

# Benchmarking Browser



Per il benchmarking dei browser sono stati scelti Google Chrome, Mozilla Firefox e Microsoft Edge.

I benchmark scelti per il confronto sono stati JetStream 2, Motion Mark e Speedometer.

**JetStream2:** Focalizzata sulle applicazioni web più avanzate. Premia i browser che si avviano rapidamente, eseguono rapidamente il codice e funzionano senza problemi.

**MotionMark:** Si concentra sulle prestazioni grafiche. Disegna più elementi di rendering. Ognuno dei quali utilizza lo stesso set di primitive grafiche.

**Speedometer:** Verifica la reattività di un browser cronometrando le interazioni simulate di un utente. Questo benchmark simula le azioni dell'utente per l'aggiunta, il completamento e la rimozione di interazioni utilizzando TodoMVC.

## Hardware usati:

### Sistema

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Produttore:	ASUSTek Computer Inc.
Processore:	AMD A10-9600P RADEON R5, 10 COMPUTE CORES 4C+6G 2.40 GHz
Memoria installata (RAM):	16,0 GB (15,0 GB utilizzabile)
Tipo sistema:	Sistema operativo a 64 bit, processore basato su x64

# JetStream2

## Google Chrome

Score finale: 46.171



<b>3d-cube-SP</b> 92.450 40.323 114.286 171.470 First Worst Average	<b>3d-raytrace-SP</b> 105.005 47.170 142.857 171.816 First Worst Average	<b>acorn-wtb</b> 10.299 6.684 10.893 15.004 First Worst Average	<b>ai-astar</b> 114.386 84.746 86.580 203.977 First Worst Average	<b>Air</b> 106.681 42.373 94.340 303.726 First Worst Average	<b>lebab-wtb</b> 13.825 8.104 15.244 21.390 First Worst Average	<b>mandreel</b> 32.124 12.469 47.619 55.830 First Worst Average	<b>ML</b> 23.310 14.793 28.129 30.437 First Worst Average	<b>multi-inspector-code-load</b> 107.366 62.500 58.309 339.612 First Worst Average	<b>n-body-SP</b> 245.839 156.250 246.914 385.113 First Worst Average
<b>async-fs</b> 31.653 26.316 31.579 38.160 First Worst Average	<b>Babylon</b> 118.381 39.370 114.943 366.605 First Worst Average	<b>babylon-wtb</b> 11.011 6.105 12.594 17.361 First Worst Average	<b>base64-SP</b> 98.791 57.471 116.279 144.277 First Worst Average	<b>Basic</b> 137.715 41.667 178.571 351.032 First Worst Average	<b>navier-stokes</b> 169.253 45.872 224.719 470.356 First Worst Average	<b>octane-code-load</b> 277.827 294.118 210.526 346.333 First Worst Average	<b>octane-zlib</b> 8.939 5.325 11.287 11.887 First Worst Average	<b>OfflineAssembler</b> 29.847 14.706 34.188 52.885 First Worst Average	<b>pdfjs</b> 36.628 13.405 42.105 87.065 First Worst Average
<b>bomb-workers</b> 6.746 7.886 5.184 7.509 First Worst Average	<b>Box2D</b> 64.612 14.577 68.729 269.231 First Worst Average	<b>cdjs</b> 14.412 10.917 16.112 17.018 First Worst Average	<b>chai-wtb</b> 28.006 22.422 29.586 33.113 First Worst Average	<b>coffeescript-wtb</b> 8.425 6.944 8.039 10.712 First Worst Average	<b>prepack-wtb</b> 9.429 6.684 9.901 12.666 First Worst Average	<b>quicksort-wasm</b> 103.451 156.250 68.493 Startup Runtime	<b>raytrace</b> 141.909 35.714 246.914 324.074 First Worst Average	<b>regex-dna-SP</b> 167.392 156.250 161.290 186.112 First Worst Average	<b>regex</b> 96.297 86.207 81.633 126.893 First Worst Average
<b>crypto</b> 280.137 119.048 333.333 554.004 First Worst Average	<b>crypto-aes-SP</b> 165.465 74.627 208.333 291.381 First Worst Average	<b>crypto-md5-SP</b> 89.025 52.632 102.041 131.376 First Worst Average	<b>crypto-sha1-SP</b> 111.276 49.020 158.730 177.083 First Worst Average	<b>date-format-tofte-SP</b> 52.374 44.248 55.249 58.765 First Worst Average	<b>richards</b> 192.715 68.493 273.973 381.410 First Worst Average	<b>richards-wasm</b> 20.336 147.059 2.812 Startup Runtime	<b>segmentation</b> 13.238 11.710 12.799 15.481 First Worst Average	<b>splay</b> 78.411 108.696 36.563 121.305 First Worst Average	<b>stanford-crypto-aes</b> 94.889 35.461 136.986 175.879 First Worst Average
<b>date-format-xparb-SP</b> 55.951 49.505 56.980 62.096 First Worst Average	<b>delta-blue</b> 237.970 45.455 327.869 904.255 First Worst Average	<b>earley-boyer</b> 166.712 84.746 168.067 325.314 First Worst Average	<b>esprew-wtb</b> 11.799 6.720 14.164 17.256 First Worst Average	<b>first-inspector-code-load</b> 55.435 55.556 49.140 62.402 First Worst Average	<b>stanford-crypto-pbkdf2</b> 165.898 104.167 156.250 280.528 First Worst Average	<b>stanford-crypto-sha256</b> 183.657 113.636 202.020 269.841 First Worst Average	<b>string-unpack-code-SP</b> 230.764 156.250 240.964 326.385 First Worst Average	<b>tagcloud-SP</b> 70.790 30.120 100 117.775 First Worst Average	<b>tsf-wasm</b> 31.315 119.048 8.237 Startup Runtime
<b>FlightPlanner</b> 152.802 70.423 183.486 276.102 First Worst Average	<b>float-mm.c</b> 5.237 5.208 5.168 5.336 First Worst Average	<b>gaussian-blur</b> 102.803 83.333 106.952 121.901 First Worst Average	<b>gbemu</b> 23.714 9.862 20.450 66.126 First Worst Average	<b>gcc-loops-wasm</b> 7.155 60.976 0.840 Startup Runtime	<b>typescript</b> 4.020 1.986 4.572 7.152 First Worst Average	<b>uglify-js-wtb</b> 7.550 5.682 7.704 9.833 First Worst Average	<b>UniPoker</b> 62.185 41.322 55.249 105.328 First Worst Average	<b>WSL</b> 0.321 0.564 0.183 Stdlib MainRun	
<b>hash-map</b> 123.460 49.020 140.845 272.561 First Worst Average	<b>HashSet-wasm</b> 15.013 80.645 2.795 Startup Runtime	<b>jshint-wtb</b> 13.602 9.311 15.015 18.002 First Worst Average	<b>json-parse-inspector</b> 49.478 62.500 34.965 55.426 First Worst Average	<b>json-stringify-inspector</b> 52.501 60.976 38.023 62.418 First Worst Average					

