

# Pulse Secure Virtual Traffic Manager Performance Quick Reference

## Performance Quick Reference

Server Hardware	Small <sup>1</sup>	Medium <sup>1</sup>	Large <sup>1</sup>
Hardware model	HP DL380 Gen9	SuperMicro X10DRI-T4	Dell R730
Processor	6 cores 1 × E5-2620 v3 @ 2.4	12 cores 1 × E5-2690 v3 @ 2.6 GHz	18 cores 1 × E5-2699 v3 @ 2.3 GHz
Memory	32 GB	64 GB	128 GB memory
Networking	4 × 10 GbE	8 × 10 GbE	8 × 10 GbE
<b>Layer 4 Performance<sup>2</sup></b>			
Connections per second	400,000	800,000	1,200,000
Max Throughput	40 Gbps	80 Gbps	145 Gbps
L4 concurrent connections	16M	32M	48M
DNS queries per second	2M	4M	6M
<b>Layer 7 Performance</b>			
HTTP connections per second	160,000	300,000	360,000
HTTP requests per second	300,000	550,000	825,000
HTTP max. throughput	30 Gbps	45 Gbps	58 Gbps
<b>SSL/TLS Performance</b>			
SSL max. throughput	20 Gbps	35 Gbps	50 Gbps
SSL transactions per second (PFS cipher) <sup>3</sup>	20,200	38,800	47,600
<b>HTTP Content Caching Performance</b>			
Cache requests per second	600,000	1,200,000	1,750,000
Cache max. throughput	40 Gbps <sup>4</sup>	80 Gbps <sup>4</sup>	80 Gbps <sup>4</sup>
<b>Compression Performance</b>			
Throughput: 8 kB files	5.5 Gbps	10 Gbps	14 Gbps

<sup>1</sup> Using Pulse Secure Virtual Traffic Manager 17.2

<sup>2</sup> Layer 4 tests were measured with the KVM virtual appliance edition of vTM 17.2

<sup>3</sup> Test uses TLS\_ECDHE\_ECDSA\_WITH\_AES\_128\_GCM\_SHA256 (P-256); this cipher provides Perfect Forward Secrecy

<sup>4</sup> Throughput limited by available network bandwidth during these tests

## About The Tests

<b>Layer 4 performance</b>	Connections per second measures the sustained rate at which new connections can be established from the client to the server, a read-write transaction (HTTP request and one-byte response body) conducted and the connection closed. Layer 4 measurements use Data Plane Acceleration mode for performance.
<b>Layer 7 performance</b>	HTTP connections per second measures the sustained rate at which new connections can be established from the client to the server, an HTTP transaction conducted and the connection closed. This test uses keepalive connections to the server nodes. HTTP requests per second measures the sustained rate of HTTP transactions using client-side and server-side keepalive connections. HTTP max. throughput measure the maximum sustained response throughput.
<b>SSL/TLS performance</b>	TLS transactions per second establish a new TLS session for each transaction; sessions are not resumed. TLS max throughput measures the maximum sustained response throughput over encrypted connections.
<b>HTTP content caching performance</b>	Cache requests per second measures the sustained rate of HTTP transactions (0 Kb response body) served directly from the Pulse Secure Virtual Traffic Manager content cache. Cache maximum throughput serves large HTTP responses from the cache to measure the maximum sustained response throughput.

## Performance Considerations

All benchmarks are carefully constructed to extract the maximum performance from the system under test. Real world network conditions, uneven traffic profiles and complex traffic management policies mean that benchmark figures (particularly throughput) may not be achieved when managing live traffic.

The Pulse Secure Community makes a number of recommendations on performance tuning Pulse Secure Virtual Traffic Manager software and the following white papers may be useful:

- Application Acceleration with the Pulse Secure Virtual Traffic Manager feature brief  
[www.pulsesecure.net/vadc](http://www.pulsesecure.net/vadc)
- Introducing Zeusbench  
[www.pulsesecure.net/vadc](http://www.pulsesecure.net/vadc)
- Load testing recommendations for the Pulse Secure Virtual Traffic Manager  
[www.pulsesecure.net/vadc](http://www.pulsesecure.net/vadc)

## Maximizing Investments

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### USING THE DATA

*These results illustrate the performance potential of Pulse Secure Virtual Traffic Manager software. They do not constitute a specific hardware recommendation, and similarly specified hardware from other leading vendors should deliver similar performance. Mention of non-Pulse Secure products or services is for informational purposes only and constitutes neither an endorsement nor a recommendation.*

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