

Renesas Synergy[™] Platform

Renesas Synergy[™] Project Import Guide

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Introduction

This application note describes how to import a Renesas Synergy Project into the IAR Embedded Workbench[®] for Renesas SynergyTM (IAR EW for Synergy) or e² studio integrated solutions development environment (ISDE), and then build and run the project application. The procedure in this application note applies to all Renesas Synergy devices and development boards, and all software listed in the "Required Resources" section.

Note: The NetXTM DNS project is used an example in this application note. Substitute your desired project, as needed.

Goals and Objectives

The goal of this application note is to help you import an existing Renesas Synergy Project, such as an example application, into IAR EW for Synergy or e^2 studio.

Prerequisites

As the reader of this application note, you are assumed to have some experience with the IAR EW for Synergy or Renesas e² studio ISDE and the SSP. For example, before you perform the procedure in this application note, you should follow the procedure in your board's Quick Start Guide to build and run the Blinky project. By doing so, you will become familiar with IAR EW for Synergy or e² studio and the SSP, and ensure that the debug connection to your board is functioning properly.

Required Resources

To perform the procedure to import a project, you will need a PC running Microsoft[®] Windows[®] 7 or 10 with the following Renesas software installed:

- A Renesas Synergy development board (for example, DK-S7G2)
- A PC running Microsoft[®] Windows[®] 7 or 10 with the following Renesas software installed:
 - IAR EW for Synergy v8.21.1 or greater or e² studio ISDE v6.2.0 or greater
 - Synergy Software Package (SSP) v1.4.0 or greater
 - Renesas Synergy[™] Standalone Configurator (SSC) v6.2.0 or greater (only for IAR EW for Synergy).

You can download the required Renesas software from the Renesas Synergy Gallery (<u>https://synergygallery.renesas.com</u>).



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1. Importing and Building Projects with IAR EW for Synergy

1.1 Importing an Existing Project into IAR EW for Synergy

- 1. Start by opening IAR EW for Synergy.
- 2. Unzip the example project, **NETX_DNS_DK-S7G2.zip**, to a known destination folder, for example: ... \Desktop\NETX_DNS_DK-S7G2.
- Open the IAR EW workspace file (.eww) by clicking File >Open Workspace. Navigate to the folder where the NETX_DNS_DK-S7G2.zip or a similar zip project has been extracted.
- 4. Select the NETX_DUO_DNS.eww workspace file (.eww) and click Open.

IAR Embedded Workbench IDE File Edit View Project Renesas Synergy Tools Window Help New File - く Q、> 🤹 HE く 📮 > 🕢 🖻 📗 📵 🖷 🚺 🕑 👰 📮 Ctrl+N Mew Workspace Open Workspace × 🎦 Open File.. Ctrl+O ← → → ↑ 📙 « NetX_Duo_DNS_V1... → NETX_Duo_DNS ✓ ^で Search NETX_Duo_DNS م 🛅 Open Workspace.. Dpen Header/Source File Ctrl+Shift+H New folder == -Organize 🔻 ? Close Ctrl+F4 Name Date modified Туре 🖈 Quick access Save Workspace .module_descriptions 19-01-2018 11:48 File folder 📃 Desktop Save Workspace As... .settings 19-01-2018 11:48 File folder 🖶 Downloads Close Workspace script 19-01-2018 11:48 File folder 🗄 Documents 1 19-01-2018 11:48 File folder settings Save Ctrl+S Pictures * 19-01-2018 11:48 File folder src Save As. NETX_Duo_DNS 28-03-2017 16:48 IAR IDE Workspace 1.4.0_migration Save All Framework base 🔒 Page Setup... LPM and Mode Print... CtrI+P Synergy Project Recent Files 🝊 OneDrive Recent Workspaces 💻 This PC 🙁 Exit File name: NETX_Duo_DNS Workspace Files (*.eww) \sim Open Cancel

Figure 1.1 Open Workspace in IAR EW for Synergy

5. After opening the project, you should see the project structure (Figure 1.2) in the IAR EW for Synergy ISDE.

NETX_Duo_DNS - IAR Embedded Workbei	nch II	DE - AR
File Edit View Project Renesas Syner	gy .	J-Link
C 🗅 🛍 📮 🖴 🗶 🛍 🗂 つ	C	
Workspace	•	ŢХ
Debug		~
Files	φ.	•
■ ● NETX_Duo_DNS - Debug	~	•

Figure 1.2 Project loaded in IAR EW for Synergy



1.2 Generating the Project Files in the IAR EW for Synergy

Now that the project has been successfully loaded, yheadleou can start configuring the project for your hardware.

Before starting the file generation, it is necessary to set the path to the Renesas SynergyTM Standalone Configurator (SSC) and Synergy Software Package (SSP). This action is requested by default if the next steps are not followed.

To generate the project files:

1. Click **Renesas Synergy** >**Settings** to open the **Renesas Synergy Settings**. If the License file and the SSC/SSP folder are already configured, the License area and SSC/SSP location of the form displays (Figure 1.3). If these settings are shown, skip to step 3.



