

## 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?

## Solution:

Metrics such as CPU utilization & Disk Utilization are primary attributes to measure in order to measure the load on your CPU and to have an overall assessment of the server memory utilization. In this case we have to manage 25000 requests per second, and because of the SSL offloading the CPU usage should definitely increase, owing to the longer 5-way handshake and then the packet encryption and for this we need to use scalable distributed monitoring system for high-performance computing systems.

For example Ganglia is such a monitoring system which can be added with a HAproxy machine to monitor. It has the network server monitoring capabilities by allowing us to view the status of machines in the network and to understand the amount of load processed by the network server with the help of parameters such as traffic, utilization and number of packets sent/received in the network interface. The below are the main parameters that need to be monitored for an SSL offloading proxy server.

- **TCP established** :: For total number of tcp connections established on the system. (inbound and outbound connections)
- **Packets sent and received** :: To see the total number of tcp packets being sent and received by our HAProxy machine.
- **Bytes sent and received** :: For the total data that we sent and received by the machine.
- **Memory** :: Amount of RAM being used over time.
- **Network** :: The network bandwidth consumption because of the packets being sent over the wire.

SSL PassThrough option provided by HAProxy will terminates/decrypts the SSL connection at the backend servers and HAProxy level is more performant. A frontend metric framework can be used for calculating the HAproxy performance. It will provide the below information and can be configured the server accordingly:

Name	Description	Metric Type
req_rate	HTTP requests per second	Work: Throughput
rate	Number of sessions created per second	Resource: Utilization
session utilization	Percentage of sessions used	Resource: Utilization
ereq	Number of request errors	Work: Error
dreq	Requests denied due to security concerns	Work: Error
hrsp_4xx	Number of HTTP client errors	Work: Error
hrsp_5xx	Number of HTTP server errors	Work: Error
bin	Number of bytes received by the frontend	Resource: Utilization
bout	Number of bytes sent by the frontend	Resource: Utilization

### Challenges of monitoring

1. Calculating the average resource utilization and connections for tuning a high-performance computing system need to be precise. So figuring out important metrics to monitor and tuning the proxy servers is a challenge.

2. Metrics monitoring tool should not effect the server's performance and need to provides thorough real time server monitoring for important metrics such as:

Memory Utilization, Disk I/O, Network Interface and Adapters, Hardware Health, Scheduled Tasks, Syslog Errors

3. Setting threshold limits for vital parameters that are important to maintain server uptime and to get instant notifications if the thresholds are violated.