

Is Our VPS Really a Premium Product?

The “premium” quality of a product can mean many different things: above-standard functionality, service, price, availability, and user experience. A feature that must be taken into account when considering Virtual Private Servers (VPSs) is performance and that is exactly what we compared in the most objective way possible, not only with local competitors (in Slovakia and the Czech Republic), but also with key global competition.

Why?

The cloud is a dynamic segment in the IT world and the landscape changes literally every day. Web Support is constantly innovating to keep up with this rapid evolution and provide superior value to customers. We released the latest generation of our virtual servers in December 2016. The VPS product was completely technologically revamped (all-flash storage, compute nodes, software, etc), and included new functionalities such as snapshots and the ability to run Microsoft Windows Server. In addition, even with these innovations, we reduced the price for customers.

With the release of the latest version of our product, we wanted to make it easy for potential customers to compare our key metrics with our competitors. Whether we like it or not, our existing and potential customers already compare us to others in the market, however, the comparison is usually in terms of price - not quality. At the same time, this exercise forced us to leave our bubble and our internal justifications and get in touch with the reality “out there”.

VPS is a product that you can purchase locally, but we included global competitors because they receive a lot of attention thanks to big names and brand awareness. Customers are increasingly confronted with these large global players and it’s important to highlight the value of local offerings in comparison.. More often than not, these multinational corporations primarily focus on meeting the needs of a narrow segment. Can we compete and keep pace with them?

The task at hand

The assignment was relatively easy – order virtual machines from providers with similar configuration (CPU, RAM and as SSD storage), with identical operating system, specifically Ubuntu 16.04 LTS, and carry out regular measurements for a given period of time. We set a period of one month and collected data every hour. Please keep in mind that all are virtual servers and not linux-based containers.

VPS competitors had the following parameters: 1-2 vCPU, 1024-2048 GB RAM and 10-50 GB SSD, and ours as follows:

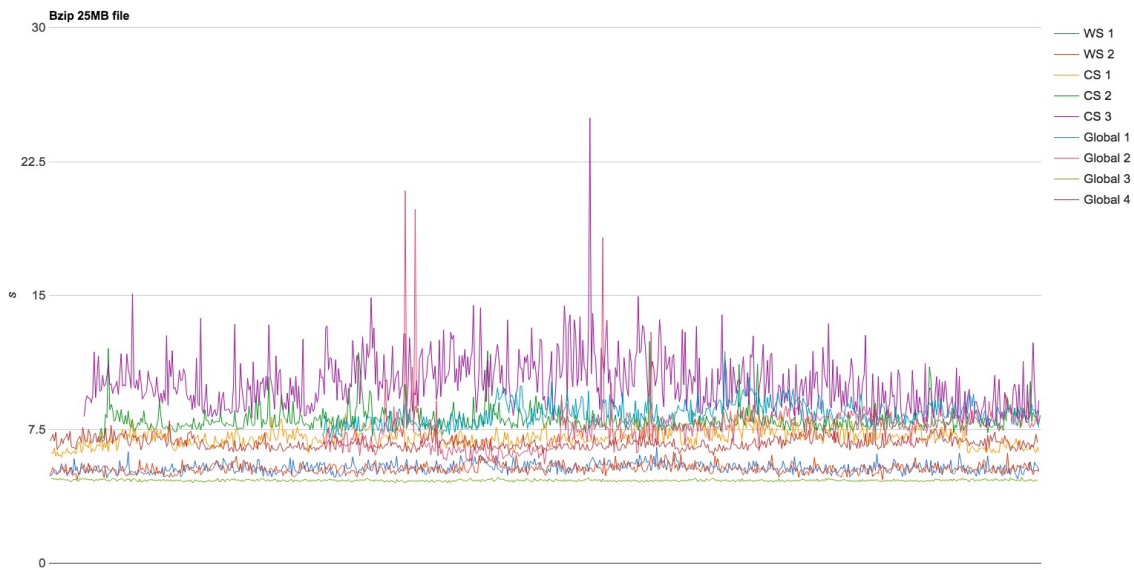
- WS1 – 1x vCPU, 1024 GB RAM and 30 GB SSD
- WS2 – 2x vCPU, 2048 GB RAM and 50 GB SSD

We selected providers based on whom our clients compare us with the most and our subjective experiences based on trends we have observed. Unfortunately, our initial ideals clashed with reality instantly. From a technological point of view, it was well thought out (which is usually the case), but to order some of the VPS's was quite a feat. In the end, we successfully selected three providers from Slovakia and the Czech Republic and four global providers. It took more than two weeks of constant emails and phone calls back and forth. Sadly, we were truly naïve in our plan to come > order > pay. There were even providers from which we failed to order a VPS. This white paper is, however, about performance, so we can deal with ordering processes and communication another time.