Figure 1.3 SSC/SSP settings

- 2. If the License area and SSC/SSP location of the form are empty or not pointing to C:\Renesas\Synergy\SSC, perform steps A to F. The settings in these steps only need to be done once.
 - A. Click the browse <...> button for the SSC/SSP location. The IAR EW for Synergy IDE displays the Open Dialog box.
- Note: If you installed the SSC/SSP to the default location, then SSC/SSP folder is located in the C:\Renesas\Synergy\SSC directory.



Figure 1.4 SSC folder



- B. Click **Choose** to set the SSC/SSP location.
- C. Click the Browse <...> button for the license file.The IAR EW for Synergy IDE displays the Open Dialog box.

Note: The SSP license is located in C:\Renesas\Synergy\SSC\intenal\projectgen\arm\Licenses directory.

D. In the directory, select **SSP_License_Example_EvalLicence_*.xml** or **SSP_Development_and_Production_License_*.xml**.

🔀 Open				×
G S K Kenesas	Synergy ▶ SSC ▶ internal ▶ projectgen ▶ arm ▶ Licenses	• •	Search Licenses	Q
Organize 🔻 New folder			•	0
★ Favorites ■ Desktop	Name SSP_License_Example_EvalLicense_20160205.xml		Date modified 5/2/2016 7:04 PM	Type XML Docu
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🐣 Pictures				
J. Videos				
🐝 Homegroup				
Computer				
Windows (C:)				
WHP_RECOVERY (D				
WHP_TOOLS (E:)	< III			*
SB DISK (F:)				, , , , , , , , , , , , , , , , , , ,
File name	e:	- >	(ml Files (*.xml)	•
			Open	Cancel

Figure 1.5 XML SSP License file

E. Click **Open** to set the License file and confirm the configuration window by clicking **OK**. Shortcuts are also available for the Renesas Synergy Settings and the Synergy Configurator in the IDE.



Figure 1.6 Shortcuts for SCC/SSP settings

3. Open the SynergyTM Standalone Configurator, by clicking **Renesas Synergy** > **Configurator**. See Figure 1.7.

NETX_Duo_DNS - IAR Embedded Workbench IDE - ARM 8.21.1



Figure 1.7 Synergy[™] Standalone Configurator



Note: At this point, the **synergy** and **synergy_cfg** folders have not been created. These two folders contain the SSP generated files. The following step generates those files.

4. In the Synergy Standalone Configuration window (Figure 1.8), click the **Generate Project Content** button.

Synergy Standalone Configurator										_			2	×
Help														
🕸 [Synergy Project] Synergy Configuration 🔀			5	Pack	age		Ξ) 🕀	-		- A	h -	- 1	
Summary	O Generate Project Con	tent		1	2 P302	3 P303	4 VSS	5 VSS		7 P911	8 VCC	9 VLO	10 VCL1	^
Project Summary		^		P109	P108	¥301				P912	P200 P201	VL0	VSS	
Board: S7G2 DK	Accelerate. Infovate. Differentiate.		D	VCC	VSS	P113	¥305	¥306	¥307	¥308	P910	¥903	VCC	
Device: SSP Version: 1.4.0-sqa4	S7G2		E	¥610	¥611				P915	P908	P909	P900	¥9313	
Selected software components:			F	P614					P906	P907	RES	P314	P710	
	v1.4.0-			PB13 VCL1	PA15 VSS					PA08 PA13	P615 P913	P206	P713	
S7G2_DK Board Support Files	sqa4 v1.4.0-		3	PA07	PA06	PAOS	PA04	PA03	PA01	PAGO	P703	¥406	¥704	1
SSP Common Code	sqa4 v1.4.0-		к	P605	P604			P607	P606	P806	P809	P515	¥404	
Express Logic NetX Synergy Port: Provides=[NetX Driver] , Requires=[Net	tX] \$1.4.0- sqa4		L	P602	P601	P600	P106	P611	P812	vcc	VSS	P007	P003	L
Express Logic USBX Synergy Port: Provides=[USBX Driver] , Requires= [USBX ,Transfer]	v1.4.0- sqa4		M	VSS P102	VCC			_	P506	P508	P015	P014	P010	Ľ
Express Logic NetX Duo DHCP: Provides=[NetX Duo DHCP] , Requires=[NetX Duo] v1.4.0- sqa4	~		P102	P103	P104		-	P507 P509	P510 VCC		AVSS0 VREFL 0	P011 P006	
Ventrala Gregy 2			R	¥100	¥801	P802	¥500	¥504	VCL2	VSS	_	VREFH 0	P009	-
YouTube Gynergy Support				1	2	3	4 R7				°) - 22		10 A (Top	,
Summary BSP Clocks Pins Threads Messaging Components			<	·									>	×
Properties Problems	🗆 🔀 Pin Conflicts											\bigtriangledown	- 1	
Properties are not available.	0 items Description	^						Mo	dule		P	in		

