

Linux Kernel Subsystem Maintenance

Linus Walleij, Lund Linux Conference



A Day in the Life of a Subsystem Maintainer

- Why are we doing it?
- How did we come to be subsystem maintainers?
- What do we actually do?

Why Do We Do It?

- I am existentialist, people do what they do because of active choices
- I have chosen to have subsystem maintenance as part of my life for self-development, technology development, career, social recognition ...
- I became a subsystem maintainer for pin control after inventing the subsystem in 2011
- In 2012 I was also given the sole maintenance of the GPIO subsystem after being co-maintainer with Grant Likely

A Typical Day

- Go through the mail in reverse date order

me, Mark (2)	ITO ME	Lis...Device Tree discuss	Lists/Linux-ARM-kernel	[PATCH v2] ARM: dt: fix up PL011 device tree bindings - The pin control state "default" is the only mandated > state, the sleep state is entirely optional. >	12:48 pm	
Mail Delivery Subsystem	Inbox	ITO ME		Delivery Status Notification (Failure) - The pin control state "default" is the only mandated state, the sleep state is entirely optional. We also add	12:04 pm	
Alexander, Shawn, Sascha (E	ITO ME	Lists/Linux-LKML		[PATCH] pinctrl: Add i.MX1 pincontrol driver - patch adds pincontrol driver for Freescale i.MX1 SOCs. > > > > Signed-off-by: Alexander Shiyan >	7:46 am	
me, Maxime (3)	ITO ME	Lists/Linux-GPIO	Lists/Linux-LKML	[PATCH] RFT: pinctrl: sunxi: convert to GPIO irqchip helpers - the sunxi pinctrl driver over to using the generic > gpiolib irqchip helpers for its chained irqs. > > As the .to_irq	May 11	
Greg Kroah-Hartman	ITO ME	Lists/Linux-LKML		[PATCH 3.14 56/83] pinctrl: as3722: fix handling of GPIO invert bit - drivers/pinctrl/pinctrl-as3722.c 17 ++++++ 1 file changed, 11 insertions(+), 6 deletions(-) ... a/drivers	May 11	
Sebastian Reichel	ITO ME	Lis...Device Tree discuss	Lists/Linux-LKML	[PATCHv5 10/10] DTS: ARM: OMAP3-N900: Add modem support - { + pinctrl-single,pins = < + 0x0ac (PIN_OUTPUT MUX_MODE4) /* gpio 70 => cmt_apeslpx */ + 0x0t	May 10	
Sebastian Reichel	ITO ME	Lis...Device Tree discuss	Lists/Linux-LKML	[PATCHv5 09/10] DTS: ARM: OMAP3-N900: Add SSI support - { + pinctrl-single,pins = < + 0x150 (PIN_INPUT_PULLUP MUX_MODE1) /* ssi1_rdy_tx */ + 0x14e (PIN_O	May 10	
Sebastian Reichel	ITO ME	Lis...Device Tree discuss	Lists/Linux-LKML	[PATCHv5 08/10] HSI: Introduce Nokia N900 modem driver - + + pinctrl-names = "default"; + pinctrl-0 = <&modem_pins>; + + hsi-channel-ids = <0>;	May 10	
