



[www.phoronix-test-suite.com](http://www.phoronix-test-suite.com)

## Apache Spark AMD EPYC

2 x AMD EPYC 7713 64-Core testing with a AMD DAYTONA\_X (RYM1009B BIOS) and ASPEED on Ubuntu 22.04 via the Phoronix Test Suite.

### Automated Executive Summary

C had the most wins, coming in first place for 44% of the tests.

Based on the geometric mean of all complete results, the fastest (A) was 1.011x the speed of the slowest (B). C was 0.992x the speed of A and B was 0.997x the speed of C.

The results with the greatest spread from best to worst included:

Apache Spark (Row Count: 10000000 - Partitions: 2000 - Calculate Pi Benchmark Using Dataframe) at 1.598x  
Apache Spark (Row Count: 1000000 - Partitions: 500 - Calculate Pi Benchmark Using Dataframe) at 1.409x  
Apache Spark (Row Count: 20000000 - Partitions: 100 - Inner Join Test Time) at 1.117x  
Apache Spark (Row Count: 20000000 - Partitions: 100 - Broadcast Inner Join Test Time) at 1.106x  
Apache Spark (Row Count: 1000000 - Partitions: 500 - SHA-512 Benchmark Time) at 1.101x  
Apache Spark (Row Count: 1000000 - Partitions: 100 - Inner Join Test Time) at 1.099x  
Apache Spark (Row Count: 10000000 - Partitions: 2000 - SHA-512 Benchmark Time) at 1.085x  
Apache Spark (Row Count: 1000000 - Partitions: 1000 - SHA-512 Benchmark Time) at 1.076x  
Apache Spark (Row Count: 20000000 - Partitions: 100 - SHA-512 Benchmark Time) at 1.072x

Apache Spark (Row Count: 10000000 - Partitions: 100 - SHA-512 Benchmark Time) at 1.064x.

## Test Systems:

**A**

**B**

**C**

Processor: 2 x AMD EPYC 7713 64-Core @ 2.00GHz (128 Cores / 256 Threads), Motherboard: AMD DAYTONA\_X (RYM1009B BIOS), Chipset: AMD Starship/Matisse, Memory: 512GB, Disk: 3841GB Micron\_9300\_MTFDHAL3T8TDP, Graphics: ASPEED, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 22.04, Kernel: 5.19.0-051900daily20220803-generic (x86\_64), Desktop: GNOME Shell 42.2, Display Server: X Server 1.21.1.3, Vulkan: 1.2.204, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1080

Kernel Notes: Transparent Huge Pages: madvise

Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa001173

Java Notes: OpenJDK Runtime Environment (build 11.0.15+10-Ubuntu-0ubuntu0.22.04.1)

Python Notes: Python 3.10.4

Security Notes: itlb\_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio\_stale\_data: Not affected + rebleed: Not affected + spec\_c\_store\_bypass: Mitigation of SSB disabled via prctl + spectre\_v1: Mitigation of usercopy/swapgs barriers and \_\_user pointer sanitization + spectre\_v2: Mitigation of Retpolines IPBP: conditional IBRS\_FW STIBP: always-on RSB filling + srbd: Not affected + tsx\_async\_abort: Not affected

	A	B	C
<b>Apache Spark - 1000000 - 100 - S.5.B.T (sec)</b>	4.54	<b>4.62</b>	<b>4.45</b>
Normalized	98.02%	96.32%	100%
Standard Deviation	1.2%	2.5%	
<b>Apache Spark - 1000000 - 100 - C.P.B (sec)</b>	17.58	<b>17.53</b>	<b>17.75</b>
Normalized	99.72%	100%	98.76%
Standard Deviation	2%	1.5%	
<b>Apache Spark - 1000000 - 100 - C.P.B.U.D (sec)</b>	<b>3.67</b>	<b>3.12</b>	3.48
Normalized	85.01%	100%	89.66%
Standard Deviation	15.3%	20%	
<b>Apache Spark - 1000000 - 100 - Group By Test Time (sec)</b>	<b>6.53</b>	6.78	<b>6.91</b>
Normalized	100%	96.31%	94.5%
Standard Deviation	1%	0.5%	
<b>Apache Spark - 1000000 - 100 - R.T.T (sec)</b>	<b>2.94</b>	<b>2.75</b>	2.91
Normalized	93.54%	100%	94.5%
Standard Deviation	7.2%	4.9%	
<b>Apache Spark - 1000000 - 100 - I.J.T.T (sec)</b>	<b>2.92</b>	3.17	<b>3.21</b>
Normalized	100%	92.11%	90.97%

	Standard Deviation	2.6%	2.2%	
<b>Apache Spark - 1000000 - 100 - B.I.J.T.T (sec)</b>	Normalized	1.86	<b>1.84</b>	<b>1.99</b>
	Standard Deviation	7%	5%	
<b>Apache Spark - 1000000 - 500 - S.5.B.T (sec)</b>	Normalized	5.93	6.01	<b>5.58</b>
	Standard Deviation	5.7%	5.7%	
<b>Apache Spark - 1000000 - 500 - C.P.B (sec)</b>	Normalized	17.47	17.49	<b>17.19</b>
	Standard Deviation	1.5%	1.5%	
<b>Apache Spark - 1000000 - 500 - C.P.B.U.D (sec)</b>	Normalized	3.18	3.22	<b>2.93</b>
	Standard Deviation	84.59%	83.54%	
	Normalized	20%	19.5%	
<b>Apache Spark - 1000000 - 1000 - S.5.B.T</b>	<b>5.91</b>	<b>6.36</b>	6.08	
	Normalized	100%	92.92%	
	Standard Deviation	4%	1.6%	
<b>Apache Spark - 1000000 - 1000 - C.P.B (sec)</b>	<b>17.45</b>	17.59	<b>17.80</b>	
	Normalized	100%	99.2%	
	Standard Deviation	1.2%	1.9%	
<b>Apache Spark - 1000000 - 1000 - C.P.B.U.D (sec)</b>	<b>3.38</b>	<b>2.46</b>	3.03	
	Normalized	72.78%	100%	
	Standard Deviation	24.1%	21.2%	
<b>Apache Spark - 1000000 - 1000 - Group By Test Time (sec)</b>	Normalized	11.95	<b>14.25</b>	<b>11.05</b>
	Standard Deviation	92.47%	77.54%	
	Normalized	17.6%	28.4%	
<b>Apache Spark - 1000000 - 1000 - R.T.T (sec)</b>	<b>5.49</b>	<b>6.25</b>	6.16	
	Normalized	100%	87.84%	
	Standard Deviation	8.8%	9.8%	
<b>Apache Spark - 1000000 - 1000 - I.J.T.T (sec)</b>	<b>6.58</b>	6.93	<b>7.01</b>	
	Normalized	100%	94.95%	
	Standard Deviation	11.5%	15.7%	
<b>Apache Spark - 1000000 - 1000 - B.I.J.T.T</b>	<b>3.90</b>	3.97	<b>4.13</b>	
	Normalized	100%	98.24%	
	Standard Deviation	7.8%	10.5%	
<b>Apache Spark - 1000000 - 2000 - S.5.B.T</b>	<b>5.91</b>	<b>6.16</b>	<b>6.13</b>	
	Normalized	100%	95.94%	
	Standard Deviation	4.8%	2.5%	
<b>Apache Spark - 1000000 - 2000 - C.P.B (sec)</b>	17.52	17.55	<b>17.46</b>	
	Normalized	99.66%	99.49%	
	Standard Deviation	1.6%	1.4%	
<b>Apache Spark - 1000000 - 2000 - C.P.B.U.D (sec)</b>	<b>3.21</b>	<b>3.64</b>	3.31	
	Normalized	100%	88.19%	
	Standard Deviation	21.1%	20.8%	
<b>Apache Spark - 1000000 - 2000 - Group By Test Time (sec)</b>	11.05	<b>10.96</b>	<b>11.86</b>	
	Normalized	99.19%	100%	
	Standard Deviation	7.3%	7.1%	
<b>Apache Spark - 1000000 - 2000 - R.T.T (sec)</b>	6.04	<b>5.98</b>	<b>8.51</b>	
	Normalized	99.01%	100%	
	Standard Deviation	11.9%	10.3%	

<b>Apache Spark - 1000000 - 2000 - I.J.T.T (sec)</b>	<b>7.18</b>	7.34	<b>7.47</b>
Normalized	100%	97.82%	96.12%
Standard Deviation	10%	7.8%	
<b>Apache Spark - 1000000 - 2000 - B.I.J.T.T</b>	<b>4.42</b>	<b>4.04</b>	<b>4.44</b>
Normalized	91.4%	100%	90.99%
Standard Deviation	8.4%	7%	
<b>Apache Spark - 10000000 - 100 - S.5.B.T</b>	<b>11.60</b>	<b>11.63</b>	<b>11.50</b>
Normalized	99.14%	98.88%	100%
Standard Deviation	1.3%	3.7%	
<b>Apache Spark - 10000000 - 100 - C.P.B (sec)</b>	<b>17.48</b>	<b>17.37</b>	17.39
Normalized	99.37%	100%	99.88%
Standard Deviation	1.1%	1.1%	
<b>Apache Spark - 10000000 - 100 - C.P.B.U.D (sec)</b>	<b>3.51</b>	<b>3.68</b>	<b>2.28</b>
Normalized	58.12%	55.43%	89.47%
Standard Deviation	6.5%	13.4%	
<b>Apache Spark - 10000000 - 100 - Group By Test Time (sec)</b>	<b>12.32</b>	<b>13.26</b>	12.67
Normalized	100%	92.91%	97.24%
Standard Deviation	3.3%	6.7%	
<b>Apache Spark - 10000000 - 100 - R.T.T (sec)</b>	<b>7.28</b>	<b>8.37</b>	8.16
Normalized	100%	86.98%	89.22%
Standard Deviation	9.8%	6.4%	
<b>Apache Spark - 10000000 - 100 - I.J.T.T (sec)</b>	<b>8.51</b>	<b>9.12</b>	<b>9.27</b>
Normalized	100%	93.31%	91.8%
Standard Deviation	1.8%	6.4%	
<b>Apache Spark - 10000000 - 100 - B.I.J.T.T</b>	<b>5.81</b>	<b>6.23</b>	6.03
Normalized	100%	93.26%	96.35%
Standard Deviation	7.3%	6.9%	
<b>Apache Spark - 10000000 - 500 - S.5.B.T</b>	<b>13.29</b>	12.85	<b>12.723502458</b>
Normalized	95.74%	99.02%	100%
Standard Deviation	2%	2.2%	
<b>Apache Spark - 10000000 - 500 - C.P.B (sec)</b>	<b>17.45</b>	<b>17.49</b>	17.48
Normalized	100%	99.77%	99.83%
Standard Deviation	1%	1.7%	
<b>Apache Spark - 10000000 - 500 - C.P.B.U.D (sec)</b>	<b>3.80</b>	3.31	<b>3.08</b>
Normalized	81.05%	93.05%	100%
Standard Deviation	13.6%	30.9%	
<b>Apache Spark - 20000000 - 100 - S.5.B.T</b>	<b>18.83</b>	19.20	<b>19.492174895</b>
Normalized	100%	98.07%	96.6%
Standard Deviation	1.8%	3%	
<b>Apache Spark - 20000000 - 100 - C.P.B (sec)</b>	17.38	<b>17.40</b>	<b>17.40</b>
Normalized	98.91%	98.79%	98.79%
Standard Deviation	1.6%	1.3%	
<b>Apache Spark - 20000000 - 100 - C.P.B.U.D (sec)</b>	<b>4.25</b>	3.39	<b>3.62</b>
Normalized	68.24%	85.55%	80.11%
Standard Deviation	1.3%	21.6%	
<b>Apache Spark - 20000000 - 500 - S.5.B.T</b>	20.37	<b>20.46</b>	<b>20.26</b>
Normalized	99.46%	99.02%	100%
Standard Deviation	1.8%	1.1%	
<b>Apache Spark - 20000000 - 500 - C.P.B (sec)</b>	17.45	<b>17.64</b>	<b>17.26</b>
Normalized	98.91%	97.85%	100%
Standard Deviation	1.8%	1%	

