signal65

PERC Hardware RAID Evolution

Performance Revolution for Dell PowerEdge Servers

PERC 12 to PERC 13: Transforming Enterprise Storage Performance

PERC 12 Series		PERC 13 Series	
Read IOPS	6.9M	Read IOPS	12.9M
Write IOPS	600K	Write IOPS	2.6M
Read Bandwidth	28.1 GB/s	Read Bandwidth	56 GB/s
Write Bandwidth	10 GB/s	Write Bandwidth	51 GB/s
Write Latency	8 µs	Write Latency	6 µs
Rebuild IOPS	1M	Rebuild IOPS	9.8M

Key Metrics

Metric	Definition	Units	R0	R10	R5	R6
Read Bandwidth	Storage bandwidth for 100% 64KB sequential read	GB/s	56	56	56	56
Write Bandwidth	Storage bandwidth for 100% 64KB sequential write	GB/s	54	45	50	40
Read IOPs	Random 4KB Read Operations per second	IOPs	13M	13M	13M	13M
Write IOPs (limited by drive count of 16)	Random 4KB Write Operations per second	IOPs	10M	5M	2.9M	2M
Write Latency	Average time to complete a storage operation up to 75% of maximum IOPS	µs	8	8	8	8
Perf Under Rebuild	Storage Subsystem performance during Rebuild (100% RR)	IOPs	n/a	10M	10M	9M
Rebuild Under Load	Minutes to rebuild failed device in RAID array	Min/TB	n/a	30	31	45

Data Preparation

Ingesting: High BW Write

Cleaning: High BW Read, High IOPs Write

Model Training

Feeding GPUs: High BW and High IOPs Reads

Checkpointing: High BW Write and Read

Model Inference

Loading Models: High BW Read

Vector Database: High IOPs Read

Critical Advantages for Mission-Critical Applications

Rebuild Performance Excellence

9.8X improvement in rebuild IOPS (1M ▸ 9.8M) ensures business continuity during drive failures with minimal performance impact on production workloads.

Ultra-Low System Responsiveness

1.33X latency reduction (8µs ▸ 6µs) enables real-time application performance critical for AI inference and high-frequency trading systems.

Executive Summary

PERC 13's revolutionary rebuild performance and system responsiveness make it the definitive choice for mission-critical applications where downtime costs thousands per minute and microsecond latencies directly impact business outcomes.

Source: Signal65 Performance Analysis, February 2025

Test Configuration: Dell PowerEdge R7725, 16×3TB NVMe drives, 4×RAID 5 volumes

Visit signal65.com for a more detailed breakdown and full report.

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