Executive summary

Dell EMC™ PowerEdge™ R840

Get more power for your CPU-intensive workloads

A Dell EMC PowerEdge R840 server with Intel Xeon Platinum processors and Intel NVMe SSDs completed Monte Carlo workloads faster than a PowerEdge R820 server, while also increasing statistical precision and simulation scope

Whether your company deals in data analytics, IT, or finance, chances are you'll need to run computation-intensive workloads to keep up with the competition. These workloads are getting more complex and massive each year, and you need a powerful solution to handle them. New servers from Dell EMC could give your business just the boost it needs.

At Principled Technologies, we tested a Dell EMC PowerEdge R840 server, powered by top-of-the-line Intel® Xeon® Platinum 8180M processors and Intel SSD DC P4500 NVMe drives. We compared this solution to one based on the PowerEdge R820 using Monte Carlo simulations—a type of computation-intensive workload used in scientific fields such as climate science, physics, and engineering, among others.

In our tests, the new PowerEdge R840 completed Monte Carlo work faster than the older model. When controlling for time, the PowerEdge R840 also achieved less statistical error and increased the scope of its simulations.

Finish Monte Carlo simulations 4.5x as fast

Achieve 54% less statistical error in Monte Carlo methods

Increase your model's scope by 1.2x

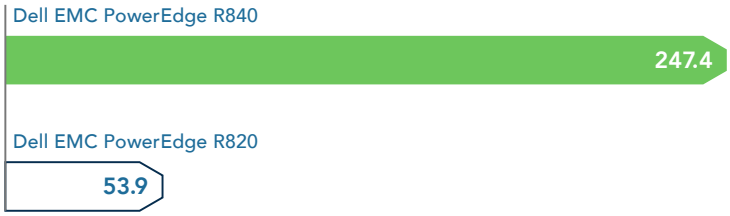
Testing compute power with Monte Carlo workloads

We assessed the computational performance of each server solution with a workload that employs Monte Carlo simulations: algorithms that use random sampling to compute possible outcomes of a given problem. Our tests applied Monte Carlo in a financial context, where the methods are used to calculate risk and uncertainty for potential investments.

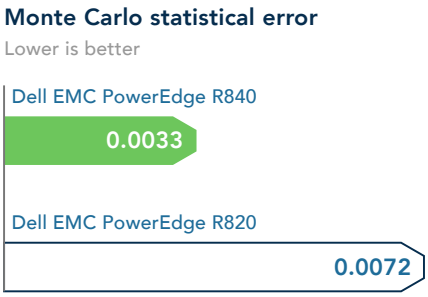
Finding #1: Faster workload completion

Faster workload processing mean faster solutions. The Dell EMC PowerEdge R840 solution performed Monte Carlo simulations 4.5 times as fast as the older server.

Finish Monte Carlo simulations 4.5x as fast



Achieve 54% less statistical error



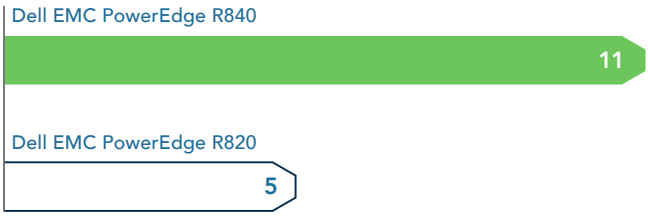
Finding #2: Reduced statistical error

For Monte Carlo workloads, error decreases as you perform more simulations. Because the newer solution can do more simulations in the same time as the older one, the Dell EMC PowerEdge R840 achieved 54 percent less statistical error in its simulations.

Finding #3: Increased simulation scope

We used a Monte Carlo workload to estimate how market fluctuations affect large-scale investments over time. To obtain estimates further into the future, the server must perform lengthier calculations. The PowerEdge R840 solution simulated the effects of market fluctuations more than twice as far into the future as the older solution while still finishing its work in the same amount of time.

Make projections 1.2x further into the future



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