## Apache Spark AMD EPYC

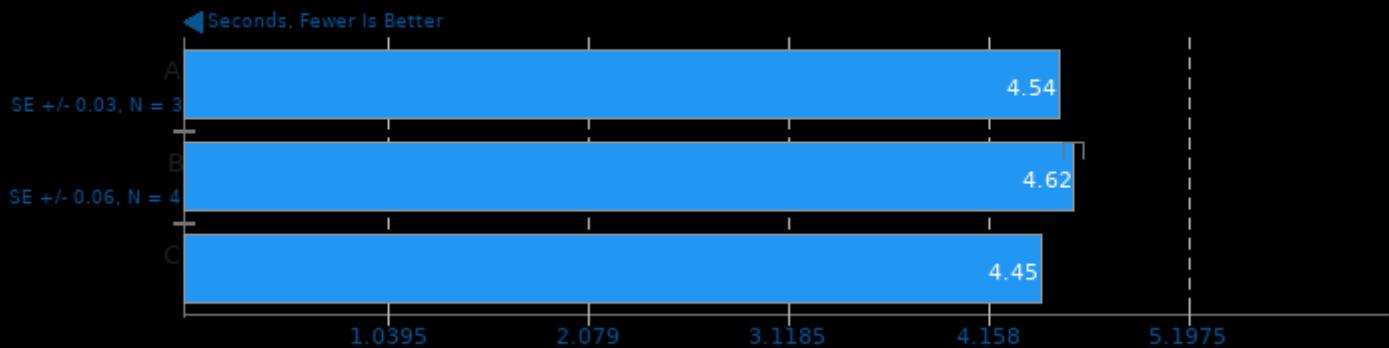
<b>Apache Spark - 20000000 - 500 - C.P.B.U.D</b>	<b>3.44</b>	<b>3.82</b>	<b>3.40</b>
	(sec)		
Normalized	98.84%	89.01%	100%
Standard Deviation	16.6%	29.1%	
<b>Apache Spark - 40000000 - 100 - S.5.B.T</b>	<b>34.96</b>	<b>35.12</b>	<b>33.94</b>
Normalized	97.08%	96.64%	100%
Standard Deviation	2.7%	3.3%	
<b>Apache Spark - 40000000 - 100 - C.P.B (sec)</b>	<b>17.54</b>	<b>17.51</b>	<b>17.71</b>
Normalized	99.83%	100%	98.87%
Standard Deviation	1.3%	1.8%	
<b>Apache Spark - 40000000 - 100 - C.P.B.U.D</b>	<b>3.44</b>	<b>3.09</b>	<b>2.53</b>
	(sec)		
Normalized	73.55%	81.88%	100%
Standard Deviation	19.7%	23.4%	
<b>Apache Spark - 40000000 - 500 - S.5.B.T</b>	<b>35.26</b>	<b>35.03</b>	<b>35.28</b>
Normalized	99.35%	100%	99.29%
Standard Deviation	1.6%	2.4%	
<b>Apache Spark - 40000000 - 500 - C.P.B (sec)</b>	<b>17.67</b>	<b>17.41</b>	<b>17.28</b>
Normalized	97.79%	99.25%	100%
Standard Deviation	0.9%	0.9%	
<b>Apache Spark - 40000000 - 500 - C.P.B.U.D</b>	<b>3.38</b>	<b>3.28</b>	<b>3.97</b>
	(sec)		
Normalized	97.04%	100%	82.62%
Standard Deviation	17.6%	24.5%	
<b>Apache Spark - 10000000 - 1000 - S.5.B.T</b>	<b>12.91</b>	<b>13.09</b>	<b>12.53</b>
	(sec)		
Normalized	97.06%	95.72%	100%
Standard Deviation	2.6%	3.9%	
<b>Apache Spark - 10000000 - 1000 - C.P.B (sec)</b>	<b>17.44</b>	<b>17.54</b>	<b>17.61</b>
Normalized	100%	99.43%	99.03%
Standard Deviation	1.3%	2.5%	
<b>Apache Spark - 10000000 - 1000 - C.P.B.U.D</b>	<b>3.54</b>	<b>3.22</b>	<b>2.89</b>
	(sec)		
Normalized	81.64%	89.75%	100%
Standard Deviation	18.4%	16.1%	
<b>Apache Spark - 10000000 - 2000 - S.5.B.T</b>	<b>13.19</b>	<b>13.09</b>	<b>13.45</b>
	(sec)		
Normalized	95.68%	96.41%	93.83%
Standard Deviation	4.4%	3.5%	
<b>Apache Spark - 10000000 - 2000 - C.P.B (sec)</b>	<b>17.48</b>	<b>17.42</b>	<b>17.11</b>
Normalized	97.88%	98.22%	100%
Standard Deviation	1.2%	1.6%	
<b>Apache Spark - 10000000 - 2000 - C.P.B.U.D</b>	<b>3.34</b>	<b>3.22</b>	<b>3.85</b>
	(sec)		
Normalized	76.65%	79.5%	66.49%
Standard Deviation	25.3%	21.5%	
<b>Apache Spark - 20000000 - 1000 - S.5.B.T</b>	<b>20.95</b>	<b>20.65</b>	<b>21.42</b>
	(sec)		
Normalized	98.57%	100%	96.41%
Standard Deviation	2.5%	2.4%	
<b>Apache Spark - 20000000 - 1000 - C.P.B (sec)</b>	<b>17.47</b>	<b>17.50</b>	<b>17.43</b>
Normalized	99.77%	99.6%	100%
Standard Deviation	1.4%	1.2%	

<b>Apache Spark - 20000000 - 1000 - C.P.B.U.D</b>	3.34 <b>(sec)</b>	<b>3.57</b>	<b>2.56</b>
Normalized	76.65%	71.71%	100%
Standard Deviation	22.3%	14.2%	
<b>Apache Spark - 20000000 - 2000 - S.5.B.T</b>	20.96 <b>(sec)</b>	<b>20.47</b>	<b>21.74</b>
Normalized	97.66%	100%	94.16%
Standard Deviation	3%	2.1%	
<b>Apache Spark - 20000000 - 2000 - C.P.B (sec)</b>	17.42	<b>17.30</b>	<b>17.61</b>
Normalized	99.31%	100%	98.24%
Standard Deviation	1.1%	0.6%	
<b>Apache Spark - 20000000 - 2000 - C.P.B.U.D</b>	<b>3.67</b> <b>(sec)</b>	3.62	<b>3.33</b>
Normalized	90.74%	91.99%	100%
Standard Deviation	22.1%	27.4%	
<b>Apache Spark - 40000000 - 1000 - S.5.B.T</b>	<b>35.18</b> <b>(sec)</b>	35.55	<b>36.21</b>
Normalized	100%	98.96%	97.16%
Standard Deviation	2.4%	2.4%	
<b>Apache Spark - 40000000 - 1000 - C.P.B (sec)</b>	17.33	<b>17.31</b>	<b>17.84</b>
Normalized	99.88%	100%	97.03%
Standard Deviation	0.9%	0.1%	
<b>Apache Spark - 40000000 - 1000 - C.P.B.U.D</b>	<b>2.90</b> <b>(sec)</b>	3.55	<b>3.80</b>
Normalized	100%	81.69%	76.32%
Standard Deviation	27.1%	17.5%	
<b>Apache Spark - 40000000 - 2000 - S.5.B.T</b>	<b>35.78</b> <b>(sec)</b>	35.36	<b>35.07</b>
Normalized	98.02%	99.18%	100%
Standard Deviation	0.4%	2.5%	
<b>Apache Spark - 40000000 - 2000 - C.P.B (sec)</b>	<b>17.63</b>	17.54	<b>17.31</b>
Normalized	98.18%	98.69%	100%
Standard Deviation	1.6%	1.3%	
<b>Apache Spark - 40000000 - 2000 - C.P.B.U.D</b>	<b>2.04</b> <b>(sec)</b>	3.43	<b>4.36702926</b>
Normalized	100%	59.48%	46.71%
Standard Deviation	1.5%	15.4%	
<b>Apache Spark - 1000000 - 500 - Group By</b>		15.62	
Test Time (sec)			
Standard Deviation		37.2%	
<b>Apache Spark - 1000000 - 500 - R.T.T (sec)</b>		4.87	
Standard Deviation		2%	
<b>Apache Spark - 1000000 - 500 - I.J.T.T (sec)</b>		5.59	
Standard Deviation		4.2%	
<b>Apache Spark - 1000000 - 500 - B.I.J.T.T (sec)</b>		4.49	
Standard Deviation		14.3%	
<b>Apache Spark - 20000000 - 100 - Group By</b>		<b>37.61</b>	<b>39.26</b>
Test Time (sec)			
Normalized		100%	95.8%
Standard Deviation		11.8%	
<b>Apache Spark - 20000000 - 100 - R.T.T (sec)</b>		<b>13.48</b>	<b>13.86</b>
Normalized		100%	97.26%
Standard Deviation		0.9%	

Apache Spark - 20000000 - 100 - I.J.T.T (sec)	<b>14.25</b>	<b>12.76</b>
Normalized	89.54%	100%
Standard Deviation	7.5%	
Apache Spark - 20000000 - 100 - B.I.J.T.T	<b>12.02</b>	<b>10.87</b>
Normalized	90.43%	100%
Standard Deviation	9.5%	
Apache Spark - 10000000 - 2000 - Group By	18.19	
<b>Test Time (sec)</b>		
Standard Deviation	4%	
Apache Spark - 10000000 - 2000 - R.T.T (sec)	14.44	
Standard Deviation	9.5%	
Apache Spark - 10000000 - 2000 - I.J.T.T	12.76	
Standard Deviation	16.2%	
Apache Spark - 10000000 - 2000 - B.I.J.T.T	8.18	
<b>(sec)</b>		
Standard Deviation	6.8%	

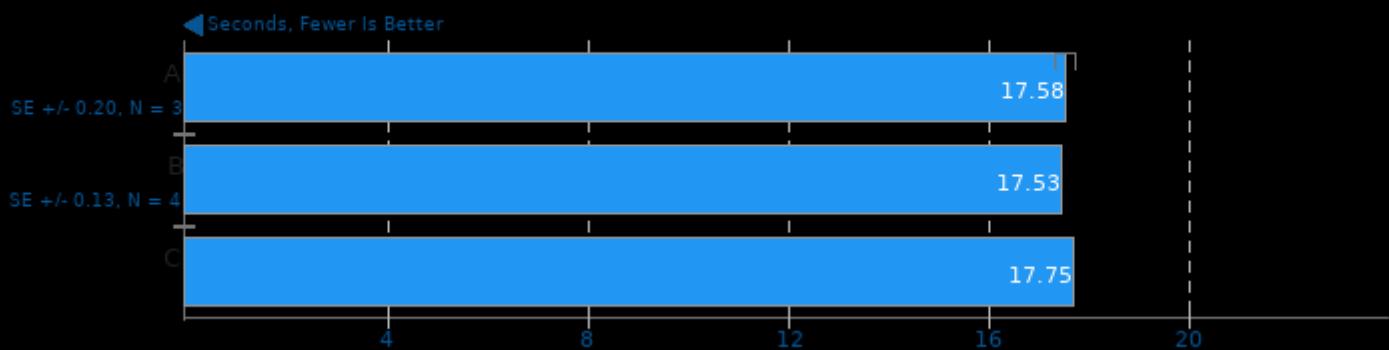
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 100 - SHA-512 Benchmark Time



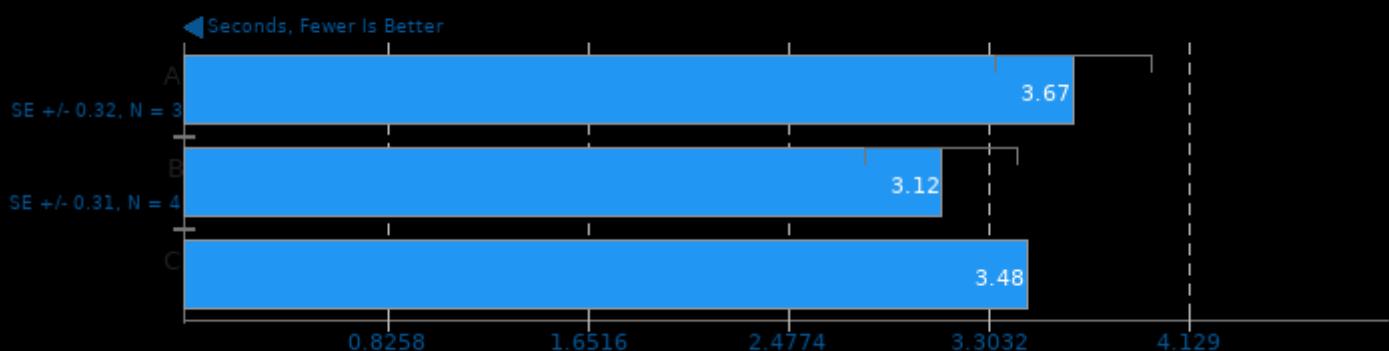
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 100 - Calculate Pi Benchmark



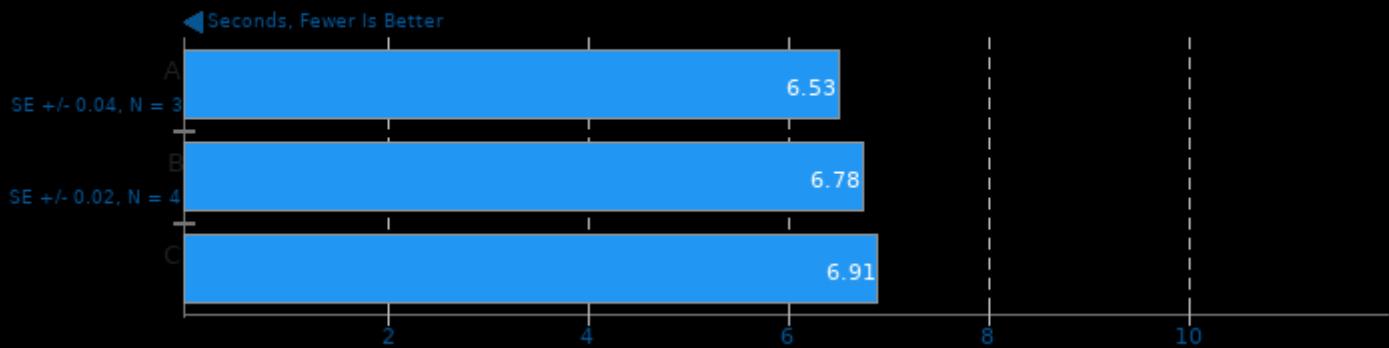
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 100 - Calculate Pi Benchmark Using Dataframe



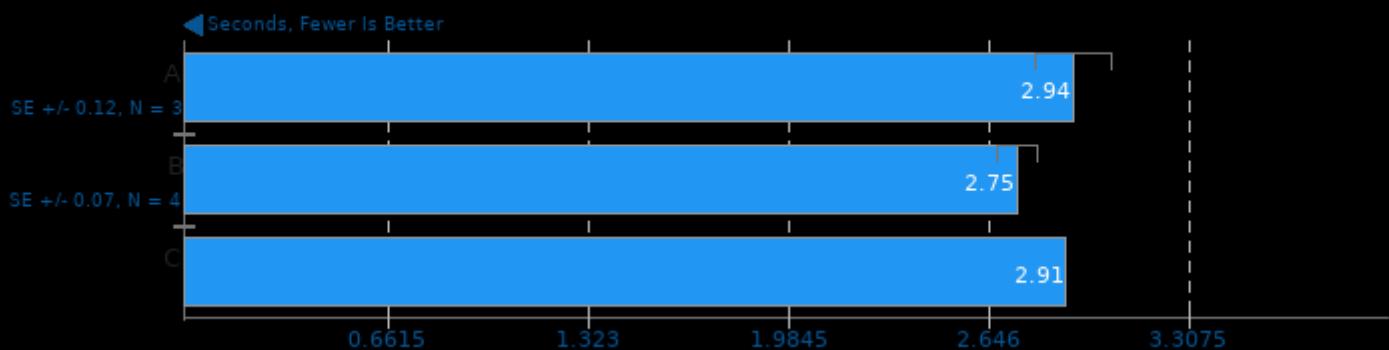
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 100 - Group By Test Time