# JetStream2

## Mozilla Firefox

Score finale: 29.695



<b>3d-cube-SP</b> 61.448 53.191 63.898 68.265 First Worst Average	<b>3d-raytrace-SP</b> 56.951 46.296 60.606 65.833 First Worst Average	<b>acorn-wtb</b> 3.987 4.333 3.668 3.986 First Worst Average	<b>ai-astar</b> 85.116 106.383 58.997 98.250 First Worst Average	<b>Air</b> 67.569 30.864 71.429 139.934 First Worst Average	<b>lebab-wtb</b> 9.239 6.925 10.460 10.887 First Worst Average	<b>mandreel</b> 20.258 12.788 24.600 26.428 First Worst Average	<b>ML</b> 7.373 7.353 6.768 8.055 First Worst Average	<b>multi-inspector-code-load</b> 39.105 51.546 23.952 48.433 First Worst Average	<b>n-body-SP</b> 190.253 185.185 163.934 226.839 First Worst Average
<b>async-fs</b> 28.741 28.090 26.690 31.666 First Worst Average	<b>Babylon</b> 47.259 25.773 52.632 77.808 First Worst Average	<b>babylon-wtb</b> 4.065 4.448 3.666 4.119 First Worst Average	<b>base64-SP</b> 112.035 100 108.696 129.376 First Worst Average	<b>Basic</b> 66.913 45.045 72.993 91.118 First Worst Average	<b>navier-stokes</b> 188.309 119.048 202.020 277.648 First Worst Average	<b>octane-code-load</b> 155.176 227.273 57.971 283.603 First Worst Average	<b>octane-zlib</b> 9.775 8.210 10.549 10.784 First Worst Average	<b>OfflineAssembler</b> 10.665 9.294 9.107 14.332 First Worst Average	<b>pdfjs</b> 25.126 21.552 17.857 41.219 First Worst Average
<b>bomb-workers</b> 10.175 10.417 9.208 10.981 First Worst Average	<b>Box2D</b> 61.406 26.316 76.628 114.821 First Worst Average	<b>cdjs</b> 13.509 12.077 13.575 15.036 First Worst Average	<b>chai-wtb</b> 16.364 11.962 19.011 19.268 First Worst Average	<b>coffeescript-wtb</b> 6.676 5.618 6.849 7.731 First Worst Average	<b>prepack-wtb</b> 7.221 5.181 8.306 8.749 First Worst Average	<b>quicksort-wasm</b> 136.083 277.778 66.667 Startup Runtime	<b>raytrace</b> 87.084 50.505 108.696 120.299 First Worst Average	<b>regex-dna-SP</b> 135.166 119.048 121.951 170.097 First Worst Average	<b>regex</b> 113.388 104.167 112.360 124.555 First Worst Average
<b>crypto</b> 198.883 147.059 215.054 248.746 First Worst Average	<b>crypto-aes-SP</b> 105.779 75.758 118.343 132.017 First Worst Average	<b>crypto-md5-SP</b> 49.265 26.316 46.620 97.461 First Worst Average	<b>crypto-sha1-SP</b> 85.839 78.125 84.034 96.341 First Worst Average	<b>date-format-tofte-SP</b> 31.326 30.303 30.960 32.768 First Worst Average	<b>richards</b> 106.572 90.909 110.497 120.494 First Worst Average	<b>richards-wasm</b> 18.944 151.515 2.369 Startup Runtime	<b>segmentation</b> 4.406 4.078 3.477 6.034 First Worst Average	<b>splay</b> 16.217 19.305 9.867 22.392 First Worst Average	<b>stanford-crypto-aes</b> 81.554 65.789 83.682 98.526 First Worst Average
<b>date-format-xparb-SP</b> 42.274 34.247 45.558 48.421 First Worst Average	<b>delta-blue</b> 79.868 56.818 55.096 162.746 First Worst Average	<b>earley-boyer</b> 54.834 50 34.305 96.123 First Worst Average	<b>espreewtb</b> 4.022 4.058 3.574 4.485 First Worst Average	<b>first-inspector-code-load</b> 37.945 37.037 32.362 45.580 First Worst Average	<b>stanford-crypto-pbkdf2</b> 124.908 121.951 120.482 132.635 First Worst Average	<b>stanford-crypto-sha256</b> 155.954 125 166.667 182.069 First Worst Average	<b>string-unpack-code-SP</b> 54.852 62.500 33.613 78.558 First Worst Average	<b>tagcloud-SP</b> 43.647 49.505 27.701 60.634 First Worst Average	<b>tsf-wasm</b> 36.028 166.667 7.788 Startup Runtime
<b>FlightPlanner</b> 70.509 46.296 80.321 94.265 First Worst Average	<b>float-mm.c</b> 3.352 3.463 3.191 3.408 First Worst Average	<b>gaussian-blur</b> 97.969 90.909 97.087 106.535 First Worst Average	<b>gbemu</b> 36.425 19.841 43.197 56.387 First Worst Average	<b>gcc-loops-wasm</b> 9.277 142.857 0.602 Startup Runtime	<b>typescript</b> 2.094 1.719 2.169 2.462 First Worst Average	<b>uglify-js-wtb</b> 4.253 3.759 4.139 4.943 First Worst Average	<b>UniPoker</b> 95.088 55.556 113.636 136.187 First Worst Average	<b>WSL</b> 0.138 0.231 0.082 Stdlib MainRun	
<b>hash-map</b> 44.536 56.818 27.211 57.135 First Worst Average	<b>HashSet-wasm</b> 5.967 27.624 1.289 Startup Runtime	<b>jshint-wtb</b> 8.247 7.764 7.716 9.363 First Worst Average	<b>json-parse-inspector</b> 28.747 49.020 15.198 31.890 First Worst Average	<b>json-stringify-inspector</b> 63.052 57.471 57.803 75.457 First Worst Average					