Alexander Shiyan	ITO ME	Lists/Linux-ARM-kernel		[PATCH 2/2] pinctrl: i.MX27: Remove nonexistent pad definitions - drivers/pinctrl/pinctrl-imx27.c 46 2 files changed, 92 deletions(-)	May 10	
Alexander Shiyan	ITO ME	Lists/Linux-ARM-kernel		[PATCH 1/2] pinctrl: i.MX27: Remove unused structure definition - drivers/pinctrl/pinctrl-imx27.c 6 1 file changed, 6 deletions(-) diff --git a/drivers/pinctrl/pinctrl-imx27	May 10	
Andy, me, Andy, Bjorn (5)	ITO ME	Lists/Linux-ARM-kernel	Lists/Linux-LKML	[PATCH] pinctrl: msm: Add more MSM8X74 pin definitions - patch adds pin definitions for the MSM8x74 TLMM. New definitions > include: > > BLSF devices (I2C, UART,	May 9	
me, me, Bjorn (3)	ITO ME	Lists/Linux-ARM-kernel	Lists/Linux-GPIO	Lists/Linux-LKML	[PATCH] RFT: pinctrl: msm: switch to using generic GPIO irqchip helpers - Qualcomm MSM pin control driver over to using > > the generic GPIO irqchip	May 9
Kumar, Andy (2)	ITO ME	Lists/Linux-ARM-kernel	Lists/Linux-LKML	[PATCH] pinctrl: qcom: ipq8064: Fix naming convention - On Fri, May 09, 2014 at 01:08:25PM -0500, Kumar Gala wrote: > Drop underscore in spdif_groups to	May 9	
Maxime, me (4)	ITO ME	Lists/Linux-ARM-kernel		[GIT PULL] Allwinner Pinctrl changes for 3.16 - > > pinctrl: mvebu: new driver for Orion platforms (2014-04-24 15:09:35 +0200) > > > are available	May 9	
Alexander, me, Nicolas (5)	ITO ME	Lists/Linux-ARM-kernel		[PATCH] pinctrl/at91: Fix lockup when IRQ on PIOC and PIOD occurs - 80cc3732 (pinctrl/at91: convert driver to use gpiolib irqchip) >> gpiolib_set_chained_irqchip is called for	May 9	
Magnus, Geert (2)	Inbox	ITO ME		[PATCH 00/03] pinctrl: sh-pfc: Extend Multiplatform Support - > > pinctrl: sh-pfc: Extend Multiplatform Support > > [PATCH 01/03] pinctrl: sh-pfc: r8a7740: Allow Multiplatform	May 9	
gregkh	Inbox	ITO ME		Patch "pinctrl: as3722: fix handling of GPIO invert bit" has been added to the 3.14-sta... - patch titled pinctrl: as3722: fix handling of GPIO invert bit to the 3.14-stable tree which can be found at: http://www.	May 9	
Hans, me, Maxime (6)	ITO ME	Lists/Linux-ARM-kernel		[PATCH] pinctrl: sunxi Ensure the correct pinctrl drivers are enabled - : "pinctrl: sunxi: Introduce per-driver Kconfig options" > > > adds a bunch of new Kconfig options	May 8	
Ulf Hansson	Inbox	ITO ME		Re: RUNTIME PM driver support for Capri - > it's pinctrl settings, what power domain it's in, etc. etc.) and IMO, a >>> portable device driver	May 8	
Magnus Damm	Inbox	ITO ME		[PATCH 03/03] pinctrl: sh-pfc: r8a73a4: Allow Multiplatform Build - drivers/pinctrl/sh-pfc/pfc-r8a73a4.c 7 ++++++ 1 file changed, 7 insertions(+), 0001/drivers/pinctrl/sh-pfc	May 8	

