

Packages - Packaging Request #3304

Bug # 3334 (confirmed): Make aarch64-linux-gnu-gcc work again on armv7h

linux-libre-64 5.18.5

2022-07-10 09:16 AM - avalos

Status: open	% Done: 0%
Priority: wish	
Assignee: bill-auger	
Category:	
Description	
<p>Hello! I managed to build version 5.18.5 of linux-libre-64. I started from linux-libre instead of linux-libre-64 because patches were already reworked for 5.18.2. Then I merged most of linux-libre-64's PKGBUILD into it. I can't guarantee it is entirely and correctly deblobbed, so you should check it before anything.</p> <p>The patches from Arch Linux ARM (armv7h) were included in the latest linux-libre-64. I suspect they aren't necessary because they improve support for armv7h boards, and, well, we're running linux-libre-64 on aarch64 hardware, so we can remove them. I included two patches from Arch Linux ARM (aarch64), one that fixes a RK3399 issue.</p>	

History

#1 - 2022-07-10 06:08 PM - bill-auger

- Assignee set to GNUtoo

so the patch was made against libre/linux-libre, not libre/linux-libre-64?

just to understand the implication, that means it will not apply to libre/linux-libre-64 - to add the changes to abslibre, someone must first apply it to libre/linux-libre, then copy the files from libre/linux-libre/* to libre/linux-libre-64/, and then make a new patch from that

i also noticed a WIP branch of abslibre GNUtoo/linux-libre-64-wip; so maybe it should be rebased onto that instead

#2 - 2022-07-10 07:43 PM - bill-auger

i merged this patch into abslibre - it is on the 'wip-linux-libre-64' branch

#3 - 2022-07-10 07:51 PM - avalos

That's not correct. The changes were initially made against linux-libre, merging in most of linux-libre-64. At the end of the process, the patch was generated relative to linux-libre-64, not linux-libre. This was possible because linux-libre-64 is basically linux-libre with few changes to cross-compile for aarch64.

#4 - 2022-07-10 09:07 PM - avalos

- File 0001-Updated-linux-libre-64-to-5.18.5-based-on-latest-lin.patch added

So, the original patch was a huge mess. Here is a better patch, in case you still need it.

#5 - 2022-07-10 11:05 PM - bill-auger

- File deleted (0001-Updated-linux-libre-64-to-5.18.5.patch)

#6 - 2022-07-10 11:05 PM - bill-auger

- File deleted (0001-Updated-linux-libre-64-to-5.18.5-based-on-latest-lin.patch)

#7 - 2022-07-11 12:49 AM - bill-auger

we discussed this a bit on IRC - this PKGBUILD is quite confusing; but it was before these changes - it appears to have been intended to be built only in an armv7h environment

```
source_armv7h+=(config.aarch64)
....
armv7h) KARCH=arm64;CROSS_COMPILE=aarch64-linux-gnu-;;
....
armv7h) cp ../config.aarch64 .config;echo 'CONFIG_COMPAT=y' >> .config;;
```

all three of the above are done only if CARCH is armv7h - but the GCC cross-compiler dependency does not exist

```
# makedepends_armv7h+=('aarch64-linux-gnu-gcc-initial') # FIXME: no such package
```

there is a 'aarch64-linux-gnu-gcc' package for x86_64 and i686; but there is neither for armv7h - this PKGBUILD is rather confusing - it removes x86_64 from the arch=() array; and if \$CARCH is i686, 'x86_64-pc-linux-gnu-gcc' is imported, but not 'aarch64-linux-gnu-gcc', and KARCH is set to x86 - i do see that there are two 'linux-libre-64' packages in the repos now, one in armv7h and one in i686; but i dunno how either of them came out of this PKGBUILD - im sure GNUtoo can clarify this

```
makedepends_i686+=('x86_64-pc-linux-gnu-gcc')
....
i686) KARCH=x86;CROSS_COMPILE=x86_64-pc-linux-gnu-;
```

in any case, it currently fails to build with libretools, which is a requisite before publishing it - can you tell me, how did you compile this PKGBUILD?

#8 - 2022-07-11 12:51 AM - avalos

I built the PKGBUILD (in my x86_64 PC) like this:

```
export CARCH=armv7h
makepkg -s
```

Also, the armv7h patches are probably not necessary, as we won't be running linux-libre-64 in armv7h boards. We should remove them. The patches are also present in linux-libre, and as we know, linux-libre-64 PKGBUILD is a modified copy of the linux-libre one, so maybe GNUtoo didn't remove the armv7h patches already present. We only need the two aarch64 patches from Arch Linux ARM.

#9 - 2022-07-11 01:56 AM - bill-auger

thats kinda a hack - did it work? - i mean can you boot that kernel?

Also, the armv7h patches are probably not necessary,

not necessary, and probably wrong for the aarch64 kernel

i suppose that the reason they are there, is to minimize the diff against the linux-libre PKGBUILD - i re-worked it to allow only cross-compiling from x86_64 (ie: CARCH=armv7h would not be needed); and i commented it thoroughly to reduce the confusion

the archarm kernel uses all of the arch patches; and the x86_64 build of linux-libre does not have any special per-arch treatments; so i over-rode the per-arch mechanism for x86_64, to further minimize the diff - if it works, then the PKGBUILD should be identical to the linux-libre PKGBUILD, except for those special lines, which are clearly commented as special over-rides

#10 - 2022-07-11 02:49 AM - avalos

bill-auger wrote:

thats kinda a hack - did it work? - i mean can you boot that kernel?

