

How to make things 'fast'

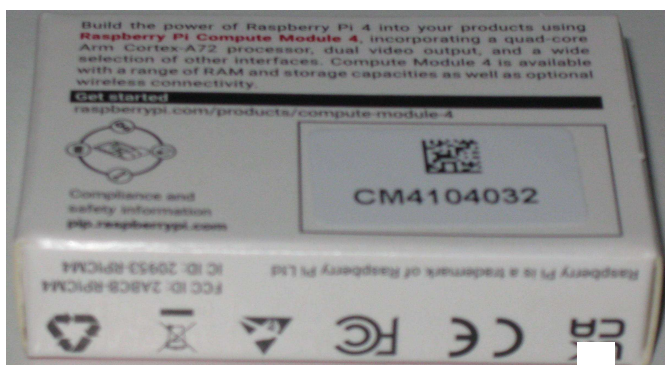
Introduction

Here is a description of how to make a 'fast' computer from readily available components.



Above: the DeskPi Mini is a compact I/O board that has an internal expansion slot for an M.2 NVMe 2242 drive, a heatsink and cooling fan, a socket for a Compute Module 4, a WiFi antenna that plugs into the CM4 and a press button to control the power (press: on, long press: off).

It has two HDMI sockets, an Internet socket, two USB sockets and a USB-C power input.



Above: a Compute Module 4 (this one has 4GB RAM, 32GB eMMC and WiFi) plugs in.

With these three components assembled (and the internal antenna plugged in if required) the first step is to install the firmware. The eMMC drive is blank and there is a special method to flash the firmware - set DIP switches 1 and 4 on the base of the unit to 'on' and connect the



Above: An NVMe drive also plugs in.

USB C power socket to another machine running 'rpiboot'. The unit appears as a mass storage unit so use Win32DiskImager to put the RPi full RISC OS distribution onto the eMMC storage. Turn the unit off and restore the DPI switches to 'off'.

Detailed instructions to do all this come included with the DeskPi Mini.

Now start up the unit as a RISC OS machine with monitor, keyboard and mouse. Download the NVMe drivers and NVMe4kFmt and format the NVMe drive: I recommend a 768GB RISC OS partition.

Software available:

RISC OS Raspberry Pi distro

NVMe drivers

www.riscosopen.org/content/downloads

NVMe drivers

www.riscosbits.co.uk/nvme

NVMe4kFmt 0.05 (29 Mar 2024)

www.riscosbits.co.uk/nvme

home.allgaeu.org/areiser/riscos/software

PartMgr 1.03 (23 May 2024)

forums.jaspp.org.uk/

Fat32fs 1.64 (14 May 2024)

sites.google.com/site/jeffreyadoggett

(some of these sites were elusive!)

You now have a fast RISC OS machine with both eMMC and NVMe storage.



Above: the on-board real time clock is invisible to RISC OS so we'll add a real time clock board.

Finally we'll download a Linux distro onto a 'Store 'N Stay' Nano 32GB USB device and plug it in.

We'll make some edits to files in the 'Loader' partition on the eMMC storage:

CONFIG.SYS:

an edited file is here: www.svrsig.org/Cfig.zip

CMDLINE.TXT:

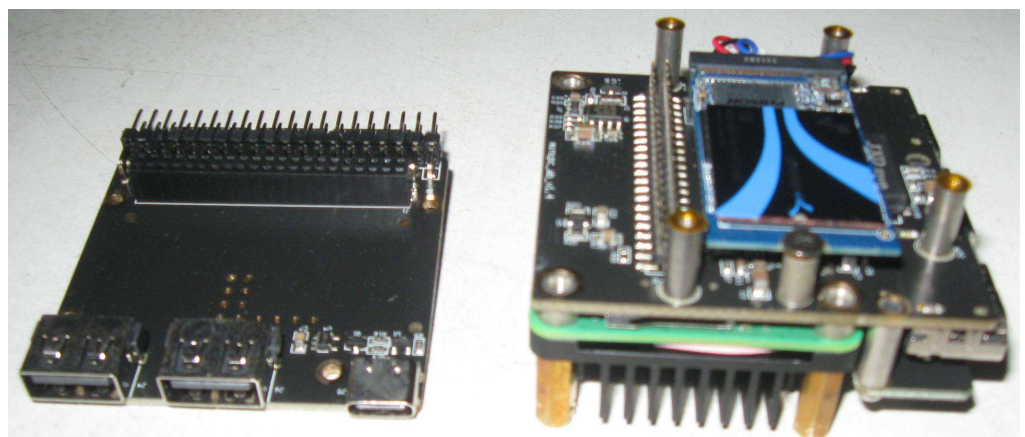
copy this file from the FAT partition on the Store N Stay USB drive to the Loader partition. Add text 'disable_gamma' at the end of the line. Delete the command 'init=...'

A few more files:

copy these items from USB to Loader: bcm2711-rpi-cm4-io/dtb, bcm2711-rpi-cm4/dtb, bcm2711-rpi-cm4s/dtb, kernel8/img and the directory 'overlays'.

Prices:

DeskPi	£49.95
CM4 (4GB)	£70.00
1TB NVMe	£149.99
RTC module	£16.00
Store 'N Stay	£12.25
Total	£298.19



We now have a dual boot RISC OS and Linux machine (with the push button on the real time clock board held down the machine will boot into Linux). With a little more trouble you can arrange for the Linux distro to use the unused space on the NVMe drive and dispense with the Store N Stay USB drive leaving both USB sockets free for keyboard and mouse.

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Above: the completed unit.

Below: taking it apart to fit the NVMe drive.