

LittleFS on MXIC Middleware Introduction

2023.1



Background

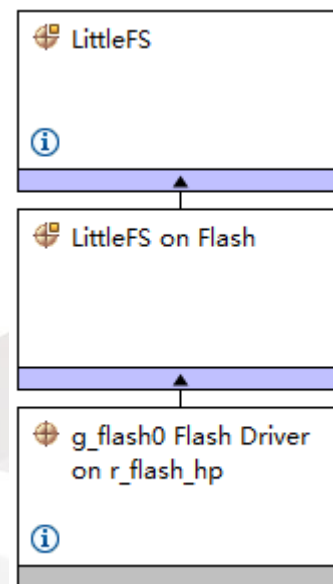
- In Renesas FSP, Users can add LittleFS to their project, and the filesystem memory is internal flash. The **LittleFS on Flash** provide a middleware to connect LittleFS and internal flash driver.

LittleFS on Flash

Settings

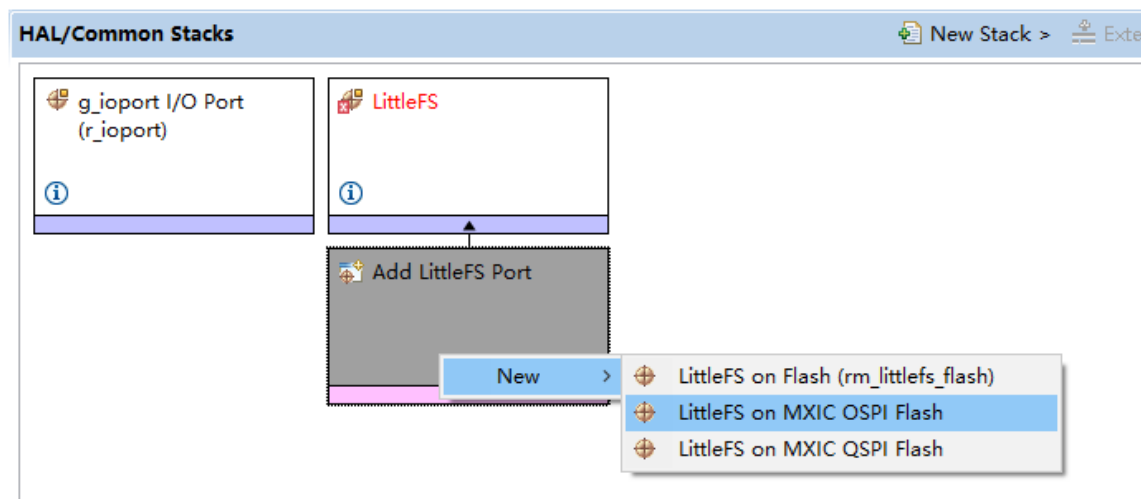
API Info

属性	値
▼ Common	
Parameter Checking Enable	Default (BSP)
▼ Module LittleFS on Flash	
Name	g_rm_littlefs0
Read Size	1
Program Size	4
Block Size (bytes)	128
Block Count	(BSP_DATA_FLASH_SIZE_BYTES/128)
Block Cycles	1024
Cache Size	64
Lookahead Size	16

