RZ/V Verified Linux Package
Version 3.0.5-update3

R01US0565EJ0106
Rev. 1.06
Feb. 29, 2024

Release Note

Introduction

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

Please refer to that Build instruction the each target device Start-up Guide," r01us0617ej0102-rz-v(Linux Start-up Guide RZV2L).pdf".

Contents

1.   Release Items

- **Name and version**
  RZ/V Verified Linux Package
  Version 3.0.5-update3 (hereinafter referred to as "VLP/V v3.0.5-update3")

- **Distribution method**
  Please visit the site below and create an account to download the packages. This site is for the entire RZ Family which includes the RZ/V series. Basic packages of VLP/V v3.0.5-update3 which are listed in 0 can be downloaded.

  RZ/V2L product page:
  http:/www.renesas.com/RZV2L

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

- **Target board**
  RZ/V2L Evaluation Board Kit PMIC version (*):
  o   RZ/V2L SMARC Module Board
  o   RZ SMARC Series Carrier Board

(*) "RZ/V2L Evaluation Board Kit PMIC version" include the RZV2L SMARC Module Board and the RZ SMARC Series Carrier Board.
  The CMOS sensor (OV5645) in the Coral camera is no longer available and should not be used for mass production. Any software support provided is for evaluation purposes only.

- **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.

- **Verified functions**
  Linux BSP
    -   Linux Kernel
    -   Linux Drivers
    -   Graphics Libraries
    -   Codec Libraries
  GUI Framework
    -   Qt (LGPL version)

- **File contents**
  VLP/V is delivered by the files listed in 0.

Table 1 RZ/V Verified Linux Package

Basic packages

File	Description
RTK0EF0045Z0024AZJ-v3.0.5-update3.zip (*1)	Verified Linux Package. This file includes the **Yocto recipe packages** and the necessary documents.
rzv_vlp_v3.0.5-update3.tar.gz (*1)	**Yocto recipe packages**
r01us0565ej0106-rz-v(Release Note).pdf	This document
r01us0617ej0102-rz-v(Linux Start-up Guide RZV2L).pdf	Documents describing booting method and the required settings of bootloader for **RZ/V2L**.
oss_pkg_rzv_v3.0.5-update3.7z (2.7GB) (1*)	Open source software packages See the Note below before download

 (*1) Yocto recipe and Open source software 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 except for Linux kernel. These are the same versions of OSSs used when VLP/V was verified.
If you are just evaluating VLP/V and RZ/V 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/V 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.

Optional packages (*1)

File ("XX" is replaced by "EN" or "JP".)	Description
RTK0EF0045Z13001ZJ-v1.2.0_XX.zip (Evaluation version) RTK0EF0045Z14001ZJ-v1.2.0_rzv_XX.zip (Unrestricted version)	RZ MPU Graphics Library for RZ/G2L, RZ/G2LC and **RZ/V2L**. This provides graphics function compliant with the OpenGL ES standard. These libraries are tested with VLP/V v3.0.5 and v3.0.5-update3.
RTK0EF0045Z15001ZJ-v1.2.0_XX.zip (Evaluation version) RTK0EF0045Z16001ZJ-v1.2.0_rzv_XX.zip (Unrestricted version)	RZ MPU Video Codec Library for RZ/G2L, **RZ/V2L**. These libraries are tested with VLP/V v3.0.5 and v3.0.5-update3.

(*1)   **Evaluation vs Unrestricted Version**
There are two release versions: Evaluation and Unrestricted. Please note that both of these packages have the same exact functionality. The only difference is that when you execute an application that uses the evaluation version of the libraries, operation will automatically be stopped after a few hours. The unrestricted version does not have this time limitation. To acquire the unrestricted version, please contact Renesas to start the formal process of acquiring those releases.

Additional packages

File	Description
RTK0EF0045Z9006AZJ-v3.0.5.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".

For RZ/G2L and RZ/V2L

https://www.renesas.com/document/oth/rzg2l-group-and-rzv2l-group-bsp-manual-set

2. Components

The components which are commonly used in this release are listed in 0. Please also refer to the manifest file for details.
Please refer:

`$WORK/build/tmp/deploy/images/smarc-rzv2l/core-image-<image-name>-smarc-rzv2l.manifest`

Note: `<image-name>`
     `RZ/V2L        :minimal, bsp, Weston, qt`

Table 2 Versions of commonly used components

Components	VLP/V v3.0.4	VLP/V v3.0.5	VLP/V v3.0.5-update3
Linux kernel	5.10.175-cip29	5.10.184-cip36	5.10.184-cip36
GCC	8.3.0 (Arm GCC 8.3-2019.03)	8.3.0 (Arm GCC 8.3-2019.03)	8.3.0 (Arm GCC 8.3-2019.03)
Glibc	2.28	2.28	2.28
Busybox	1.30.1	1.30.1	1.30.1
openssl	1.1.1n	1.1.1n	1.1.1n
gstreamer1.0	1.16.3	1.16.3	1.16.3
wayland	1.18.0	1.18.0	1.18.0
weston	8.0.0	8.0.0	8.0.0
Python3	3.8.13	3.8.13	3.8.13
Qt (LGPL version)	5.6.3	5.6.3	5.6.3
Docker	19.03.8-ce	19.03.8-ce	19.03.8-ce

3. Changes

This section describes the changes in this release from VLP/V v3.0.5-update3, including new features and defect fixes.

