Matching Engine Performance Report

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v3.0 - High Performance Benchmark

Metric	Value
Total Requests	400
Total Errors	0
Success Rate	100.0%

Performance Metrics

Order Submission

Metric	Value (ms)	Metric	Value (ms)
Min	1.27	P50	2.40
Mean	6.06	P95	13.32
Median	2.38	P99	284.52
Max	284.52	StdDev	28.32
Count	100		

Get Orderbook

Metric	Value (ms)	Metric	Value (ms)
Min	1.49	P50	2.17
Mean	7.92	P95	5.01
Median	2.15	P99	277.62
Max	277.62	StdDev	38.93
Count	50		

Get Bbo

Metric	Value (ms)	Metric	Value (ms)

Metric	Value (ms)	Metric	Value (ms)
Min	1.63	P50	2.78
Mean	8.31	P95	6.65
Median	2.76	P99	264.50
Max	264.50	StdDev	36.99
Count	50		

Get Trades

Metric	Value (ms)	Metric	Value (ms)
Min	4.27	P50	6.67
Mean	12.03	P95	9.95
Median	6.61	P99	269.35
Max	269.35	StdDev	37.16
Count	50		

Market Orders

Metric	Value (ms)	Metric	Value (ms)
Min	1.62	P50	2.58
Mean	7.83	P95	4.54
Median	2.57	P99	260.62
Max	260.62	StdDev	36.49
Count	50		

Limit Orders

Metric	Value (ms)	Metric	Value (ms)
Min	1.29	P50	2.40
Mean	7.90	P95	5.35
Median	2.35	P99	264.83
Max	264.83	StdDev	37.09
Count	50		

Performance Analysis

Key Findings:

• **Fastest Operation (P50):** Get Orderbook at 2.17ms
• **Slowest Operation (P50):** Get Trades at 6.67ms
• **Average P95 Latency:** 7.47ms
• **Average P99 Latency:** 270.24ms

Interpretation:
P50 (Median) represents typical performance under normal conditions.
P95 and P99 represent worst-case performance for 95% and 99% of requests.
Lower P95/P99 values indicate more consistent performance.

Recommendations:
• Operations with P95 > 500ms should be optimized
• Consider caching for frequently accessed endpoints
• Monitor P99 values for SLA compliance

System Information

Matching Engine: v3.0
API Version: REST API v3
WebSocket Support: Enabled
Database: In-memory with persistence
Concurrency: Async/await pattern
Framework: FastAPI + Uvicorn

Test Environment:
• Load Type: Sequential + Concurrent
• Order Types: Market, Limit, IOC, FOK, Stop Orders
• Symbols Tested: BTC-USDT, ETH-USDT