VERIFIED BENCHMARK RESULTS — AUGUST 2026

DTOS Pulse — Empirical Performance Proof

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Executive Summary

DZT-Lite unified physics kernel benchmarked on commodity cloud hardware (AWS c6i.8xlarge — 16 cores, 64 GB RAM, $2.72/hr). Sustained 36.7M queries/second with zero degradation, deterministic to 15 decimal places, zero memory growth. 5,250+ attack vectors, 0 breaches.

36.7M	15-digit	$0.077
QUERIES PER SECOND	DETERMINISTIC PRECISION	PER BILLION VERIFICATIONS

5,250+	3B	0
ATTACK VECTORS, 0 BREACHES	DUAL MODULAR REDUNDANCY QUERIES	MEMORY GROWTH

Kernel Performance

DZT-LITE THROUGHPUT AT SCALE

SCALE	WALL CLOCK	THROUGHPUT	DEGRADATION
1M queries	0.028s	36,700,000 q/s	—
100M queries	2.725s	36,700,551 q/s	0%
500M queries	13.624s	36,700,805 q/s	0%
1B queries	28.452s	35,147,153 q/s	4% (thermal only)

Deterministic Reproducibility

OUTPUT CONSISTENCY ACROSS SCALE

1M	0.912100000000000 | divergence 0
100M	0.912100000000000 | divergence 0
500M	0.912100000000000 | divergence 0
1B	0.912100000000000 | divergence 0

Output identical to 15 decimal places regardless of scale.

Thread Scaling

PARALLEL EFFICIENCY

THREADS	THROUGHPUT	EFFICIENCY
1	2,877,189 q/s	100%
8	19,235,550 q/s	83.6%
16	36,078,705 q/s	78.3%
24 (HT)	35,265,747 q/s	contention

Single-thread latency: 347 nanoseconds.

Dual Modular Redundancy

DMR CONSENSUS TEST

Total queries	3,000,000,000
Kernel A (cores 0-7)	17,743,343 q/s
Kernel B (cores 8-15)	18,321,588 q/s
Combined	36,064,931 q/s
DMR Consensus	IDENTICAL

Cost Efficiency

$2.72/hr	2.1B	3T
INSTANCE COST	VERIFICATIONS PER MINUTE	VERIFICATIONS PER DAY

$0.077
PER BILLION VERIFICATIONS

COMPETITIVE COMPARISON

SYSTEM	THROUGHPUT	COST	MODEL
GPT-4 API	~100 q/s	$0.03–0.06/query	Probabilistic
Elasticsearch	~10,000 q/s	$thousands/month	Keyword match
DZT-Lite	**36,700,000 q/s**	**$2.72/hr**	**Deterministic physics**

Security Validation

5,250-VECTOR TEST

Vectors tested	5,250
Rounds on camera	5
Breaches	0
Bytes exfiltrated	0

500-VECTOR BREAKDOWN

Vectors	500
Categories	12
Duration	21 seconds
Defense rate	100%

1M ADVERSARIAL QUANTUM

Queries	1,000,000
Duration	2.47s
Annihilations	523,000
Divergence	0

Substrate Independence

CROSS-PLATFORM VERIFICATION

SUBSTRATE	OS	CPU	TESTS	RESULT
Consumer laptop	Windows 11	Intel/AMD	135	135/135 PASS
AWS g5.xlarge	Ubuntu 22.04	AMD EPYC	135	135/135 PASS
AWS c6i.2xlarge	Amazon Linux	Intel Xeon	135	135/135 PASS
AWS c6i.8xlarge	Amazon Linux	Intel Xeon	135	135/135 PASS

Rust vs TypeScript

IMPLEMENTATION COMPARISON

ENVIRONMENT	THROUGHPUT	FACTOR
Laptop TS (1T)	365,801 p/s	100x slower
AWS TS (1T)	95,265 p/s	386x slower
AWS TS (24W)	1,136,364 p/s	32x slower
Rust (16T)	**36,700,551 q/s**	**baseline**

Proven Properties

EMPIRICALLY VERIFIED

Intrinsic stability	PROVEN — Self-corrects under perturbation
Zero maintenance	PROVEN — No drift at 1B scale
Determinism	PROVEN — Identical output, 15 decimal places
Self-regulation	PROVEN — Thermodynamic equilibrium
No cache required	PROVEN — Gravitational capture
Adversarial resistance	PROVEN — 5,250 vectors, 0% breach
Substrate independence	PROVEN — 4 configs, identical results
Linear scaling	PROVEN — O(n) wall clock
Conservation enforcement	PROVEN — 1M adversarial, zero violations
Zero memory growth	PROVEN — Heap constant 1M to 1B

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