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Getting Started with Freescale MQX™ RTOS BSP Cloning Wizard

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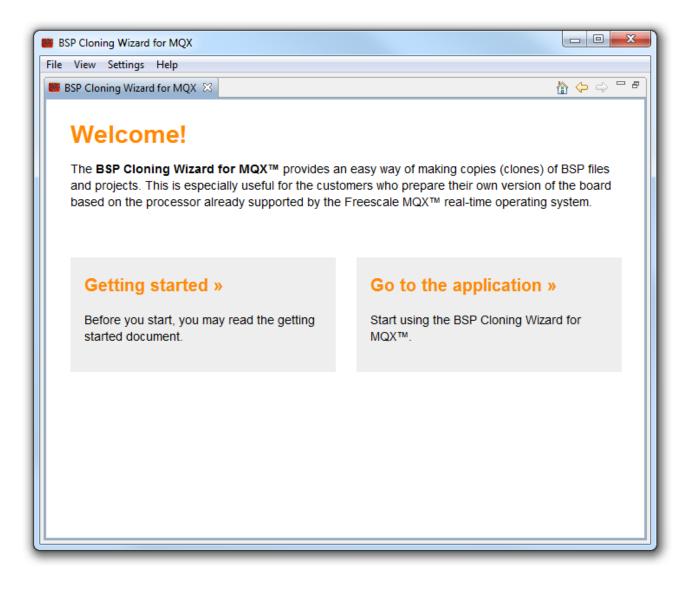
1 Read Me First

This document describes how to use the MQX[™] RTOS BSP Cloning Wizard tool. The aim of this application is to provide an easy way of making copies (clones) of BSP files and projects. This is especially useful for the customers who prepare their own version of the board based on the processor supported by the Freescale MQX RTOS operating system.

2 Making a clone of an existing board

2.1 Starting the MQX RTOS BSP Cloning Wizard application

To start the BSP Cloning Wizard, run the "BSPCloningWizard.exe" executable, which is located in <install_dir>\tools\BSPCloningWizard. If this is the first time you have started the application, the main window of the application displays as shown in the image. You can always display the welcome page using the "Help/Welcome" menu.



To start using the wizard, click the "Go to the application" link. You can see this screen.

BSP Cloning Wizard for MQX	l	- 0	23
File View Settings Help			
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E Console 🛛	2 5	• 📫 •	
No consoles to display at this time.			

2.2 Creating a clone of an existing board

To create a new clone, find in the toolbar the wizard icon since and click it. It is located in the left corner of the application.

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	File View Settings Help
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You can see the wizard window.

MQX BSP	Clone Wizard
-	Clone Wizard BSP Project
Name:	customk60n512
MQX Base:	MQX 4.1 -
Board Base:	twrk60n512 🔹
	Finish Cancel

Select the MQX software base for which you need to create a board clone and then select an appropriate board that serves as a base for your custom board. In the name file, type the name of your custom board. Click the "Finish" button – the wizard creates clones of BSP files in the MQX software folder structure and the window with available libraries and examples are opened. It is used to create the project files for selected IDEs.

2.3 Generating project files

To generate project files for IDEs, select at least one IDE and at least one project from Libraries and Examples sections. Note that for MQX RTOS version 4.1 and above, you can generate the makefiles and regular project files.

BSP Cloning Wizard for MQX		
File View Settings Help		
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ustomk60n512.yml		
MQX Projects Generator		1 🤊
Information		
Board name: customk60n512 MQX Location: C:\Freescale\Frees	cale_MQX_4_1_0	
Makefiles Support		
Generate Makefiles for the selected pr	rojects	
IDEs	Libraries	Examples
Select IDEs for which projects will be generated. CodeWarrior 10.x GCC IAR Embedded Workbench Keil uVision4 <u>Select all</u> or <u>deselect all</u>	Select the projects to be generated BSP PSP MFS RTCS Shell USB Device USB Host Select all or <u>deselect all</u>	Select the projects to be generated MQX C++ Examples MQX Examples MFS RTCS Shell Examples MFS RTCS Shell USB Host Examples MFS Shell Examples MFS Shell USB Host Examples MQX Shell TSS Examples RTCS Examples RTCS Shell Examples RTCS USB Device Examples USB Device Examples USB Host Examples Select all or deselect all
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No consoles to display at this time.		

