

e² studio V7.0.1 Linux Host Public Beta for RZ

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Introduction

This document outlines the supported OS and device support in e² studio V7.0.1 for Linux Host.

Contents

1. F	Product Information	2
1.1	Supported Operating Systems	2
1.2	Supported Toolchains	2
Prod	uct Information Device Support	3
1.3	Project Generator Support	3
2. V	What is new in e ² studio V7.0.1?	4
2.1	Overview	4
2.2	How to install	4
2.3	How to run	4
2.4	Register toolchain to e ² studio	5
2.5	How to build and debug Linux application	6
3. <i>I</i>	Appendix	10
3.1	Website and Support	10



1. Product Information

1.1 Supported Operating Systems

These operating systems are officially supported by e² studio:

• Ubuntu 18.04 LTS 64-bit version

1.2 Supported Toolchains

The following toolchains are supported in e² studio V7.0.1:

Linaro GCC - tested version 7.2.1-2017.11



Product Information Device Support

1.3 Project Generator Support

Family	Group	Devices
		R7S721000, R7S721000_DualSPI, R7S721001, R7S721001_DualSPI,
		R7S721010, R7S721010_DualSPI, R7S721011, R7S721011_DualSPI,
		R7S721020, R7S721020_DualSPI, R7S721021, R7S721021_DualSPI,
		R7S721030, R7S721030_DualSPI, R7S721031, R7S721031_DualSPI,
	A1	R7S721034, R7S721034_DualSPI
		R8A77430, R8A77450
	G	R8A77430_Core1, R8A77450_Core1,(Debug Support Only)
	G1C	R8A77470
RZ	G1H	R8A77420
	G1N	R8A77440
		R7S910001, R7S910002, R7S910006, R7S910007, R7S910011,
		R7S910013, R7S910015, R7S910015_M3, R7S910016, R7S910016_M3,
		R7S910017, R7S910017_M3, R7S910018, R7S910018_M3, R7S910025,
		R7S910026, R7S910027, R7S910028, R7S910035, R7S910036,
		R7S910101, R7S910102, R7S910106, R7S910107, R7S910111,
		R7S910113, R7S910115, R7S910115_M3, R7S910116, R7S910116_M3,
		R7S910117, R7S910117_M3, R7S910118, R7S910118_M3, R7S910125,
	T1	R7S910126, R7S910127, R7S910128, R7S910135, R7S910136



2. What is new in e² studio V7.0.1 Linux Host?

Component	Device	Description
RZ debugging	RZ Family devices	Linux Host support is provided for e ² studio to support the RZ device family.
		The use cases allow the following cases:
		 Linux target OS debugging for RZ/G and RZ/A1. Segger J-link debugging for RZ on Linux Host

2.1 Overview

The public beta version e^2 studio is based on e^2 studio V7.0.0 for windows. Therefore, documents of e^2 studio will be helpful for common usages. This part describes mainly how to install public beta version e^2 studio for Linux and set configurations of debug functions have dependencies of Linux environment.

2.2 How to install

Installation steps of public beta version e² studio for Linux

- A) Download archived file from download page. You can find download page by searching 'e² studio V7.0.1 for Linux, public beta edition' from the list shown as clicking 'Download the installer' button at e² studio product information web page (<u>https://www.renesas.com/e2_studio</u>).
- B) Extract the downloaded archived file (extension *.7z) into local storage.
- C) Please install JRE 1.8 (Java 8) 64bit version.
 Ubuntu install command example (The internet connection is required.): sudo apt-get install openjdk-8-jre

Error Message in below will appear, if JRE (Java Runtime Environment) is not installed and try to run e^2 studio.

0	A Java Runtime Environment (JRE) or Java Development Kit (JDK) must be available in order to run E2studio. No Java virtual machine was found after searching the following locations: /home/softgi/e2studio/jre/bin/java java in your current PATH
	Close

2.3 How to run

- A) Administrator privilege is required for debugging or some other features which demand file access authentication.
- B) Run 'terminal' application of Linux.
- C) Move installed directory and Run 'e2studio' binary file. (example of executing command with administrator privilege at installed directory: sudo ./e2studio)



2.4 Register toolchain to e² studio

- A) Download and extract a toolchain package file to arbitrary directory.
- B) Run 'e2studio' and select 'Help Add Renesas Toolchains'
- C) Select 'Toolchain Type' and 'Add' Location of toolchain.