Figure 1.8 Generate Project Content button

5. Close the Synergy Standalone Configuration.



Figure 1.9 Close the SCC window

6. The project should resemble the folder structure in Figure 1.10.





Figure 1.10 Synergy Configuration tabs

1.3 Building the Application

1. Build the project by clicking the Make icon in the menu bar. You can also use the F7 shortcut key.

Window Help	
🔜 < Q > ⇆ म्म < 😳 > 🕢 🔊 📗 🚺	-= O • 📜 🛛 🐨 📜
μ ×	Make (F7)
✓	Make the active project (build files as needed)
• ·	

Figure 1.11 Build button

2. A successful build produces an output similar to Figure 1.12.

×	Messages
	startup_S7G2.c system_S124.c system_S3A7.c system_S7G2.c Linking
p	Total number of errors: 0 Total number of warnings: 0
Build	Build Debug Log

Figure 1.12 Error Free build

Note: For third party code used in the application project, there can be warnings at compile time. As long as these warnings don't affect the functionality of the project, they can be ignored.



1.4 Building from the command line

To build the project from the command line, use the IAR Command Line Build Utility (iarbuild.exe) located in the common\bin directory. Typically, this can be useful for automating your testing for continuous integration.

As input you use the project file, and the invocation syntax is:

```
iarbuild project.ewp [ -clean | -build | -make | -cstat_analyze |
-cstat_clean] config[,config1,config2,...] |*[-log
errors|warnings|info|all][-parallel number][-varfile filename]
```

These are the possible parameters:

Parameter	Description
-build	Rebuilds and relinks all files in the specified build configuration(s).
-make	Brings the specified build configuration(s) up to date by compiling, assembling, and linking only the files that have changed since the last build.
-cstat_analyze	Analyzes the project using C-STAT and generates information about the number of messages. For more information, see the <u>C-STAT® Static Analysis Guide</u> .
-cstat_clean	Cleans the C-STAT message database for the project. For more information, see the <u>C-STAT® Static Analysis Guide</u> .
config *	Specifies config, the name of a configuration you want to build, which can be either one of the predefined configurations Debug or Release, or a name that you define yourself. For more information about build configurations, see the <u>IDE</u> <u>Project Management and Building Guide</u> , Projects and build configurations, page 94. * (wildcard character), the -clean, -build, and -make commands will a process all configurations defined in the project.
-log errors	Displays build error messages.
-log warnings	Displays build warning and error messages.
-log info	Displays build warning and error messages, and messages issued by the #pragma message preprocessor directive.
-log all	Displays all messages generated from the build, for example, the compiler sign- on information and the full command line.
-parallel number	Specifies the number of parallel processes to run the compiler in to make better use of the cores in the CPU.
-varfile filename	Makes custom-defined argument variables become defined in a workspace scope available to the build engine by specifying the file to use. See the <u>IDE</u> <u>Project Management and Building Guide</u> , Configure Custom Argument Variables dialog box, page 87.

If you run the application from a command shell without specifying a project file, you will get a sign-on message describing available parameters and their syntax.

1.4.1 GUIX Studio Command Line

GUIX Studio provides some command line options, based on the command line arguments will not start the GUI interface, but instead just load the .gxp project and generate the requested output files.

Command Line Usage

Usage: guix_studio [OPTION] [ARGUMENT]

- 1. Open .gxp project.
- 2. Load specified project and generate specified output files.

Examples:

Command line: demo.gxp Open demo.gxp project.

Command line: guix_studio.exe -p demo.gxp Open demo.gxp project.



Command line: guix_studio.exe -n -p demo.gxp Generate all output files for demo.gxp project.

Command line: guix_studio.exe -n -r -p demo.gxp Generate resource files for demo.gxp project

Table 1.1 Command Line Options

Option	Description
-n nogui	The "No GUI" option. Tells the Win32 version of the guix_studio.exe to just run the command line, and not to start the Studio UI interface.
-o pathname log	Log option. Specify a log file.
-b binary	Binary resource option. Produces a binary resource file rather than a C file.
-d display1, display2	GUIX Studio 67.
display	Display names option. If this option is used then only the specified display names are included in any generated resource or specification files. If this option is not used then all displays are included.
-t theme1, theme2 theme	Theme name(s) option. If this option is used, then only the specified display names are included in any generated resource or specification files. If this option is not used then all displays are included.
-l langagel, language2 language	Language name(s) option. If this option is used, then the specified language names are included in the generated resource or specification files. Otherwise all language names are included.
-r [filename] resource	The resource option. Specifies that Studio should produce a resource file for previously designated display(s), theme(s), and language(s).
-s [filename] specification	The specification option, specify that studio should produce a specification file for designated display(s), theme(s), and language(s).
-p project_pathname project	Project pathname option, specify the .gxp project to be loaded.

1.5 Running the Application

The application is now ready run on the target hardware. The project settings are all generated and the default debug probe is the J-Link ARM. You can also make use of the IAR I-jet or I-jet Trace when debugging, if you change the debug driver.

