RZ MPU Qt6 (v6.8.3) Package V4.0.0.0 for Verified Linux Package V4.0.0

R01US0806EJ0100
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Qt6 (v6.8.3) Start-up Guide

Introduction

This release note describes the contents, building procedures for Qt6 (v6.8.3) and important points of the RZ MPU Qt6 (V6.8.3) Package V4.0.0.0 for Verified Linux Package (hereinafter referred to as “VLP/G”).

As “Qt6.8.3” includes components licensed under LGPLv3, please consider the commercial version if necessary, depending on your intended use.

If you need information to build Linux BSPs without Qt6 (v6.8.3), please refer to “RZ MPU Verified Linux Package Version 4.0.0 Release Note” (r01us0797ej0100-rz(Release Note).pdf).

Contents

1. Release Items

- **Name and version**
  RZ MPU Qt6 (v6.8.3) Package V4.0.0.0 for RZ/G Verified Linux Package Version 4.0.0 (hereinafter referred to as "Qt6 (v6.8.3) Package v4.0.0.0" and "VLP/G v4.0.0")

- **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/G series. Basic packages of VLP/G can be downloaded.
  RZ Family:
  https://www.renesas.com/products/microcontrollers-microprocessors/rz-arm-based-high-end-32-64-bit-mpus

  You can also download the basic packages of VLP/G v4.0.0 from the site below.
  RZ/G Marketplace:
  https://www.renesas.com/products/microcontrollers-microprocessors/rz-cortex-a-mpus/rzg-linux-platform

- **Target board for Qt6 (v6.8.3)**

  RZ/G2L Evaluation Board Kit PMIC version (*1):
  - RZ/G2L SMARC Module Board v2.1
  - RZ SMARC Series Carrier Board v4.0

  RZ/G2LC Evaluation Board Kit (*2):
  - RZ/G2LC SMARC Module Board v1.0
  - RZ SMARC Series Carrier Board v4.0

(*1) "RZG2L Evaluation Board Kit PMIC version" includes the RZ/G2L SMARC Module Board and the RZ SMARC Series Carrier Board.
(*2) "RZG2LC Evaluation Board Kit" includes the RZ/G2LC SMARC Module Board and the RZ SMARC Series Carrier Board.

- **Verified functions**
  Linux BSP
  - Linux Kernel
  - Linux Drivers
  - Graphics Libraries
  - Codec Libraries

- **File contents**
  VLP/G is delivered by the files listed in Table 1.

Table 1. RZ/G Verified Linux Package

Basic files of VLP/G v4.0.0

File	Description
RTK0EF0045Z0035AZJ-v4.0.0.zip (*)	Verified Linux Package. This file includes the **Yocto recipe packages** and the necessary documents.
rz_vlp_v4.0.0.tar.gz	**Yocto recipe packages**.
r01us0797ej0100-rz(Release Note).pdf	Release Note of VLP without Qt6 (v6.8.3).
r01us0798ej0100-rz(Linux Start-up Guide RZG2L,LC).pdf	Document Release Note of VLP without Qt6 (v6.8.3) describing booting method and the required settings of bootloader for **RZ/G2L and RZ/G2LC**.
oss_pkg_rz_v4.0.0.7z (*)	Open-source software packages. See the Note below before you download.

Basic files of Qt6 (v6.8.3) Package v4.0.0.0

File	Description
RTK0EF0224Z00000ZJ_v4.0.0.0.zip (*)	Verified Linux Package for Qt6 (v6.8.3). This file includes the **Yocto recipe packages** for Qt6 (v6.8.3) and the necessary documents.
rzg_bsp_qt6.8.3_v4.0.0.0.tar.gz	**Yocto recipe packages**.
r01us0806ej0100-rz(Qt6 Start-up Guide).pdf	This document.
oss_pkg_qt6.8.3_v4.0.0.0.7z (*)	Open-source software packages for Qt6 (v6.8.3). Please use this file instead of oss_pkg_rz_v4.0.0.7z when building Qt6 (v6.8.3). See the Note below before you 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) The open-source software (OSS) packages contain all the relevant source code files. These are the same versions of OSS that was used when VLP/G was verified. Downloading and using this large OSS package file (oss_pkg_rz_xxx.7z and oss_pkg_qtXXX_xxx.7z) is not mandatory if your Linux Host PC is connected to the Internet and can directly download the individual source code packages listed in the Yocto recipes. However, if your Host PC is not connected to the Internet, this OSS package file contains all the source packages required by the Yocto build.

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/G 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, you may use different source codes than Renesas used due to the implicit changes of the repositories of OSSs.
Most bootable images that VLP/G supports can be built on an “offline” environment. Please refer to the documents of the Linux Start-up Guide.