		Preferences		• •
type filter text 🛛 🛚	Renesas Toolch	ain Manageme	nt	↓ ↓ ↓ ↓
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D) Click checkbox of added toolchain and restart e^2 studio.

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2.5 How to build and debug Linux application

Public beta version e² studio for Linux supports building and debugging Linux applications for devices of RZ/A Group and RZ/G Group. For debugging by GDB (the GNU Project Debugger), please add Linux programs gdb-server program to Linux file system of devices and run as back ground process automatically. (ssh-server, tcf-agent will be needed for connection between host system and target device.) For detail about building Linux image for RZ family devices, refer to embedded Linux wiki pages (https://elinux.org) or Renesas Rulz web pages about RZ family (https://renesasrulz.com/rz). Descriptions in below is based on RZ/A1H case.

- 2.5.1. How to add gdb-server to RZ/A Linux root file system
 - A) Build root file system of RZ/A1 Linux-4.9 BSP. (path example: ~/rza_linux-4.9_bsp/, command example: ./build.sh buildroot)
 - B) Move to 'buildroot-***' directory in 'output'. (path example : ~/rza_linux-4.9_bsp/output/buildroot-2017.02)
 - C) Run menuconfig (make menuconfig) and add gdb-server. (Select 'Toolchain-Copy gdb server to the Target' menu)

softqi@softqi-dynabook-RZ83-VB: ~/RZA linux 4 9/rza linux-4.9 bsp/output/buildroot-2017.02	
File Fdit View Search Terminal Help	
/home/softgi/RZA_linux_4_9/rza_linux-4.9_bsp/output/buildroot-2017.02/.config - Buildroot 2017.02.10-g2e1365e Configurati	.on
Toolchain Arrow keys navigate the menu. <enter> selects submenus> (or empty submenus). Highlighted letters are hotkeys. Pressing <y> selects a feature, while <n> excludes a feature. Press <esc><esc> to exit, <? > for Help, for Search. Legend: [*] feature is selected [] feature is excluded</esc></esc></n></y></enter>	
Toolchain type (External toolchain)> *** Toolchain External Options *** Toolchain origin (Toolchain to be downloaded and installed)> Toolchain origin (Toolchain to be downloaded and installed)> [*] Copy gdb server to the Target *** Host GDB Options *** *** Toolchain Generic Options *** [] Copy gconv libraries [*] Enable MMU support () Target Optimizations () Target linker options [] Register toolchain within Eclipse Buildroot plug-in	
<pre><select> < Exit > < Help > < Save > < Load ></select></pre>	-

- D) Move to 'target' directory in 'output' of 'buildroot-****'. (path example: ~/rza_linux-4.9_bsp/output/buildroot-2017.02/output/target)
- E) Add new file with a line as command at '/etc/init.d' directory

File name: S51gdbserver

Command: /usr/bin/gdbserver --multi --remote-debug /dev/ttySC0

F) Delete or disable below contents from etc/inittab.

Put a getty on the serial port

ttySC0::respawn:/sbin/getty -L ttySC0 115200 vt100 # GENERIC_SERIAL

G) Move 'Linux-4.9 BSP root' (path example: ~/rza_linux-4.9_bsp/) and build root file system again. Download root file system at target device.



- 2.5.2. Linux C/C++ Project generation and build
 - A) Connect target device which is run as Linux, via Serial port.
 - B) Select 'File New RZ Linux C/C++ project' menu and make new RZ/A1H Linux C/C++ project. In phase of 'RZ Linux connection settings', the serial port which is used for connecting target device, will be selected automatically.

