

Verify the pd_info Directory and bootuplog Files from a System Report

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Introduction

This document describes how to inspect the pd_info directory and bootuplog file from a system report in order to troubleshoot unexpected reloads.

Components Used

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

This document is based on enterprise routing and switching Cisco IOS® XE platforms. When decompressing the system report generated upon an unexpected reload of a Cisco IOS XE device, it contains a directory called pd_info under the bootflash directory and the bootuplog file under the tmp directory.



Note: Refer to system report documentation at [System reports](#).

The pd_info directory refers to the platform dependent information and it contains generally these log files:

- dmesg_output
- filesystems
- memaudit
- proc_cpuinfo
- proc_diskstats

- `proc_interrupts`
- `proc_oom_stats`
- `proc_softirqs`
- `system_report_trigger.log`
- `top_output`



Note: Note that every log file has a date and time stamp as part of the file name.

Some of these files helps to understand the last conditions in terms of resources before a device reloaded unexpectedly.

This document focuses in a brief explanation of some of these files.

Description of the Files in `pd_info` Directory

`pd_info` Directory

This section describes different files contains within the `pd_info` directory from a system report.

- **Filesystem.** Logical name of the file system device.
- **Used.** Number of 1Kb blocks used.
- **Available.** Number of free 1Kb blocks available.
- **Percentage Used.** Percentage of 1Kb blocks used of the total available.
- **Mounted on.** Canonical path to the mounted file system.

The two log files are:

- **`dmesg_output.log`:** The `dmesg` output contains the kernel log buffer dump.
- **`filesystems.log`:** This file contains these information of the file system:



Note: This output corresponds with the output of command **`show platform software mount`** which is described at [Cisco IOS Configuration Fundamentals Command Reference](#).

An example output can be seen here:

```
*****
OUTPUT OF df -h
*****
Filesystem      Size  Used Avail Use% Mounted on
rootfs          7.7G  136M   7.5G   2% /
```

devtmpfs	4.0M	0	4.0M	0%	/dev
tmpfs	7.7G	9.6M	7.7G	1%	/dev/shm
tmpfs	3.1G	9.6M	3.1G	1%	/run
tmpfs	4.0M	0	4.0M	0%	/sys/fs/cgroup
tmpfs	7.7G	79M	7.6G	2%	/tmp
tmpfs	7.7G	360K	7.7G	1%	/var
tmpfs	5.0M	40K	5.0M	1%	/var/log/audit
/dev/sda2	1008M	1.3M	956M	1%	/flash6
/dev/sda4	7.8M	346K	7.1M	5%	/flash4
/dev/sda5	7.8M	58K	7.3M	1%	/flash5
/dev/sda6	124M	1.6M	116M	2%	/flash3
/dev/sda7	1.2G	1.9M	1.2G	1%	/flash7
/dev/sda1	1.6G	263M	1.3G	18%	/flash2
/dev/sda3	11G	2.5G	7.6G	25%	/flash1
/dev/loop0	32K	32K	0	100%	/tmp/sw/mount/cat9k-wlc.17.09.04a.SPA.pkg
/dev/loop1	2.1M	2.1M	0	100%	/tmp/sw/mount/cat9k-guestshell.17.09.04a.SPA.pkg
/dev/loop2	18M	18M	0	100%	/tmp/sw/mount/cat9k-webui.17.09.04a.SPA.pkg
/dev/loop3	26M	26M	0	100%	/tmp/sw/mount/cat9k-cc_srdriver.17.09.04a.SPA.pkg
/dev/loop4	40M	40M	0	100%	/tmp/sw/mount/cat9k-srdriver.17.09.04a.SPA.pkg
/dev/loop5	50M	50M	0	100%	/tmp/sw/mount/cat9k-sipbase.17.09.04a.SPA.pkg
/dev/loop6	63M	63M	0	100%	/tmp/sw/mount/cat9k-sipspace.17.09.04a.SPA.pkg
/dev/loop7	166M	166M	0	100%	/tmp/sw/mount/cat9k-espace.17.09.04a.SPA.pkg
/dev/loop8	781M	781M	0	100%	/tmp/sw/mount/cat9k-rpbase.17.09.04a.SPA.pkg
tmpfs	13G	29M	13G	1%	/tmp/rp/tdltdb
tmpfs	13G	2.1M	13G	1%	/tmp/fp/tdltdb
tmpfs	13G	3.2M	13G	1%	/tmp/cc/tdltdb

This file output correspond to the Linux command output **df -h**

```
[Router_RP_0:/]$ df -h
```