When you have finished selecting IDEs and libraries/examples, you can generate the project files. To do this, click the generator icon 1. It is located next to the wizard icon.

BSP Cloning Wizard for MQX	
File View Settings Help	
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👹 customk60n512.yml 🖾	

You can see the modal window indicating the progress.

BSP Cloning Wizard for MQX		
File View Settings Help		
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🐻 Test.yml 🖾		
MQX Projects Generate	or	1 0
Information		
Board name: Test MQX Location: C:\Freesca	le\Freescale_MQX_4_1	
Makefiles Support	Generating MQX projects	
Generate Makefiles for the so	Operation in progress	
Select IDEs for which projects v generated.	-	
 ✓ CodeWarrior 10.x GCC ✓ IAR Embedded Workbench ✓ Keil uVision4 <u>Select all</u> or <u>deselect all</u> 	🗖 Always run in background	
		Run in Background Cancel Details >>
		KICS USB Device Examples VISB Device Examples VISB Host Examples Select all or deselect all
🗐 Console 🔀		È. 🛃 🛃 = - C) C
MQX BSP Generator		
(i) generated: c:/Freesca	<pre>le/Freescale_MQX_4_1/usb/ho le/Freescale_MQX_4_1/usb/ho le/Freescale_MQX_4_1/usb/ho</pre>	st/build/bat/usbh_Test.bat
Generating: MQX C++ Examp	les for cw10gcc	
	e e	-

After the generation process has been finished, you can find the generated projects in the MQX software folder structure.

2.4 Exporting MQX RTOS source tree

You can always export the MQX RTOS source tree for a given board, either for the board which comes with MQX software, or for your custom board. Exported MQX software is a full MQX RTOS with all tools including the BSP Cloning Wizard. It is important to note that <u>exported source tree</u> <u>does not contain project files</u>, even if they were created in the original location. Please use BSP Cloning Wizard to generate project files.

To export the source tree, click the green arrow button $\stackrel{\text{\tiny{solar}}}{\longrightarrow}$.

BSP Cloning Wizard for MQX
File View Settings Help
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🦉 customk60n512.yml 🛛

You can see the export tree wizard.

Export MQX Sou	rce Tree	
MQX Tree Export	Wizard	
Export MQX Sourc	e Tree	
MQX:	MQX 4.1	•
Board:	customk60n512	•
Installation Name:	customk60n512	
Destination:	C:\Freescale\CustomK60n512 MQX	Browse
	Finish	Cancel

Select MQX RTOS, where the board to be exported is stored, and then select the appropriate board.

In the field "Installation Name," fill in the name of the installation. It is visible in the Installation Manager and can be used to quickly open the board definition.

Finally, select the folder where the source should be exported and click the "Finish" button.

When the exporting process is done, you can zip the destination folder and, for instance, share it with another team member. You should be aware, however, that, on a new machine, it should be registered in the MQX software installation manager. For more information, see <u>the next chapter</u>.

2.5 MQX software installation manager

When you install MQX RTOS using the installer from the Freescale web page, your MQX installation is registered in the Windows registry. However, this is not the case when you get a MQX software source tree from someone else, or when you move your MQX installation to some other directory. The registry entries become outdated.

To register the MQX software source tree go to the "Settings/Preferences" menu.