	RZ Linux Project	0 😣	RZ Lii	nux Project	• •
RZ Linux toolchain an Select target device, to	nd project selection volchain and a template project	Ď	RZ Linux connection settings Select connection details		Ď
RZ Linux Target Device	RZ/A1H (R7S721000)	•]	Connections		
Toolchains	Linaro	•	🗹 Use Serial Port: 🖊 🗸 🗸	ud rate: 115200 🔻	
Toolchain Version	7.3.1.20180425	•	/dev/ttyACM0		
Project templates			Network: 172.22.162.222	Ŧ	New connection
			Open Network Connections		
0	< Back Next > Cancel	Finish	?	Next > Cancel	Finish

C) After editing codes, build by selecting 'Build Project' in right-click menu or push

button.

3

					workspace - RZA_Linux_App/src/Hello.cpp - e ² studio
File Edit Sou	rce Refactor Navigat	te Search Project Renesas V	/iews Run Wind	ow Hel	elp
S 🕸 🔳	☆ Debug ~	RZA_Linux_App_rza	× 🄅 📑 🕶 🖫		🕶 🔦 🕶 🔜 🕼 New Connection 💦 📢 🔩 🖛 🖳 💘 🔍 🛰 🖘 🇞 🕪
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▶ ₩ Biparie	<u>N</u> ew	• •	69		<pre>system("echo 0 > /sys/devices/leds.1/leds/led3/brightnes</pre>
> son binarie	Go Into		70		}
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🕨 🗁 Debug	Open in <u>N</u> ew Window		72		result = Tunction@3(arg);
T 🗁 SFC	Show <u>I</u> n	►	74		return result:
🕨 尾 Hello	📔 <u>С</u> ору	Ctrl+C	75	ł	
	💼 Paste	Ctrl+V	76		
	V Delete		77	⊖int	t function03(int arg)
	- Delete		78	{	
	Source	•	79		unsigned long result = 0;
			80		call03++;
	Rena <u>m</u> e	F2	82		std::cout << "function03:" << coll03 << std::endl:
	A Import		83		if (callo3%20 > 10) {
			84		<pre>system("echo 255 > /sys/devices/leds.1/leds/led4/brightr</pre>
	🖆 Exp <u>o</u> rt		85	Θ	} else {
	<u>B</u> uild Project		86		<pre>system("echo 0 > /sys/devices/leds.1/leds/led4/brightnes</pre>
	Clean Project		87		}
	Defrech	FS	88		
	slava protont	13	89		result = function04(arg);
	Clo <u>s</u> e Project		91		return result:
	Close <u>U</u> nrelated Proje	ects	92	}	
	Build Targets	F	93	1	
	Index	•	94	⊖int	t function04(int arg)
	Ruild Configurations		95	{	



- 2.5.3. GDB debug by using serial port communication
 - A) Terminate all processes use serial port communication such as Minicom.
 - B) Open 'Configuration' and check 'Serial' is selected as 'Connection'.



C) Run debug by push button . It takes 10 or more seconds for transferring binary files to target device. Pop up message for switching to debug perspective will be shown after transferring binary files.





 D) 'Debug Perspective' provide ways for flow controls and configurations. This public beta version e2 studio for Linux doesn't have console view for showing result of the program. (Under development) For more detail, please see user manuals of e² studio Windows edition.

% *	Debug V	× #] itt • ii	🐚 🖲 🛪 🔏 🔻 🗟 🎜 New C	onnection	*** E: + 0 × <mark> 0+ () = </mark> *	1.2.2.1 = 3(10, - 9,00)	BIY Q 1451 / 14
to Debug 😂				He over	🕬 Variables 😫 🍫 Break	points 💷 Registers 🛎 Modu	les 🕅 Express
RZA_Linux_	App_rza [Renesas Linux Application]				Name	Time	Malue
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25 00010750 26 0001075e 27 0001075e 28 29 30 0001077a 31 00010772 32 0001077a 33 00010776 34	<pre>call02 = 0; call04 = 0; total_result = 0; while(1) { counter++; if (counter == 0x1000000) { std::cout << "Hello Worl counter = 0;</pre>	d!" << std::endl;					54
35 000107d4 36 000107dc	tmp++; total result = function@	(tmp):					
37 38	, }	Expression	Туре	Value	Address		
20 Temple Felt	/	•>tmp	unsigned long	1	0xbefffd34		
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3. Appendix

3.1 Website and Support

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http://www.renesas.com/

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