# JetStream2

## Microsoft Edge

Score finale: 48.788



<b>3d-cube-SP</b> 102.807 47.170 120.482 191.195 First Worst Average	<b>3d-raytrace-SP</b> 103.904 48.544 129.870 177.931 First Worst Average	<b>acom-wtb</b> 11.673 6.536 12.887 18.886 First Worst Average	<b>ai-astar</b> 109.482 86.207 73.529 207.029 First Worst Average	<b>Air</b> 112.797 45.455 100.503 314.150 First Worst Average	<b>lebab-wtb</b> 14.502 8.446 16.340 22.099 First Worst Average	<b>mandreel</b> 32.305 12.723 46.838 56.574 First Worst Average	<b>ML</b> 24.751 16.502 28.818 31.885 First Worst Average	<b>multi-inspector-code-load</b> 123.310 73.529 67.114 379.949 First Worst Average	<b>n-body-SP</b> 334.313 208.333 392.157 457.341 First Worst Average
<b>async-fs</b> 29.226 27.322 24.590 37.157 First Worst Average	<b>Babylon</b> 79.091 19.920 78.431 316.658 First Worst Average	<b>babylon-wtb</b> 8.891 5.519 10.081 12.634 First Worst Average	<b>base64-SP</b> 63.827 54.348 39.216 122.001 First Worst Average	<b>Basic</b> 129.882 40 161.290 339.612 First Worst Average	<b>navier-stokes</b> 199.878 52.083 277.778 551.948 First Worst Average	<b>octane-code-load</b> 320.108 333.333 240.964 408.373 First Worst Average	<b>octane-zlib</b> 10.164 6.196 12.887 13.150 First Worst Average	<b>OfflineAssembler</b> 32.458 15.625 38.023 57.555 First Worst Average	<b>pdfjs</b> 39.521 14.837 44.743 92.983 First Worst Average
<b>bomb-workers</b> 7.609 8.026 7.189 7.635 First Worst Average	<b>Box2D</b> 66.295 14.970 68.729 283.198 First Worst Average	<b>cdjs</b> 16.032 11.628 17.857 19.847 First Worst Average	<b>chai-wtb</b> 29.599 23.474 32.258 34.247 First Worst Average	<b>coffeescript-wtb</b> 8.482 6.803 8.333 10.764 First Worst Average	<b>prepack-wtb</b> 10.593 7.123 11.364 14.684 First Worst Average	<b>quicksort-wasm</b> 146.805 250 86.207 Startup Runtime	<b>raytrace</b> 155.017 37.594 277.778 356.715 First Worst Average	<b>regex-dna-SP</b> 183.084 166.667 181.818 202.519 First Worst Average	<b>regex</b> 110.373 100 96.154 139.835 First Worst Average
<b>crypto</b> 286.140 135.135 303.030 572.115 First Worst Average	<b>crypto-aes-SP</b> 84.594 24.390 93.023 266.816 First Worst Average	<b>crypto-md5-SP</b> 93.608 52.632 112.994 137.923 First Worst Average	<b>crypto-sha1-SP</b> 111.139 49.020 155.039 180.631 First Worst Average	<b>date-format-tofte-SP</b> 59.829 50 62.893 68.101 First Worst Average	<b>richards</b> 223.675 92.593 289.855 416.959 First Worst Average	<b>richards-wasm</b> 31.028 312.500 3.081 Startup Runtime	<b>segmentation</b> 16.293 13.661 16.043 19.734 First Worst Average	<b>splay</b> 93.244 128.205 43.573 145.122 First Worst Average	<b>stanford-crypto-aes</b> 125.505 53.763 176.991 207.751 First Worst Average
<b>date-format-xparb-SP</b> 61.455 52.083 64.935 68.627 First Worst Average	<b>delta-blue</b> 251.096 43.860 384.615 938.486 First Worst Average	<b>earley-boyer</b> 171.279 89.286 169.492 332.031 First Worst Average	<b>espreew-wtb</b> 12.724 6.935 16.026 18.536 First Worst Average	<b>first-inspector-code-load</b> 58.509 59.524 50.378 66.794 First Worst Average	<b>stanford-crypto-pbkdf2</b> 195.167 121.951 178.571 341.365 First Worst Average	<b>stanford-crypto-sha256</b> 197.909 128.205 206.186 293.248 First Worst Average	<b>string-unpack-code-SP</b> 253.336 161.290 266.667 378.018 First Worst Average	<b>tagcloud-SP</b> 100.072 56.180 127.389 140.033 First Worst Average	<b>tsf-wasm</b> 35.593 151.515 8.361 Startup Runtime
<b>FlightPlanner</b> 159.802 72.464 181.818 309.735 First Worst Average	<b>float-mm.c</b> 3.826 3.658 3.627 4.221 First Worst Average	<b>gaussian-blur</b> 86.844 70.423 89.286 104.167 First Worst Average	<b>gbemu</b> 22.799 8.711 21.906 62.102 First Worst Average	<b>gcc-loops-wasm</b> 8.779 98.039 0.786 Startup Runtime	<b>typescript</b> 4.428 2.182 5.020 7.928 First Worst Average	<b>uglify-js-wtb</b> 8.871 6.394 9.363 11.662 First Worst Average	<b>UniPoker</b> 88.832 43.478 106.383 151.554 First Worst Average	<b>WSL</b> 0.314 0.542 0.182 Stdlib MainRun	
<b>hash-map</b> 120.295 49.020 134.228 264.562 First Worst Average	<b>HashSet-wasm</b> 13.479 79.365 2.289 Startup Runtime	<b>jslint-wtb</b> 13.508 8.977 15.432 17.794 First Worst Average	<b>json-parse-inspector</b> 49.788 62.500 35.336 55.882 First Worst Average	<b>json-stringify-inspector</b> 62.788 64.103 60.606 63.716 First Worst Average					

# MotionMark

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## Google Chrome

Score finale: 119.72

**119.72**

**±6.43%**

*on a medium screen (laptop, tablet)*



### Test Name Score

Multiply 195.55 ±1.60%

Canvas Arcs 142.78 ±0.88%

Leaves 275.50 ±1.91%

Paths 335.36 ±1.46%

Canvas Lines 1611.72 ±2.13%

Focus 7.50 ±18.41%

Images 38.05 ±14.90%

Design 28.62 ±2.81%

Suits 148.68 ±22.81%

# MotionMark

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## Mozilla Firefox

Score finale: 59.81

**59.81**

$\pm 21.47\%$

*on a large screen (desktop)*



Test Name	Score
Multiply	12.40 $\pm 85.68\%$
Canvas Arcs	362.49 $\pm 4.36\%$
Leaves	7.49 $\pm 65.82\%$
Paths	948.65 $\pm 5.52\%$
Canvas Lines	676.19 $\pm 4.11\%$
Focus	32.52 $\pm 5.28\%$
Images	8.19 $\pm 6.31\%$
Design	11.54 $\pm 12.14\%$
Suits	147.71 $\pm 4.35\%$



# MotionMark

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## Microsoft Edge

Score finale: 129.69

**129.69**

$\pm 7.71\%$

on a medium screen (laptop, tablet)



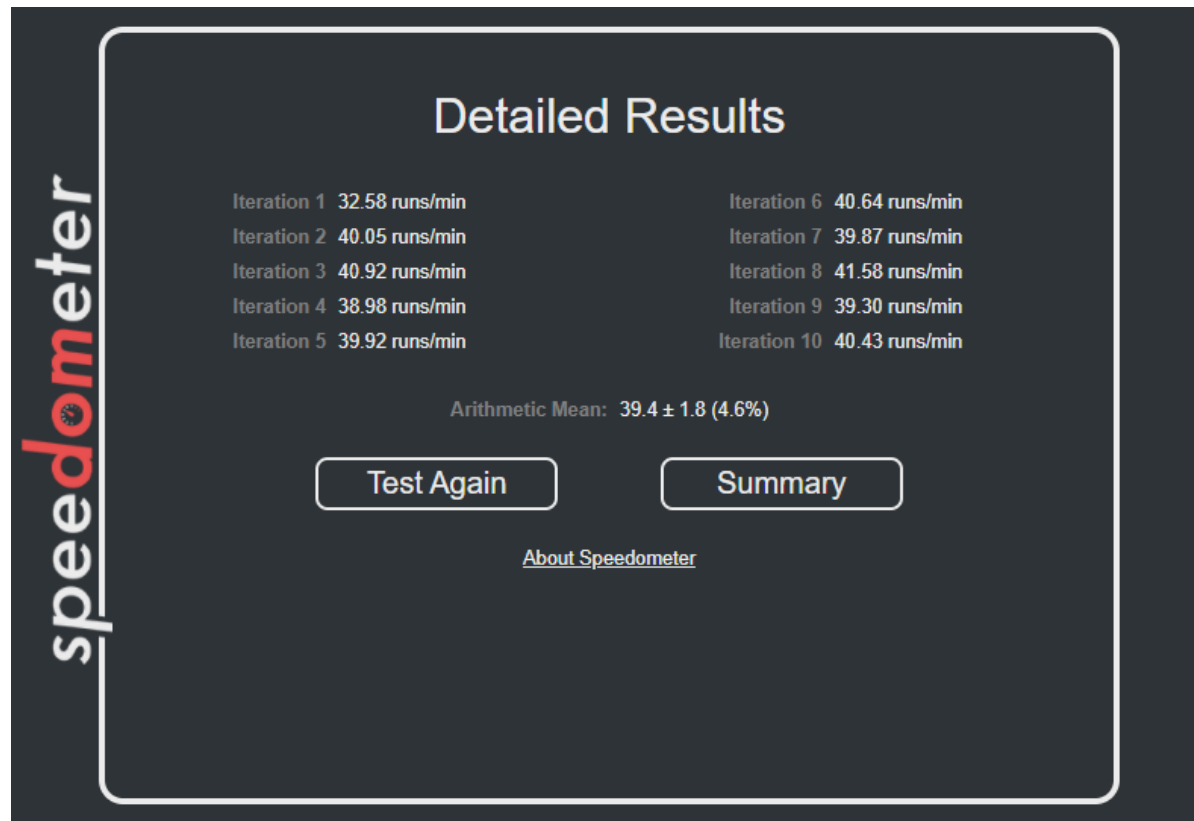
Test Name	Score	
Multiply	275.81	$\pm 1.44\%$
Canvas Arcs	137.93	$\pm 1.19\%$
Leaves	315.99	$\pm 1.85\%$
Paths	334.24	$\pm 0.97\%$
Canvas Lines	1498.55	$\pm 2.98\%$
Focus	8.31	$\pm 27.13\%$
Images	39.06	$\pm 12.93\%$
Design	36.89	$\pm 13.29\%$
Suits	143.97	$\pm 4.81\%$

