
Introduction to Linux Ramdump Parser



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Revision History

Revision	Date	Description
A	June 2016	Initial release

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Ramdump parser introduction

- What is Linux Ramdump parser?
 - Qualcomm developed open source tools, used to analyze crash dumps from Linux's perspective.
- How to get Ramdump parser?
 - `git clone git://codeaurora.org/quic/la/platform/vendor/qcom-opensource/tools`
- How to run Ramdump parser?
 - Example:
 - `python C:\Tools\linux-ramdump-parser-v2\ramparse.py -v C:\Port_COM3\vmlinux -g C:\D\Tools\aarch64-linux-gnu-gdb.exe -n C:\D\Tools\aarch64-linux-gnu-gcc-nm.exe -j C:\D\Tools\aarch64-linux-gnu-gcc-objdump.exe -e C:\Port_COM3\DDRCS0.bin 0x80000000 0x13ffffff --force-hardware 8996 --64-bit --phys-offset=0x80000000 -x -o C:\Port_COM3\parser`
 - See load.cmm under dump folder to know how to set **-e** and **-phys-offset**.

Ramdump parser logs

- Kconfig
- Kernel log
- RTB log
- An entry to launch TRACE32 simulator
- Cores' final call stack in non-secure world, parsed from debug images
- Runqueue for each core
- Each task's call stack, state, stack base
- Each core's timer list (tv1/2/3/4/5, and hrtimers)
- Clock dumps
- Workqueue
- IRQ state
- CPR information
- Thermal info
- L2 cache dump
- Zone info
- /proc/pagetypeinfo
- Page allocation corruption
- DDR cache compare

Ramdump parser commands

```
-h, --help            show this help message and exit
--print-watchdog-time  Print watchdog timing information
-e, --ram-file         List of ram files (name, start, end)
-v UMLINUX, --vmlinux=UMLINUX
                      vmlinux path
-n NM, --nm-path=NM    nm path
-g GDB, --gdb-path=GDB
                      gdb path
-j OBJDUMP, --objdump-path=OBJDUMP
                      objdump path
-a AUTODUMP, --auto-dump=AUTODUMP
                      Auto find ram dumps from the path
-o OUTDIR, --outdir=OUTDIR
                      Output directory
-s, --t32launcher      Create T32 simulator launcher
--t32-host-system=HOST
                      T32 host system (for launcher script generation).
                      Supported choices: "Linux", "Windows". Defaults to the
                      system ramparse.py is running on.
-x, --everything       Output everything (may be slow)
-f OUTFILE, --output-file=OUTFILE
                      Name of file to save output
--stdout              Dump to stdout instead of the file
--phys-offset=PHYS_OFFSET
                      use custom phys offset
--kaslr-offset=KASLR_OFFSET
                      Offset for address space layout randomization
--page-offset=PAGE_OFFSET
                      use custom page offset
--force-hardware=FORCE_HARDWARE
                      Force the hardware detection
--force-version=FORCE_HARDWARE_VERSION
                      Force the hardware detection to a specific hardware
                      version
--parse-qdss           Parse QDSS (deprecated)
--64-bit              Parse dumps as 64-bit dumps (default)
--32-bit              Parse dumps as 32-bit dumps
--shell               Run an interactive python interpreter with the ramdump
                      loaded

--print-cache-dump     Print L2 cache dump
--clock-dump           Dump all the clocks in the system
--cpr3-info            Print CPR3 information
--cpr-info             Print CPR information
--cpu-state            Reads register values of non-panic'ing CPUs
--ddr-compare          Sanity check the DDR data to find possible corruptions
-w, --check-for-watchdog
                      Check for an FIQ watchdog
--parse-debug-image    Parse the debug image and associated information
-d, --dmesg            Print the dmesg
--print-gpuinfo        print gpu info like ringbuffer, snapshot and pointer
                      addresses
--print-iommu-pg-tables
                      Print IOMMU page tables
--print-ipc-logging    Print all the IPC information
-i, --print-irqs       Print all the irq information
-c, --print-kconfig    Print saved kernel configuration
--lpm                 Parse LPM Driver info
--dump-page-tables     Dumps page tables
--print-pagealloccorruption
                      print pagealloc corruption information (if available)
--print-pagetracking   print page tracking information (if available)
--print-pagetypeinfo   Print the pagetypeinfo
--check-rodata         check rodata in dump against the static image
-r, --print-rtb        Print RTB (if enabled)
--print-runqueues      Print the runqueue status
--slabinfo             print information about slabs
--slabpoison           check slab poison
--spm                 Parse SPM Driver info
-t, --print-tasks      Print all the task information
-T, --print-tasks-timestamps
                      Print all the task sched stats per core sorted on
                      arrival time
-p, --check-for-panic  Check if a kernel panic occurred
--thermal-info         Useful information from thermal data structures
--timer-list           Print all the linux timers
--print-vmalloc        print vmalloc information
--print-vmstats        Print the information similar to /proc/zoneinfo and
                      /proc/vmstat
-q, --print-workqueues
```


