RZ/V2M Linux Package Version 1.1.0

Release Note

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Introduction

This release note describes the contents and usage of the RZ/V2M Linux Package.

Contents

1. Release items

RZ/V2M Linux Package provides the following items:

- **Name and version**
  RZ/V2M Linux Package version 1.1.0

- **Target board**
  RZ/V2M Evaluation Kit

- **File contents**
  This package provides the following file contents listed in Table 1-1.

Table 1-1. RZ/V2M Linux package file contents

Contents		File	Explanation
Software	Linux package	rzv2m_bsp_eva_v110.tar.gz	RZ/V2M Linux package. The Yocto version is 2.4.3.
	Build image files	Image	Linux kernel image version 1.1.0.
		r9a09g011gbg-evaluation-board.dtb	Device tree file version 1.1.0.
		core-image-bsp-rzv2m.tar.bz2	rootfs version 1.1.0.
	Loader binaries	loader_1st_128kb.bin	1st loader binary.
		loader_2nd.bin	2nd loader binary.
		loader_2nd_param.bin	Boot parameter for 2nd loader.
		u-boot.bin	U-Boot binary.
		u-boot_param.bin	Boot parameter for U-Boot.
	Board shutdown application	rdk_shutdown	Pre-build binary for shutdown the RZ/V2M Evaluation Kit. This runs on rootfs.
Option	Script file	eMMC_writer_v110.ttl	Script file to write loader binaries to eMMC with the terminal software (Tera Term).
	Flash writer	B2_intSW.bin	Writing loader binaries to the eMMC on the RZ/V2M Evaluation Kit via your PC.
Documentation		r01an5971ej0110-rzv2m-linux.pdf	This document.
		r01us0512ej0110-rzv2m-linux-software-manual.pdf	Software manual for the RZ/V2M Linux system. English and Japanese version are available.
		r01us0512jj0110-rzv2m-linux-software-manual.pdf	
		r01tu0360ej0110-rzv2m-linux-component-list.pdf	RZ/V2M Linux package component list. (Hereafter, component list)
		r01us0527ej0110-rzv2m-linux-startup-guide.pdf	Brief usage instructions for RZ/V2M Linux package. (Hereafter, start-up guide)
		r01us0528ej0110-rzv2m-linux-yocto-startup-guide.pdf	Brief usage instructions with Yocto Project.
		r01us0516ej0110-rzv2m-linux-csi.pdf	Usage of CSI device driver on RZ/V2M.
		r01us0517ej0110-rzv2m-linux-gether.pdf	Usage of Gigabit Ether device driver on RZ/V2M.
		r01us0518ej0110-rzv2m-linux-i2c.pdf	Usage of I2C device driver on RZ/V2M.
		r01us0519ej0110-rzv2m-linux-pfc.pdf	Usage of PFC device driver on RZ/V2M.
		r01us0520ej0110-rzv2m-linux-pwm.pdf	Usage of PWM device driver on RZ/V2M.

	r01us0521ej0110-rzv2m-linux-sd-emmc.pdf	Usage of SD/eMMC device driver on RZ/V2M.
	r01us0522ej0110-rzv2m-linux-timer.pdf	Usage of Timer device driver on RZ/V2M.
	r01us0523ej0110-rzv2m-linux-uart.pdf	Usage of UART device driver on RZ/V2M.
	r01us0524ej0110-rzv2m-linux-usbh.pdf	Usage of USB Host device driver on RZ/V2M.
	r01us0525ej0110-rzv2m-linux-usbp.pdf	Usage of USB Peripheral device driver on RZ/V2M.
	r01us0526ej0110-rzv2m-linux-wdt.pdf	Usage of Watchdog timer device driver on RZ/V2M.

2. Components in RZ/V2M Linux Package

RZ/V2M Linux package mainly uses the following components. Refer to the component list for other components and details.

Table 2-1. Components of RZ/V2M Linux Package

Software	Version
Linux kernel	4.19.56
GCC	linaro+7.3
glibc	2.19
busybox	1.22.0
openssl	1.0.1t

3. How to use this package

Refer to the start-up guide to use this Linux package.

The start-up guide gives the following instructions.

