SMP and Networking support on NuttX/LC823450

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What is demonstrated

HTTP audio (PCM/44.1k/stereo) streaming is working on NuttX/LC823450 in SMP mode.

What was improved

Running SMP kernel on lc823450-xgevk

- Port existing drivers to the latest NuttX
  - UART, Timer, GPIO, DMA, I2C, SPI, LCD
  - eMMC (including boot), SD, USB, LED, Audio, ADC
- Implement SMP related code
  - lc823450_cpuidstack.c, lc823450_cpuindex.c
  - lc823450_cpupause.c, lc823450_cpustart.c,
  - lc823450_testset.c (Use H/W Mutex instead of Idex, stres)
- Improve performance
  - Introduce spin_lock_irqsave(), spin_unlock_irqrestore()
  - Use these APIs inside the driver code.
  - Up to 20% performance improvement

HTTP audio streaming support

- Fix RNDIS driver for NuttX
- Fix data corruption
- Add USB high speed mode support
- Modify tcp_send.c to support receive
  - window control.
- Still experimental
- Modify npplayer to support HTTP
  - connection.
  - Currently only WAV format is supported.
  - Still testing with SMP kernel

Hardware Information

ON Semiconductor LC823450 Dual Cortex-M3 160MHz

Source code or detail technical information availability

The code is available at bitbucket.org/nuttx