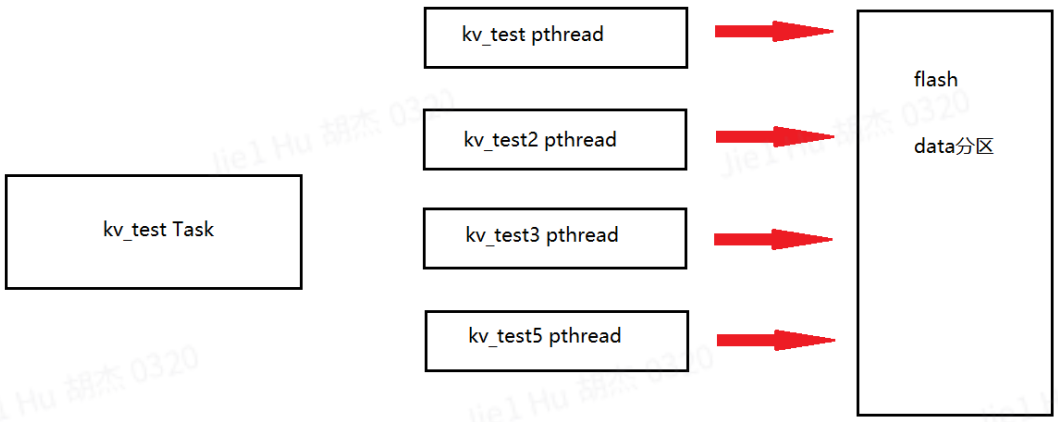
文件系统压力测试程序使用说明

1. 背景

velaOS模组中，文件存储时，需要在flash分区上挂载文件系统，模组运行过程中，会不断地读取、擦写文件，因此需要对文件系统的稳定性进行测试。

2. 系统介绍

kv文件系统压力测试框架主要由1个kv_test主进程和4个子线程组成，每个子线程完成独立的场景测试，调用接口将文件value值写至flash，同时将文件进行md5压缩，md5值及文件存储至内存，后续进行文件比对时，根据文件名从flash读取value并及进行md5压缩，通过比对判断文件读写是否正确。



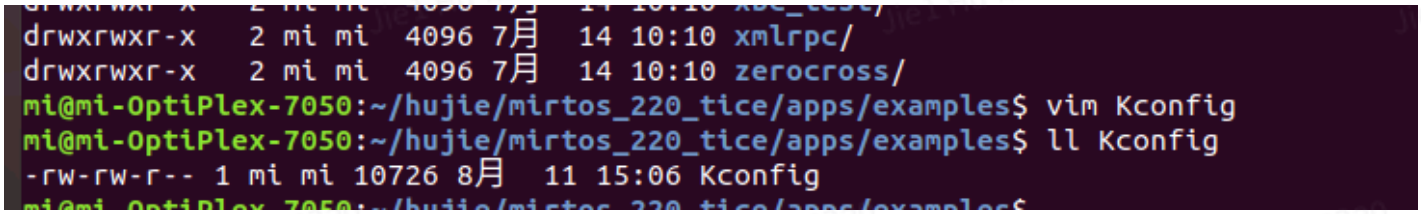
各个场景测试如下：

	测试场景
kv_test pthread	写20000个文件至data分区，周期为1s，文件名及长度随机，写满后删除长度最大的一个文件后，继续写
kv_test2 pthread	写20000个文件至data分区，周期为1s，文件名及长度1-250递增，写满后删除长度最大的一个文件后，继续写
kv_test3 pthread	修改已写入data分区文件；

kv_test5 pthread	写20000个文件至data分区，周期为1s，文件名及长度随机，写满60个文件后删除所有文件，继续写

3. 搭建运行环境

a. 代码下载到本地（代码git库：https://partner-gitlab.mioffice.cn/miot/bsp/miio_auto_test）后，将kv_test整体拷贝到/apps/examples中，在Kconfig中添加kv_test以创建kv_test主进程；



b. 在menuconfig中打开kv_test特性开关并配置相关参数（厂商此时如果有ot代码则关闭ot_client）；

参数	意义	类型	default
Program name	进程名	string	“kv_test”
kv_test task priority	进程任务优先级	int	100
kv_test stack size	进程栈大小	int	4096
kv_test case num	测试用例case num	int	1
kv_test file RW sum	测试用例中文件读写总数	int	20000
kv_test file RW period(ms)	测试用例中文件读写周期	int	1000