- gmail filters used extensively to cut through dozens of mail lists and unrelated discussions

- Putting me on To: line is a good idea

Review Patches

- Anachronistic definition: it's like Gerrit but in mail ...

[PATCH V2 05/19] mmc: mmci: Add DT bindings for feedback clock pin

ITO ME x



Linus Walleij <linus.walleij@linaro.org>

to Ulf, linux-arm-kern., Russell, devicetree, Rob

Ulf Hansson <ulf.hansson@linaro.org>

to linux-arm-kern., Russell, me, devicetree, Rob

The ST Micro variant supports the option of using a feedback clock signal in favor of the clockout pin when latching incoming signals on the data bus.

Since this is matter of how pins are being routed we need to provide a **new** DT binding to be able to configure this through DT.

Signed-off-by: Ulf Hansson <ulf.hansson@linaro.org>

```
Documentation/devicetree/bindings/mmc/mmci.txt | 2 ++
drivers/mmc/host/mmci.c | 2 ++
2 files changed, 4 insertions(+)
```

```
diff --git a/Documentation/devicetree/bindings/mmc/mmci.txt b/Documentation/devicetree/bindings/mmc/mmci.txt
index 9bd2fa..2c8756f 100644
--- a/Documentation/devicetree/bindings/mmc/mmci.txt
+++ b/Documentation/devicetree/bindings/mmc/mmci.txt
@@ -24,6 +24,7 @@ Optional properties:
- st,sig-dir-dat31 : bus signal direction pin used for DAT[3] and DAT[1].
- st,sig-dir-dat74 : bus signal direction pin used for DAT[4] to DAT[7].
- st,sig-dir-cmd : cmd signal direction pin used for CMD.
+- st,sig-pin-fbclk : feedback clock signal pin used.
```

Example:

```
@@ -47,6 +48,7 @@ sdi0_per1@80126000 {
    st,sig-dir-dat0;
    st,sig-dir-dat2;
    st,sig-dir-cmd;
+   st,sig-pin-fbclk;

    vmmc-supply = <&ab8500_ido_aux3_reg>;
    vqmmc-supply = <&vmmc1>;
diff --git a/drivers/mmc/host/mmci.c b/drivers/mmc/host/mmci.c
index c99ec88..3663bc15 100644
--- a/drivers/mmc/host/mmci.c
+++ b/drivers/mmc/host/mmci.c
@@ -1402,6 +1402,8 @@ static void mmci_dt_populate_generic_pdata(struct device_node *np,
    pdata->sigdir |= MCI_ST_DATA7DIREN;
    if (of_get_property(np, "st,sig-dir-cmd", NULL))
        pdata->sigdir |= MCI_ST_CMDDIREN;
+   if (of_get_property(np, "st,sig-pin-fbclk", NULL))
+       pdata->sigdir |= MCI_ST_FBCLKEN;

    pdata->gpio_wp = of_get_named_gpio(np, "wp-gpios", 0);
    pdata->gpio_cd = of_get_named_gpio(np, "cd-gpios", 0);
```

On Mon, Mar 31, 2014 at 5:18 PM, Ulf Hansson <ulf.hansson@linaro.org> wrote:

> The ST Micro variant supports the option of using a feedback clock signal in favor of the clockout pin when latching incoming signals on the data bus.

>

> Since this is matter of how pins are being routed we need to provide a **new** DT binding to be able to configure this through DT.

>

> Signed-off-by: Ulf Hansson <ulf.hansson@linaro.org>

Reviewed-by: Linus Walleij <linus.walleij@linaro.org>

Yours,
Linus Walleij

Technical Discussion



Linus Walleij <linus.walleij@linaro.org>

to Heiko, linux-arm-kern., devicetree, max.schwarz, Rob, Pawel, Mark, Ian, Kur

On Mon, May 5, 2014 at 1:57 PM, Heiko Stübner <heiko@sntech.de> wrote:

- > Initially due to lack of documentation and (personal) understanding
- > I assumed that the area holding the iomux settings would be separate
- > from everything else, while in fact the grf registers contain not only
- > `pinctrl` stuff but also dma, usb-phy and general soc-status settings.
- > Also things like drive-strength we do not support currently are intermixed.
- >
- > The same is true for the pmu, which does not only contain power domains
- > but also the system reset as well as general registers surviving
- > system-resets. Additionally the rk3188 moved parts of the pull-setting
- > registers into the pmu space.
- >
- > While this wasn't a problem until now, the upcoming rk3288 introduces
- > additional changes to both the grf and pmu areas. On it even part of
- > the pinmux registers move into the pmu space.
- >
- > The code in it's current form supports both the old as well as the
- > changed bindings.
- >
- > As stated in the v1 thread, this is also a first step to deprecate the
- > wrongly included gpio-controllers which now duplicate the recently added
- > gpio-dwapb, that should be used instead.

Patched 1 thru 7 applied to the `pin` control tree.

We knew this would be a bumpy ride when the merging started so this is all expected.

