

# RZ/T2H, RZ/N2H Board Support Package

## Version 1.0.2-update2

R01US0681EJ0104

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### Release Note

#### Introduction

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

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

- [r01us0682ej0103-rz-t2h-n2h\(Linux\\_Start-up\\_Guide\\_RZT2H\\_N2H\).pdf](#)

#### Contents

|                           |   |
|---------------------------|---|
| 1. Release Items .....    | 2 |
| 2. Components .....       | 4 |
| 3. Changes .....          | 5 |
| 4. Restriction .....      | 6 |
| 5. Note .....             | 7 |
| 6. Revision History ..... | 9 |

## 1. Release Items

- **Name and version**  
RZ/T2H, RZ/N2H Board Support Package  
Version 1.0.2-update2 (hereinafter referred to as “BSP v1.0.2-update2”)
- **Target board**  
RZ/T2H Evaluation Board  
RZ/N2H Evaluation Board
- **Functions**  
Linux BSP
  - Linux Kernel
  - Linux Drivers
 GUI Framework
  - LVGL
  - Qt
- **File contents**  
BSP is delivered by the files listed in Table 1.

**Table 1. RZ/T2H, RZ/N2H Board Support Package**

**Basic files of BSP v1.0.2**

| File                                                            | Description                                                                                                                 |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| RTK0EF0177Z00002ZJ-v1.0.2-update2.zip (*)                       | Board Support Package. This file includes the <b>Yocto recipe packages</b> , the necessary documents, and Flash Programmer. |
| rzt2h_n2h_bsp_v1.0.2.tar.gz                                     | <b>Yocto recipe packages.</b>                                                                                               |
| - HDR NM<br>- 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.            |
| r01us0681ej0104-rz-t2h-n2h(Release_Note_RZT2H_N2H).pdf          | This document.                                                                                                              |
| r01us0682ej0103-rz-t2h-n2h(Linux_Start-up_Guide_RZ/T2H_N2H).pdf | A document that describes the process from building the BSP to booting the evaluation board.                                |
| rzt2h_n2h_bsp_v1.0.2-update1_patches.zip                        | Patch files to update v1.0.2 to v1.0.2-update1. See the “5. Notes” section. This file is optional.                          |
| oss_pkg_rzt_rzn_v1.0.2-update2.7z (1GB)                         | Open-source software packages<br><br><b>See the Note below before download</b>                                              |

- (\*) 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 BSP 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. BSP 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                     | BSP v1.0.2-update1             | BSP v1.0.2-update2             |
|--------------|--------------------------------|--------------------------------|--------------------------------|
| Linux kernel | 5.10.145-cip17                 | 5.10.145-cip17                 | 5.10.145-cip17                 |
| GCC          | 8.3.0<br>(Arm GCC 8.3-2019.03) | 8.3.0<br>(Arm GCC 8.3-2019.03) | 8.3.0<br>(Arm GCC 8.3-2019.03) |
| busybox      | 1.30.1                         | 1.30.1                         | 1.30.1                         |
| openssl      | 1.1.1n                         | 1.1.1n                         | 1.1.1n                         |
| Docker       | 19.03.8-ce                     | 19.03.8-ce                     | 19.03.8-ce                     |

### 3. Changes

The following table lists the changes from the previous version.

**Table 3. Changes from BSPv1.0.1 to BSPv1.0.2**

| Features | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kernel   | <ul style="list-style-type: none"><li>- Support PCIe Endpoint. Please note that there are some limitations and some patches.</li><li>- TSU driver is disabled to access OTP. TSU gets OTP with the secure monitor call function.</li><li>- Ping failed when setting over 1340 bytes, so this is fixed.</li><li>- DSU frequency is changed.</li><li>- Support PTPOUT signal.</li><li>- Support the driver of EtherCAT Slave Controller.</li><li>- Fix long boot time issue on preempt-RT version of kernel.</li><li>- Updated CPG driver according to the latest hardware manual.</li><li>- Change RS485 DE definition pin from gpio to pinctrl.</li><li>- SCI: support baud rate higher than 115200.</li></ul> |

**Changes from BSPv1.0.2 to BSPv1.0.2-update1**

| Features | Description                                                            |
|----------|------------------------------------------------------------------------|
| glibc    | Fix CVE-2025-4802 (glibc allows attack with untrusted LD_LIBRARY_PATH) |
| glib     | Updated to glib2.0_2.58.3-2+deb10u8.                                   |

**Changes from BSPv1.0.2-update1 to BSPv1.0.2-update2**

| Features    | Description                        |
|-------------|------------------------------------|
| OSS package | Add OSS package for offline build. |

## 4. Restriction

### (1) PCIe Devices compatibility

Our evaluation has shown that the following PCIe cards are incompatible with our evaluation board. It is likely that other PCIe cards may also exhibit the same issue.

- BUFFALO USB 3.0 2-Port PCI-Express Interface Board (IFC-PCIE2U3)
- Lenovo PCI-E PCI Express x1 2-Ports USB 3.0 Adapter Card 03T7030

### (2) PCIe Endpoint (EP)

The PCIe Endpoint feature of RZ/T2H and RZ/N2H have the following limitations:

- Only MSI interrupt is supported.