1. Verify the debug probe (Figure 1.13) by clicking **Project** > **Options** > **Debugger** > **Setup** > **Driver**.



Renesas Synergy[™] Platform

🔀 NETX_DUO_DNS -	IAR Embedded Workbench IDE				
File Edit Viev Pr	oject Renesas Synergy Tools Window	/ Help			
D 🛥 🖬 🕼 🍓	Add Files		\$ \$ 3 B \$ \$ \$	🚯 🍉 🎯 🍪 🛤 💱 🐼	
Workspace	Add Group		Synergy		
Debug	Import File List		٩.	Options for node "NETX_	_DUO_DNS"
Files	Add Project Connection		e le cle		
□ □ NETX_DUO ⊢□	Edit Configurations				Factory Settings
Source F	Remove			Category: General Options	Factory Settings
🗕 🗖 🗀 syr	Create New Project		mation	Static Analysis	
de € de	Add Existing Project		iformatio you need	Runtime Checking C/C++ Compiler	Setup Download Images Extra Options Multicore Plugins
-⊞ C de	Options	Alt+F7	aur morman n, a	Assembler	Driver Run to
ilie -⊡ Cînev	Version Control System	+		Output Converter Custom Build	J-Link/J-Trace main
	Make	F7		Build Actions	Simulator CMSIS DAP
	Compile	Ctrl+F7	USER GUIDES	Linker	l-jet/JTAGjet
	Rebuild All		mplete product	Debugger	J-Link/J-Trace
	Clean		pumentation in PDF mat gives you all the	Simulator CMSIS DAP	
	Batch build	F8	r and reference prmation you need.	I-jet/JTAGjet	
	C-STAT Static Analysis	+		J-Link/J-Trace	Device description file
	Stop Build Ctr	rl+Break			Override default
L L Cutput	Download and Debug	Ctrl+D	SUPPORT		\$TOOLKIT_DIR\$\CONFIG\debugger\Renesas\R7FS7G27H.ddf
	Debug without Downloading		questions about how use your IAR product,		
	Make & Restart Debugger	Ctrl+R	orting a problem, or		
		+Shift+R	ting support purces.		
	Download	•			
	SFR Setup				OK Cancel
	Open Device Description File	•			
	Save List of Registers				

Figure 1.13 Debugger Setup 1

- 2. Click **OK** to confirm the **J-Link** or **IAR I-jet** driver.
- 3. Press the **CTRL+D** or **Download and Debug** button (Figure 1.14) to start debugging.

- IAR E	Embedded Workber	nch IDE									ومعيومة ومعيره
Project	Renesas Synergy	Tools	Window	Help							
X Pa					🐂 🔁 🔯		•	🤣 🎯 🕒	😲 🕅 💆	₽	
	x	IAR Info	rmation Center	for Renesas	Synergy					ownload	and Debug
	•~ R12.		2	, a		م	2	Å	2		
			E :		A Dahi		4 O				

Figure 1.14 Debugger Setup 2

4. Press **F5** or the **Go** button (Figure 1.15) to start the application.

Help		
🔉 🔪 💽 📘 🜒	I 📼 🕒 C 😆 📜 Ռ 🧐	r + + 1 🕞 🕐 🖆 + 📜 eth suo 🛛 🐼 👰
		► Go (F5)
		Run the program in the debugger

Figure 1.15 Run button

Note: The application is now running on the hardware. You can pause, stop, and resume the application using the debug controls (Figure 1.16).







5. Press **Ctrl + Shift +D** or the **Stop** button to end the debug session.

2. Importing and Building Projects with e² studio ISDE

2.1 Importing an Existing Project in e² studio ISDE

- 1. Start by opening e^2 studio.
- 2. Open the Workspace that you want to import the file into and skip to step D. Otherwise, proceed with the following steps:
 - A. At the end of e² studio startup, you see the Workspace Launcher Dialog box shown in Figure 2.1.

e ² Workspace Launcher	
Select a workspace	
e2 studio stores your projects in a folder called a workspace. Choose a workspace folder to use for this session.	
Workspace: C:\Users\ <user name="">\e2_studio\workspace</user>	▼ <u>B</u> rowse
Use this as the default and do not ask again	
<u>U</u> se this as the default and do not ask again	
	OK Cancel

Figure 2.1 Workspace Launcher dialog

- B. If you did not see this dialog box, you might have turned off 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 Workspace Launcher dialog (Figure 2.2). e² studio creates a new workspace with the name entered.

e ² Workspace Launcher	
Select a workspace	
e2 studio stores your projects in a folder called a workspace. Choose a workspace folder to use for this session.	
Workspace: C:\Users\ <user name="">\e2_studio\new_workspace</user>	▼ <u>B</u> rowse
<u>□ U</u> se this as the default and do not ask again	
	OK Cancel

Figure 2.2 Workspace Launcher dialog



- D. Click OK.
- E. When the workspace is opened, you may see the Welcome Window. If that happens, click the Workbench arrow to proceed past the Welcome Screen (Figure 2.3).