Yours,
Linus Walleij



Linus Walleij <linus.walleij@linaro.org>

to Thomas, Antoine, Sebastian, Alexandre, zhiming, Jisheng, linux-arm-kern., linux-kernel

On Wed, Apr 23, 2014 at 5:51 PM, Antoine Ténart <antoine.tenart@free-electrons.com> wrote:

- > This series adds support for the Marvell Berlin `pin`-controller, allowing
- > to configure the `pin` muxing from the device tree.
- >
- > The Berlin `pin`-controller support is divided into 3 drivers, each
- > driving one Berlin SoC. These drivers use a Berlin common part.
- >
- > This series applies on top of patches introducing the Marvell Berlin
- > BG2Q you can find on Sebastian's berlin/for-next branch[1] and the patch
- > allowing not to define the `get_group_pins()` function[2].
- >
- > Tested on the Berlin BG2Q.

So now I need some advice from the mvebu `pinctrl` maintainers (Thomas, Sebastian etc):

- Is this a totally different `pin` controller so that `drivers/pinctrl/mvebu` can not be used?
- Really?
- OK can you help me review this thing?
- Should the base folder really be named "berlin" or is this going to be part of a bigger family of `pin` controllers so a more neutral name should be sought?
- Why do hardware engineers seek to reinvent wheels like `pin` controllers, GPIO and DMA engines all the time :-/

Yours,
Linus Walleij

... and of course: [CONFERENCE PRESENTATIONS!](#)

Technical Discussion in Person



Administration of Patch Mechanics



Linus Walleij <linus.walleij@linaro.org>

to Maxime, linux-arm-kern. ▾

On Fri, May 9, 2014 at 7:31 PM, Maxime Ripard
<maxime.ripard@free-electrons.com> wrote:

> Only **pinctrl**/next is not going to be rebased, right?

pinctrl/devel actually.

for-next is a mixdown branch that is rebased all the time
so don't use that.

But notify me first if you're going to be pulling in that branch!
(Handshake.)

Also: why do you need it? Just as a dependence to dts files
does **not** count as a reason to cross merge these trees,
as the device tree files are meant to even be moved out of
the kernel at some point... but you may have better reasons?

Yours,
Linus Walleij

```
> Signed-off-by: Sebastian Andrzej Siewior <bigeazy@linutronix.de>
> ...
> I am very sorry for the delay. I assumed that I've already fixed the
> patch sent it out. Just realized that it was not the case.
>
> v1...v2:
```

OK this patch is ACKed by Alan so I would like to apply it but:

```
Content-Type: text/plain; charset=utf-8
Content-Disposition: inline
Content-Transfer-Encoding: quoted-printable
```

This is not good. Quoted-printable makes the raw patch look like
that:

```
- int err, irq;
+ int err, irq, i;
=20
  irq =3D irq_of_parse_and_map(node, 0);
```

Notice spurious =20 and =3D encoding.

Please resend in ISO8859-1 and take this opportunity to add
Alan's ACK.

Yours,
Linus Walleij



Lee Jones

to me, Samuel, linux-kernel, Silvio, Philipp, Sascha, Shawn, Viresh, Shiraz, spear-devel ▾

```
> The only platform using the STMPE expander now boots from
> device tree using all-dynamic GPIO and IRQ number assignments, so
> remove the mechanism to pass this from the device tree entirely.
```

```
> Signed-off-by: Linus Walleij <linus.walleij@linaro.org>
```

```
> ...
> drivers/gpio/gpio-stmpe.c | 18 +++++.....
> drivers/mfd/stmpe.c      | 3 +--
> include/linux/mfd/stmpe.h | 14 .....
> 3 files changed, 6 insertions(+), 29 deletions(-)
```

MFD changes look good to me.

Acked-by: Lee Jones <lee.jones@linaro.org>

Do you want me to set up and **immutable branch** between MFD and GPIO?

...



Linus Walleij <linus.walleij@linaro.org>

to Lee, Samuel, linux-kernel ▾

On Fri, May 9, 2014 at 11:55 AM, Lee Jones <lee.jones@linaro.org> wrote:

```
> Looks like it matters which order the patches are merged in - my bad!
>
> The following changes since commit 89ca3b881987f5a4be4c5dbaa7f0df12bbdde2fd:
>
>   Linux 3.15-rc4 (2014-05-04 18:14:42 -0700)
>
> are available in the git repository at:
>
>   git://git.kernel.org/pub/scm/linux/kernel/git/lee/mfd.git tags/ib-mfd-gpio-v3.16
>
> for you to fetch changes up to 3ba1d516d5feddba3e13d30d31a70da130a3ee0e:
>
>   mfd: stmpe: root out static GPIO and IRQ assignments (2014-05-09 10:51:14 +0100)
```

OK I first merged in v3.15-rc4 to my devel branch and then pulled this
on top and all
seems to be working well :)

Thanks a ton Lee!