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[ ] LIBDSP library testing
[ ] ESP32 HIMEM Example
[ ] Serial flow control example
[ ] FTP client example
[ ] FTP server example
[ ] FXOS8700CQ motion sensor example
[ ] GPS example
[ ] HDC1008 driver example
[ ] "Hello, World!" example
[ ] USB HID keyboard example
[ ] IGMP example
[ ] INA219 example
[ ] INA226 example
[ ] JSON example
[*] "kv test!" example
(kv_test) Program name
(100) kv_test task priority
(4096) kv_test stack size
(5)   kv_test case num
(20000) kv_test file RW sum
(5000) kv_test file RW period(ms)
[ ] Static library Example
[ ] LSM330 SPI test program
[ ] "max31855" example
[ ] Media test
[ ] MLX90614 Test Example
[ ] FreeModBus example
[ ] Modbus Master example
[ ] File system mount example
[ ] MTD partition test
```

c. 编译版本并烧录至模组中;

d. 模组起来后，在nsh串口中输入？可查看到对应的各进程;

```
== Rtl8710c IoT Platform ==
Chip VID: 5, Ver: 1
ROM Version: v2.1

== Boot Loader ==
Nov 30 2020:13:49:24

Boot Loader <==

== RAM Start ==
[    0.000000] [  INFO] NuttX RTOS Initializtion Entry
[    0.001000] [  INFO] Starting init thread
[    0.004000] [  INFO] nsh: main entry
[    0.009000] [  INFO] CPU0: Beginning Idle Loop
[    2.600000] [  WARN] opcode 0xfc01 status 0x01
[    2.603000] [  WARN] Vendor HCI extensions not available
ifup CONFIG_MIIO_WIRELESS_STA_NA[    2.694000] [  INFO] nsh: execute start-up script done
M[    2.700000] [  INFO] nsh: enter into command line parsing loop
E...OK

NuttShell (NSH) NuttX-8.2.0
nsh> ?
help usage:  help [-v] [<cmd>]

  ?         cd        free      ifdown    ls        ps        set       true
  break     echo      help      ifup      mount     reboot    sleep
  cat       false     ifconfig  kill      mw        rm        time

Builtin Apps:
  zblue     kv_test   sh        nsh
nsh>
```

e. 输入kv_test &可运行文件系统压力测试进程;

```
ftop CONFIG_MIIO_WIRELESS_STA_NA[    2.693000] [  INFO] nsh: execute start-up script done
M[    2.699000] [  INFO] nsh: enter into command line parsing loop
E...OK

NuttShell (NSH) NuttX-8.2.0
nsh> kv_test &
[    6.767000] [ ALERT] kv_test_main begin