Figure 2.3 Workbench arrow

3. You are now in the workspace that you want to import the project into. Click File in the menu bar (Figure 2.4).



Figure 2.4 Menu and tool bar

4. Click **Import** on the **File** drop-down menu (Figure 2.5).

e² S	ynergy Confi <mark>gura</mark> t	ion - e2 st	tudio		5 - 1	(* - s
File	Edit Navigate	Search	Project	Renesas Views	Run	Window
	New			Alt	+Shift+	N 🕨 🗼
	Open File					-
	Close				Ctrl+\	w
	Close All			Ctrl+	+Shift+\	w
	Save				Ctrl+	-S
	Save As					
Q	Save All			Ctrl	l+Shift+	-s
	Revert					
	Move					
	Rename				F	2
8	Refresh				F	-5
	Convert Line Deli	miters To				-
8	Print				Ctrl+	p
	Switch Workspac	e				+
	Restart					
è	Import					
2	Export					
	Properties			,	Alt+Ent	er

Figure 2.5 File drop-down menu



5. In the Import dialog box shown in Figure 2.6, select the **General** option, and then select **Existing Projects into Workspace** to import the project into the current workspace.

e² Import
Select Create new projects from an archive file or directory.
Select an import source:
type filter text
 ▲ General ♣ Archive File ➡ CMSIS Pack ➡ Convert CCRX to GNURX Project ➡ Existing Projects into Workspace ♣ File System ♣ HEW Project ➡ Preferences ➡ Rename & Import Existing C/C++ Project into Workspace ➡ Renesas Common Project File
Image: Second

Figure 2.6 Project Import dialog with "Existing Projects into Workspace" option selected

- 6. Click Next.
- 7. Click Select archive file (Figure 2.7).

e ² Import		
Import Projects Select a directory to search for ex	isting Eclipse projects.	
Select roo <u>t</u> directory:		Browse Browse
Projects:		Select All Deselect All Rgfresh
Options ✓ Searc <u>h</u> for nested projects ✓ Copy projects into workspace ■ Hide projects that already exit		
Working sets Add projec <u>t</u> to working sets Working sets:		▼ S <u>e</u> lect
?	< <u>B</u> ack <u>N</u> ext >	<u>Finish</u> Cancel

Figure 2.7 Import Existing Project dialog 1



- 8. Click Browse.
- 9. Browse to the folder where the zip file for the project you want to import is located.
- 10. Select the file for import. In our example, it is **NETX_DNS_DK-S7G2.zip**.
- 11. Click Open.
- 12. Select the Project to import from the list of Projects (Figure 2.8).

P	rojects:		
	VETX_DNS	(DK-S7G2)	

Figure 2.8 Import Existing Project dialog 2

13. Click Finish to import the project.

2.2 Installing the Synergy License

Building and running example applications requires a Synergy license to be installed in e^2 studio. If this license is not installed, a yellow box is displayed in the lower right hand corner of the ISDE after you have imported your example application.

4 6 🕏	📓 🚮 😑 🗟 📑 🖻 🕶 📑 🕶
	Synergy License Required × No Synergy license has been selected.
	Click here to set up the license

Figure 2.9 Synergy License Required prompt

2. To install the license, select the **Click here to set up the license** link. This takes you to the Synergy License setup window.

e ² Preferences		_ 🗆 🗙
type filter text	Synergy License	$\leftrightarrow \bullet \bullet \bullet \bullet \bullet \bullet$
File Types		
··· Language Mappings	License file:	\frown
New C/C++ Project W		
Property Pages Setting	License Details:	ーて一ノ
Renesas Breakpoints		
Device add-ins St	pecify Synergy License	<u> </u>
Emulator		
- Language Setting	nse file:	
Launch Settings		
··· Logging		
	wse Variables	
··· Renesas Toolcha		
··· Smart Browser	OK Cancel	
🗈 Smart Manual		_
Synergy License		
Task Tags		
Template Default Value	Visit the Apps Gallery for license file and Pack file downloads	
+ Help		
Install/Update	Replace encrypted files with decrypted files	
Library Hover		
🕀 Run/Debug		
▼ ▼	Restore Def	aults <u>A</u> pply
?	OK	Cancel

Figure 2.10 Synergy License file

Pressing the two **Browse** buttons takes you to the folder where your default Synergy License is stored. Select this file to install the license. Once this is done, the yellow window disappears and building can begin.



2.3 Generating the Project Files in the ISDE

Now that the project has been successfully imported, you can start configuring the project for the hardware.

1. If the Project Explorer looks like Figure 2.11, click the arrow to the left to expand the project.



Figure 2.11 Collapsed Project Explorer

2. Open the Synergy Configuration, if not already open, by double-clicking the **configuration.xml** file in the Project Explorer (Figure 2.12).



Figure 2.12 Project Explorer

- Note: At this point, the **synergy** and **synergy_cfg** folders have not been created. These two folders contain files generated by e^2 studio and the SSP. The next step generates these files.
- 3. In the Synergy Configuration window (Figure 2.13), click the Generate Project Content button.



