An OS to build, deploy and securely manage billions of devices

Latest News:

Apache Mynewt 1.10.0, Apache NimBLE 1.5.0 (/download) released (May 6, 2022)

SEGGER RTT Console

Objective

Sometimes you dont have UART on your board, or you want to use it for something else while still having newt logs/shell capability. With SEGGER's RTT (https://www.segger.com/jlink-rtt.html) capability you can swap UART for RTT, which is a very high-speed memory-mapped I/O.

- Hardware needed
- Setup the target
- Run the target executables
- Connect to console

Hardware needed

You'll need a SEGGER J-Link programmer in order to use this advanced functionality. You might have an external J-Link programmer you're already using, or maybe your board has a dedicated J-Link onboard as some development kits do. Another possibilty is J-Link OB firmware available for some devices like the micro:bit.

Setup the target

We'll assume you have an existing project with some kind of console/shell like Blinky with console and shell (../blinky/blinky_console.html) that we're switching over to RTT from UART.

Note: We have tested RTT with J-Link version V6.14h. We recommend that you upgrade your J-Link if you have an earlier version of J-Link installed. Earlier versions of J-Link use the BUFFER_SIZE_DOWN value defined in hw/drivers/rtt/include/rtt/SEGGER_RTT_Conf.h for the maximum number of input characters. If an input line exceeds the BUFFER_SIZE_DOWN number of characters, RTT ignores the extra characters. The default value is 16 characters. For example, this limit causes shell commands with more than 16 characters of input to fail. You may set the Mynewt `RTT_BUFFER_SIZE_DOWN` syscfg setting in your target to increase this value if you do not upgrade your J-Link version.

We can disable uart and enable rtt with the newt target command:

```
newt target amend nrf52_blinky syscfg=CONSOLE_UART=0
newt target amend nrf52_blinky syscfg=CONSOLE_RTT=1
```

Run the target executables

Now 'run' the newt target as you'll need an active debugger process to attach to:

```
$ newt run nrf52_blinky 0
App image succesfully generated: ~/Downloads/myapp1/bin/targets/nrf52_blinky/app/apps/blinky/blinky.img
Loading app image into slot 1
[~Downloads/myapp1/repos/apache-mynewt-core/hw/bsp/nrf52-thingy/nrf52-thingy_debug.sh ~/Downloads/myapp1/repo
s/apache-mynewt-core/hw/bsp/nrf52-thingy ~/Downloads/myapp1/bin/targets/nrf52_blinky/app/apps/blinky/blinky]
Debugging ~/Downloads/myapp1/bin/targets/nrf52_blinky/app/apps/blinky/blinky.elf
GNU gdb (GNU Tools for ARM Embedded Processors) 7.8.0.20150604-cvs
Copyright (C) 2014 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.  Type "show copying"
and "show warranty" for details.
This GDB was configured as "--host=x86_64-apple-darwin10 --target=arm-none-eabi".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
<http://www.gnu.org/software/gdb/documentation/>.
For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from ~/Downloads/myapp1/bin/targets/nrf52_blinky/app/apps/blinky/blinky.elf...done.
0x000000d8 in ?? ()
Resetting target
0x000000dc in ?? ()
(gdb)
```

Connect to console

In a seperate terminal window `telnet localhost 19021` and when you continue your gdb session you should see your output. If you're not familiar with telnet, when you're ready to exit you may by using the hotkey ctrl+] then typing quit

```
$ telnet localhost 19021
Trying ::1...
telnet: connect to address ::1: Connection refused
Trying fe80::1...
telnet: connect to address fe80::1: Connection refused
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
SEGGER J-Link V6.14e - Real time terminal output
SEGGER J-Link EDU V8.0, SN=268006294
Process: JLinkGDBServer
```

Then you can interact with the device:

```
stat
stat
000262 Must specify a statistic name to dump, possible names are:
000262  stat
000262 compat>
```

Previous: Tooling (tooling.html)

Next: SEGGER SystemView (segger_sysview.html)