RTB log example

```
246882.014895: [0xE2A760F0] LOGK_IRQ 0x000000050 from address 0xFFFFF0C000081524 gic_handle_irq
246882.014905: [0xE2A760F4] LOGK_WRITEL 0xFFFFF080000000188 from address 0xFFFFF0C00035CDBC gic_poke_irq
246882.014906: [0xE2A760F8] LOGK_READL 0xFFFFF080000000000 from address 0xFFFFF0C00035CF90 gic_do_wait_for_rwp
246882.015295: [0xE2A760FC] LOGK_IRQ 0x00000001B from address 0xFFFFF0C000081524 gic_handle_irq
246882.015320: [0xE2A76100] LOGK_IRQ 0x0000000D7 from address 0xFFFFF0C000081524 gic_handle_irq
246882.015324: [0xE2A76104] LOGK_WRITEL 0xFFFFF080000000198 from address 0xFFFFF0C00035CDBC gic_poke_irq
246882.015326: [0xE2A76108] LOGK_READL 0xFFFFF080000000000 from address 0xFFFFF0C00035CF90 gic_do_wait_for_rwp
246882.015330: [0xE2A7610C] LOGK_READL 0xFFFFF0800277A100 from address 0xFFFFF0C0009FADDC mon_irq_status
246882.015339: [0xE2A76110] LOGK_WRITEL 0xFFFFF0800277A280 from address 0xFFFFF0C0009FAC8C mon_disable
246882.015342: [0xE2A76114] LOGK_READL 0xFFFFF0800277A288 from address 0xFFFFF0C0009FB398 mon_get_count
246882.015344: [0xE2A76118] LOGK_READL 0xFFFFF0800277A100 from address 0xFFFFF0C0009FADDC mon_irq_status
246882.015346: [0xE2A7611C] LOGK_WRITEL 0xFFFFF0800277A284 from address 0xFFFFF0C0009FB4AC mon_clear.isra.2
246882.015348: [0xE2A76120] LOGK_WRITEL 0xFFFFF0800277A108 from address 0xFFFFF0C0009FACE4 mon_irq_clear
246882.015350: [0xE2A76124] LOGK_WRITEL 0xFFFFF080028AE108 from address 0xFFFFF0C0009FAD20 mon_irq_clear
246882.015352: [0xE2A76128] LOGK_WRITEL 0xFFFFF0800277A280 from address 0xFFFFF0C0009FAD80 mon_enable
246882.015355: [0xE2A7612C] LOGK_WRITEL 0xFFFFF080000000118 from address 0xFFFFF0C00035CDBC gic_poke_irq
246882.015357: [0xE2A76130] LOGK_READL 0xFFFFF080000000000 from address 0xFFFFF0C00035CF90 gic_do_wait_for_rwp
246882.015399: [0xE2A76134] LOGK_CTXID 0x000029C5 from address 0xFFFFF0C00008679C __switch_to
246882.015438: [0xE2A76138] LOGK_CTXID 0x000000008 from address 0xFFFFF0C00008679C __switch_to
246882.015458: [0xE2A7613C] LOGK_CTXID 0x000000000 from address 0xFFFFF0C00008679C __switch_to
246882.015477: [0xE2A76140] LOGK_READL 0xFFFFF080000000104 from address 0xFFFFF0C00035D6A4 gic_set_affinity
246882.015480: [0xE2A76144] LOGK_WRITEL 0xFFFFF080000000184 from address 0xFFFFF0C00035CDBC gic_poke_irq
246882.015481: [0xE2A76148] LOGK_READL 0xFFFFF080000000000 from address 0xFFFFF0C00035CF90 gic_do_wait_for_rwp
246882.015482: [0xE2A7614C] LOGK_WRITEL 0xFFFFF0800000061F0 from address 0xFFFFF0C00035D74C gic_set_affinity
246882.015484: [0xE2A76150] LOGK_WRITEL 0xFFFFF080000000104 from address 0xFFFFF0C00035CDBC gic_poke_irq
246882.015485: [0xE2A76154] LOGK_READL 0xFFFFF080000000000 from address 0xFFFFF0C00035CF90 gic_do_wait_for_rwp
246882.015605: [0xE2A76158] LOGK_IRQ 0x000000000 from address 0xFFFFF0C000081580 gic_handle_irq
246882.015606: [0xE2A7615C] LOGK_IRQ 0x000000050 from address 0xFFFFF0C000081524 gic_handle_irq
246882.015614: [0xE2A76160] LOGK_WRITEL 0xFFFFF080000000188 from address 0xFFFFF0C00035CDBC gic_poke_irq
246882.015615: [0xE2A76164] LOGK_READL 0xFFFFF080000000000 from address 0xFFFFF0C00035CF90 gic_do_wait_for_rwp
```

