

# **Why you need a test strategy for your kernel development**

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```

@@ -41,6 +41,20 @@ if (NOT ${U_CMAKE_BUILD_TYPE} MATCHES DEBUG)
    if (HAS_LTO_FLAG)
        find_program(LTO_AR NAMES "${CMAKE_C_COMPILER}-ar" gcc-ar)
        find_program(LTO_RANLIB NAMES "${CMAKE_C_COMPILER}-ranlib" gcc-ranlib)
+
+       EXECUTE_PROCESS(COMMAND "${LTO_AR}" --version
+                       RESULT_VARIABLE ret OUTPUT_QUIET ERROR_QUIET)
+
+       if (ret)
+           unset(LTO_AR CACHE)
+       endif()
+   endif()
+   if (LTO_RANLIB)
+       EXECUTE_PROCESS(COMMAND "${LTO_RANLIB}" --version
+                       RESULT_VARIABLE ret OUTPUT_QUIET ERROR_QUIET)
+
+       if (ret)
+           unset(LTO_RANLIB CACHE)
+       endif()
+   endif()
    if (LTO_AR AND LTO_RANLIB)
        set(CMAKE_CXX_FLAGS "${CMAKE_CXX_FLAGS} -flto")
        set(CMAKE_AR "${LTO_AR}")

```



# [PATCH v1]

```
> +      if (LTO_RANLIB)
> +          EXECUTE_PROCESS(COMMAND "${LTO_RANLIB}" --version
> +                          RESULT_VARIABLE ret OUTPUT_QUIET ERROR_QUIET)
```

*You could use LTO\_RANLIB\_WORKS as result variable here...*

```
> +      if (ret)
> +          unset(LTO_RANLIB CACHE)
> +      endif()
> +  endif()
>  if (LTO_AR AND LTO_RANLIB)
```

*... and here test for LTO\_RANLIB\_WORKS instead of LTO\_RANLIB.*

```
>      set(CMAKE_CXX_FLAGS "${CMAKE_CXX_FLAGS} -flto")
>      set(CMAKE_AR "${LTO_AR}")
```



## [PATCH v1] – Review

From 271ead7cd1c78bde11980355996bf31c4763f4f6 Mon Sep 17 00:00:00 2001  
From: Laurent Pinchart <laurent.pinchart@ideasonboard.com>  
Date: Fri, 2 Sep 2016 19:15:06 +0300  
Subject: [PATCH v2] Fix LTO detection

Catch gcc-ar and gcc-ranlib versions compiled without plugin support and  
disable LTO in that case.

Signed-off-by: Laurent Pinchart <laurent.pinchart@ideasonboard.com>

---

CMakeLists.txt | 8 ++++++-

1 file changed, 7 insertions(+), 1 deletion(-)

Changes since v1:

- Use LTO\_AR\_WORKS and LTO\_RANLIB\_WORKS as result variables



# [PATCH v2]

```

@@ -41,7 +41,17 @@ if (NOT ${U_CMAKE_BUILD_TYPE} MATCHES DEBUG)
    if (HAS_LTO_FLAG)
        find_program(LTO_AR NAMES "${CMAKE_C_COMPILER}-ar" gcc-ar)
        find_program(LTO_RANLIB NAMES "${CMAKE_C_COMPILER}-ranlib" gcc-ranlib)
-       if (LTO_AR AND LTO_RANLIB)
+       if (LTO_AR)
+           EXECUTE_PROCESS(COMMAND "${LTO_AR}" --version
+                           RESULT_VARIABLE LTO_AR_WORKS
+                           OUTPUT_QUIET ERROR_QUIET)
+       endif()
+       if (LTO_RANLIB)
+           EXECUTE_PROCESS(COMMAND "${LTO_RANLIB}" --version
+                           RESULT_VARIABLE LTO_RANLIB_WORKS
+                           OUTPUT_QUIET ERROR_QUIET)
+       endif()
+       if (LTO_AR_WORKS AND LTO_RANLIB_WORKS)
            set(CMAKE_CXX_FLAGS "${CMAKE_CXX_FLAGS} -flto")
            set(CMAKE_AR "${LTO_AR}")
            set(CMAKE_RANLIB "${LTO_RANLIB}")

```



# [PATCH v2]

**No need to test  
such a small  
change.**



---

**Famous Last Words**

```

> @@ -41,7 +41,17 @@ if (NOT ${U_CMAKE_BUILD_TYPE} MATCHES DEBUG)
>     if (HAS_LTO_FLAG)
>         find_program(LTO_AR NAMES "${CMAKE_C_COMPILER}-ar" gcc-ar)
>         find_program(LTO_RANLIB NAMES "${CMAKE_C_COMPILER}-ranlib" gcc-ranlib)
> -
> +         if (LTO_AR AND LTO_RANLIB)
> +             if (LTO_AR)
> +                 EXECUTE_PROCESS(COMMAND "${LTO_AR}" --version
> +                                 RESULT_VARIABLE LTO_AR_WORKS
> +                                 OUTPUT_QUIET ERROR_QUIET)
> +             endif()
> +             if (LTO_RANLIB)
> +                 EXECUTE_PROCESS(COMMAND "${LTO_RANLIB}" --version
> +                                 RESULT_VARIABLE LTO_RANLIB_WORKS
> +                                 OUTPUT_QUIET ERROR_QUIET)
> +             endif()
> +         if (LTO_AR_WORKS AND LTO_RANLIB_WORKS)

```

*With this, I get "gcc-ar or gcc-ranlib not found, disabling LTO" on my PC, where I'm quite sure LTO works.*



## [PATCH v2] – Review



**Oops**

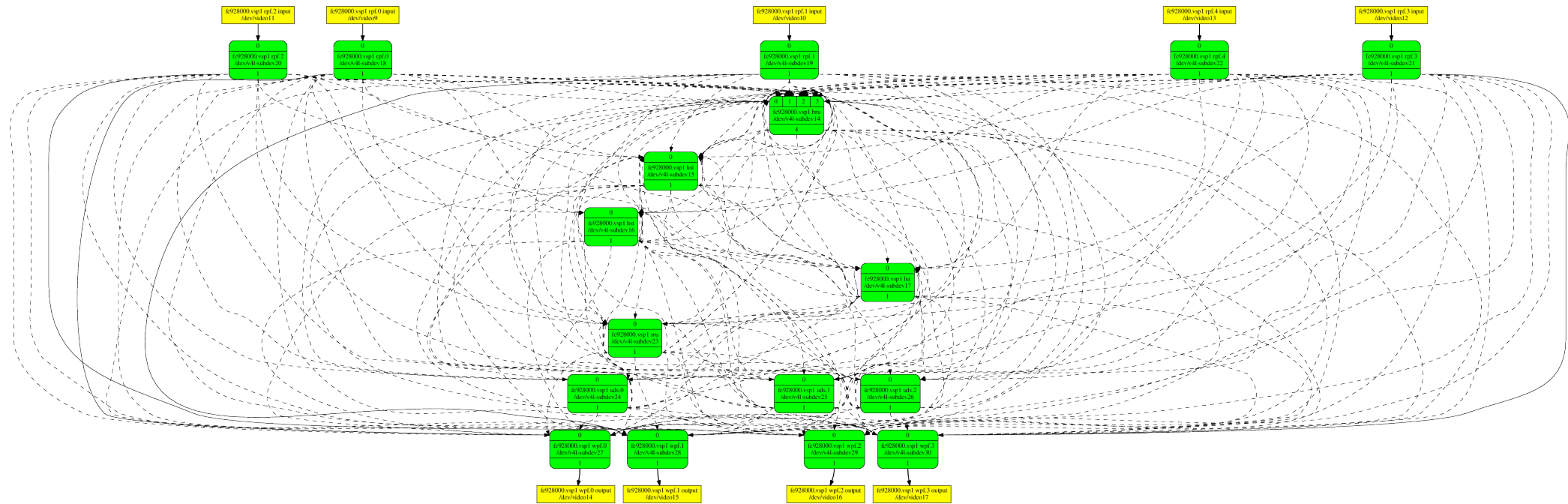


|   |      |       |
|---|------|-------|
| drivers/media/platform/vsp1/vsp1.h        | 108  | +++   |
| drivers/media/platform/vsp1/vsp1_bru.c    | 418  | +++++ |
| drivers/media/platform/vsp1/vsp1_bru.h    | 46   | +     |
| drivers/media/platform/vsp1/vsp1_clu.c    | 292  | +++++ |
| drivers/media/platform/vsp1/vsp1_clu.h    | 48   | +     |
| drivers/media/platform/vsp1/vsp1_dl.c     | 640  | +++++ |
| drivers/media/platform/vsp1/vsp1_dl.h     | 45   | +     |
| drivers/media/platform/vsp1/vsp1_drm.c    | 607  | +++++ |
| drivers/media/platform/vsp1/vsp1_drm.h    | 44   | +     |
| drivers/media/platform/vsp1/vsp1_drv.c    | 758  | +++++ |
| drivers/media/platform/vsp1/vsp1_entity.c | 414  | +++++ |
| drivers/media/platform/vsp1/vsp1_entity.h | 148  | ++++  |
| drivers/media/platform/vsp1/vsp1_hsit.c   | 174  | +++++ |
| drivers/media/platform/vsp1/vsp1_hsit.h   | 38   | +     |
| drivers/media/platform/vsp1/vsp1_lif.c    | 181  | +++++ |
| drivers/media/platform/vsp1/vsp1_lif.h    | 37   | +     |
| drivers/media/platform/vsp1/vsp1_lut.c    | 249  | +++++ |
| drivers/media/platform/vsp1/vsp1_lut.h    | 45   | +     |
| drivers/media/platform/vsp1/vsp1_pipe.c   | 385  | +++++ |
| drivers/media/platform/vsp1/vsp1_pipe.h   | 127  | +++   |
| drivers/media/platform/vsp1/vsp1_regs.h   | 741  | +++++ |
| drivers/media/platform/vsp1/vsp1_rpf.c    | 264  | +++++ |
| drivers/media/platform/vsp1/vsp1_rwpf.c   | 253  | +++++ |
| drivers/media/platform/vsp1/vsp1_rwpf.h   | 102  | ++    |
| drivers/media/platform/vsp1/vsp1_sru.c    | 335  | +++++ |
| drivers/media/platform/vsp1/vsp1_sru.h    | 42   | +     |
| drivers/media/platform/vsp1/vsp1_uds.c    | 328  | +++++ |
| drivers/media/platform/vsp1/vsp1_uds.h    | 41   | +     |
| drivers/media/platform/vsp1/vsp1_video.c  | 1021 | +++++ |
| drivers/media/platform/vsp1/vsp1_video.h  | 62   | +     |
| drivers/media/platform/vsp1/vsp1_wpf.c    | 384  | +++++ |

31 files changed, 8377 insertions(+)



# Small Driver



# Simple Device

