## Task 2:

Imagine a server with the following specs:

- 4 times Intel(R) Xeon(R) CPU E7-4830 v4 @ 2.00GHz
- 64GB of ram
- 2 tb HDD disk space
- 2 x 10Gbit/s nics

The server is used for SSL offloading and proxies around 25000 requests per second. Please let us know which metrics are interesting to monitor in that specific case and how would you do that? What are the challenges of monitoring this?

**Answer:**

Following metrics can be considered as interesting to  monitor on the aforementioned cases.

(1) CPU metrics
- CPU usage
- CPU load
- CPU threshold value
- CPU temperature
- CPU log

(2) RAM metrics
- RAM usage
- RAM speed
- RAM free
- Buffers
- Cached

(3) Disk metrics
- Disk free
- Disk total
- Disk usage
- Disk Read time / Write time

(4) Network Metrics
- Number of bytes received and sent per second
- Number of packets received and sent per second
- Number of packets drop while sending and receiving per second
- IP address and TCP connections status
- SNMP  and ICMP status (ping)
- Up time and down time

The most comprehensive way to monitor all the metrics is to aggregate in a dashboard to monitor a real-time series data. A time interval has to set in the dashboard to fetch the performance metrics in real time from the specific server to visualize the resource usage information.

Plenty of monitoring tools exist in the current marketplace to monitor the network infrastructure. Nagios, Zabbix, Prometheus and Grafana, ELK etc. are popular monitoring tools that are widely used in network industry.

Nagios monitoring tool can be a good option to monitor the performance in this case. Nagios provides a user friendly dashboard to check the performance metrics of an entire network. It indicates red and green signal which helps to easily identify the problem. It also generates alarm, email, SMS etc. periodically to keep update about the network status. And Nagios supports different types of devices and is highly scalable for large area of networks. It is capable to monitor and store the system log, log files when a log is detected.

**Challenges:**
Following challenges should be considered while monitoring network metrics.

- Determine network performance baselines
- Volume of network information
- Set time interval to fetch metrics
- Liability to detect and address the issues
- Alerting on time
- Reporting on time