nsh> [   11.773000] [  INFO] [00:00:11.773 ] kv_test: 5 write kv qfiesicdppapo.gaarganhvloifurpqwmgalluh, value: 54
[   11.789000] [  INFO] [00:00:11.788 ] kv_test: 5 write kv time:7
[   11.793000] [  INFO] [00:00:11.793 ] kv_test: 5 write kv success >>>> 1 <<<<
[   16.801000] [  INFO] [00:00:16.801 ] kv_test: 5 write kv avhwpqbs.czfo, value: 217
[   16.817000] [  INFO] [00:00:16.817 ] kv_test: 5 write kv time:9
[   16.822000] [  INFO] [00:00:16.822 ] kv_test: 5 write kv success >>>> 2 <<<<
[   21.830000] [  INFO] [00:00:21.830 ] kv_test: 5 write kv yokkjivtzdf.skwwg, value: 14
[   21.848000] [  INFO] [00:00:21.847 ] kv_test: 5 write kv time:11
[   21.852000] [  INFO] [00:00:21.852 ] kv_test: 5 write kv success >>>> 3 <<<<
[   26.860000] [  INFO] [00:00:26.860 ] kv_test: 5 write kv bkdtncgujwbzy.jxss, value: 45
[   26.880000] [  INFO] [00:00:26.879 ] kv_test: 5 write kv time:13
[   26.884000] [  INFO] [00:00:26.884 ] kv_test: 5 write kv success >>>> 4 <<<<
[   31.892000] [  INFO] [00:00:31.892 ] kv_test: 5 write kv geeqcyzs.otmoumdp, value: 251
[   31.916000] [  INFO] [00:00:31.915 ] kv_test: 5 write kv time:16
[   31.920000] [  INFO] [00:00:31.920 ] kv_test: 5 write kv success >>>> 5 <<<<
[   36.928000] [  INFO] [00:00:36.928 ] kv_test: 5 write kv dyahhfkacrokijhwueagceyuspvafkk.mnlfgkdyjaltncaglfbhckrrardbrbt, value: 42
[   36.957000] [  INFO] [00:00:36.957 ] kv_test: 5 write kv time:19
[   36.962000] [  INFO] [00:00:36.962 ] kv_test: 5 write kv success >>>> 6 <<<<
[   41.970000] [  INFO] [00:00:41.970 ] kv_test: 5 write kv ui.gqqyfdttikitebaxl, value: 0
[   41.996000] [  INFO] [00:00:41.996 ] kv_test: 5 write kv time:20
[   42.001000] [  INFO] [00:00:42.001 ] kv_test: 5 write kv success >>>> 7 <<<<
[   47.009000] [  INFO] [00:00:47.009 ] kv_test: 5 write kv sytdmfnd.svwgsskyotbpnrcgvkqckhcxqgrhcek, value: 239
[   47.227000] [  INFO] [00:00:47.227 ] kv_test: 5 write kv time:209
[   47.232000] [  INFO] [00:00:47.232 ] kv_test: 5 write kv success >>>> 8 <<<<
[   52.240000] [  INFO] [00:00:52.240 ] kv_test: 5 write kv crmwoorv.cadu, value: 23
[   52.261000] [  INFO] [00:00:52.261 ] kv_test: 5 write kv time:15
[   52.266000] [  INFO] [00:00:52.266 ] kv_test: 5 write kv success >>>> 9 <<<<
[   57.274000] [  INFO] [00:00:57.274 ] kv_test: 5 write kv tf.owuq, value: 12
[   57.296000] [  INFO] [00:00:57.296 ] kv_test: 5 write kv time:17
[   57.301000] [  INFO] [00:00:57.301 ] kv_test: 5 write kv success >>>> 10 <<<<
[   62.309000] [  INFO] [00:01:02.309 ] kv_test: 5 write kv elvgpjzxi.dohm, value: 0
[   62.333000] [  INFO] [00:01:02.333 ] kv_test: 5 write kv time:18
[   62.338000] [  INFO] [00:01:02.338 ] kv_test: 5 write kv success >>>> 11 <<<<
[   67.346000] [  INFO] [00:01:07.346 ] kv_test: 5 write kv ehodkowqoknzipjgwlqupuqsbhg.oegaammovzi, value: 43
[   67.375000] [  INFO] [00:01:07.375 ] kv_test: 5 write kv time:21
[   67.380000] [  INFO] [00:01:07.380 ] kv_test: 5 write kv success >>>> 12 <<<<
[   72.388000] [  INFO] [00:01:12.388 ] kv_test: 5 write kv g.fvmtlq, value: 97
[   72.416000] [  INFO] [00:01:12.416 ] kv_test: 5 write kv time:22
[   72.421000] [  INFO] [00:01:12.421 ] kv_test: 5 write kv success >>>> 13 <<<<
[   77.429000] [  INFO] [00:01:17.429 ] kv_test: 5 write kv topmlezu.w, value: 46
[   77.737000] [  INFO] [00:01:17.737 ] kv_test: 5 write kv time:302
[   77.742000] [  INFO] [00:01:17.742 ] kv_test: 5 write kv success >>>> 14 <<<<
[   82.750000] [  INFO] [00:01:22.750 ] kv_test: 5 write kv henxptaj.uqyqxmzk, value: 95
[   82.776000] [  INFO] [00:01:22.775 ] kv_test: 5 write kv time:19
```