```

crw-rw---- 1 root root 81,  9 Jan 1 1970 /dev/video9
crw-rw---- 1 root root 81, 10 Jan 1 1970 /dev/video10
crw-rw---- 1 root root 81, 11 Jan 1 1970 /dev/video11
crw-rw---- 1 root root 81, 12 Jan 1 1970 /dev/video12
crw-rw---- 1 root root 81, 13 Jan 1 1970 /dev/video13
crw-rw---- 1 root root 81, 14 Jan 1 1970 /dev/video14
crw-rw---- 1 root root 81, 15 Jan 1 1970 /dev/video15
crw-rw---- 1 root root 81, 16 Jan 1 1970 /dev/video16
crw-rw---- 1 root root 81, 17 Jan 1 1970 /dev/video17
crw-rw---- 1 root root 81, 142 Jan 1 1970 /dev/v4l-subdev14
crw-rw---- 1 root root 81, 143 Jan 1 1970 /dev/v4l-subdev15
crw-rw---- 1 root root 81, 144 Jan 1 1970 /dev/v4l-subdev16
crw-rw---- 1 root root 81, 145 Jan 1 1970 /dev/v4l-subdev17
crw-rw---- 1 root root 81, 146 Jan 1 1970 /dev/v4l-subdev18
crw-rw---- 1 root root 81, 147 Jan 1 1970 /dev/v4l-subdev19
crw-rw---- 1 root root 81, 148 Jan 1 1970 /dev/v4l-subdev20
crw-rw---- 1 root root 81, 149 Jan 1 1970 /dev/v4l-subdev21
crw-rw---- 1 root root 81, 150 Jan 1 1970 /dev/v4l-subdev22
crw-rw---- 1 root root 81, 151 Jan 1 1970 /dev/v4l-subdev23
crw-rw---- 1 root root 81, 152 Jan 1 1970 /dev/v4l-subdev24
crw-rw---- 1 root root 81, 153 Jan 1 1970 /dev/v4l-subdev25
crw-rw---- 1 root root 81, 154 Jan 1 1970 /dev/v4l-subdev26
crw-rw---- 1 root root 81, 155 Jan 1 1970 /dev/v4l-subdev27
crw-rw---- 1 root root 81, 156 Jan 1 1970 /dev/v4l-subdev28
crw-rw---- 1 root root 81, 157 Jan 1 1970 /dev/v4l-subdev29
crw-rw---- 1 root root 81, 158 Jan 1 1970 /dev/v4l-subdev30

```



# Straightforward UAPI

- media-ctl
- v4l2-ctl
- yavta
- raw2rgbnm



---

## Tool Box

```
$ ./media-ctl -d /dev/media0 -r
$ ./media-ctl -d /dev/media0 -l \
    "'fe928000.vsp1 rpf.0':1 -> 'fe928000.vsp1 wpf.0':0 [1]"
$ ./media-ctl -d /dev/media0 -l \
    "'fe928000.vsp1 wpf.0':1 -> 'fe928000.vsp1 wpf.0 output':0 [1]"
$ ./media-ctl -d /dev/media0 -V "'fe928000.vsp1 rpf.0':0 [fmt:AYUV32/1024x768]"
$ ./media-ctl -d /dev/media0 -V "'fe928000.vsp1 wpf.0':0 [fmt:AYUV32/1024x768]"
$ ./media-ctl -d /dev/media0 -V "'fe928000.vsp1 wpf.0':1 [fmt:AYUV32/1024x768]"
```



# Manual Testing

(telnet)

```
$ ./yavta -c10 -n 4 -f YUYV -s 1024x768 \
  --file=frame-ref-yuyv-1024x768.bin \
  /dev/video9
Device /dev/video9 opened.
Device `fe928000.vsp1 rpf.0 input' on
`fe928000.vsp1' is a video output (with
mplanes) device.
[...]
0 (0) [-] none 0 614400 B 28721.749626
28724.017693 155.352 fps ts mono/SoE
[...]
9 (1) [-] none 9 614400 B 28724.285689
28724.317700 27.719 fps ts mono/SoE
Captured 10 frames in 2.574510 seconds
(3.884233 fps, 2386472.678610 B/s).
4 buffers released.
```

(telnet 2)

```
$ ./yavta -c10 -n 4 -f ARGB32 -s 1024x768 \
  /dev/video14
Device /dev/video14 opened.
Device `fe928000.vsp1 wpf.0 output' on
`fe928000.vsp1' is a video output (with
mplanes) device.
[...]
0 (0) [-] none 0 614400 B 28721.749626
28724.017693 155.352 fps ts mono/SoE
[...]
9 (1) [-] none 9 614400 B 28724.285689
28724.317700 27.719 fps ts mono/SoE
Captured 10 frames in 2.574510 seconds
(3.884233 fps, 2386472.678610 B/s).
4 buffers released.
$ for f in frame-0*.bin ; do
>   raw2rgbpmn -f ARGB32 -s 1024x768 \
>             $f ${f/bin/pnm} ;
> done
```



# Manual Testing

```
syntax() {  
    echo "Syntax: vsp1.sh [options] dev cmd [...]"  
    echo ""  
    echo "Supported options:"  
    echo "    -v      Enable verbose operation"  
    echo ""  
    echo "Supported commands:"  
    echo "    <pipeline> infmt outfmt"  
    echo "    hgo [options]"  
    echo "    input index infmt [options]"  
    echo "    output index outfmt [options]"  
    echo ""  
    echo "Supported pipelines:"  
    echo "    m2d, m2d-bru, m2d-crop, m2d-scale,"  
    echo "    m2m, m2m-bru, m2m-bru-lut, m2m-clu, m2m-crop, m2m-hgo,"  
    echo "    m2m-hgo-crop, m2m-lut, m2m-scale, m2m-upscale"  
}
```



## Test Script (still manual)

(console)

```
$ ./vsp1.sh media0 m2m YUYV ARGB32
```

(telnet 1)

