A very open laptop

Pine64 PineBook Pro

The ne64 community is involved to some extent in the design and testing of hardware, for example, by giving suggestions for the correction of problems that have been observed in the design jnu. For example, the author of this article has been working for a long time on suggestions for revising chapters not printed circuit boards for PBP.

Everything described so far was valid for harý the door part, and the entire software support ka for all Pine64 devices, including PBP, is based on community work. In other words thus, there are no official Pine64 ini installation images files, that is, not it says some official Linux distribution created and maintained by Pine64 as a company, or something similar. Everything that powers PBP is the result of community work, be it Pine64 forý unit or, for example, the Linux kernel or the KDE community. Of course, certain Linux disj tributions make an extra effort, providing specific support for PBP (as, at priý mer, Manjaro ARM, whose collaborator and author of this article), which is often necessary, since all kernel patches required for funcý

functional PBP s have not yet become part of the mainline Linux kernel. Yes, you read that right, PBP runs a mainline Linux kernel nel, which means that there are no ancient BSP s in circulation (board support package, that is, the kernel that the SoC vendor provides ) year for its product), but it also means that certain software functions are still missing. The community works on it, and give backý we will talk about this in the rest of the article.

Obviously, this display of devices does not follow any usual flow, and the goal is to avoid repeating common things and use the space for what sets Pine64 and PBP apart from other manufacturers and devices on the SBC market. Namely, the vast majority of SBC manufacturers are oriented towards offering functional SBC s to end users through a kind of "rounded system", ma that makes it possible, either through some sort of "standard way" of doing certain things or through sets of ini

installation images that often use some ancient versions of the BSP kernel and userspace software. You will ask yourself what is wrong with that, and the answer is that this is how "moldable" it of the users that hinders their creation lives, that is, in this way, timely norm, the death of software support is inevitable. In other words, the only real way to support it in the Linux kernel for some hardware save from the teeth of time isý to become part of the mainline Linux kernel’la. After turning on support for the nor hardware in the mainline Linux kernel, the concern for continued support is largely left to the Linux kernel community.

As for the hardware specifications of PBP, they can be called relatively solid. Finally today. Essentially, PBP is, forý right, modified RockPro44 SBC, upâ¡̂ forged into the body of the laptop, with accessories necessary for its operation, such as additional hardware logic that serves the built-in battery. The SoC on which PBP is based is Rockchip RK3399, which uses ARM "big.Lilý" architecture with two "big" ARM Cortex-A72 core which, according to the official specý fications, they work at a maximum of 1.8 gigaherý ca and four “LITTLE” ARM Cortex-A53 cores operating at a maximum of 1.4 gigahertz. The SoC contains a total of slightly less than two megabytes that cache for CPU cores, the Maliit7860 integrated GPU running at a maximum of 800 megaherý ca and various additional electronics that reý alize functions like PCI Express master’la, gigabit Ethernet interface and USB port fat. The maximum supported RAM capacity is four gigabytes, which is how much PBP comes with, in the soldered dual-channel LPDDR4 variant. Supported storage device types include eMMC modules, microSD cards, standard dne M.2 NVMe SSD’ye soldered SPI chip, with a capacity of 16 megabytes. The PBP comes standard with an easily replaceable eMMC module, covers theta 44 gigabytes, and eMMC is also available twice the capacity module. Perý the handle for PCI Express is in the hardware ru at the level of version 2.0, but in the kernel’ it is limited to version 1.0 (because, according to Rocký hipu, unexplainedý problem in operation as 2.0), and all this with the available four PCI Express lines. The limitation to version 1.0 is not a big handicap rather com work with an M.2 NVMe SSD, as the RK3399 has internal interconnect speed limits that result in maximum NVMe SSD read and write speeds of around 600 to 700 megabytes per second, which is still pretty good for a fairly old ARM SoC. Maximum read and write speeds with eMMC modules range from 150 to 180 megabytes per second, which is still quí but it’s fast and in good balance with the overall level of performance that the RK3399 can offer. For more details about RK3399, see its datasheet at Lsk.rs/358744, and for more details about RK3399 within PBP, see put Device Tree (DT) kernels behind PBP, doý entered at the address Lsk.rs/358745.

What gives the above hardware specifications additional power or, boý in other words, the real strength is the openness of the hardware in terms of specifications and software Tver view. If we go "into the small intestine", the only closed segments are softwareý of support for the RK3399 SoC are the so-called Majý skROM, machine code that is written directly sleep in the ROM part of the chip during its manufacture, support for HDCP (High Definition Digital Content Protection) i poý handle for some additional functions of USB/C ports. So far, the community has implemented i
writes despite the existence of IP cores for that
in RK3399. As another example, support for the
USB/C port is partial and, as of yet, unproven.
for some reason, support for DisplayPort Alt
Mode via USB/C port, which allows connecting an
external monitor via USB/C port, and is implemented
in the form of an out of tree kernel patch, simply
refuses to work.

Let's finally get back to what was
can be called the usual description of a laptop.
There is not much to say here, since the PBP looks
and behaves like a completely ordinary laptop, and
from the external ports there are connected
to power supply, which delivers three amps at five
volts, one USB 3.0 port, one USB 2.0 port and one
USB/C 3.0 port, as well as a microSD card reader
and a 3.5mm TRRS port for sluč

cups. The keyboard is very comfortable to use.
which is contributed by the rather long key stroke for
a laptop keyboard. for more
the author of the article considers the keyboard
on the PBP much more comfortable to type than, for
example, the keyboard on the HP ProBook G8 laptop
pu. The screen on the PBP is excellent, 14 inches
diagonally, made in IPS technology and with a notch
with a resolution of 1920×1080 pixels. It offers nonč
the worse the range of colors it can reproduce
mints, but it makes up for it with a fairly high contrast
ratio (1000:1), making the displayed image look
really great, especially considering the price
range the PBP belongs to. Ugrač

a webcam is also provided, usually
position above the screen, but the quality of the video
it produces is, frankly, quite poor. Two speakers and
two microphones are built in, all of mediocre quality.
Sposč
the smooth surfaces of the PBP's case are a
pleasant surprise, as they are made of magnesium
alloy and make the exterior of the PBP have a
certain amount of premium feel. remain
the laptop is made of plastic and is well fitted, and as a
big drawback, because of the lens
ness, we can state that the first series of PBPs had
done what worse plastic, which often caused the plastic
part of the case to crack in the area of the screen joints.

This, obviously, is not a common occurrence.
laptop model, since PBP is not "just another laptop", but
is, in practice, a development environment for the
RK3399 platform that can also be used as a laptop, in
case you are ready to accept some of its "lies"