Measurements and results

BZIP (CPU)

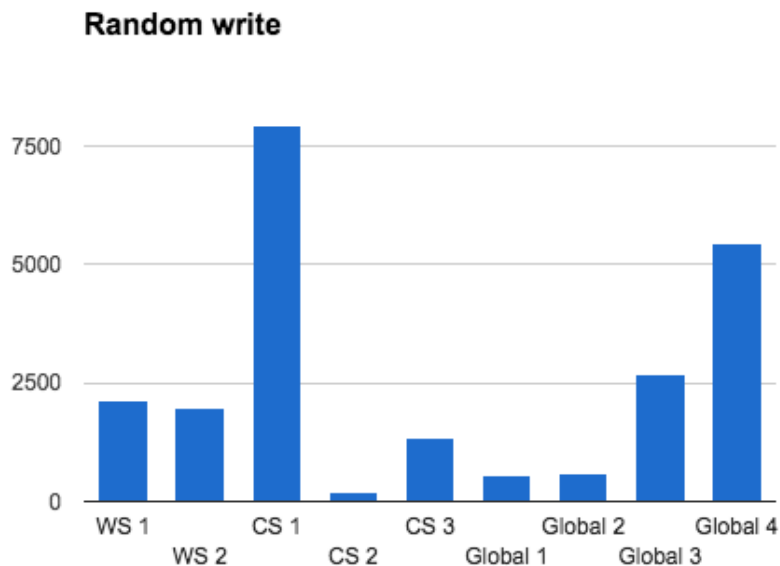
Via `dd if=/dev/urandom`, we generated a 25MB file and measured the compression time into a.bz2 archive by using the `tar cfj` command. In the graph below, the X-axis displays a period of one month and the Y-axis represents time in seconds. The higher the variance, the more unreliable the performance is. Consequently, the lower the results, the better and faster the solution is.



The graph provides for even more conclusions. The more linear the graph, the better has the provider set their aggregations and maximum limits. The more variance there is signals fluctuating, unreliable performance. WebSupport performed well in this task; only global competitor No. 3 had better results.

Random Write (Disc)

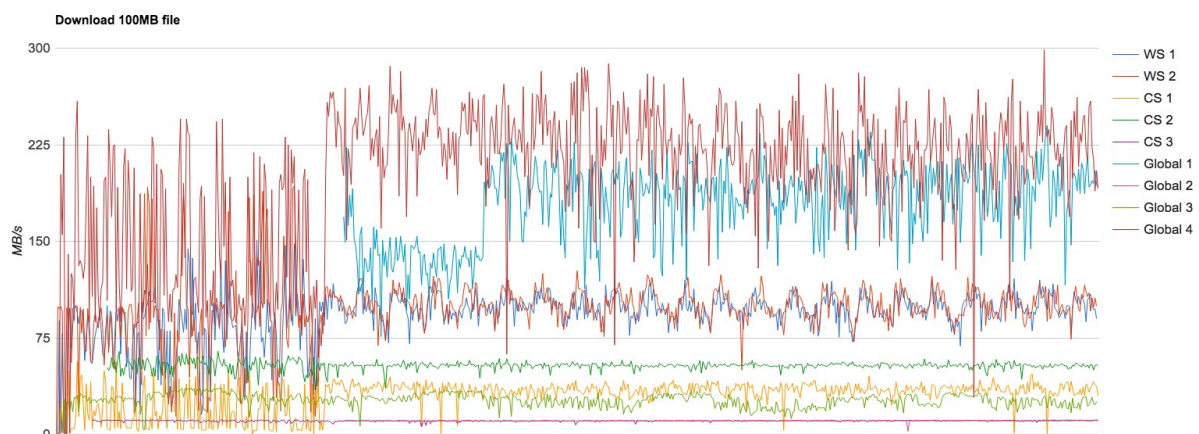
In order to measure a disc and how it randomly writes data we used the `sysbench` utility and measured it by operating the command `sysbench --test=fileio --file-test-mode=rndrw run` – the respective graph shows average values from the whole period of measurement. The Y-axis represents the number of operations executed per second – the higher the number the better.



