RZ/Five Verified Linux Package
Version 3.0.7

Release Note

R01US0608EJ0110
Rev. 1.10
Mar. 31, 2025

Introduction

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

Please refer to ”r01us0618ej0106-rz-five(Linux Start-up Guide RZFive).pdf” that describes the instruction to build VLP/F and boot the evaluation board.

Contents

Contents

1. Release Items

- **Name and version**
  RZ/Five Verified Linux Package
  Version 3.0.7 (hereinafter referred to as "VLP/F v3.0.7")

- **Distribution method**
  Please visit the site below and create an account to download the packages. Basic packages of VLP/F v3.0.7 which are listed in the 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 22.0.4 LTS (64 bit OS must be used.)
  22.04 inside a docker container also OK.
  100GB free space on HDD or SSD is necessary. (*)
  (*) The necessary free space

  Note) Please note that the build of VLP failed when Ubuntu 24.04 is used.

- **Functions**
  Linux VLP
  - Linux Kernel
  - Linux Drivers

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

Table 1. RZ/Five Verified Linux Package

Basic packages

File	Description
RTK0EF0045Z0025AZJ-v3.0.7 (*1)	RZ/Five Verified Linux Package. This file includes the Yocto recipe packages and the necessary documents.
rzfive_vlp_v3.0.7.tar.gz (*1)	Yocto recipe packages
r01us0608ej0110-rz-five(Release Note).pdf	This document
r01us0618ej0106-rz-five(Linux Start-up Guide RZFive).pdf	Documents describing building instruction, booting methods and the required settings of bootloader for RZ/Five.
oss_pkg_rzfive_v3.0.7.7z (*1)	Open source software packages. See the Note below before download.

(*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-v3.0.7.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".

Download URL: https://www.renesas.com/document/oth/rzg2l-group-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 to:

`$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 v3.0.6-update3	VLP/F v3.0.7
Linux kernel	5.10.201-cip41	5.10.229-cip54
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
python3	3.8.18	3.8.18
docker	20.10.17+ce	20.10.17+ce

3. Changes

The following table lists the changes from the previous version.

Table 3. Changes

Changes of VLP/Fv3.0.6-update3, VLP/Fv3.0.7

Features	Description
Yocto reciepes	- poky: update to dunfell v23.0.33 (previous version is v23.0.31). - meta-renesas/meta-rzfive: U-boot is updated to v2023.10, and opensbi is updated to version 1.5.
Kernel	Update the kernel version to v5.10.229-cip54 and v5.10.229-cip54-rt23.
SPI Multi Driver	Implement workaround to avoid burst read cache.
RIIC Driver	Implement slave mode support and bus recovery.
SSI Driver	Terminate DMA descriptor if stream is not running. Implement a workaround for full-duplex TX/RX alignment and add S2R implementation.
OpenSBI	Update OpenSBI to version v1.5. All the patches for I/O Coherence Port support are in this version.
u-boot	Update U-Boot to version 2023.10 for OpenSBI v1.5 compatibility and to support booting kernel v5.10.229-cip54.

4. Restrictions

None

5. Note

5.1 Versions of U-Boot and OpenSBI

Please note that the U-Boot and OpenSBI versions have been updated in this release.

Kernel 5.10.229-cip54 is incompatible with older bootloaders (U-Boot + OpenSBI). Attempting to boot with previous VLP versions (VLP/Fv3.0.6-update3) is not supported and will result in failure.

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.
1.03	Oct. 31, 2023	-	First edition for VLP/F v3.0.5.
1.04	Nov. 15, 2023	-	Add the patch file of update1.
1.05	Jan. 29, 2024	-	Add the patch file of update3.
1.06	Apr. 24, 2024	-	First edition for VLP/F v3.0.6.
		6	Workaround when executing Docker command.
1.07	May 31, 2024	-	VLP/F v3.0.6-update1
1.08	Jun. 14, 2024	-	VLP/F v3.0.6-update2
1.09	Jul. 31, 2024	-	VLP/F v3.0.6-update3
1.10	Mar. 31, 2025	-	VLP/F v3.0.7

Website and Support

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