The particular thing about linux-libre-64 is that when you ask it to build for arm7h, it actually builds for aarch64. Check the `case` statements. Since Parabola has no aarch64 support, it must disguise as an armv7h package built (from Parabola's perspective) for armv7h.

i suppose that the reason they are there, is to minimize the diff against the linux-libre PKGBUILD

Sounds like a logical explanation.

- i re-worked it to allow only cross-compiling from x86_64 (ie: CARCH=armv7h would not be needed); and i commented it thoroughly to reduce the confusion

Parabola builds are manual, right? If so, then this shouldn't cause any problem, I guess.

the archarm kernel uses all of the arch patches; and the x86_64 build of linux-libre does not have any special per-arch treatments; so i over-rode the per-arch mechanism for x86_64, to further minimize the diff - if it works, then the PKGBUILD should be identical to the linux-libre PKGBUILD, except for those special lines, which are clearly commented as special over-rides

I'll check the changes you did.

#11 - 2022-07-11 03:59 AM - bill-auger

ok the package compiled that way - the problem though, is that it is an x86_64 package - im not sure if i can trick it into the armv7h repo

avalos - do you remember, did your package filename have armv7h in it, or x86_64 ?

Parabola builds are manual, right? If so, then this shouldn't cause any problem,

only the one i mentioned - it may be best to put the over-rides i have now, on armv7h instead; but that would require a 'aarch64-linux-gnu-gcc' package for armv7h, which was the original problem

#12 - 2022-07-11 05:28 AM - bill-auger

i just published the binary package to x86_64/libre-testing, if someone wants to try it - you would need to cherry pick the files, obviously - i dont have hardware to test it on

https://repo.parabola.nu/pool/parabola/linux-libre-64-5.18.5-1-x86_64.pkg.tar.zst
https://repo.parabola.nu/pool/parabola/linux-libre-64-5.18.5-1-x86_64.pkg.tar.zst.sig

#13 - 2022-07-11 08:04 AM - avalos

- File 0001-linux-libre-64-Fixed-install-of-mkinitcpio-preset.patch added

#14 - 2022-07-11 08:36 AM - avalos

Is this expected output of the mkinitcpio command? By the way, I fixed the installation of the preset file in the patch from the last attachment.

```
==> WARNING: No modules were added to the image. This is probably not what you want.  
==> Creating zstd-compressed initcpio image: /boot/initramfs-linux-libre-64.img  
==> WARNING: errors were encountered during the build. The image may not be complete.
```

#15 - 2022-07-12 01:17 AM - avalos

- File 0001-linux-libre-64-Fixed-install-of-mkinitcpio-preset.patch added

- File 0002-Fix-installation-of-mkinitcpio-preset.patch added

Here are the two patches that fix the installation of the mkinitcpio.

#16 - 2022-07-13 07:56 AM - avalos

- File 0001-wip-uboot-pinebookpro-failing-build.patch added

#17 - 2022-07-17 10:41 PM - bill-auger

- Priority changed from bug to wish

i was able to build linux-libre-64 5.18.5 for armv7h with the bootstrap cross-compiler aarch64-linux-gnu-gcc-initial 9.3.0-1parabola1

this and all the cross-compiler packages are in armv7h/libre-testing now

```
linux-libre-64 5.18.5  
aarch64-linux-gnu-gcc-initial 9.3.0-1parabola1  
aarch64-linux-gnu-binutils 2.38-1  
aarch64-linux-gnu-glibc 2.35-1  
aarch64-linux-gnu-linux-libre-api-headers 5.18_gnu-1
```

#18 - 2022-07-21 05:12 PM - avalos

- File 0001-linux-libre-64-added-CONFIG_BATTERY_CW2015-option.patch added

In order for the battery gauge in the Pinebook Pro to work, we need to enable the option CONFIG_BATTERY_CW2015 to the kernel configuration, so the driver is loaded. Thanks for the solution, GNUtoo!

#19 - 2022-07-22 03:09 AM - bill-auger

- Assignee changed from GNUtoo to bill-auger

the battery monitor patch is on the tip of the wip-linux-libre-64 now

#20 - 2022-07-25 04:30 AM - bill-auger

UPDATE: avalos built this for armv7h; but it would not boot - it was successful (again) by cross-compiling from x86_64 - this time however, avalos put ARCH=armv7h into the PKGBUILD; which created a package which the armv7h pacman would accept

i just noticed a bug in the PKGBUILD though, which (maybe?) should be corrected - that PKGBUILD did not apply any of the armv7h patches, only the aarch64 patches

roughly, because of this trick:

```
source_armv7h=(
  # Arch Linux ARM patches (armv7h)
  ...
)
source_aarch64=(
  # Arch Linux ARM patches (aarch64)
  ....
)
source_armv7h=( ${source_aarch64[*]} ) # cross-compile over-ride
```

that final LOC (probably) should have been appending:

```
source_armv7h+=( ${source_aarch64[*]} ) # cross-compile over-ride
```

#21 - 2022-08-28 06:53 PM - bill-auger

- Parent task set to #3334

Files

0001-linux-libre-64-Fixed-install-of-mkinitcpio-preset.patch	1.83 KB	2022-07-11	avalos
0002-Fix-installation-of-mkinitcpio-preset.patch	1.8 KB	2022-07-12	avalos
0001-linux-libre-64-Fixed-install-of-mkinitcpio-preset.patch	1.84 KB	2022-07-12	avalos
0001-wip-uboot-pinebookpro-failing-build.patch	16.1 KB	2022-07-13	avalos
0001-linux-libre-64-added-CONFIG_BATTERY_CW2015-option.patch	2.29 KB	2022-07-21	avalos