



## Identifying Memory Allocations for Processes

You can identify the allocation, limit, memory allocation, and usage for each process in the memory. The following is a sample output from the **show processes memory** command. This output has been abbreviated to make the example more concise.

```
switch# show processes memory
PID MemAlloc MemLimit MemUsed StackBase/Ptr Process
----
```

| PID | MemAlloc | MemLimit | MemUsed | StackBase/Ptr     | Process     |
|-----|----------|----------|---------|-------------------|-------------|
| 1   | 159744   | 0        | 2027520 | ff808d30/ffffffff | init        |
| 2   | 0        | 0        | 0       | 0/0               | kthreadd    |
| 3   | 0        | 0        | 0       | 0/0               | migration/0 |
| 4   | 0        | 0        | 0       | 0/0               | ksoftirqd/0 |
| 5   | 0        | 0        | 0       | 0/0               | watchdog/0  |
| 6   | 0        | 0        | 0       | 0/0               | migration/1 |
| 7   | 0        | 0        | 0       | 0/0               | ksoftirqd/1 |
| 8   | 0        | 0        | 0       | 0/0               | watchdog/1  |
| 9   | 0        | 0        | 0       | 0/0               | migration/2 |
| 10  | 0        | 0        | 0       | 0/0               | ksoftirqd/2 |
| 11  | 0        | 0        | 0       | 0/0               | watchdog/2  |
| 12  | 0        | 0        | 0       | 0/0               | migration/3 |
| 13  | 0        | 0        | 0       | 0/0               | ksoftirqd/3 |
| 14  | 0        | 0        | 0       | 0/0               | watchdog/3  |
| 15  | 0        | 0        | 0       | 0/0               | migration/4 |
| 16  | 0        | 0        | 0       | 0/0               | ksoftirqd/4 |
| 17  | 0        | 0        | 0       | 0/0               | watchdog/4  |
| 18  | 0        | 0        | 0       | 0/0               | migration/5 |
| 19  | 0        | 0        | 0       | 0/0               | ksoftirqd/5 |
| 20  | 0        | 0        | 0       | 0/0               | watchdog/5  |
| 21  | 0        | 0        | 0       | 0/0               | migration/6 |
| 22  | 0        | 0        | 0       | 0/0               | ksoftirqd/6 |
| 23  | 0        | 0        | 0       | 0/0               | watchdog/6  |
| 24  | 0        | 0        | 0       | 0/0               | migration/7 |
| 25  | 0        | 0        | 0       | 0/0               | ksoftirqd/7 |
| 26  | 0        | 0        | 0       | 0/0               | watchdog/7  |
| 27  | 0        | 0        | 0       | 0/0               | events/0    |
| 28  | 0        | 0        | 0       | 0/0               | events/1    |
| 29  | 0        | 0        | 0       | 0/0               | events/2    |
| 30  | 0        | 0        | 0       | 0/0               | events/3    |
| 31  | 0        | 0        | 0       | 0/0               | events/4    |
| 32  | 0        | 0        | 0       | 0/0               | events/5    |
| 33  | 0        | 0        | 0       | 0/0               | events/6    |
| 34  | 0        | 0        | 0       | 0/0               | events/7    |
| 35  | 0        | 0        | 0       | 0/0               | khelper     |
| 36  | 0        | 0        | 0       | 0/0               | netns       |
| 37  | 0        | 0        | 0       | 0/0               | kblockd/0   |

The **show processes memory** command includes the following keywords:

| Keyword | Description                          |
|---------|--------------------------------------|
| >       | Redirects the output to a file.      |
| >>      | Adds the output to an existing file. |
| shared  | Displays shared memory information.  |

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## Identifying CPU Utilization for Processes

You can identify the CPU utilization for running process in the memory. The following is a sample output from the **show processes cpu** command. This output has been abbreviated to make the example more concise.

```
switch# show processes cpu
```

```
CPU utilization for five seconds: 0%/0%; one minute: 1%; five minutes: 2%
```

