

# Nginx vs. FrankenPHP (Worker vs. Thread)

Performance Benchmark on a Sylius Application

## Test Environment

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### Compute Server

Scaleway DEV1-S (2 vCPUs, 2 GB RAM)

### Application

Sylius Standard (PHP 8.3)

### Database Server

Scaleway DB-DEV-S (2 vCPUs, 2 GB RAM, MySQL)

### Benchmark Tool

wrk on a separate DEV1-S instance

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## Configurations

### Nginx + PHP-FPM:

pm.max\_children = 15

### FrankenPHP (Worker

Mode): worker.num = 36

### FrankenPHP (Thread

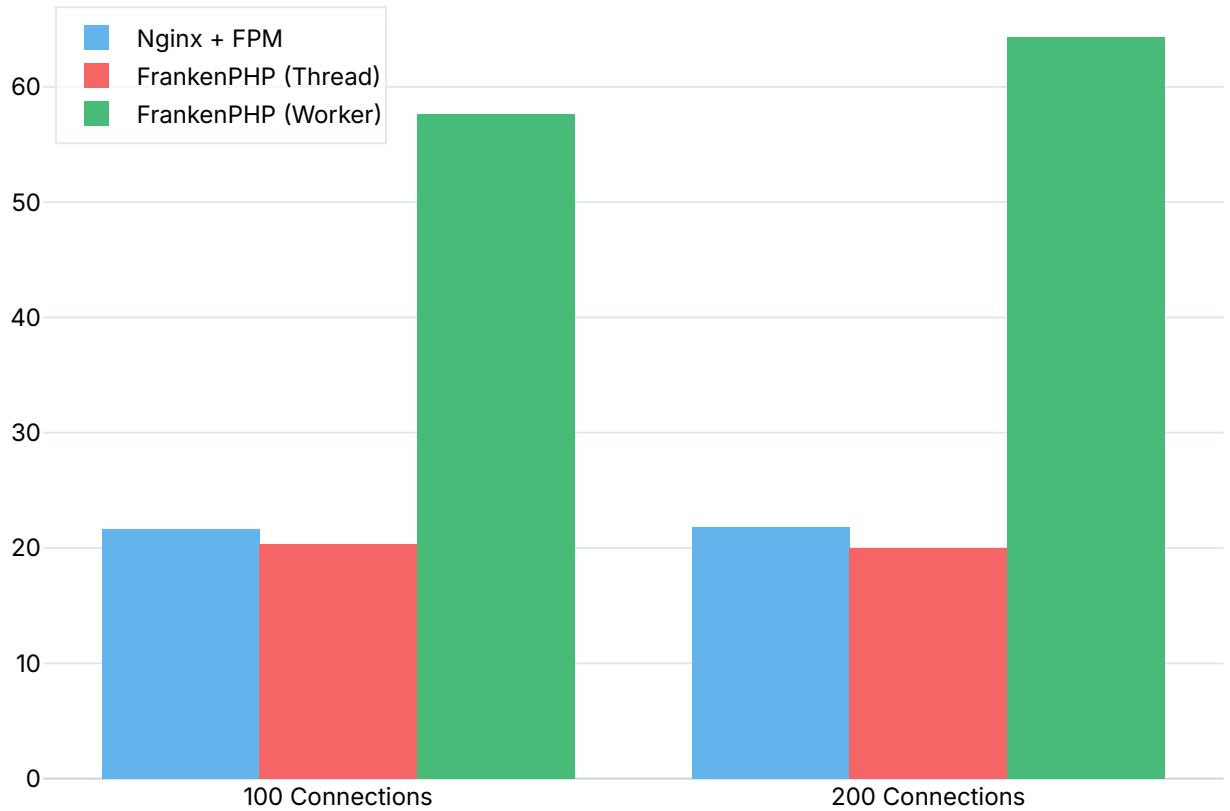
Mode): num\_threads = 36

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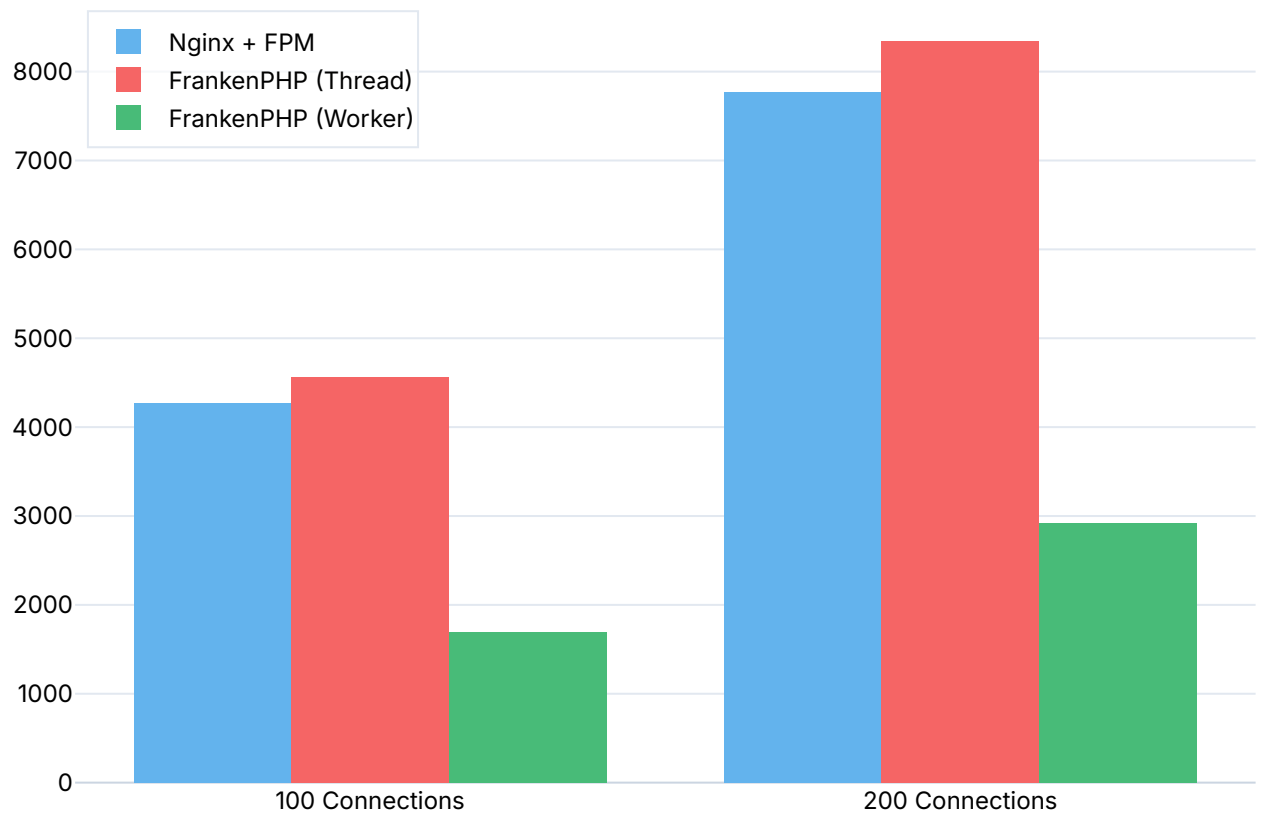
## Warmup Procedure

Before each 30-second benchmark, a warmup phase was executed. This involved calling the API endpoint with `curl` to ensure application caches were primed, followed by a preliminary 10-second `wrk` run with 100 connections.