# Speedometer

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## Google Chrome

Score finale: 39.4



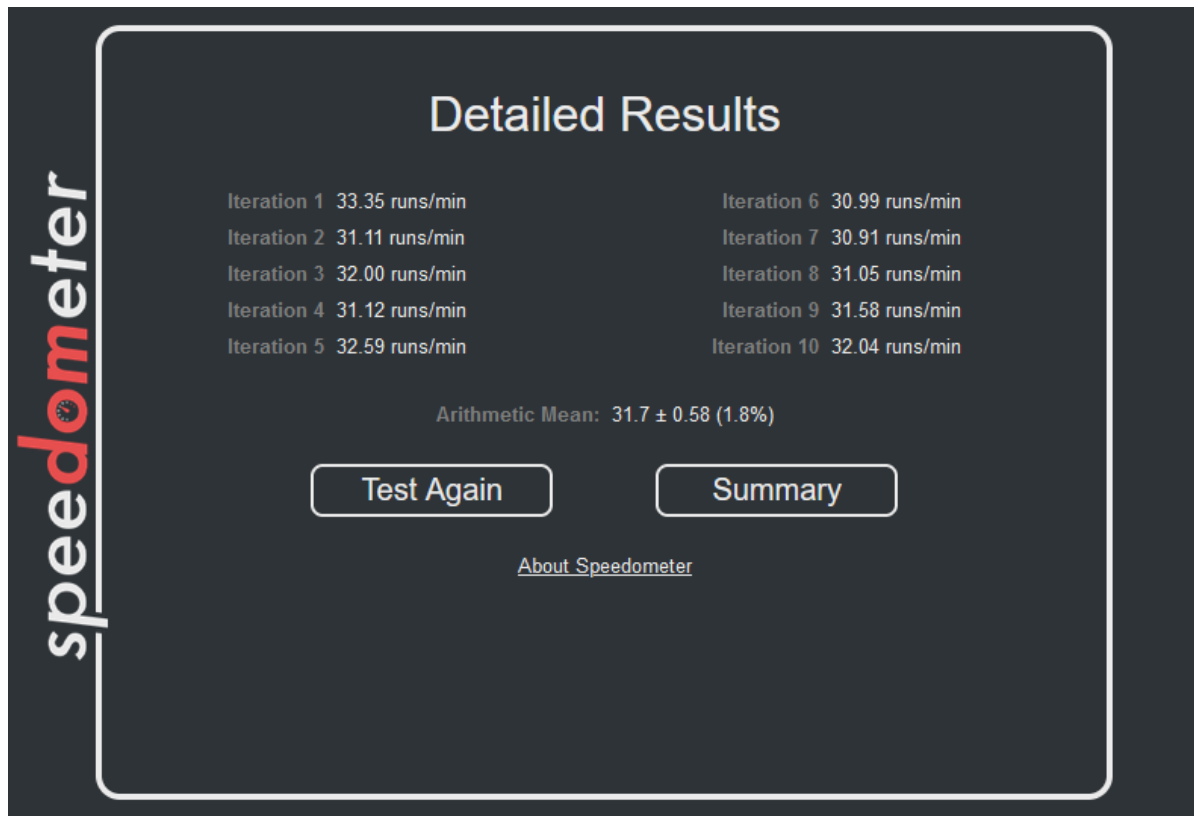


# Speedometer

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## Mozilla Firefox

Score finale: 31.7



# Speedometer

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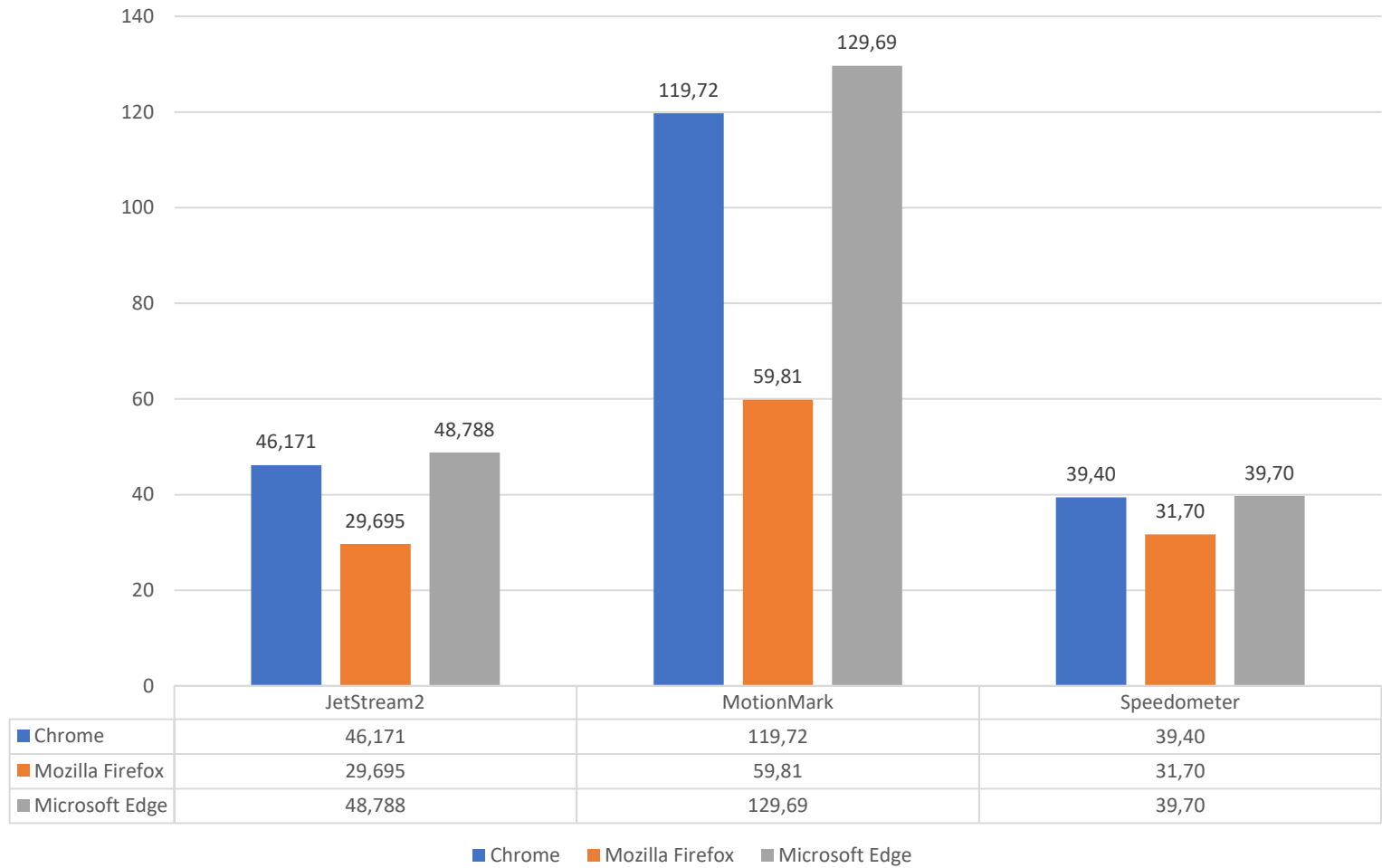
## Microsoft Edge