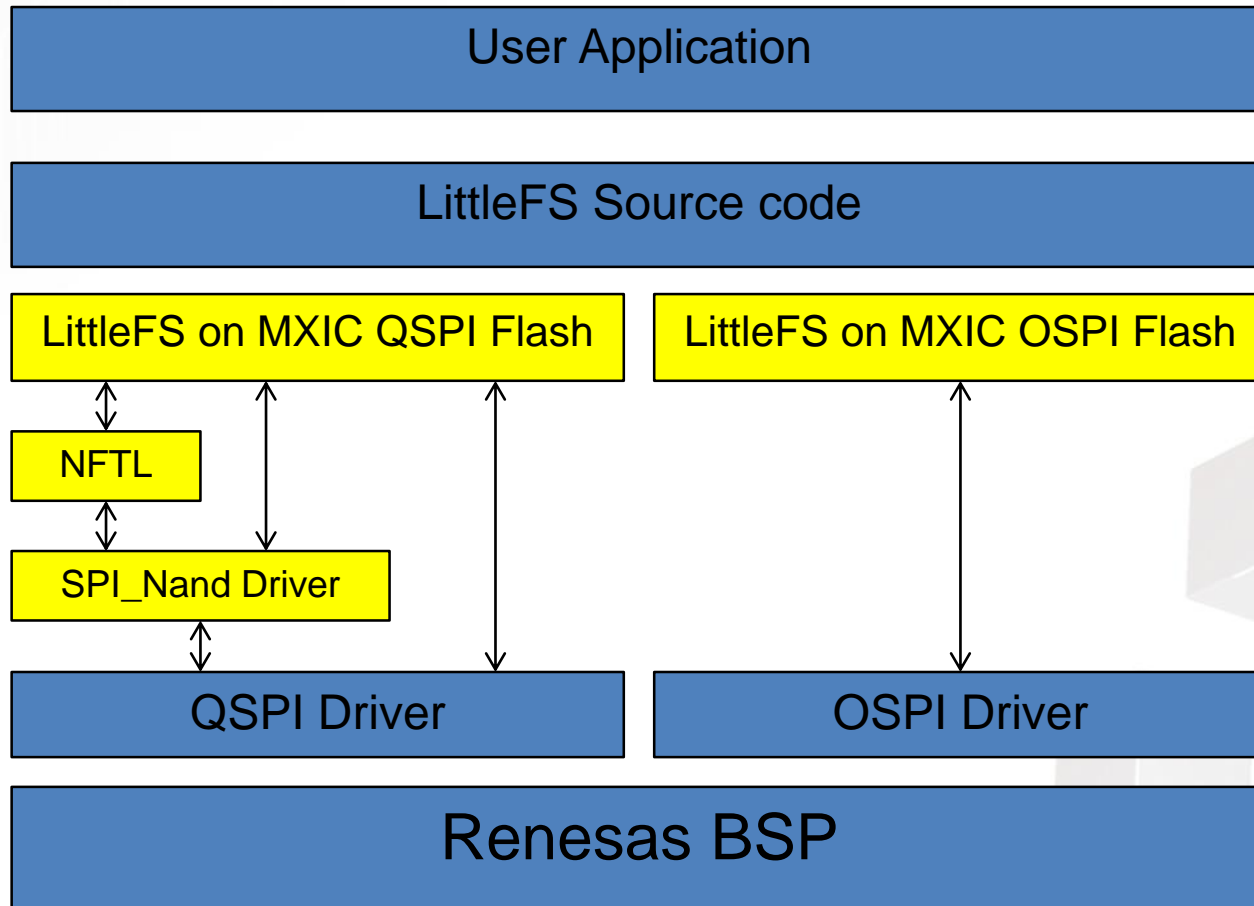


Introduction

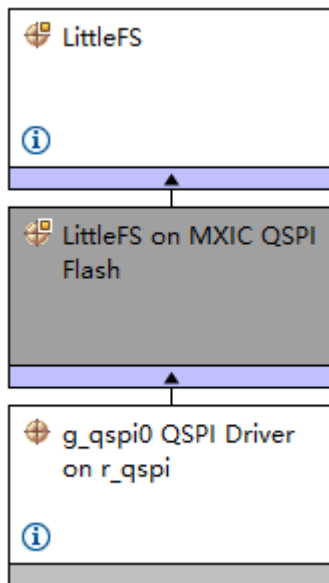
- ❑ To support MXIC Flash to LittleFS, Here we provide two middleware to connect LittleFS and QSPI/OSPI controller, so you can use any MXIC Flash which has QSPI/OSPI interface in FSP.
- ❑ SPI_Nand is Nand Flash while it can be accessed by SPI interface. Here we add SPI_Nand driver to **LittleFS on MXIC QSPI Flash** Middleware and user can select SPI_Nand as the LittleFS memory.