## 5. Note

Check the following patches, select, and apply to your build environment if needed. After that, build in the “online” environment. This step is required before executing the bitbake command. Refer to the section below in the “Linux Start-up Guide” for more information.

```
$ cd ~/rzt2h_n2h_bsp_${PACKAGE_VERSION}      #(e.g., PACKAGE_VERSION=v1.0.2)
$ unzip RTK0EF0177Z00002ZJ-v1.0.2-update1.zip \
"RTK0EF0177Z00002ZJ-v1.0.2-update1/rzt2h_n2h_bsp_v1.0.2-update1_patches.zip"
$ unzip RTK0EF0177Z00002ZJ-v1.0.2-update1/rzt2h_n2h_bsp_v1.0.2-update1_patches.zip\
-d extra
```

The following files and directories will be extracted into the `~/rzt2h_n2h_bsp_${PACKAGE_VERSION}/extra` folder:

```
|—— 0001-Update_source_for_buster_and_bullseye.patch
|—— 0002-Ignore_LD_LIBRARY_PATH_and_debug_env_var_for_setuid_for_static.patch
|—— 0003-meta-rz-common-Change-OSS-mirro-to-Freexian.patch
|—— 0004-meta-rz-common-Extend-Freexian-support-to-more-recipes.patch
|—— enable_pcie_endpoint.patch
|—— 0001-rzt2-linux-renesas-Add-support-changing-ports-to.patch
|—— 0002-rzn2-linux-renesas-Add-support-changing-ports-to.patch
```

### (1) PCIe Endpoint

If you require the PCIe Endpoint, please apply the following patch before starting a build. And please skip step 2.2(2) in `r01us0682ej0102-rz-t2h-n2h(Linux_Start-up_Guide_RZT2H_N2H).pdf` to avoid a conflict.

```
$ cd ~/rzt2h_n2h_bsp_${PACKAGE_VERSION}
$ patch -p1 < ./extra/enable_pcie_endpoint.patch
```

### (2) For fixing CVE-2025-4802

The vulnerability CVE-2025-4802 allows an attacker to exploit `LD_LIBRARY_PATH` to inject malicious libraries into `setuid-root` programs, potentially leading to privilege escalation. This issue affects `glibc` in environments where `LD_LIBRARY_PATH` is not properly sanitized for privileged binaries.

To address this issue, please apply the following patches before starting a build.

```
$ cd ~/rzt2h_n2h_bsp_${PACKAGE_VERSION}/meta-renesas/
$ patch -p1 < ../extra/0001-Update_source_for_buster_and_bullseye.patch
$ patch -p1 < ../extra/0002-Ignore_LD_LIBRARY_PATH_and_debug_env_var_for_setuid\
for_static.patch
$ cd ..
```

### (3) For fixing build “Fetcher failure”

Some OSS files (Example: “`glib2.0_2.58.3-2+deb10u5.dsc`” or “`openssl_1.1.1n.orig.tar.gz.asc`”) has been removed, which causes a fetcher failure during the building.

To address this issue, please apply the following patches before starting a build.

```
$ cd ~/rzt2h_n2h_bsp_${PACKAGE_VERSION}/meta-renesas/  
$ patch -p1 < ../extra/0003-meta-rz-common-Change-OSS-mirro-to-Freexian.patch  
$ patch -p1 < ../extra/0004-meta-rz-common-Extend-Freexian-support-to-more-\  
recipes.patch  
$ cd ..
```

Note: Please apply for this patch after fixing the CVE-2025-4802 patches.

#### (4) 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 will prevent U-Boot from outputting control signals for eMMC on pins P12\_0 and P12\_1 during boot.

To disable eMMC in the device tree, change the status = "okay" property of the SDHI0 node to status = "disabled" at line 70 in the following file:

```
~/rzt2h_n2h_bsp_${PACKAGE_VERSION}/build/tmp/work/rzt2h_dev-poky-linux/u-  
boot/1_v2021.10+gitAUTOINC+0adf5cb2db-r0/git/arch/arm/dts/rzt2h-dev.dts  
or  
~/rzt2h_n2h_bsp_${PACKAGE_VERSION}/build/tmp/work/rzn2h_dev-poky-linux/u-  
boot/1_v2021.10+gitAUTOINC+0adf5cb2db-r0/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
```

## 6. Revision History

| Rev. | Date          | Description |                                                             |
|------|---------------|-------------|-------------------------------------------------------------|
|      |               | Page        | Summary                                                     |
| 1.00 | Nov. 26, 2024 | -           | First edition issued.                                       |
| 1.01 | Dec. 23, 2024 | -           | Update the information to BSP v1.0.1. Newly support RZ/N2H. |
| 1.02 | Apr. 15, 2025 | -           | Update the information to BSP v1.0.2.                       |
| 1.03 | Jul. 31, 2025 | -           | Update the information to BSP v1.0.2-update1.               |
| 1.04 | Sep. 15, 2025 | -           | Update OSS package information for BSP v1.0.2-update2.      |

**Website and Support**

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