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CPU Load Diagnostics

Linux Essentials

TRAINING

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How to Find Out CPU Load?

Linux Terminal

```
$ uptime
17:52:50 up 6 days, 18:42, 1 user, load average: 1,03, 1,45, 1,63
```

What does the **uptime** show?

- Current time.
- The **uptime** value itself or, in other words, how long the system runs without restart.
- How many users are currently logged in.
- Average system load or **Load Average**.

What is Load Average?

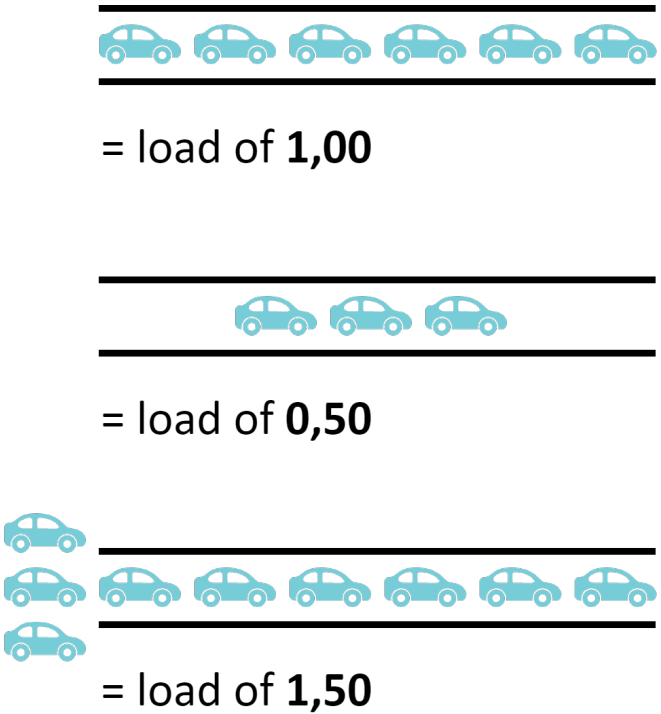
The **Load Average** shows the weighted average system load over the last **one**, **five** and **fifteen** minutes.

The values are indicators of the **CPU queue length**.

What is CPU Queue Length?

CPU Queue Length is the sum of processes that are running and awaiting execution in a certain period of time.

Effective CPU utilization refers to the full utilization of the CPU pipeline without pending processes in queue.



Per-core values are summed on multi-core CPUs.

While the effective load equals 1,00 on a single-core CPU, it will be 4,00 on a quad-core CPU. The value of 1,00 on a quad-core CPU will indicate that it is only one quarter loaded.

How many cores CPU has?

Linux Terminal

```
$ nproc
4
$ grep -c processor /proc/cpuinfo
4
```

How Representative Load Average Is?

- Processes in uninterruptable sleep state are also counted in Linux.
- Such processes can increase Load Average values due to a storage (disk, NFS) I/O workload, not just CPU demand.

Despite **Load Average** is an abstract value, it **lets one quickly detect bottlenecks and assess overall system load**.

Further reading:

- Understanding Linux CPU Load - when should you be worried?
  https://scoutapm.com/blog/understanding-load-averages
- Wikipedia - Load (computing)
  https://en.wikipedia.org/wiki/Load_(computing)
- Linux Load Averages: Solving the Mystery
  http://www.brendangregg.com/blog/2017-08-08/linux-load-averages.html