

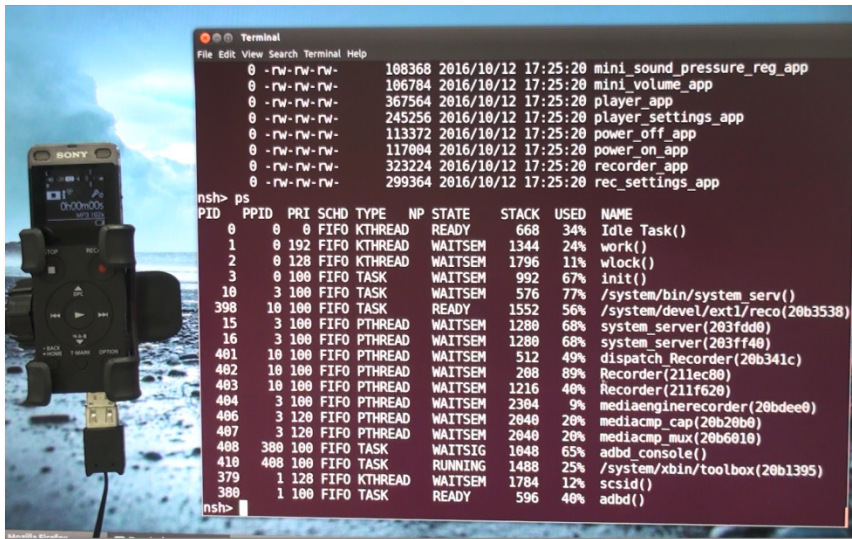


Fast ELF loading and adb support on NuttX



Masayuki Ishikawa / Sony Video & Sound Products Inc.

What is demonstrated



NuttX (POSIX-based RTOS) is running on the device. System information (e.g. task) can be checked via adb. GUI application is written in C++11 with libc++. Quick loading and unloading application is possible.

Hardware Information

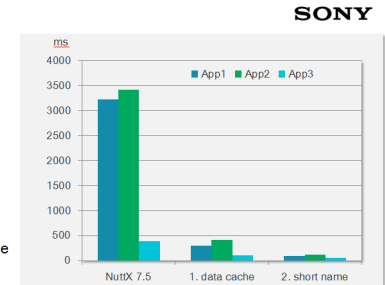
MCU: ON Semiconductor LC823450
- Cortex-M3 160MHz + DSP, SRAM 1656KB
Other devices: eMMC, OLED display

Feb 23
4:20pm

What was improved

Fast ELF loading

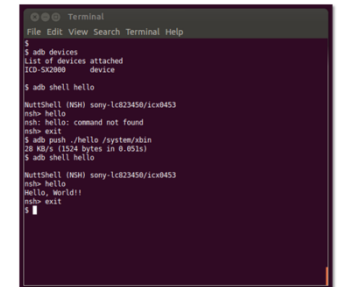
- Section data cache
 - Allocate a big heap to hold tables to reduce eMMC access.
 - Use unused SRAM areas, if possible
 - e.g. DSP program & work area
- Symbol name replacement
 - Shorten symbols by hashing their names
 - Sort A-Z and do binary-search in find-by-name
 - Need to modify the build system



```
["pthread_condattr_setlock", &pthread_condattr_setlock],
["*@95afc", &pthread_condattr_setlock],
```

adb* support

- Motivation
 - To test the system without proprietary tools
 - To retrieve internal logs
- Features
 - push, pull and shell with a remote execution
 - The feature is disabled at the factory before shipping
- Implementation
 - Start with the NuttX USB serial driver
 - composite version
 - Change the USB descriptors
 - Implement the protocols from scratch



*adb = Android Debug Bridge

Source code or detail technical information availability

The code is not merged but OpenOCD related code is available at <https://github.com/sony/openocd-nuttX>.