miquel.raynal@bootlin.com>

Status
Maintained

Files
Documentation/devicetree/bindings/nvmem/layouts/onie,tlv-layout.
yaml drivers/nvmem/layouts/onie-tlv.c

* 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

* ONSEMI ETHERNET PHY DRIVERS

Mail
Piergiorgio Beruto <piergiorgio.beruto@gmail.com>

Mailing list
netdev@vger.kernel.org

Status
Supported

Web-page
http://www.onsemi.com

Files
    drivers/net/phy/ncn*

* 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 FLATTENED DEVICE TREE

Mail
Rob Herring <robh+dt@kernel.org>, Frank Rowand <frowand.list@gmail.com>

Mailing list
devicetree@vger.kernel.org

Status
Maintained

Web-page
http://www.devicetree.org/

chat
irc://irc.libera.chat/devicetree

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/

Content regex
of_overlay_notifier_ of_overlay_fdt_apply of_overlay_remove

* OPEN FIRMWARE AND FLATTENED DEVICE TREE BINDINGS

Mail
Rob   Herring   <robh+dt@kernel.org>,   Krzysztof   Kozlowski
<krzysztof.kozlowski+dt@linaro.org>, Conor Dooley <conor+dt@kernel.org>

Mailing list
devicetree@vger.kernel.org

Status
Maintained

Patchwork
http://patchwork.ozlabs.org/project/devicetree-bindings/list/

chat
> irc://irc.libera.chat/devicetree

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/opencores,i2c-ocores.yaml
> 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
> linux-openrisc@vger.kernel.org

Status
> Maintained

Web-page
> http://openrisc.io

SCM
  git https://github.com/openrisc/linux.git

Files
  Documentation/arch/openrisc/   Documentation/devicetree/bindings/
  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/   tools/testing/
  selftests/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@lists.linux.dev

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>, Amir Goldstein <amir73il@gmail.com>

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/

* PACKET SOCKETS

Mail
Willem de Bruijn <willemdebruijn.kernel@gmail.com>

Status
Maintained

Files
include/uapi/linux/if_packet.h net/packet/af_packet.c

* 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/ 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
    mm/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>

Reviewer
Ajay   Kaher   <akaher@vmware.com>,   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

* 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/arch/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_parisc.c   drivers/video/console/sti*

```
drivers/video/fbdev/sti*  drivers/video/logo/logo_parisc*  include/
linux/hp_sdc.h
```

* PARMAN

Mail
> Jiri Pirko <jiri@resnulli.us>

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 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 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-common.yaml
Documentation/devicetree/bindings/pci/fsl,imx6q-pcie-ep.yaml
Documentation/devicetree/bindings/pci/fsl,imx6q-pcie.yaml   drivers/
pci/controller/dwc/*imx6*
```

* 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 <yoshi-
   hiro.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

* 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 <gus-
tavo.pimentel@synopsys.com>, Manivannan Sadhasivam <manivan-
nan.sadhasivam@linaro.org>

Mailing list
linux-pci@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/pci/snps,dw-pcie-ep.yaml
Documentation/devicetree/bindings/pci/snps,dw-pcie.yaml   drivers/
pci/controller/dwc/*designware*

* PCI DRIVER FOR TI DRA7XX/J721E

Mail
Vignesh Raghavendra <vigneshr@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 DRIVER FOR XILINX VERSAL CPM

Mail
Bharat Kumar Gogada <bharat.kumar.gogada@amd.com>, Michal Simek
<michal.simek@amd.com>

Mailing list
linux-pci@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/pci/xilinx-versal-cpm.yaml
drivers/pci/controller/pcie-xilinx-cpm.c

* PCI ENDPOINT SUBSYSTEM

Mail
Lorenzo Pieralisi <lpieralisi@kernel.org>, Krzysztof Wilczyński
<kw@linux.com>

Reviewer
Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>, Kishon Vijay
Abraham I <kishon@kernel.org>

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/pci/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
    Mahesh J Salgaonkar <mahesh@linux.ibm.com>

Reviewer
    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 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>,   Krzysztof   Wilczyński <kw@linux.com>

Reviewer
Rob Herring <robh@kernel.org>

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/pci/pci.git

Files
Documentation/devicetree/bindings/pci/   drivers/pci/controller/ drivers/pci/pci-bridge-emul.c drivers/pci/pci-bridge-emul.h

* 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/pci/pci.git

Files
driver-api/pci/p2pdma `drivers/pci/p2pdma.c include/linux/pci-p2pdma.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/pci/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
Chuanhua Lei <lchuanhua@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 (moderated 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
Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Mailing list
linux-pci@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status
Maintained

Files
drivers/pci/controller/dwc/pcie-qcom.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,rk3399-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*

* 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

* 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

* PDS DSC VIRTIO DATA PATH ACCELERATOR

Reviewer
Shannon Nelson <shannon.nelson@amd.com>

Files
drivers/vdpa/pds/

* 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   <shannon.nelson@amd.com>,   Brett   Creeley
   <brett.creeley@amd.com>, 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>, Ian Rogers <irogers@google.com>, Adrian Hunter <adrian.hunter@intel.com>

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 git git://git.kernel.org/pub/scm/linux/kernel/git/perf/perf-tools.git perf-tools git git://git.kernel.org/pub/scm/linux/kernel/git/perf/perf-tools-next.git perf-tools-next

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.g.garry@oracle.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/dt-bindings/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,
    mt6779-pinctrl.yaml   Documentation/devicetree/bindings/pinctrl/
    mediatek,mt7622-pinctrl.yaml   Documentation/devicetree/bindings/
    pinctrl/mediatek,mt8183-pinctrl.yaml drivers/pinctrl/mediatek/

* PIN CONTROLLER - MEDIATEK MIPS

Mail

Arınç ÜNAL <arinc.unal@arinc9.com>, Sergio Paracuellos <sergio.paracuellos@gmail.com>

Mailing list

linux-mediatek@lists.infradead.org (moderated for non-subscribers), linux-mips@vger.kernel.org

Status

Maintained

Files

```
Documentation/devicetree/bindings/pinctrl/mediatek,mt7620-pinctrl.
yaml          Documentation/devicetree/bindings/pinctrl/mediatek,
mt7621-pinctrl.yaml       Documentation/devicetree/bindings/pinctrl/
mediatek,mt76x8-pinctrl.yaml      Documentation/devicetree/bindings/
pinctrl/ralink,rt2880-pinctrl.yaml         Documentation/devicetree/
bindings/pinctrl/ralink,rt305x-pinctrl.yaml          Documentation/
devicetree/bindings/pinctrl/ralink,rt3352-pinctrl.yaml
Documentation/devicetree/bindings/pinctrl/ralink,rt3883-pinctrl.
yaml          Documentation/devicetree/bindings/pinctrl/ralink,
rt5350-pinctrl.yaml        drivers/pinctrl/mediatek/pinctrl-mt7620.
c     drivers/pinctrl/mediatek/pinctrl-mt7621.c     drivers/pinctrl/
mediatek/pinctrl-mt76x8.c drivers/pinctrl/mediatek/pinctrl-mtmips.*
drivers/pinctrl/mediatek/pinctrl-rt2880.c drivers/pinctrl/mediatek/
pinctrl-rt305x.c drivers/pinctrl/mediatek/pinctrl-rt3883.c
```

* 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 - NXP S32

Mail
>Chester Lin <clin@suse.com>

Reviewer
>NXP S32 Linux Team <s32@nxp.com>

Mailing list
>linux-gpio@vger.kernel.org

Status
>Maintained

Files
>Documentation/devicetree/bindings/pinctrl/nxp,s32* drivers/pinctrl/
>nxp/

* PIN CONTROLLER - QUALCOMM

Mail
>Bjorn Andersson <andersson@kernel.org>

Mailing list
>linux-arm-msm@vger.kernel.org

Status
>Maintained

Files
>Documentation/devicetree/bindings/pinctrl/qcom,* 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 Ko-
 zlowski <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

Patchwork
 https://patchwork.kernel.org/project/linux-samsung-soc/list/

bugs
 mailto:linux-samsung-soc@vger.kernel.org

chat
 irc://irc.libera.chat/linux-exynos

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 <hao-
 jian.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 - 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

* PINE64 PINEPHONE KEYBOARD DRIVER

Mail
Samuel Holland <samuel@sholland.org>

Status
Supported

Files
Documentation/devicetree/bindings/input/pine64,pinephone-keyboard.
yaml drivers/input/keyboard/pinephone-keyboard.c

* 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

* PLCA RECONCILIATION SUBLAYER (IEEE802.3 Clause 148)

Mail
Piergiorgio Beruto <piergiorgio.beruto@gmail.com>

Mailing list
netdev@vger.kernel.org

Status
Maintained

Files
drivers/net/phy/mdio-open-alliance.h net/ethtool/plca.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

* 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

* 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

* 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
```

* 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

Mailing list
linux-ppp@vger.kernel.org

Status
Orphan

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.yaml 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>

Reviewer
Peter Ziljstra <peterz@infradead.org>

Status
Maintained

Files
include/linux/psi* kernel/sched/psi.c

* PRINTK

Mail
Petr Mladek <pmladek@suse.com>

Reviewer
Steven Rostedt <rostedt@goodmis.org>, John Ogness <john.ogness@linutronix.de>, Sergey Senozhatsky <senozhatsky@chromium.org>

Status
Maintained

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/printk/linux.git

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>

Reviewer
Tony Luck <tony.luck@intel.com>, Guilherme G. Piccoli <gpiccoli@igalia.com>

Mailing list
linux-hardening@vger.kernel.org

Status
   Supported

SCM
   git git://git.kernel.org/pub/scm/linux/kernel/git/kees/linux.git for-next/pstore

Files
   admin-guide/pstore-blk   admin-guide/ramoops   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*

Content regex
   (?:\b|_)ptp(?:\b|_)