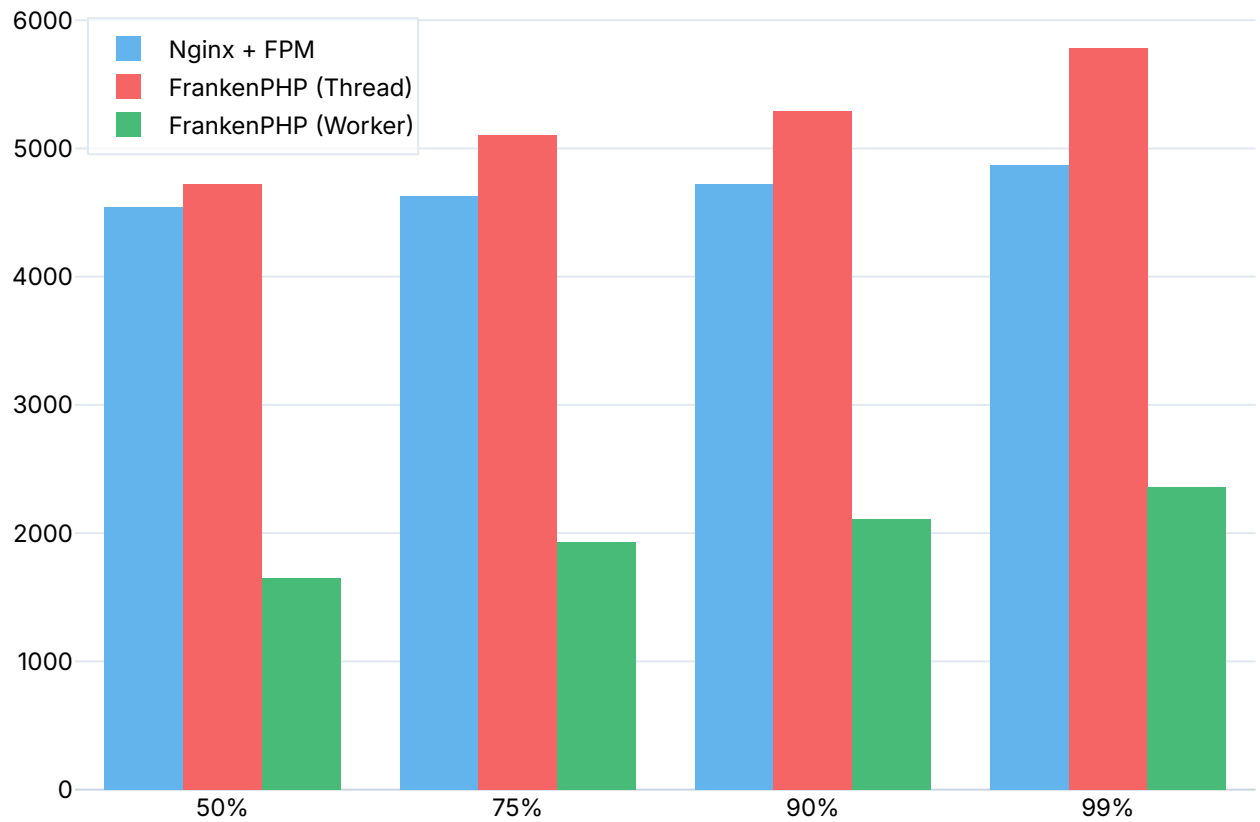
## Requests per Second



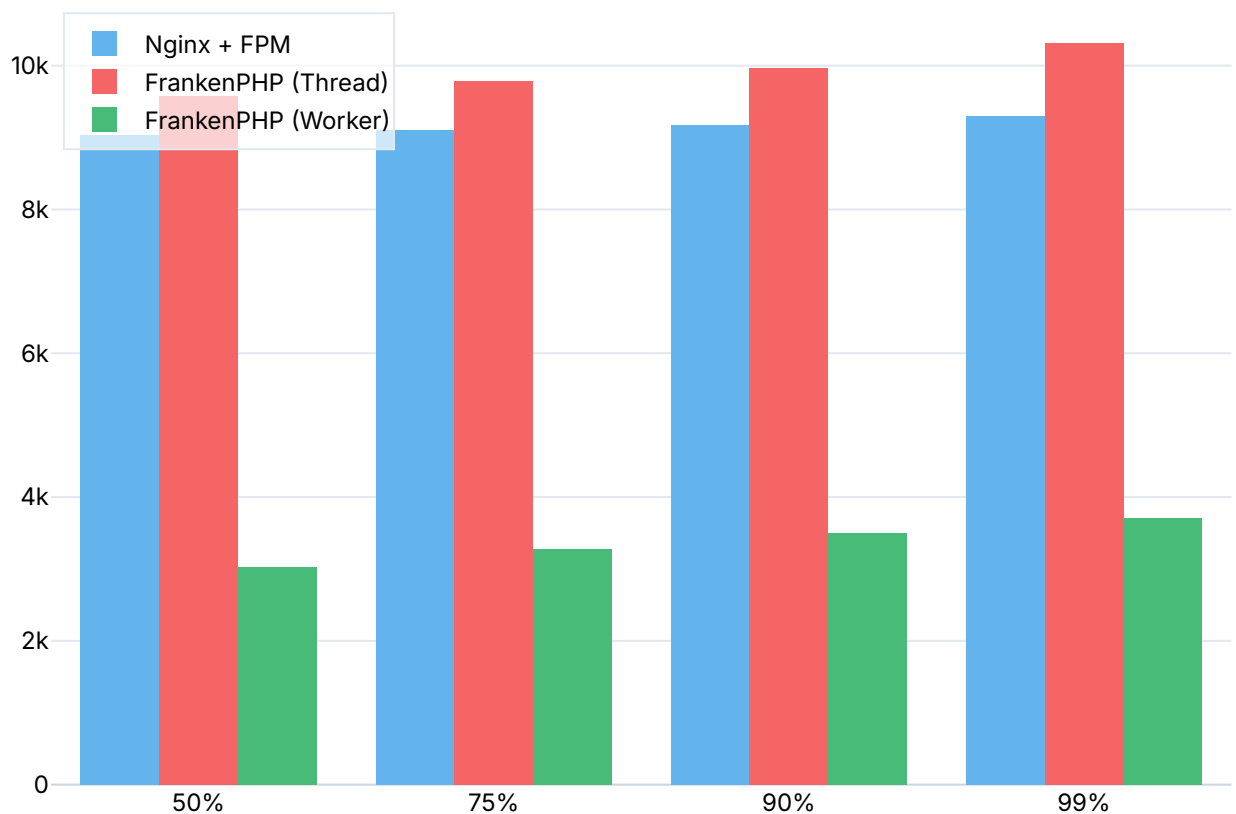
## Average Latency (ms)



### Latency Distribution @ 100 Connections



### Latency Distribution @ 200 Connections



# Benchmark Summary

- The benchmarks reveal a stark difference in performance between the server configurations, particularly highlighting the strength of FrankenPHP's worker mode.
- **FrankenPHP Worker Mode Leads Significantly:** This configuration vastly outperformed the others, handling nearly **3x more requests** per second and showing dramatically lower latency across both 100 and 200 connection tests.
  - **Nginx vs. FrankenPHP Thread Mode:** The performance difference between the traditional Nginx/PHP-FPM setup and FrankenPHP's thread-based mode is negligible.
  - **Performance Under Pressure:** FrankenPHP in worker mode was the only configuration that handled the increased load from 100 to 200 connections gracefully, maintaining high throughput. In contrast, both Nginx and FrankenPHP's thread mode saw latency skyrocket to unusable levels, with throughput remaining flat.

