RZ/Five Verified Linux Package
Version 3.0.4
Release Note

R01US0608EJ0102
Rev. 1.02
Jun 30, 2023

Introduction

This release note describes the contents, building procedures and important points of the RZ/Five Verified Linux Package (hereinafter referred to as “VLP/F”).

Please refer to the ”r01us0618ej0100-rz-five(Linux Start-up Guide RZFive).pdf” that Build instruction for smarc EVK.

Contents

1. Release Items 2
2. Components 4
3. Changes 5
4. Restrictions 6
5. Notes 7
6. Revision History 9

1. Release Items

- **Name and version**
  RZ/Five Verified Linux Package
  Version 3.0.4 (hereinafter referred to as “VLP/F v3.0.4”)

- **Distribution method**
  Please visit the site below and create an account to download the packages. Basic packages of VLP/F v3.0.4 which are listed in **Table 1** can be downloaded.

  RZ/Five product page:
  https://www.renesas.com/us/en/products/microcontrollers-microprocessors/rz-mpus/rzfive-risc-v-general-purpose-microprocessors-risc-v-cpu-core-andes-ax45mp-single-10-ghz-2ch-gigabit-ethernet

  RZ/Five Verified Linux Package [5.10-CIP]:
  https://www.renesas.com/us/en/software-tool/rzfive-verified-linux-package-510-cip

- **Target board**

RZ/Five reference board

- RZ/Five Evaluation board Kit (smarc-rzfive) (*)
  - RZ/Five SMARC Module Board (P/N: RTK9743F01C01000BE)
  - RZ SMARC Series Carrier Board (P/N: RTK97X4XXXB00000BE)

(*) “RZ/Five Evaluation board Kit” includes the RZ/Five SMARC Module Board and the RZ SMARC Series Carrier Board.
The “Evaluation board Kit for RZ/Five MPU” will be called “RZ/Five Evaluation Kit” in the next section.

- **Build Environment**
  Linux Host PC
  OS: Ubuntu 20.0.4 LTS (64 bit OS must be used.)
  20.04 inside a docker container also OK.
  100GB free space on HDD or SSD is necessary.

- **Functions**
  Linux BSP
  - Linux Kernel
  - Linux Drivers

- **File contents**
  VLP/F is delivered by the files listed in **Table 1**.

Table 1. RZ/Five Verified Linux Package

Basic packages

File	Description
RTK0EF0045Z0025AZJ-v3.0.4.zip(*1)	RZ/Five Verified Linux Package. This file includes the **Yocto recipe packages** and the necessary documents.
rzfive_vlp_v3.0.4.tar.gz(*1)	**Yocto recipe packages**
oss_pkg_rzfive_v3.0.4.7z(*1)	Open source software packages See the Note below before download
r01us0608ej0102-rz-five(Release Note).pdf	This document
r01us0618ej0100-rz-five(Linux Start-up Guide RZFive).pdf	Documents describing building instruction, booting method and the required settings of bootloader for **RZ/Five**.

(*1) These packages are provided “AS IS” with no warranty and the license which is described in the source code. Please check the contents of the license, then consider the applicability to the product carefully.

Note) Open source software packages contain all source codes of OSSs. These are the same versions of OSSs used when VLP/F was verified.
If you are just evaluating VLP/F and RZ/Five series, open source software packages are not mandatory to use.
Usually, all the software can be built without using these files if your build machine is connected to the Internet.

Open source software packages are required for an “offline” environment. The word “offline” means an isolated environment which does not connect to any network. VLP/F can always build images in this “offline” environment by using these packages without affected from changes of original repositories of OSSs. Also, this “offline” environment always reproduces the same images as the images which were verified by Renesas. Note that if you build without using open source software packages, there are possibilities to use different source codes than Renesas used due to the implicit changes of the repositories of OSSs.

Additional packages

File	Description
RTK0EF0045Z9006AZJ-v3.0.4.zip	BSP Manual Set for RZ/G2L, RZ/G2LC, RZ/G2UL, RZ/Five and RZ/V2L.