Yours,
Linus Walleij

Refactoring



Linus Walleij <linus.walleij@linaro.org>

to linux-gpio, Alexandre, Thomas ▾

Now that the gpiolib irqchip helpers can support nested, threaded IRQ handlers, switch the TC3589X **driver** over to using this **new** infrastructure. Tested on the Ux500.

Cc: Thomas Gleixner <tglx@linutronix.de>

Signed-off-by: Linus Walleij <linus.walleij@linaro.org>

```
drivers/gpio/Kconfig      | 1 +
drivers/gpio/gpio-tc3589x.c | 114 ++++++++.....
2 files changed, 24 insertions(+), 91 deletions(-)
```

```
diff --git a/drivers/gpio/Kconfig b/drivers/gpio/Kconfig
```

```
index a86c49a605c6..5ad9e927baba 100644
```

```
--- a/drivers/gpio/Kconfig
```

```
+++ b/drivers/gpio/Kconfig
```

```
@@ -579,6 +579,7 @@ config GPIO_STP_XWAY
```

```
config GPIO_TC3589X
```

```
bool "TC3589X GPIOs"
```

```
depends on MFD_TC3589X
```

```
+ select GPIOLIB_IRQCHIP
```

```
help
```

```
This enables support for the GPIOs found on the TC3589X
```

```
I/O Expander.
```

```
diff --git a/drivers/gpio/gpio-tc3589x.c b/drivers/gpio/gpio-tc3589x.c
```

```
index 4b0d8ccbe561..51f7cbd9ff71 100644
```

```
--- a/drivers/gpio/gpio-tc3589x.c
```

Other examples include:

- Switching the gpiolib to only use descriptors internal (instead of global GPIO numbers)
- Exposing the GPIO descriptor API to the outside world with a new <linux/gpio/consumer.h> API
- Refactoring the whole world to use the above (ongoing)
- Early refactoring in pin control creating a shared state transition to be used with a device for both pin multiplexing and pin configuration
- Move all ARM32 systems (well...) to device tree and multiplatform boot

Accumulating Patches

Save patch in plaintext from gmail “show original”, select patch text and middle-button paste into a text editor. I have two important topic branches for mainstream stuff:

Regression?

```
git checkout fixes  
git am --signoff foo.patch
```

New functionality?

```
git checkout devel  
git am --signoff bar.patch
```

Fixes and Devel Branches

fixes is constantly rebased against the latest release candidate vN.N-rcN

devel is usually based on one of the early release candidates like -rc1 or -rc2/3 and then kept linearly accumulative until the merge window

for-next is created like so:

```
git checkout for-next  
git reset --hard fixes  
git merge devel
```

Occasional Rebasing

- If prerequisites appear in fixes to Torvalds tree I may either (say we have a devel branch based on v3.15-rc1 and need a commit from v3.15-rc4):

A) `git merge v3.15-rc4`

B) `git rebase v3.15-rc4`

Another reason to rebase at least a few top commits is to add Acked-by, Reviewed-by and Tested-by: tags.