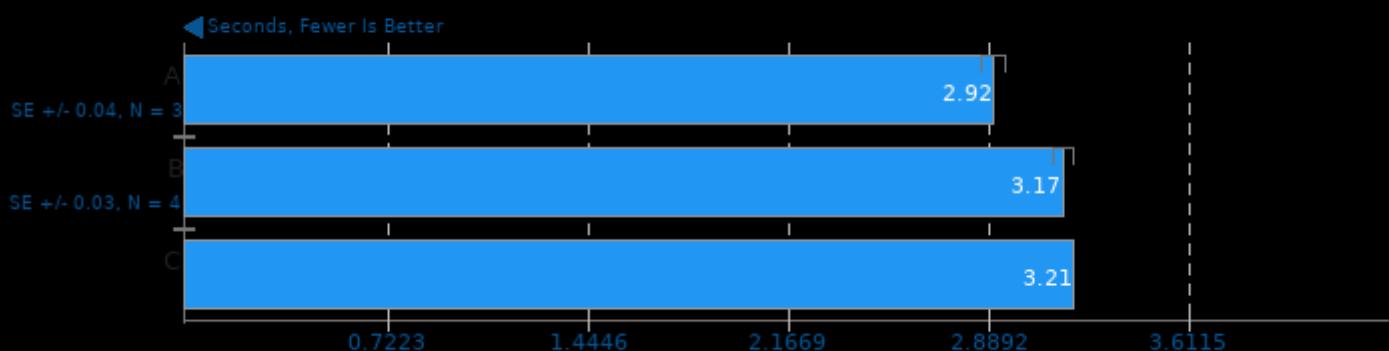
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 100 - Repartition Test Time



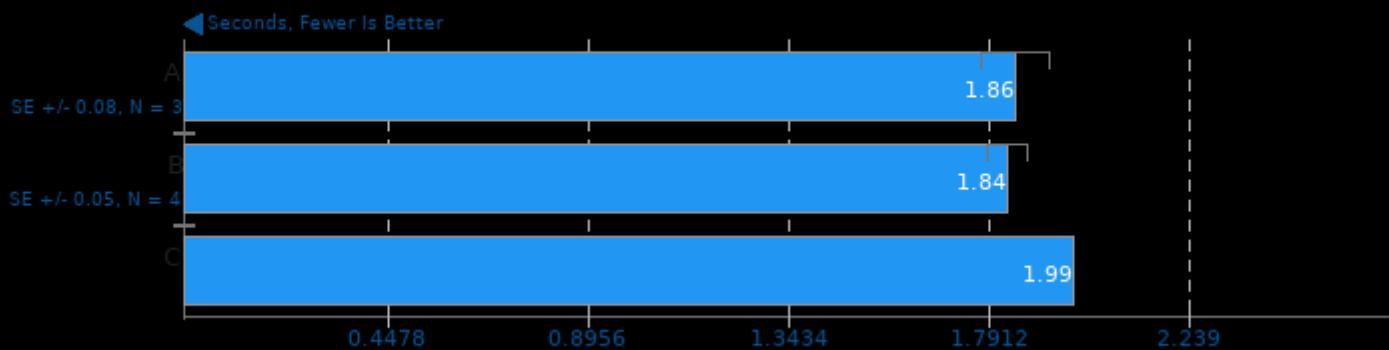
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 100 - Inner Join Test Time



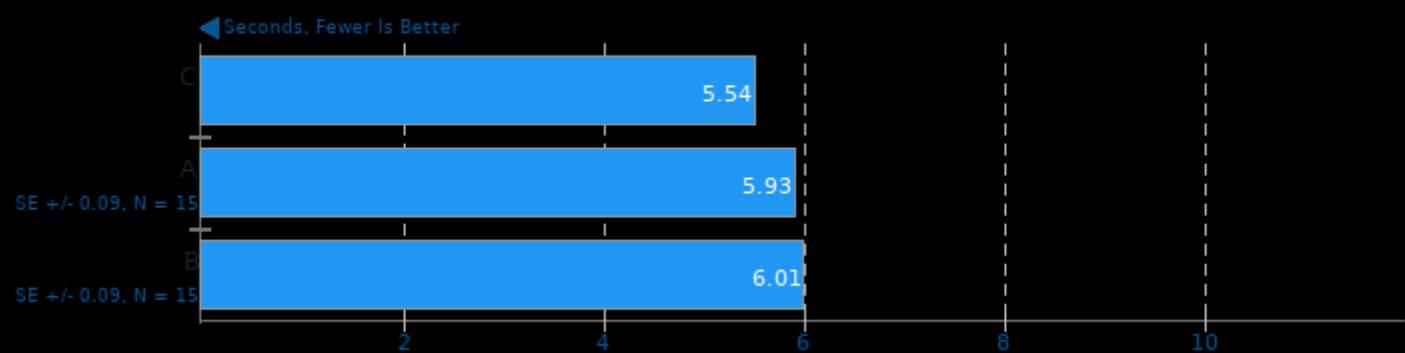
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 100 - Broadcast Inner Join Test Time



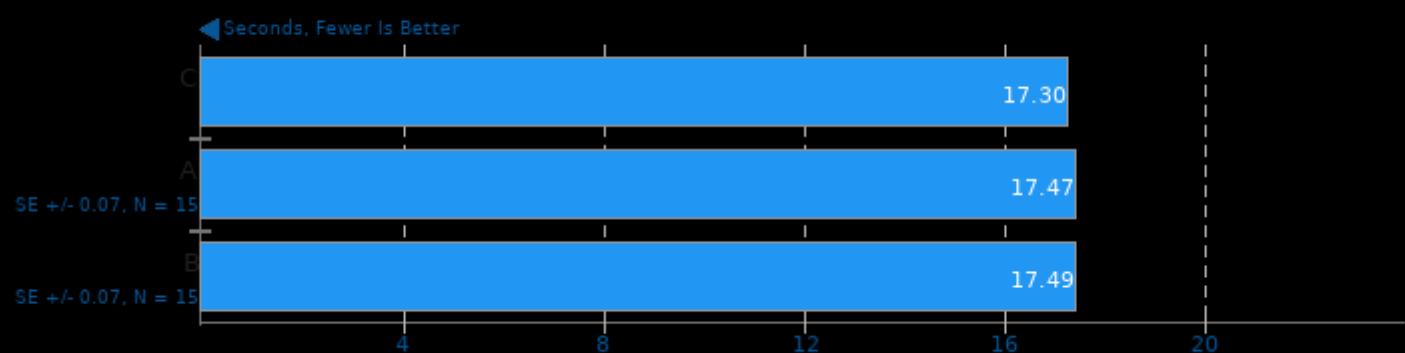
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 500 - SHA-512 Benchmark Time



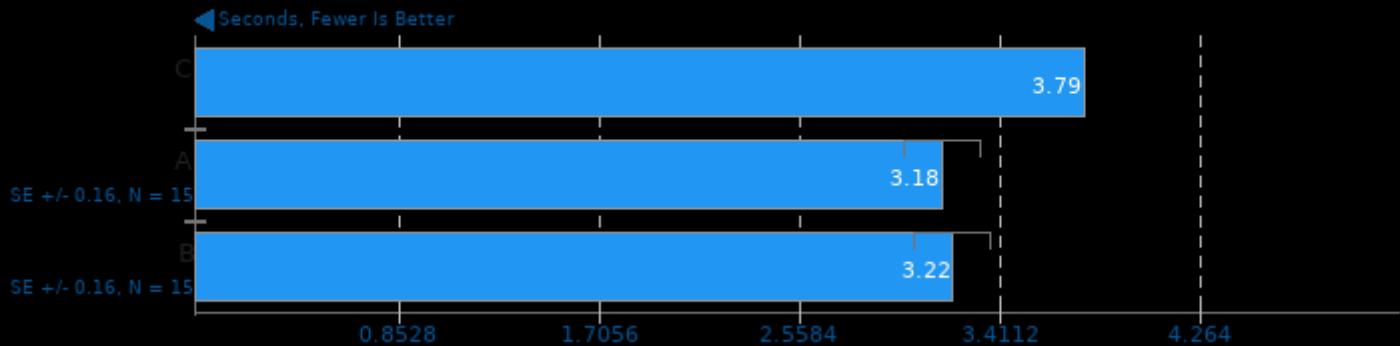
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 500 - Calculate Pi Benchmark



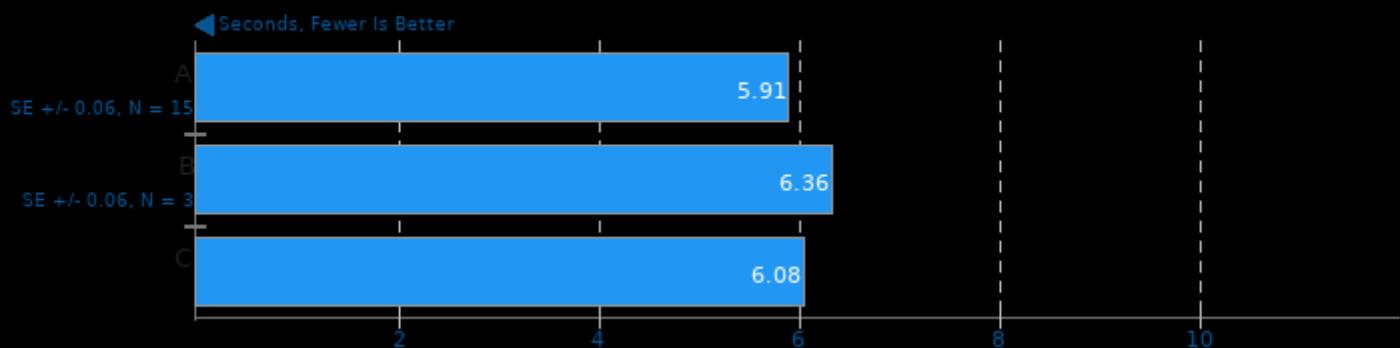
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 500 - Calculate Pi Benchmark Using Dataframe



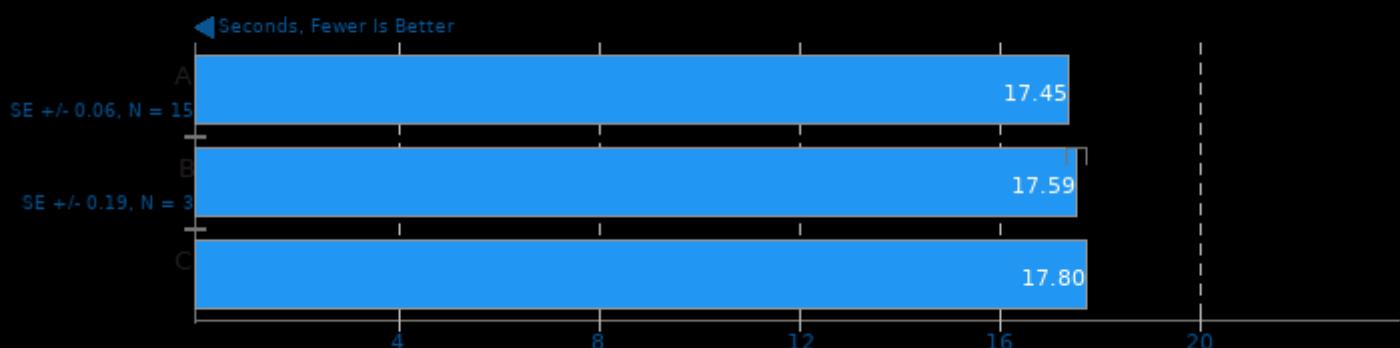
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 1000 - SHA-512 Benchmark Time



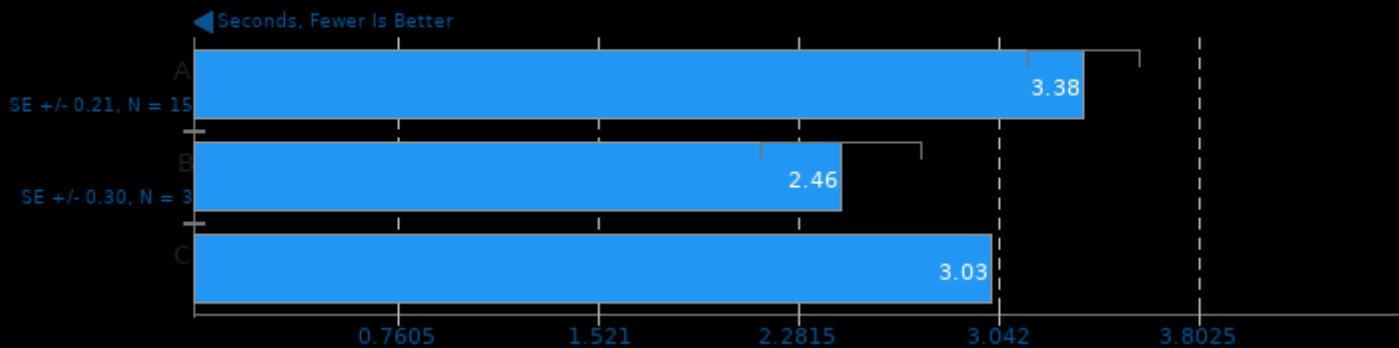
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 1000 - Calculate Pi Benchmark



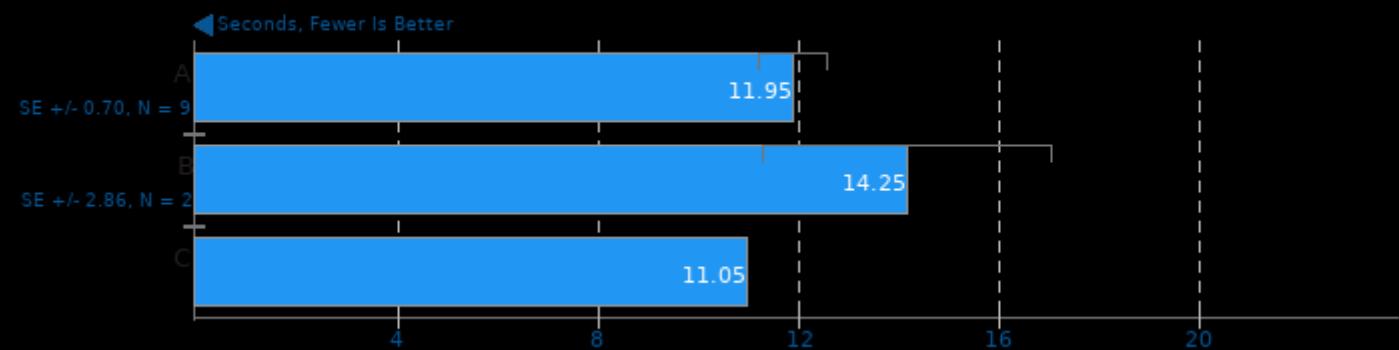
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 1000 - Calculate Pi Benchmark Using Dataframe



