

REVOLUTION PI

Release Notes
Bullseye 06/2023

6/30/2023

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1 Release Notes Buster 06/2023

Raspberry Pi OS Buster

Our image is based on the Raspberry Pi OS 2023-05-03, which is based on Debian Bullseye. Previously, our images were based on Debian Buster. Accordingly, some basic functions of the operating system (e.g. graphical user interface and network configuration) have changed. Details about the changes to Raspberry Pi OS can be found in these release notes:

- https://downloads.raspberrypi.org/raspios_armhf/release_notes.txt for Bullseye armhf
- https://downloads.raspberrypi.org/raspios_arm64/release_notes.txt for Bullseye arm64

We have made adjusted Raspberry Pi OS: Among other things, we removed unnecessary packages, retrofitted APT repositories and installed packages from KUNBUS. Please find details here:

<https://github.com/RevolutionPi/imagebakery>

The image contains all package updates released by the Raspberry Pi Foundation up to May 2023 and by the Revolution Pi project up to June 2023. It uses kernel 5.10.152 with the RT patch version 75 as before.

Support for arm64 architecture

For the first time, we provide the image not only in a 32-bit variant (armhf architecture), but also in a 64-bit variant (arm64 architecture). The 64-bit variant is compatible with all RevPi products not including the RevPi Core (with Compute Module 1).

If you use your own programs on your RevPi, you must recompile them for the arm64 architecture. If you use proprietary software that is only available as a 32-bit binary, you usually must use the 32-bit image. If you are unsure whether to install the 32-bit or 64-bit image, this list of pros and cons may help:

<https://www.raspberrypi.com/news/raspberry-pi-os-64-bit/>

For compatibility reasons, we continue to ship new devices with the 32-bit image for now.

End of support for the RevPi Core (with Compute Module 1)

Bullseye ends the official support of the RevPi Core in the first version (PR100102). Due to the increased hardware requirements of the Bullseye release, a stable operation with sufficient available resources for custom applications is unfortunately no longer possible. For customers who need newer software versions, we recommend upgrading to the RevPi Core S/SE family.

Easier detection of the RevPi in the network

Formally, you had to use tools like Angry IP Scanner to find a newly installed RevPi on the network. Starting with Bullseye, the RevPi now advertises its services via multicast DNS (also known as mDNS, Avahi, Zeroconf or Bonjour).

To reach the RevPi via Multicast DNS, its serial number is required. The WebStatus is then accessible via `https://revpiNNN.local`, where NNN corresponds to the serial number. Example: If the serial number is 4815162342, the WebStatus can be accessed via `https://revpi4815162342.local`. SSH connection is possible at the address `revpi4815162342.local`.

If you do not have the serial number on hand or have reflashed the RevPi, you can use the following Linux command to display all local RevPis that offer the WebStatus service:

```
avahi-browse -tr _revpiwebstatus._tcp
```

For example, the output looks like this:

```
1 + eth0 IPv4 RevPi Webstatus @ RevPi123          _revpiwebstatus._tcp local
2 + eth0 IPv4 RevPi Webstatus @ RevPi124          _revpiwebstatus._tcp local
3 = eth0 IPv4 RevPi Webstatus @ RevPi123          _revpiwebstatus._tcp local
4   hostname = [RevPi123.local]
5   address = [192.168.1.123]
6   port = [41443]
7   txt = []
8 = eth0 IPv4 RevPi Webstatus @ RevPi124          _revpiwebstatus._tcp local
9   hostname = [RevPi124.local]
10  address = [192.168.1.124]
11  port = [41443]
12  txt = []
```

On Apple devices, the "Flame Services Browser" app can be used instead, which is available free of charge for all platforms (macOS, iOS and iPadOS) in the App Store. This has a search function and lists all RevPi and their services in the network. By clicking on the corresponding service, the WebStatus, for example, can be opened directly: <https://apps.apple.com/de/app/flame-services-browser/id325206381>



Switching off the function:

If multicast DNS is undesirable, e.g. because the RevPi should remain silent for security reasons, the service can be permanently disabled, and an unwanted reactivation prevented, with the following commands:

```
sudo systemctl stop avahi-daemon.service
sudo systemctl disable avahi-daemon.service
sudo systemctl mask avahi-daemon.service
```

Own TLS certificate for each RevPi

Until now, all RevPi used the same self-signed TLS certificate to secure browser access to WebStatus and PiTory. To improve security, a separate certificate is now generated for each RevPi. The generation is automated by the systemd service revpi-cert-wizard.timer. The duration of the certification remains unchanged at 10 years. It will be renewed automatically one week before expiration.