Filesystem	Size	Used	Avail	Use%	Mounted on
devtmpfs	4.0M	0	4.0M	0%	/dev
tmpfs	3.7G	46M	3.7G	2%	/dev/shm
tmpfs	1.5G	15M	1.5G	1%	/run
tmpfs	4.0M	0	4.0M	0%	/sys/fs/cgroup
tmpfs	3.7G	82M	3.7G	3%	/tmp
/dev/bootflash1	7.2G	2.9G	4.0G	43%	/bootflash

```
<snip>
```

This file snapshot is useful when troubleshooting Temporal File System (TMPFS) issues. For example, when this type of alarm is seen:

```
%PLATFORM-3-ELEMENT_TMPFS_WARNING: [LOCATION] R0/0: smand: [SLOT]: TMPFS value 45% above warning level
```

memaudit.log

This file contains a different outputs regarding the memory of the system, for example:

```
=====
```

free -m

	total	used	free	buffers	cached
Mem:	15618.812	1972.348	7662.254	5984.211	13203.898
Swap:	0.000	0.000	0.000	0.000	0.000

/proc/meminfo

MemTotal: 15618.812
MemFree: 7661.594
MemAvailable: 13203.746
Buffers: 503.805
Cached: 5288.754
SwapCached: 0.000
Active: 3482.742
Inactive: 3563.887
Active(anon): 1339.430
Inactive(anon): 182.828
Active(file): 2143.566
Inactive(file): 3381.059
Unevictable: 0.055
Mlocked: 0.055
SwapTotal: 0.000
SwapFree: 0.000
Dirty: 0.027
Writeback: 0.000
AnonPages: 1254.098
Mapped: 1043.117
Shmem: 267.809
KReclaimable: 192.031
Slab: 320.250
SReclaimable: 192.031
SUnreclaim: 128.219
KernelStack: 5.922
PageTables: 64.332
NFS_Unstable: 0.000
Bounce: 0.000
WritebackTmp: 0.000
CommitLimit: 7801.406
Committed_AS: 5058.414
VmallocTotal: 33554431.999
VmallocUsed: 21.395
VmallocChunk: 0.000
Percpu: 3.031
CmaTotal: 0.000
CmaFree: 0.000
HugePages_Total: 8
HugePages_Free: 8
HugePages_Rsvd: 0
HugePages_Surp: 0
Hugepagesize: 2.000
Hugetlb: 16.000
DirectMap4k: 119.438
DirectMap2M: 3646.000
DirectMap1G: 14336.000

```
=====
```

```
df -Th -BM
```

```
=====
```

Filesystem	Type	Blocks	Used	Available	Use%	Mounted
rootfs	rootfs	7785	136	7649	2	/
devtmpfs	devtmpfs	4	0	4	0	/dev
tmpfs	tmpfs	7810	10	7800	1	/dev/shm
tmpfs	tmpfs	3124	10	3115	1	/run
tmpfs	tmpfs	4	0	4	0	/sys/fs
tmpfs	tmpfs	7810	79	7731	2	/tmp
tmpfs	tmpfs	7810	1	7810	1	/var
tmpfs	tmpfs	5	1	5	1	/var/lo

```
<snip>
```

Analysis of /proc/<pid>/smaps

```
=====
```

Parent	Process	PID	RSS	PSS	Shared	Anon	Private	Siz	B
rp	linux_iosd_image	5457	829.051	677.971	236.832	310.402	592.219	7233.859	320.
fp	fed	22495	266.438	224.062	65.270	167.348	201.168	4205.105	0.
rp	dbm	7938	234.234	111.116	177.156	34.402	57.078	2217.719	0.
rp	sessmgrd	4362	169.340	81.144	115.844	33.219	53.496	1528.961	0.
rp	smand	9523	164.414	130.350	40.879	120.895	123.535	729.090	0.
cc	iomd	11892	138.047	127.436	16.789	36.832	121.258	2310.754	1.
rp	cli_agent	8234	131.434	52.303	103.168	21.633	28.266	1150.047	0.
rp	fman_rp	7311	129.938	80.075	79.238	18.297	50.699	1613.012	7.

```
<snip>
```



Note: Note that the output of linux command **/proc/<pid>/smaps** contains Resident Set Size (RSS) value for each Cisco IOS XE process.

proc_oom_stats.log

This file can give hints about out of memory events and associated processes.

```
*****
OUTPUT OF cat /proc/oom_stats
*****
OOM events: 0
  pid      name      memory
=====
```

system_report_trigger.log

This file provides an error string that indicates what event triggered the system report file generation.

top_output.log

This file contains the output of linux command **top -b -n 1 -w 512 -c** .

