Release Notes

Bookworm 10/2024

REVOLUTION PI
a KUNBUS brand

2024-10-09

Release Notes Bookworm 10/2024

The RevPi Bookworm Images are based on Debian Bookworm and include packages from Raspberry Pi OS.

The images contain all package updates that were released in the Debian, Raspberry Pi OS, and Revolution Pi package sources up to 2024-10-08. It uses kernel `6.6.46` with the RT patch version `39`.

Changes from Bookworm

- The *RevPi Bookworm Images* are based on *Debian Bookworm* and *Raspberry Pi OS Bookworm*.
- The *RevPi Bookworm Images* are only offered as a 64-bit version. There will no longer be any 32-bit (armhf) variants.
- An upgrade from *Bullseye* is **not** supported.
  - The boot partition is now mounted under `/boot/firmware`.
  - The `config.txt`, the device tree, and overlay files can now be found in `/boot/firmware`.
- *RevPi Status* is being replaced by *Cockpit*.
  - The login to *Cockpit* is done using the user `pi`, not the user `admin`.
  - *PiCtory* can now be accessed via the menu entry “RevPi Configuration” in *Cockpit*.
- The access rights of the user `pi` have been restricted.
  - There are now various user groups to configure access rights in a fine-grained manner.

> An upgrade from Bullseye to Bookworm is not supported, just like on the Raspberry Pi! The images need to be reinstalled on the devices.

Known issues

- Configuring the keyboard layout via `raspi-config` is only possible if the `console-setup` package is installed beforehand: `sudo apt install console-setup`.
- Log entries from `/etc/udev/rules.d/99-com.rules:7 Unknown group 'X'`, `ignoring` with the value `gpio`, `spi` and `i2c`.
- WLAN on the RevPi Flat is currently not usable after a warm start. It was found that the problem can be avoided using an older firmware version. A fix that resolves this issue is being provided and can be installed via the update in Cockpit or `sudo apt update && sudo apt upgrade`.

- To fix a Bluetooth issue on the RevPi Flat S, the `revpi-bluetooth` package needs to be updated. Version 1.1.0 fixes the problem.

Package versions

An detailed list of all changes can be found in the changelog of the respective package. (e.g.: `/usr/share/doc/PACKAGE_NAME/changelog.Debian.gz`).

cockpit-revpi 1.2.0-1+deb12+1

Cockpit plugin for the configuration of the Revolution Pi. This package replaces `revpi-webstatus`. As a dependency, the entire cockpit system, including selected plugins, is installed. To use Cockpit, this package must be installed via `cockpit-revpi-apache`.

Further information: Cockpit replaces RevPi Status

cockpit-revpi-apache 1.2.0-1+deb12+1

Integrate `cockpit-revpi` into the Apache web server on port `41443` under `/cockpit-revpi/` and install the `cockpit-revpi` package as a dependency on the system.

Further information: Cockpit replaces RevPi Status

cockpit-revpi-redirect-apache 1.2.0-1+deb12+1

Allows calling Cockpit without specifying the port. For your own web applications on the Revolution Pi system, the package can be uninstalled, making the standard ports `80` and `443` freely usable: `apt remove cockpit-revpi-redirect-apache`

> Cockpit remains accessible via port `41443`.

Further information: Cockpit replaces RevPi Status

Linux Kernel (linux-image-revpi-v8) 6.6.46-rt39-revpi2-1+deb12+1

Until Bullseye, the Linux kernel and piControl were built in a package under the name *raspberrypi-kernel*. That changes with Bookworm. The new Linux kernel package is called `linux-image-revpi-v8` and is built differently from the previous kernel package. piControl has its own package named

`picontrol`.
We are using the stable version 6.6 for the Linux kernel.

A dedicated device tree overlay for activating the DSA feature on the RevPi Flat S is now also being offered.

mqtt-revpi-client 0.1.0-1+revpi12+2

With this package, the virtual MQTT Client Device is installed in the PiCtory device catalog and is ready for use. With this device, all IOs can be sent and received via an MQTT broker.

opcua-revpi-server 0.4.0-1+revpi12+2

With this package, the virtual OPC UA Server Device is installed in the PiCtory device catalog and is ready for use. With this device, all IOs can be directly addressed via OPC UA.

picontrol 2.2.1-1+deb12+1

piControl is now, like the Linux Kernel, no longer part of the `raspberrypi-kernel` package but exists as a separate package named `picontrol`.

Through optimizations to the UART driver, the processor load demanded by piControl was significantly reduced.