* PTP MOCKUP CLOCK SUPPORT

Mail
   Vladimir Oltean <vladimir.oltean@nxp.com>

Mailing list
   netdev@vger.kernel.org

Status
   Maintained

Files
   drivers/ptp/ptp_mock.c include/linux/ptp_mock.h

* 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
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 IR Transmitter

Mail
    Sean Young <sean@mess.org>

Mailing list
    linux-media@vger.kernel.org

Status
    Maintained

Files
    Documentation/devicetree/bindings/leds/irled/pwm-ir-tx.yaml 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>

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.yaml
Documentation/devicetree/bindings/pwm/  driver-api/pwm  drivers/gpio/
gpio-mvebu.c drivers/pwm/ drivers/video/backlight/pwm_bl.c include/
dt-bindings/pwm/ 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/intel/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/intel/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
Documentation/devicetree/bindings/soc/qcom/qcom,apr* Documentation/devicetree/bindings/sound/qcom,* drivers/soc/qcom/apr.c include/dt-bindings/sound/qcom,wcd9335.h sound/soc/codecs/lpass-rx-macro.* sound/soc/codecs/lpass-tx-macro.* 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/wcd-clsh-v2.* sound/soc/codecs/wcd-mbhc-v2.* sound/soc/codecs/wcd9335.* sound/soc/codecs/wcd934x.c sound/soc/codecs/wsa881x.c sound/soc/codecs/wsa883x.c sound/soc/codecs/wsa884x.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 <manishc@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

* QNX6 FILESYSTEM

Status
> Orphan

Files
> filesystems/qnx6 fs/qnx6/ include/linux/qnx6_fs.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 ATH12K WIRELESS DRIVER

Mail
    Kalle Valo <kvalo@kernel.org>, Jeff Johnson <quic_jjohnson@quicinc.com>

Mailing list
    ath12k@lists.infradead.org

Status
    Supported

Web-page
    https://wireless.wiki.kernel.org/en/users/Drivers/ath12k

SCM
    git git://git.kernel.org/pub/scm/linux/kernel/git/kvalo/ath.git

Files
    drivers/net/wireless/ath/ath12k/

* QUALCOMM ATHEROS ATH10K WIRELESS DRIVER

Mail
    Kalle Valo <kvalo@kernel.org>, Jeff Johnson <quic_jjohnson@quicinc.com>

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
    Documentation/devicetree/bindings/net/wireless/qcom,ath10k.yaml
    drivers/net/wireless/ath/ath10k/

* QUALCOMM ATHEROS ATH11K WIRELESS DRIVER

Mail
Kalle Valo <kvalo@kernel.org>, Jeff Johnson <quic_jjohnson@quicinc.com>

Mailing list
ath11k@lists.infradead.org

Status
Supported

Web-page
https://wireless.wiki.kernel.org/en/users/Drivers/ath11k

bugs
https://wireless.wiki.kernel.org/en/users/Drivers/ath11k/bugreport

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

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/kvalo/ath.git

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 <rfoss@kernel.org>, Todor Tomov <todor.too@gmail.com>, Bryan
    O'Donoghue <bryan.odonoghue@linaro.org>

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 <andersson@kernel.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 CLOUD AI (QAIC) DRIVER

Mail
    Jeffrey Hugo <quic_jhugo@quicinc.com>

Reviewer
    Carl Vanderlip <quic_carlv@quicinc.com>, Pranjal Ramajor Asha Kanojiya
    <quic_pkanojiy@quicinc.com>

Mailing list
    linux-arm-msm@vger.kernel.org, dri-devel@lists.freedesktop.org

Status
    Supported

SCM
    git git://anongit.freedesktop.org/drm/drm-misc

Files
Documentation/accel/qaic/ drivers/accel/qaic/ include/uapi/drm/
qaic_accel.h

* QUALCOMM CORE POWER REDUCTION (CPR) AVS DRIVER

Mail
Bjorn Andersson <andersson@kernel.org>, Konrad Dybcio <kon-
rad.dybcio@linaro.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/
pmdomain/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
Documentation/devicetree/bindings/crypto/qcom-qce.yaml 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>

Reviewer
Bhupesh Sharma <bhupesh.sharma@linaro.org>

Mailing list
netdev@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/net/qcom,ethqos.yaml 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.yaml 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

Status
Supported

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/bcain/linux.git

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 <rfoss@kernel.org>

Mailing list
linux-i2c@vger.kernel.org, linux-arm-msm@vger.kernel.org

Status
Maintained

Files
```
Documentation/devicetree/bindings/i2c/qcom,i2c-cci.yaml drivers/i2c/
busses/i2c-qcom-cci.c
```

* QUALCOMM INTERCONNECT BWMON DRIVER

Mail
Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>

Mailing list
linux-arm-msm@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/interconnect/qcom,msm8998-bwmon.
yaml drivers/soc/qcom/icc-bwmon.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 TYPEC PORT MANAGER DRIVER

Mail
Bryan O'Donoghue <bryan.odonoghue@linaro.org>

Mailing list
linux-arm-msm@vger.kernel.org, linux-usb@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/usb/qcom,pmic-*.yaml   drivers/usb/
typec/tcpm/qcom/

* QUALCOMM VENUS VIDEO ACCELERATOR DRIVER

Mail
Stanimir Varbanov <stanimir.k.varbanov@gmail.com>, Vikash Garodia <quic_vgarodia@quicinc.com>

Reviewer
Bryan O'Donoghue <bryan.odonoghue@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

bugs
https://gitlab.freedesktop.org/drm/amd/-/issues

chat
irc://irc.oftc.net/radeon

SCM
git https://gitlab.freedesktop.org/agd5f/linux.git

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 https://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

Mailing list
linux-fbdev@vger.kernel.org

Status
Orphan

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 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>

Status

Maintained

SCM

git https://git.kernel.org/pub/scm/linux/kernel/git/crng/random.git

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/legacy/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-core.h include/media/rc-map.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   <math-
  ieu.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/arch/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 Weisbecker <frederic@kernel.org> (kernel/rcu/tree_nocb.h), Neeraj Upadhyay <quic_neeraju@quicinc.com> (kernel/rcu/tasks.h), Joel Fernandes <joel@joelfernandes.org>, Josh Triplett <josh@joshtriplett.org>, Boqun Feng <boqun.feng@gmail.com>

Reviewer
Steven Rostedt <rostedt@goodmis.org>, Mathieu Desnoyers <mathieu.desnoyers@efficios.com>, Lai Jiangshan <jiangshanlai@gmail.com>, Zqiang <qiang.zhang1211@gmail.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
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/rtc.h include/linux/rtc/ include/uapi/linux/rtc.h tools/testing/selftests/rtc/

* Real-time Linux Analysis (RTLA) tools

Mail
Daniel Bristot de Oliveira <bristot@kernel.org>, Steven Rostedt <rost-edt@goodmis.org>

Mailing list
linux-trace-kernel@vger.kernel.org

Status
Maintained

Files
Documentation/tools/rtla/ tools/tracing/rtla/

* 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

Files
    drivers/net/wireless/realtek/rtlwifi/

* REALTEK WIRELESS DRIVER (rtw88)

Mail
    Ping-Ke Shih <pkshih@realtek.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

Mailing list
    linux-wireless@vger.kernel.org

Status
    Orphan

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
Obsolete

Files
fs/reiserfs/

* REMOTE PROCESSOR (REMOTEPROC) SUBSYSTEM

Mail
Bjorn Andersson <andersson@kernel.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 <andersson@kernel.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 IDT821034 ASoC CODEC

Mail
Herve Codina <herve.codina@bootlin.com>

Mailing list
alsa-devel@alsa-project.org (moderated for non-subscribers)

Status
Maintained

Files
Documentation/devicetree/bindings/sound/renesas,idt821034.yaml
sound/soc/codecs/idt821034.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

* 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>

Mailing list

linux-ide@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status

Supported

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 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/G2L MTU3a COUNTER DRIVER

Mail
Biju Das <biju.das.jz@bp.renesas.com>

Mailing list
linux-iio@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status
Supported

Files
Documentation/devicetree/bindings/timer/renesas,rz-mtu3.yaml
drivers/counter/rz-mtu3-cnt.c

* RENESAS RZ/N1 A5PSW SWITCH DRIVER

Mail
Clément Léger <clement.leger@bootlin.com>

Mailing list
linux-renesas-soc@vger.kernel.org, netdev@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/net/dsa/renesas,rzn1-a5psw.yaml
Documentation/devicetree/bindings/net/pcs/renesas,rzn1-miic.yaml
drivers/net/dsa/rzn1_a5psw* drivers/net/pcs/pcs-rzn1-miic.c include/
dt-bindings/net/pcs-rzn1-miic.h include/linux/pcs-rzn1-miic.h net/
dsa/tag_rzn1_a5psw.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 RZ/N1 USBF CONTROLLER DRIVER

Mail
Herve Codina <herve.codina@bootlin.com>

Mailing list
linux-renesas-soc@vger.kernel.org, linux-usb@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/usb/renesas,rzn1-usbf.yaml
drivers/usb/gadget/udc/renesas_usbf.c

* RENESAS RZ/V2M I2C DRIVER

Mail
Fabrizio Castro <fabrizio.castro.jz@renesas.com>

Mailing list
linux-i2c@vger.kernel.org, linux-renesas-soc@vger.kernel.org

Status
Supported

Files
Documentation/devicetree/bindings/i2c/renesas,rzv2m.yaml   drivers/
i2c/busses/i2c-rzv2m.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 VERSACLOCK 7 CLOCK DRIVER

Mail
Alex Helms <alexander.helms.jy@renesas.com>

Status
Maintained

Files
Documentation/devicetree/bindings/clock/renesas,versaclock7.yaml
drivers/clk/clk-versaclock7.c

