RZ/T2H, RZ/N2H Time-sensitive Network Package
Version 1.0.3

R01US0751EJ0103
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Release Note

Introduction

This release note describes the contents and important points of the RZ/T2H, RZ/N2H Time-sensitive Network Package.

Please also refer to the following documents that explain the Board Support Package (hereinafter referred to as "BSP") and the instruction to build BSP and boot the evaluation boards.

- r01us0681ej0xxx-rz-t2h-n2h(Release Note RZT2H_N2H).pdf
- r01us0682ej0xxx-rz-t2h-n2h(Linux_Start-up_Guide_RZT2H_N2H).pdf

   "xxx" is replaced with the revision of the documents.

Contents

1.   Release Items

- **Name and version**
  RZ/T2H, RZ/N2H Time-sensitive Network Package Version 1.0.3

- **Target board**
  RZ/T2H Evaluation Board
  RZ/N2H Evaluation Board

- **Functions**
  Time-**S**ensitive **N**etwork Stack (gptp, TDMA Driver, LLDP, SRP, YANG, NETCONF, EAP)

Table 1. TSN List

Stack Name	OSS	License	URL
gPTP	LinuxPTP	GPL-2.0	https://github.com/richardcochran/linuxptp/tree/v2.0.1
TDMA Driver	iproute2	GPL-2.0	https://github.com/iproute2/iproute2/tree/v5.5.0
LLDP	lldpd	ISC	https://github.com/lldpd/lldpd/tree/1.0.4
YANG	libyang	BSD-3-Clause	https://github.com/CESNET/libyang/tree/v2.1.111
NETCONF	libnetconf2	BSD-3-Clause	https://github.com/CESNET/libnetconf2/tree/v2.1.37
EAP	Freeradius	GPL-2.0 license	https://github.com/FreeRADIUS/freeradius-server/tree/release_3_0_20

- **File contents**
  BSP is delivered by the files listed in Table 2.

Table 2. TSN Package

TSN Package v1.0.3

File	Description
RTK0EF0177Z05001ZJ-v1.0.3.zip (*)	TSN Package. This file includes the Yocto recipe and the necessary document.
meta-rz-tsn_v1.0.2.tar.gz	Yocto recipe for TSN. This file is not updated from TSN Package v1.0.2. **No change from the previous package.**
r01us0751ej0103-rz-t2h-n2h(TSN_Release_Note).pdf	This document.
r11an0932ej0103-rz-t2h-n2h(TSN_AppNote).pdf	This file describes how to build and use TSN Package.
tsn_v1.0.3.patch	This patch file is the new file for TSN Package v1.0.3.

Basic Packages of BSPv1.0.2

File	Description
RTK0EF0177Z00002ZJ-v1.0.2.zip (*)	Board Support Package. This file includes the **Yocto recipe packages** and the necessary documents.
rzt2h_n2h_bsp_v1.0.2.tar.gz	**Yocto recipe packages**
- HDR NM - Flash_Programmer_SCIF_CR52_RZT2H_EVK.mot	Flash Programmer. These are used for writing the bootloaders on the evaluation board.
r01us0681ej0102-rz-t2h-n2h(Release_Note_RZT2H_N2H).pdf	BSP release note.
R01us0682ej0102-rz-t2h-n2h(Linux_Start-up_Guide_RZ/T2H_N2H).pdf	Documents describing booting method and the required settings of bootloader for RZ/T2H, RZ/N2H.

(*)   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.

2. Components

The components which are commonly used in this release are listed in Table 3. Please also refer to the manifest file for details. The manifest file is created in the following path after building the images:

Example:

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

Or

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

Table 3. Versions of commonly used components

Components	BSP v1.0.1	BSP v1.0.2	BSP v1.0.2
Linux kernel	5.10.145-cip17	5.10.145-cip17	5.10.145-cip17
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)
busybox	1.31.1	1.31.1	1.31.1
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

In this release, the following restriction is resolved.

(1)   Fix time synchronization issue

Renesas discovered that the 1PPS offset was too large, so a patch was prepared and included in the package.

The key change in these patches is the separation of clock frequency synchronization and clock phase synchronization into two distinct functions: ethsw_timer_adjust_freq and ethsw_timer_adjust_phase.

Additionally, settings have been added to support frame timestamp interface delay. For more details, please refer to "29.4.22.3 Frame Timestamp Interface Delay" in the Hardware User Manual.

Please refer to section 5(2) in this document to know how to apply the patch.

4. Restriction

None.

5. Note

(1)   GMAC Known issue and workaround

Known issues and workarounds of GMAC affecting TSN functions are detailed in Table 28.104 of the "RZ/T2H and RZ/N2H Groups User's Manual: Hardware" (Document Number: R01UH1039EJxxxx). Please refer to the document for details.

(2)   How to apply the patch of TSN package v1.0.3

As explained in Table 2 and Section 3(1), the following patch addresses the issue. Please apply it by running the commands below, following Section 2(2) in r11an0932ej0102-rz-t2h-n2h(TSN_AppNote).pdf.

```
$ cd ~/rzt2h_n2h_bsp_<package version>
$ patch -p1 < ./RTK0EF0177Z05000ZJ-v1.0.3/tsn_v1.0.3.patch
```

6. Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Nov. 26, 2024	-	First edition issued.
1.01	Dec. 23, 2024	-	Add TDMA driver. Newly support RZ/T2H, RZ/N2H BSP v1.0.1.
1.02	Apr. 15, 2025	-	Newly support RZ/T2H, RZ/N2H BSP v1.0.2.
1.03	Jun. 13, 2025	-	Add a patch to fix issue.

Website and Support

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