% [INCLY_DIND_D	K_S7G2] Synergy Configuration 🔀	
Summary		Generate Project Content
0		S7 ^
<u>S7 (</u>	Series	~
Project Su	immary	^
	S7G2 SK	
Board:		
Board: Device:	R7FS7G27H3A01CFC	
	R7FS7G27H3A01CFC GCC ARM Embedded	

Figure 2.13 Generate Project Content button

4. The project should resemble the folder structure seen in Figure 2.14.



Figure 2.14 Synergy Configuration tabs



2.4 Building the Application

Build the project by clicking the hammer icon (Figure 2.15) on the tool bar.



Figure 2.15 Build button

A successful build produces an output similar to Figure 2.16.



Figure 2.16 Error free build

2.5 Building from the command line

Headless build essentially means building projects from the command line without the use of the e^2 studio UI. This is useful if you want to automate your builds using continuous integration tools like Hudson or Jenkins.

2.5.1 How to build projects

To build your projects using a headless build you will need to the command line version of eclipse called eclipsec.exe.

First, you will need to import and build your projects into a workspace to allow headless build to build them. Use the following command to do this:

```
eclipsec.exe -nosplash -debug -consolelog -application
org.eclipse.cdt.managedbuilder.core.headlessbuild -data c:\work\project\test -
import [project location] -build all
```

This command will not only import your project into a workspace called test, but also build for all configurations. If you want to import all projects from a workspace then swap the switch "-import" and use "-importAll" and just define the path to where all the projects exist.

All the build output, for example, the compilation output and make output, will be sent to the console because of the "-consolelog" switch. Please see Table 2.1 for a list of the available switches for headless build.



Table 2.1 Headless build options explained

Option	Description
-nosplash	Will supress the e2 studio/eclipse splash screen
-consolelog	Any log output is sent to System.out which is normally the command shell itself
-debug	Will print any information, warning or error messages to the console
-application	Defines the identifier of the application to run, in this case it will be the cdt managedbuilder.
-import {[uri:/]/path/to/project}	Import the project defined in the path
-importall {[uri:/]/path/to/projectTreeURI}	Import all projects under URI
-build {project_name_reg_ex{/config_reg_ex} all}	Build the project defined based on the selected configuration
<pre>-cleanBuild {project_name_reg_ex{/config_reg_ex} all}</pre>	Clean and build the defined project based on the configuration
-I {include_path}	Additional include_path to add to tools
-include {include_file}	Additional include_file to pass to tools
-D {prepoc_define}	Addition pre-processor defines to pass to the tools
-E {var=value}	Replace/add value to environment variable when running all tools
-Ea {var=value}	append value to environment variable when running all tools
-Er {var}	Remove/unset the given environment variable
-Ep {var=value}	Prepend value to environment variable when running all tools
-T {toolid} {optionid=value}*	Replace a tool option value in each configuration built
-Ta {toolid} {optionid=value}*	Append to a tool option value in each configuration built
-Tp {toolid} {optionid=value}*	Prepend to a tool option value in each configuration built
-Tr {toolid} {optionid=value}*	Remove a tool option value in each configuration built

Note: * Tool option values are parsed as a string, comma separated list of strings or a Boolean based on the option's type.

How to add Headless build into Hudson/Jenkins

To add headless building to your Hudson or Jenkins build system you need to add a build step called "Execute Windows batch command". Ensure you have "-consolelog" enabled so that all the output will appear in the Hudson or Jenkins build output where you can customise by parsing and colour code the output using one of the many plugins available in Hudson/Jenkins.

Figure 2.17 shows a new build step has been added to a Hudson 3.1.0 job. Using environment variables within the job the build step can be customised further.



Configure release build Set environment variables Variable Name/Value PROJTOBUILD=\${WORKSPACE}/project Please write name/value pairs like name=value. separating each pair with a newline, in this text area. Please write name/value pairs like name=value. separated by newlines. AAA=BBS PRJHCME=={{WORKSPACE}/project Build Command eclipsec.esse -nosplash -debug -consolelog -application org.eclipse.odt.managedbuilder.core.headlessbuild -data c:\work\project\test -import { See the list of available environment variables Add build rate	Build Envir	ronment	
Variable Name/Value pRQITOBUILD=\${WORKSPACE}/project Please write name/value pairs like name=value, separating each pair with a newline, in this text area. Please write name/value pairs like name=value, separating each pair with a newline, in this text area. Enter environment variable key/value pairs in this textarea, separated by newlines. AAA=BSB PRJHONE=\${WORKSPACE}/project Build Command eclipsec.exe =nosplash =debug =consolelog =application org.eclipse.cdt.managedbuilder.core.headlessbuild =data c:\work\project\test = import	Configu	re release build	
Please write name/value pairs like name=value, separating each pair with a newline, in this text area. Please write name/value pairs like name=value, separated by newlines. AAA=BBB PRJHOME=\$ (WORKSPACE) / project	Set env	ironment variables	
Enter environment variable key/value pairs in this textarea, separated by newlines. AAA=BBB PRJHOWE=s{WORKSPACE}/project Build Command eclipsec.exe = nosplash = debug = consolelog = application org.eclipse.cdt.managedbuilder.core.headlessbuild = data c:\work\project\test = import s(PROJTOBUILD) = build all See the list of available environment variables Delete	Variable Na	ame/Value pROJTOBUILD=\${WORKSPACE}/project	
Ala=BBB PRJHOME=\${WORKSPACE}/project Build Command		Please write name/value pairs like name=value, separating each pair with a newline, in this text area.	
Command cclipsec.exe -nosplash -debug -consolelog -application org.eclipse.cdt.managedbuilder.core.headlessbuild -data c:\work\project\test -import		AAA=BBB	
\${PROJTOBUILD} -build all	Execute	e Windows batch command	(?)
Delete	Command		
Delete		—	244
	MINE SEC		ete

