

Renesas RA Family

Migrating Projects to New FSP Version

Introduction

This section describes the steps to migrate an existing RA Project to a newer FSP pack version, and then build and run the example project. The procedure in this migration guide applies to all RA devices and evaluation kits, and all software listed in the Required Resources section.

Required Resources

- An RA evaluation kit (for example, EK-RA6M3)
- A PC running Microsoft[®] 10 with the following Renesas software installed as required:
 - Flex Software Package (FSP) v1.0.0 or greater
 - e² studio ISDE v7.6.0 or greater
 - RA Smart Configurator (RASC) v7.6.0 or greater
 - IAR EW for ARM v8.50.1 or greater
 - Keil MDK (v5.29 or higher) and ARM compiler 6 (version 6.13 or higher)

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1. Installing Latest FSP Packs

A. e² studio

- This can be done in two ways:
- Download and install the latest FSP with e² studio Installer (for example,
 - $setup_fsp_x_x_e2s_x_x.exe$). This should be done if the e^2 studio version has changed.
- Download and run the latest FSP pack installer (for example, FSP_Packs_x.x.exe) and browse to the folder where e² studio is installed.

Choose in Choose th The installation path must point to the rr C:Renesas's2_studio). Please make su Browse to folder where e2 studio is in C:'Renesas'RA/e2studio	oot of the e2 studio installation (e.g. re e2 studio is closed before installation stalled]	
Space required: 54.7 MB Space available: 345.4 GB	< Back Install	Cano	d	

Figure 1. Choosing Install Location in e² studio

B. Keil and IAR

This can be done in two ways:

- Download and install the new RASC (for example, setup_fsp_x_x_rasc_x_resc) with the latest FSP pack version.
- Download and run the latest FSP pack installer (for example, FSP_Packs_x.x.exe) and browse to the folder where RASC is installed.

💮 Renesas	FSP	-		×
REN	Choose Install Choose the fold	Location er in which to install Renesas FS	P v.	
The insta C:\Rener	ation path must point to the root of stle2_studio). Please make sure e2	the e2 studio installation (e.g. studio is closed before installati	n.	
	to folder where e2 studio is installed nesas\RA\sc_v.		owse	1
	uired: 54.7 MB ilable: 345.4 GB			
		< Back Install	Cance	el

Figure 2. Choosing Install Location in Keil and IAR

C. Additional steps:

- a. IAR: To use RASC with EWARM, latest RASC needs to be configured as a tool in EWARM by selecting the menu item Tools > Configure Tools.
 Command: Select Browse... and navigate to rasc.exe in the installed RA SC.
- b. Keil: Import the latest RA device pack. (for example, MDK_Device_Packs_x.x.z.zip). Extract the archive file to locate the RA device pack. To import the RA device pack, launch the PackInstaller.exe from <keil_mdk_install_dir>\UV4. Select the menu item File > Import... and browse to the extracted .pack file.



2. Migrating Project in e² studio

2.1 Migrating an Existing Project in e² studio

- 1. Start by opening e^2 studio.
- 2. Follow the steps below to launch the workspace.
 - A. At the end of e² studio startup, you see the e² studio Launcher dialog box as shown in Figure 3.

e² studio Launcher	×
Select a directory as workspace e ² studio uses the workspace directory to store i	ts preferences and development artifacts.
Workspace: ² C:\Users\Public\worksapce	· · · · · · · · · · · · · · · · · · ·
Use this as the default and do not ask again	
Recent Workspaces	Launch Cancel
	Calcel

Figure 3. e² studio Launcher Dialog Box

- B. If you do not see the dialog box, you might have turned it off. If this is the case, open your desired project and skip to step D. Otherwise, continue with the following steps.
- C. Enter a new workspace name in the **e² studio Launcher** dialog box.
- D. Click Launch.
- E. When the workspace is opened, you may see the **Welcome** window.
- 3. You are now in the workspace that you want to import the project into. Click File in the menu bar.



Figure 4. File Menu Bar in the Workspace

4. Click Import on the File drop-down menu.

File	Edit Source Refactor Navigate	Search Project
0	New Open File Open Projects from File System Recent Files	Alt+Shift+N >
	Close Close All	Ctrl+W Ctrl+Shift+W
	Save Save As Save All Revert	Ctrl+S Ctrl+Shift+S
8	Move Rename Refresh Convert Line Delimiters To Print	F2 F5 > Ctrl+P
è	Import	
	Export	
3	Properties	Alt+Enter
	Switch Workspace Restart Exit	>

Figure 5. Selecting Import Option in the File Menu



5. In the **Import** dialog box shown in the figure below, select the **General** option, and then select **Existing Projects into Workspace** to import the project into the current workspace.

Select an import wizard: type filter text Select an import wizard: type filter text Select an import wizard: Comparison of the select of	Create new projects from an archive file or directory.	
type filter text	elect an import wizard:	
 Archive File CMSIS Pack Existing Projects into Workspace File System Preferences Projects from Folder or Archive Rename & Import Existing C/C++ Project into Workspace 		
	 Archive File CMSIS Pack Existing Projects into Workspace File System Preferences Projects from Folder or Archive Rename & Import Existing C/C++ Project into Workspace 	

Figure 6. Selecting Workspace to Import Existing Projects

- 6. Click Next.
- 7. Click Select archive file or Select root directory if project is already extracted and click Browse.