TRACE32 simulator launcher for Linux

```
start C:\T32\bin\windows64\t32MARM64.exe -c ./t32_config.t32, ./t32_startup_script.cmm
```

```
OS=
ID=T32_1000002
TMP=C:\TEMP
SYS=C:\T32
HELP=C:\T32\pdf

PBI=SIM

SCREEN=
FONT=SMALL
HEADER=Trace32-Simulator

PRINTER=WINDOWS

RCL=NETASSIST
PACKLEN=1024
PORT=29764
```

```
title "C:\02392677\Port_COM185\parser"
sys.cpu HYDRA
sys.up
data.load.binary C:\02392677\Port_COM185\DDRCS0.bin 0x80000000
data.load.binary C:\02392677\Port_COM185\DDRCS1.bin 0x100000000
Register.Set NS 1
Data.Set SPR:0x30201 %Quad 0x8203c000
Data.Set SPR:0x30202 %Quad 0x00000032B5193519
Data.Set SPR:0x30A20 %Quad 0x000000FF440C0400
Data.Set SPR:0x30A30 %Quad 0x0000000000000000
Data.Set SPR:0x30100 %Quad 0x00000000004C5D93D
Register.Set CPSR 0x3C5
MMU.Delete
MMU.SCAN PT 0xFFFFFFFF8000000000--0xFFFFFFFFFFFFFFFF
mmu.on
mmu.pt.list 0xffffffff8000000000
data.load.elf C:\02392677\Port_COM185\vmlinux /nocode
task.config C:\T32\demo\arm64\kernel\linux\linux-3.x\linux3.t32
menu.reprogram C:\T32\demo\arm64\kernel\linux\linux-3.x\linux.men
task.dtask
v.v %ASCII %STRING linux_banner
```

Debug image (registers/call stack for each core)

```
Debug image version: 2.0 Number of table entries 1
-----
Debug image version: 2.0 Entry id: MSM_DUMP_TABLE_APPS Entry type: MSM_DUMP_TYPE_TABLE Number of entries: 30
-----
Parsing debug information for MSM_DUMP_DATA_CPU_CTX. Version: 20 Magic: 42445953 Source:
Parsing CPU0 context start 1720ca180 end 1720ca980
Core 0 PC: handle_IPI+1b4 <ffffffffffc0000910e4>
Core 0 LR: handle_IPI+1b4 <ffffffffffc0000910e4>

[<ffffffffffc0000910e4>] handle_IPI+0x1b4
[<ffffffffffc000081584>] gic_handle_irq+0x3bc
[<ffffffffffc000084dac>] el1_irq+0x6c
[<ffffffffffc0000840774>] cpuidle_enter_state+0x3bc
[<ffffffffffc0000840950>] cpuidle_enter+0x18
[<ffffffffffc0000de264>] cpu_startup_entry+0x284
[<ffffffffffc000c630f0>] rest_init+0x84
[<ffffffffffc00133ba34>] start_kernel+0x470
[<80081750>] (No symbol for address 80081750)+0x0

core0 regs:
x0 = 0x0000000000000000
x1 = 0x0000000000f03fe03b
x2 = 0x0000000000000007
x3 = 0x0000000000000004
x4 = 0x0000000000000007
x5 = 0x000000000000001d
x6 = 0x0000000000000000
x7 = 0xffffffffffffffff
x8 = 0x78302b6c656e7265
x9 = 0xffffffffffffffff
x10 = 0x0000000000000000
x11 = 0x0000000000000002
x12 = 0xffffffffc0000910dc
x13 = 0x0000000000000000
x14 = 0x0xfffffffffffffff
x15 = 0x0000000000000000
x16 = 0x0000000000000000
x17 = 0x0000000000000000
x18 = 0x00000000000001ff80
x19 = 0x0000000000000000
x20 = 0xffffffffc0013f0248
x21 = 0x0000000000000003
x22 = 0xffffffffc0011de000
x23 = 0xffffffffc0011de000
x24 = 0xffffffffc0013dbd30
x25 = 0x0000000000000000
x26 = 0xffffffffc0013c8f88
x27 = 0xffffffffc0010b3ac8
x28 = 0x0000000000000000
x29 = 0xffffffffc0013dbc90
x30 = 0xffffffffc0000910e4 [handle_IPI+0x1b4]
pc = 0xffffffffc0000910e4 [handle_IPI+0x1b4]
currentEL = 0x0000000000000000
sp_el3 = 0x0000000000000000
elr_el3 = 0xffffffffc0000910e4 [handle_IPI+0x1b4]
spsr_el3 = 0x00000000600001c5
sp_el2 = 0x0000000085970ff0
elr_el2 = 0xffffffffc00008ae04 [__invoke_psci_fn_smc+0x4]
spsr_el2 = 0x00000000200001c5
sp_el1 = 0xffffffffc0013dbc90
elr_el1 = 0xffffffffc000844a7c [lpm_cpuidle_enter+0x620]
spsr_el1 = 0x0000000060000145
sp_el0 = 0x00000007fdb5e2600
dirty_flag = 0x0000000000000000
PStateMisc = 0x0000000000000000
```