- ✓ Building the RZ/V2M Linux package (bitbake)
- ✓ Preparation for use (Board, SD card, and others setting)
- ✓ Boot loader and U-Boot
- ✓ Run on the board
- ✓ Make software development kit (SDK)

Note: If you use the previous version RZ/V2M Linux Package, you should rewrite the boot loader and U-Boot to the eMMC. Refer to "RZ/V2M Linux Package Start-Up Guide" for how to write bootloader in detail.

4. Application Development Procedure

This chapter explains how to make and run an application for RZ/V2M with this package.

4.1 Make Application

Here is an example of how to make an application running on RZ/V2M. The following steps will generate the “Hello World” sample application.

Note that you must build (bitbake) a core image for the target and prepare SDK before making an application. Refer to the start-up guide on how to make SDK.

Step 1. Make a work directory for the application.

```
$ mkdir ~/hello_apl
$ cd ~/hello_apl
```

Step 2. Make the following three files (an application file, Makefile, and configure file) in the directory for the application. Here, the application is made by automake and autoconf.

- hello.c

```
#include <stdio.h>

main()
{
    printf("Hello, world!\n");
}
```

- Makefile.am

```
bin_PROGRAMS = hello
hello_SOURCES = hello.c
```

- configure.in

```
AC_INIT(hello.c)
AM_INIT_AUTOMAKE(hello,0.1)
AC_PROG_CC
AC_PROG_INSTALL
AC_OUTPUT(Makefile)
```

Step 3. Generate the configuration scripts, files needed by GNU coding standards, and the configure files. After that, cross-compile the application.

```
$ aclocal
$ autoconf
$ touch NEWS README AUTHORS ChangeLog
$ automake -a
$ ./configure ${CONFIGURE_FLAGS}
```

Step 4. Make the application by the generated makefile.

```
$ make
```

After making, confirm that the execute application (the sample file name is “hello”) is generated in the hello_apl folder. Also, this application must be cross-compiled for AArch64.

4.2 Store the Sample Application

The sample application could be written by the following procedure.

The application should be stored in the ext3 partition.

```
$ sudo mount /dev/sdb2 /media/
$ cd /media/usr/bin
$ sudo cp <hello_application_stored_path>/hello .
$ sudo chmod +x hello
```

Notes: 1. “sdb2” (above in red) may depend on using system.
2. <hello_application_stored_path> is an optional directory name to store the application.

4.3 Run the Sample Application

Power on the RZ/V2M Evaluation Kit and start the system.

After booting, run the sample application with the following command.

