



## Sizing Guide for Deploying NGINX Plus on Bare Metal Servers

NGINX Plus is the only all-in-one load balancer, content cache, and web server. It's built on NGINX Open Source, which powers more of the world's websites than any other server. NGINX Plus runs on bare metal x86 servers for maximum performance and significant cost savings compared to hardware application delivery controllers (ADCs).

The table below outlines the hardware specifications required to achieve different levels of performance from NGINX Plus, along with the typical cost for that hardware.

HARDWARE COST	HARDWARE SPECS	EXPECTED PERFORMANCE
\$750 <sup>1</sup>	2 CPU cores <sup>2</sup> 4 GB RAM 2x1 GbE NIC 500 GB HDD	90,000 RPS <sup>3</sup> 4,000 SSL TPS (RSA) <sup>4</sup> 4,500 SSL TPS (ECC) <sup>5</sup> 1 Gbps throughput <sup>6</sup>
\$1,100	2 CPU cores 4 GB RAM 2x10 GbE NIC 500 GB HDD	90,000 RPS 4,000 SSL TPS (RSA) 4,500 SSL TPS (ECC) 10 Gbps throughput
\$1,300	4 CPU cores 4 GB RAM 2x40 GbE NIC 500 GB HDD	175,000 RPS 7,500 SSL TPS (RSA) 8,500 SSL TPS (ECC) 25 Gbps throughput
\$2,200	8 CPU cores 4 GB RAM 2x40 GbE NIC 1 TB HDD	350,000 RPS 14,000 SSL TPS (RSA) 16,000 SSL TPS (ECC) 40 Gbps throughput
\$3,500	16 CPU cores 4 GB RAM 2x40 GbE NIC 1 TB HDD	650,000 RPS 27,000 SSL TPS (RSA) 30,000 SSL TPS (ECC) 40 Gbps throughput
\$6,000	32 CPU cores 8 GB RAM 4x40 GbE NIC 1 TB HDD	1,000,000 RPS 48,000 SSL TPS (RSA) 52,000 SSL TPS (ECC) 70 Gbps throughput
\$10,000	44 CPU cores 16 GB RAM 4x40 GbE NIC 1 TB HDD	1,200,000 RPS 61,000 SSL TPS (RSA) 64,000 SSL TPS (ECC) 70 Gbps throughput

1. Prices are based on Dell PowerEdge servers with Intel NICs

2. Testing done with Intel Xeon E5-2699 v4 CPUs @ 22.GHz

3. 1 KB response size with keepalive connection

4. RSA 2048 bit, ECDHE-RSA-AES-GCM-SHA384, OpenSSL 1.0.2

5. ECC 256 bit, ECDHE-ECDSA-AES256-GCM-SHA384, OpenSSL 1.0.2

6. 1 MB response size

For details on how we obtained the performance metrics, see [www.nginx.com/blog/nginx-plus-sizing-guide-how-we-tested/](https://www.nginx.com/blog/nginx-plus-sizing-guide-how-we-tested/)

**Note: NGINX is provided as software only, not bundled with hardware; the hardware costs presented here are typical when purchasing from a reseller.**



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## About the Performance Metrics

**Requests per second (RPS)** – Measures the ability of NGINX Plus to process HTTP requests. The client sends requests over keepalive connections. NGINX Plus processes each request and forwards it to a web server over a separate keepalive connection.

**SSL transactions per second (SSL TPS)** – Measures the ability of NGINX Plus to process new SSL/TLS connections. Clients send a series of HTTPS requests, each on a new connection. NGINX Plus parses the requests and forwards them to a web server over an established keepalive connection. The web server sends back a 0-byte response for each request.

**Throughput** – Measures the volume in gigabits per second (Gbps) of traffic that NGINX Plus can sustain when serving large files over HTTP.

## Memory Sizing

NGINX Plus memory usage grows slowly as the number of concurrently active connections increases. Though dependent on the configuration, it is typically less than 10–20 KB per connection.

When caching is enabled, NGINX Plus might need more memory. Size the memory so that there is sufficient unused memory to store the hot cached content in the operating system page cache.

## Perfect Forward Secrecy

The SSL TPS numbers presented above are for SSL/TLS with Perfect Forward Secrecy (PFS). PFS ensures that encrypted traffic captured now can't be decrypted at a later time, even if the private key is compromised. We recommend PFS for maximum protection and user privacy in the current security climate.

PFS is more computationally expensive and as a result yields lower overall TPS. Most other vendors do not specify whether they are using PFS (and so probably are not); keep this in mind when doing comparisons.

## About NGINX PLUS

NGINX Plus helps you achieve performance, reliability, security, and scale by providing a complete application delivery platform by combining load balancing, content caching, web serving, security controls, and monitoring in one easy-to-use software package.

NGINX Plus ensures maximum performance and flawless delivery for almost any application (whether a legacy application, traditional web app, or interconnected microservices) and equally for all types of infrastructure (bare metal, containers, VMs, and public, private, and hybrid cloud).

**Try NGINX Plus for free today: [www.nginx.com/free-trial-request](https://www.nginx.com/free-trial-request)**