Runqueue analysis

===== RUNQUEUE STATE =====

CPU0 8 process is running
|--curr: migration/0(10)
|--idle: swapper/0(0)
|--stop: migration/0(10)
CFS 5 process is pending
|--curr: None(0)
|--next: ksoftirqd/0(3)
|--last: None(0)
|--skip: None(0)
|--pend: ksoftirqd/0(3)
|--pend: kworker/0:1H(274)
|--pend: kworker/0:4(423)
|--pend: kworker/1:0(15)
|--pend: kworker/0:2(288)
RT 2 process is pending
|--pend: msm_watchdog(37)
|--pend: watchdog/0(11)

current callstack is maybe:

<snip>

0xffffffffc16b177bd8:('el1_irq', 108L)
0xffffffffc16b177be8:('save_return_addr', 0L)
0xffffffffc16b177bf8:('walk_stackframe', 48L)
0xffffffffc16b177c40:('cpu_bit_bitmap', 24L)
0xffffffffc16b177c88:('__func__.26497', 0L)
0xffffffffc16b177cb0:('save_return_addr', 0L)
0xffffffffc16b177d00:('walk_stackframe', 40L)
0xffffffffc16b177d10:('walk_stackframe', 48L)
0xffffffffc16b177d38:('return_address', 64L)
0xffffffffc16b177d48:('smpboot_thread_fn', 460L)
0xffffffffc16b177d68:('preempt_count_sub', 212L)
0xffffffffc16b177d98:('preempt_count_sub', 208L)
0xffffffffc16b177da8:('smpboot_thread_fn', 460L)
0xffffffffc16b177dc8:('kthread', 228L)
0xffffffffc16b177de0:('kallsyms_token_index',
25411L)
0xffffffffc16b177df0:('smpboot_thread_fn', 0L)
0xffffffffc16b177e08:('kthread', 200L)
0xffffffffc16b177e18:('ret_from_fork', 16L)
0xffffffffc16b177e20:('kthread', 0L)

Kernel stack and Running state of every task

Process: swapper/0, cpu: 0 pid: 0 start: 0xffffffffc0015405b0

=====

Task name: swapper/0 pid: 0 cpu: 0
state: 0x0 exit_state: 0x0 stack base: 0xffffffffc00152c000
Stack:
[<ffffffffc0000867ac>] __switch_to+0x7c
[<ffffffffc000d048ac>] __schedule+0x56c
[<ffffffffc000d04f4c>] preempt_schedule_irq+0x48
[<ffffffffc000084e24>] ell_preempt+0x8
[<ffffffffc000d04b68>] schedule+0x74
[<ffffffffc000d04ef4>] schedule_preempt_disabled+0x14
[<ffffffffc0000dfbd8>] cpu_startup_entry+0x324
[<ffffffffc000cf6680>] rest_init+0x84
[<ffffffffc0013fa9b4>] start_kernel+0x3f0
[<40081750>] (No symbol for address 40081750)+0x0

Each core's timer list

```
-----  
CPU 0(tvvec_base: ffffffff001801480 timer_jiffies: 4294938144 next_timer: 4294937660 active_timers: 8)  
-----
```

+ tv1 Timers (6)

INDEX	TIMER_LIST ADDR	EXPIRES	FUNCTION	DATA / WORK
33	fffffffc169f774c8	4294938145	pm_suspend_timer_fn	0xffffffffc169f77390
36	fffffffc0b4b892f8	4294938148	delayed_work_timer_fn	0xffffffffc0b4b892d8 / ufshcd_gate_work
88	fffffffc17cb86e10	4294938200	delayed_work_timer_fn	0xffffffffc17cb86df0 / vmstat_update
90	fffffffc0b49ec920	4294938202	blk_rq_timed_out_timer	0xffffffffc0b49ec328
90	fffffffc0b49ebf88	4294938202	blk_rq_timed_out_timer	0xffffffffc0b49eb990
90	fffffffc0b45805f8	4294938202	blk_rq_timed_out_timer	0xffffffffc0b4580000

