Evaluation of Busybox bootchartd

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Bootchart

- **Bootchart**
  - a tool for performance analysis and visualization of the GNU/Linux boot process.
Environment

• **Bootchartd patch for busybox**
  – [PATCH] bootchartd applet
  – **Denys Vlasenko** *Tue May 4 13:41:00 UTC 2010*
    

• **Environment**
  
  – Cortex-A9 433MHz
  – Compiler: gcc-4.4.2
  – Libc: eglibc-2.10.2-2
  – Binutils: binutils-2.20
  – Linux kernel: linux-2.6.28.10-arm2
  – Busybox: busybox-1.15.3
  – Visualization tool: bootchart-0.9
    
    • [http://prdownloads.sourceforge.net/bootchart/bootchart-0.9.tar.bz2](http://prdownloads.sourceforge.net/bootchart/bootchart-0.9.tar.bz2)
bootchartd start / stop

- **start/stop**
  - **start**
    - # bootchartd start
  - **stop**
    - # bootchartd stop
    - or 1 minutes after start
bootchartd with program

- **program**
  - Run program with logging.
  - `# bootchartd start {path of program} {args}`
bootchartd as init

• with initramfs
  – rdinit=/sbin/bootchartd

• with cramfs
  – init=/sbin/bootchartd

• Selecting init
  – bootchart_init=xxx
  – default: /init /sbin/init

• Auto stop
  – console + 2 sec
Problems

• **Illegal timeout value (fixed in repository)**
  – timeout after start.
    • current: 60*1000*1000 / 200*1000 = 60,000,000 seconds
    • correct: 60*1000*1000 /(200*1000) = 60 seconds
  – timeout after getty.
    • current: 2*1000*1000 / 200*1000 = 2,000,000 seconds
    • correct: 2*1000*1000 /(200*1000) = 2 seconds

• **Sampling rate is 200ms only**

• **No header file**
  – original bootchartd creates header including the following data,
    • version
    • title
    • system.uname
    • system.release
    • system.cpu
    • system.kernel.options
Problems

- Cannot recognize threads
- Process/Thread informations under /proc has changed for multi thread.
- Getting stat information for only main thread.
- /proc in 2.6.20 is below

/proc/401
  +- stat : main thread
  +--task
    +-- 401
      |    +-- stat : main thread
      |      |    ...
    +-- 402
      |    +-- stat : 2nd thread
      |      |    ...
    +-- 403
      +-- stat : 3rd thread
      |    ...

Problems

uname:
release:
CPU:
kernel options:
time: 0:48

2nd Thread is running in busy loop