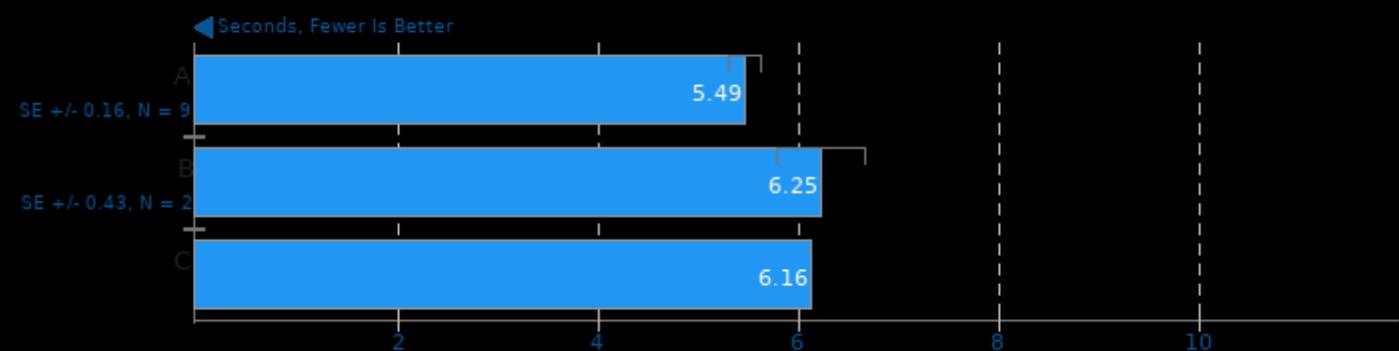
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 1000 - Group By Test Time



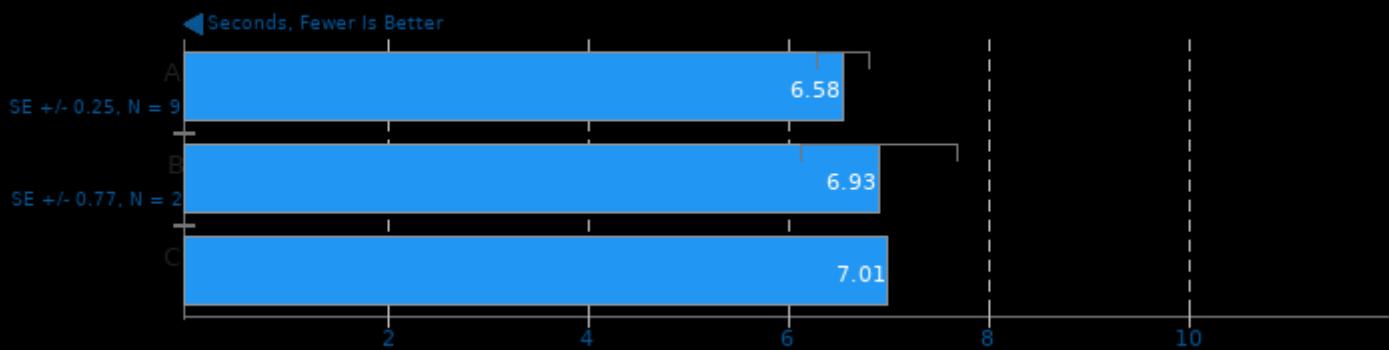
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 1000 - Repartition Test Time



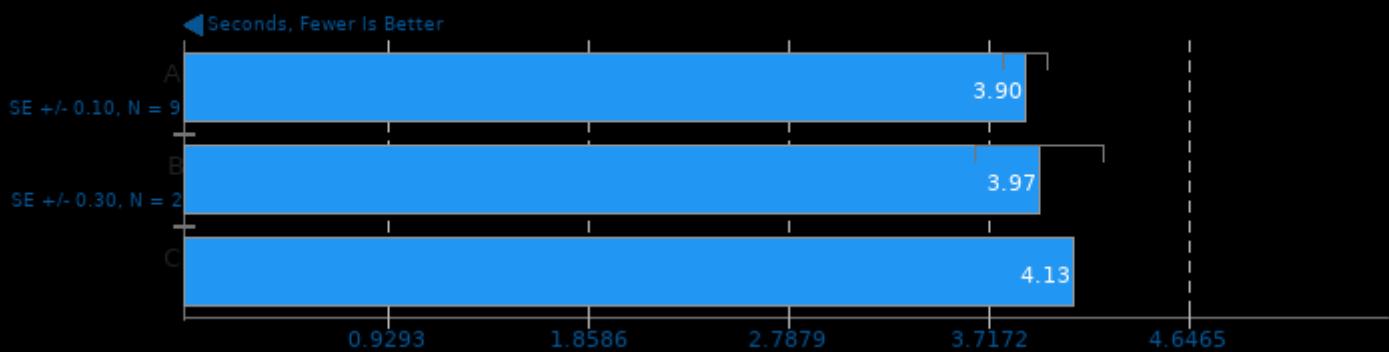
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 1000 - Inner Join Test Time



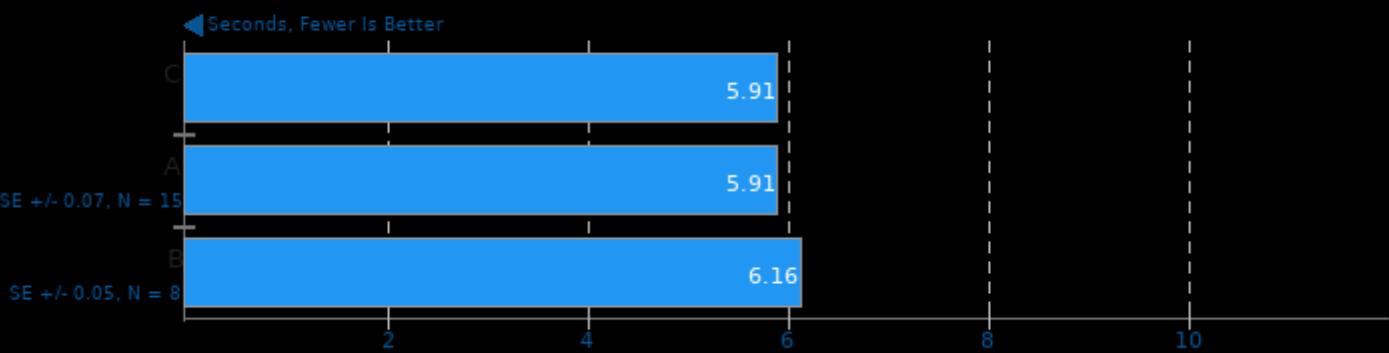
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 1000 - Broadcast Inner Join Test Time



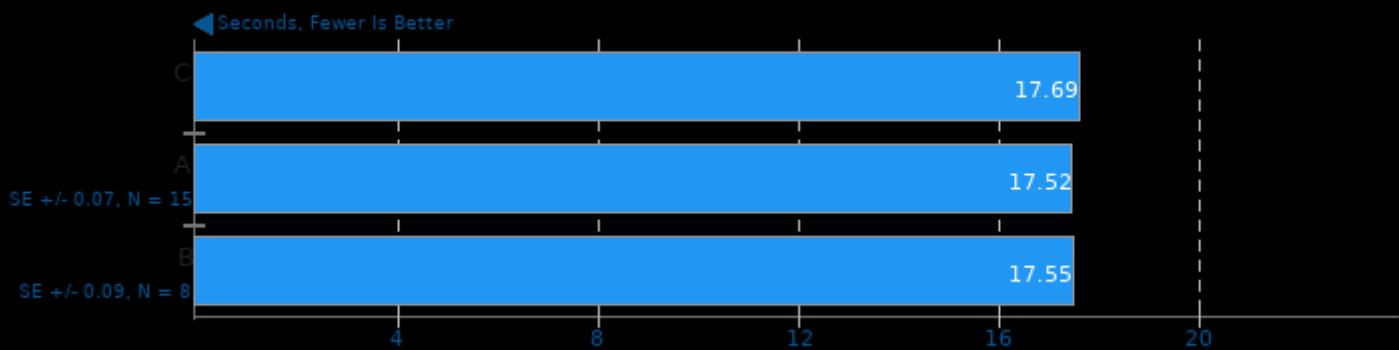
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 2000 - SHA-512 Benchmark Time



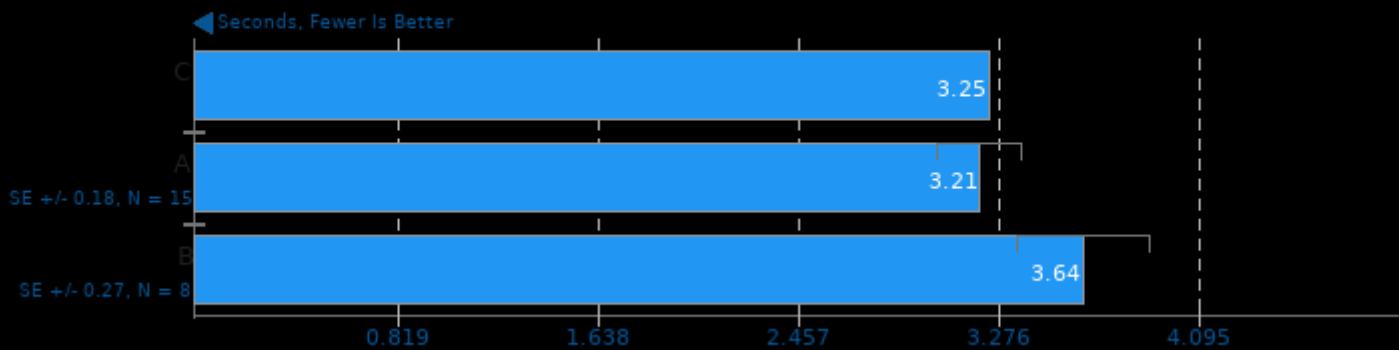
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 2000 - Calculate Pi Benchmark



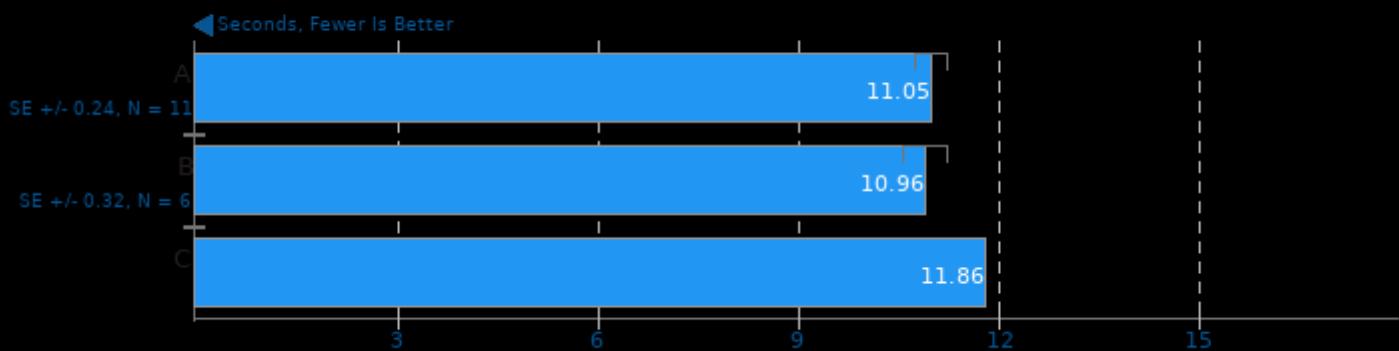
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 2000 - Calculate Pi Benchmark Using Dataframe



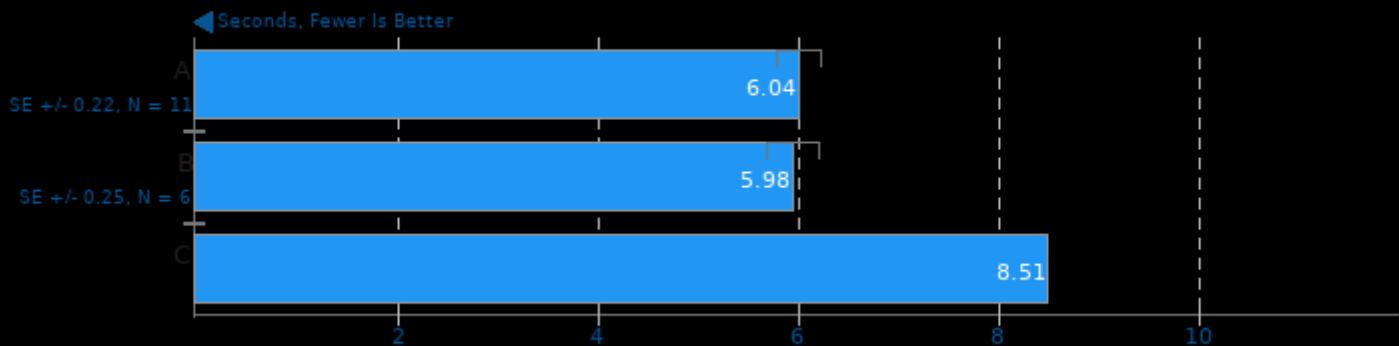
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 2000 - Group By Test Time



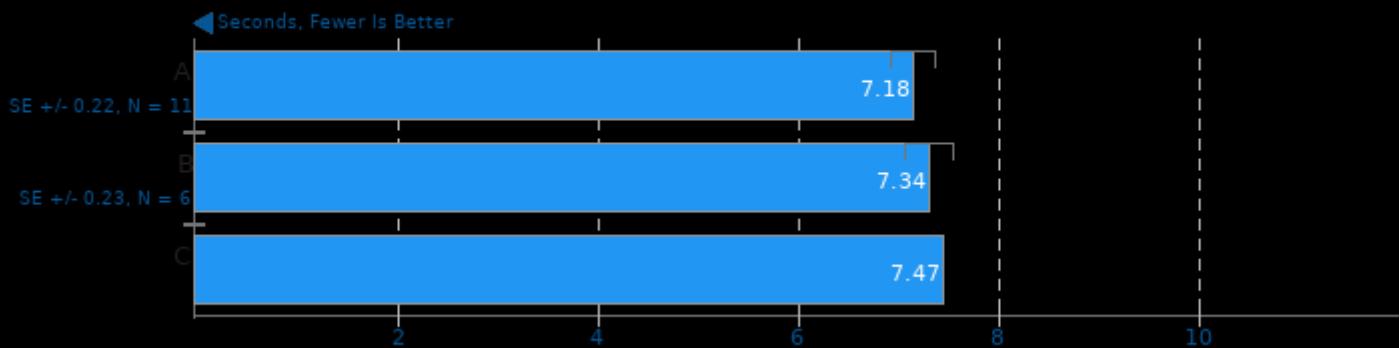
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 2000 - Repartition Test Time