* RENESAS X9250 DIGITAL POTENTIOMETERS DRIVER

Mail
> Herve Codina <herve.codina@bootlin.com>

Mailing list
> linux-iio@vger.kernel.org

Status
> Maintained

Files
> Documentation/devicetree/bindings/iio/potentiometer/renesas,x9250.
> yaml drivers/iio/potentiometer/x9250.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 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

Patchwork
https://patchwork.kernel.org/project/linux-riscv/list/

chat
irc://irc.libera.chat/riscv

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 FPGA SUPPORT

Mail
Conor Dooley <conor.dooley@microchip.com>, Daire McNamara
<daire.mcnamara@microchip.com>

Mailing list
linux-riscv@lists.infradead.org

Status
Supported

Files
```
Documentation/devicetree/bindings/clock/microchip,mpfs*.yaml
Documentation/devicetree/bindings/gpio/microchip,mpfs-gpio.yaml
Documentation/devicetree/bindings/i2c/microchip,corei2c.yaml
Documentation/devicetree/bindings/mailbox/microchip,mpfs-mailbox.
yaml  Documentation/devicetree/bindings/net/can/microchip,mpfs-can.
yaml       Documentation/devicetree/bindings/pwm/microchip,corepwm.
yaml          Documentation/devicetree/bindings/riscv/microchip.yaml
Documentation/devicetree/bindings/soc/microchip/microchip,
mpfs-sys-controller.yaml       Documentation/devicetree/bindings/spi/
microchip,mpfs-spi.yaml         Documentation/devicetree/bindings/usb/
microchip,mpfs-musb.yaml   arch/riscv/boot/dts/microchip/   drivers/
char/hw_random/mpfs-rng.c drivers/clk/microchip/clk-mpfs*.c drivers/
i2c/busses/i2c-microchip-corei2c.c       drivers/mailbox/mailbox-mpfs.
c       drivers/pci/controller/pcie-microchip-host.c       drivers/pwm/
pwm-microchip-core.c       drivers/reset/reset-mpfs.c       drivers/rtc/
rtc-mpfs.c drivers/soc/microchip/mpfs-sys-controller.c drivers/spi/
spi-microchip-core-qspi.c drivers/spi/spi-microchip-core.c drivers/
usb/musb/mpfs.c include/soc/microchip/mpfs.h
```

* RISC-V MISC SOC SUPPORT

Mail
Conor Dooley <conor@kernel.org>

Mailing list
linux-riscv@lists.infradead.org

Status
Maintained

Patchwork
https://patchwork.kernel.org/project/linux-riscv/list/

SCM
git https://git.kernel.org/pub/scm/linux/kernel/git/conor/linux.git/

Files
```
Documentation/devicetree/bindings/riscv/ arch/riscv/boot/dts/
```

Excluded
```
arch/riscv/boot/dts/allwinner/ arch/riscv/boot/dts/renesas/
```

* 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 THEAD SoC SUPPORT

Mail
    Jisheng Zhang <jszhang@kernel.org>, Guo Ren <guoren@kernel.org>, Fu Wei
    <wefu@redhat.com>

Mailing list
    linux-riscv@lists.infradead.org

Status
    Maintained

Files
    arch/riscv/boot/dts/thead/

* 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 CRYPTO DRIVERS

Mail
Corentin Labbe <clabbe@baylibre.com>

Mailing list
linux-crypto@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/crypto/rockchip,rk3288-crypto.
yaml drivers/crypto/rockchip/

* 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/metafmt-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

Mail
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 BU270xx LIGHT SENSOR DRIVERs

Mail
Matti Vaittinen <mazziesaccount@gmail.com>

Mailing list
linux-iio@vger.kernel.org

Status
Supported

Files
drivers/iio/light/rohm-bu27008.c drivers/iio/light/rohm-bu27034.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

Mail
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
https://linux-ax25.in-berlin.de

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

Files
drivers/net/wireless/realtek/rtl818x/rtl8180/

* RTL8187 WIRELESS DRIVER

Mail
> Hin-Tak   Leung   <hintak.leung@gmail.com>,   Larry   Finger
> <Larry.Finger@lwfinger.net>

Mailing list
> linux-wireless@vger.kernel.org

Status
> Maintained

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

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/

* RUNTIME VERIFICATION (RV)

Mail
> Daniel Bristot de Oliveira <bristot@kernel.org>, Steven Rostedt <rost-
> edt@goodmis.org>

Mailing list
> linux-trace-kernel@vger.kernel.org

Status
> Maintained

Files
Documentation/trace/rv/ include/linux/rv.h include/rv/ kernel/trace/
rv/ tools/verification/

* RUST

Mail
Miguel Ojeda <ojeda@kernel.org>, Alex Gaynor <alex.gaynor@gmail.com>,
Wedson Almeida Filho <wedsonaf@gmail.com>

Reviewer
Boqun Feng <boqun.feng@gmail.com>, Gary Guo <gary@garyguo.net>,
Björn Roy Baron <bjorn3_gh@protonmail.com>, Benno Lossin
<benno.lossin@proton.me>, Andreas Hindborg <a.hindborg@samsung.com>,
Alice Ryhl <aliceryhl@google.com>

Mailing list
rust-for-linux@vger.kernel.org

Status
Supported

Web-page
https://github.com/Rust-for-Linux/linux

bugs
https://github.com/Rust-for-Linux/linux/issues

chat
zulip://rust-for-linux.zulipchat.com

SCM
git https://github.com/Rust-for-Linux/linux.git rust-next

Files
Documentation/rust/ rust/ samples/rust/ scripts/*rust*

Content regex
\b(?i:rust)\b

* 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 ARCHITECTURE

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

SCM
    git git://git.kernel.org/pub/scm/linux/kernel/git/s390/linux.git

Files
    driver-api/s390-drivers Documentation/arch/s390/ arch/s390/ drivers/s390/
    drivers/watchdog/diag288_wdt.c

* S390 COMMON I/O LAYER

Mail
    Vineeth Vijayan <vneethv@linux.ibm.com>, Peter Oberparleiter <ober-
    par@linux.ibm.com>

Mailing list
    linux-s390@vger.kernel.org

Status
    Supported

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

Files
block/partitions/ibm.c   drivers/s390/block/dasd*   include/linux/
dasd_mod.h

* S390 IOMMU (PCI)

Mail
Niklas Schnelle <schnelle@linux.ibm.com>, Matthew Rosato <mjrosato@linux.ibm.com>

Reviewer
Gerald Schaefer <gerald.schaefer@linux.ibm.com>

Mailing list
linux-s390@vger.kernel.org

Status
Supported

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

Files
drivers/s390/net/*iucv* include/net/iucv/ net/iucv/

* S390 MM

Mail
Alexander Gordeev <agordeev@linux.ibm.com>, Gerald Schaefer <gerald.schaefer@linux.ibm.com>

Mailing list
linux-s390@vger.kernel.org

Status
Supported

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/s390/linux.git

Files
arch/s390/include/asm/pgtable.h arch/s390/mm

* 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

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

Files
arch/s390/pci arch/s390/pci/ drivers/pci/hotplug/s390_pci_hpc.c

* S390 SCM DRIVER

Mail
Vineeth Vijayan <vneethv@linux.ibm.com>

Mailing list
linux-s390@vger.kernel.org

Status
Supported

Files
drivers/s390/block/scm* drivers/s390/cio/scm.c

* 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

Files
Documentation/arch/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
arch/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 <far-man@linux.ibm.com>

Mailing list
linux-s390@vger.kernel.org, kvm@vger.kernel.org

Status
Supported

Files
arch/s390/kvm/pci* 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

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

Files
drivers/s390/scsi/zfcp_*

* 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
Sylwester Nawrocki <s.nawrocki@samsung.com>

Mailing list
alsa-devel@alsa-project.org (moderated for non-subscribers)

Status
Maintained

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>

Mailing list
> linux-kernel@vger.kernel.org, linux-samsung-soc@vger.kernel.org

Status
> Maintained

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>

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
Documentation/devicetree/bindings/media/samsung,s5c73m3.yaml
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
```
Documentation/devicetree/bindings/media/samsung,exynos4210-csis.
yaml              Documentation/devicetree/bindings/media/samsung,
exynos4210-fimc.yaml         Documentation/devicetree/bindings/media/
samsung,exynos4212-fimc-is.yaml    Documentation/devicetree/bindings/
media/samsung,exynos4212-fimc-lite.yaml    Documentation/devicetree/
bindings/media/samsung,fimc.yaml       drivers/media/platform/samsung/
exynos4-is/
```

* SAMSUNG SOC CLOCK DRIVERS

Mail
Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>, 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
Maintained

SCM
git   git://git.kernel.org/pub/scm/linux/kernel/git/krzk/linux.git   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/s5p*.h  include/dt-bindings/clock/samsung,*.h  include/linux/
clk/samsung.h
```

* SAMSUNG SPI DRIVERS

Mail
    Andi Shyti <andi.shyti@kernel.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

* 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/ti/omap/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/
```

* SCSI LIBSAS SUBSYSTEM

Reviewer

John Garry <john.g.garry@oracle.com>, Jason Yan <yanaijie@huawei.com>

Mailing list

linux-scsi@vger.kernel.org

Status

Supported

Files

```
scsi/libsas  drivers/scsi/libsas/  include/scsi/libsas.h  include/scsi/
sas_ata.h
```

* 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
 Marcelo Ricardo Leitner <marcelo.leitner@gmail.com>, Xin Long <lucien.xin@gmail.com>

Mailing list
 linux-sctp@vger.kernel.org

Status
 Maintained

Web-page
 https://github.com/sctp/lksctp-tools/wiki

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

* 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 for-next/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
    Kamal Dasu <kamal.dasu@broadcom.com>, 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
    Supported

Files
    Documentation/devicetree/bindings/mmc/sdhci-common.yaml 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) 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 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
Vignesh Raghavendra <vigneshr@ti.com>