Figure 2.17 Defining a headless build job as a build step in Hudson

GUIX Studio Command Line

For information on the GUIXStudio command line, see section 1.4 Building from the command line)

2.6 Running the Application

The application is now ready to run on the target hardware.

1. Click the drop-down menu for the debug icon (Figure 2.18).



Figure 2.18 Debug options

- 2. Select the **Debug Configurations...** option.
- 3. Under the Renesas GDB Hardware Debug section, select the name of the project, which in this case is **NETX_DNS_SK_S7G2 Debug**.
- 4. Make sure that the ".elf" file name matches the one generated by the project inside of the debug folder.



Synergy Configuration - NETX_DNS_SK_S7G2/cont	figuration.xml - e2 studio	
File Edit Navigate Search Project Renesas V	iews Run Window Help	
📑 🕶 🖶 🍋 📎 🕶 🗞 🕶 🛣 🗟 💖 🤅) 💽 🥖 😂 🔅 🕶 🔿 🕶 🖓 🕶	20 - 20 - 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1
Project Explorer Project Exp	e ² Debug Configurations Create, manage, and run configurations	
 > Solutions 	Image: Second secon	Name: NETX_DNS_SK_S7G2 Debug Main Debugger Startup Source Common Project:
 Synergy, DNS_SK_S7G2.elf - [arm/le] NETX_DNS_SK_S7G2.log NETX_DNS_SK_S7G2.log NETX_DNS_SK_S7G2.map config script script Synergy_cfg Config for DK-S7G2.bat Config for SK-S7G2.bat Config for SK-S7G2.bat Config for SK-S7G2.bat Config for SK-S7G2.bat STG2-SK_S7G2_LAR.launch STG2-SK_BSP.pincfg synergy_projectConnection.ipcf 	 C/C++ Remote Application Debug-only GDB Hardware Debugging GDB Simulator Debugging Java Applet Java Application Launch Group Remote Java Application C Renesas GDB Hardware Debugging Renesas Simulator Debugging (RX) 	NETX_DNS_SK_S7G2 NETX_DNS_SK_S7G2.elf Debug/NETX_DNS_SK_S7G2.elf Build (if required) before launching Build configuration: Use Active Enable auto build Disable auto build Disable auto build Apply Revert Apply Revert
	?	Debug Close

Figure 2.19 Debug Configurations window

- 5. Click the **Debugger** tab on the right side of the dialog box.
- 6. Ensure the **Debug hardware** setting is set to **J-Link ARM**. If not, change it using the drop-down menu.
- 7. Ensure the **Target Device** setting matches the target hardware. If it does not match, click the "…" button to select the correct target device from the Synergy device list.

	J-Link ARM 🔻	Target Device: R7FS7G2		
DB Settings	Connection Settings	Debug Tool Settings		
GDB Connecti	on Settings			
Autostart I	ocal GDB server	Host name or IP address:	localhost	
Connect to remote GDB server		GDB port number:	61234	
		ADM port number:	61236	
GDB Command	i:			
\${eclipse_hom	ne}/DebugComp/ar	m-none-eabi-gdb	B	rowse Variables
Enable verbo	se mode			
			(An	ply Revert

Figure 2.20 Debug Configurations Debugger setup



8. Press the **Debug** button to start debugging.



Figure 2.21 Debug button

9. Select **Yes** to open the Debug Perspective.



Figure 2.22 Perspective Switch dialog

10. Press **F8** or the **Resume** button to start the application.



Figure 2.23 Resume button

- 11. Press F8 or the Resume button to continue.
- Note: The application is now running on the hardware. You can pause, stop, and resume the application using the debug controls (Figure 2.24).
- 12. Press Ctrl + F2 or the Stop button to end the debug session.
- 13. Press the Synergy Configuration button to return to the Synergy Perspective.



Figure 2.24 Perspective options

3. Configuring e² studio to build with the IAR compiler

The e^2 studio ISDE builds with the GNU compiler by default. However, it is possible to configure e^2 studio to use the IAR compiler instead. Only the compiler that comes bundled with Embedded Workbench for Synergy can be used.

