

RZ/T2H, RZ/N2H Verified Linux Package

Version 5.0.0

R01US0820EJ0100
Rev. 1.00
Nov. 28, 2025

Release Note

Introduction

This release note describes the contents and important points of the RZ/T2H, RZ/N2H Verified Linux Package (hereinafter referred to as “VLP”).

Please also refer to the following documents that describe the instructions to build VLP and boot the evaluation boards.

- r01us0821ej0100-rz(Linux_Start-up_Guide_RZT2H_N2H).pdf

Contents

1. Release Items	2
2. Components	3
3. Changes	4
4. Restrictions	5
5. Notes	6
5.1 Note	6
5.1.1 Disabling eMMC Usage in U-Boot	6
5.1.2 Real time performance	6
5.2 Memory Map	8
5.2.1 RZT2H, RZN2H.....	8
6. Revision History	9

1. Release Items

- **Name and version**
RZ/T2H, RZ/N2H Verified Linux Package
Version 5.0.0 (hereinafter referred to as “VLP v5.0.0”)
- **Target board**
RZ/T2H Evaluation Board
RZ/N2H Evaluation Board
- **Functions**
Linux VLP
 - Linux Kernel
 - Linux Drivers
 GUI Framework
 - LVGL
- **File contents**
VLP is delivered by the files listed in Table 1.

Table 1. RZ/T2H, RZ/N2H Verified Linux Package

Basic files of VLP v5.0.0

File	Description
RTK0EF0045Z0042AZJ-rz-ulp-v5_0_0.zip (*)	Verified Linux Package. This file includes the Yocto recipe packages , the necessary documents, and Flash Programmer.
rz_ulp_v5_0_0.tar.gz	Yocto recipe packages.
- HDR NM - Flash_Programmer_SCIF_CR52_RZT2H_EVK.mot	Flash Programmer for both RZ/T2H and RZ/N2H. These are used for writing the bootloaders on the evaluation board.
r01us0820ej0100-rz(Release_Note).pdf	This document.
r01us0821ej0100-rz(Linux_Start-up_Guide_RZT2H_N2H).pdf	A document that describes the process from building the VLP to booting the evaluation board.
oss_pkg_rz_v5_0_0.7z (1.57GB)	Open-source software packages See the Note below before download

(*) 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 was verified.
If you are just evaluating RZ/T and RZ/N 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 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.

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. The manifest file is created to the following path after building the images:

Example:

```
$WORK/build/tmp/deploy/images/rzt2h-dev/core-image-minimal-rzt2h-dev.manifest
```

```
$WORK/build/tmp/deploy/images/rzn2h-dev/core-image-minimal-rzn2h-dev.manifest
```

Table 2. Versions of commonly used components

Components	BSP v1.0.2-update2	VLP v5.0.0
Linux kernel	5.10.145-cip17	6.12.43-cip7
GCC	8.3.0 (Arm GCC 8.3-2019.03)	13.4.0
busybox	1.30.1	1.36.1
openssl	1.1.1n	3.2.4
Docker	19.03.8-ce	25.0.3

3. Changes

The following table lists the changes from the previous version.

Table 3. Changes from BSPv1.0.2-update2 to VLPv5.0.0

Features	Description
Kernel	<ul style="list-style-type: none"><li data-bbox="408 369 906 403">- Upgraded the kernel version to 6.12.<li data-bbox="408 414 858 448">- Added support for CPU hot plug.<li data-bbox="408 459 1337 492">- Updated ETHSW Timer configuration to use ETHSW timer 1 for GMAC1.<li data-bbox="408 504 1390 571">- Updated the slew rate setting of the SDHI pins in the device tree to match the HW User Manual specification.<li data-bbox="408 582 1134 616">- Fixed incorrect output pulse number generated by GPT.<li data-bbox="408 627 1166 660">- Fixed PCIe Incompatibility with Trusted Firmware-A (TFA).<li data-bbox="408 672 933 705">- Added support for CAN-FD dual mode.<li data-bbox="408 716 858 750">- Added support for ETHSW PTP.<li data-bbox="408 761 1166 795">- Added support for the internal DMA controller for PCIe-EP.

