

Performance evolution for Open Telekom Cloud Virtual Machines

New CPU generation delivers more power per Euro

In September 2020, T-Systems mandated Cloud Mercato, an independent cloud testing company, to evaluate the performance of the newly introduced CPU classes of Open Telekom Cloud in comparison to the existing CPU generation. This report shows the results of this evaluation.

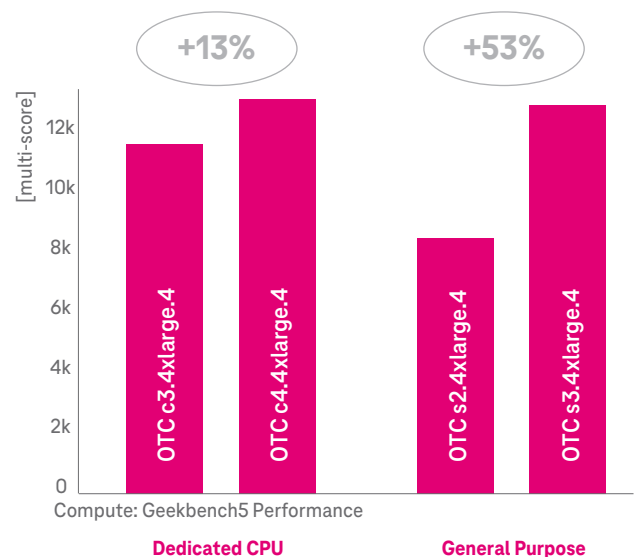
VMs named c3 and s2 represent the existing CPUs. While c3 is a dedicated CPU that offers full CPU capacity for the respective user, s2 represents a common general-purpose VM with potential “performance steal” from other users. The succeeding CPU generations are c4 respectively s3. 16 vCPUs VMs were used.

The table below shows the data for the CPUs.

	Model	Frequency	L1d	L1i	L2	L3
C3	Intel® Xeon® Gold 6151	3.00 GHz	32 KB	32 KB	1 MB	25 MB
C4	Intel® Xeon® Gold 6266C	3.00 GHz	32 KB	32 KB	1 MB	30 MB
S2	Intel® Xeon® Gold 6161	2.20 GHz	32 KB	32 KB	1 MB	30 MB
S3	Intel® Xeon® Gold 6278C	2.60 GHz	32 KB	32 KB	1 MB	35 MB

CPU Testing

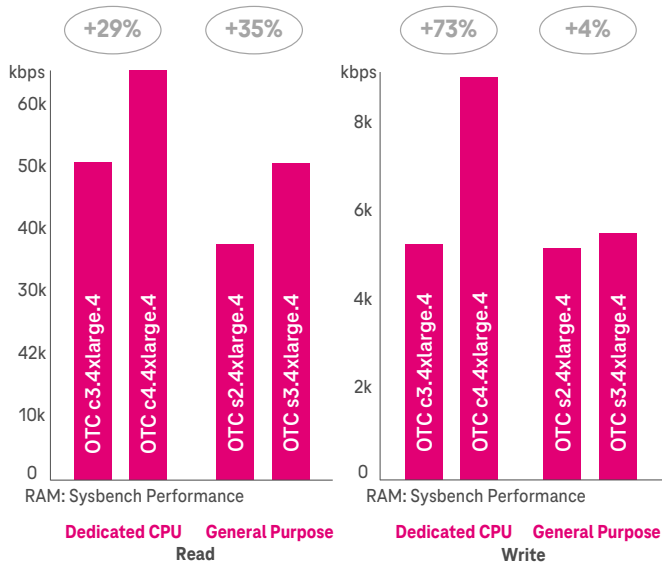
To collect a synthetic performance value, Geekbench 5 was chosen as benchmark suite. This software runs workloads with integer, floating point and cryptographic domains. The set of tests includes various kinds such as compression, machine learning or compute vision and each test is performed with single and multi-thread modes. The data from multi-thread is displayed.



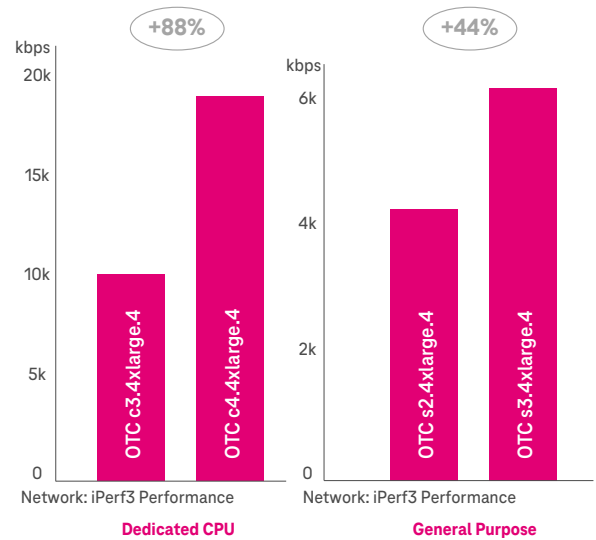
For the c-VM the test shows an increase of the CPU performance of 13 percent, for the s-class an increase of 53 percent is observed.

RAM Testing

For some use cases the availability of efficient RAM is even more important than CPU power, e.g. for memory-intensive workloads caused by in-memory databases like SAP’s HANA®. The volatile memory is the fastest one present on a system. To evaluate RAM performance the bandwidth between CPU and memory is tested using Sysbench. Its test scenarios are based on random access to memory with 1k blocks. For this test read and write access have been used. By nature, write mode is slower as it suffers from latency occurred by data storing whereas read only retrieves cached data. RAM performance is time related and may decrease while the hypervisor is filling.



The results for read operations show an increase of 29 percent from c3 to c4 and 35 percent from s2 to s3. The results for writing show a 73 percent plus for c-VMs and 4 percent for s-VMs.



For c3 flavors an increase of 88 percent was observed, for s2 44 percent.

Network bandwidth

Cloud providers generally have a high-performance internal network throttled in consumer usage to guarantee a certain level of services for all tenants. The maximum performance is completely virtual and is defined by vendor in the VM's network specification. For the evaluation of the maximum bandwidth iPerf3 was used. In the testing setup 2 identical VMs were used. These were loaded with a number of threads equal to CPU to generate the maximum throughput.

A view on price/performance

A price/performance comparison of the existing and the new generation is an easy task. As prices according to the price calculator are identical (75.33 ct/h for s flavors and 98.88 ct/h for c flavors), users can opt for the new generation. The new generation offers an improved price/performance of 13 percent (c4) and 53 percent (s3) based on the CPU capacity gain alone. In other words users get a solid price reduction when using the new generation CPUs. Taking into consideration the improved values for RAM and network bandwidth the performance per Euro increases additionally.

This report is based on the benchmark testing and report of the IaaS Benchmark Study by Cloud Mercato 2020.

ANY QUESTIONS?

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