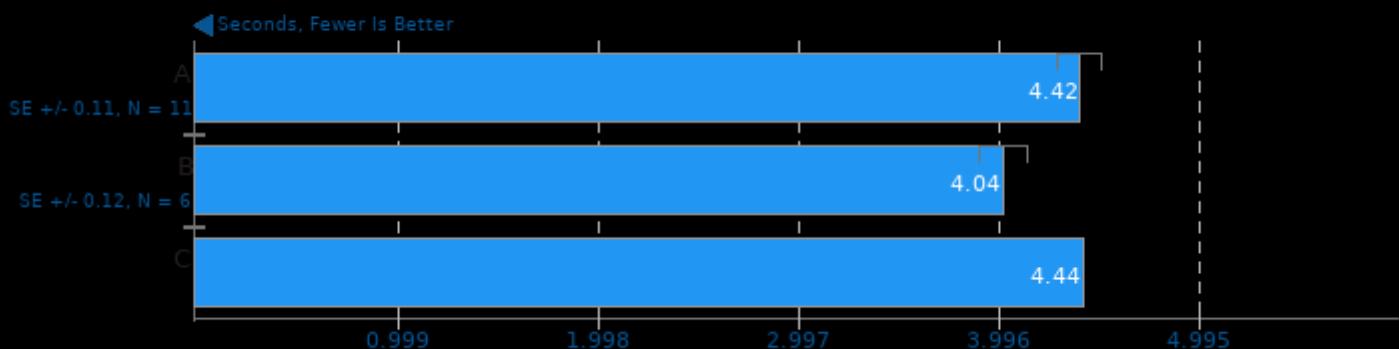
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 2000 - Inner Join Test Time



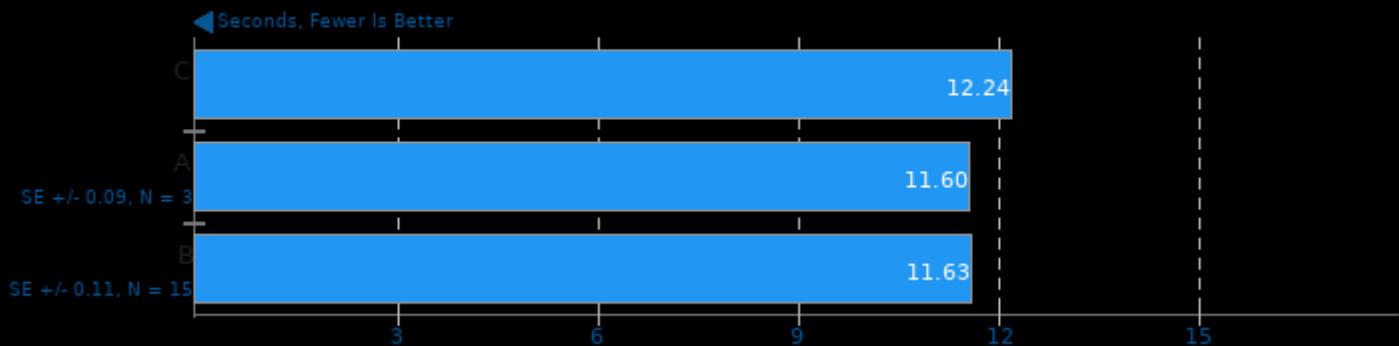
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 2000 - Broadcast Inner Join Test Time



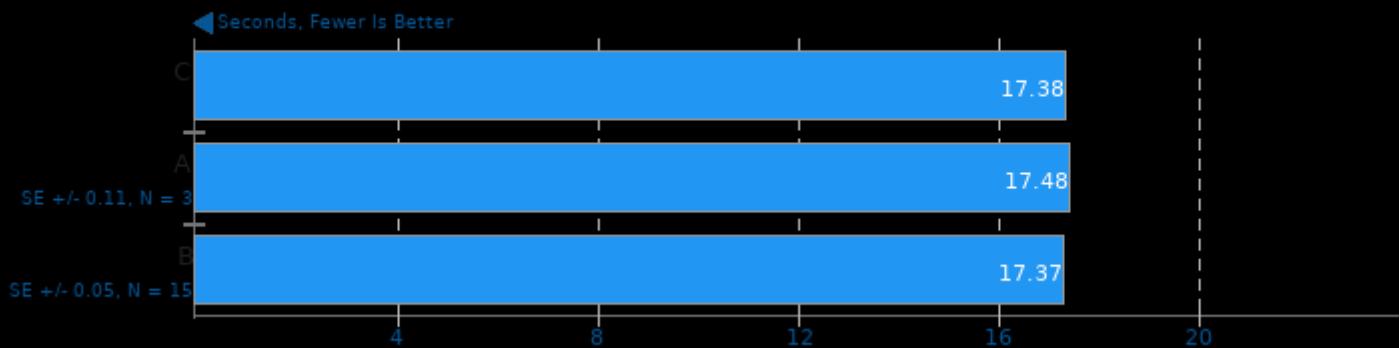
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 100 - SHA-512 Benchmark Time



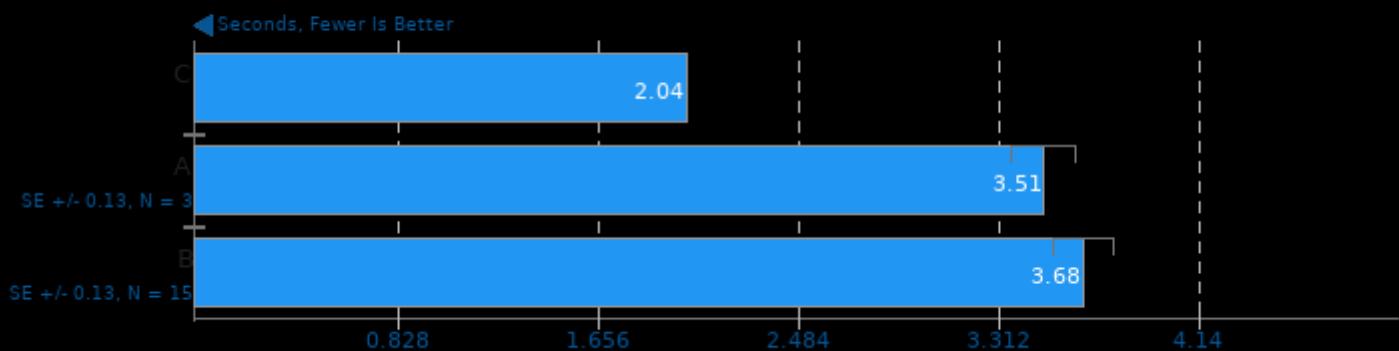
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 100 - Calculate Pi Benchmark



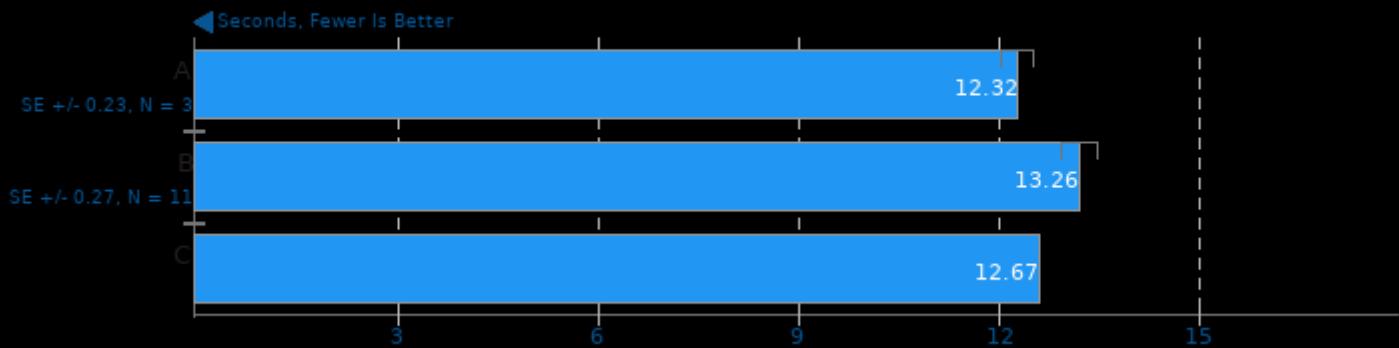
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 100 - Calculate Pi Benchmark Using Dataframe



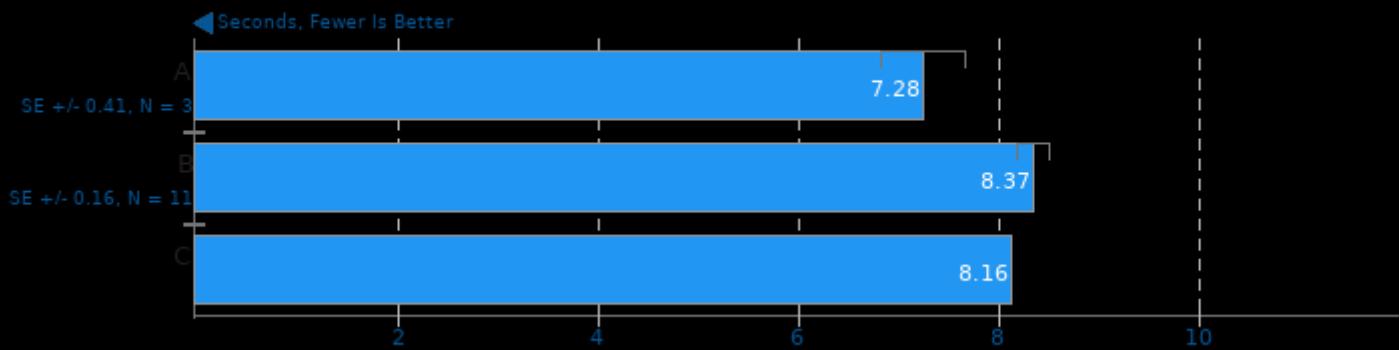
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 100 - Group By Test Time



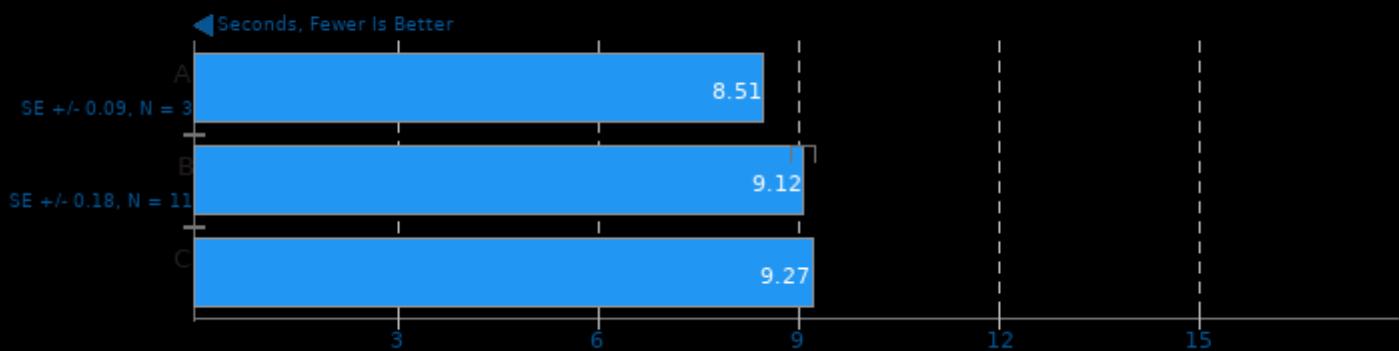
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 100 - Repartition Test Time



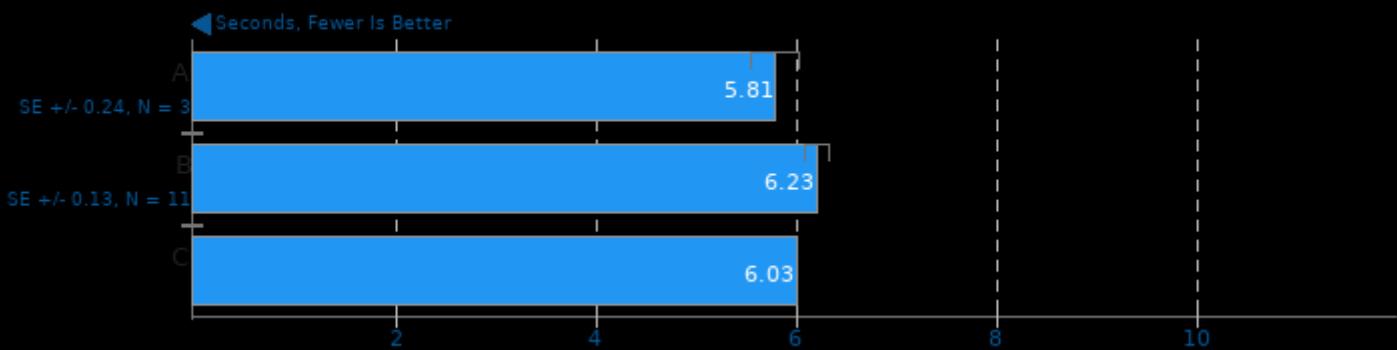
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 100 - Inner Join Test Time



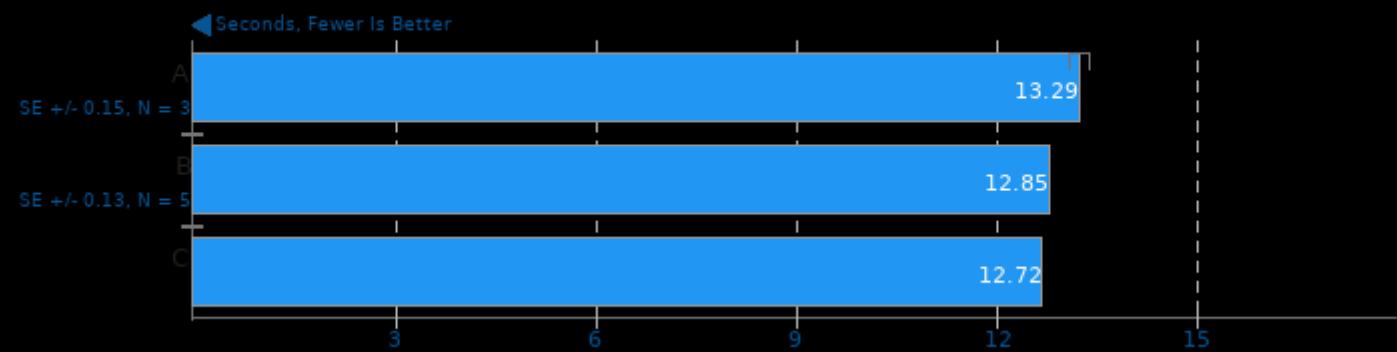
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 100 - Broadcast Inner Join Test Time