```
$ ./vsp1.sh media0 input 0 YUYV
Device /dev/video9 opened.
Device `fe928000.vsp1 rpf.0 input' on
`fe928000.vsp1' is a video output (with
mplanes) device.
[...]
0 (0) [-] none 0 614400 B 28721.749626
28724.017693 155.352 fps ts mono/SoE
[...]
9 (1) [-] none 9 614400 B 28724.285689
28724.317700 27.719 fps ts mono/SoE
Captured 10 frames in 2.574510 seconds
(3.884233 fps, 2386472.678610 B/s).
```

(telnet 2)

```
$ ./vsp1.sh media0 input 0 ARGB32
Device /dev/video14 opened.
Device `fe928000.vsp1 wpf.0 output' on
`fe928000.vsp1' is a video output (with
mplanes) device.
[...]
0 (0) [-] none 0 614400 B 28721.749626
28724.017693 155.352 fps ts mono/SoE
[...]
9 (1) [-] none 9 614400 B 28724.285689
28724.317700 27.719 fps ts mono/SoE
Captured 10 frames in 2.574510 seconds
(3.884233 fps, 2386472.678610 B/s).
```

```
$ for f in frame-0*.bin ; do
>   raw2rgbnm -f ARGB32 -s 1024x768 \
>           $f ${f/bin/pnm}
> done
```



# Test Script (still manual)



```
$ ./vsp1.sh media0 m2m-bru YUYV ARGB32
```

*(telnet 1)*

```
$ ./vsp1.sh media0 input 0 YUYV
Device /dev/video9 opened.
Device `fe928000.vsp1 rpf.0 input'
on `fe928000.vsp1' is a video
output (with mplanes) device.
[...]
0 (0) [-] none 0 614400 B
28721.749626 28724.017693 155.352
fps ts mono/SoE
[...]
9 (1) [-] none 9 614400 B
28724.285689 28724.317700 27.719
fps ts mono/SoE
Captured 10 frames in 2.574510
seconds (3.884233 fps,
2386472.678610 B/s).
```

*(telnet 2)*

```
$ ./vsp1.sh media0 input 1 YUYV
Device /dev/video10 opened.
Device `fe928000.vsp1 rpf.1 input'
on `fe928000.vsp1' is a video
output (with mplanes) device.
[...]
0 (0) [-] none 0 614400 B
28721.749626 28724.017693 155.352
fps ts mono/SoE
[...]
9 (1) [-] none 9 614400 B
28724.285689 28724.317700 27.719
fps ts mono/SoE
Captured 10 frames in 2.574510
seconds (3.884233 fps,
2386472.678610 B/s).
```

*(telnet 3)*

```
$ ./vsp1.sh media0 output 0 ARGB32
Device /dev/video14 opened.
Device `fe928000.vsp1 wpf.0
output' on `fe928000.vsp1' is a
video output (with mplanes)
device.
[...]
0 (0) [-] none 0 614400 B
28721.749626 28724.017693 155.352
fps ts mono/SoE      [...]
9 (1) [-] none 9 614400 B
28724.285689 28724.317700 27.719
fps ts mono/SoE      Captured 10
frames in 2.574510 seconds
(3.884233 fps, 2386472.678610
B/s).
```

```
$ for f in frame-0*.bin ; do
>   raw2rgbppnm -f ARGB32 \
>   -s 1024x768 $f ${f/bin/ppnm}
> done
```

# Test Script (still manual)



\$ ./vsp1.sh m2m-bru4 YUYV ARGB32

| (telnet 1)  | (telnet 2)   | (telnet 3)   | (telnet 4)   | (telnet 5)   |
|---|--|--|--|--|
| <pre>\$ ./vsp1.sh media0 input 0 YUYV Device /dev/video9 opened. Device `fe928000.vsp1 rpf.0 input' on `fe928000.vsp1' is a video output (with mplanes) device. [...] 0 (0) [-] none 0 614400 B 28721.749626 28724.017693 155.352 fps ts mono/SoE [...] 9 (1) [-] none 9 614400 B 28724.285689 28724.317700 27.719 fps ts mono/SoE Captured 10 frames in 2.574510 seconds (3.884233 fps, 2386472.678610 B/s).</pre> | <pre>\$ ./vsp1.sh media0 input 1 YUYV Device /dev/video10 opened. Device `fe928000.vsp1 rpf.1 input' on `fe928000.vsp1' is a video output (with mplanes) device. [...] 0 (0) [-] none 0 614400 B 28721.749626 28724.017693 155.352 fps ts mono/SoE [...] 9 (1) [-] none 9 614400 B 28724.285689 28724.317700 27.719 fps ts mono/SoE Captured 10 frames in 2.574510 seconds (3.884233 fps, 2386472.678610 B/s).</pre> | <pre>\$ ./vsp1.sh media0 input 2 YUYV Device /dev/video11 opened. Device `fe928000.vsp1 rpf.2 input' on `fe928000.vsp1' is a video output (with mplanes) device. [...] 0 (0) [-] none 0 614400 B 28721.749626 28724.017693 155.352 fps ts mono/SoE [...] 9 (1) [-] none 9 614400 B 28724.285689 28724.317700 27.719 fps ts mono/SoE Captured 10 frames in 2.574510 seconds (3.884233 fps, 2386472.678610 B/s).</pre> | <pre>\$ ./vsp1.sh media0 input 3 YUYV Device /dev/video12 opened. Device `fe928000.vsp1 rpf.3 input' on `fe928000.vsp1' is a video output (with mplanes) device. [...] 0 (0) [-] none 0 614400 B 28721.749626 28724.017693 155.352 fps ts mono/SoE [...] 9 (1) [-] none 9 614400 B 28724.285689 28724.317700 27.719 fps ts mono/SoE Captured 10 frames in 2.574510 seconds (3.884233 fps, 2386472.678610 B/s).</pre> | <pre>\$ ./vsp1.sh media0 output 0 ARGB32 Device /dev/video14 opened. Device `fe928000.vsp1 wpf.0 output' on `fe928000.vsp1' is a video output (with mplanes) device. [...] 0 (0) [-] none 0 614400 B 28721.749626 28724.017693 155.352 fps ts mono/SoE [...] 9 (1) [-] none 9 614400 B 28724.285689 28724.317700 27.719 fps ts mono/SoE Captured 10 frames in 2.574510 seconds (3.884233 fps, 2386472.678610 B/s).  \$ for f in frame-0*.bin ; do &gt;   raw2rgbnm -f ARGB32 \ &gt;   -s 1024x768 \ &gt;   \$f \${f/bin/pnm} &gt; done</pre> |



# Test Script (still manual)

<http://git.ideasonboard.com/renesas/vsp-tests.git>