The local competitor No. 1 (CS 1) achieved the best results. The sequential write moved within a relatively broad scale of 500-1100 MB/s, which can mean that users are not limited. WebSupport finished in a praiseworthy fourth place. The reason for this is the limit we introduced on our side in order to maintain a high quality of service for customers and to evenly distribute operations so that everybody gets a fair share and no single user utilizes an unfair share of bandwidth.

Download (Network)

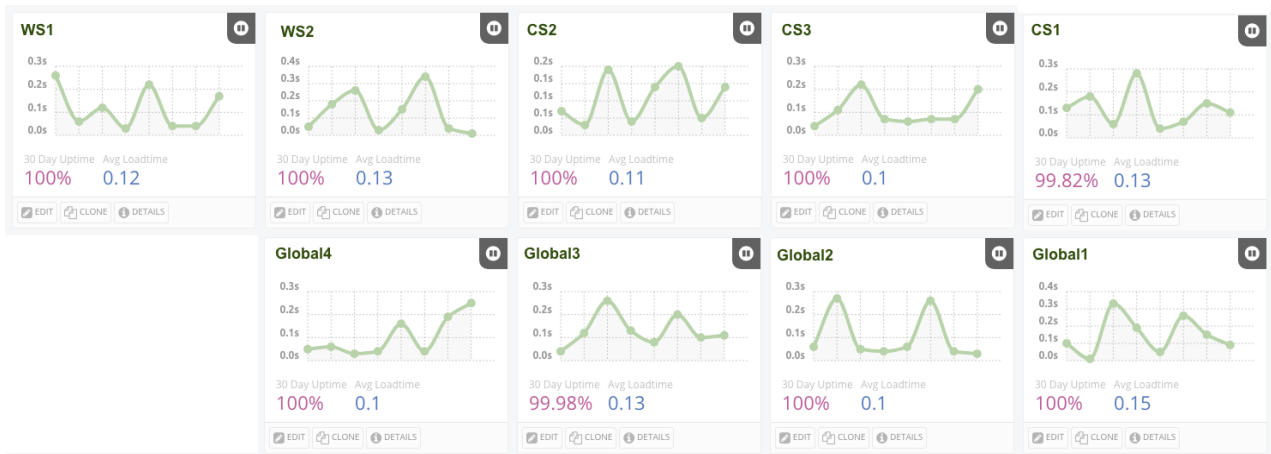
The network test consisted of the download speed of a 100MB file from <http://cachefly.cachefly.net/100mb.test> locality - we selected a foreign source again in order to stay objective. Moreover, we have a rather large number of customers who use our VPSs for the Centro-European region and who are very attentive to the connection quality to foreign countries. In order to measure download, we used `wget`, which recorded the speed. The X-axis shows a period of one month and the Y-axis represents speed.



Again, as we interpret the results – the more linear the graph, the more stable the speed and it means the network is appropriately limited. The greater the ups and downs, the poorer the quality of connection and fluctuating speed. WebSupport did not reach the highest speed, but from a qualitative point of view our results are excellent.

Availability (Network)

Apart from the download speed we were interested in the sheer availability of virtual servers. Despite having our own System Monitoring service, which is placed outside of our infrastructure, we decided to use StatusCake. The interval of requests was set to 5 minutes and ICMP pings were monitored for a period of one month.



The server response lay between **0.1 - 0.15**, which is quite comparable. A considerable majority of VPSs had an availability of 100%. Out of local competitors, CS No. 1 had an outage for **1h 18m 53.5s** and out of global competitors No. 3 was down for **8m 45.9s**.

In Conclusion

Our intention with this experiment was to provide a quick overview and help customers easily compare our VPS solution with regional and global competitors in the market today. It is not rocket science, so surely one could monitor for a longer period of time and with greater accuracy.