Mailing list
linux-mmc@vger.kernel.org

Status
Maintained

Files
drivers/mmc/host/sdhci-omap.c

* SECURE ENCRYPTING DEVICE (SED) OPAL DRIVER

Mail
Jonathan Derrick <jonathan.derrick@linux.dev>

Mailing list
linux-block@vger.kernel.org

Status
Supported

Files
block/opal_proto.h block/sed* include/linux/sed* include/uapi/linux/sed*

* 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

* SECURITY CONTACT

Mail
Security Officers <security@kernel.org>

Status
Supported

Files
process/security-bugs

* SECURITY SUBSYSTEM

Mail
Paul Moore <paul@paul-moore.com>, 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/pcmoore/lsm.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/removed/sysfs-selinux-checkreqprot Documentation/ABI/removed/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 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, linux-net-drivers@amd.com

Status
>   Supported

Files
>   networking/devlink/sfc drivers/net/ethernet/sfc/

* SFCTEMP HWMON DRIVER

Mail
>   Emil Renner Berthing <kernel@esmil.dk>

Mailing list
>   linux-hwmon@vger.kernel.org

Status
>   Maintained

Files
>   Documentation/devicetree/bindings/hwmon/starfive,jh71x0-temp.yaml
>   hwmon/sfctemp drivers/hwmon/sfctemp.c

* SFF/SFP/SFP+ MODULE SUPPORT

Mail
>   Russell King <linux@armlinux.org.uk>

Mailing list
>   netdev@vger.kernel.org

Status
>   Maintained

Files
>   Documentation/devicetree/bindings/net/sff,sfp.yaml   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|clear|connect

* 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>

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>, Jan Karcher <jaka@linux.ibm.com>

Reviewer
D. Wythe <alibuda@linux.alibaba.com>, Tony Lu <tonylu@linux.alibaba.com>, Wen Gu <guwen@linux.alibaba.com>

Mailing list
linux-s390@vger.kernel.org

Status
Supported

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
    Documentation/devicetree/bindings/media/silabs,si470x.yaml   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/

* SIEMENS IPC LED DRIVERS

Mail
    Gerd Haeussler <gerd.haeussler.ext@siemens.com>, Xing Tong Wu <xing-
    tong.wu@siemens.com>, Tobias Schaffner <tobias.schaffner@siemens.com>

Mailing list
    linux-leds@vger.kernel.org

Status
    Maintained

Files
    drivers/leds/simple/

* SIEMENS IPC PLATFORM DRIVERS

Mail
    Gerd Haeussler <gerd.haeussler.ext@siemens.com>, Xing Tong Wu <xing-
    tong.wu@siemens.com>, Tobias Schaffner <tobias.schaffner@siemens.com>

Mailing list
    platform-driver-x86@vger.kernel.org

Status
    Maintained

Files
    drivers/platform/x86/siemens/ include/linux/platform_data/x86/
    simatic-ipc-base.h include/linux/platform_data/x86/simatic-ipc.h

* SIEMENS IPC WATCHDOG DRIVERS

Mail
    Gerd Haeussler <gerd.haeussler.ext@siemens.com>, Xing Tong Wu <xing-
    tong.wu@siemens.com>, Tobias Schaffner <tobias.schaffner@siemens.com>

Mailing list
    linux-watchdog@vger.kernel.org

Status
    Maintained

Files
    drivers/watchdog/simatic-ipc-wdt.c

* SIFIVE DRIVERS

Mail
Palmer Dabbelt <palmer@dabbelt.com>, Paul Walmsley <paul.walmsley@sifive.com>

Mailing list
linux-riscv@lists.infradead.org

Status
Supported

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/`

* SIFIVE SOC DRIVERS

Mail
Conor Dooley <conor@kernel.org>

Mailing list
linux-riscv@lists.infradead.org

Status
Maintained

SCM
git https://git.kernel.org/pub/scm/linux/kernel/git/conor/linux.git/

Files
Documentation/devicetree/bindings/cache/sifive,ccache0.yaml drivers/
soc/sifive/

* 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/

* 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/siphash_kunit.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

Status
Orphan

Files
fb/sisfb drivers/video/fbdev/sis/ include/video/sisfb.h

* SIS I2C TOUCHSCREEN DRIVER

Mail
Mika Penttilä <mpenttil@redhat.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
```

* SL28 VPD NVMEM LAYOUT DRIVER

Mail
Michael Walle <michael@walle.cc>

Status
Maintained

Files
```
Documentation/devicetree/bindings/nvmem/layouts/kontron,sl28-vpd.
yaml drivers/nvmem/layouts/sl28vpd.c
```

* SLAB ALLOCATOR

Mail
Christoph Lameter <cl@linux.com>, Pekka Enberg <penberg@kernel.org>, David Rientjes <rientjes@google.com>, Joonsoo Kim <iamjoonsoo.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*
```

* SLCAN CAN NETWORK DRIVER

Mail
Dario Binacchi <dario.binacchi@amarulasolutions.com>

Mailing list
linux-can@vger.kernel.org

Status
Maintained

Files
drivers/net/can/slcan/

* 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 <mathieu.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.*`

* 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.*

* SNET DPU VIRTIO DATA PATH ACCELERATOR

Reviewer
Alvaro Karsz <alvaro.karsz@solid-run.com>

Files
drivers/vdpa/solidrun/

* 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,synquacer-netsec.yaml 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/socionext,synquacer-spi.yaml
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/socionext,synquacer-i2c.yaml
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/

* SOCKET TIMESTAMPING

Mail
Willem de Bruijn <willemdebruijn.kernel@gmail.com>

Status
Maintained

Files
networking/timestamping include/uapi/linux/net_tstamp.h tools/testing/
selftests/net/so_txtime.c

* 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

Patchwork
    https://patchwork.kernel.org/project/linux-raid/list/

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/marvell/armada-388-clearfog*   arch/arm/boot/dts/
    marvell/armada-38x-solidrun-*

* SOLIDRUN CUBOX-I/HUMMINGBOARD SUPPORT

Mail
> Russell King <linux@armlinux.org.uk>

Status
> Maintained

Files
> arch/arm/boot/dts/nxp/imx/imx6*-cubox-i* arch/arm/boot/dts/nxp/imx/
> imx6*-hummingboard* arch/arm/boot/dts/nxp/imx/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/sony,imx290.yaml
drivers/media/i2c/imx290.c

* SONY IMX296 SENSOR DRIVER

Mail
Laurent Pinchart <laurent.pinchart@ideasonboard.com>, Manivannan Sadhasi-
vam <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/sony,imx296.yaml
drivers/media/i2c/imx296.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 IMX415 SENSOR DRIVER

Mail
    Michael Riesch <michael.riesch@wolfvision.net>

Mailing list
    linux-media@vger.kernel.org

Status
    Maintained

SCM
    git git://linuxtv.org/media_tree.git

Files
    Documentation/devicetree/bindings/media/i2c/sony,imx415.yaml
    drivers/media/i2c/imx415.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 - 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 - 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 - 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>, Daniel Baluta <daniel.baluta@nxp.com>

Reviewer
Kai Vehmanen <kai.vehmanen@linux.intel.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*

* SPANISH DOCUMENTATION

Mail
> Carlos Bilbao <carlos.bilbao@amd.com>

Status
> Maintained

Files
> Documentation/translations/sp_SP/

* 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/

Patchwork
https://patchwork.kernel.org/project/linux-sparse/list/

bugs
https://bugzilla.kernel.org/enter_bug.cgi?component=Sparse&product=Tools

SCM
git git://git.kernel.org/pub/scm/devel/sparse/sparse.git

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/st/spear* arch/arm/mach-spear/ drivers/clk/spear/ drivers/pinctrl/spear/

* SPI NOR SUBSYSTEM

Mail
Tudor Ambarus <tudor.ambarus@linaro.org>, Pratyush Yadav <pratyush@kernel.org>

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.yaml
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 VGXY61 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-vgxy61.yaml
> userspace-api/media/drivers/st-vgxy61 drivers/media/i2c/st-vgxy61.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
> Hans de Goede <hdegoede@redhat.com>, 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 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/

* STANDALONE CACHE CONTROLLER DRIVERS

Mail
    Conor Dooley <conor@kernel.org>

Mailing list
    linux-riscv@lists.infradead.org

Status
    Maintained

SCM
    git https://git.kernel.org/pub/scm/linux/kernel/git/conor/linux.git/

Files
    drivers/cache

* STARFIRE/DURALAN NETWORK DRIVER

Mail
Ion Badulescu <ionut@badula.org>

Status
Odd Fixes

Files
drivers/net/ethernet/adaptec/starfire*

* STARFIVE CRYPTO DRIVER

Mail
Jia Jie Ho <jiajie.ho@starfivetech.com>, William Qiu <william.qiu@starfivetech.com>

Status
Supported

Files
Documentation/devicetree/bindings/crypto/starfive* drivers/crypto/starfive/

* STARFIVE DEVICETREES

Mail
Emil Renner Berthing <kernel@esmil.dk>

Status
Maintained

Files
arch/riscv/boot/dts/starfive/

* STARFIVE DWMAC GLUE LAYER

Mail
Emil Renner Berthing <kernel@esmil.dk>, Samin Guo <samin.guo@starfivetech.com>

Status
Maintained

Files
Documentation/devicetree/bindings/net/starfive,jh7110-dwmac.yaml drivers/net/ethernet/stmicro/stmmac/dwmac-starfive.c

* STARFIVE JH7110 DPHY RX DRIVER

Mail
Jack Zhu <jack.zhu@starfivetech.com>, Changhuang Liang <changhuang.liang@starfivetech.com>

Status
Supported

Files
Documentation/devicetree/bindings/phy/starfive,jh7110-dphy-rx.yaml
drivers/phy/starfive/phy-jh7110-dphy-rx.c

* STARFIVE JH7110 MMC/SD/SDIO DRIVER

Mail
William Qiu <william.qiu@starfivetech.com>

Status
Supported

Files
Documentation/devicetree/bindings/mmc/starfive*   drivers/mmc/host/
dw_mmc-starfive.c

