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LittleFS on MXIC Middleware Introduction

2023.4

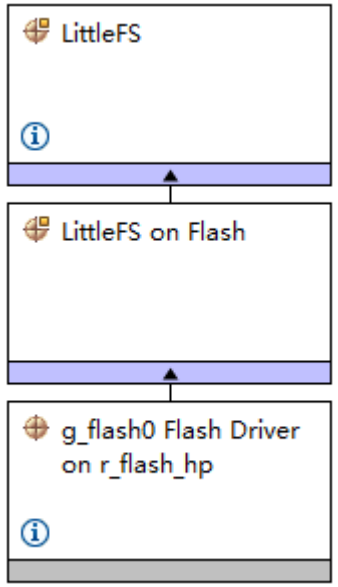
Background

- In Renesas FSP, Uers 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	值
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



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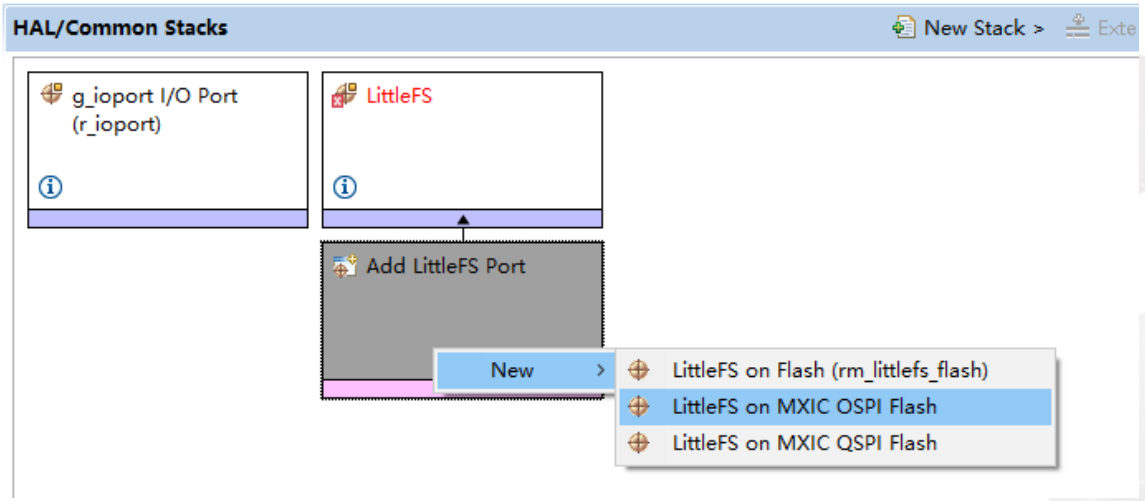
Introduction

- 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.