It contains relevant information about CPU and memory resources. For example:

```
*****
```

```
OUTPUT OF top -b -n 1 -w 512 -c
```

```
*****
```

```
top - 02:18:38 up 36 min,  0 users,  load average: 0.15, 0.07, 0.17
```

```
Tasks: 322 total,   1 running, 321 sleeping,   0 stopped,   0 zombie
```

```
%Cpu(s):  0.7 us,  1.5 sy,  0.0 ni, 97.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
```

```
MiB Mem : 15618.8 total,  7660.3 free,  1972.0 used,  5986.5 buff/cache
```

```
MiB Swap:   0.0 total,    0.0 free,    0.0 used. 13204.0 avail Mem
```

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
4028	root	20	0	6124	3312	2768	R	6.2	0.0	0:00.01	top -b -n 1 -w 512 -c
11892	root	20	0	2366212	141152	103584	S	6.2	0.9	1:45.41	/tmp/sw/cc/1/0/cc_spa/mount/usr/bi
22495	root	20	0	4306028	269572	99536	S	6.2	1.7	0:34.62	/tmp/sw/fp/0/0/fp/mount/usr/binos/
1	root	20	0	28800	25060	8008	S	0.0	0.2	0:02.40	/init SR_PKGS_OK
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	[kthreadd]
3	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	[rcu_gp]
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	[rcu_par_gp]
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	[kworker/0:0H-kblockd]
8	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	[mm_percpu_wq]

```
<snip>
```

The bootuplog File

The bootup Log file is located in the tmp directory from the system report:

```
% tree sd43405-test.test_RP_0-system-report_RP_0_20260818-155012-cdt.tar.gz_decoded.log
```

```
/Users/ivanher/Downloads/sd43405-test.test_RP_0-system-report_RP_0_20260818-155012-cdt.tar.gz_decoded.1
```

```
├─ bootflash
│   └─ pd_info
│       ├── dmesg_output-20260818-154935-cdt.log
│       ├── filesystems-20260818-154935-cdt.log
│       ├── memaudit-20260818-154935-cdt.log
│       ├── proc_cpuinfo-20260818-154935-cdt.log
│       ├── proc_diskstats-20260818-154935-cdt.log
│       ├── proc_interrupts-20260818-154935-cdt.log
│       ├── proc_oom_stats-20260818-154935-cdt.log
│       ├── proc_softirqs-20260818-154935-cdt.log
│       ├── system_report_trigger.log
│       └─ top_output-20260818-154935-cdt.log
├─ btracedecode.log
├─ crashinfo
│   └─ tracelogs
│       └─ IOSRP_R0-0.7286_0.20260714192115.bin.gz_decoded.log
```

```
<snip>
```

[illegible]

```
776 directories, 2646 files
```

This file contains some logs that can be relevant to understand an unexpected reset.

For example, it can contain if there were heartbeat misses for multicaud systems:

```
Aug 18 15:49:32 test_RP_0 cman_fp[12978]: %CMFP-3-HB_TIMEOUT: F0/0: cman_fp: Periodic Heartbeat message
Aug 18 15:49:34 test_RP_0 pman:[10638]: %PMAN-3-PROCHOLDDOWN: F0/0: pman: The process cman_fp has been
```

In wireless controllers (for example the Cisco Catalyst 9800) it contains data about last activity happening in a High Availability (HA) environment:

```

Jul 27 11:35:37 test_2_RP_0 rif_mgr[6455]: %RIF_MGR_FSM-6-RP_LINK_UP: R0/0: rif_mgr: The RP link is UP.
Jul 27 11:35:37 test_2_RP_0 stack_mgr[5465]: %STACKMGR-1-DUAL_ACTIVE_CFG_MSG: R0/0: stack_mgr: Dual Act
Jul 27 11:35:38 test_2_RP_0 wncmgrd[17474]: %EWLC_HA_LIB_MESSAGE-6-BULK_SYNC_STATE_INFO: R0/0: wncmgrd:
Jul 27 11:35:38 test_2_RP_0 ndbmand[26588]: %NDBMAN-5-ACTIVE: R0/0: ndbmand: All data providers active.
Jul 27 11:35:39 test_2_RP_0 stack_mgr[5465]: %STACKMGR-6-KA_MISSED: R0/0: stack_mgr: Keepalive missed f
Jul 27 11:35:40 test_2_RP_0 stack_mgr[5465]: %STACKMGR-6-CHASSIS_REMOVED: R0/0: stack_mgr: Chassis 1 ha
Jul 27 11:35:40 test_2_RP_0 stack_mgr[5465]: %STACKMGR-6-CHASSIS_REMOVED_KA: R0/0: stack_mgr: Chassis 1

```

Additional Information

The log file `bootuplog.log` is also included in the system report, in the `tmp` directory. This log file contains relevant logs which can be useful to have more visibility about last logs seen by the system before an unexpected reload.