Optional packages (*1, 2)

	File ("XX" is replaced by "EN" or "JP".)	**Description**
RZ MPU Graphics Library	RTK0EF0045Z14001ZJ-v4.1.2.5_XX.zip	For **RZ/G2L** and **RZ/G2LC**. This provides graphics function compliant with the OpenGL ES standard.
RZ MPU Video Codec Library	RTK0EF0045Z16001ZJ-v4.1.3.0_XX.zip	RZ MPU Video Codec Library for **RZ/G2L**.

(*1) **Download link**
RZ/G Verified Linux Package [6.1-CIP]: https://www.renesas.com/en/software-tool/rz-mpu-verified-linux-package-61-cip

(*2) **Qt6 (v6.8.3) Package v1.0.0 supports the below combination:**
rz_vlp_v4.0.0.tar.gz + rzg_bsp_qt6.8.3_v4.0.0.0.tar.gz + RTK0EF0045Z14001ZJ-v4.1.2.5_XX.zip + RTK0EF0045Z16001ZJ-v4.1.3.0_XX.zip

2. Build Instructions

2.1 Build VLP without Qt6 (v6.8.3)

Please follow the documents below and build the VLP first. You can read the release note and check the release items. You can build VLP by following chapters 1 and 2 of the Linux Start-up Guide.

Table 2. Documents for the first step

r01us0797ej0100-rz(Release Note).pdf	Release Note of VLP without Qt6 (v6.8.3). You can check the release items.
r01us0798ej0100-rz(Linux Start-up Guide RZG2L,LC).pdf	Documents describing booting methods and the required settings of bootloader for **RZ/G2L and RZ/G2LC**. Please refer to chapters 1 and 2 for building VLP.

VLP has some additional packages and options, so users can select the combination themselves and build.
Please note that Qt6 (v6.8.3) packages are tested with the below combination.

Example) RZ/G2L is tested using both the graphics library and the codec library, but it is not tested using Security, Multi-OS, and Docker.

Table 3. Combinations of Qt6 (v6.8.3)

		Packages and Options				
		Graphics	Codec	Security	Multi-OS	Docker
Devices	RZ/G2L	O		-	-	-
	RZ/G2LC	O	-	-	-	-

(*) "-" means that the packages and the options are not tested with Qt6 (v6.8.3).

After you complete the build, please move to section 2.2 in this document to enable Qt6 (v6.8.3).

2.2 Build VLP with Qt6 (v6.8.3)

This section describes the instructions to build VLP with Qt6 (v6.8.3).

Copy all files obtained from Renesas into your Linux Host PC prior to the steps below. The directory which you put the files in is described as <package download directory> in the build instructions.

(1) Move to the working directory and decompress Yocto recipe package

Run the commands below.

```
$ cd ~/rz_vlp_v4.0.0
$ cp ../<package download directory>/*.zip .
$ unzip ./RTK0EF0224Z00000ZJ_v4.0.0.0.zip
$ tar zxvf ./RTK0EF0224Z00000ZJ_v4.0.0.0/rzg_bsp_qt6.8.3_v4.0.0.0.tar.gz
```

(2) Set up a build environment

Initialize a build using the 'oe-init-build-env' script in Poky and point TEMPLATECONF to platform conf path.

```
$ TEMPLATECONF=$PWD/meta-renesas/meta-rz-distro/conf/templates/rz-conf/ source poky/
oe-init-build-env build
```

(3) Add layers

Please follow the steps below to add the layers you need. The steps add the settings to bblayers.conf.

```
$ bitbake-layers add-layer ../meta-qt6
$ bitbake-layers add-layer ../meta-rz-qt6
$ bitbake-layers add-layer .. /meta-rz-features/meta-rz-codecs
$ bitbake-layers add-layer .. /meta-rz-features/meta-rz-graphics
```

(4) Install Qt Examples (Optional)

Please add the line below to "`~/rz_vlp_v4.0.0/build/conf/local.conf`" to install **all** Qt example applications to the VLP.

```
IMAGE_INSTALL:append = " packagegroup-qt6-examples "
```

(5) Decompress OSS files to "build" directory (Optional)

Run the commands below. This step is optional, and you can proceed to step (6) if an "offline" environment isn't necessary. This '7z' command will decompress all the OSS packages. For example, this step uses the path "~/rz_vlp_v4.0.0/build/" to decompress the open-source software packages. You can choose any path for decompression.

```
$ cp ../<package download directory>/oss_pkg_qt6.8.3_v4.0.0.0.7z .
$ 7z x oss_pkg_qt6.8.3_v4.0.0.0.7z
```

Note) If you skip this step, the bitbake command will download all source codes from the repositories of each OSS over the internet. Please be aware that if you are not in an "offline" environment, the building might fail due to unexpected changes in the OSS repositories. Open-source software packages include all the source codes of the OSS components. These are the exact versions of the OSS used during the verification of VLP. If you are simply evaluating VLP and the RZ/G2L group, using these open-source software packages is not necessary. Generally, all the software can be built without these files if your Linux Host PC has an internet connection. Open-source software packages are necessary for an "offline" environment. An "offline" environment is defined as an isolated environment without any network connection. VLP can consistently build images in this

"offline" environment using these packages, unaffected by any modifications in the original OSS repositories. Furthermore, this "offline" environment always produces the same images that Renesas verified. Keep in mind that building without these open-source software packages could lead to the use of different source codes than those used by Renesas, due to potential unexpected changes in the OSS repositories.