Even signed TLS certificates cannot be verified by browsers. Therefore, these display a warning because the publisher of the certificate cannot be recognized. This has no influence on the encryption, only no automatic check of the authenticity of the certificate is possible. Without a plausibility check by the user, the use of self-signed certificates for communication over a public network is strongly not recommended.



The automated renewal of the self-signed certificate can be disabled as follows:

```
sudo systemctl stop revpi-cert-wizard.timer
sudo systemctl disable revpi-cert-wizard.timer
sudo systemctl stop revpi-cert-wizard.service
sudo systemctl disable revpi-cert-wizard.service
```



If you wish to retain the self-signed TLS certificate that was shipped by default, you can copy the following two files from one of our previous images:

```
/etc/ssl/certs/revpi-self-signed.pem
/etc/ssl/private/revpi-self-signed.key
```

For example, this can be useful, if you have already added the previous standard certificate to the allow list of your browser and want to continue using it.

The CertWizard is part of the `revpi-webstatus` package. You can also use the installed program `revpi-cert-wizard` to create your own self-signed TLS certificate. The program must be run with root privileges. You can get information about the tool by calling: `revpi-cert-wizard --help`.

WebStatus and PiCtory exclusively via encrypted connection

Until now, WebStatus and PiCtory could be accessed via an unencrypted connection in the browser. Now this is only possible in encrypted form.

Unencrypted accesses to port 80 or 41080 are redirected to the encrypted port 41443 after an info message.

Additionally, by default, port 443, which is the standard for encrypted connections, is redirected to 41443.



If you want to use the standard ports 80 and 443 for your own applications, you just must uninstall the package `revpi-webstatus-redirect`.

WebStatus and PiCtory remain available via port 41443.

NetworkManager as replacement for dhcpcd

Starting with our Bullseye image, network configuration is now done with NetworkManager instead of the previously used `dhcpcd`. This leads to a slight improvement in the boot time.

By default, the interfaces are assigned an IP address via DHCP. If this is undesirable, IP addresses can be assigned either through the `/etc/network/interfaces` file or with the `nmtui` command line utility. Alternatively, configuration is possible via the graphical user interface with the `nm-connection-editor` program. To do this, install the package `network-manager-gnome`. Instructions for setting up static IP addresses and other common configurations can be found e.g., in the Debian Wiki:

<https://wiki.debian.org/NetworkConfiguration>

The NetworkManager also allows easy configuration of wireless networks (graphically as well as on the command line).

UTC as new default time zone

The default time zone of our image has been changed from `Europe/Berlin` to `UTC`. This considers our steadily growing international user base. Thanks for this suggestion for improvement to our customer Kees Jan Koster!

Third-party Software

Node-RED

Node-RED is now shipped with the image in version 3. The Node.js version has been updated to 18 (LTS), the RevPi nodes are now distributed as a Debian package.

The Node-RED changelog for version 3 can be found at the following link:

<https://github.com/node-red/node-red/blob/5d698d66d0857e65b08be41b212b7bcafe5f8261/CHANGELOG.md>

Access to Node-RED now runs via the Revolution Pi integrated apache2 web server. When the standard port 1880 is called, the browser automatically redirects to the encrypted connection to port 41880. This connection uses the CertWizard self-signed certificate (see above). If this behavior is not desired, simply uninstall the `revpi-nodered-proxy-apache` package. Then Node-RED is only available on the local system via port 1881.



The Node-RED interface runs on 127.0.0.1 port 1881, is bound exclusively to localhost and is not accessible from the outside. If this is to be changed, the file `/usr/lib/systemd/system/nodered.service` can be modified.



Created nodes like `websocket in`, `http in` or `tcp/udp in` are bound to all interfaces and are accessible from outside.

logi.RTS no longer part of the repository

Starting with the Bullseye image, the logi.RTS package is no longer maintained by KUNBUS, but must be downloaded directly from the manufacturer logi.cals.

Installation instructions are provided by logi.cals at:

<https://help.logicals.com/display/LC3UserDocuDE/logi.RTS+auf+Raspberry+Pi+installieren+und+starten#logi.RTSaufRaspberryPi+installieren+und+starten-logi.RTSaufRaspberryPi+installieren>.