Push Branches to git.kernel.org

- When a fix is made, devel and/or for-next branch is to be pushed over to the kernel.org GIT server I simply force the remote branch to be overwritten

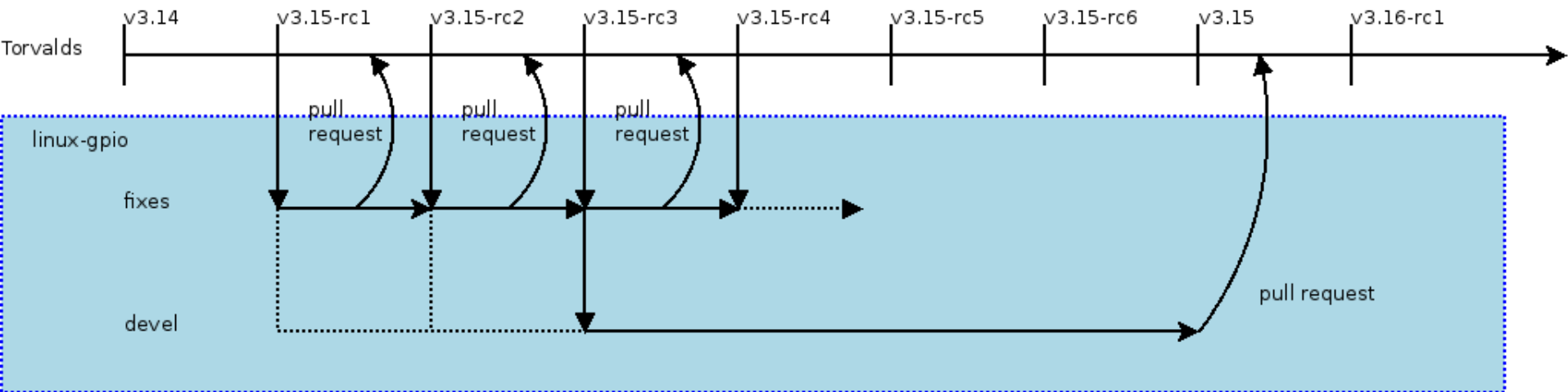
```
git push --all --force <REMOTE>
```

- The set-up for kernel.org tree uses **gitolite** to provide remote access to GIT without shell access for security reasons

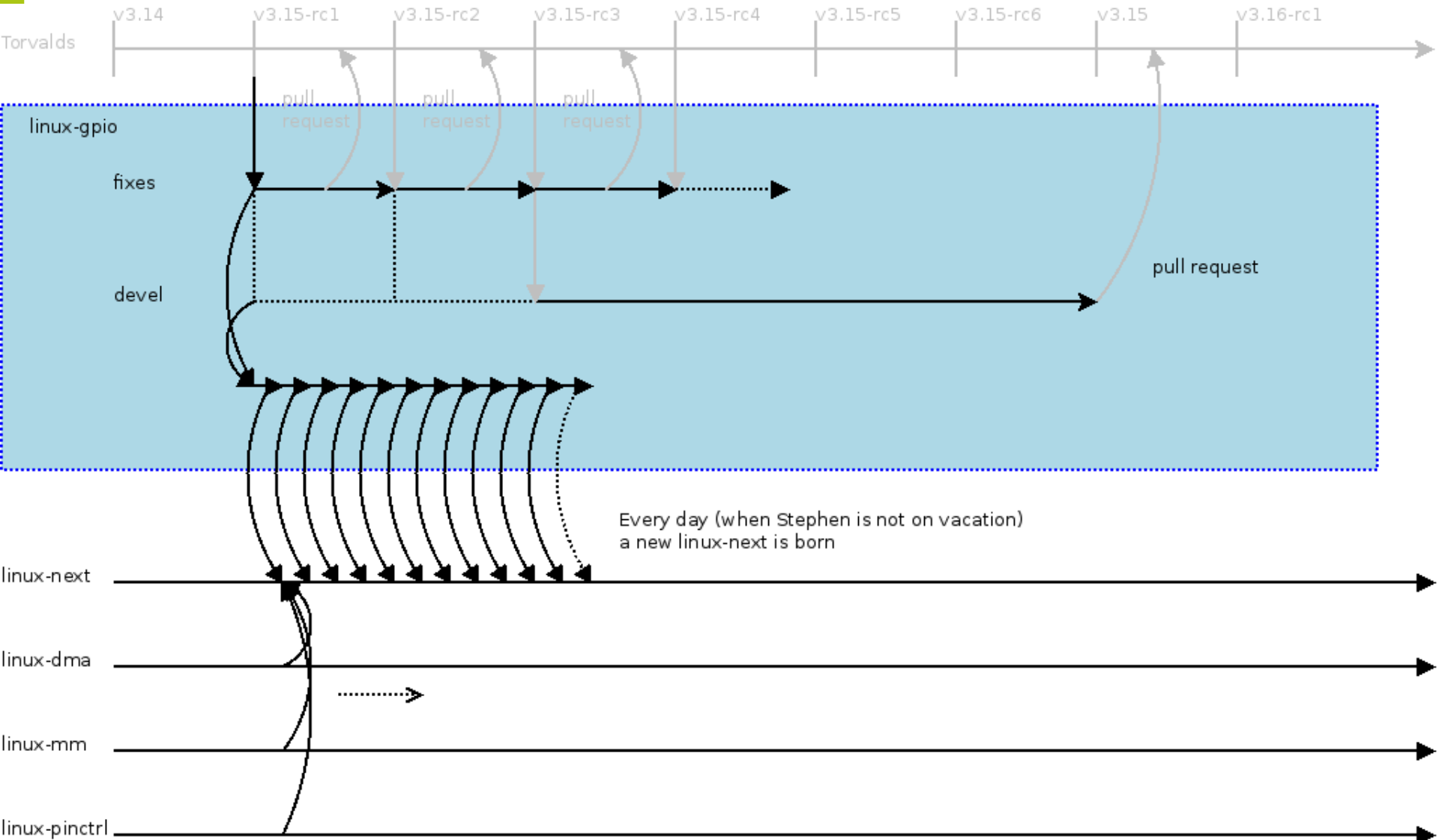
- Surplus branches are purged from the remote tree at uneven intervals:

```
git push <REMOTE> :deadbranch
```

