Achieve Higher In-Memory Database Throughput with Google Cloud C3 High-CPU VMs

C3 High-CPU VMs Featuring 4th Gen Intel® Xeon® Scalable Processors Handled up to 1.59x the Redis Throughput of VMs with Older Processors

In-memory databases allow users to interact with data in real time. These databases underlie important functions across sectors, such as interactive gaming, online bidding, IoT data streaming, and more. Fast database performance can keep these processes running smoothly, which in turn can keep customers satisfied or pave the way to support more users.

Redis is an open-source in-memory data structure store. If your business—like Twitter, GitHub, and others—utilizes Redis, it's important to support those workloads with a high-performing solution. With a cloud VM that can deliver higher Redis throughput, your business could keep customers and employees happy with faster response times. To determine which VM might be a good fit for a business running Redis workloads, we tested three types of Google Cloud VMs: C3 high-CPU VMs, C2 standard VMs, and N2 standard VMs. The C3 VMs featured 4th Gen Intel® Xeon® Scalable processors, and the C2 and N2 VMs had 2nd Gen Intel Xeon Scalable processors. We also tested N2 standard VMs with 3rd Gen Intel Xeon Scalable processors. We found that C3 high-CPU VMs featuring 4th Gen Intel Xeon Scalable processors offered up to 1.59 times the Redis throughput of the VMs with older processors.

Better Performance Compared to VMs with 2nd Gen Processors

In our first comparison, we tested C3 high-CPU VMs enabled by 4th Gen Intel Xeon Scalable processors and the C2 and N2 standard VMs with 2nd Gen Intel Xeon Scalable processors. As Figure 1 shows, the C3 high-CPU VM achieved 1.39 times the Redis throughput of the C2 standard VM and 1.59 times the throughput of the N2 standard VM.

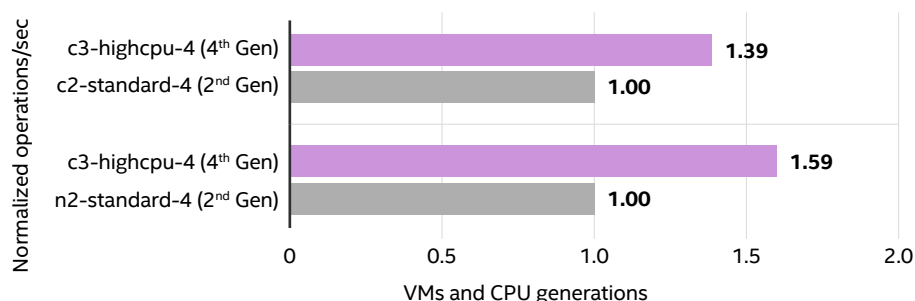**Normalized Redis Performance: 2nd Gen Processor Comparison**
Higher is better

Figure 1. Relative performance, in operations per second, that C3 high-CPU VMs featuring 4th Gen Intel Xeon Scalable processors achieved compared to C2 and N2 VMs with 2nd Gen Intel Xeon Scalable processors. Higher is better.

Intel Workload Proof Series: Redis on Google Cloud C3, N2, and C2 VMs

See backup for workloads and configurations. Results may vary.

Redis Performance

Support More Simultaneous Users with Higher Throughput

Keep In-Memory Databases Running Smoothly

Higher Performance Than a VM with 3rd Gen Processors

In the next comparison, we performed tests on a C3 high-CPU VM featuring 4th Gen Intel® Xeon® Scalable processors and an N2 standard VM with 3rd Gen Intel Xeon Scalable processors. Figure 2 shows that the C3 high-CPU VM also outperformed the N2 VM in this comparison, delivering 1.23 times the Redis throughput.

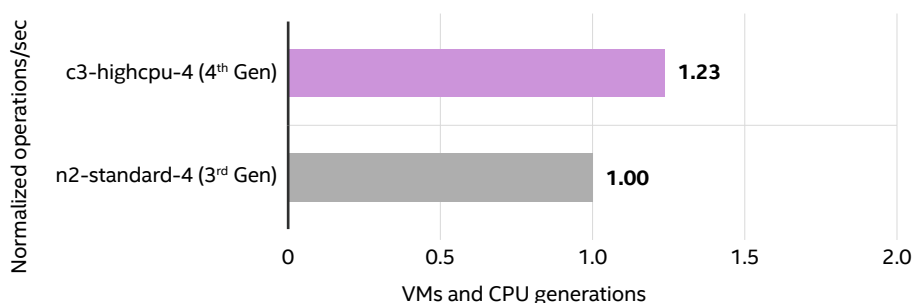### Normalized Redis Performance: 3rd Gen Processor Comparison
Higher is better

Figure 2. Relative performance, in operations per second, that C3 high-CPU VMs featuring 4th Gen Intel Xeon Scalable processors achieved compared to N2 VMs with 3rd Gen Intel Xeon Scalable processors. Higher is better.

Conclusion

In-memory database performance directly impacts customers' and employees' experience with your applications. To gain the benefit of faster database performance, which can keep operations running smoothly, choosing the right cloud VM is key. In Redis testing on three Google Cloud VM types with multiple generations of processors, we found that C3 high-CPU VMs featuring 4th Gen Intel Xeon Scalable processors outperformed C2 and N2 counterparts with older processors. They delivered up to 1.59 times the performance of VMs with 2nd Gen Intel Xeon Scalable processors, and 1.23 times the performance of an N2 VM with 3rd Gen Intel Xeon Scalable processors.

Learn More

To begin running your Redis workloads on Google Cloud C3 high-CPU VMs, visit https://cloud.google.com/compute/docs/general-purpose-machines#c3_series.

intel.