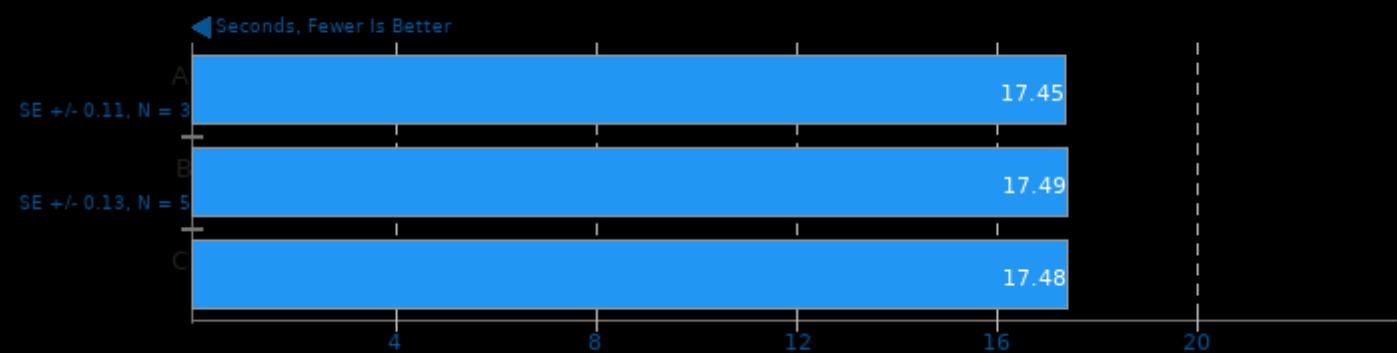
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 500 - SHA-512 Benchmark Time



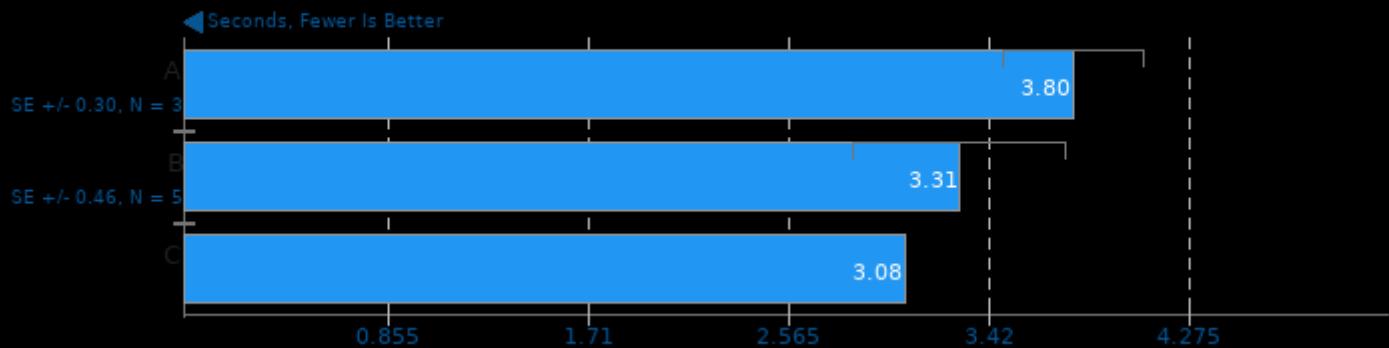
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 500 - Calculate Pi Benchmark



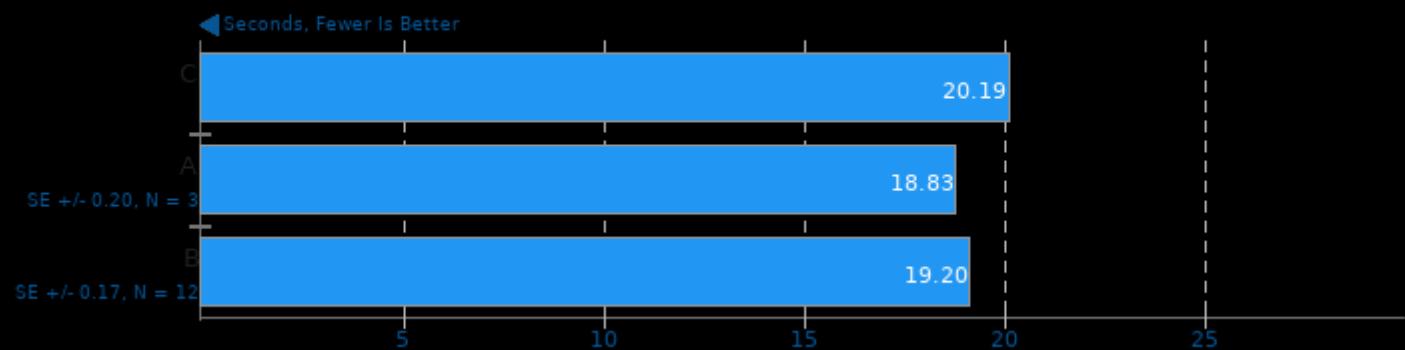
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 500 - Calculate Pi Benchmark Using Dataframe



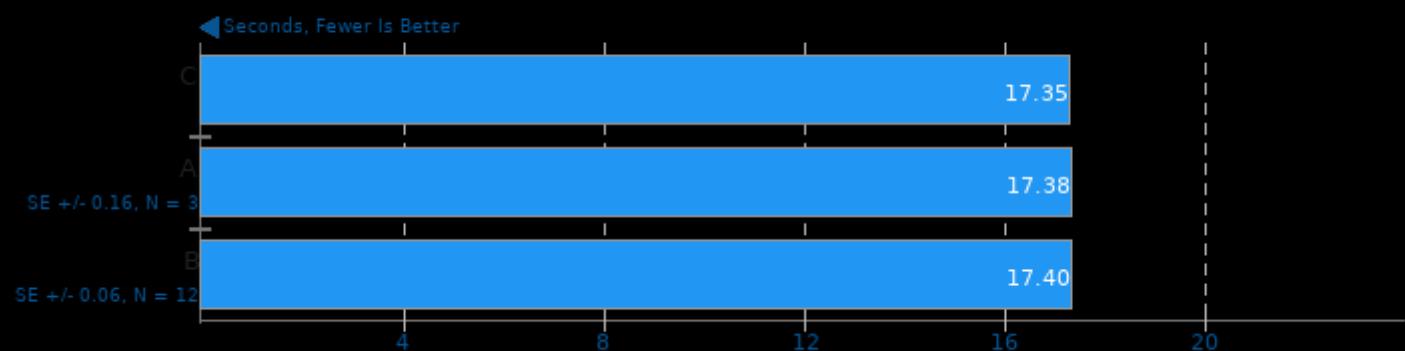
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 100 - SHA-512 Benchmark Time



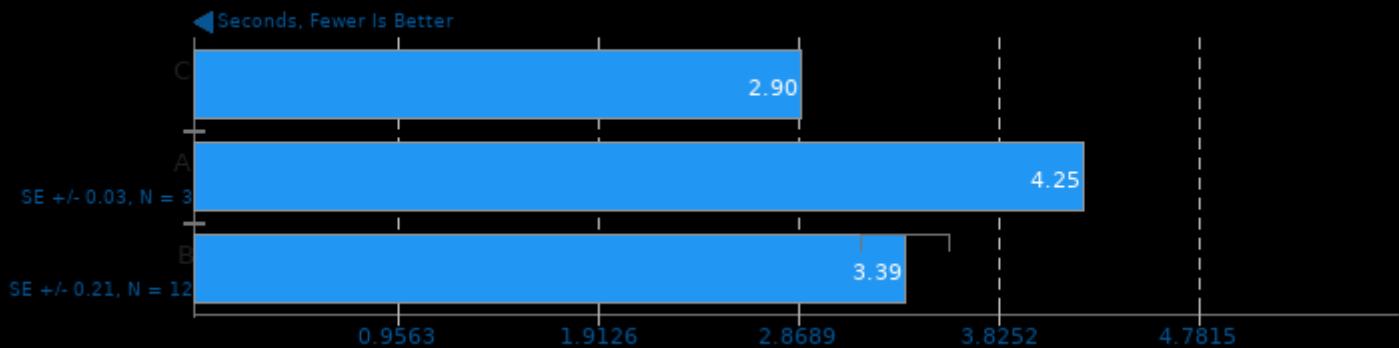
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 100 - Calculate Pi Benchmark



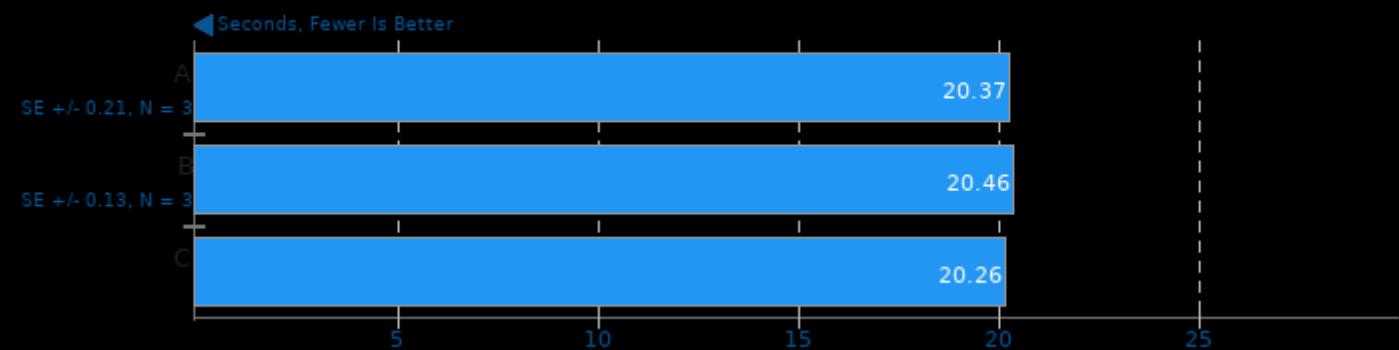
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 100 - Calculate Pi Benchmark Using Dataframe



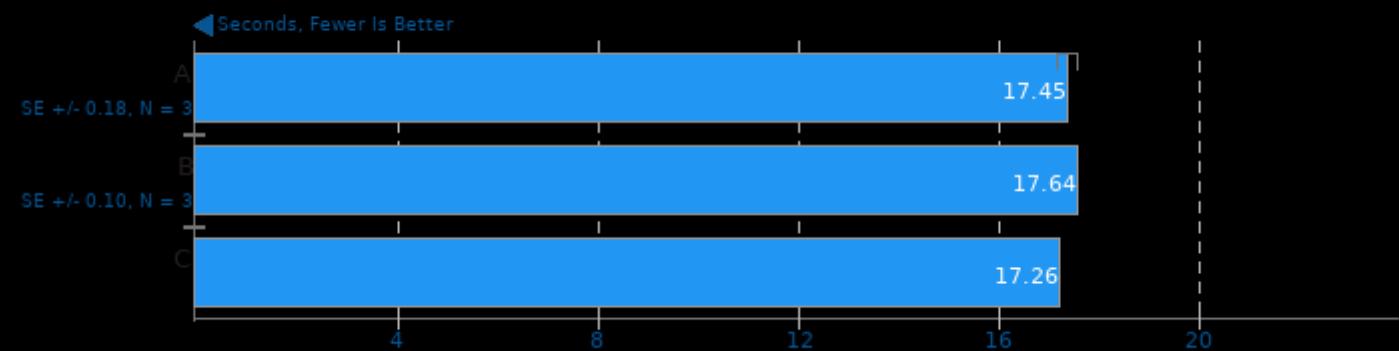
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 500 - SHA-512 Benchmark Time



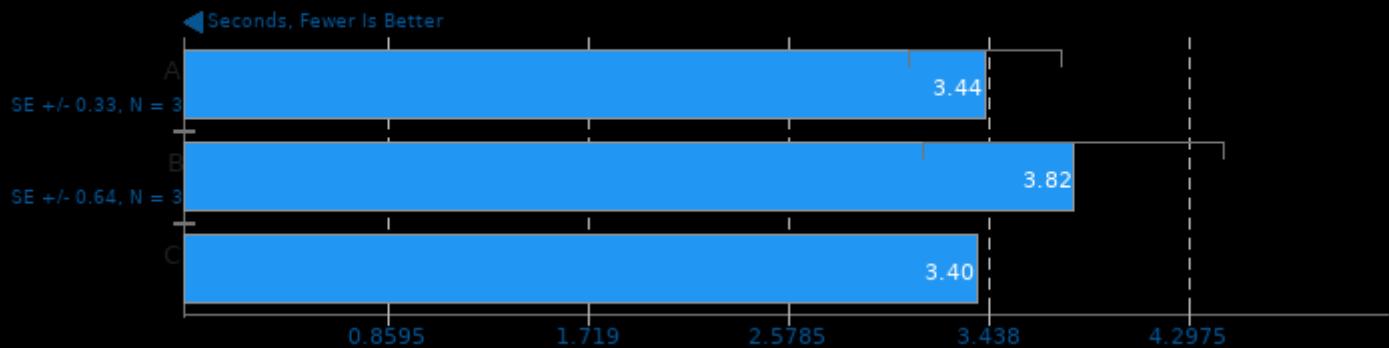
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 500 - Calculate Pi Benchmark



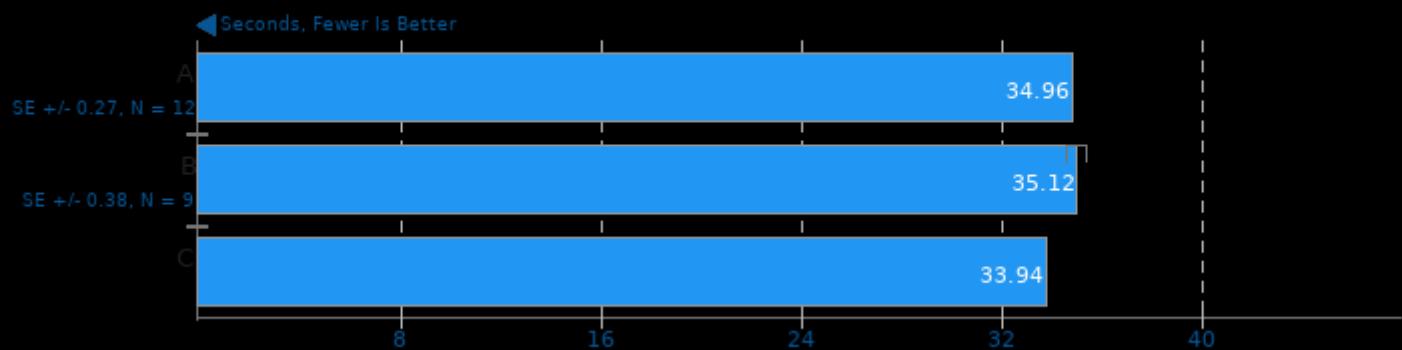
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 500 - Calculate Pi Benchmark Using Dataframe