```
$ cat README
```

```
[...]
```

```
-----
```

```
Runtime Dependencies
```

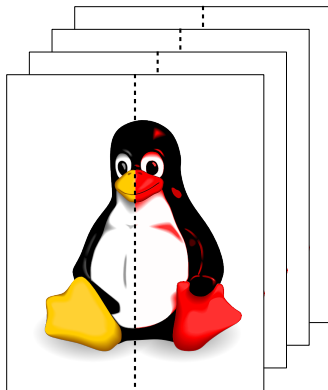
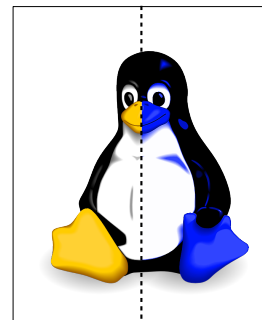
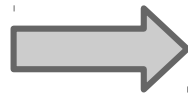
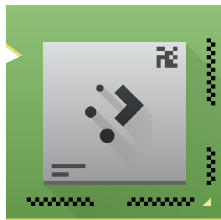
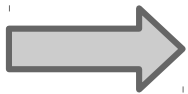
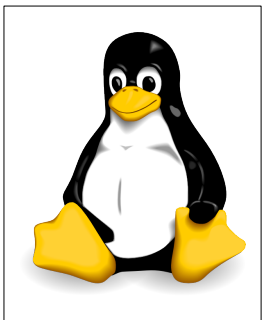
```
-----
```

The tests scripts require the following tools to be installed on the target system in a directory included in \$PATH.

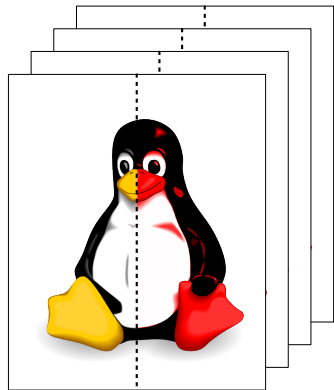
- \* compare (part of ImageMagick)
  - \* media-ctl (part of v4l-utils, available at [git://linuxtv.org/v4l-utils.git](http://git://linuxtv.org/v4l-utils.git))
  - \* raw2rgbnm (available at [git://git.retiisi.org.uk/~sailus/raw2rgbnm.git](http://git://git.retiisi.org.uk/~sailus/raw2rgbnm.git))
  - \* yavta (available at [git://git.ideasonboard.org/yavta.git](http://git://git.ideasonboard.org/yavta.git))
- ```
[...]
```



# vsp-tests



**vsp-tests**



**x2 resolutions**  
**x2 scaling**  
**x4 composition**  
**x20 formats**  
**x300kB-3MB**  
**= too much**



**vsp-tests**



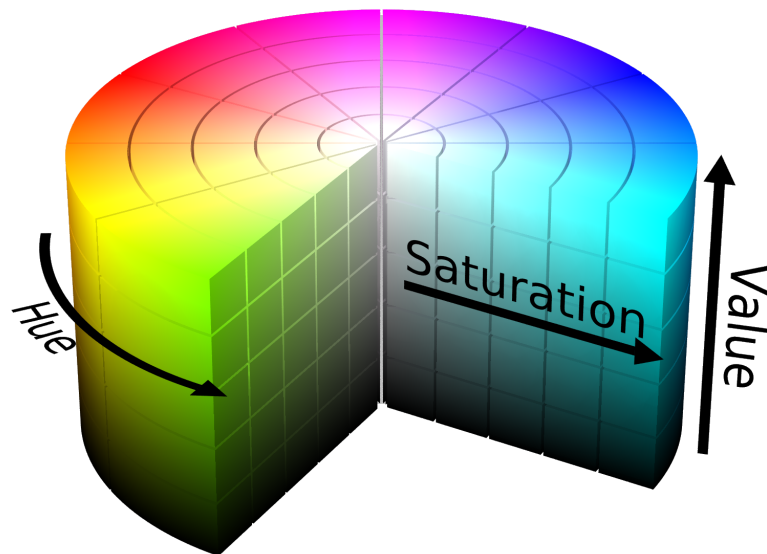
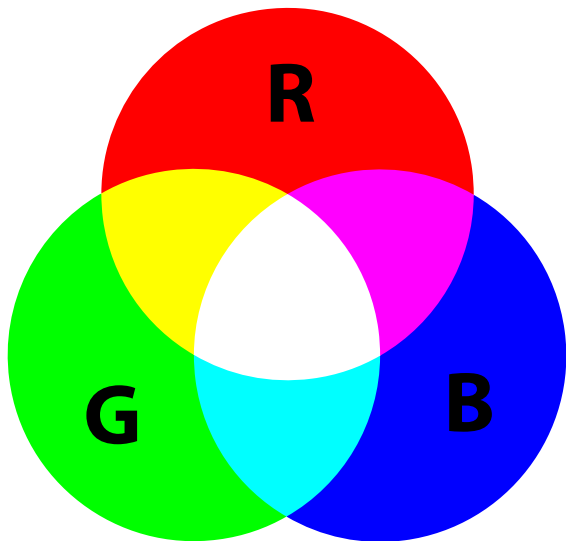
```
$ ./gen-image -h
Usage: ./src/gen-image [options] <infile.pnm>
```

Convert the input image stored in <infile> in PNM format to the target format and resolution and store the resulting image in raw binary form.

Supported options:

|                         |                                                                                                                                                         |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| -a, --alpha value       | Set the alpha value. Valid syntaxes are floating point values ([0.0 - 1.0]), fixed point values ([0-255]) or percentages ([0% - 100%]). Defaults to 1.0 |
| -c, --compose n         | Compose n copies of the image offset by (50,50) over a black background                                                                                 |
| -C, --no-chroma-average | Disable chroma averaging for odd pixels on output                                                                                                       |
| -e, --encoding enc      | Set the YCbCr encoding method. Valid values are BT.601, REC.709, BT.2020 and SMPTE240M                                                                  |
| -f, --format format     | Set the output image format<br>Defaults to RGB24 if not specified<br>Use -f help to list the supported formats                                          |
| -h, --help              | Show this help screen                                                                                                                                   |
| --hflip                 | Flip the image horizontally                                                                                                                             |
| -H, --histogram file    | Compute histogram on the output image and store it to file                                                                                              |
| [...]                   |                                                                                                                                                         |







$$M = \max(R, G, B)$$

$$m = \min(R, G, B)$$

$$C = M - m$$

$$H' = \begin{cases} \text{undefined} & \text{if } C=0 \\ \frac{G-B}{C} \% 6 & \text{if } M=R \\ \frac{B-R}{C} + 2 & \text{if } M=G \\ \frac{R-G}{C} + 4 & \text{if } M=B \end{cases}$$

$$H = H' \times 60$$

$$S = \begin{cases} 0 & \text{if } C=0 \\ \frac{C}{M} & \text{otherwise} \end{cases}$$

$$V = M$$



**vsp-tests**

```
static uint8_t hst_calc_s(uint8_t r8, uint8_t g8, uint8_t b8)
{
    uint8_t max, min, delta;
    unsigned int s;

    max = max(r8, max(g8, b8));
    min = min(r8, min(g8, b8));
    delta = max - min;
    if (!delta)
        return 0;

    s = delta * 255;

    /*
     * Special rounding. If the minimum RGB component is less
     * then 128 the calculated S value should be rounded half
     * down else half should be rounded up.
     */
    if (min < 128)
        return (s * 2 + max - 1) / max / 2;
    else
        return (s * 2 + max) / max / 2;
}
```

**vsp-tests**



From: [...]  
To: Laurent Pinchart <laurent.pinchart@ideasonboard.com>  
Date: Wed Sep 6 11:42:35 2016 +0300

[...]

> Emulation of the VSP HST (RGB->HSV) HW module in the test vsp-tests tool doesn't  
> match the hardware exactly. The V and S components match perfectly but the H  
> component is off by 1 for in ~8% of all possible input values. This HW emulation is  
> needed if the vsp-test tool should be able to test HGT with all HUE buckets enabled.  
>  
> There are a few possible workarounds:

[...]

> Workaround 1 will be used to start with, while [...] is trying to get the necessary  
> information from Cthulhu^Wthe hardware team.

I got answer from HW guys.  
Unfortunately, HW guys said "it is secret information, we can't teach it".  
Sorry about that.



# vsp-tests

**commit 34c3c7ce0f7bde52fcfbcff2a613552b693503fc**

**Author: Laurent Pinchart <laurent.pinchart@ideasonboard.com>**

**Date: Wed Sep 7 01:54:45 2016 +0300**

**gen-image: Add conversion from RGB to HSV support**

**Signed-off-by: Laurent Pinchart <laurent.pinchart@ideasonboard.com>**



**vsp-tests**

```
#!/bin/sh
```

```
#
```

```
# Test WPF packing in RGB mode. Use a RPF -> WPF pipeline with a fixed ARGB32
```

```
# format on the input and capture output frames in all RGB formats supported
```