Score finale: 39.7



# Confronto Web Browser

Confronto Web Browser



# Benchmarking WebServer



Per il benchmarking dei WebServer sono stati scelti Apache 2.4.51 e Nginx 1.20.1

VS



## Hardware usati:

### Sistema

Produttore:	ASUSTek Computer Inc.
Processore:	AMD A10-9600P RADEON R5, 10 COMPUTE CORES 4C+6G 2.40 GHz
Memoria installata (RAM):	16,0 GB (15,0 GB utilizzabile)
Tipo sistema:	Sistema operativo a 64 bit, processore basato su x64

# WebServer Apache

## Test su file statico di 30 kb

Server Software: Apache/2.4.51  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /image.jpg  
Document Length: 29790 bytes



### - Rate 1

Concurrency Level: 1  
Time taken for tests: 146.106 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300410000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 68.44 [#/sec] (mean)  
Time per request: 14.611 [ms] (mean)  
Time per request: 14.611 [ms] (mean, across all concurrent requests)  
Transfer rate: 2007.92 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 9.3	0	328
Processing:	0	10 13.0	16	325
Waiting:	0	6 8.7	0	215
Total:	0	15 13.3	16	335

#### Percentage of the requests served within a certain time (ms)

50%	16
66%	16
75%	16
80%	16
90%	16
95%	16
98%	16
99%	25
100%	335 (longest request)

### - Rate 25

Concurrency Level: 25  
Time taken for tests: 41.055 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300410000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 243.57 [#/sec] (mean)  
Time per request: 102.638 [ms] (mean)  
Time per request: 4.106 [ms] (mean, across all concurrent requests)  
Transfer rate: 7145.73 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 6.8	0	31
Processing:	0	98 11.3	94	203
Waiting:	0	41 24.9	31	141
Total:	0	102 12.1	94	203

#### Percentage of the requests served within a certain time (ms)

50%	94
66%	109
75%	109
80%	109
90%	109
95%	109
98%	141
99%	156
100%	203 (longest request)

# WebServer Apache

## Test su file statico di 30 kb

Server Software: Apache/2.4.51  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /image.jpg  
Document Length: 29790 bytes



### - Rate 50

Concurrency Level: 50  
Time taken for tests: 45.419 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300410000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 220.17 [#/sec] (mean)  
Time per request: 227.097 [ms] (mean)  
Time per request: 4.542 [ms] (mean, across all concurrent requests)  
Transfer rate: 6459.13 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 11.7	0	322
Processing:	16	222 86.3	203	838
Waiting:	0	99 80.3	94	791
Total:	16	226 87.6	203	1135

#### Percentage of the requests served within a certain time (ms)

50%	203
66%	203
75%	219
80%	234
90%	250
95%	250
98%	618
99%	813
100%	1135 (longest request)

### - Rate 75

Concurrency Level: 75  
Time taken for tests: 41.038 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300410000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 243.68 [#/sec] (mean)  
Time per request: 307.782 [ms] (mean)  
Time per request: 4.104 [ms] (mean, across all concurrent requests)  
Transfer rate: 7148.78 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 6.9	0	109
Processing:	16	302 25.1	297	500
Waiting:	0	169 75.9	172	469
Total:	31	306 25.4	297	500

#### Percentage of the requests served within a certain time (ms)

50%	297
66%	312
75%	312
80%	312
90%	312
95%	313
98%	328
99%	422
100%	500 (longest request)



# WebServer Apache

## Test su file statico di 30 kb

Server Software: Apache/2.4.51  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /image.jpg  
Document Length: 29790 bytes



### - Rate 100

Concurrency Level: 100  
Time taken for tests: 45.188 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300410000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 221.30 [#/sec] (mean)  
Time per request: 451.876 [ms] (mean)  
Time per request: 4.519 [ms] (mean, across all concurrent requests)  
Transfer rate: 6492.25 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 12.6	0	316
Processing:	47	445 210.7	406	2006
Waiting:	16	296 170.0	266	1990
Total:	47	449 212.6	406	2015

#### Percentage of the requests served within a certain time (ms)

50%	406
66%	406
75%	406
80%	422
90%	437
95%	656
98%	1641
99%	1677
100%	2015 (longest request)

### - Rate 150

Concurrency Level: 150  
Time taken for tests: 40.757 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300410000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 245.36 [#/sec] (mean)  
Time per request: 611.349 [ms] (mean)  
Time per request: 4.076 [ms] (mean, across all concurrent requests)  
Transfer rate: 7198.08 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 6.8	0	78
Processing:	94	601 37.4	609	641
Waiting:	16	472 77.6	469	625
Total:	109	605 37.4	609	703

#### Percentage of the requests served within a certain time (ms)

50%	609
66%	609
75%	609
80%	609
90%	625
95%	625
98%	625
99%	625
100%	703 (longest request)

# WebServer Apache

## Test su file statico di 30 kb

Server Software: Apache/2.4.51  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /image.jpg  
Document Length: 29790 bytes



## - Rate 200

Concurrency Level: 200  
Time taken for tests: 40.851 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300410000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 244.79 [#/sec] (mean)  
Time per request: 817.011 [ms] (mean)  
Time per request: 4.085 [ms] (mean, across all concurrent requests)  
Transfer rate: 7181.52 [Kbytes/sec] received

### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 6.8	0	63
Processing:	109	803 57.1	812	860
Waiting:	0	663 83.9	672	859
Total:	125	806 57.1	812	907

### Percentage of the requests served within a certain time (ms)

50%	812
66%	812
75%	812
80%	828
90%	828
95%	828
98%	844
99%	844
100%	907 (longest request)

# WebServer Nginx



## Test su file statico di 30 kb

Server Software: nginx/1.20.1  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /image.jpg  
Document Length: 29790 bytes

### - Rate 1

Concurrency Level: 1  
Time taken for tests: 139.354 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300270000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 71.76 [#/sec] (mean)  
Time per request: 13.935 [ms] (mean)  
Time per request: 13.935 [ms] (mean, across all concurrent requests)  
Transfer rate: 2104.23 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 7.5	0	132
Processing:	0	10 10.8	16	336
Waiting:	0	5 8.1	0	136
Total:	0	14 9.9	16	336

#### Percentage of the requests served within a certain time (ms)

50%	16
66%	16
75%	16
80%	16
90%	16
95%	16
98%	16
99%	21
100%	336 (longest request)