* STARFIVE JH7110 PLL CLOCK DRIVER

Mail
Xingyu Wu <xingyu.wu@starfivetech.com>

Status
Supported

Files
Documentation/devicetree/bindings/clock/starfive,jh7110-pll.yaml
drivers/clk/starfive/clk-starfive-jh7110-pll.c

* STARFIVE JH7110 SYSCON

Mail
William Qiu <william.qiu@starfivetech.com>, Xingyu Wu <xingyu.wu@starfivetech.com>

Status
Supported

Files
Documentation/devicetree/bindings/soc/starfive/starfive,
jh7110-syscon.yaml

* STARFIVE JH7110 TDM DRIVER

Mail
> Walker Chen <walker.chen@starfivetech.com>

Status
> Maintained

Files
> Documentation/devicetree/bindings/sound/starfive,jh7110-tdm.yaml
> sound/soc/starfive/jh7110_tdm.c

* STARFIVE JH71X0 CLOCK DRIVERS

Mail
> Emil Renner Berthing <kernel@esmil.dk>, Hal Feng
> <hal.feng@starfivetech.com>

Status
> Maintained

Files
> Documentation/devicetree/bindings/clock/starfive,jh71*.yaml drivers/
> clk/starfive/clk-starfive-jh71* include/dt-bindings/clock/starfive?
> jh71*.h

* STARFIVE JH71X0 PINCTRL DRIVERS

Mail
> Emil Renner Berthing <kernel@esmil.dk>, Jianlong Huang <jian-
> long.huang@starfivetech.com>, Hal Feng <hal.feng@starfivetech.com>

Mailing list
> linux-gpio@vger.kernel.org

Status
> Maintained

Files
> Documentation/devicetree/bindings/pinctrl/starfive,jh71*.yaml
> drivers/pinctrl/starfive/pinctrl-starfive-jh71* include/dt-bindings/
> pinctrl/pinctrl-starfive-jh7100.h   include/dt-bindings/pinctrl/
> starfive,jh7110-pinctrl.h

* STARFIVE JH71X0 RESET CONTROLLER DRIVERS

Mail
Emil Renner Berthing <kernel@esmil.dk>, Hal Feng <hal.feng@starfivetech.com>

Status
Maintained

Files
Documentation/devicetree/bindings/reset/starfive,jh7100-reset.yaml drivers/reset/starfive/reset-starfive-jh71* include/dt-bindings/ reset/starfive?jh71*.h

* STARFIVE JH71X0 USB DRIVERS

Mail
Minda Chen <minda.chen@starfivetech.com>

Status
Maintained

Files
Documentation/devicetree/bindings/usb/starfive,jh7110-usb.yaml drivers/usb/cdns3/cdns3-starfive.c

* STARFIVE JH71XX PMU CONTROLLER DRIVER

Mail
Walker Chen <walker.chen@starfivetech.com>

Status
Supported

Files
Documentation/devicetree/bindings/power/starfive* drivers/pmdomain/ starfive/jh71xx-pmu.c include/dt-bindings/power/starfive,jh7110-pmu. h

* STARFIVE SOC DRIVERS

Mail
Conor Dooley <conor@kernel.org>

Status
Maintained

SCM
git https://git.kernel.org/pub/scm/linux/kernel/git/conor/linux.git/

Files
Documentation/devicetree/bindings/soc/starfive/ drivers/soc/ starfive/

* STARFIVE TRNG DRIVER

Mail
Jia Jie Ho <jiajie.ho@starfivetech.com>

Status
Supported

Files
Documentation/devicetree/bindings/rng/starfive*   drivers/char/
hw_random/jh7110-trng.c

* STARFIVE WATCHDOG DRIVER

Mail
Xingyu   Wu   <xingyu.wu@starfivetech.com>,   Samin   Guo
<samin.guo@starfivetech.com>

Status
Supported

Files
Documentation/devicetree/bindings/watchdog/starfive*   drivers/
watchdog/starfive-wdt.c

* STARFIVE JH71X0 PCIE AND USB PHY DRIVER

Mail
Minda Chen <minda.chen@starfivetech.com>

Status
Supported

Files
Documentation/devicetree/bindings/phy/starfive,jh7110-pcie-phy.
yaml Documentation/devicetree/bindings/phy/starfive,jh7110-usb-phy.
yaml   drivers/phy/starfive/phy-jh7110-pcie.c   drivers/phy/starfive/
phy-jh7110-usb.c

* 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/cec/st,stih-cec.yaml
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
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/

* SUN HAPPY MEAL ETHERNET DRIVER

Mail
Sean Anderson <seanga2@gmail.com>

Status
Maintained

Files
drivers/net/ethernet/sun/sunhme.*

* 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 MMC DRIVER

Mail
Tony   Huang   <tonyhuang.sunplus@gmail.com>,   Li-hao   Kuo   <lhj-
eff911@gmail.com>

Status
Maintained

Files
Documentation/devicetree/bindings/mmc/sunplus,mmc.yaml drivers/mmc/
host/sunplus-mmc.c

* 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 USB2 PHY DRIVER

Mail
Vincent Shih <vincent.sunplus@gmail.com>

Mailing list
linux-usb@vger.kernel.org

Status
Maintained

Files
> Documentation/devicetree/bindings/phy/sunplus,sp7021-usb2-phy.yaml
> drivers/phy/sunplus/Kconfig   drivers/phy/sunplus/Makefile   drivers/
> phy/sunplus/phy-sunplus-usb2.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>,
> John Paul Adrian Glaubitz <glaubitz@physik.fu-berlin.de>

Mailing list
> linux-sh@vger.kernel.org

Status
> Maintained

Patchwork
> http://patchwork.kernel.org/project/linux-sh/list/

Files
> Documentation/arch/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/sleep* arch/x86/kernel/
    acpi/wakeup* 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*

* 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/arch/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

Mail
Ilpo Järvinen <ilpo.jarvinen@linux.intel.com>

Reviewer
Andy Shevchenko <andriy.shevchenko@linux.intel.com>

Status
Supported

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 Westerberg
    <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@kernel.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/powercap/
arm_scmi_powercap.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

Status
> Orphan

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 tools/testing/selftests/drivers/net/team/

* TECHNICAL ADVISORY BOARD PROCESS DOCS

Mail
    "Theodore   Ts'o"   <tytso@mit.edu>,   Greg   Kroah-Hartman
    <gregkh@linuxfoundation.org>

Mailing list
    tech-board-discuss@lists.linux-foundation.org

Status
    Maintained

Files
    process/contribution-maturity-model process/researcher-guidelines

* 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

* 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 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 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 VIDEO DRIVER

Mail
Thierry Reding <thierry.reding@gmail.com>, Jonathan Hunter <jonathanh@nvidia.com>, Sowjanya Komatineni <skomatineni@nvidia.com>, Luca Ceresoli <luca.ceresoli@bootlin.com>

Mailing list
linux-media@vger.kernel.org, linux-tegra@vger.kernel.org

Status
Maintained

Files
```
Documentation/devicetree/bindings/display/tegra/nvidia,
tegra20-host1x.yaml Documentation/devicetree/bindings/display/tegra/
nvidia,tegra20-vi.yaml    Documentation/devicetree/bindings/display/
tegra/nvidia,tegra20-vip.yaml 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>

Status
Maintained

SCM
git https://github.com/jcmvbkbc/linux-xtensa.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 AUDIO (ASoC/HDA) DRIVERS

Mail
Shenghao Ding <shenghao-ding@ti.com>, Kevin Lu <kevin-lu@ti.com>, Baojun Xu <baojun.xu@ti.com>

Mailing list
alsa-devel@alsa-project.org (moderated for non-subscribers)

Status
Maintained

Files
```
Documentation/devicetree/bindings/sound/tas2552.txt  Documentation/
devicetree/bindings/sound/tas2562.yaml     Documentation/devicetree/
bindings/sound/tas2770.yaml        Documentation/devicetree/bindings/
sound/tas27xx.yaml          Documentation/devicetree/bindings/sound/
ti,pcm1681.txt           Documentation/devicetree/bindings/sound/ti,
pcm3168a.yaml    Documentation/devicetree/bindings/sound/ti,tlv320*.
yaml          Documentation/devicetree/bindings/sound/tlv320adcx140.
yaml        Documentation/devicetree/bindings/sound/tlv320aic31xx.txt
Documentation/devicetree/bindings/sound/tpa6130a2.txt        include/
sound/tas2*.h include/sound/tlv320*.h include/sound/tpa6130a2-plat.h
sound/pci/hda/tas2781_hda_i2c.c   sound/soc/codecs/pcm1681.c   sound/
soc/codecs/pcm1789*.* sound/soc/codecs/pcm179x*.* sound/soc/codecs/
pcm186x*.*   sound/soc/codecs/pcm3008.*   sound/soc/codecs/pcm3060*.*
sound/soc/codecs/pcm3168a*.* sound/soc/codecs/pcm5102a.c sound/soc/
codecs/pcm512x*.* sound/soc/codecs/tas2*.* sound/soc/codecs/tlv320*.*
sound/soc/codecs/tpa6130a2.*
```

* 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/    include/linux/dma/
k3-psil.h      include/linux/dma/k3-udma-glue.h      include/linux/dma/
ti-cppi5.h
```

Excluded
```
drivers/dma/ti/cppi41.c
```

* 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' 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' 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/pmdomain/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' 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/
    admin-guide/thermal/   Documentation/devicetree/bindings/thermal/
    Documentation/driver-api/thermal/   drivers/thermal/   include/
    dt-bindings/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`
`drivers/thermal/thermal_trace_ipa.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/

* THUNDERX GPIO DRIVER

Mail
Robert Richter <rric@kernel.org>

Status
Odd Fixes

Files
drivers/gpio/gpio-thunderx.c

* TI ADS7924 ADC DRIVER

Mail
Hugo Villeneuve <hvilleneuve@dimonoff.com>

Mailing list
linux-iio@vger.kernel.org

Status
Supported

Files
Documentation/devicetree/bindings/iio/adc/ti,ads7924.yaml   drivers/
iio/adc/ti-ads7924.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
Bartosz Golaszewski <brgl@bgdev.pl>