These are the versions of the two IDEs that work together:

e ² studio	IAR EW for Synergy
v6.2.0	v7.71.3 / v8.21.1
v6.2.1	V8.23.1

This is how to configure e^2 studio to build with the IAR compiler:

1. Download and install IAR EWSYN



- 2. Open e2 studio go to help and select IAR Embedded workbench plugin manager
- 3. Install the IAR plugins for Synergy

upported targets			Augilable IAP Feel	oedded Workbench installa	tion
Target	Installed plugin	^	Version	Status	IAR Embedded Workbench Installation path
78K (>= 4.71)	not installed		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_5
ARM (6.50.x)	8.0.0.201804152231	100	8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.0 EWSYN_5
ARM (8.x)	8.0.0.201804152231		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_6
ARM (7.20.x to 7.80.x)	8.0.0.201804152231		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN
R32C (>= 1.30)	not installed		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_4
RH850 (>= 1.10)	not installed		8.23.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.23.1
RL78 (>= 2.10)	not installed				
RL78 (1.x)	not installed				
RX (>= 2.20)	not installed				
STM8 (>= 2.10)	not installed				
Synergy (7.x)	not installed				
Synergy (8.x)	1.0.0.201804152231				
V850 (>= 3.71 < 4.x)	not installed	~	<		

4. Set the new path to IAR EWSYN in Window → Preferences → IAR Embedded Workbench Setup and click 'Apply':

upported targets			Available IAR Em	bedded Workbench installa	tions
larget	Installed plugin	^	Version	Status	IAR Embedded Workbench Installation path
78K (>= 4.71)	not installed		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_5
ARM (6.50.x)	8.0.0.201804152231		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.0 EWSYN_5
ARM (8.x)	8.0.0.201804152231		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_6
ARM (7.20.x to 7.80.x)	8.0.0.201804152231		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN
R32C (>= 1.30)	not installed		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_4
RH850 (>= 1.10)	not installed		8.23.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.23.1
RL78 (>= 2.10)	not installed				
RL78 (1.x)	not installed				
RX (>= 2.20)	not installed				
TM8 (>= 2.10)	not installed				
Synergy (7.x)	not installed				
Synergy (8.x)	1.0.0.201804152231				
/850 (>= 3.71 < 4.x)	not installed	~	<		

e² studio will need to restart:



upported targets			Available IAR Emb	oedded Workbench installa	itions
larget	Installed plugin	^	Version	Status	IAR Embedded Workbench Installation path
78K (>= 4.71)	not installed		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_5
ARM (6.50.x)	8.0.0.201804152231		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.0 EWSYN_5
ARM (8.x)	8.0.0.201804152231		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_6
RM (7.20.x to 7.80.x)	8.0.0.201804152231		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN
32C (>= 1.30)	not installed		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_4
H850 (>= 1.10)	not installed		8.23.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.23.1
RL78 (>= 2.10)	not installed				
RL78 (1.x)	not installed				
XX (>= 2.20)	not installed				
STM8 (>= 2.10)	not installed				
Synergy (7.x)	not installed				
ynergy (8.x)	1.0.0.201804152231				
/850 (>= 3.71 < 4.x)	not installed	~	<		

5. Now, when you create a new Synergy project, you can select the IAR compiler from the list of available toolchains and your project will build with IAR compiler:

upported targets			Available IAR Emb	bedded Workbench installa	tions
Target	Installed plugin	^	Version	Status	IAR Embedded Workbench Installation path
78K (>= 4.71)	not installed		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_5
ARM (6.50.x)	8.0.0.201804152231	100	8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.0 EWSYN_5
ARM (8.x)	8.0.0.201804152231		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_6
ARM (7.20.x to 7.80.x)	8.0.0.201804152231		8.21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN
R32C (>= 1.30)	not installed		8,21.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.100 EWSYN_4
RH850 (>= 1.10)	not installed		8.23.1	Plugin installed	C:\Program Files (x86)\IAR Systems\Embedded Workbench 8.23.1
RL78 (>= 2.10)	not installed				
RL78 (1.x)	not installed				
RX (>= 2.20)	not installed				
STM8 (>= 2.10)	not installed				
Synergy (7.x)	not installed				
Synergy (8.x)	1.0.0.201804152231				
V850 (>= 3.71 < 4.x)	not installed	~	<		



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Revision History

		Description	
Rev.	Date	Page	Summary
1.00	Jan 1, 2018	—	First release document
1.10	Mar 30, 2016	10	Removed appendix "Fixing the license path" and all
			references to the appendix.
1.11	May 25, 2016	All	Minor formatting and editing changes.
1.12	Jun 30, 2016	All	Added the importing information for the IAR EW for Synergy
1.13	Aug 30, 2016	All	Minor format changes
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1.15	Nov 29, 2016	1	Specified software version numbers for e ² studio, IAR EW
			and SSC.
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			SSC, and SSP.
1.19	Feb 6, 2018	1	Updated software version numbers and screens for e ² studio,
			IAR EW, SSC, and SSP.
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		21-23	
1.21	Oct 22, 2018	1	Fixed broken link for https://synergygallery.renesas.com.

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