TeamViewer no longer preinstalled

TeamViewer is not available for the 64-bit image. On the 32-bit image, it can be post-installed as follows:

```
sudo apt update && sudo apt install teamviewer-revpi
```

Reorganization of RevPi packages

pimodbus

The "Modbus Organization" has replaced the terms "Master-Slave" by "Client-Server" in its documentation. Therefore, we have adapted the names of the Debian packages:

```
pimodbus-master -> revpi-modbus-client
```

```
pimodbus-slave -> revpi-modbus-server
```

Official press statement of the Modbus Organization:

<https://modbus.org/docs/Client-ServerPR-07-2020-final.docx.pdf>

revpi-sos and revpi-config

The tool `revpi-sos` for generating an SOS report for our support has been moved from the Debian package `revpi-tools` to the standalone package `revpi-sos-report`.

The `revpi-config` tool has been moved from the Debian package `revpi-webstatus` to the package `revpi-tools`.

Watchdog files

The files for using the watchdog on the RevPi Connect are now located at `/usr/share/doc/revpi-tools/` instead of `/home/pi/connect/` as before.

File system enlargement

To speed up the flash process, our image is initially compressed to its minimum size and is expanded to the full size of the eMMC mass storage during the first boot. Until now this file system enlargement happened in the tool `revpi-factory-reset`. Instead, it now happens via a new service called `firstboot.service`. The service is executed exclusively during the initial system boot, which then starts the corresponding shell script. This script can be found under the following path: `/usr/share/revpi/firstboot/resize-fs.sh`.

Upgrade an existing Buster image

The upgrade procedure corresponds to the Raspberry Pi documentation:

<https://www.raspberrypi.com/documentation/computers/os.html#using-apt>

In detail:

- ▷ Change the entries in `/etc/apt/sources.list` and `/etc/apt/sources.list.d/*.list` from "buster" to "bullseye". Example for `/etc/apt/sources.list`:

```
1 deb http://raspbian.raspberrypi.org/raspbian/ bullseye main contrib non-free rpi
2 # Uncomment line below then 'apt-get update' to enable 'apt-get source'
3 #deb-src http://raspbian.raspberrypi.org/raspbian/ bullseye main contrib non-free rpi
```

- ▷ Then reread the contents of the repositories and start the upgrade:

```
1 sudo apt update
2 sudo apt full-upgrade
```

- ⇒ It is possible that with `sudo apt full-upgrade` this error occurs:

```
1 The following packages have unmet dependencies:
2 libc6-dev : Breaks: libgcc-8-dev (< 8.4.0-2~) but 8.3.0-6+rpi1 is to be installed
3 E: Error, pkgProblemResolver::Resolve generated breaks, this may be caused by held packages.
```

- ▷ To fix the error, you need to manually install the `libgcc-8-dev` package using the `sudo apt install libgcc-8-dev` command.
- Manual intervention is required to ensure that the network interfaces retain the classic interface names (e.g. `eth0`) after the upgrade. The tool `raspi-config` is suitable for this purpose. Select the menu item 6 Advanced Options, then A4 Network Interface Names. Selecting No will use the classic names, selecting Yes will use the newer names for the interfaces.
- To continue to access WebStatus via port 80 after the upgrade, a redirect must be set up. This is done by installing the `revpi-webstatus-redirect` package. After installation, it is necessary to restart the Apache service using `sudo systemctl reload apache2`.

- After upgrading the lite image (this does not affect the normal image), the dhcpd configuration will no longer work because the location of the executable has changed. The configuration can either be adjusted in `/etc/systemd/system/dhcpd.service.d/wait.conf` or the file can simply be deleted.
- This script enables an automated switch to the NetworkManager: <https://gist.github.com/nbuchwitz/06876674ebd0b2bab429f1a8506271a1>

Node-RED upgrade



NOTICE

Direct execution of scripts downloaded from the Internet can cause potential damage.

It is recommended to download the script beforehand, check for errors, and only then run it.

▷ Perform the Node-RED update to 3.x and Node.JS 18:

```
1 bash <(curl -sL https://raw.githubusercontent.com/node-red/linux-installers/master/deb/update-nodejs-and-nodered) --node18
```

▷ Install RevPi nodes from the Debian package:

```
1 apt install node-red-contrib-revpi-nodes
```

▷ Remove local RevPi nodes:

```
1 rm -R /home/pi/.node_red/node_modules/node-red-contrib-revpi-nodes
```

▷ Restart Node-RED:

```
1 systemctl restart nodered
```