Hyperscale Next: Performance Tuning

Hyperscale Next

As the public cloud market accelerates business operations and functionality for customers, the largest hyperscalers dominate the cloud infrastructure market and often get favorable treatment from supplying vendors, including advanced access to new technologies, helping them market faster with differentiated services. Unfortunately, this makes it harder for other CSPs, Hosters, and online service providers to provide differentiation and innovation. Most must wait until general availability to test new technologies. It can take them several months to take new technology from testing to full production, making it difficult to respond rapidly to evolving technologies and customer demands.

The Dell Hyperscale Next program is designed to help our cloud customers react to evolving technologies and customer demands, expand their cloud services and applications, and provide differentiated performance for target workloads — with speeds unmatched by other Tier 1 providers. The program includes early access to new technology, rack integration, factory server configuration, ProSupport One, Self-service support technology, and server performance tuning.

A Workload Optimized Server

Dell Technologies understands that time-to-value is critical when making IT purchasing decisions. Our no-cost Hyperscale Next Performance Tuning Program aims to give select customers a head start when evaluating and adopting new enterprise technologies.

Optimizing a server for a particular workload can be challenging, time-consuming, and costly. Our performance tuning program allows you to work with our world-class performance engineers to configure and optimize a PowerEdge server for your unique workload. This direct engagement lets our engineers understand your requirements and perform iterative testing in our lab to make data-driven recommendations for optimal workload performance.
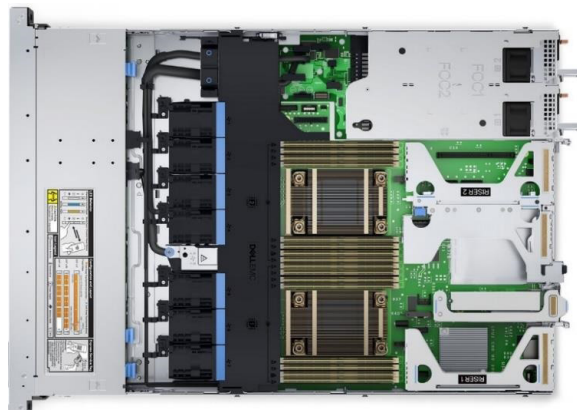

Figure 1: Dell PowerEdge R650xs

Summary

The PowerEdge Product Group and Services, in partnership with Intel, have purpose-built a program to directly support the growth and specific needs of Cloud Service Providers. This includes Hosters, B2B Service Providers, and B2C Service Providers like you. We are offering the Hyperscale Next program to select pre-approved accounts.

This Direct from Development (DfD) tech note summarizes how our performance engineering team can enable rapid time-to-value through data-driven performance optimization testing at no-cost.

Authors

Mike Kosacek
Delmar Hernandez
Server and Infrastructure Engineering

The Process

IT decision-makers must answer a few questions when mapping a workload or use case to a server.

- Server: Which server meets my workload and use-case requirements?
- CPU: Which CPU SKU delivers the best price/performance? More cores or higher frequency?
- Storage/Memory: What are my capacity and performance requirements?
- BIOS and Firmware: Which settings deliver the best performance for my workload?
- Networking: What is my networking bandwidth requirement per CPU?
- Power: What are my power constraints?
- Cost: What is my budget?

Our team works with you to identify the appropriate server, components, and server settings for the workload.
For example, when running a transactional database, selecting a low core count and high-frequency CPU SKU can deliver high performance and be more cost-effective due to licensing costs. Likewise, a memory configuration with the optimal DIMM quantity, capacity, and speed increases performance and minimizes TCO. Here's how it works.