+ tv2 Timers (2)

INDEX	TIMER_LIST ADDR	EXPIRES	FUNCTION	DATA / WORK
16	fffffffc0019eb600	4294938628	delayed_work_timer_fn	0xffffffffc0019eb5e0 / remote_rmi4_delay_work
16	fffffffc0019ebf20	4294938692	delayed_work_timer_fn	0xffffffffc0019ebf00 / remote_rmi4_delay_work

+ No tv3 Timers found

+ No tv4 Timers found

+ No tv5 Timers found

Clock dump

CLOCK NAME	COUNT/PREPARE_COUNT	RATE	CUR_LEVEL	CLOCK STRUCTURE
D mmss_gcc_dbg_clk	0 / 0	0	NULL	v.v (struct clk *)0xffffffffc001aff250
D gpu_gcc_dbg_clk	0 / 0	0	NULL	v.v (struct clk *)0xffffffffc001aff420
D gcc_debug_mux_v2	0 / 0	0	NULL	v.v (struct clk *)0xffffffffc001b043e0
D cpu_dbg_clk	0 / 0	0	NULL	v.v (struct clk *)0xffffffffc001aff338
D gcc_debug_mux	0 / 0	1593600000	NULL	v.v (struct clk *)0xffffffffc001b04530
D audio_ext_ap_clk	0 / 0	0	NULL	v.v (struct clk *)0xffffffffc001b419c8
D audio_ext_pmi_clk	0 / 0	0	NULL	v.v (struct clk *)0xffffffffc001b418e8
D audio_ext_ap_clk2	0 / 0	0	NULL	v.v (struct clk *)0xffffffffc001b41ac0
D gpu_aon_isense_clk	0 / 0	0	NULL	v.v (struct clk *)0xffffffffc001b24ae8
D gpu_mx_clk	0 / 0	0	0	v.v (struct clk *)0xffffffffc001b20480
D gpu_gcc_dbg_clk	0 / 0	19200000	NULL	v.v (struct clk *)0xffffffffc001b20ec8
D pwrcl_pll_main	0 / 0	595200000	NULL	v.v (struct clk *)0xffffffffc001b2e930
D pwrcl_lf_mux	0 / 0	595200000	NULL	v.v (struct clk *)0xffffffffc001b30290
D perfcl_pll_main	0 / 0	403200000	NULL	v.v (struct clk *)0xffffffffc001b2ea58
D perfcl_lf_mux	0 / 0	403200000	NULL	v.v (struct clk *)0xffffffffc001b2fff0
D sys_apcsaux_clk	0 / 0	300000000	NULL	v.v (struct clk *)0xffffffffc001b2f5b0
D cpu_debug_mux	0 / 0	1593600000	NULL	v.v (struct clk *)0xffffffffc001b30698
D mmpll18_postdiv_clk	0 / 0	133000000	NULL	v.v (struct clk *)0xffffffffc001b2d750
D mmpll19_postdiv_clk	0 / 0	624000000	NULL	v.v (struct clk *)0xffffffffc001b2d518
D mmsscc_gpll0_div	0 / 0	0	NULL	v.v (struct clk *)0xffffffffc001b1a470
D mmpll10	0 / 0	800000000	1	v.v (struct clk *)0xffffffffc001b2e1c0
D mmpll10_out_main	0 / 0	800000000	NULL	v.v (struct clk *)0xffffffffc001b2e090
D mmpll11	0 / 0	810000000	1	v.v (struct clk *)0xffffffffc001b1aa28

Note: The clock structures' pointer can be obtained so that the details in TRACE32 simulator can be checked. The current rate can be seen, whether it is enabled (if count = prepar_count !=0).