```
# by the WPF.
```

```
#
```

```
source vsp-lib.sh
```

```
features="rpf.0 wpf.0"
```

```
test_init $0 "$features"
```



# vsp-tests

```
test_wpf_packing() {
    test_start "WPF packing in $format"

    pipe_configure rpf-wpf 0 0
    format_configure rpf-wpf 0 0 ARGB32 1024x768 $format

    vsp_runner rpf.0 &
    vsp_runner wpf.0

    local result=$(compare_frames)
    test_complete $result
}

formats="RGB332 ARGB555 XRGB555 RGB565 BGR24 RGB24 ABGR32 ARGB32 XBGR32 XRGB32"

test_main() {
    local format
    for format in $formats ; do
        test_wpf_packing $format
    done
}

test_run
```



# vsp-tests

```

test_wpf_packing() {
    test_start "WPF packing in $format"

    pipe_configure rpf-wpf 0 0 | ./logger.sh config >> $logfile
    format_configure rpf-wpf 0 0 \
        ARGB32 1024x768 $format | ./logger.sh config >> $logfile
    $vsp_runner $mdev input 0 ARGB32 | ./logger.sh config >> $logfile &
    $vsp_runner $mdev output 0 $format | ./logger.sh config >> $logfile

    local result=$(compare_frames exact reference $format 0)
    test_complete $result
}

formats="RGB332 ARGB555 XRGB555 RGB565 BGR24 RGB24 ABGR32 ARGB32 XBGR32 XRGB32"

test_main() {
    local format
    for format in $formats ; do
        test_wpf_packing $format
    done
}

test_run

```



# vsp-tests

# 1 feature

=

# 1 test



**vsp-tests**



**1 bug**

**=**

**1 test**



**vsp-tests**

# 1 non-feature

=

# 1 test



**vsp-tests**

## ***Internal***

- Kconfig\* selftests
- tools/testing/ktest/
- tools/testing/selftests/
- (virtual drivers)

## ***External***

- Linux Test Project
- intel-gpu-tools
- Linaro lava tests
- v4l2-compliance
- vsp-tests

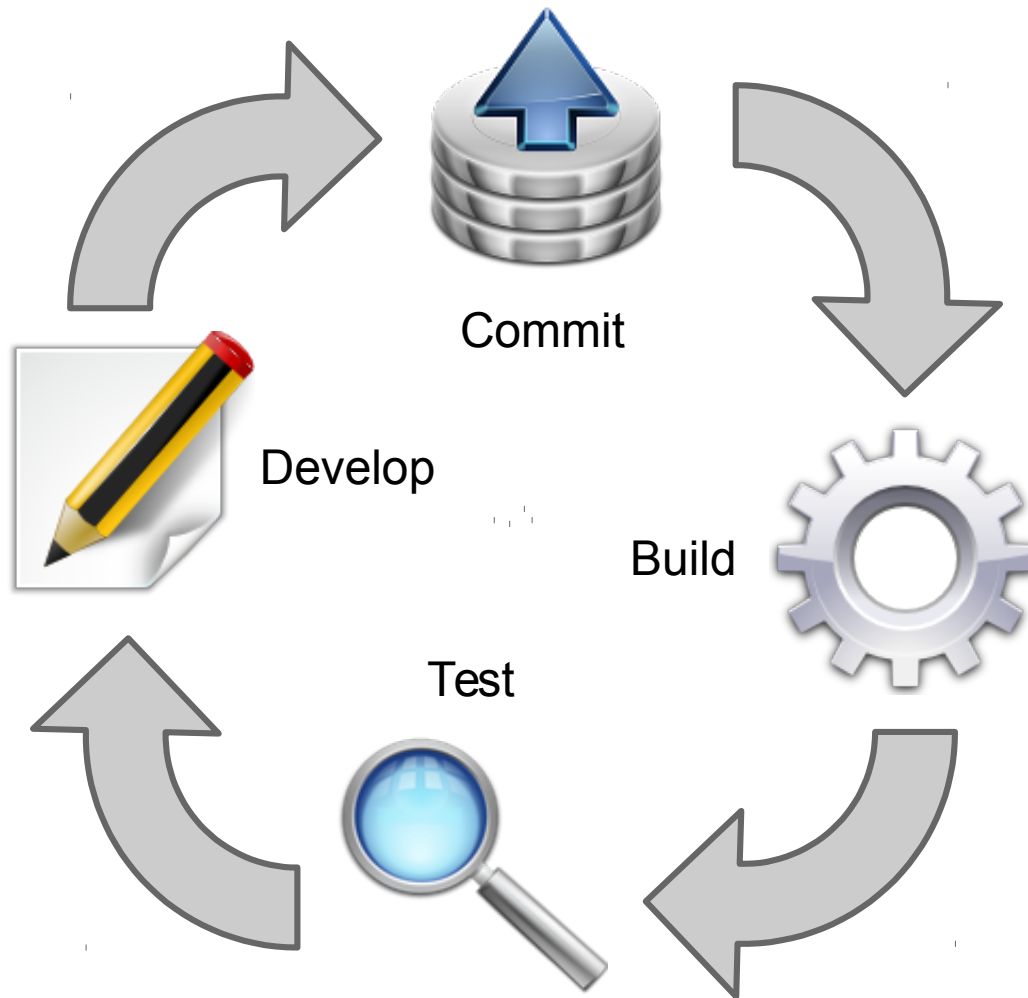


# **Kernel Test Suites**

# CI



## Holy Grail of Testing

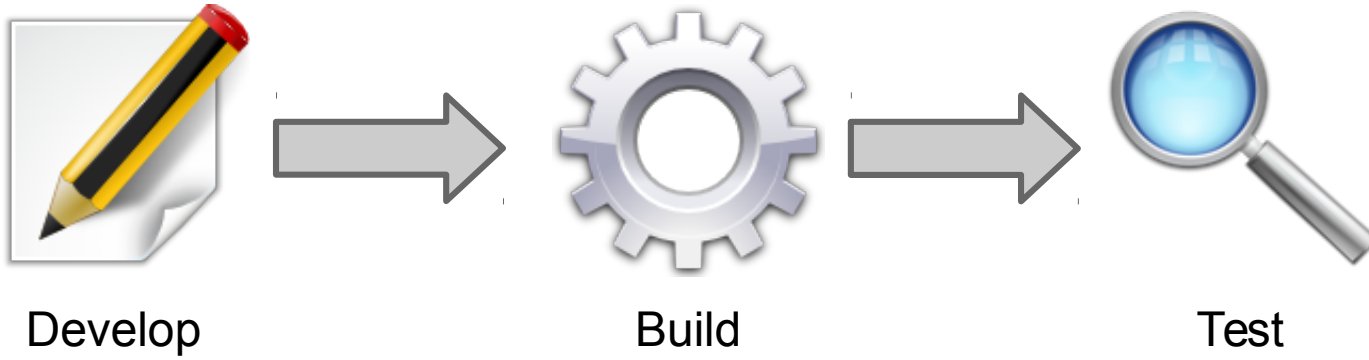


# Continuous Integration

# Integration



**Less Holy Grail of Testing (but still important)**



# Integration



Develop



Commit



Build

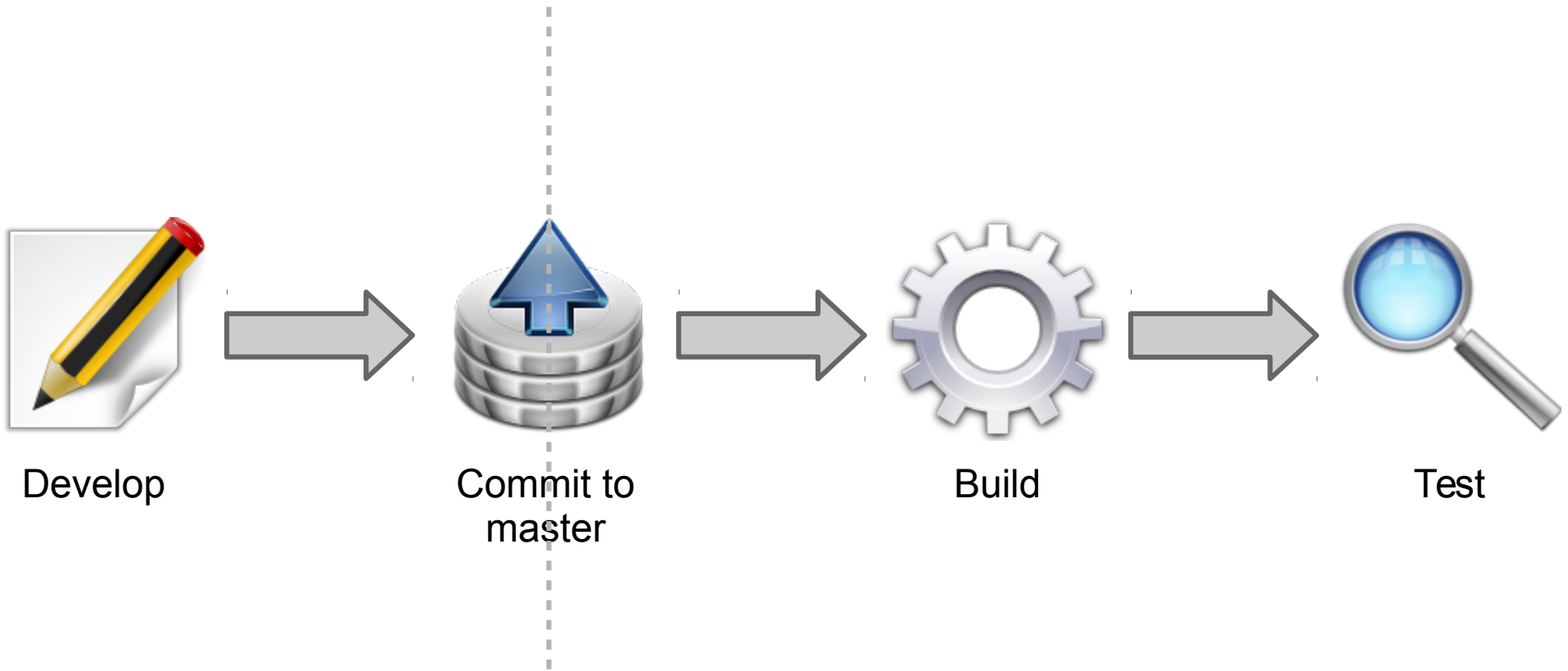


Test



# Integration





Develop

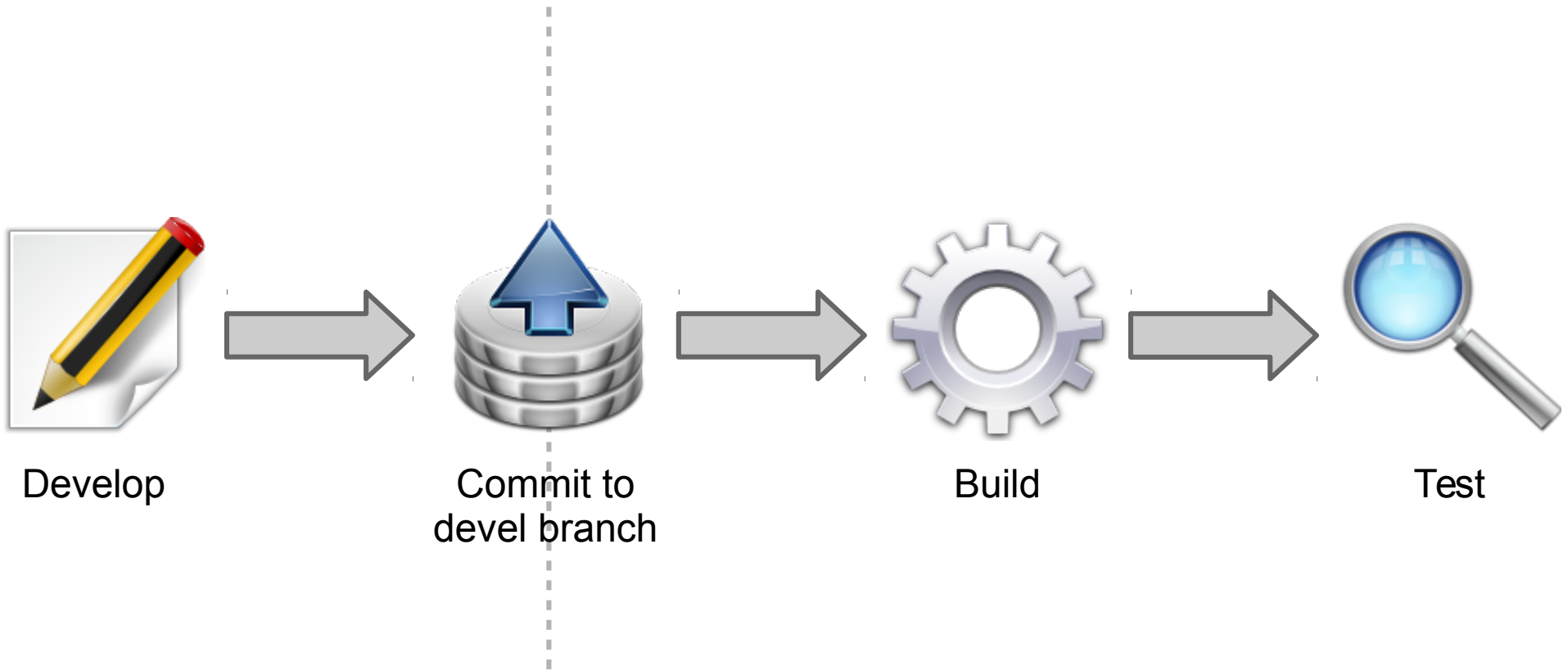
Commit to  
master

Build

Test

# Disintegration

IDEAS  
ON BOARD

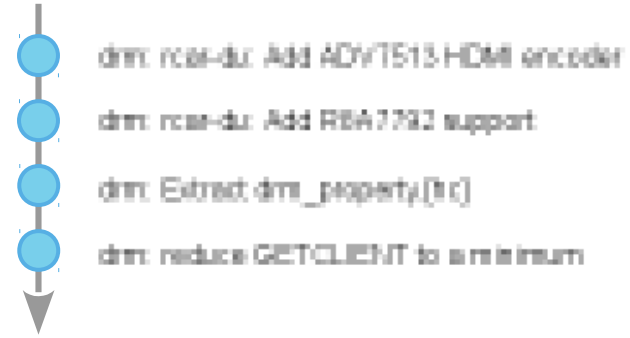
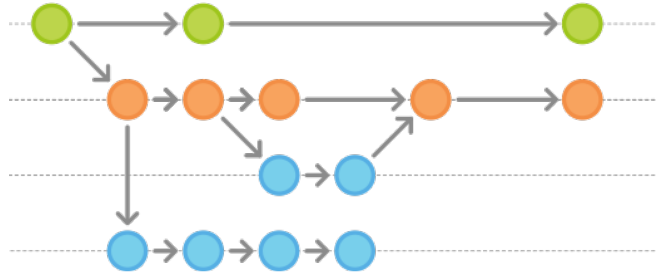


# Integration

# CI



## Holy Grail of Testing



**0-Day**



Subject: [renesas:next 6/9] Error: arch/arm64/boot/dts/renesas/r8a7795-salvator-x.dts:148.1-10 Label or path scif\_clk not found

**tree:** <https://git.kernel.org/pub/scm/linux/kernel/git/horms/renesas.git> next

head: 23598a7eb9c68eb53d7c33a73cb0ec06ce84bf8b

**commit:** cb9209138688fd3fdffc9fd403ca51dbb8372353 [6/9] arm64: dts: salvator-x: Enable SCIF\_CLK frequency and pins

**config:** arm64-defconfig (attached as .config)

**reproduce:**