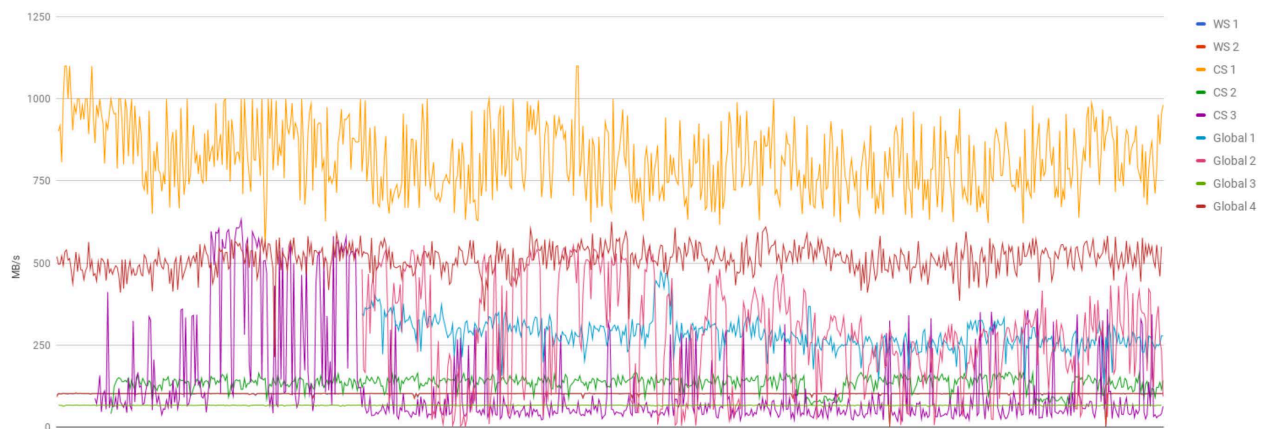
Although the VPS are an aggregated and shared type of service, the customer should not feel directly limited or “squeezed” with others on servers. We are aware that our customers use VPS primarily for conducting business. Therefore, it is preferable to provide guaranteed resources and reliable, evenly distributed performance at any given time.

This article would be incomplete without answering the question from the title: yes, our VPS is a premium product that we are extremely proud of. The measurements clearly indicate that customers will not get the same quality or performance from other services with at first glance seemingly identical parameters. We are of course glad that VPS from WebSupport achieved good results when measuring repositories and above-standard results when measuring the network and CPU performance. On the other hand, our job is far from finished. Quite the contrary - we are continuing to innovate our cloud products to provide superior solutions at a reasonable price point.

Technical note

One of our primary goals when we were redefining the VPS product was to provide an super-stable performance for all customers at any time. In last five years, our biggest challenge was to achieve performance goals with our storage system. Thanks to our all-flash NexentaStor system and OpenStack, we are now able to do that. To be more specific, our objective has always been to provide at least 100MB/s write performance with 300 IOPS for any customer’s virtual servers.

I/O speed



As you can see from chart above, we achieved that goal. Additionally, it does not matter how high we raise the bar, our storage system always delivers for our customers. On top of that, NexentaStor provides an excellent DR strategy that replicates to a secondary datacenter with AutoSync asynchronous replication, meeting our requirements on RTO and RPO.

About Nexenta in Websupport:

We use dual-controller system based on Dell R730xd and MD1420 with 24x 1.92TB Toshiba SAS drives. The system serves data over NFSv4 to blade servers, which are managed by OpenStack and Cinder module. At the moment we have more than 1000 virtual servers running on top of the system. The system is capable of delivering over 600k read IOPS and 300k write IOPS, but thanks to advanced ZFS caching capability, we can easily deliver more than 1.2M read IOPS. The compression feature in NexentaStor saves us up to 40% of required disk space capacity.

Technical details:

- Controllers use 2x Intel Xeon E5-2643v3 with 256GB RAM and 40GE connectivity
- Data are stored on 24x Toshiba PX04SR 1.92TB drives, configured in 3 raidz2 groups with 8 devices
- The platform is based on OpenStack Mitaka

About WebSupport

WebSupport Company was established on April 1, 2002. Over time, it became an inseparable part of Slovak IT community. WebSupport is now the biggest provider of web hosting services and registrar of domains in Slovakia. The company manages more than 70,000 domains of their 40,000+ customers and also stands behind successful international startup project Nicereply.