Table 3 Changes

Features	Description
Yocto	3.1.26 (dunfell)
	Add support SBoM SPDX.
	Add support WIC image.
	Update Flash-writer, TF-A, U-boot and Kernel to the latest commit revision.
	Add audio initializing script for RZ/V2L Series.
	Update OpenSSL of Debian Buster to v1.1.1n-0+deb10u6.
Linux Kernel	Update the kernel version to v5.10.184-cip36-rt14.
	Add ECC support for RZ/V2L.
	RTC (RZ/V2L): fix do not advertise update interrupt feature if no interrupt specified.
	MTU3 (RZ/V2L): fix possible case dividing by zero in pwm_config.
	Versa3clock (RZ/V2L): add property to enable/disable 32kHz free-running clock.
	Pin control (RZ/V2L): add bias pull up/down pin configuration.
	Emergency shutdown (RZ/V2L): add support this feature.
U-boot	Update default environment variables for all RZ/V platforms.
Trusted-firmware-a	Update to v2.9.
	Add ECC support for RZ/V2L.
RZ MPU Graphics Library (RZ/V2L)	Some bug fixes are included.

Change of VLP/V v3.0.5-update3

Features	Description

Package	Add a patch to:
	• Update the glib2.0 to 2.58.3-2+deb10u5
	• Add "exit" command to U-Boot
	• Apply the bug fixes of Ethernet:
	    - ravb: Fix up dma_free_coherent() call in ravb_remove() - kernel/git/cip/linux-cip.git - Civil Infrastructure Platform stable kernel branches
	    - ravb: Fix use-after-free issue in ravb_tx_timeout_work() - kernel/git/cip/linux-cip.git - Civil Infrastructure Platform stable kernel branches

4. Restrictions

None.

5.   Notes

5.1   Notes

None.

5.2   Memory Map

5.2.1   RZ/V2L

RZ/V2L SMARC board memory map is shown in Figure 1.

Physical Address

Address	Area
0x00_4000_0000	Reserved Area (Size: 128MB)
0x00_47FF_FFFF	
0x00_4800_0000	Kernel Area (Size: 256MB)
0x00_57FF_FFFF	
0x00_5800_0000	Linux CMA (Size: 256MB)
0x00_67FF_FFFF	
0x00_6800_0000	Reserved Area (Size: 128MB)
0x00_6FFF_FFFF	
0x00_7000_0000	Kernel Area (Size: 256MB)
0x00_7FFF_FFFF	
0x00_8000_0000	DRP-AI (*) (Size: 512MB)
0x00_9FFF_FFFF	
0x00_A000_0000	Kernel Area (Size: 256MB)
0x00_AFFF_FFFF	
0x00_B000_0000	udmabuf (Size: 64MB)
0x00_B3FF_FFFF	
0x00_B400_0000	Simple ISP (Size: 48MB)
0x00_B6FF_FFFF	
0x00_B700_0000	Kernel Area (Size: 144MB)
0x00_C000_0000	

Table 1.   *: The area to store DRP-AI Object files. This area must be set to an address of 8bytes or less.

Figure 1. Memory map

6. Appendix

None.

7.   Revision History

Rev.	Date	Description	
		Page	**Summary**
1.00	Jun. 30, 2022	-	First edition issued.
1.01	Jul. 6, 2022	3	Modify Optional packages to describe the information for the latest libraries of the Graphics and the Video Codec.
		6	Modify the step 3.1(2) according to the latest libraries of the Graphics and the Video Codec.
1.02	Aug. 9, 2022	15	Add the update2 information to appendix.
1.03	Dec. 27, 2022	-	Update v3.0.2 released.
		13, 14	Add Bullseye Debian 11 information
1.04	Jul. 31, 2023	-	Support for RZ/V2M, RZ/V2MA Linux as RZ/V VLP. Add the information for RZ/V2M and RZ/V2MA to this document.
		-	Move to "Linux Start-up Guide" that Build Instruction section.
		6-10	Add "Changes" section.
1.05	Dec. 27, 2023	-	Update to VLP/V v3.0.5 for RZ/V2L.
1.06	Feb. 29, 2024		Add the patch file of update3. (update1 and update2 do not exist in VLP/V v3.0.5.)

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