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/brgl/linux.git

Files
```
Documentation/devicetree/bindings/i2c/i2c-davinci.txt      arch/arm/
boot/dts/ti/davinci/   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/ include/linux/clk/davinci.h
```

* 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 CAPTURE (eCAP) DRIVER

Mail
Vignesh Raghavendra <vigneshr@ti.com>

Reviewer
Julien Panis <jpanis@baylibre.com>

Mailing list
linux-iio@vger.kernel.org, linux-omap@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/counter/ti,am62-ecap-capture.yaml
drivers/counter/ti-ecap-capture.c

* 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 FPD-LINK DRIVERS

Mail
Tomi Valkeinen <tomi.valkeinen@ideasonboard.com>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

Files
`Documentation/devicetree/bindings/media/i2c/ti,ds90* drivers/media/i2c/ds90* include/media/i2c/ds90*`

* 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/pmdomain/ti/omap_prm.c 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 LMP92064 ADC DRIVER

Mail
Leonard Göhrs <l.goehrs@pengutronix.de>

Reviewer
kernel@pengutronix.de

Mailing list
linux-iio@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/iio/adc/ti,lmp92064.yaml drivers/iio/adc/ti-lmp92064.c

* 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 TMAG5273 MAGNETOMETER DRIVER

Mail
Gerald Loacker <gerald.loacker@wolfvision.net>

Mailing list
linux-iio@vger.kernel.org

Status
Maintained

Files
Documentation/devicetree/bindings/iio/magnetometer/ti,tmag5273.yaml
drivers/iio/magnetometer/tmag5273.c

* TI TRF7970A NFC DRIVER

Mail
Mark Greer <mgreer@animalcreek.com>

Mailing list
linux-wireless@vger.kernel.org

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

Files
drivers/net/wireless/ti/

* 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.*`

* 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
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
Hans Verkuil <hverkuil-cisco@xs4all.nl>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

Files
    Documentation/devicetree/bindings/media/i2c/tc358743.txt   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/

* TPS546D24 DRIVER

Mail
    Duke Du <dukedu83@gmail.com>

Mailing list
    linux-hwmon@vger.kernel.org

Status
    Maintained

Files
hwmon/tps546d24 drivers/hwmon/pmbus/tps546d24.c

* TQ SYSTEMS BOARD & DRIVER SUPPORT

Mailing list
linux@ew.tq-group.com

Status
Supported

Web-page
https://www.tq-group.com/en/products/tq-embedded/

Files
arch/arm/boot/dts/imx*mba*.dts*   arch/arm/boot/dts/imx*tqma*.dts*
arch/arm/boot/dts/mba*.dtsi arch/arm64/boot/dts/freescale/imx*mba*.
dts* arch/arm64/boot/dts/freescale/imx*tqma*.dts* arch/arm64/boot/
dts/freescale/mba*.dtsi   drivers/gpio/gpio-tqmx86.c   drivers/mfd/
tqmx86.c drivers/watchdog/tqmx86_wdt.c

* TRACING

Mail
Steven   Rostedt   <rostedt@goodmis.org>,   Masami   Hiramatsu   <mhira-
mat@kernel.org>

Mailing list
linux-kernel@vger.kernel.org, linux-trace-kernel@vger.kernel.org

Status
Maintained

Patchwork
https://patchwork.kernel.org/project/linux-trace-kernel/list/

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/trace/linux-trace.git

Files
Documentation/trace/* fs/tracefs/ include/linux/trace*.h include/
trace/ kernel/trace/ scripts/tracing/ tools/testing/selftests/ftrace/

* TRACING MMIO ACCESSES (MMIOTRACE)

Mail
Steven   Rostedt   <rostedt@goodmis.org>,   Masami   Hiramatsu   <mhira-
mat@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
    trace/hwlat_detector trace/osnoise-tracer trace/timerlat-tracer arch/*/kernel/
    trace.c   include/trace/events/osnoise.h   kernel/trace/trace_hwlat.c
    kernel/trace/trace_irqsoff.c   kernel/trace/trace_osnoise.c   kernel/
    trace/trace_sched_wakeup.c

* TRADITIONAL CHINESE DOCUMENTATION

Mail
    Hu Haowen <src.res.211@gmail.com>

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 AND SERIAL DRIVERS

Mail
    Greg Kroah-Hartman <gregkh@linuxfoundation.org>, Jiri Slaby <jirislaby@kernel.org>

Mailing list
    linux-kernel@vger.kernel.org, linux-serial@vger.kernel.org

Status
    Supported

SCM

git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/tty.git

Files

Documentation/devicetree/bindings/serial/ Documentation/driver-api/
serial/ drivers/tty/ 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

Willem de Bruijn <willemdebruijn.kernel@gmail.com>, Jason Wang <jasowang@redhat.com>

Status

Maintained

Web-page

http://vtun.sourceforge.net/tun

Files
>   networking/tuntap arch/um/os-Linux/drivers/ drivers/net/tap.c drivers/
>   net/tun.c

* 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   drivers/
nvmem/u-boot-env.c

* 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/

* UBLK USERSPACE BLOCK DRIVER

Mail
Ming Lei <ming.lei@redhat.com>

Mailing list
linux-block@vger.kernel.org

Status
Maintained

Files
block/ublk `drivers/block/ublk_drv.c include/uapi/linux/ublk_cmd.h`

* UCLINUX (M68KNOMMU AND COLDFIRE)

Mail
Greg Ungerer <gerg@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/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@readahead.eu>

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

* 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 EXYNOS HOOKS

Mail
Alim Akhtar <alim.akhtar@samsung.com>

Mailing list
linux-scsi@vger.kernel.org

Status
Maintained

Files
drivers/ufs/host/ufs-exynos*

* 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*

* UNIVERSAL FLASH STORAGE HOST CONTROLLER DRIVER QUALCOMM HOOKS

Mail
Manivannan Sadhasivam <manivannan.sadhasivam@linaro.org>

Mailing list
linux-arm-msm@vger.kernel.org, linux-scsi@vger.kernel.org

Status
Maintained

Files
    Documentation/devicetree/bindings/ufs/qcom,ufs.yaml   drivers/ufs/
    host/ufs-qcom*

* UNIVERSAL FLASH STORAGE HOST CONTROLLER DRIVER RENESAS HOOKS

Mail
    Yoshihiro Shimoda <yoshihiro.shimoda.uh@renesas.com>

Mailing list
    linux-renesas-soc@vger.kernel.org, linux-scsi@vger.kernel.org

Status
    Maintained

Files
    drivers/ufs/host/ufs-renesas.c

* 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

Mailing list
linux-wireless@vger.kernel.org

Status
Orphan

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 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 <wang-binghui@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
Documentation/devicetree/bindings/usb/nxp,isp1760.yaml drivers/usb/
isp1760/*

* 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/

* 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>

Reviewer
    Hongren Zheng <i@zenithal.me>

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 https://github.com/petkan/pegasus.git

Files
    drivers/net/usb/pegasus.*

* 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 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 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 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 https://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/
include/uapi/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>, Daniel Scally <dan.scally@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)

Mailing list
linux-wireless@vger.kernel.org

Status
Orphan

Files
drivers/net/wireless/legacy/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.*

* USER DATAGRAM PROTOCOL (UDP)

Mail
Willem de Bruijn <willemdebruijn.kernel@gmail.com>

Status
Maintained

Files
include/linux/udp.h net/ipv4/udp.c net/ipv6/udp.c

* 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

Reviewer
Andy Shevchenko <andriy.shevchenko@linux.intel.com>

Mailing list
linux-kernel@vger.kernel.org

Status
Maintained

Files
include/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/`

* V4L2 ASYNC AND FWNODE FRAMEWORKS

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/v4l2-core/v4l2-async.c`   `drivers/media/v4l2-core/v4l2-fwnode.c include/media/v4l2-async.h include/media/v4l2-fwnode.h`

* V4L2 LENS DRIVERS

Mail
Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

Files
drivers/media/i2c/ak* drivers/media/i2c/dw* drivers/media/i2c/lm*

* V4L2 CAMERA SENSOR DRIVERS

Mail
Sakari Ailus <sakari.ailus@linux.intel.com>

Mailing list
linux-media@vger.kernel.org

Status
Maintained

Files
driver-api/media/camera-sensor driver-api/media/tx-rx drivers/media/i2c/ar*
drivers/media/i2c/hi* drivers/media/i2c/imx* drivers/media/i2c/mt*
drivers/media/i2c/og* drivers/media/i2c/ov* drivers/media/i2c/s5*
drivers/media/i2c/st-vgxy61.c

* 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/ tools/testing/selftests/filesystems/fat/

* VFIO CDX DRIVER

Mail
Nipun Gupta <nipun.gupta@amd.com>, Nikhil Agarwal <nikhil.agarwal@amd.com>

Mailing list
kvm@vger.kernel.org

Status
Maintained

Files
drivers/vfio/cdx/*

* VFIO DRIVER

Mail
Alex Williamson <alex.williamson@redhat.com>

Mailing list
kvm@vger.kernel.org

Status
Maintained

SCM
git https://github.com/awilliam/linux-vfio.git

Files
Documentation/ABI/testing/sysfs-devices-vfio-dev 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 MLX5 PCI DRIVER

Mail
Yishai Hadas <yishaih@nvidia.com>

Mailing list
kvm@vger.kernel.org

Status
Maintained

Files
    drivers/vfio/pci/mlx5/

* VFIO PCI DEVICE SPECIFIC DRIVERS

Reviewer
    Jason Gunthorpe <jgg@nvidia.com>, Yishai Hadas <yishaih@nvidia.com>, Shameer Kolothum <shameerali.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 PDS PCI DRIVER