## Raw `wrk` Results

```
### FrankenPHP (Thread Mode, num_threads = 36) ###

# 100 Connections
root@attacker:~# wrk -t4 -c100 -d30s --latency --timeout 20s
http://51.159.157.40/api/v2/shop/products/Summer_Picnic_Charm
Running 30s test @ http://51.159.157.40/api/v2/shop/products/
Summer_Picnic_Charm
  4 threads and 100 connections
  Thread Stats   Avg      Stdev     Max    +/-  Stdev
    Latency    4.56s   852.58ms   5.99s   87.38%
    Req/Sec   10.15     9.58    50.00   75.00%
  Latency Distribution
    50%    4.72s
    75%    5.10s
    90%    5.29s
    99%    5.78s
  610 requests in 30.05s, 1.95MB read
Requests/sec:    20.30
Transfer/sec:    66.30KB

# 200 Connections
root@attacker:~# wrk -t4 -c200 -d30s --latency --timeout 20s
http://51.159.157.40/api/v2/shop/products/Summer_Picnic_Charm
```

```
Running 30s test @ http://51.159.157.40/api/v2/shop/products/
Summer_Picnic_Charm
  4 threads and 200 connections
  Thread Stats   Avg      Stdev     Max   +/-  Stdev
    Latency    8.34s    2.52s   10.68s   82.23%
    Req/Sec   14.31    14.70    90.00   85.53%
  Latency Distribution
    50%     9.58s
    75%     9.78s
    90%     9.97s
    99%    10.31s
  602 requests in 30.05s, 1.91MB read
Requests/sec:    20.03
Transfer/sec:    65.11KB

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```

### Nginx + PHP-FPM ###

# 100 Connections

```
root@attacker:~# wrk -t4 -c100 -d30s --latency --timeout 20s
http://51.159.157.40/api/v2/shop/products/Summer_Picnic_Charm
Running 30s test @ http://51.159.157.40/api/v2/shop/products/
Summer_Picnic_Charm
  4 threads and 100 connections
  Thread Stats   Avg      Stdev     Max   +/-  Stdev
    Latency    4.27s   901.33ms    4.98s   89.83%
    Req/Sec   14.72    10.81    50.00   74.57%
  Latency Distribution
    50%     4.54s
    75%     4.63s
    90%     4.72s
    99%     4.87s
  649 requests in 30.05s, 2.06MB read
Requests/sec:    21.60
Transfer/sec:    70.35KB
```

# 200 Connections

```
root@attacker:~# wrk -t4 -c200 -d30s --latency --timeout 20s
http://51.159.157.40/api/v2/shop/products/Summer_Picnic_Charm
Running 30s test @ http://51.159.157.40/api/v2/shop/products/
Summer_Picnic_Charm
  4 threads and 200 connections
  Thread Stats   Avg      Stdev     Max   +/-  Stdev
    Latency    7.77s    2.46s    9.45s   83.08%
    Req/Sec   15.02    10.39    60.00   78.49%
```

#### Latency Distribution

50%	9.04s
75%	9.11s
90%	9.18s
99%	9.30s

656 requests in 30.06s, 2.09MB read

Requests/sec: 21.82

Transfer/sec: 71.09KB

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### FrankenPHP (Worker Mode, worker.num = 36) ###

#### # 100 Connections

root@attacker:~# wrk -t4 -c100 -d30s --latency --timeout 20s

http://51.159.157.40/api/v2/shop/products/Summer\_Picnic\_Charm

Running 30s test @ http://51.159.157.40/api/v2/shop/products/  
Summer\_Picnic\_Charm

4 threads and 100 connections

Thread Stats	Avg	Stdev	Max	+/- Stdev
Latency	1.69s	321.95ms	2.57s	71.90%
Req/Sec	20.57	19.25	131.00	80.33%

#### Latency Distribution

50%	1.65s
75%	1.93s
90%	2.11s
99%	2.36s

1733 requests in 30.06s, 5.46MB read

Requests/sec: 57.65

Transfer/sec: 186.07KB

#### # 200 Connections

root@attacker:~# wrk -t4 -c200 -d30s --latency --timeout 20s

http://51.159.157.40/api/v2/shop/products/Summer\_Picnic\_Charm

Running 30s test @ http://51.159.157.40/api/v2/shop/products/  
Summer\_Picnic\_Charm

4 threads and 200 connections

Thread Stats	Avg	Stdev	Max	+/- Stdev
Latency	2.92s	577.77ms	3.89s	78.93%
Req/Sec	24.44	26.24	200.00	88.45%

#### Latency Distribution

50%	3.02s
75%	3.28s
90%	3.50s
99%	3.71s

1932 requests in 30.05s, 6.09MB read

Requests/sec: 64.29  
Transfer/sec: 207.51KB