4. Restrictions

(1) **CAN-FD: Fail with 8 Mb bitrate.**

CAN-FD testing fails at 8 Mb bitrate in dual mode, canfd mode, classical mode on RZ/N2H.

(2) **Support the internal DMA controller for PCIe.**

The internal DMA controller for PCIe-RC will be supported in the next release.

(3) **LCDC flicker**

LCDC appears to flicker on some screens after running for a few minutes.

(4) **PCIe can't detect Samsung SSD**

PCIe-RC can't detect Samsung SSDs, currently it can detect Crucial SSD types.

(5) **Real-time Linux kernel (PREEMPT_RT)**

The Real-time Linux kernel (PREEMPT_RT) is provided "AS IS". Refer to Section 5.1.2 for instructions on enabling this feature.

5. Notes

5.1 Note

5.1.1 Disabling eMMC Usage in U-Boot

By default, U-Boot saves environment variables to eMMC.

If your system does not require the use of eMMC, you can modify the device tree as described below to disable eMMC. This prevents the eMMC control signal from being output to the P12_0 pin and P12_1 when booting with U-Boot.

To disable eMMC in the device tree, change the status = "okay" property of the SDHI0 node to status = "disabled" at line 712 in the following file:

```
~/rz_vlp_<package version>/build/tmp/work/rzt2h_dev-poky-linux/u-boot/2024.07+git/git/arch/arm/dts/rzt2h-dev.dts
```

or

```
~/rz_vlp_<package version>/build/tmp/work/rzn2h_dev-poky-linux/u-boot/2024.07+git/git/arch/arm/dts/rzn2h-dev.dts
```

```
&sdhi0 {  
    bus-width = <8>;  
-   status = "okay";  
+   status = "disable";
```

Then, you can use the following command to re-build the U-Boot.

```
$ MACHINE=<board> bitbake u-boot -C configure
```

5.1.2 Enabling Real-time Linux kernel (PREEMPT_RT)

If you want to use the Linux kernel built with PREEMPT_RT enabled, follow the steps below.

(1) **Follow the instructions in the Linux Start-up Guide**

Refer to r01us0821ej0100-rz(Linux_Start-up_Guide_RZT2H_N2H).pdf and complete the steps up to Section 2.1 (3).

(2) **Modify local.conf**

Modify the following file as below:

```
” ~/rz_vlp_v${PACKAGE_VERSION}/build/conf/local.conf”.
```

```
- # PREFERRED_PROVIDER_virtual/kernel = "linux-renesas-rt"  
+ PREFERRED_PROVIDER_virtual/kernel = "linux-renesas-rt"
```

(3) Create a new recipe file

Create a new file named "linux-renesas-rt_6.12.bb" in the directory below:

meta-renesas/meta-rz-bsp/recipes-kernel/linux/linux-renesas-rt_6.12.bb

The file contents are as follows:

```
DESCRIPTION = "RT Linux kernel from the Renesas RZ BSP based on linux-6.12.y-cip"

require recipes-kernel/linux/linux-yocto.inc
require linux-renesas.inc

LINUX_VERSION ?= "6.12.43-cip7"
KBUILD_DEFCONFIG ?= "defconfig"
KCONFIG_MODE ?= "alldefconfig"

KERNEL_URL ?= "git://github.com/renesas-rz/rz_linux-cip.git"

KERNEL_BRANCH ?= "rz-6.12-cip7-rt"
KERNEL_REV ?= "be1f7505aa30da8da520b0e2fd5320eadebd851b"
```

5.2 Memory Map

5.2.1 RZT2H, RZN2H

Following Figure shows memory map of RZ/T2H and RZ/N2H Series in this Linux VLP package.

Note: Kernel uses 4KB page size (VA_BITS=48) and 4 levels of translation tables.