Workqueue for each core

CPU 0

pool 0

BUSY Workqueue worker: kworker/0:4 current_work: (None)

BUSY Workqueue worker: kworker/0:2 current_work: (None)

IDLE Workqueue worker: kworker/0:3 current_work: (None)

IDLE Workqueue worker: kworker/0:0 current_work: (None)

IDLE Workqueue worker: kworker/0:1 current_work: (None)

Pending entry: push_to_pool

Pending entry: ding entry: battery_age_tsens_poll

Pending entry: rslow_comp_work

Pending entry: update_cycle_count

Pending entry: update_esr_value

Pending entry: power_supply_changed_work

Pending entry: power_supply_changed_work

Pending entry: push_to_pool

pool 1

BUSY Workqueue worker: kworker/0:4 current_work: (None)

BUSY Workqueue worker: kworker/0:2 current_work: (None)

IDLE Workqueue worker: kworker/0:1H current_work: (None)

IDLE Workqueue worker: kworker/0:0H current_work: (None)

Pending entry: cfq_kick_queue

IRQ state

-----begin IrqParse-----

IRQ	CPU0	CPU1	CPU2	CPU3	Name	Chip	IRQ Structure
3	1421	447	1325	1275	arch_timer	GICv3	v.v (struct irq_desc *)0xffffffffc16b00b480
5	0	0	0	0	arch_mem_timer	GICv3	v.v (struct irq_desc *)0xffffffffc16b00b100
6	0	0	0	0	MDSS	GICv3	v.v (struct irq_desc *)0xffffffffc169d68e00
7	0	0	0	0	smp2p	GICv3	v.v (struct irq_desc *)0xffffffffc169d6aa00
8	0	0	0	0	smp2p	GICv3	v.v (struct irq_desc *)0xffffffffc169d69180
9	0	0	0	0	smp2p	GICv3	v.v (struct irq_desc *)0xffffffffc169d6a680
10	0	0	0	0	spdm_bw_hyp	GICv3	v.v (struct irq_desc *)0xffffffffc169d6a300
13	58	0	0	0	i2c-msm-v2-irq	GICv3	v.v (struct irq_desc *)0xffffffffc169d69c00
14	0	0	0	0	sps	GICv3	v.v (struct irq_desc *)0xffffffffc169f7c000
16	507	0	0	0	i2c-msm-v2-irq	GICv3	v.v (struct irq_desc *)0xffffffffc169f7c380
17	6	0	0	0	i2c-msm-v2-irq	GICv3	v.v (struct irq_desc *)0xffffffffc169f7f800
18	0	0	0	0	i2c-msm-v2-irq	GICv3	v.v (struct irq_desc *)0xffffffffc169f7c700
19	22	0	0	0	i2c-msm-v2-irq	GICv3	v.v (struct irq_desc *)0xffffffffc169f7f480
26	0	0	0	0	ngd_slim_irq	GICv3	v.v (struct irq_desc *)0xffffffffc169f7e300
28	0	0	0	0	630000.ufsice	GICv3	v.v (struct irq_desc *)0xffffffffc169f7df80
29	465	0	0	0	ufshcd	GICv3	v.v (struct irq_desc *)0xffffffffc169fcc000
30	0	0	0	0	int_msi	GICv3	v.v (struct irq_desc *)0xffffffffc169fcfb80
37	0	0	0	0	int_pls_err	GICv3	v.v (struct irq_desc *)0xffffffffc169fcce00
38	0	0	0	0	int_aer_legacy	GICv3	v.v (struct irq_desc *)0xffffffffc169fced80
40	0	0	0	0	int_pls_link_down	GICv3	v.v (struct irq_desc *)0xffffffffc169fcea00

CPR information (Not for all targets)

CPR Regulator	apc1_corner						
CPR Enabled	1						
Current Voltage	920000						
speed_bin	0						
cpr_fuse_revision	1						
cpr_fuse_map_match	-1						
num_fuse_corners	3						
num_corners	7						
corner	3						
cpr_fuse_redundant	0						
ro_sel	2						
cpr_fuse_ro_sel	2 2 2						
Corner	1	2	3	4	5	6	7
ceiling_volt	850000	850000	925000	970000	1040000	1080000	1095000
open_loop_volt	850000	850000	925000	970000	1040000	1080000	1095000
last_volt	850000	850000	920000	965000	1025000	1065000	1080000
floor_volt	790000	790000	820000	850000	940000	990000	990000
Target quotient	940	940	1119	1230	1372	1455	1490

Thermal sensor data

Thermal sensor data

TEMPERATURE ENTRIES FOR CPU:0

Temperature reading -	493	TimeStamp -	8469957160
Temperature reading -	503	TimeStamp -	8470442420
Temperature reading -	503	TimeStamp -	8470575650
Temperature reading -	474	TimeStamp -	8166957107
Temperature reading -	470	TimeStamp -	8168471534
Temperature reading -	480	TimeStamp -	8409028566
Temperature reading -	480	TimeStamp -	8413876639
Temperature reading -	477	TimeStamp -	8415337681
Temperature reading -	480	TimeStamp -	8435138462
Temperature reading -	477	TimeStamp -	8448638931