A bug was also fixed that caused increased errors on the PiBridge. This applies especially (but not exclusively) to the case where data was simultaneously sent over a separate RS-485 connection.

The process image under `/dev/piControl0` could previously be read and written by all users. With Bookworm, this is only possible for users in the `picontrol` group. The user `pi` is a member of this group by default.
If other users are to have access to the process image on the system, they must be added to the `picontrol` group. This can be done, for example, with the following command: `sudo adduser $USER picontrol`.

> Access to `/dev/piControl0` is only possible as a member of the `picontrol` group.

pictory-apache 2.10.0-1+deb12+1

Integrate PiCtory into the Apache web server on port 41443 under `/pictory/` and install the `pictory` package as a dependency on the system.

pictory 2.10.0-1+deb12+1

No longer contains web server configurations. To use the web application, this package must be installed via `pictory-apache`.

python3-revpimodio2 2.7.2-1+deb12+1

- Fixes a bug where the relay could not be controlled on a Connect 4.
- The colors of the LEDs over .core.A1 - .A5 on a Connect 4 are now switched according to the constants GREEN, RED, and BLUE.

> Starting with the RevPi Bookworm Images, the user executing the process must be a member of the `picontrol` group. In the case of a PermissionDenied error, this should be checked as the first step of the error investigation.

revpi-base-files 0.4.1-1+revpi12+1

The package installs basic files required for the minimal operation of a Revolution Pi device.

revpi-cert-wizard 1:2.4.5-1+revpi12+4 + revpi-tmpfs-logs 1:2.4.5-1+revpi12+4

The functions for creating TLS certificates and storing logs in a tmpfs (in RAM) were part of `revpi-webstatus`. By replacing RevPi Status with Cockpit, these two components were released as standalone packages.

revpi-nodered-proxy-apache 1.5.1-1+deb12+1

Integrate Node-RED into the Apache web server on port `41880` and install the `revpi-nodered` package. `revpi-nodered` installs the complete Node-RED environment with the RevPi nodes, which were otherwise part of the `node-red-contrib-revpi-nodes` package.

> To install `revpi-nodered` in a Lite image, `revpi-nodered-proxy-apache` must be installed, otherwise it will only be available via `localhost`. Alternatively, it can be installed via Cockpit in the “RevPi Configuration” menu item.

Further information: Node-RED as a standalone package

revpi-tools 4.2.2-1+revpi12+1

This package still contains tools for the Revolution Pi, but no base files required for minimal operation. These are now being installed via the `revpi-base-files` package.

revpi-ui 0.1.0-1+revpi12+1

Installs all dependencies for using the graphical user interface (GUI). Can be used in lite images for the subsequent installation of the GUI.

```
sudo apt install revpi-ui
```

revpi-webstatus

This package no longer exists. The functions have been outsourced to the following packages:

- revpi-webserver-apache
- cockpit-revpi-apache
- pictory-apache
- revpi-cert-wizard
- revpi-tmpfs-logs

revpi-webserver-apache 0.2.0-1+revpi12+2

Framework for web server configurations for all RevPi web applications on port `41443`. Packages like PiCtory, Cockpit, Node-RED extend this configuration and are immediately accessible via the web interface after installation. No more `systemctl reload apache2` needed.

More Information

Cockpit replaces RevPi Status

Starting with the RevPi Bookworm Images, the basic configuration with RevPi Status is replaced by Cockpit. The new interface offers, in addition to the configuration options from RevPi Status, various other ways to manage the entire system.

Cockpit is a web application for configuring Linux servers. Cockpit offers a user-friendly graphical interface that allows authenticated users to execute any configurations and commands on a device

over a secure connection. Network configuration, user management, status and log views can be managed through a browser. Cockpit, also known as Web Console, is an open-source software project sponsored by Red Hat, released under the GNU Lesser General Public License (LGPL).

Cockpit is based on a modular principle and can be extended with plugins. The package `cockpit-revpi` is a Cockpit plugin from Revolution Pi. The plugin allows for the basic configuration of RevPi devices and a simple activation or deactivation of the installed services.

> IMPORTANT: For registration, the username and device password on the sticker on the side of the RevPi base module are now used. The default user is “pi” (previously “admin”).
>
> Current base modules that are already delivered with the Bookwork images have the name of the new standard user printed on the case. (“pi” instead of “admin”).

Basic Configuration with Cockpit Cockpit is accessed via a web browser at `https://revpi[serial number].local:41443`. The login is done with the username *pi* and the device password.