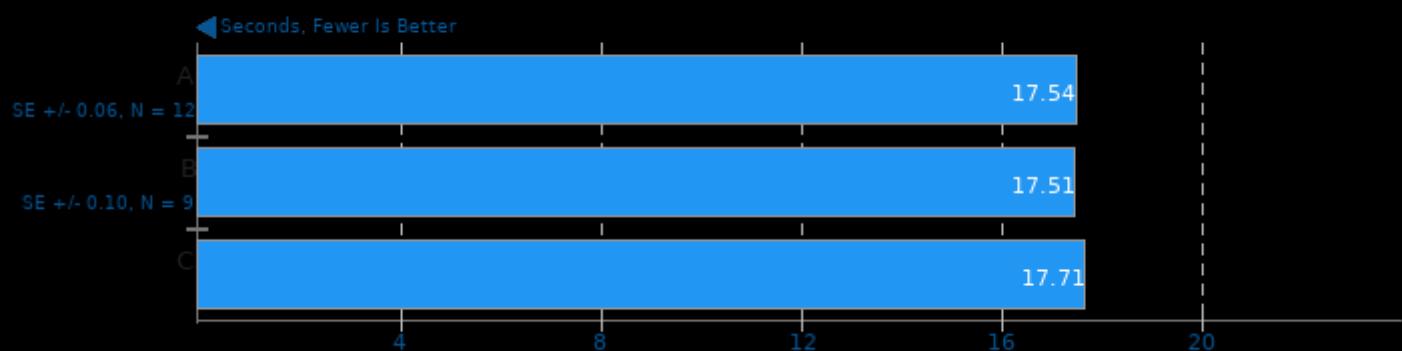
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 100 - SHA-512 Benchmark Time



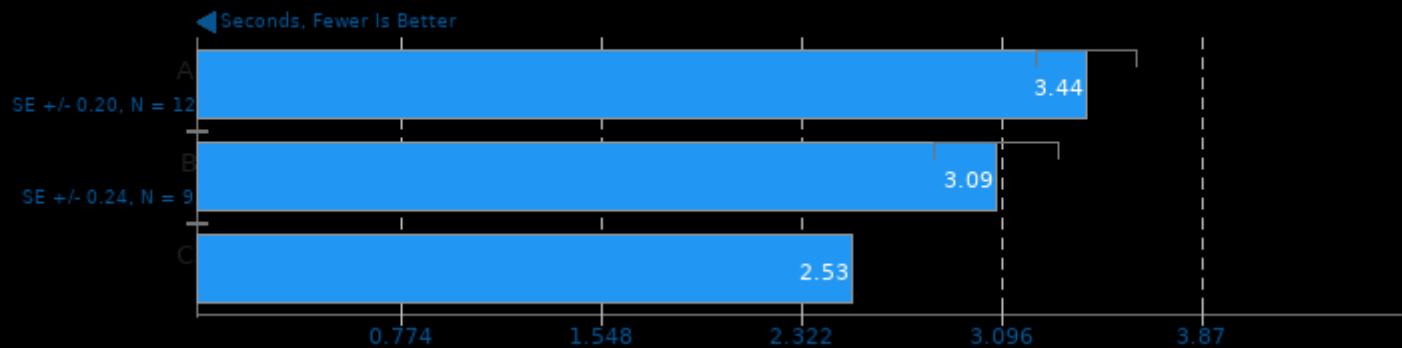
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 100 - Calculate Pi Benchmark



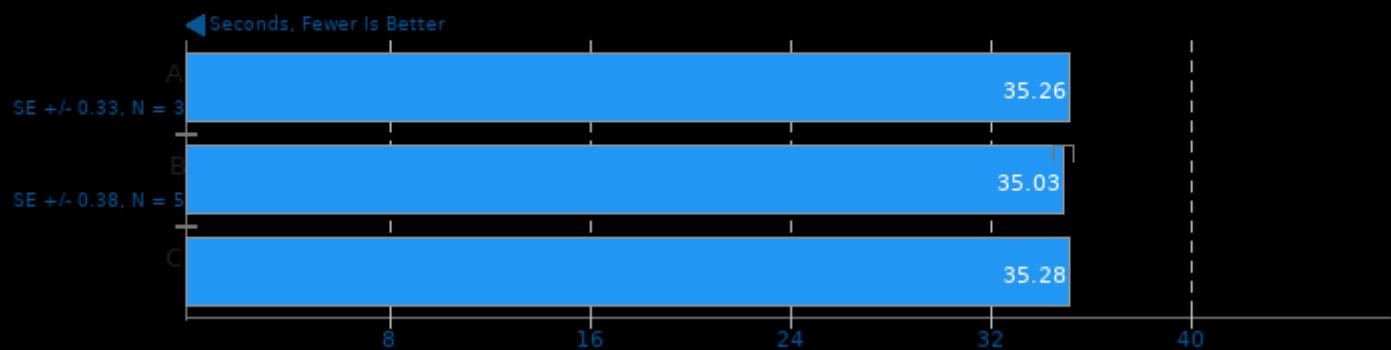
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 100 - Calculate Pi Benchmark Using Dataframe



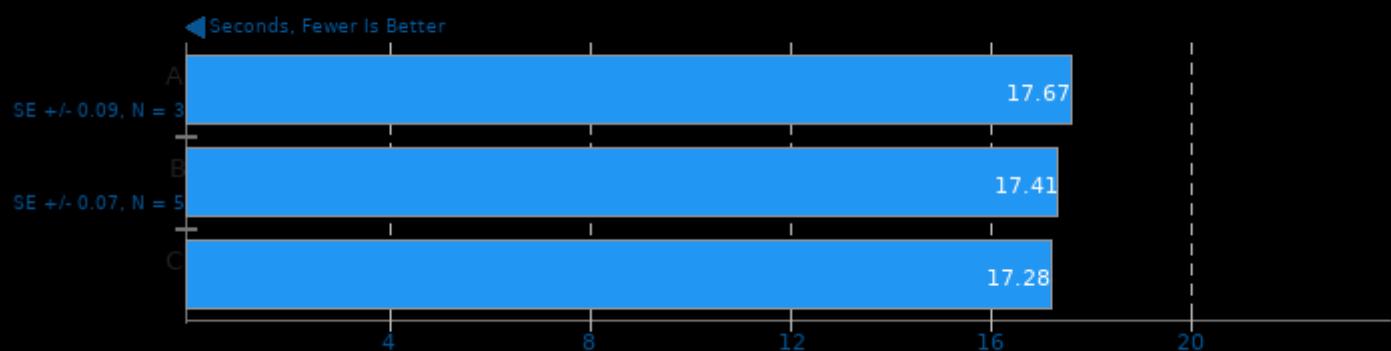
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 500 - SHA-512 Benchmark Time



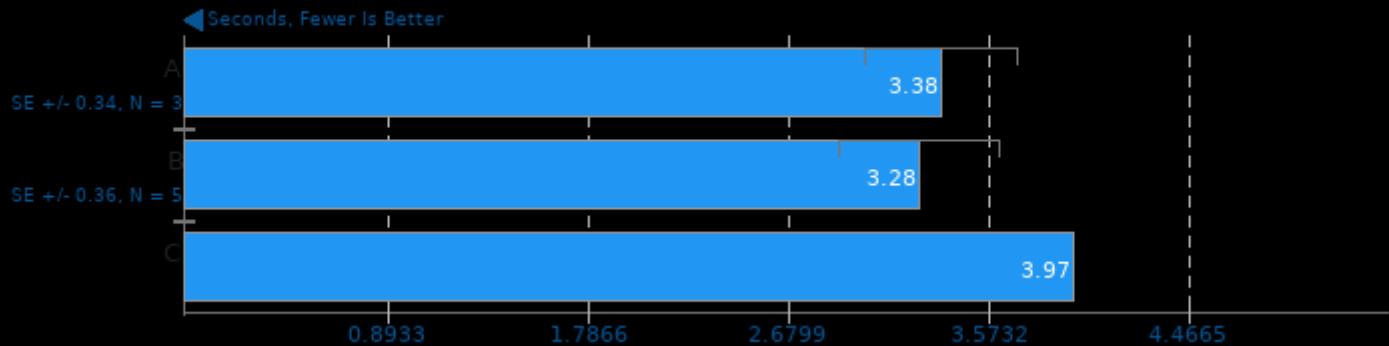
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 500 - Calculate Pi Benchmark



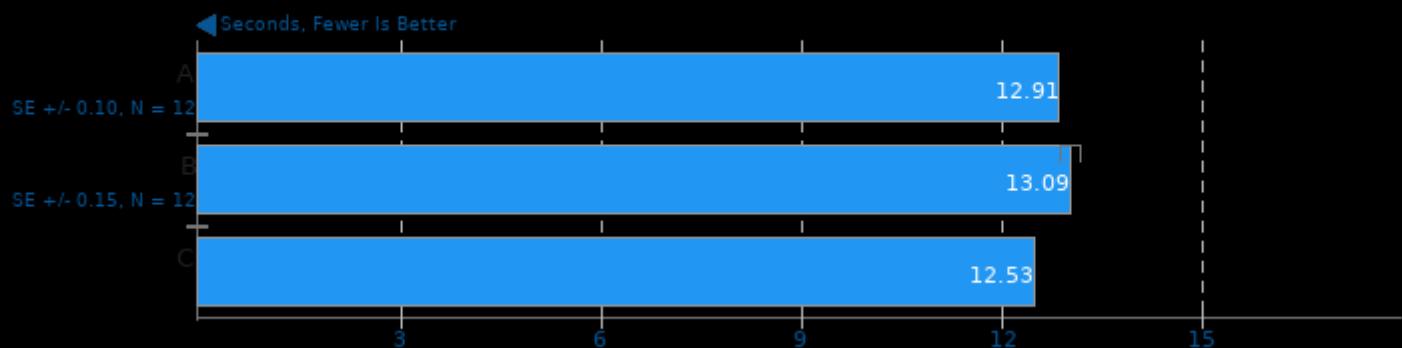
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 500 - Calculate Pi Benchmark Using Dataframe



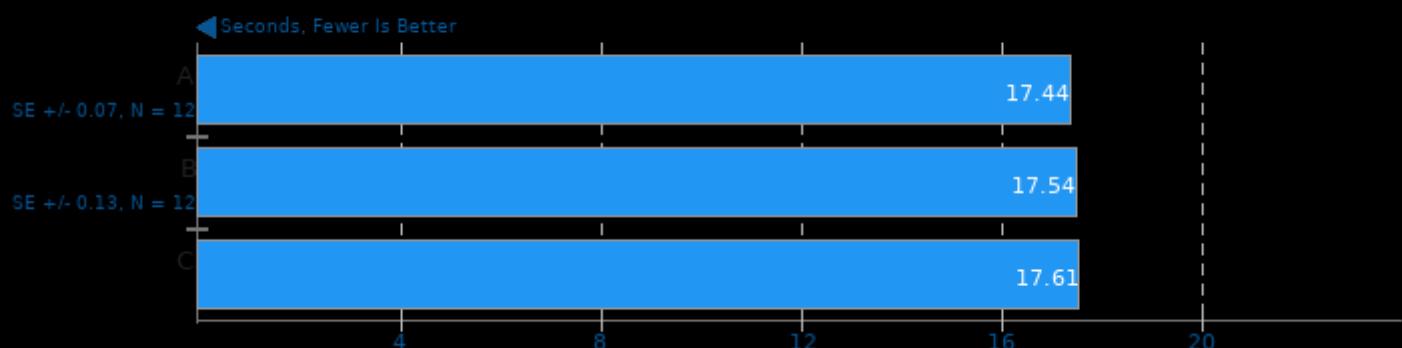
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 1000 - SHA-512 Benchmark Time



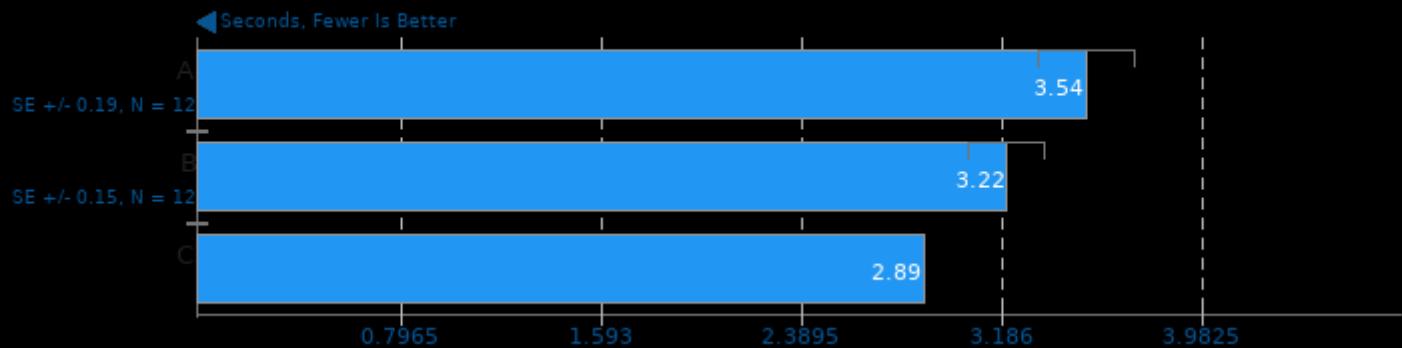
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 1000 - Calculate Pi Benchmark



