

PiBox - Action Item #176

PiBox component rev: kernel

23 Mar 2013 16:45 - Hammel

Status:	Closed	Start date:	23 Mar 2013
Priority:	Immediate	Due date:	
Assignee:	Hammel	% Done:	100%
Category:	03 - Linux Kernel	Estimated time:	0.00 hour
Target version:	0.8.0		
Severity:	03 - Medium		
Description			
Current version is based on 3.2.27. There is a 3.6.x branch in the git repo that needs to be tested.			

Associated revisions

Revision 7877c3b4 - 18 Jan 2014 15:26 - Hammel

RM #176: Add support for 3.10.y kernel tree. This is not the default yet, but it does boot. It needs to be tested with the rest of the roots and opkgs to make sure it has the right default kernel config.

Revision 9ea8693b - 23 Feb 2014 15:35 - Hammel

RM #176: Rev'ed kernel configuration for latest 3.10.y tree. Fixed bug in kernel-git.cfg to KV works correctly. Merged mdev.conf with nldev.conf.

History

#1 - 23 Mar 2013 16:46 - Hammel

- *Tracker changed from Bug to Action Item*

Initial tests with a build on 64-bit failed. The kernel couldn't find init. I'm using the same cmdline.txt that was used for the 3.2.27 branch. The root file systems is an ext3 partition and the cmdline.txt references it correctly. Not sure why the newer kernel doesn't work.

#2 - 23 Mar 2013 16:48 - Hammel

- *% Done changed from 0 to 10*

#3 - 28 Mar 2013 19:09 - Hammel

- *Status changed from New to In Progress*

- *Priority changed from Normal to Low*

- *% Done changed from 10 to 20*

- *Severity changed from 03 - Medium to 04 - Low*

The 3.6.y kernel builds fine and boots, but it doesn't support my wireless keyboard. It also seems to mix the init processing with some usb probing, which causes some things not to happen, like the USB wifi not to get loaded because the USB has not enumerated the dongle when mdev is starting up.

The latter issue might be an "early init" configuration item. I seem to have a vague recollection about hearing about such a feature in the kernel. The former I don't know what the problem is. I ran meld on the two kernel configs (3.6.y and 3.2.27) and don't see anything missing from the new kernels config that was in the old kernel config. But there are lots of changes so maybe I missed something.

For now, I'm falling back to 3.2.27 until I get a public release of PiBox out the door.

#4 - 18 Jan 2014 15:22 - Hammel

- % Done changed from 20 to 50

Ran a test today with the kernel from the Raspberry Pi kernel repo on github using GIT id rpi-3.10.y. This was built using the current PiBox xcc, based on Crosstool-NG 1.15.2. The rootfs is the same with only a minor change to cleaning up the lib/modules/.../ symlinks to support kernel versions that don't match the kernel release names.

The system boots just fine. In fact, it seems to boot rather fast in comparison to the 3.2.27 tree. Also, the keyboard is available on boot (at least with the initial test). Not sure if that was a fluke or they fixed something with the USB handling.

I will checkin the changes to buildroot.mk and the new kernel configuration file for rpi-3.10.y. I'll also add commented out configuration support for the new kernel, but won't make it the default yet. I need to verify that all required components (re: opkgs) are working with the new kernel first.

#5 - 18 Jan 2014 16:06 - Hammel

A quick check shows that the mdev handler (usbhandler.conf/usbhandler.sh) is not getting called, so the network driver (which **is** compiled and available) is not getting loaded.

#6 - 19 Jan 2014 14:20 - Hammel

Stuff to review for mdev:

1. <http://git.busybox.net/busybox/plain/docs/mdev.txt>
2. <https://wiki.gentoo.org/wiki/Mdev>
3. <http://free-electrons.com/doc/mdev-lab.pdf>
4. <http://www.linuxfromscratch.org/clfs/view/clfs-3.0/mips/bootscripts/mdev.html>

Also, add usr/bin/mdevdebug.sh (from my sandbox) and add it to /etc/mdev.conf as the first command that executes and falls through to the other commands. This should really be an opkg that patches mdev.conf on install and unpatches on uninstall.

#7 - 21 Jan 2014 21:04 - Hammel

Inittab tries to mount /proc/bus/usb as usbfs. This directory doesn't exist with this kernel using the default RPi kernel config (not my config, the default one).

The reason no mdev-based driver loading occurs is because the usbfs isn't mounted. It's deprecated after kernel 3.5. See this discussion: <http://askubuntu.com/questions/326597/enabling-usbfs-in-ubuntu>

One solution that seems to also be deprecated was CONFIG_USB_DEVICE_CLASS (it's not in the 3.10.25 configuration). See <http://www.libusb.org/ticket/119>

I might get more info from https://wiki.gentoo.org/wiki/Mdev/Automount_USB

#8 - 23 Jan 2014 20:24 - Hammel

Possible alternatives to mdev (that can call mdev):

- <http://www.skarnet.org/software/s6-linux-utils/s6-devd.html>
- <http://git.r-36.net/nldev/>

Both listen to the netlink socket for events and pass them to mdev.

#9 - 09 Feb 2014 15:51 - Hammel

- *Priority changed from Low to Immediate*
- *Severity changed from 04 - Low to 03 - Medium*

#10 - 22 Feb 2014 09:19 - Hammel

- *Target version changed from 1.0 - Atreides to 0.8.0*

Getting close to making this work so retarget for 0.8.0.

#11 - 26 Feb 2014 21:22 - Hammel

- *Status changed from In Progress to Closed*
- *% Done changed from 50 to 100*

After finding a working branch from the RPi kernel repo, which is not the latest but is merge with kernel.org's 3.10.31, and updating the rootfs to properly load usb drivers using lusb as a front end in an init script, PiBox is now rev'd to a 3.10.x kernel.

This means we can integrate with the mainline fbft drivers for the touchscreen display and can properly support BLE.

This issue can be closed.