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L	File View	Settings Help
l	i 💼 🏦 🕽	Preferences

You can see the MQX Installation Details page.

ype filter text	MQX Installation	n Details		$\Rightarrow \Rightarrow \Rightarrow = $
MQX Installation Details	Installed MQXs			
	MQX Name	ID	Path	^ Add
	MQX 3.8	3.8	C:\Freescale\Freescale MQX 3.8	
	MQX 4.0 TWRV	4.0 TWRVF65G	C:\Freescale\Freescale_MQX_4_0	Remove
	MQX 4.0 TWRK	4.0 TWRK21F1	C:\Freescale\Freescale_MQX_4_0	
	MQX 4.1	4.1	C:\Freescale\Freescale_MQX_4_1	=
	MQX 4.0	4.0	C:\Freescale\Freescale_MQX_4_0	
	customk60n512	4.1	C:\Freescale\CustomK60n512 MQX	*

You may add another entry which contains a name (it is used in many dialogs), ID which is used to identify your MQX RTOS version, and the path to the installation. Please note that the ID is slightly different than the version. For instance, MQX RTOS version 4.0.1 has ID equal to 4.0. When you have finished adding MQX installations click the "Apply" button and then the "OK" button.

2.6 Opening board definition file

To open a board definition file (e.g. you got a source tree and you want to generate project files for it) click the 🔒 icon.

BSP Cloning Wizard for MQX				
File View Settings Help				
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📑 customk60n512.yml 🖾				

You can see the dialog window.

🐻 Open	Board Definition File
MQX:	customk60n512 🔹
Board:	customk60n512 🗸
	Open Cancel

Select appropriate MQX RTOS and the board you want to open. Please keep in mind that the MQX installation has to be registered in the MQX installation manager to be visible in this dialog.

Click the "Open" button. The board definition file is opened.

BSP Cloning Wizard for MQX				
File View Settings Help				
📾 🏦 1 🐲				
■ customk60n512.yml 🖾				
MQX Projects Generator				
Information				
Board name: customk60n512 MQX Location: C:\Freescale\CustomK60n512 MQX				
Makefiles Support				
Generate Makefiles for the selected projects				
Libraries	Examples			
Select the projects to be generated BSP PSP MFS RTCS Shell USB Device USB Host <u>Select all</u> or <u>deselect all</u>	Select the projects to be generated MQX C++ Examples MQX Examples MFS RTCS Shell Examples MFS RTCS Shell USB Host Examples MFS Shell Examples MAS Shell USB Host Examples MQX Shell TSS Examples RTCS Examples RTCS Shell Examples RTCS USB Device Examples USB Device Examples USB Host Examples Select all or deselect all			
	rojects Libraries Select the projects to be generated Ø BSP Ø PSP Ø MFS Ø RTCS Ø Shell Ø USB Device Ø USB Host			

2.7 Support for the MQX New Project Wizard in CodeWarrior

If projects for CodeWarrior have been selected, at the end of the generation process the BSP Cloning Wizard creates additional XML file and two windows registry files. One file is for the 32-bit system and the other file is for the 64-bit system. The files are named accordingly. Ensure that you use the appropriate file corresponding to the registry. The files may be used to add the custom board into the MQX CodeWarrior New Project Wizard.

It is important to ensure that the New Project Wizard for MQX software plug-in in version 1.4.0 or later is used.

The generated XML and the registry files may be found in the following directory: <install_dir>/tools/CodeWarriorNPW

The registry file is used to add the MQX software path to the Windows Registry, which is especially important if you have exported the MQX source tree to a new location. The CodeWarrior New Project Wizard uses the Windows Registry to get the root folder of MQX RTOS.

All MQX installations are registered under the following node in the Windows Registry: [HKEY_LOCAL_MACHINE\SOFTWARE\Freescale\Freescale MQX]

After importing the registry file in Windows, the XML file has to be copied into the CodeWarrior folder structure. The general schema of folders is as follows: <codewarrior_install_dir>/MCU/lib/wizard_data/mqx/<mqx_version>/<architecture>

For instance, for MQX RTOS version 4.1.0 and the ARM architecture, the XML should be copied to the following directory: <codewarrior_install_dir>/MCU/lib/wizard_data/mgx/4.0/arm

2.8 Remarks

The other approach to opening board definition files is by using "File/Open File..." command. The files with the description are located in the following directory:

<install_dir>/tools/generator/records/<your_custom_board_name>.yml

Please do not move these files to another folder because, during the projects generation process, the generator makes some assumptions about the relative position of MQX files.