- Dell performance engineers meet with you to understand your workload requirements
- Our engineers map your workload to synthetic benchmarks that act as proxies for the workload
- Our engineers perform iterative benchmarking in our lab to study the effects of various BIOS, firmware, OS settings, and system settings on workload performance
- Finally, our engineers analyze the data to identify the hardware configuration and server settings that deliver optimal performance for your workload
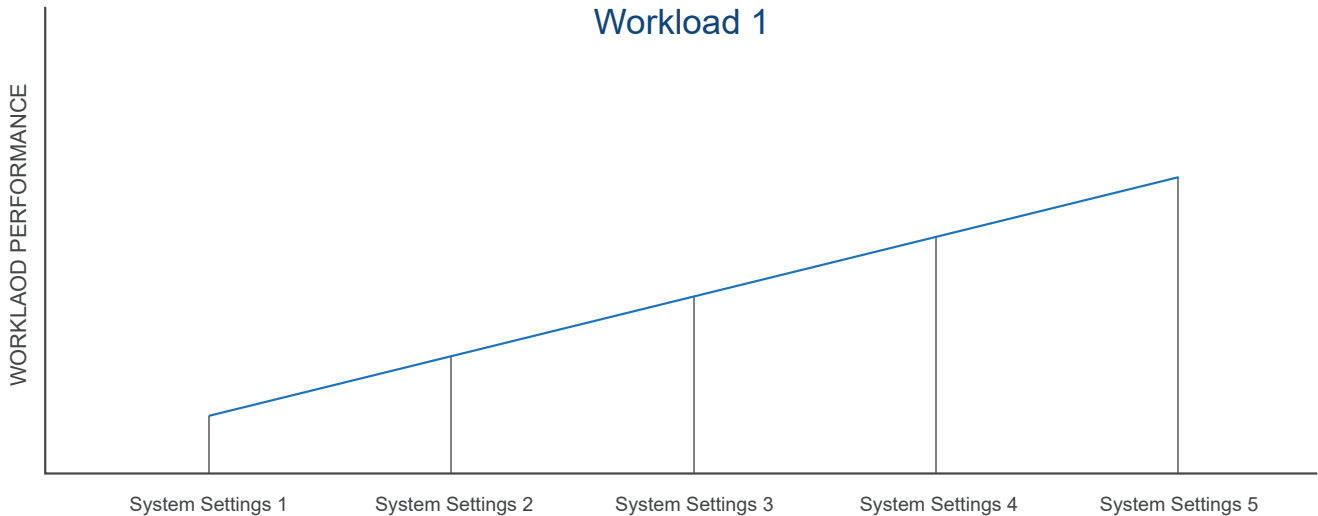
Performance Tuning

Our performance engineers use popular synthetic benchmarks as proxies for your workload to evaluate performance and identify server settings that optimize performance. Some of the example workloads we use are shown in Figure 2.

Benchmark	What It Tests
MLC and Stream	Memory Bandwidth and Latency
FIO	Storage IOPS and Throughput
SPEC CPU 2017 (SPECint)	CPU Integer Performance
HPL (Linpack)	CPU Floating Point Performance
HammerDB	SQL, MySQL database performance
SPECjbb 2015	Java Server Performance
iPerf	Network Bandwidth

Figure 2: Synthetic Benchmarks List

Our engineers select the appropriate benchmarks in coordination with your team. Then, using the benchmarks, we perform iterative testing in a Dell performance lab to analyze the effects of specific server settings and hardware configurations on a benchmark. This data-driven approach with engineers specializing in PowerEdge system performance allows Dell to identify the optimal system configuration for a given workload and provide guidance that delivers rapid time to-value for our cloud customers.

Performance Optimizations
Workload 1

Performance Troubleshooting

The Hyperscale Next Program includes direct access to our system performance engineers. When evaluating a new server or optimizing your current fleet, our team helps you quickly understand and resolve issues limiting expected performance in your workload or benchmark. This service is another example of how we are helping our customers achieve rapid time-to-value when they choose Dell PowerEdge servers.

Early Access Program/s

Through the Hyperscale Next Program, select customers receive server engineering samples to start their evaluation before a platform RTS. This early access program enables rapid time-to-value by allowing you to evaluate and optimize for your environment before a product is publicly available. With the help of our Hyperscale Next team, you get a head start on adopting the latest technologies. In addition, the performance tuning service is available for platforms in the early access program and currently shipping products.

Let's get started!

The Hyperscale Next Program performance tuning service is available to select customers at no additional cost. This program helps our customers enable and optimize the latest technologies at the pace their business demands. Work with your Dell account team for more detailed information or email hyperscale.next@dell.com.

Learn more about PowerEdge servers

Follow us on social media

Contact us for feedback and requests

DELLTechnologies