Pengutronix News No. 30

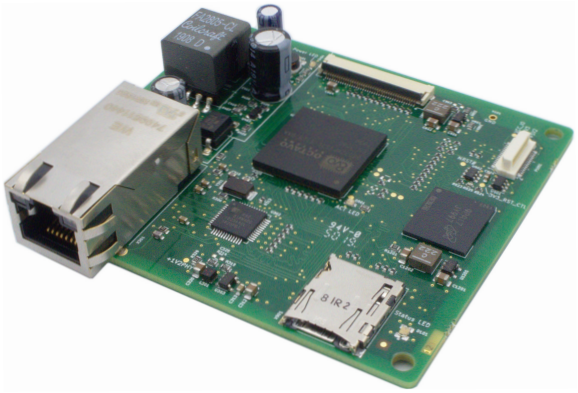
Barebox & Mainline Linux on i.MX8M

Processors with long availability and great support in the mainline Linux kernel have been rare in the last decade: many of our customers developed their embedded systems with i.MX6 during the 2010s. This resulted in synergistic effects: people took the already good Linux support and improved it where required for their project (or let the Pengutronix kernel team help them). Due to the open source license of the Linux kernel, the result went back into the kernel and everyone could make use of it.

With i.MX8, Pengutronix is focussing on the "M" series of processors, mainly because it is - in contrast to the QM and X series - fully documented, and there is no need to rely on proprietary system control coprocessor firmware. Experience has shown that open documentation for all critical system components has been the key factor for great kernel quality - and this is what we aim for on i.MX8 as well. While i.MX8M Mini and i.MX8M Nano will be the entry level processors of the family, i.MX8M Plus will be the high end derivate with TSN ethernet and CAN bus. Mainline kernel support is already making great progress for all of those!

Barebox & Linux on STM32MP1 / OSM32MP1x

In addition to i.MX, a new player with great mainline Linux support appeared during the last year, addressing the same industrial long term market: STM32MP1 by STMicroelectronics. With our new hardware spin-off, Linux Automation GmbH, Pengutronix recently demonstrated how easily the physical world can be bridged to IT with a OSM32MP15x System-in-Package, which is a Linux computer on a chip (just add eMMC):



The MP1 is already well supported by the Barebox bootloader and the mainline kernel, and, as it has the same Vivante 3D GPU family as many i.MX processors, it also runs the open source 3D graphics driver suite provided by Etnaviv.

J1939 Support in the Official Linux Tree!

Pengutronix recently ported the heavy duty vehicle protocol J1939 (based on CAN) into the official kernel! The effort, driven by a customer, shows that even “exotic” protocols can benefit from open source development in the kernel community!

https://www.kernel.org/doc/html/latest/networking/j1939.html

More Pengutronix Highlights

If you are interested in seeing more of the results of our Embedded Linux project work, you might want to have a look at our current demos at one of the upcoming tradeshows and conferences:

- **Robust Software Updating with RAUC and barebox**
- **Embedded Linux Test Automation with labgrid**
- **Visualisation Panels with Off-the-Shelf SiPs OSM32MP15x (Octavo Systems) and Off-the-Shelf BoTouch (Bopla)**
- **Open Source Multimedia: Hantro Drivers on i.MX8M**
- **Etnaviv on i.MX8M and STM32MP1**

Other Recent Linux Topics

- **Accelerated Open Source 3D Graphics & Multimedia**
  Etnaviv, GStreamer, Video4Linux2, Wayland: platforms for hardware accelerated multimedia systems
- **Long term Maintenance & Updating Concepts**
  Strategies for Linux based IoT product development, including longterm maintenance of the kernel, bootloader and critical system components
- **IoT: Secure Boot, Field Upgrade + Provisioning with RAUC**
  Use Linux + Barebox for IoT gateways and field nodes
- **Boot Time Optimization: We Optimize Your Device**
- **Realtime + Rich OS: MX8, SoCFPGA, Ultrascale, STM32MP1**
  Get the best of the microcontroller- and FPGA-world in combination with a Linux SoC, with and without RT-Preempt
- **Watchdog Support for systemd, D-Bus Middleware**
  Learn about “modern linux userspace”, systemd, D-Bus and today's full-featured infrastructure for your embedded app
- **Security with OP-TEE and HAB / Trusted Boot**

Upcoming Events

25.02.-27.02.2020
Embedded World, Nuremberg

14.-15.03.2020
Chemnitzer Linux-Tage

26.-28.10.2020
Embedded Linux Conference Europe

10.-13.11.2020
electronica, Munich

Read more news in our company blog:
https://www.pengutronix.de/en/blog.html

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