Block Diagram



LittleFS on MXIC QSPI Flash



- User can select Normal Nor Flash or SPI_Nand Flash, but you have to make sure the hardware is connected correctly.
- The other setting about LittleFS should refer to flash data sheet and actual requirement.

LittleFS on MXIC QSPI Flash		
Settings	属性	值
▼ Common		
	Parameter Checking Enable	Default (BSP)
	Select Flash Type	Normal Nor Flash
	NFTL	Normal Nor Flash
		SPI_Nand Flash
▼ Module LittleFS on MXIC QSPI Flash		
	Name	g_rm_littlefs0
	Read Size	256
	Program Size	256
	Block Size (bytes)	4096
	Block Count	1024
	Block Cycles	1024
	Cache Size	256
	Lookahead Size	16

LittleFS on MXIC QSPI Flash

- ❑ The SPI_Nand parameter has a little different from normal nor flash, please refer SPI_Nand datasheet for more information.

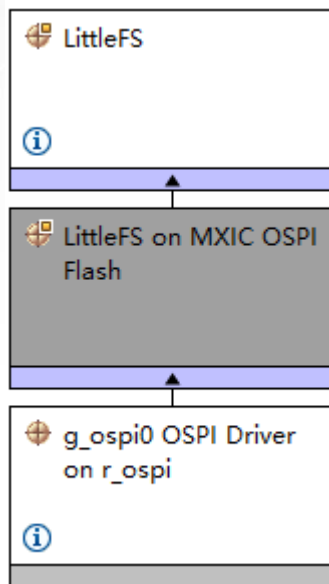
LittleFS on MXIC QSPI Flash		
Settings	Property	Value
	▼ Common	
	Parameter Checking Enable	Default (BSP)
	Select Flash Type	SPI_Nand Flash
	NFTL	Disabled
	▼ Module LittleFS on MXIC QSPI Flash	
	Name	g_rm_littlefs0
	Read Size	2048
	Program Size	2048
	Block Size (bytes)	0x20000
	Block Count	1024
	Block Cycles	1024
	Cache Size	2048
	Lookahead Size	16

LittleFS on MXIC QSPI Flash

- ❑ The NFTL middleware can manage SPI_Nand Flash under LittleFS, please refer NFTL introduction for more information.
- ❑ The parameter setting needs to be calculated according to the actual parameters of SPI_Nand Flash and NFTL algorithm.

LittleFS on MXIC QSPI Flash		
Settings	属性	值
	▼ Common	
	Parameter Checking Enable	Default (BSP)
	Select Flash Type	SPI_Nand Flash
	NFTL	Enabled
	▼ Module LittleFS on MXIC QSPI Flash	
	Name	g_rm_littlefs0
	Read Size	2048
	Program Size	2048
	Block Size (bytes)	2048
	Block Count	16000
	Block Cycles	1024
	Cache Size	2048
	Lookahead Size	16

LittleFS on MXIC OSPI Flash



- The usage of OSPI middleware is similar to that of QSPI. Note that when configuring OSPI middleware, the instruction interval must meet the Flash Datasheet(40ns).
- You should pay attention to whether the OSPI Mapping Address setting is correct.

LittleFS on MXIC OSPI Flash		
Settings	Property	Value
	▼ Common	
	Parameter Checking Enable	Default (BSP)
	OSPI Mapping Address	BSP_FEATURE_OSPI_DEVICE_0_START_ADDRESS
	▼ Module LittleFS on MXIC OSPI Flash	
	Name	g_rm_littlefs0
	Read Size	256
	Program Size	256
	Block Size (bytes)	4096
	Block Count	1024
	Block Cycles	1024
	Cache Size	256
	Lookahead Size	16

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