| PID | Runtime (ms) | Invoked | uSecs | 5Sec  | 1Min  | 5Min  | TTY | Process     |
|-----|--------------|---------|-------|-------|-------|-------|-----|-------------|
| 1   | 28660        | 405831  | 70    | 0.00% | 0.00% | 0.00% | -   | init        |
| 2   | 21           | 1185    | 18    | 0.00% | 0.00% | 0.00% | -   | kthreadd    |
| 3   | 468          | 36439   | 12    | 0.00% | 0.00% | 0.00% | -   | migration/0 |
| 4   | 79725        | 8804385 | 9     | 0.00% | 0.00% | 0.00% | -   | ksoftirqd/0 |
| 5   | 0            | 4       | 65    | 0.00% | 0.00% | 0.00% | -   | watchdog/0  |
| 6   | 472          | 35942   | 13    | 0.00% | 0.00% | 0.00% | -   | migration/1 |
| 7   | 33967        | 953376  | 35    | 0.00% | 0.00% | 0.00% | -   | ksoftirqd/1 |
| 8   | 0            | 11      | 3     | 0.00% | 0.00% | 0.00% | -   | watchdog/1  |
| 9   | 424          | 35558   | 11    | 0.00% | 0.00% | 0.00% | -   | migration/2 |
| 10  | 58084        | 7683251 | 7     | 0.00% | 0.00% | 0.00% | -   | ksoftirqd/2 |
| 11  | 0            | 3       | 1     | 0.00% | 0.00% | 0.00% | -   | watchdog/2  |
| 12  | 381          | 29760   | 12    | 0.00% | 0.00% | 0.00% | -   | migration/3 |
| 13  | 17258        | 265884  | 64    | 0.00% | 0.00% | 0.00% | -   | ksoftirqd/3 |
| 14  | 0            | 2       | 0     | 0.00% | 0.00% | 0.00% | -   | watchdog/3  |
| 15  | 46558        | 1300598 | 35    | 0.00% | 0.00% | 0.00% | -   | migration/4 |
| 16  | 1332913      | 4354439 | 306   | 0.00% | 0.00% | 0.00% | -   | ksoftirqd/4 |
| 17  | 0            | 6       | 2     | 0.00% | 0.00% | 0.00% | -   | watchdog/4  |
| 18  | 45808        | 1283581 | 35    | 0.00% | 0.00% | 0.00% | -   | migration/5 |
| 19  | 981030       | 1973423 | 497   | 0.00% | 0.00% | 0.00% | -   | ksoftirqd/5 |
| 20  | 0            | 16      | 3     | 0.00% | 0.00% | 0.00% | -   | watchdog/5  |
| 21  | 48019        | 1334683 | 35    | 0.00% | 0.00% | 0.00% | -   | migration/6 |
| 22  | 1084448      | 2520990 | 430   | 0.00% | 0.00% | 0.00% | -   | ksoftirqd/6 |
| 23  | 0            | 31      | 3     | 0.00% | 0.00% | 0.00% | -   | watchdog/6  |
| 24  | 46490        | 1306203 | 35    | 0.00% | 0.00% | 0.00% | -   | migration/7 |
| 25  | 1187547      | 2867126 | 414   | 0.00% | 0.00% | 0.00% | -   | ksoftirqd/7 |
| 26  | 0            | 16      | 3     | 0.00% | 0.00% | 0.00% | -   | watchdog/7  |
| 27  | 21249        | 2024626 | 10    | 0.00% | 0.00% | 0.00% | -   | events/0    |
| 28  | 8503         | 1990090 | 4     | 0.00% | 0.00% | 0.00% | -   | events/1    |
| 29  | 11675        | 1993684 | 5     | 0.00% | 0.00% | 0.00% | -   | events/2    |
| 30  | 9090         | 1973913 | 4     | 0.00% | 0.00% | 0.00% | -   | events/3    |
| 31  | 74118        | 2956999 | 25    | 0.00% | 0.00% | 0.00% | -   | events/4    |

```

32      76281  2837641   26  0.00%  0.00%  0.00%  -  events/5
33     129651  3874436   33  0.00%  0.00%  0.00%  -  events/6
34      8864  2077714    4  0.00%  0.00%  0.00%  -  events/7
35         0      8      23  0.00%  0.00%  0.00%  -  khelper
36      234      34  6884  0.00%  0.00%  0.00%  -  netns

```

The **show processes cpu** command includes the following keywords:

| Keyword | Description                                 |
|---------|---|
| >       | Redirects the output to a file.             |
| >>      | Adds the output to an existing file.        |
| history | Displays information about the CPU utility. |
| sort    | Sorts the list based on the memory usage.   |

## Monitoring Process Core Files

You can monitor the process core files by using the **show cores** command.

```

switch# show cores
Module Instance Process-name PID Date (Year-Month-Day Time)
-----
28      1      bgp-64551  5179  2013-11-08 23:51:26

```

The output shows all cores that are presently available for upload from the active supervisor.

## Processing the Crash Core Files

You can process the crash core files by using the **show processes log** command.

```

switch# show process log
Process PID Normal-exit Stack-trace Core Log-create-time
-----
ntp 919 N N N Jun 27 04:08
snsm 972 N Y N Jun 24 20:50

```

## Clearing the Core

You can clear the core by using the **clear cores** command.

```
switch# clear cores
```

## Enabling Auto-Copy for Core Files

You can enter the **system cores** command to enable the automatic copy of core files to a TFTP server, the flash drive, or a file.

```
switch(config)# system cores tftp://10.1.1.1/cores
```