🛃 Import	- x
Import Projects	(m)
Select a directory to search for existing Eclipse projects.	
O Select root directory:	- Browie_
Select archive file:	~ Browse_
Projects:	
	Select All
	Deselect All
	Refresh
Options Search for nested projects Copy projects into workspace Close newly imported projects upon completion Hide projects that already exist in the workspace	
Working sets	
Add project to working sets	New_
Working sets:	Select.
(2) < Back Next >	Finish Cancel

Figure 7. Selecting Archive File or Root Directory

- 8. Browse to the folder where the zip/extracted file for the project you want to import is located.
- 9. Select the file for import. For the purpose of illustration gpt_ek_ra6m3_ep.zip is used in this document.
- 10. Click Open.



11. Select the project to import from the list of projects.

Projects:
✓ gpt_ek_ra6m3_ep

Figure 8. Selecting the Project to Import

- 12. Click Finish to import the project.
- 13. Now that the project has been successfully imported, you can start configuring the project to migrate for the hardware.
- 14. Open the RA Configuration, by double-clicking the configuration.xml file in the Project Explorer.





After clicking, a dialog box may appear to migrate the project to latest FSP version. Click **OK**.
 If not, click on **BSP** tab and choose the appropriate FSP version from drop down as shown.

Board Sup	oort Package Configuration	Generate Project Content
		Restore Defaults
Device Select	on	
FSP version	Board Details	
Board:	N. LEW	
Device:	R/FA6M3AH3CFC	
RTOS:	No RTOS	

Figure 10. Choosing the FSP Version from the BSP Tab



2.2 Generating the Project Files in e² studio

1. In the **RA Configuration** window, save the configuration and click the **Generate Project Content** button.

		Generate Project	content
Project Summa	гу		
		RENESAS	
Board:	EK-RA6M3		
Device:	R7FA6M3AH3CFC		
Toolchain:	GCC ARM Embedded		
Toolchain Version	c 1		
FSP Version:			
Selected software	components		
RA6M3-EK Boar	d Support Files		
	ckage for R7FA6M3AH3CFC		
	ickage for RA6M3		
	ckage for RA6M3 - FSP Data		
Arm CMSIS Vers	-		
	ackage Common Files		
Board Support P	•		
General PWM Ti			
General PWM Ti			
General PWM Ti			
General PWM Ti			

Figure 11. Clicking the Generate Project Content Button

2. The project should resemble the folder structure and the project is ready to build.



Figure 12. Folder Structure for the Ready to Build Project

2.3 Building and Running the Project

Refer to the section "Tutorial: Your First RA MCU Project – Blinky" in <u>FSP Documentation</u> for steps on building and running the project.



3. Migrating a Project in Keil µVision

3.1 Migrating an Existing Project in Keil µVision

- 1. Start by unzipping the example project, gpt_ek_ra6m3_ep.zip and open the project in file explorer.
- 2. Open the Keil project by double clicking the μ Vision project file as shown in Figure 13.

Name	1
.settings	
📕 script	8
📕 src	8
buildinfo.gpdsc	8
📔 configuration	8
🗋 apt ek ra6m3 ep.uvoptx	8
🕎 gpt_ek_ra6m3_ep	1
JLinkSettings	1
R7FA6M3AH3CFC.pincfg	1
ra_cfg	1
RA6M3-EK.pincfg	1

Figure 13. Opening the Keil Project

3. After opening the project, you should see the project structure as shown in Figure 14.

Image: Second	+ → + + ネ ⊽
Project	д 🔀
 Target: gpt_ek_ra6m3_ep Target 1 Source Group 1 Renesas RA Smart Configurate Flex Software 	Common Sources

Figure 14. Project Structure

4. Now click on 🔹 to open **Manage Run-time Environment** tab.



5. Click the green run button next to RA Configuration in the Flex Software tree as shown in Figure 15.

Software Component	Sel.	Variant	V	ersion	Description
🕀 💠 CMSIS					Cortex Microcontroller Software Interface Comp
🕀 💠 CMSIS Driver					Unified Device Drivers compliant to CMSIS-Driv
🕀 🚸 Compiler		ARM Compiler			Compiler Extensions for ARM Compiler 5 and A
🕀 💠 Device					Startup, System Setup
🕀 💠 File System		MDK-Plus	\sim		File Access on various storage devices
🖃 💠 Flex Software					Renesas Flex Software
Build Configuration					
- 🤗 Generated Data					
Linker Script					
RA Configuration					Renesas RA Configuration
🕀 💠 Components					
🕀 💠 Graphics		MDK-Plus	~		User Interface on graphical LCD displays
🕀 🚸 Network		MDK-Plus	\sim		IPv4 Networking using Ethernet or Serial protoc
	1	MDK Dive		_	LICE Communication with various device classes
Validation Output			Descrip	ption	

Figure 15. Clicking the Green Button for RA Configuration in the Flex Software Tree

6. If multiple versions of RASC are installed, select the appropriate version of RASC to run.

ultiple RA Smart Configurators	s installed.		
: Version	s installed:		
: Version			
. Version			

Figure 16. Selecting the Appropriate Version of RASC to Run

- 7. RASC will be launched with project generator wizard.
- 8. A dialog box may appear to migrate the project to latest FSP version. Click **OK**.