Note) Detailed information regarding the configuration (Device tree) and usage of the device drivers contained in this VLP can be downloaded from Renesas.com. Please download the "BSP Manual Set".

2. Components

The components which are commonly used in this release are listed in Table 2. Please also refer to the manifest file for details.
Please refer:

`$WORK/build/tmp/deploy/images/smarc-rzfive/core-image-<image-name>-smarc-rzfive.manifest`

Note: `<image-name>` is minimal or bsp.

Table 2. commonly used components

Components	VLP/F v3.0.2-update1	VLP/F v3.0.4
Linux kernel	5.10.145-cip17	5.10.175-cip29
GCC	8.3.0 (RISC-V GCC 8.3-2019.03)	8.3.0 (RISC-V GCC 8.3-2019.03)
glibc	2.28	2.28
busybox	1.30.1	1.30.1
openssl	1.1.1n	1.1.1n

3. Changes

This section describes the changes in this release from VLP/F v3.0.2-update1, including new features and defect fixes.

- **Upgrade the kernel to 5.10.175-cip29.**
- **Supports the Docker container.**
- **Supports the Watchdog Timer in U-boot.**

4. Restrictions

(1) EMMC boot

EMMC boot is not supported in the current release.

5. Notes

(1) GPLv3 packages

In this release, the GPLv3 packages are disabled as default in *build/conf/local.conf*:

```
INCOMPATIBLE_LICENSE = "GPLv3 GPLv3+"
```

If you want to use GPLv3, just hide this line:

```
#INCOMPATIBLE_LICENSE = "GPLv3 GPLv3+"
```

(2) CIP Core Packages

VLP/F includes Debian 10 (Buster) based CIP Core Packages and is enabled by the default settings. These packages can be changed.

Note that network access is required to start the build process when you enable these packages except for Buster which is set as the default setting.

CIP Core Packages are going to be maintained by the Civil Infrastructure Platform project. For more technical information, please contact Renesas.

1. Buster (default):

The following lines are added as default in the `local.conf`:

```
# Select CIP Core packages
CIP_CORE = "1"
```

2. Bullseye:

Please change "`CIP_MODE`" in the **`local.conf`** to change from Buster to Bullseye:

```
# Select CIP Core packages by switching betwwen Buster and Bullseye.
#  - Buster (default)    : build all supported Debian 10 Buster recipes
#  - Bullseye            : build all supported Debian 11 Bullseye recipes
#  - Not set (or different with above): not use CIP Core, use default packages
version in Yocto


CIP_MODE = "Bullseye"
```

3. No CIP Core Packages:

If the CIP Core Packages are unnecessary, comment out and add the following lines to disable CIP Core Packages in the `local.conf`:

```
# Select CIP Core packages
#CIP_CORE = "1"
```

Note) The above 2 settings disable GPLv3 packages as default. In case the GPLv3 packages are required, please comment out the following line in the `local.conf`.

```
# INCOMPATIBLE_LICENSE = "GPLv3 GPLv3+"
```

By building the VLP/F, the packages will be replaced as below in the table.

Table 3. Versions of all Buster Debian packages

Package	Buster Debian	Bullseye Debian
Attr	2.4.48	2.4.48
busybox	1.30.1	1.30.1
coreutils	6.9	6.9
GCC	8.3.0	-
glib-2.0	2.58.3	2.62.2
glibc	2.28	2.31
kbd	2.0.4	2.2.0
libgcrypt	1.8.4	1.8.5
openssh	7.9p1	8.2p1
Perl	5.30.1	5.30.1
pkgconfig	0.29	0.29.2
Quilt	0.65	0.66

6. Revision History

		Description	
Rev.	**Date**	**Page**	**Summary**
1.00	Dec. 27, 2022	-	First edition for VLP/F v3.0.2
1.01	Feb. 10, 2023	13	Add the appendix section for VLP/F v3.0.2-update1.
1.02	Jun. 30, 2023	-	Move to “Linux Start-up Guide” that Build Instruction section.
		5	Add “Changes” section.

Website and Support

Renesas Electronics Website
http://www.renesas.com/

Inquiries
http://www.renesas.com/contact/