Mail
    Brett Creeley <brett.creeley@amd.com>

Mailing list
    kvm@vger.kernel.org

Status
    Maintained

Files
    networking/device_drivers/ethernet/amd/pds_vfio_pci drivers/vfio/pci/pds/

* VFIO PLATFORM DRIVER

Mail
    Eric Auger <eric.auger@redhat.com>

Mailing list
    kvm@vger.kernel.org

Status
    Maintained

Files
    drivers/vfio/platform/

* 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

Mail
Kevin Brace <kevinbrace@bracecomputerlab.com>

Status
Maintained

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_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-*

* 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/*

* 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, net-dev@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 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/linux/balloon_compaction.h
    include/uapi/linux/virtio_balloon.h mm/balloon_compaction.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   <ste-
    fanha@redhat.com>

Mailing list
    virtualization@lists.linux-foundation.org

Status
    Maintained

Files
    drivers/block/virtio_blk.c drivers/scsi/virtio_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>

Reviewer
Xuan Zhuo <xuanzhuo@linux.alibaba.com>

Mailing list
virtualization@lists.linux-foundation.org

Status
Maintained

Files
```
Documentation/ABI/testing/sysfs-bus-vdpa          Documentation/ABI/
testing/sysfs-class-vduse  Documentation/devicetree/bindings/virtio/
Documentation/driver-api/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/linux/vringh.h
include/uapi/linux/virtio_*.h tools/virtio/
```

* 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@redhat.com>, 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

* 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,   net-dev@vger.kernel.org

Status
    Maintained

SCM
    git git://git.kernel.org/pub/scm/linux/kernel/git/mst/vhost.git

Files
    drivers/vhost/   include/linux/sched/vhost_task.h   include/linux/
    vhost_iotlb.h include/uapi/linux/vhost.h kernel/vhost_task.c

* VIRTIO HOST (VHOST-SCSI)

Mail
    "Michael S. Tsirkin" <mst@redhat.com>, Jason Wang <jasowang@redhat.com>,
    Mike Christie <michael.christie@oracle.com>

Reviewer
    Paolo   Bonzini   <pbonzini@redhat.com>,   Stefan   Hajnoczi   <stefanha@redhat.com>

Mailing list
    virtualization@lists.linux-foundation.org

Status
    Maintained

Files
    drivers/vhost/scsi.c

* 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 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 PMEM DRIVER

Mail
Pankaj Gupta <pankaj.gupta.linux@gmail.com>

Mailing list
virtualization@lists.linux-foundation.org

Status
Maintained

Files
drivers/nvdimm/nd_virtio.c drivers/nvdimm/virtio_pmem.c

* 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/*

* 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 PCM TEST DRIVER

Mail
Ivan Orlov <ivan.orlov0322@gmail.com>

Mailing list
alsa-devel@alsa-project.org

Status
Maintained

Files
    sound/cards/pcmtest sound/drivers/pcmtest.c tools/testing/selftests/
    alsa/test-pcmtest-driver.c

* VIRTUAL SERIO DEVICE DRIVER

Mail
    Stephen Chandler Paul <thatslyude@gmail.com>

Status
    Maintained

Files
    drivers/input/serio/userio.c include/uapi/linux/userio.h

* VISL VIRTUAL STATELESS DECODER DRIVER

Mail
    Daniel Almeida <daniel.almeida@collabora.com>

Mailing list
    linux-media@vger.kernel.org

Status
    Supported

Files
    drivers/media/test-drivers/visl

* 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/*

* 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

* 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/

* VMALLOC

Mail
    Andrew Morton <akpm@linux-foundation.org>

Reviewer
    Uladzislau   Rezki   <urezki@gmail.com>,   Christoph   Hellwig
    <hch@infradead.org>, Lorenzo Stoakes <lstoakes@gmail.com>

Mailing list
    linux-mm@kvack.org

Status
    Maintained

Web-page
    http://www.linux-mm.org

SCM
    git git://git.kernel.org/pub/scm/linux/kernel/git/akpm/mm

Files
    include/linux/vmalloc.h mm/vmalloc.c

* 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
Odd fixes

SCM
git git://git.kernel.org/pub/scm/linux/kernel/git/gregkh/char-misc.git

Files
driver-api/vme `drivers/staging/vme_user/`

* 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
Supported

Files
`drivers/misc/vmw_balloon.c`

* VMWARE HYPERVISOR INTERFACE

Mail
Ajay Kaher <akaher@vmware.com>, 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
Supported

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
Supported

Files
drivers/scsi/vmw_pvscsi.c drivers/scsi/vmw_pvscsi.h

* VMWARE VIRTUAL PTP CLOCK DRIVER

Mail
Deep Shah <sdeep@vmware.com>

Reviewer
Ajay Kaher <akaher@vmware.com>, Alexey Makhalov <amakhalov@vmware.com>, 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>, Vishnu Dasa <vdasa@vmware.com>

Reviewer
VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list
linux-kernel@vger.kernel.org

Status
Supported

Files
drivers/misc/vmw_vmci/ include/linux/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
Supported

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
Supported

Files
drivers/net/vmxnet3/

* VMWARE VSOCK VMCI TRANSPORT DRIVER

Mail
Bryan Tan <bryantan@vmware.com>, Vishnu Dasa <vdasa@vmware.com>

Reviewer
VMware PV-Drivers Reviewers <pv-drivers@vmware.com>

Mailing list
linux-kernel@vger.kernel.org

Status
Supported

Files
net/vmw_vsock/vmci_transport*

* 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>

Reviewer
Andy Shevchenko <andriy.shevchenko@linux.intel.com>, Rasmus Villemoes <linux@rasmusvillemoes.dk>, Sergey Senozhatsky <senozhatsky@chromium.org>

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@proton.me>

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
Krzysztof Kozlowski <krzysztof.kozlowski@linaro.org>

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`

* WANGXUN ETHERNET DRIVER

Mail
Jiawen Wu <jiawenwu@trustnetic.com>, Mengyuan Lou <mengyuanlou@net-swift.com>

Mailing list
netdev@vger.kernel.org

Status
Maintained

Web-page
https://www.net-swift.com

Files
Documentation/networking/device_drivers/ethernet/wangxun/* drivers/net/ethernet/wangxun/ drivers/net/pcs/pcs-xpcs-wx.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/trace/events/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@readahead.eu>

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

Mailing list
linux-watchdog@vger.kernel.org

Status
Orphan

Files
drivers/watchdog/ebc-c384_wdt.c

* WINSYSTEMS WS16C48 GPIO DRIVER

Mail
William Breathitt Gray <william.gray@linaro.org>

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
Orphan

Files
drivers/net/wireless/legacy/wl3501*

* WMI BINARY MOF DRIVER

Mail
Armin Wolf <W_Armin@gmx.de>

Reviewer
Thomas Weißschuh <linux@weissschuh.net>

Mailing list
platform-driver-x86@vger.kernel.org

Status
Maintained

Files
Documentation/ABI/stable/sysfs-platform-wmi-bmof wmi/devices/wmi-bmof
drivers/platform/x86/wmi-bmof.c

* 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
> kernel/workqueue_internal.h

* 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/arch/x86/ Documentation/devicetree/bindings/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 HARDWARE VULNERABILITIES

Mail
    Thomas Gleixner <tglx@linutronix.de>, Borislav Petkov <bp@alien8.de>, Peter
    Zijlstra <peterz@infradead.org>, Josh Poimboeuf <jpoimboe@kernel.org>

Reviewer
    Pawan Gupta <pawan.kumar.gupta@linux.intel.com>

Status
    Maintained

Files
    Documentation/admin-guide/hw-vuln/   arch/x86/include/asm/
    nospec-branch.h arch/x86/kernel/cpu/bugs.c

* 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 arch/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/`

* X86 PLATFORM DRIVERS

Mail
　　　Hans de Goede <hdegoede@redhat.com>, Ilpo Järvinen <ilpo.jarvinen@linux.intel.com>, Mark Gross <markgross@kernel.org>

Mailing list
　　　platform-driver-x86@vger.kernel.org

Status
　　　Maintained

Patchwork
　　　https://patchwork.kernel.org/project/platform-driver-x86/list/

SCM
　　　git git://git.kernel.org/pub/scm/linux/kernel/git/pdx86/platform-drivers-x86.git

Files
　　　`drivers/platform/olpc/` `drivers/platform/x86/` `include/linux/`
　　　`platform_data/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
Justin Ernst <justin.ernst@hpe.com>, Kyle Meyer <kyle.meyer@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
drivers/net/ethernet/*/*/*/*/*xdp*   drivers/net/ethernet/*/*/*xdp*
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*

Content regex
(?:\b|_)xdp(?:\b|_)

* XDP SOCKETS (AF_XDP)

Mail
Björn   Töpel   <bjorn@kernel.org>,   Magnus   Karlsson   <mag-
nus.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/netns/xdp.h   include/net/xdp_sock*
include/net/xsk_buff_pool.h   include/uapi/linux/if_xdp.h   include/
uapi/linux/xdp_diag.h net/xdp/ tools/testing/selftests/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/ kernel/configs/xen.config

* 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/configs/xen.config 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), net-dev@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/*/include/asm/xen/swiotlb-xen.h   drivers/xen/swiotlb-xen.c
include/xen/arm/swiotlb-xen.h include/xen/swiotlb-xen.h

* XFS FILESYSTEM

Mail
Catherine Hoang <catherine.hoang@oracle.com>, Chandan Babu R <chandan.babu@oracle.com>

Reviewer
Darrick J. Wong <djwong@kernel.org>

Mailing list
linux-xfs@vger.kernel.org

Status
Supported

Web-page
http://xfs.org/

chat
irc://irc.oftc.net/xfs

SCM
git git://git.kernel.org/pub/scm/fs/xfs/xfs-linux.git

P
filesystems/xfs-maintainer-entry-profile

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@amd.com>

Status
> Maintained

Files
> Documentation/devicetree/bindings/net/xlnx,axi-ethernet.yaml
> 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 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