💽 e2 s	tudio	×	
<u> </u>	FSP version is not installed. Version will be selected.		
		ОК	

Figure 17. Notification Regarding FSP Version



3.2 Generating the Project Files in Keil µVision

- 1. The configuration window opens once the project wizard is closed.
- 2. In the RA Configuration window, click the Generate Project Content button.

Summary	Generate Project Conten
Project Summary	
Board: EK-RA6M3 Device: R7FA6M3AH3CFC FSP Version:	RENESAS
Selected software components	
Board support package for R7FA6M3AH3CFC Board support package for RA6M3 Board support package for RA6M3 - FSP Data Arm CMSIS Version 5 - Core (M) Board Support Package Common Files General PWM Timer I/O Port	

Figure 18. Clicking the Generate Project Content Button

3. After clicking **Generate Project Content** in the RA Smart Configurator, return to μVision. μVision offers a dialog box to import the changes and updates to the project made in RASC. Select **Yes** to import the updated project and the project is ready to build.

μVision		<
2	For the current project new generated code is available for import. Project: C:\Dev_work\Keil_projects\Jab_project\R7FA6M3AH3CFC\R7FA6 M3AH3CFC.uvprojx Generated: C:\Dev_work\Keil_projects\Jab_project\R7FA6M3AH3CFC\buildi nfo.gpdsc Import Changes?	
	<u>Y</u> es <u>N</u> o	1

Figure 19. Importing Changes and Updates in the µVision Window

4. RASC will place the necessary FSP source code and header files into the project workspace.

3.3 Building and Running the Project

Refer to the section "Using RA Smart Configurator with Keil MDK" in <u>FSP Documentation</u> for steps on building and running the project.



4. Migrating Project in IAR EWARM

4.1 Migrating an Existing Project in IAR EWARM

- 1. Start by unzipping the example project, $gpt_ek_ra6m3_ep.zip$, and open the project in file explorer.
- 2. Open the IAR project by double clicking the IAR project file as shown in Figure 20.

	Name
	.settings
	📜 script
	📜 src
	buildinfo.ipcf
	Nonfiguration
	gpt_ek_ra6m3_ep.ewd
_	gpt_ek_ra6m3_ep.ewp
	gpt_ek_ra6m3_ep
	R7FA6M3AH3CFC.pincfg
	ra_cfg
	RA6M3-EK.pincfg

Figure 20. Opening the IAR Project File

3. After opening the project, you should see the project structure as shown in Figure 21.

Vorkspace	
Debug	
Files	¢
∃ ● gpt_ek_ra6m3_ep - De ├──	~
└── Dibuildinfo.ipcf └─⊞ ■ Output	

Figure 21. Project Structure

4. RASC can now be launched from EWARM using the menu item **Tools > RA Smart Configurator**.

Options	\$	
 Filename Extensions Configure Viewers Configure Custom Argument Variables Configure Tools 	Ło	
IAR Project Converter		

Figure 22. Launching the RA Smart Configurator from EWARM



- 5. RASC will be launched with project generator wizard.
- 6. A dialog box will appear to migrate the project to latest FSP version.

📴 e2 studio	×
FSP version is not installed. Version will be selected.	
	ОК

Figure 23. Migrating the Project to the Latest FSP Version

7. Click **OK**.

4.2 Generating the Project Files in IAR EWAR

- 1. The configuration window opens once the project wizard is closed.
- 2. In the RA Configuration window, click the Generate Project Content button.

像 [RA Project] RA C Summary			Generate Project Content
Device: FSP Version: Selected softw RA6M3-EK B Board suppo Board suppo Board suppo Arm CMSIS	EK-RA6M3 R7FA6M3AH3CFC ware components Board Support Files rut package for R7FA6M3AH3CFC ort package for RA6M3 rt package for RA6M3 - FSP Data Version 5 - Core (M) ort Package Common Files	Renesa	S
You Tube Support			
	cks Pins Interrupts Event Links Stacks Components		

Figure 24. Clicking the Generate Project Content

- 8. After clicking Generate Project Content in the RA Smart Configurator, return to IAR EWARM.
- 9. Changes to the RA configuration will be reflected in the EWARM project.

4.3 Building and Running the project

Refer to <u>FSP Documentation</u> for steps on building and running the project.



Website and Support

Visit the following vanity URLs to learn about key elements of the RA family, download components and related documentation, and get support.

RA Product Information RA Product Support Forum RA Flexible Software Package Renesas Support www.renesas.com/ra/forum www.renesas.com/FSP www.renesas.com/support



Revision History

		Description		
Rev.	Date	Page Summary		
1.00	Sep.15.20	First release document		



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