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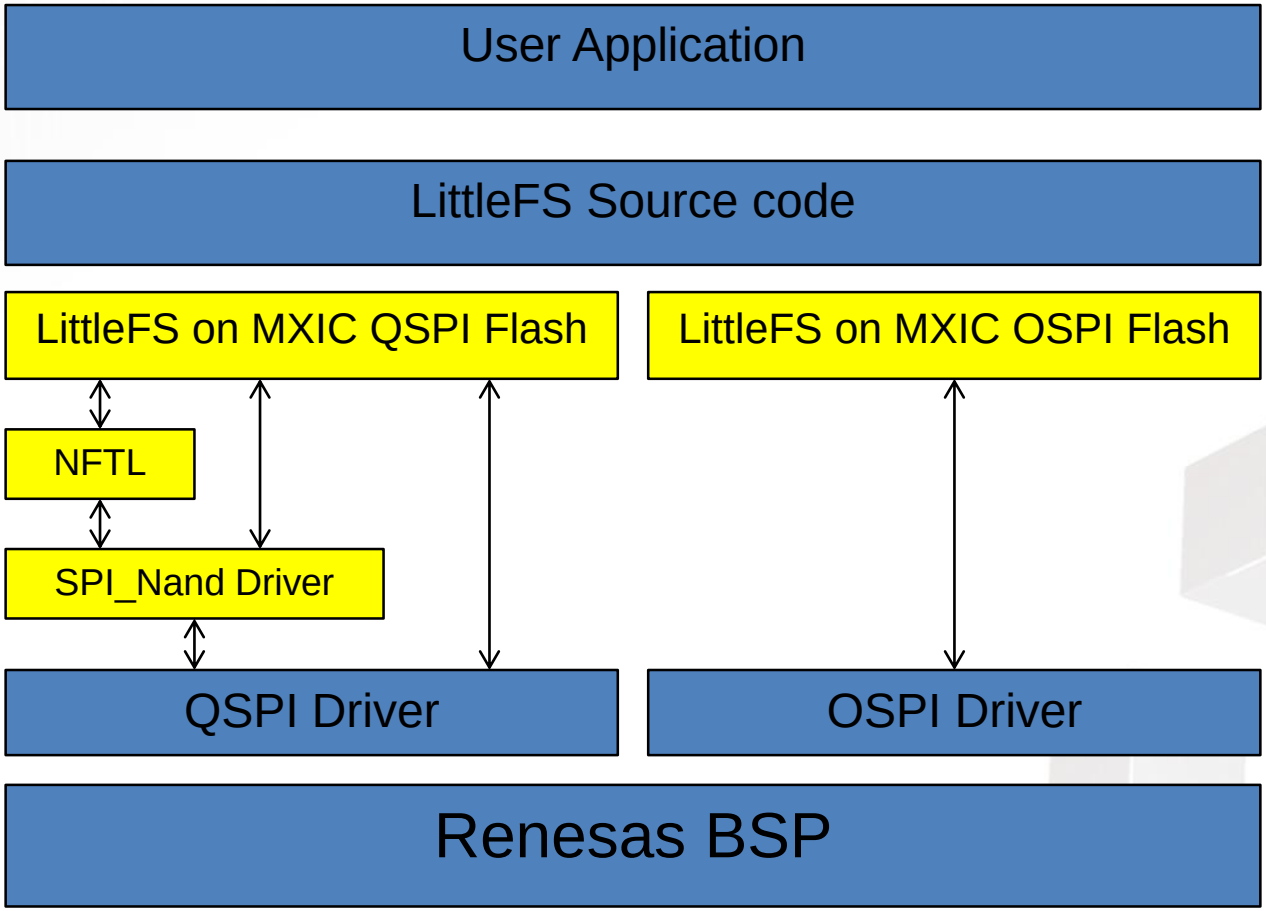
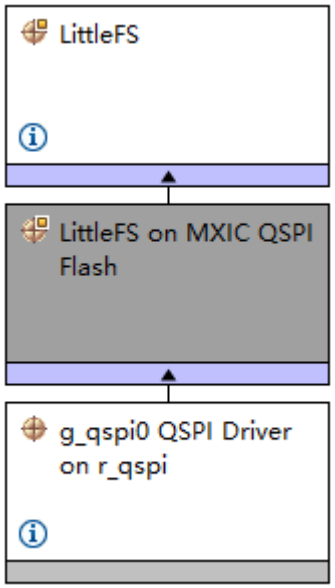
Block Diagram



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

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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

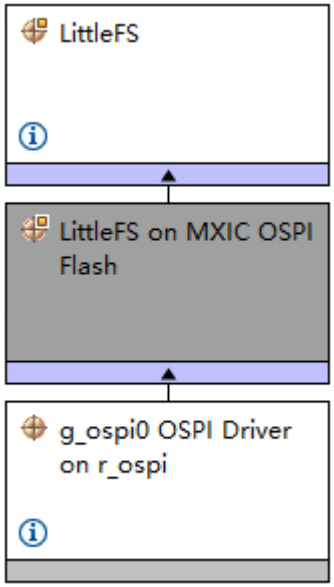
- The NFTL middleware can manage SPI_Nand Flash under LittleFS, please refer NFTL introduction for more information.
- The parameter setting needs to be calculated according to the actual parameters of SPI_Nand Flash and NFTL algorithm.

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_1_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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