```
wget https://git.kernel.org/cgit/linux/kernel/git/wfg/lkp-tests.git/plain/sbin/make.cross -O ~/bin/make.cross
chmod +x ~/bin/make.cross
git checkout cb9209138688fd3fdffc9fd403ca51dbb8372353
# save the attached .config to linux build tree
make.cross ARCH=arm64
```

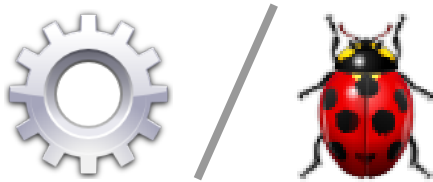
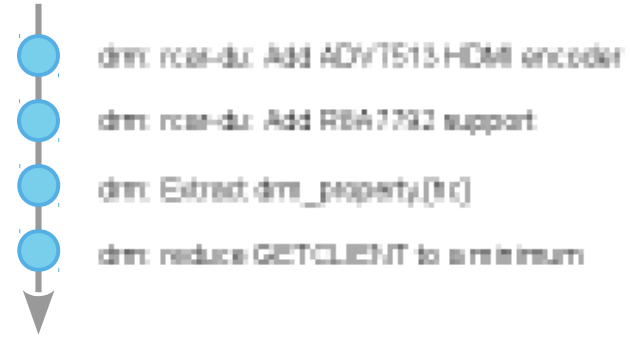
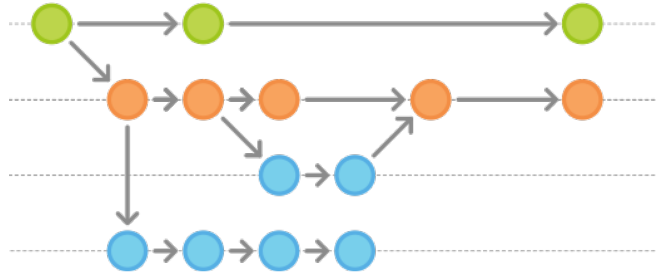
Note: the renesas/next HEAD 23598a7eb9c68eb53d7c33a73cb0ec06ce84bf8b builds fine.  
It only hurts bisectibility.

**All errors (new ones prefixed by >>):**