### - Rate 25

Concurrency Level: 25  
Time taken for tests: 40.506 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300270000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 246.87 [#/sec] (mean)  
Time per request: 101.266 [ms] (mean)  
Time per request: 4.051 [ms] (mean, across all concurrent requests)  
Transfer rate: 7239.16 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 6.8	0	47
Processing:	0	97 7.7	94	110
Waiting:	0	37 20.3	31	109
Total:	16	101 8.3	94	156

#### Percentage of the requests served within a certain time (ms)

50%	94
66%	109
75%	109
80%	109
90%	109
95%	109
98%	109
99%	109
100%	156 (longest request)

# WebServer Nginx



## Test su file statico di 30 kb

Server Software: nginx/1.20.1  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /image.jpg  
Document Length: 29790 bytes

### - Rate 50

Concurrency Level: 50  
Time taken for tests: 42.923 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300270000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 232.98 [#/sec] (mean)  
Time per request: 214.614 [ms] (mean)  
Time per request: 4.292 [ms] (mean, across all concurrent requests)  
Transfer rate: 6831.63 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean	mean[+/-sd]	median	max
Connect:	0	4	9.8	0	327
Processing:	16	210	58.2	203	942
Waiting:	0	84	66.1	78	813
Total:	16	214	59.0	203	957

#### Percentage of the requests served within a certain time (ms)

50%	203
66%	203
75%	203
80%	203
90%	219
95%	312
98%	332
99%	516
100%	957 (longest request)

### - Rate 75

Concurrency Level: 75  
Time taken for tests: 42.115 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300270000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 237.44 [#/sec] (mean)  
Time per request: 315.864 [ms] (mean)  
Time per request: 4.212 [ms] (mean, across all concurrent requests)  
Transfer rate: 6962.62 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean	mean[+/-sd]	median	max
Connect:	0	4	6.9	0	109
Processing:	0	310	27.6	297	406
Waiting:	0	149	88.8	141	359
Total:	0	314	27.8	312	453

#### Percentage of the requests served within a certain time (ms)

50%	312
66%	313
75%	328
80%	344
90%	344
95%	359
98%	359
99%	375
100%	453 (longest request)

# WebServer Nginx



## Test su file statico di 30 kb

Server Software: nginx/1.20.1  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /image.jpg  
Document Length: 29790 bytes

### - Rate 100

Concurrency Level: 100  
Time taken for tests: 43.940 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300270000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 227.58 [#/sec] (mean)  
Time per request: 439.401 [ms] (mean)  
Time per request: 4.394 [ms] (mean, across all concurrent requests)  
Transfer rate: 6673.45 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 10.8	0	314
Processing:	0	433 140.3	406	1654
Waiting:	0	209 149.9	203	1623
Total:	16	437 141.4	406	1658

#### Percentage of the requests served within a certain time (ms)

50%	406
66%	406
75%	406
80%	422
90%	500
95%	656
98%	842
99%	1323
100%	1658 (longest request)

### - Rate 150

Concurrency Level: 150  
Time taken for tests: 43.497 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300270000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 229.90 [#/sec] (mean)  
Time per request: 652.456 [ms] (mean)  
Time per request: 4.350 [ms] (mean, across all concurrent requests)  
Transfer rate: 6741.43 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 10.5	0	315
Processing:	16	643 167.2	609	1653
Waiting:	0	302 196.6	297	1627
Total:	16	647 168.0	609	1653

#### Percentage of the requests served within a certain time (ms)

50%	609
66%	625
75%	625
80%	625
90%	656
95%	844
98%	1346
99%	1630
100%	1653 (longest request)

# WebServer Nginx



## Test su file statico di 30 kb

Server Software: nginx/1.20.1  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /image.jpg  
Document Length: 29790 bytes

### - Rate 200

Concurrency Level: 200  
Time taken for tests: 44.590 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 300270000 bytes  
HTML transferred: 297900000 bytes  
Requests per second: 224.27 [#/sec] (mean)  
Time per request: 891.801 [ms] (mean)  
Time per request: 4.459 [ms] (mean, across all concurrent requests)  
Transfer rate: 6576.18 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 10.4	0	314
Processing:	16	874 243.6	812	2306
Waiting:	0	431 299.0	406	1903
Total:	16	879 244.6	812	2321

#### Percentage of the requests served within a certain time (ms)

50%	812
66%	828
75%	828
80%	844
90%	984
95%	1436
98%	1868
99%	1954
100%	2321 (longest request)



# WebServer Apache

## Test su file dinamico di 0,8 kb

Server Software: Apache/2.4.51  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /index.php  
Document Length: 799 bytes



### - Rate 1

Concurrency Level: 1  
Time taken for tests: 94.781 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 10210000 bytes  
HTML transferred: 7990000 bytes  
Requests per second: 105.51 [#/sec] (mean)  
Time per request: 9.478 [ms] (mean)  
Time per request: 9.478 [ms] (mean, across all concurrent requests)  
Transfer rate: 105.20 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 7.6	0	187
Processing:	0	5 7.9	0	148
Waiting:	0	5 7.9	0	148
Total:	0	9 9.0	16	195

#### Percentage of the requests served within a certain time (ms)

50%	16
66%	16
75%	16
80%	16
90%	16
95%	16
98%	16
99%	16
100%	195 (longest request)

### - Rate 25

Concurrency Level: 25  
Time taken for tests: 44.926 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 10210000 bytes  
HTML transferred: 7990000 bytes  
Requests per second: 222.59 [#/sec] (mean)  
Time per request: 112.316 [ms] (mean)  
Time per request: 4.493 [ms] (mean, across all concurrent requests)  
Transfer rate: 221.94 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 7.8	0	125
Processing:	0	107 19.0	109	297
Waiting:	0	66 32.6	63	266
Total:	16	112 18.9	109	297

#### Percentage of the requests served within a certain time (ms)

50%	109
66%	109
75%	109
80%	109
90%	111
95%	125
98%	203
99%	219
100%	297 (longest request)

# WebServer Apache

## Test su file dinamico di 0,8 kb

Server Software: Apache/2.4.51  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /index.php  
Document Length: 799 bytes



### - Rate 50

Concurrency Level: 50  
Time taken for tests: 43.659 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 10210000 bytes  
HTML transferred: 7990000 bytes  
Requests per second: 229.05 [#/sec] (mean)  
Time per request: 218.297 [ms] (mean)  
Time per request: 4.366 [ms] (mean, across all concurrent requests)  
Transfer rate: 228.37 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 7.0	0	107
Processing:	0	213 12.0	219	250
Waiting:	0	125 59.8	125	235
Total:	0	217 11.6	219	357

#### Percentage of the requests served within a certain time (ms)

50%	219
66%	219
75%	219
80%	219
90%	219
95%	234
98%	234
99%	234
100%	357 (longest request)

### - Rate 75

Concurrency Level: 75  
Time taken for tests: 42.709 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 10210000 bytes  
HTML transferred: 7990000 bytes  
Requests per second: 234.14 [#/sec] (mean)  
Time per request: 320.319 [ms] (mean)  
Time per request: 4.271 [ms] (mean, across all concurrent requests)  
Transfer rate: 233.46 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 6.9	0	78
Processing:	0	314 17.9	312	344
Waiting:	0	189 78.0	187	344
Total:	16	318 18.0	312	407

#### Percentage of the requests served within a certain time (ms)

50%	312
66%	328
75%	328
80%	328
90%	328
95%	328
98%	344
99%	344
100%	407 (longest request)

# WebServer Apache

## Test su file dinamico di 0,8 kb

Server Software: Apache/2.4.51  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /index.php  
Document Length: 799 bytes