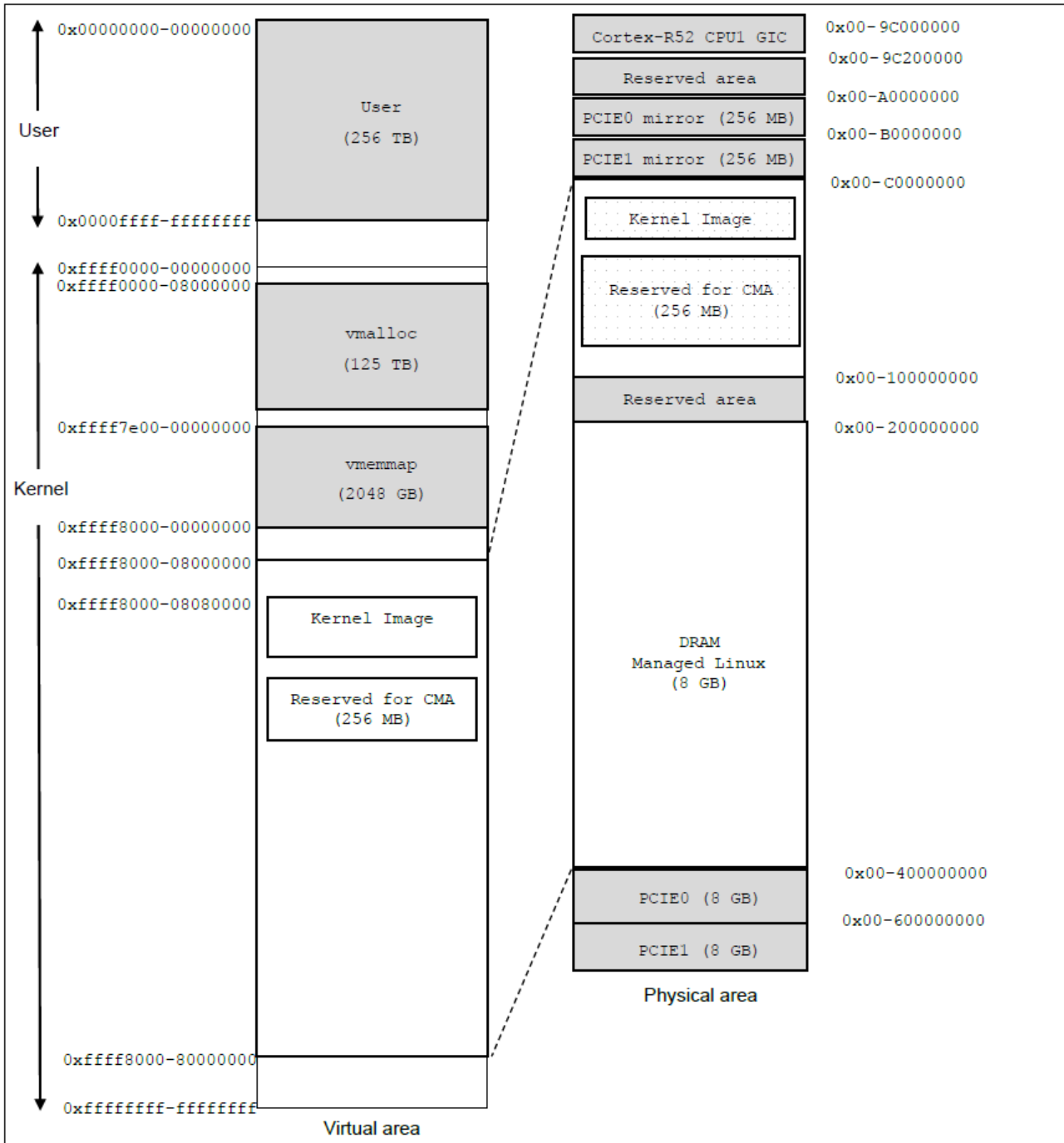


Figure 1. Memory map of kernel (RZ/T2H and RZ/N2H Evaluation Board Kit)

6. Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Nov. 28, 2025	-	First edition issue for VLP v5.0.0.

Website and Support

Renesas Electronics Website

<http://www.renesas.com/>

Inquiries

<http://www.renesas.com/contact/>

All trademarks and registered trademarks are the property of their respective owners.