```
>> Error: arch/arm64/boot/dts/renesas/r8a7795-salvator-x.dts:148.1-10 Label or path
scif_clk not found
FATAL ERROR: Syntax error parsing input tree
```



# 0-Day



**0-Day**

**IDEAS  
ON BOARD**

Subject: [pinchart1-fbdev:dma/next 3/6] drivers/dma/sh/rcar-dmac.c:1490:3-8: No need to set .owner here. The core will do it.

From: kbuild test robot <fengguang.wu@intel.com>

tree: git://linuxtv.org/pinchart1/fbdev.git dma/next

head: 58e5ef8b074e5c20a0333aee30af8e6857a65ce0

commit: 8d0c0169ccfb52abb869830a3326cfc3ea2aee6e [3/6] dmaengine: rcar-dmac: Add Renesas R-Car Gen2 DMA Controller (DMAC) driver

**coccinelle warnings: (new ones prefixed by >>)**

**>> drivers/dma/sh/rcar-dmac.c:1490:3-8: No need to set .owner here. The core will do it.**

Please review and possibly fold the followup patch.

---

0-DAY kernel test infrastructure  
<http://lists.01.org/mailman/listinfo/kbuild>

Open Source Technology Center  
Intel Corporation



# 0-Day

Subject: [pinchart1-fbdev:dma/next 3/6] drivers/dma/sh/rcar-dmac.c:1490:3-8: No need to set .owner here. The core will do it.

From: kbuild test robot <fengguang.wu@intel.com>

tree: git://linuxtv.org/pinchart1/fbdev.git dma/next

head: 58e5ef8b074e5c20a0333aee30af8e6857a65ce0

commit: 8d0c0169ccfb52abb869830a3326cfc3ea2aee6e [3/6] dmaengine: rcar-dmac: Add Renesas R-Car Gen2 DMA Controller (DMAC) driver

coccinelle warnings: (new ones prefixed by >>)

>> drivers/dma/sh/rcar-dmac.c:1490:3-8: No need to set .owner here. The core will do it.

**Please review and possibly fold the followup patch.**

---

0-DAY kernel test infrastructure  
<http://lists.01.org/mailman/listinfo/kbuild>

Open Source Technology Center  
Intel Corporation



# 0-Day



Subject: [PATCH] dmaengine: rcar-dmac: fix platform\_no\_drv\_owner.cocci warnings  
From: kbuild test robot <fengguang.wu@intel.com>

drivers/dma/sh/rcar-dmac.c:1490:3-8: No need to set .owner here. The core will do it.  
Remove .owner field if calls are used which set it automatically

Generated by: scripts/coccinelle/api/platform\_no\_drv\_owner.cocci

Signed-off-by: Fengguang Wu <fengguang.wu@intel.com>

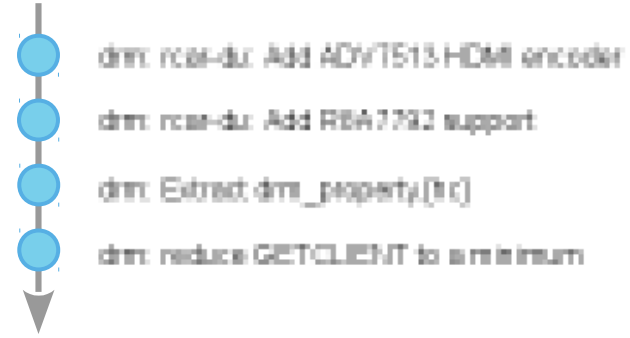
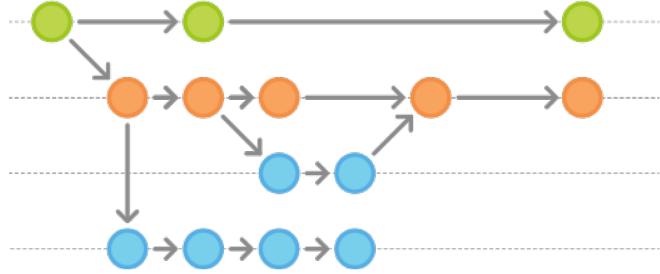
```
---
rcar-dmac.c |      1 -
1 file changed, 1 deletion(-)

--- a/drivers/dma/sh/rcar-dmac.c
+++ b/drivers/dma/sh/rcar-dmac.c
@@ -1487,7 +1487,6 @@ MODULE_DEVICE_TABLE(of, rcar_dmac_of_ids