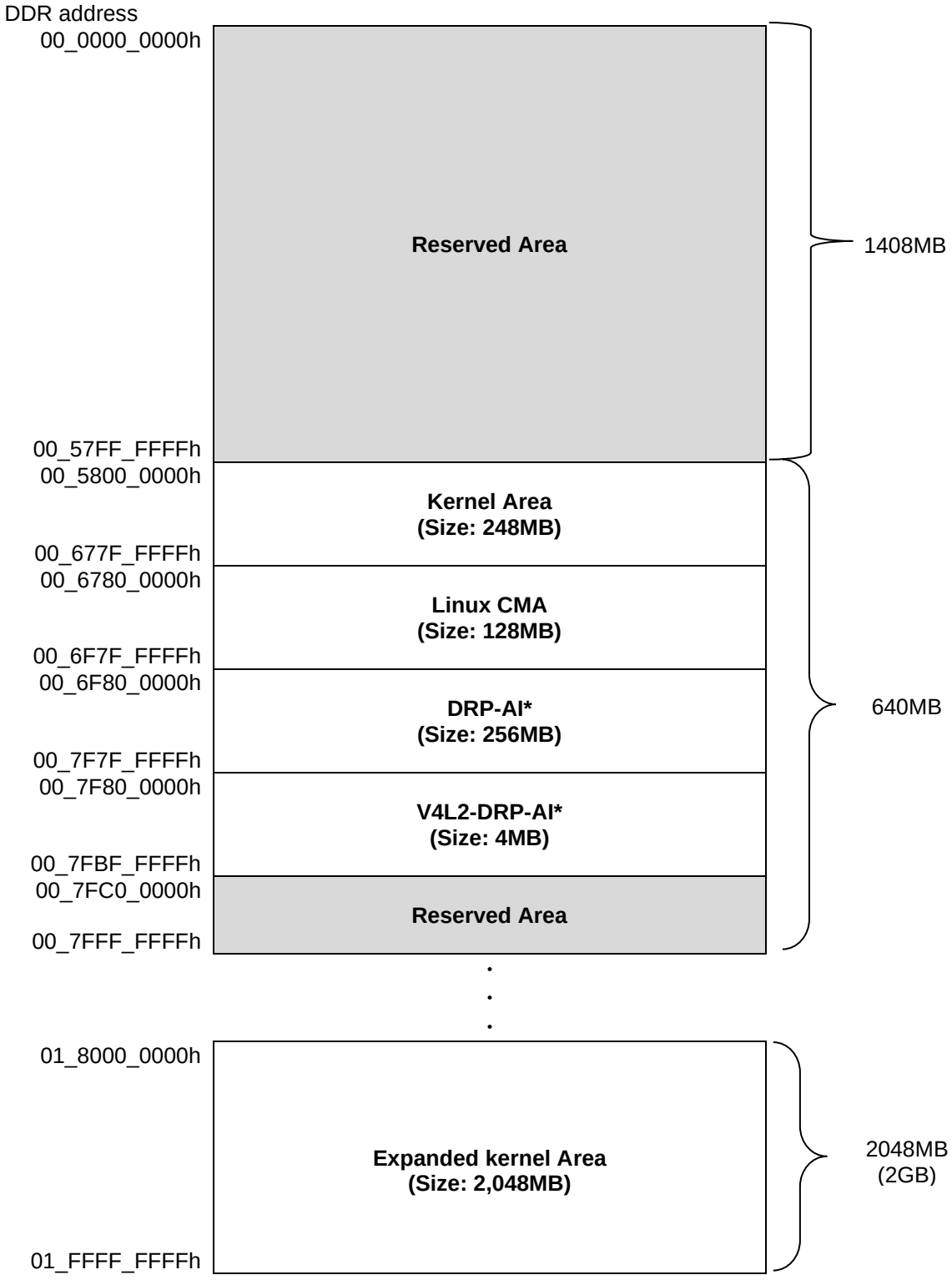
```
root@rzv2m:~# hello
Hello, world!
```

Note: Refer to the start-up guide for the method how to boot the board and system.

5. Notes

5.1 Memory map

DDR memory map in the RZ/V2M is shown in Figure 5-1.



*: The area to store DRP-AI Object files.

Figure 5-1. Memory map

6. Restrictions

The following table lists restrictions for this version of RZ/V2M Linux Package.

Table 6-1. Restrictions

Software		Details	
		Previous (V1.0.0)	Now (V1.1.0)
Device driver	USB Peripheral	Insert USB devices after turning on the target board and starting Linux. If USB devices are inserted before booting, the USB OTG function may not work successfully.	No restrictions.
	PCI Express	Not supported in this version. *Not provided PCI Express diver source codes and user's manual now.	Not supported in this version. *Not provided PCI Express diver source codes and user's manual now.
Memory map	Area size	Available 2GB from the address 0x0000_0000h to 0x7FFF_FFFFh in DDR memory. * Not described the above in RZ/V2M Linux Package Version 1.0.0 Release Note.	Available 4GB from the address 0x0000_0000h to 0x7FFF_FFFFh, and from 0x1_8000_0000h to 0x1_FFFF_FFFFh in DDR memory.
	Kernel Area Linux CMA Area DRP-AI Area V4L2-DRP-AI Area	—	Linux CMA, DRP-AI, and V4L2-DRP-AI Area must be located as the same as the memory map address. Not locate them in the Kernel Area from 01_8000_0000h to 01_FFFF_FFFFh.

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Oct 8, 2021	—	First edition issued.

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2. Processing at power-on

   The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power reaches the level at which resetting is specified.
3. Input of signal during power-off state

   Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.
4. Handling of unused pins

   Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.
5. Clock signals

   After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.
6. Voltage application waveform at input pin

   Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).
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