When you run the 7z command, you may see the below message. Please select "**A**" at that time.

```
Would you like to replace the existing file:
Path: ./own-mirror/git2_git.eclipse.org.r.tcf.org.eclipse.tcf.agent.git.tar.gz.done
Size: 0 bytes
Modified: 2025-06-24 14:59:12
with the file from archive:
Path: own-mirror/git2_git.eclipse.org.r.tcf.org.eclipse.tcf.agent.git.tar.gz.done
Size: 0 bytes
Modified: 2025-06-24 14:59:12
? (Y)es / (N)o / (A)lways / (S)kip all / A(u)to rename all / (Q)uit? A
```

After the above procedure finishes, add these lines to the "`~/rz_vlp_v4.0.0/build/conf/local.conf`":

```
BB_GENERATE_MIRROR_TARBALLS = "1"
BB_GENERATE_SHALLOW_TARBALLS = "1"
BB_GIT_SHALLOW = "1"
BB_GIT_SHALLOW_DEPTH = "1"

BB_NO_NETWORK = "1"

INHERIT += "own-mirrors"
SOURCE_MIRROR_URL = "file://<package download directory>/own-mirror"
```

Then other Host PCs also can refer the same <package download directory> instead of decompressing the OSS files by themselves.

(6) Start a build

Run the command below to start a build. Building an image can take up to a few hours depending on the user's host system performance.

Build the target file system image using bitbake

```
$ MACHINE=<board> bitbake core-image-qt
```

<board> can be selected by referring to the エラー! 参照元が見つかりません。.

Example: MACHINE=smarc-rzg2l

Table 4. List of platforms and the boards

Renesas MPU	<board>
RZ/G2L	smarc-rzg2l
RZ/G2LC	smarc-rzg2lc

After the building is successfully completed, a similar output will be seen, and the command prompt will return.

```
NOTE: Tasks Summary: Attempted 13371 tasks of which 16 didn't need to be rerun and a
ll succeeded.
```

All necessary will be generated by the bitbake command and will be located in the **build/tmp/deploy/images** directory.

2.3 Qt example applications

This section describes how to launch the Qt example applications after building VLP.

2.3.1 Launch the Qt example applications on the evaluation board

(1) Prepare the SD card and boot the evaluation board

Please follow the documents below again to boot the evaluation board. You can prepare the SD card and boot the evaluation board by following chapters 3 and 4 of the Linux Start-up Guide.
After booting the target board, please move to the next section 2.3.1(2) in this document.

Table 5. Documents for the first step

r01us0798ej0100-rz(Linux Start-up Guide RZG2L,LC).pdf	Documents describing booting method and the required settings of bootloader for **RZ/G2L and RZ/G2LC**. Please refer to chapters 3 and 4.

(2) Launch the Qt example applications on the evaluation board

If you install Qt example applications in section 2.2(4), the applications will be in **/usr/shared/examples** directory.

Please connect a monitor, USB hub, a mouse, and a keyboard to your evaluation board.

The following are **some of the many** Qt example applications available in that directory, which you can run using these commands:

- **Media Player Example | Qt Multimedia 6.8.3**

```
root@smarc-rzg2l:/# /usr/share/examples/multimedia/player/player
```

- **HelloGraphs | Qt Graphs 6.8.3**

```
root@smarc-rzg2l:/# /usr/share/examples/graphs/2d/hellographs/hellographs
```

- **Hello GL2 Example | Qt OpenGL**

```
root@smarc-rzg2l:/# /usr/share/examples/opengl/hellogl2/bin/hellogl2
```

- **Qt Quick 3D - HelloCube Example | Qt Quick 3D 6.8.3**

```
root@smarc-rzg2l:/# /usr/share/examples/quick3d/hellocube/bin/hellocube
```

- **Virtual Keyboard in Qt Quick | Qt Virtual Keyboard 6.8.3**

```
root@smarc-rzg2l:/# /usr/share/examples/virtualkeyboard/basic/basic
```

3. Note

(1) Test Status of the Qt6 (v6.8.3) package

The Qt6 (v6.8.3) package has been tested. One type of test was conducted:

- Package tests:
  These tests verify the functionality of the public APIs of the Qt6 (v6.8.3).

4. Revision History

		Description	
Rev.	**Date**	**Page**	**Summary**
1.00	June 30, 2025	-	First edition for VLP/G v4.0.0.

Website and Support

Renesas Electronics Website
http://www.renesas.com/

Inquiries
http://www.renesas.com/contact/