static struct platform_driver rcar_dmac_driver = {
    .driver          = {
-        .owner      = THIS_MODULE,
        .pm          = &rcar_dmac_pm,
        .name        = "rcar-dmac",
        .of_match_table = rcar_dmac_of_ids,
```

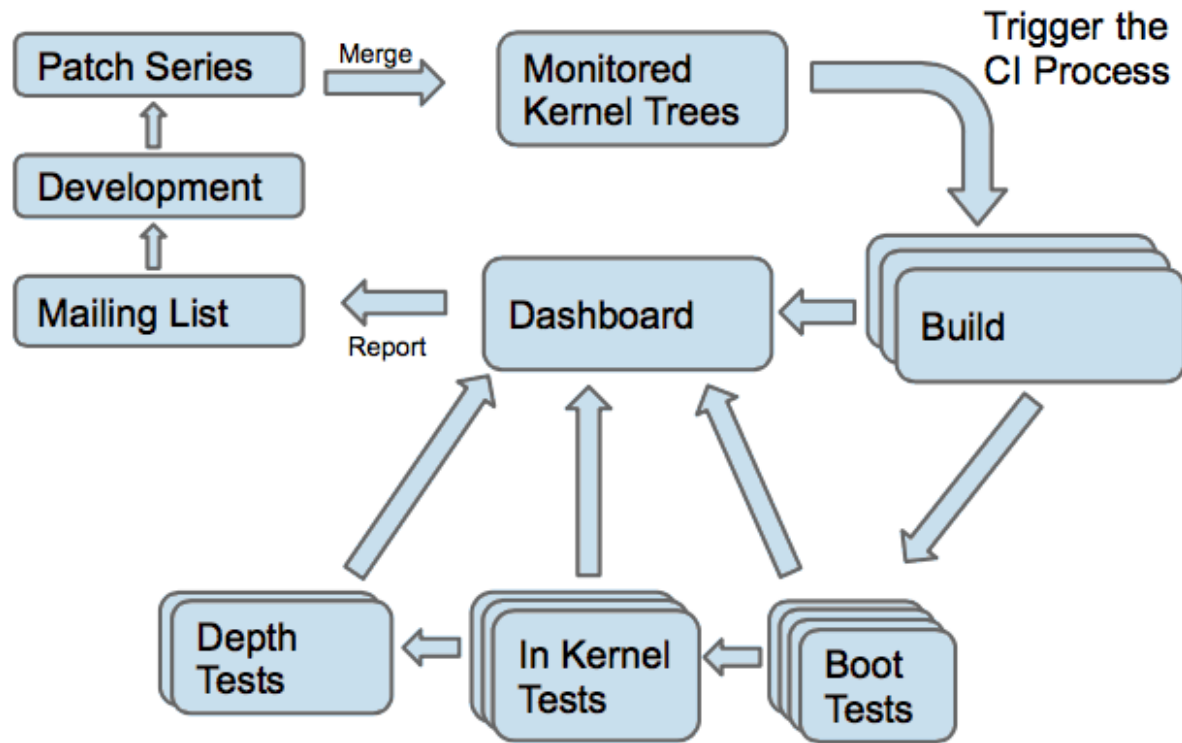


# 0-Day



IDEAS  
ON BOARD

# 0-Day



**kernelci.org**

## Available Jobs

The results shown here cover the last **14 days** of available data starting from **Thu, 01 Jun 2017** (time is **UTC** based).

25

jobs per page



Filter the results

| Tree      | Branch                        | Latest Build Status |     |   |   | Latest Boot Status |     |    |   | Date       | Status |                   |
|-----------|-------------------------------|---------------------|-----|---|---|--------------------|-----|----|---|------------|--------|-------------------|
| net-next  | master                        | 174                 | 173 | 1 | 0 | 0                  | 0   | 0  | 0 | 2017-06-01 |        | <a href="#">Q</a> |
| krzysztof | for-next                      | 206                 | 205 | 1 | 0 | 69                 | 66  | 3  | 0 | 2017-05-31 |        | <a href="#">Q</a> |
| omap      | for-next                      | 206                 | 206 | 0 | 0 | 66                 | 61  | 5  | 0 | 2017-05-31 |        | <a href="#">Q</a> |
| android   | android-4.9                   | 210                 | 209 | 1 | 0 | 82                 | 81  | 1  | 0 | 2017-05-31 |        | <a href="#">Q</a> |
| mainline  | master                        | 207                 | 206 | 1 | 0 | 38                 | 26  | 12 | 0 | 2017-05-31 |        | <a href="#">Q</a> |
| amlogic   | for-next                      | 207                 | 206 | 1 | 0 | 23                 | 23  | 0  | 0 | 2017-05-31 |        | <a href="#">Q</a> |
| drm-tip   | drm-tip                       | 207                 | 207 | 0 | 0 | 60                 | 59  | 1  | 0 | 2017-05-31 |        | <a href="#">Q</a> |
| pmwg      | integ                         | 203                 | 202 | 1 | 0 | 67                 | 62  | 4  | 1 | 2017-05-31 |        | <a href="#">Q</a> |
| rmk       | for-next                      | 206                 | 206 | 0 | 0 | 65                 | 63  | 1  | 1 | 2017-05-31 |        | <a href="#">Q</a> |
| next      | master                        | 208                 | 207 | 1 | 0 | 70                 | 10  | 60 | 0 | 2017-05-31 |        | <a href="#">Q</a> |
| lsk       | linux-linaro-lsk-v4.1-android | 214                 | 208 | 6 | 0 | 60                 | 60  | 0  | 0 | 2017-05-31 |        | <a href="#">Q</a> |
| lsk       | linux-linaro-lsk-v4.1         | 209                 | 207 | 2 | 0 | 71                 | 71  | 0  | 0 | 2017-05-31 |        | <a href="#">Q</a> |
| android   | android-4.4                   | 206                 | 206 | 0 | 0 | 71                 | 71  | 0  | 0 | 2017-05-30 |        | <a href="#">Q</a> |
| mattface  | master                        | 207                 | 207 | 0 | 0 | 80                 | 74  | 6  | 0 | 2017-05-30 |        | <a href="#">Q</a> |
| ulfh      | next                          | 207                 | 206 | 1 | 0 | 123                | 110 | 13 | 0 | 2017-05-30 |        | <a href="#">Q</a> |
| android   | android-3.18                  | 207                 | 207 | 0 | 0 | 76                 | 76  | 0  | 0 | 2017-05-30 |        | <a href="#">Q</a> |

Subject: rmk/for-next boot: 65 boots: 1 failed, 63 passed with 1 offline (v4.12-rc1-7-ge8fa27d7428e)

From: kernelci.org bot <bot@kernelci.org>

To: kernel-build-reports@lists.linaro.org

rmk/for-next boot: 65 boots: 1 failed, 63 passed with 1 offline (v4.12-rc1-7-ge8fa27d7428e)

Full Boot Summary:

<https://kernelci.org/boot/all/job/rmk/branch/for-next/kernel/v4.12-rc1-7-ge8fa27d7428e/>

Full Build Summary:

<https://kernelci.org/build/rmk/branch/for-next/kernel/v4.12-rc1-7-ge8fa27d7428e/>

Tree: rmk

Branch: for-next

Git Describe: v4.12-rc1-7-ge8fa27d7428e

Git Commit: e8fa27d7428e27870b4624514be1cc198d6049fa

Git URL: <git://git.armlinux.org.uk/~rmk/linux-arm.git>

Tested: 17 unique boards, 10 SoC families, 18 builds out of 206



---

# kernelci.org

Boot Failure Detected:

arm64:

```
defconfig+CONFIG_KASAN=y  
armada-3720-db: 1 failed lab
```

Offline Platforms:

arm64:

```
defconfig+CONFIG_RANDOMIZE_BASE=y:  
armada-3720-db: 1 offline lab
```

---

For more info write to <[info@kernelci.org](mailto:info@kernelci.org)>



**kernelci.org**

- kernelci.org bot
- Mark Brown's build bot
- Olof Johansson's autobuilder/autobooter
- Jon Hunter's Tegra baseline test results



**[kernel-build-report@lists.linaro.org](mailto:kernel-build-report@lists.linaro.org)**

# May 2017 Archives by thread

- Messages sorted by: [\[ subject \]](#) [\[ author \]](#) [\[ date \]](#)
- [More info on this list...](#)

**Starting:** Mon May 1 03:54:54 UTC 2017

**Ending:** Wed May 31 20:00:58 UTC 2017

**Messages:** 562

- [mainline build: 0 warnings 0 failures \(mainline/v4.11\)](#) *Olof's autobuilder*
- [mainline/master build: 207 builds: 0 failed, 207 passed, 9 warnings \(v4.11\)](#) *kernelci.org bot*
- [mainline/master boot: 100 boots: 1 failed, 99 passed \(v4.11\)](#) *kernelci.org bot*
- [next/master build: 207 builds: 1 failed, 206 passed, 66 warnings \(next-20170501\)](#) *kernelci.org bot*
- [next build: 29 warnings 0 failures \(next/next-20170501\)](#) *Olof's autobuilder*
- [next/master boot: 91 boots: 4 failed, 87 passed \(next-20170501\)](#) *kernelci.org bot*
- [Tegra baseline test results for v4.11](#) *Jon Hunter*
- [mainline/master build: 207 builds: 1 failed, 206 passed, 9 warnings \(v4.11-375-g08c521a2011f\)](#) *kernelci.org bot*
- [mainline build: 0 warnings 0 failures \(mainline/v4.11-375-g08c521a\)](#) *Olof's autobuilder*
- [mainline build: 0 warnings 0 failures \(mainline/v4.11-430-gcdbfbba\)](#) *Olof's autobuilder*
- [mainline/master build: 207 builds: 1 failed, 206 passed, 9 warnings \(v4.11-430-gcdbfbba98c15\)](#) *kernelci.org bot*
- [mainline/master build: 207 builds: 0 failed, 207 passed, 9 warnings \(v4.11-502-g85724edecbdc\)](#) *kernelci.org bot*
- [mainline/master boot: 109 boots: 0 failed, 108 passed with 1 offline \(v4.11-375-g08c521a2011f\)](#) *kernelci.org bot*
- [mainline/master build: 207 builds: 1 failed, 206 passed, 9 warnings \(v4.11-635-g5fab10041b43\)](#) *kernelci.org bot*
- [mainline/master boot: 91 boots: 0 failed, 91 passed \(v4.11-430-gcdbfbba98c15\)](#) *kernelci.org bot*
- [mainline/master build: 207 builds: 1 failed, 206 passed, 10 warnings \(v4.11-746-g2dbf3d5c32bf\)](#) *kernelci.org bot*
- [mainline/master build: 207 builds: 0 failed, 207 passed, 10 warnings \(v4.11-874-g174ddfd5dfbf\)](#) *kernelci.org bot*
- [mainline/master boot: 92 boots: 1 failed, 91 passed \(v4.11-502-g85724edecbdc\)](#) *kernelci.org bot*
- [mainline/master boot: 103 boots: 2 failed, 101 passed \(v4.11-635-g5fab10041b43\)](#) *kernelci.org bot*
- [mainline/master build: 207 builds: 1 failed, 206 passed, 10 warnings \(v4.11-1236-g7c8c03bfc7b9\)](#) *kernelci.org bot*
- [mainline/master boot: 93 boots: 1 failed, 91 passed with 1 offline \(v4.11-746-g2dbf3d5c32bf\)](#) *kernelci.org bot*
- [mainline/master boot: 94 boots: 2 failed, 92 passed \(v4.11-874-g174ddfd5dfbf\)](#) *kernelci.org bot*



# kernel-build-report@lists.linaro.org



- <https://linux-test-project.github.io/>
- <http://elinux.org/Ktest>
- <https://01.org/lkp>
- <https://kernelci.org/>
- <https://01.org/linuxgraphics/gfx-docs/igt/>



## Resources



[laurent.pinchart@ideasonboard.com](mailto:laurent.pinchart@ideasonboard.com)



---

**Contact**

?

!

ご清聴  
ありがとう  
ございました！