How This Works



How Linux-next Works



Integration tests: Kautobuild & friends

- When the branches are pushed to *git.kernel.org* Fenguang's autobuilder **Kautobuild** is triggered and will build all branches (fixes, devel, for-next) for a plethora of architectures and configs
- The **for-next** branch gets pulled into the **linux-next** tree for integration test and more build and boot tests
- The **linux-next** tree is for example built by Olof Johansson and booted on a farm of ARM boards, and Kevin Hilman has yet another set of boards

Results 1

[gpio:devel 67/72] twl6040.c:undefined reference to `of_get_named_gpio_flags'



Inbox x

!TO ME x

 **kbuild test robot**

to Alexandre, me, kbuild-all 

```
tree: git://git.kernel.org/pub/scm/linux/kernel/git/linusw/linux-gpio.git devel
head: 3102c0614f18d87af42522573f94c4841d244a8b
commit: 5d23e78603244ff5113fd3635b6ec1f51845ac74 [67/72] gpio: make of_get_named_gpiod_flags() private
config: x86_64-randconfig-j0-0513 (attached as .config)
```

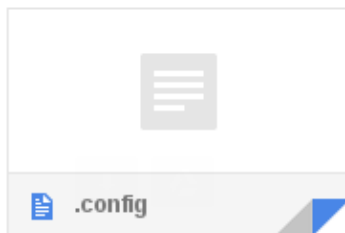
All error/warnings:

```
drivers/built-in.o: In function `twl6040_probe':
>> twl6040.c:(.text+0x1222ee): undefined reference to `of_get_named_gpio_flags'
drivers/built-in.o: In function `spi_imx_probe':
>> spi-imx.c:(.text+0x1a0278): undefined reference to `of_get_named_gpio_flags'
drivers/built-in.o: In function `moxart_rtc_probe':
>> rtc-moxart.c:(.text+0x1db2b4): undefined reference to `of_get_named_gpio_flags'
>> rtc-moxart.c:(.text+0x1db2da): undefined reference to `of_get_named_gpio_flags'
>> rtc-moxart.c:(.text+0x1db300): undefined reference to `of_get_named_gpio_flags'
drivers/built-in.o:pps-gpio.c:(.text+0x23a8af): more undefined references to `of_get_named_gpio_flags' follow
```

...