* XILINX GPIO DRIVER

Mail
Shubhrajyoti Datta <shubhrajyoti.datta@amd.com>

Reviewer
Srinivas   Neeli   <srinivas.neeli@amd.com>,   Michal   Simek
<michal.simek@amd.com>

Status
Maintained

Files
Documentation/devicetree/bindings/gpio/gpio-zynq.yaml Documentation/
devicetree/bindings/gpio/xlnx,gpio-xilinx.yaml   drivers/gpio/
gpio-xilinx.c drivers/gpio/gpio-zynq.c

* XILINX PWM DRIVER

Mail
Sean Anderson <sean.anderson@seco.com>

Status
Maintained

Files
drivers/pwm/pwm-xilinx.c include/clocksource/timer-xilinx.h

* XILINX SD-FEC IP CORES

Mail
Derek   Kiernan   <derek.kiernan@amd.com>,   Dragan   Cvetic   <dra-
gan.cvetic@amd.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 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
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 WATCHDOG DRIVER

Mail
Srinivas Neeli <srinivas.neeli@amd.com>

Reviewer
Shubhrajyoti   Datta   <shubhrajyoti.datta@amd.com>,   Michal   Simek
<michal.simek@amd.com>

Status
Maintained

Files
Documentation/devicetree/bindings/watchdog/xlnx,versal-wwdt.yaml
Documentation/devicetree/bindings/watchdog/xlnx,xps-timebase-wdt.
yaml drivers/watchdog/of_xilinx_wdt.c drivers/watchdog/xilinx_wwdt.c

* XILINX XDMA DRIVER

Mail
Lizhi Hou <lizhi.hou@amd.com>, Brian Xu <brian.xu@amd.com>, Raj Kumar Rampelli <raj.kumar.rampelli@amd.com>

Mailing list
dmaengine@vger.kernel.org

Status
Supported

Files
drivers/dma/xilinx/xdma-regs.h drivers/dma/xilinx/xdma.c include/linux/dma/amd_xdma.h include/linux/platform_data/amd_xdma.h

* XILINX ZYNQMP DPDMA DRIVER

Mail
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 OCM EDAC DRIVER

Mail
Shubhrajyoti Datta <shubhrajyoti.datta@amd.com>, Sai Krishna Potthuri <sai.krishna.potthuri@amd.com>

Status
Maintained

Files
Documentation/devicetree/bindings/memory-controllers/xlnx,zynqmp-ocmc-1.0.yaml drivers/edac/zynqmp_edac.c

* XILINX ZYNQMP PSGTR PHY DRIVER

Mail
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@amd.com>

Status
Maintained

Files
drivers/crypto/xilinx/zynqmp-sha.c

* 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>

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>

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 for-next/hardening

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.*`

* 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`

* 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

* ZD1211RW WIRELESS DRIVER

Mailing list
linux-wireless@vger.kernel.org

Status
Orphan

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 <dlemoal@kernel.org>, Naohiro Aota <nao-hiro.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/media/pci/zoran/`

* ZRAM COMPRESSED RAM BLOCK DEVICE DRVIER

Mail
Minchan   Kim   <minchan@kernel.org>,   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>,   Sergey   Senozhatsky
    <senozhatsky@chromium.org>

Mailing list
    linux-mm@kvack.org

Status
    Maintained

Files
    `mm/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 https://github.com/terrelln/linux.git

Files
    `crypto/zstd.c include/linux/zstd* lib/decompress_unzstd.c lib/zstd/`

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.

* Surveys

Research often takes the form of surveys sent to maintainers or contributors. As a general rule, though, the kernel community derives little value from these surveys. The kernel development process works because every developer benefits from their participation, even working with others who have different goals. Responding to a survey, though, is a one-way demand placed on busy developers with no corresponding benefit to themselves or to the kernel community as a whole. For this reason, this method of research is discouraged.

Kernel community members already receive far too much email and are likely to perceive survey requests as just another demand on their time. Sending such requests deprives the community of valuable contributor time and is unlikely to yield a statistically useful response.

As an alternative, researchers should consider attending developer events, hosting sessions where the research project and its benefits to the participants can be explained, and interacting directly with the community there. The information received will be far richer than that obtained from an email survey, and the community will gain from the ability to learn from your insights as well.

* Patches

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
- *Security bugs*

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>.

LINUX KERNEL CONTRIBUTION MATURITY MODEL

* Background

As a part of the 2021 Linux Kernel Maintainers' Summit, there was a discussion about the challenges in recruiting kernel maintainers as well as maintainer succession. Some of the conclusions from that discussion included that companies which are a part of the Linux Kernel community need to allow engineers to be maintainers as part of their job, so they can grow into becoming respected leaders and eventually, kernel maintainers. To support a strong talent pipeline, developers should be allowed and encouraged to take on upstream contributions such as reviewing other people's patches, refactoring kernel infrastructure, and writing documentation.

To that end, the Linux Foundation Technical Advisory Board (TAB) proposes this Linux Kernel Contribution Maturity Model. These common expectations for upstream community engagement aim to increase the influence of individual developers, increase the collaboration of organizations, and improve the overall health of the Linux Kernel ecosystem.

The TAB urges organizations to continuously evaluate their Open Source maturity model and commit to improvements to align with this model. To be effective, this evaluation should incorporate feedback from across the organization, including management and developers at all seniority levels. In the spirit of Open Source, we encourage organizations to publish their evaluations and plans to improve their engagement with the upstream community.

* Level 0

- Software Engineers are not allowed to contribute patches to the Linux kernel.

* Level 1

- Software Engineers are allowed to contribute patches to the Linux kernel, either as part of their job responsibilities or on their own time.

* Level 2

- Software Engineers are expected to contribute to the Linux Kernel as part of their job responsibilities.

- Software Engineers will be supported to attend Linux-related conferences as a part of their job.

- A Software Engineer's upstream code contributions will be considered in promotion and performance reviews.

* Level 3

- Software Engineers are expected to review patches (including patches authored by engineers from other companies) as part of their job responsibilities

- Contributing presentations or papers to Linux-related or academic conferences (such those organized by the Linux Foundation, Usenix, ACM, etc.), are considered part of an engineer's work.

- A Software Engineer's community contributions will be considered in promotion and performance reviews.

- Organizations will regularly report metrics of their open source contributions and track these metrics over time. These metrics may be published only internally within the organization, or at the organization's discretion, some or all may be published externally. Metrics that are strongly suggested include:

  - The number of upstream kernel contributions by team or organization (e.g., all people reporting up to a manager, director, or VP).

  - The percentage of kernel developers who have made upstream contributions relative to the total kernel developers in the organization.

  - The time interval between kernels used in the organization's servers and/or products, and the publication date of the upstream kernel upon which the internal kernel is based.

  - The number of out-of-tree commits present in internal kernels.

* Level 4

- Software Engineers are encouraged to spend a portion of their work time focused on Upstream Work, which is defined as reviewing patches, serving on program committees, improving core project infrastructure such as writing or maintaining tests, upstream tech debt reduction, writing documentation, etc.

- Software Engineers are supported in helping to organize Linux-related conferences.

- Organizations will consider community member feedback in official performance reviews.

* Level 5

- Upstream kernel development is considered a formal job position, with at least a third of the engineer's time spent doing Upstream Work.

- Organizations will actively seek out community member feedback as a factor in official performance reviews.

- Organizations will regularly report internally on the ratio of Upstream Work to work focused on directly pursuing business goals.

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.h
APM_BIOS_MAGIC	0x4101	apm_user	arch/x86/kernel/ apm_32.c
FASYNC_MAGIC	0x4601	fasync_struct	include/linux/fs.h
SLIP_MAGIC	0x5302	slip	drivers/net/slip.h
BAYCOM_MAGIC	0x19730510	baycom_state	drivers/net/ baycom_epp.c
HDLCDRV_MAGIC	0x5ac6e778	hdlcdrv_state	include/linux/ hdlcdrv.h
KV_MAGIC	0x5f4b565f	kernel_vars_s	arch/mips/include/ asm/sn/klkernvars.h
CODA_MAGIC	0xC0DAC0DA	coda_file_info	fs/coda/coda_fs_i.h
YAM_MAGIC	0xF10A7654	yam_port	drivers/net/ hamradio/yam.c
CCB_MAGIC	0xf2691ad2	ccb	drivers/scsi/ ncr53c8xx.c
QUEUE_MAGIC_FREE	0xf7e1c9a3	queue_entry	drivers/scsi/arm/ queue.c
QUEUE_MAGIC_USED	0xf7e1cc33	queue_entry	drivers/scsi/arm/ queue.c
NMI_MAGIC	0x48414d4d455201	nmi_s	arch/mips/include/ asm/sn/nmi.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 uintptr_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 maintaining 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.

* Patchwork

RISC-V has a patchwork instance, where the status of patches can be checked:

> https://patchwork.kernel.org/project/linux-riscv/list/

If your patch does not appear in the default view, the RISC-V maintainers have likely either requested changes, or expect it to be applied to another tree.

Automation runs against this patchwork instance, building/testing patches as they arrive. The automation applies patches against the current HEAD of the RISC-V *for-next* and *fixes* branches, depending on whether the patch has been detected as a fix. Failing those, it will use the RISC-V *master* branch. The exact commit to which a series has been applied will be noted on patchwork. Patches for which any of the checks fail are unlikely to be applied and in most cases will need to be resubmitted.

* 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 unlikely to be incompatibly changed in the future. For specifications from the RISC-V foundation this means "Frozen" or "Ratified", for the UEFI forum specifications this means a published ECR. (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 implementers 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 consider patches for extensions that either:

- Have been officially frozen or ratified by the RISC-V Foundation, or

- Have been implemented in hardware that is widely available, per standard Linux practice.

(Implementers, 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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