Freescale MQX RTOS Example Guide

Mfs_nandflash example

This document describes the NAND flash driver example application. What to expect from the example and a brief introduction to the API.

The example

The example code used to demonstrate how to communicate with FFS (flash file system) on NAND flash.

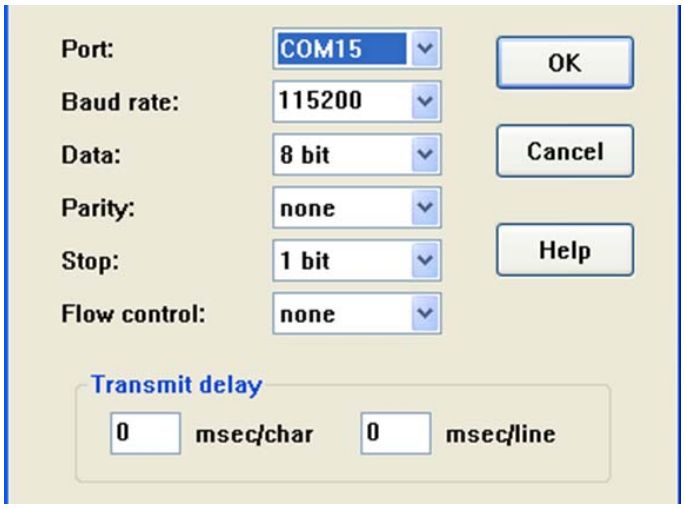
The example code opens NAND flash device and installs MFS. It allows user to perform some basic operation with the NAND flash through the terminal interface for example write/copy/create/rename. It shows how to work with the driver and how to use shell commands.

Running example

Check that the SHELLCFG_USES_MFS, MQX_USE_TIMER macro are set to 1 and BSPCFG_ENABLE_NANDFLASH is cleared in the user_config.h file.

Then rebuild the BSP, PSP, MFS, FFS and SHELL projects for the target platform/IDE.

Start a terminal application on your PC and set the serial connection for 115200 baud, 8 data bits, 1 stop bit, no parity and no flow control.



After the example are loaded and run, the following text will be printed.

```
This is the Flash File System example, type help for list of available commands
If this is the first time you use the demo, you should run "nanderasechip" command first
.

Shell (build: May 12 2014)
Copyright (c) 2013 Freescale Semiconductor;
shell>
shell>
```

The shell library source code is available as a reference. To understand the execution details of the Shell function review the source code for the library located in: \<MQX installation folder>\shell\source\

The Shell function takes an array of commands and a pointer to a file as parameters. The Shell_commands array specifies a list of commands and relates each command to a function.

When a command is entered into the Shell input the corresponding function is executed.

List of shell commands

-

- “ffs_close”: Close NAND flash device.
- “ffs_repair”: Repair NAND flash device.
- “ffs_erase_drive”: Erase NAND flash driver.
- “nand_erase_ffs”: Erase entire chip.
- “nand_get_bbt”: Get bad block table.

Explaining the example

The application example creates just one AUTO_START_TASK Shell_task during initialization.

The Shell_task installs NAND flash device and executes the command that is entered from keyboard.

The code to install NAND flash driver

```
_io_nandflash_wl_install(&_bsp_nandflash_wl_init, FFS_DEVICE)
```

After NAND flash driver is installed, Task goes into a infinite loop, waits and executes the command that is entered from user.

Some of the functions executed using the Shell are provided by the MQX RTOS. For example, functions that are related to the file system are implemented within the MFS library.

Mfs_nandflash specific functions are implemented within the application example code.

- Shell_ffs_open(int32_t argc, char* argv[]);
- Shell_ffs_close(int32_t argc, char* argv[]);
- Shell_ ffs_erase_drive (int32_t argc, char* argv[]);
- Shell_ffs_repair(int32_t argc, char* argv[]);
- Shell_nand_erase_ffs(int32_t argc, char*argv[]);

For example, the shell_ffs_open function.

```
int32_t  shell_nand_erase_ffs(int32_t argc, char * argv[] )
```

The shell commands erases NAND chip completely. When the string received through the shell command is “nand_erase_ffs” the function nand_erase_ffs() is executed. When string received through the shell command is “nand_erase_ffs help” the purpose of the shell command is printed.

Other functions with thin application example code execute different NAND flash functionalities but the implantation is similar to the example.