0-DAY kernel build testing backend
<http://lists.01.org/mailman/listinfo/kbuild>

Open Source Technology Center
Intel Corporation



Results 2

next boot: 45 pass, 10 fail (next-20140516)

Autobuild/Autoboot x

Lists/Linaro-kernel x



Kevin's boot bot

to kernel-build-r., linaro-kernel

Tree/Branch: next

Git describe: next-20140516

Failed boot tests (console logs at the end)

```
=====
legacy,dm365evm: FAIL: arm-davinci_all_defconfig
da850-evm: FAIL: arm-davinci_all_defconfig
tegra124-jetson-tk1: FAIL: arm-tegra_defconfig
tegra30-beaver: FAIL: arm-tegra_defconfig
sun7i-a20-cubieboard2: OFFLINE: arm-multi_v7_defconfig+CONFIG_ARM_LPAE=y
sun7i-a20-cubieboard2: FAIL: arm-multi_v7_defconfig
sun4i-a10-cubieboard: FAIL: arm-multi_v7_defconfig
sun7i-a20-cubieboard2: FAIL: arm-sunxi_defconfig
sun4i-a10-cubieboard: FAIL: arm-sunxi_defconfig
bcm28155-ap: FAIL: arm-bcm_defconfig
```

Full Report

=====

arm-davinci_all_defconfig

```
legacy,dm365evm 0 min 16.1 sec: FAIL
da850-evm 0 min 14.2 sec: FAIL
```

arm-tegra_defconfig

```
tegra124-jetson-tk1 0 min 59.4 sec: FAIL
tegra30-beaver 0 min 41.8 sec: FAIL
```

arm-multi_v7_defconfig+CONFIG_ARM_LPAE=y

```
tegra124-jetson-tk1 0 min 37.6 sec: PASS
armada-xp-openblocks-ax3-4 0 min 25.8 sec: PASS
omap5-uevm 1 min 36.9 sec: PASS
sun7i-a20-cubieboard2 0 min 31.4 sec: OFFLINE
```

arm-imx_v6_v7_defconfig

```
imx6dl-wandboard,wand-dual 0 min 19.0 sec: PASS
imx6dl-wandboard,wand-solo 0 min 19.4 sec: PASS
imx6q-wandboard 0 min 17.4 sec: PASS
```

Sending Pull Requests to Torvalds

Once a branch has been through linux-next and “feels stable” I will prepare a signed tag utilizing the kernel community chain of trust, and issue a pull request to Linus Torvalds, example:

```
git tag -s -u 0xb0195d73 gpio-v3.15-3
```

```
git request-pull v3.15-rc4 git://git.kernel.org/.../linux-gpio tags/gpio-v3.15-3
```

[GIT PULL] gpio fixes for v3.15

Linus Torvalds (linux-foundation.org)

[GIT PULL] gpio fixes for v3.15

Hi Linus,

let's hope these two patches are the last GPIO fixes for this merge window. (Famous last words.)

Anyway, details in the tag, please pull it in.

Yours,
Linus Walleij

The following changes since commit 89ca3b881987f5a4be4c5dbaa7f0df12bbdde2fd:
Linux 3.15-rc4 (2014-05-04 18:14:42 -0700)
are available in the git repository at:
[git://git.kernel.org/pub/scm/linux/kernel/git/linusw/linux-gpio.git](https://git.kernel.org/pub/scm/linux/kernel/git/linusw/linux-gpio.git) tags/gpio-v3.15-3
for you to fetch changes up to 99e4b98dbe3ad1fe38a74d12c3b8d44a55930de4:
gpio: mcp23s08: Bug fix of SPI device tree registration. (2014-05-09 10:28:16 +0200)

GPIO fixes for the v3.15 series:

- Fix a null pointer bug in the ICH6 chipset driver
- Fix device tree registration for the mcp23s08 driver

Michael Welling (1):
gpio: mcp23s08: Bug fix of SPI device tree registration.

Vincent Donnefort (1):
gpio: ich: set regs and reglen for i3100 and ich6 chipset

drivers/gpio/gpio-ich.c | 4 ++++
drivers/gpio/gpio-mcp23s08.c | 12 ++++++-----
2 files changed, 11 insertions(+), 5 deletions(-)

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