TEMPERATURE ENTRIES FOR CPU:1

Temperature reading -	516	TimeStamp -	8469915806
Temperature reading -	451	TimeStamp -	8126790180
Temperature reading -	454	TimeStamp -	8128299346
Temperature reading -	451	TimeStamp -	8166965492
Temperature reading -	454	TimeStamp -	8168479659
Temperature reading -	503	TimeStamp -	8408967628
Temperature reading -	474	TimeStamp -	8413886951
Temperature reading -	474	TimeStamp -	8415350024
Temperature reading -	464	TimeStamp -	8435150545
Temperature reading -	461	TimeStamp -	8448646952

Page type information

zone DMA	type Unmovable	74	73	65	16	1	1	0	1	2	1	0 = 7 MB 1808 pages
zone DMA	type Reclaimable	75	74	66	17	2	2	1	2	3	2	1 = 15 MB 3855 pages
zone DMA	type Movable	1	0	1	1	1	2	1	1	1	0	0 = 2 MB 541 pages
zone DMA	type CMA	2	1	2	2	2	3	2	2	2	1	1 = 10 MB 2588 pages
zone DMA	type Reserve	320	411	127	37	2	5	0	2	1	0	180 = 730 MB 186970 pages
zone DMA	type Isolate	321	412	128	38	3	6	1	3	2	1	181 = 738 MB 189017 pages
Total pages:		793	971	389	111	11	19	5	11	11	5	363

Approximate total for zone DMA: 1503 MB, 384779 pages

!!! Numbers may not be accurate due to list corruption!

zone Normal	type Unmovable	140	100	88	19	1	0	1	3	2	1	1 = 13 MB 3356 pages
zone Normal	type Reclaimable	141	101	89	20	2	1	2	4	3	2	2 = 21 MB 5403 pages
zone Normal	type Movable	1	1	1	5	0	1	0	0	1	1	0 = 3 MB 847 pages
zone Normal	type CMA	2	2	2	6	1	2	1	1	2	2	1 = 11 MB 2894 pages
zone Normal	type Reserve	952	1758	897	129	22	1	2	1	1	1	191 = 805 MB 206080 pages
zone Normal	type Isolate	953	1759	898	130	23	2	3	2	2	2	192 = 812 MB 208127 pages
Total pages:		2189	3721	1975	309	49	7	9	11	11	9	387

Zone information

```
Zone DMA
NR_FREE_PAGES      : 692168
NR_ALLOC_BATCH     : 277
NR_LRU_BASE        : 2
NR_ACTIVE_ANON     : 316
NR_INACTIVE_FILE   : 0
NR_ACTIVE_FILE     : 74
NR_UNEVICTABLE     : 0
NR_MLOCK           : 0
NR_ANON_PAGES      : 317
NR_FILE_MAPPED     : 4
NR_FILE_PAGES      : 119
NR_FILE_DIRTY      : 0
NR_WRITEBACK       : 0
NR_SLAB_RECLAIMABLE : 2010
NR_SLAB_UNRECLAIMABLE : 10488
NR_PAGETABLE       : 3
NR_KERNEL_STACK    : 104
NR_UNSTABLE_NFS    : 0
NR_BOUNCE          : 0
NR_VMSCAN_WRITE    : 0
NR_VMSCAN_IMMEDIATE : 0
NR_WRITEBACK_TEMP  : 0
NR_ISOLATED_ANON   : 0
NR_ISOLATED_FILE   : 0
NR_SHMEM           : 5
NR_DIRTIED         : 0
NR_WRITTEN         : 0
NR_PAGES_SCANNED   : 0
WORKINGSET_REFAULT : 0
WORKINGSET_ACTIVATE : 0
WORKINGSET_NODERECLAIM : 0
NR_ANON_TRANSPARENT_HUGEPAGES : 0
NR_FREE_CMA_PAGES  : 34243
NR_SWAPCACHE       : 0
WMARK_MIN          : 1195
WMARK_LOW          : 1493
WMARK_HIGH         : 1792
```

Downloaded from <http://ajph.org/> on November 10, 2015

from DDR:

ffffffc001666800	*31a739c7	*29663186	*29452946	*29452945	*29452925	*29452945	*29452945	*29452945	.9.1.1f)F(E)E(E)%E)E)E)E)E)
ffffffc001666820	*21042125	*10a318e4	*08621082	*08210841	*08210021	*08410841	*08410841	*08420842	%!.!.....b.A.!...A.A.A.B.B.
ffffffc001666840	*08620862	*08620862	*08620862	*08620862	*08620862	*08620862	*10820862	*10821082	b.b.b.b.b.b.b.b.b.b.b.b.....
ffffffc001666860	*10a310a3	*18c318c3	*18e418c4	*21252104	*29662145	*31a72986	*39e839c7	*4a494229!!%E)f).).1.9.9)BIJ
ffffffc001666880	*52ab4a6a	*630c5acb	*6b6e634d	*73af738e	*7bf07bcf	*8c728c71	*9cf49cd3	*42284208	jJ.R.ZcMcnk.s.s.{q.r.....B(B
ffffffc0016668a0	*630c4a49	*52aa52aa	*5aaa5aaa	*5aaa5aaa	*5aaa5aaa	*5aaa62cb	*52695a8a	*4a284a28	IJC.R.R.Z.Z.Z.Z.Z.Z.b.Z.ZiR(J(J
ffffffc0016668c0	*52694a48	*5aaa5aaa	*5aaa5aaa	*52695aaa	*630b5aaa	*20e35269	*20e31081	*20e320e3	HJR.Z.Z.Z.Z.ZiR.ZciR.....
ffffffc0016668e0	*20e320e3	*20c320c3	*20e320c3	*20e320e3	*20e320e3	*20e420e4	*290420e4	*29042904).

```
from vmlinux:
```

```

ffffffffffc001666800 *a8c27bfd *d65f03c0 *a9bf7bfd *f0003d40 *910003fd *f906581f *f0003d40 *f9065c1f .{...._.{.!=.....X.!=...\.
ffffffffffc001666820 *f0003d40 *f906681f *f0003d40 *f906641f *97b02c53 *a8c17bfd *d65f03c0 *a9bf7bfd @=...h..!=...d..S,...{...._.{..
ffffffffffc001666840 *d0ffce41 *52800040 *910003fd *91194021 *97d720ce *a8c17bfd *d65f03c0 *a9be7bfd A...@..R....!@.....{...._.{..
ffffffffffc001666860 *910003fd *f9000bf3 *90001793 *91248273 *91004260 *97d6b486 *91018260 *52800021 .....s.$.`B.....`...!...R
ffffffffffc001666880 *97d72a0d *91036260 *52800041 *97d729a6 *91072260 *97d5c114 *f9400bf3 *a8c27bfd *..`b..A..R.)..`".....@..{..
ffffffffffc0016668a0 *d65f03c0 *90003da1 *d0ffce40 *a9bf7bfd *911c0000 *910003fd *f9427821 *97d72e86 .._..=.@....{.....!xB.....
ffffffffffc0016668c0 *90001780 *912c8000 *97d5c107 *a8c17bfd *d65f03c0 *90003da1 *d0ffce40 *a9bf7bfd .....,.....{...._.=.@....{..
ffffffffffc0016668e0 *911da000 *910003fd *f9427c21 *97d72e7a *90001780 *912d8000 *97d5c0fb *a8c17bfd .....!|B.z.....-.....{..

```


DDR Cache Compare

Kernel Configuration for debug spinlocks is not enabled, cannot compare the magic values!!

Checking for task list corruption.

Init Task Address = 0xffffffffc001a29d30L

Task Offset 0x398

Comm Offset 0x608

Next = 0xffffffffc0d9c90000 (init)
Next = 0xffffffffc0d9c90c00 (kthreadd)
Next = 0xffffffffc0d9c91800 (ksoftirqd/0)
Next = 0xffffffffc0d9c93000 (kworker/0:0H)
Next = 0xffffffffc0d9c93c00 (kworker/u8:0)
Next = 0xffffffffc0d9c94800 (rcu_preempt)
Next = 0xffffffffc0d9c95400 (rcu_sched)
Next = 0xffffffffc0d9c96000 (rcu_bh)
Next = 0xffffffffc0d9c96c00 (migration/0)
Next = 0xffffffffc0d9e9a400 (migration/1)
Next = 0xffffffffc0d9e9b000 (ksoftirqd/1)
Next = 0xffffffffc0d9e9c800 (kworker/1:0H)

Next = 0xffffffffc004250000 (kworker/3:3)
Next = 0xffffffffc09ee03000 (kworker/2:2)
Next = 0xffffffffc0ccfd8c00 (kworker/1:2)
Next = 0xffffffffc0343dc800 (kworker/2:1)
Next = 0xffffffffc0cbf35400 (kworker/0:1)
Next = 0xffffffffc0343dbc00 (kworker/u8:12)
Next = 0xffffffffc04fcc0000 (kworker/3:1)
Next = 0xffffffffc04fcc1800 (kworker/1:3)
Next = 0xffffffffc0cbf30000 (kworker/2:3)
Next = 0xffffffffc0cd1eec00 (kworker/u8:16)
Next = 0xffffffffc001a29d30 (swapper/0)

RESULT: No issues found in the task list

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Questions?

<https://createpoint.qti.qualcomm.com>