### - Rate 100

Concurrency Level: 100  
Time taken for tests: 46.126 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 10210000 bytes  
HTML transferred: 7990000 bytes  
Requests per second: 216.80 [#/sec] (mean)  
Time per request: 461.264 [ms] (mean)  
Time per request: 4.613 [ms] (mean, across all concurrent requests)  
Transfer rate: 216.16 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	5 12.7	0	402
Processing:	16	454 204.6	422	2105
Waiting:	0	327 173.2	312	1952
Total:	31	458 206.6	422	2118

#### Percentage of the requests served within a certain time (ms)

50%	422
66%	422
75%	437
80%	437
90%	437
95%	453
98%	1462
99%	1674
100%	2118 (longest request)

### - Rate 150

Concurrency Level: 150  
Time taken for tests: 47.713 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 10210000 bytes  
HTML transferred: 7990000 bytes  
Requests per second: 209.59 [#/sec] (mean)  
Time per request: 715.693 [ms] (mean)  
Time per request: 4.771 [ms] (mean, across all concurrent requests)  
Transfer rate: 208.97 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	5 12.5	0	328
Processing:	47	704 295.6	641	2842
Waiting:	16	571 260.6	531	2811
Total:	47	709 297.3	641	2852

#### Percentage of the requests served within a certain time (ms)

50%	641
66%	672
75%	687
80%	687
90%	719
95%	844
98%	2072
99%	2515
100%	2852 (longest request)

# WebServer Apache

## Test su file dinamico di 0,8 kb

Server Software: Apache/2.4.51  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /index.php  
Document Length: 799 bytes



## - Rate 200

Concurrency Level: 200  
Time taken for tests: 46.315 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 10210000 bytes  
HTML transferred: 7990000 bytes  
Requests per second: 215.91 [#/sec] (mean)  
Time per request: 926.296 [ms] (mean)  
Time per request: 4.631 [ms] (mean, across all concurrent requests)  
Transfer rate: 215.28 [Kbytes/sec] received

### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	5 12.2	0	328
Processing:	31	911 346.9	859	3636
Waiting:	0	783 321.5	734	3620
Total:	47	915 348.3	859	3642

### Percentage of the requests served within a certain time (ms)

50%	859
66%	859
75%	875
80%	875
90%	890
95%	1078
98%	2485
99%	3009
100%	3642 (longest request)

# WebServer Nginx



## Test su file dinamico di 0,8 kb

Server Software: nginx/1.20.1  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /index.php  
Document Length: 799 bytes

### - Rate 1

Concurrency Level: 1  
Time taken for tests: 158.563 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 9520000 bytes  
HTML transferred: 7890000 bytes  
Requests per second: 63.07 [#/sec] (mean)  
Time per request: 15.856 [ms] (mean)  
Time per request: 15.856 [ms] (mean, across all concurrent requests)  
Transfer rate: 58.63 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	3 8.0	0	128
Processing:	0	12 7.8	16	203
Waiting:	0	12 7.8	16	203
Total:	0	16 9.2	16	203

#### Percentage of the requests served within a certain time (ms)

50%	16
66%	16
75%	16
80%	16
90%	17
95%	31
98%	31
99%	31
100%	203 (longest request)

### - Rate 25

Concurrency Level: 25  
Time taken for tests: 41.256 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 9520000 bytes  
HTML transferred: 7890000 bytes  
Requests per second: 242.39 [#/sec] (mean)  
Time per request: 103.141 [ms] (mean)  
Time per request: 4.126 [ms] (mean, across all concurrent requests)  
Transfer rate: 225.34 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 6.9	0	78
Processing:	16	99 9.5	94	156
Waiting:	0	61 26.4	62	141
Total:	16	103 10.2	109	188

#### Percentage of the requests served within a certain time (ms)

50%	109
66%	109
75%	109
80%	109
90%	109
95%	109
98%	125
99%	141
100%	188 (longest request)

# WebServer Nginx



## Test su file dinamico di 0,8 kb

Server Software: nginx/1.20.1  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /index.php  
Document Length: 799 bytes

### - Rate 50

Concurrency Level: 50  
Time taken for tests: 41.006 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 9520000 bytes  
HTML transferred: 7890000 bytes  
Requests per second: 243.86 [#/sec] (mean)  
Time per request: 205.032 [ms] (mean)  
Time per request: 4.101 [ms] (mean, across all concurrent requests)  
Transfer rate: 226.72 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 6.8	0	16
Processing:	0	200 17.2	203	328
Waiting:	0	110 56.0	109	328
Total:	16	204 17.2	203	328

#### Percentage of the requests served within a certain time (ms)

50%	203
66%	203
75%	203
80%	203
90%	219
95%	219
98%	250
99%	297
100%	328 (longest request)

### - Rate 75

Concurrency Level: 75  
Time taken for tests: 42.943 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 9520000 bytes  
HTML transferred: 7890000 bytes  
Requests per second: 232.87 [#/sec] (mean)  
Time per request: 322.073 [ms] (mean)  
Time per request: 4.294 [ms] (mean, across all concurrent requests)  
Transfer rate: 216.49 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 10.1	0	314
Processing:	16	317 75.6	297	746
Waiting:	0	170 101.2	172	720
Total:	16	321 76.4	297	746

#### Percentage of the requests served within a certain time (ms)

50%	297
66%	312
75%	312
80%	312
90%	313
95%	422
98%	704
99%	731
100%	746 (longest request)



# WebServer Nginx



## Test su file dinamico di 0,8 kb

Server Software: nginx/1.20.1  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /index.php  
Document Length: 799 bytes

### - Rate 100

Concurrency Level: 100  
Time taken for tests: 42.131 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 9520000 bytes  
HTML transferred: 7890000 bytes  
Requests per second: 237.35 [#/sec] (mean)  
Time per request: 421.311 [ms] (mean)  
Time per request: 4.213 [ms] (mean, across all concurrent requests)  
Transfer rate: 220.67 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 6.9	0	47
Processing:	0	415 47.1	406	609
Waiting:	0	218 119.2	219	578
Total:	16	419 47.3	406	609

#### Percentage of the requests served within a certain time (ms)

50%	406
66%	406
75%	422
80%	422
90%	453
95%	531
98%	578
99%	594
100%	609 (longest request)

### - Rate 150

Concurrency Level: 150  
Time taken for tests: 43.083 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 9520000 bytes  
HTML transferred: 7890000 bytes  
Requests per second: 232.11 [#/sec] (mean)  
Time per request: 646.249 [ms] (mean)  
Time per request: 4.308 [ms] (mean, across all concurrent requests)  
Transfer rate: 215.79 [Kbytes/sec] received

#### Connection Times (ms)

	min	mean[+/-sd]	median	max
Connect:	0	4 8.4	0	297
Processing:	0	635 96.1	609	1174
Waiting:	0	332 189.1	328	1158
Total:	0	640 96.5	625	1174

#### Percentage of the requests served within a certain time (ms)

50%	625
66%	625
75%	625
80%	625
90%	687
95%	859
98%	968
99%	1033
100%	1174 (longest request)

# WebServer Nginx



## Test su file dinamico di 0,8 kb

Server Software: nginx/1.20.1  
Server Hostname: 192.168.1.11  
Server Port: 3000

Document Path: /index.php  
Document Length: 799 bytes

### - Rate 200

Concurrency Level: 200  
Time taken for tests: 43.655 seconds  
Complete requests: 10000  
Failed requests: 0  
Total transferred: 9520000 bytes  
HTML transferred: 7890000 bytes  
Requests per second: 229.07 [#/sec] (mean)  
Time per request: 873.097 [ms] (mean)  
Time per request: 4.365 [ms] (mean, across all concurrent requests)  
Transfer rate: 212.96 [Kbytes/sec] received