In Cockpit, the mode must be switched from *Limited access* to *Administrative access* in order to change various settings.

Through the *RevPi Configuration* menu, the settings for the basic configuration can be made as previously done in the RevPi Status.

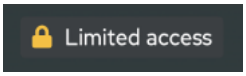

Figure 1: cockpit_access_button_en.png

Starting from the RevPi Bookworm Images, PiCtory will also be launched via Cockpit. The configuration of the Revolution Pi System, which consists of a RevPi base module with extension modules, is done via PiCtory.

If the lite version of the RevPi images has been installed, missing packages like Node-RED can be installed at this point.

> All settings are applied immediately upon being set.

Software updates

In the cockpit menu *Software updates*, all installed software packages on the Revolution Pi system can be updated.

Network information

In the cockpit menu *Networking*, network information can be queried and, for example, a static IP address can be set for the interfaces.

Adding the RevPi to a Wi-Fi network is not possible here. For this purpose, the web console and `sudo nmtui` in the browser can be used.

> If the IP address is changed, Cockpit must be restarted via the web browser.

Log files and SOS report

In the cockpit menu *Logs*, the logs can be filtered and viewed for troubleshooting.

In the cockpit menu *Diagnostic reports*, an SOS report for error diagnosis can be created and exported.

Integrated terminal

Through the cockpit menu *Terminal*, an integrated, fully functional terminal opens, through which commands can be entered directly.

SSH connection

It is also possible to access the RevPi base module via an SSH connection with the RevPi Bookworm images.

Node-RED as a standalone package

The Node-RED server is installed in the system via the `revpi-nodered` package. This package also includes the `node-red-contrib-revpi-nodes` in the latest version and will be automatically updated via package updates, just like Node-RED. In images before Bookworm, these were installed via a separate package, which no longer exists.

Node-RED runs on the Revolution Pi system as a systemd service and starts, for security reasons, only with access via `localhost` on port `1881`. To ensure that Node-RED is accessible remotely via an encrypted connection, the pre-installed package `revpi-nodered-proxy-apache` installs a proxy configuration for the Apache web server. Node-RED is remotely accessible via the address of the Revolution Pi on port `41880`.

The Node-RED process runs as the system user `nodered`. All settings and user data are located in the folder `/var/lib/revpi-nodered`. This path is also the only path where the user can write data. The rest of the file system is only available for reading.

Permissions If access to devices in the `/dev` directory is to be granted via Node-RED, such as RS-485, the user `nodered` must be added to the respective groups that have write access to the devices.

An example is `/dev/ttyRS485-0`, which can be used, for instance, for Modbus. The user `nodered` can obtain access rights either via SSH or through the terminal in the cockpit with the following command:

```
sudo adduser nodered dialout
```

> The access to the IOs of the Revolution Pi with the integrated nodes runs through the noderedrevpinodes-server, for which no further permissions need to be set.

Establish standard behavior If it is necessary for Node-RED to be accessible remotely through the standard method for certain reasons, the following changes can be made to the system. These changes are not supported by us and should only be carried out by experienced users.

- Uninstallation of the web configuration

```
sudo apt purge revpi-nodered-proxy-apache
```

- Create an override for the existing systemd file (do not modify the original file, as it would be restored during an update)

```
sudo mkdir -p /etc/systemd/system/nodered.service.d
cat | sudo tee /etc/systemd/system/nodered.service.d/custom-override.conf <<"__END__"
[Service]
# Clear existing configuration
ExecStart=
# Use start command without bind ip and port
ExecStart=/usr/bin/env /usr/share/revpi-nodered/node_modules/node-red/bin/node-red-pi $NODE_OPTIONS $NODE_RED_OPTIONS -D uiPort=1880 -D uiHost=0.0.0.0
__END__
```

CODESYS

- At least “CODESYS Control Linux ARM 64 (v4.10.0.0)” must be used.

- The RS-485 interfaces now have consecutive numbers `/dev/ttyRS485-0`, `/dev/ttyRS485-1`.

For the use of the RS-485 interfaces, the following entry must be added to `/etc/CODESYSControl.cfg`:

```
1 [SysCom]
2 Linux.Devicefile =/dev/ttyRS485-
```

> The line ends with a hyphen, this is not a typo!

This results in the following assignments in CODESYS:

- `/dev/ttyRS485-0` -> COM Port 1
- `/dev/ttyRS485-1` -> COM Port 2 (Flat S)

> The device `/dev/ttyRS485` is obsolete. For compatibility with Bullseye, it still exists and will be completely removed with the next Debian release.