#### Connection Times (ms)

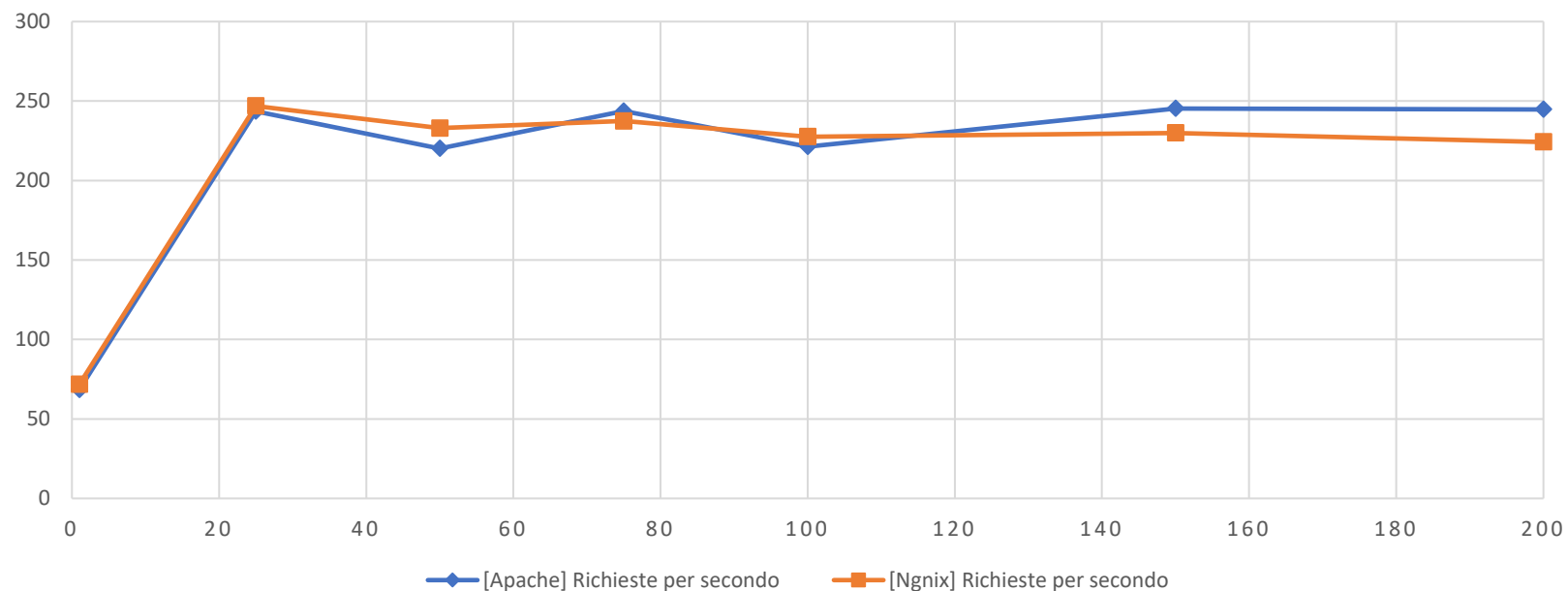
	min	mean[+/-sd]	median	max
Connect:	0	4 8.3	0	125
Processing:	16	859 156.2	812	1531
Waiting:	0	444 260.4	437	1524
Total:	16	863 156.8	828	1539

#### Percentage of the requests served within a certain time (ms)

50%	828
66%	844
75%	859
80%	859
90%	1031
95%	1189
98%	1406
99%	1515
100%	1539 (longest request)

# Confronto WebServer File Statico

TEST SU FILE STATICO [30 KB]



APACHE  
HTTP SERVER



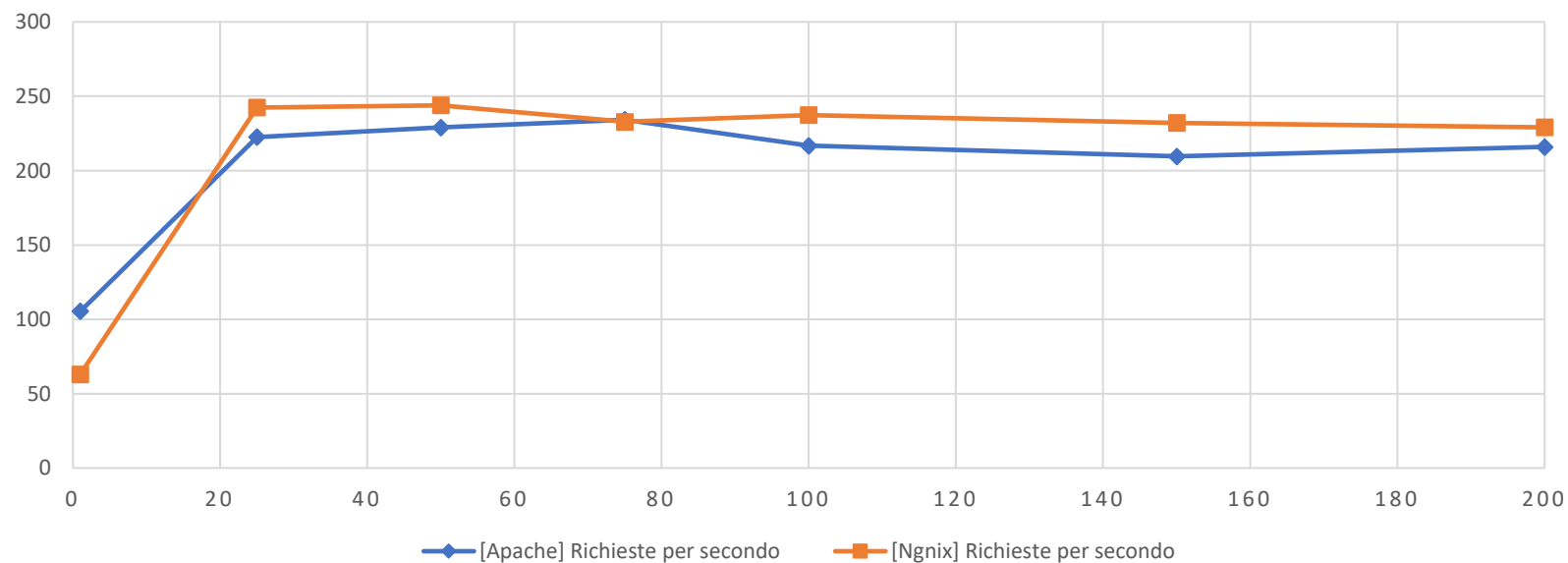
VS



Numero richieste concorrenti	[Apache] Richieste per secondo	[Nginx] Richieste per secondo
1	68,44	71,76
25	243,57	246,87
50	220,17	232,98
75	243,68	237,44
100	221,3	227,58
150	245,36	229,9
200	244,79	224,27

# Confronto WebServer File Dinamico

TEST SU FILE DINAMICO [PHP TIMESTAMP] [0,8 KB]



VS



Numero richieste concorrenti	[Apache] Richieste per secondo	[Nginx] Richieste per secondo
1	105,51	63,07
25	222,59	242,39
50	229,05	243,96
75	234,14	232,87
100	216,8	237,35
150	209,59	232,11
200	215,91	229,07