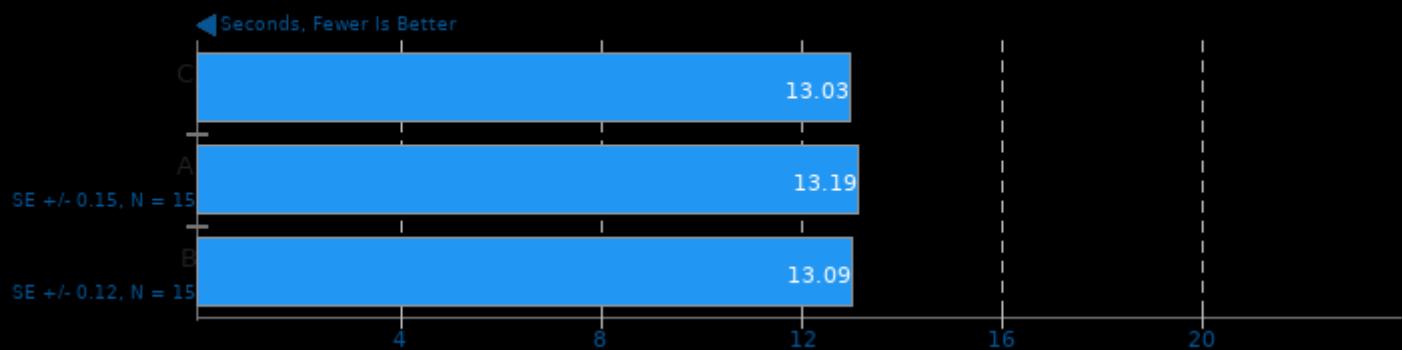
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 1000 - Calculate Pi Benchmark Using Dataframe



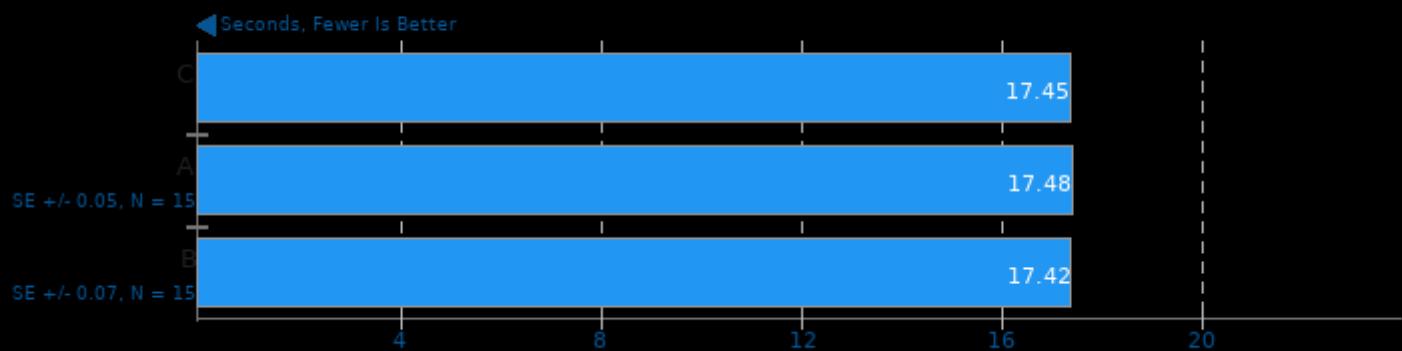
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 2000 - SHA-512 Benchmark Time



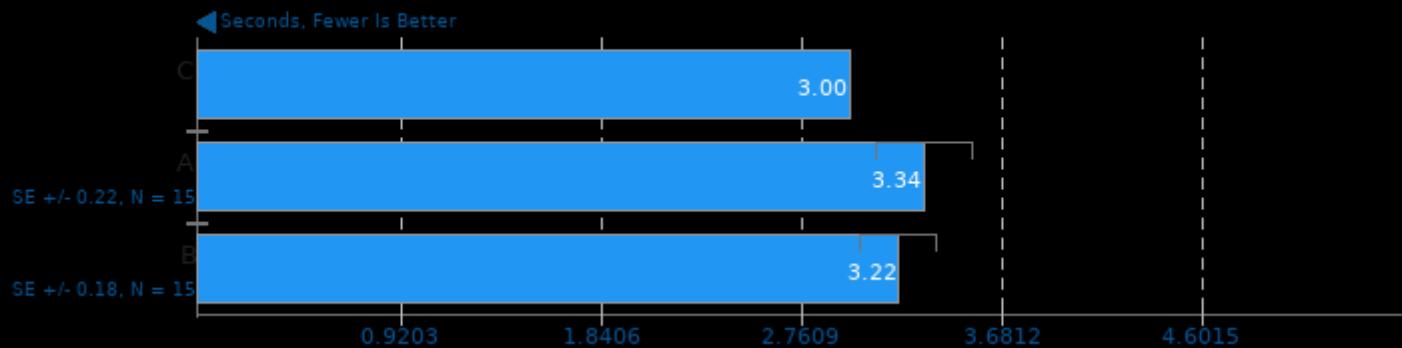
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 2000 - Calculate Pi Benchmark



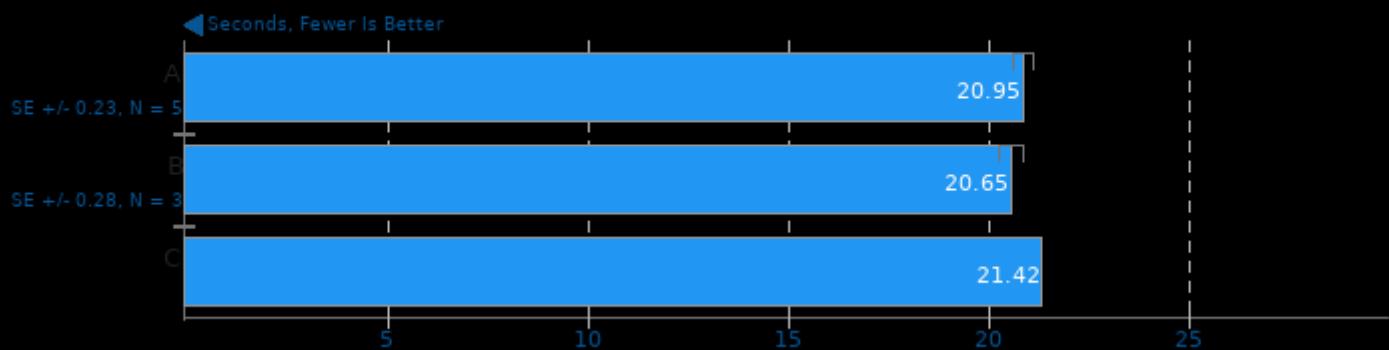
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 2000 - Calculate Pi Benchmark Using Dataframe



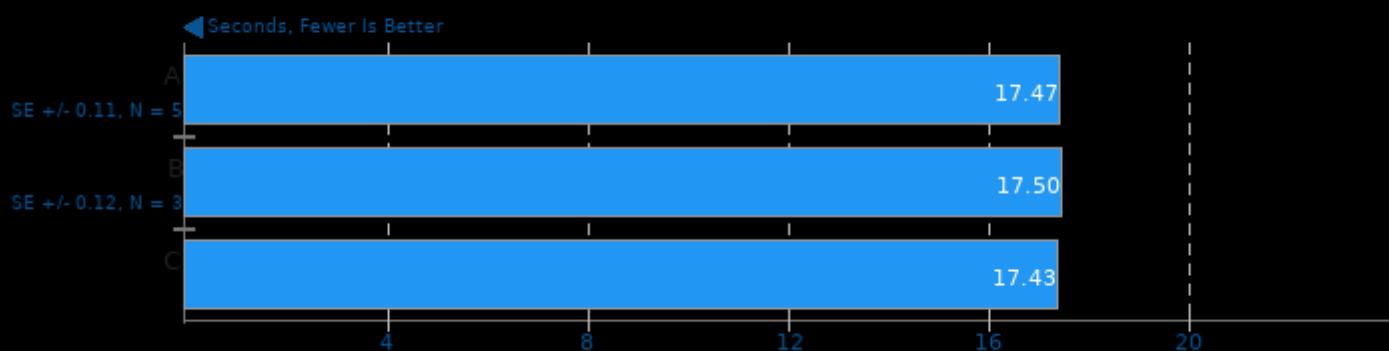
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 1000 - SHA-512 Benchmark Time



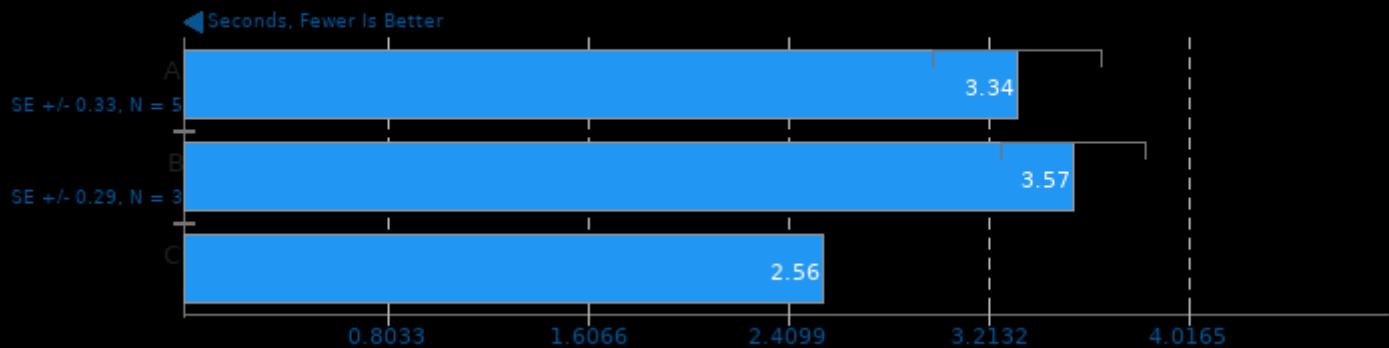
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 1000 - Calculate Pi Benchmark



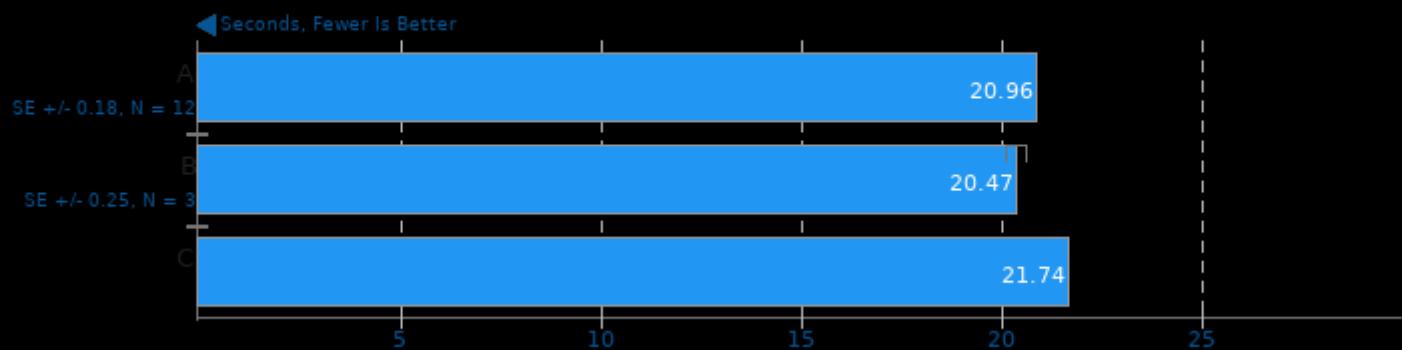
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 1000 - Calculate Pi Benchmark Using Dataframe



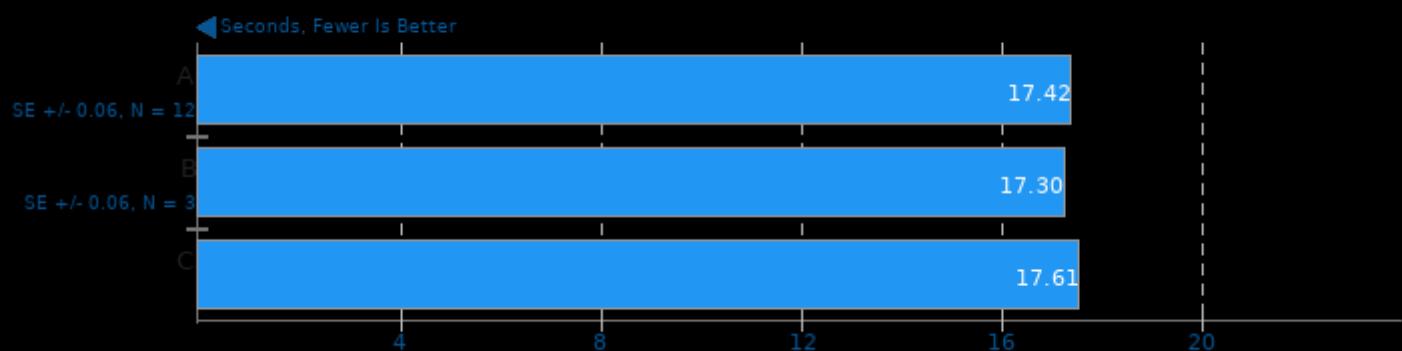
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 2000 - SHA-512 Benchmark Time



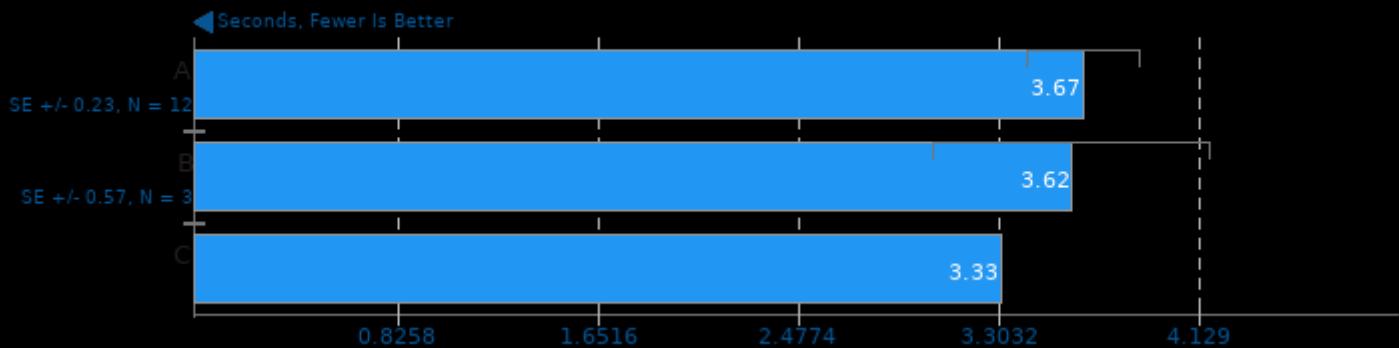
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 2000 - Calculate Pi Benchmark



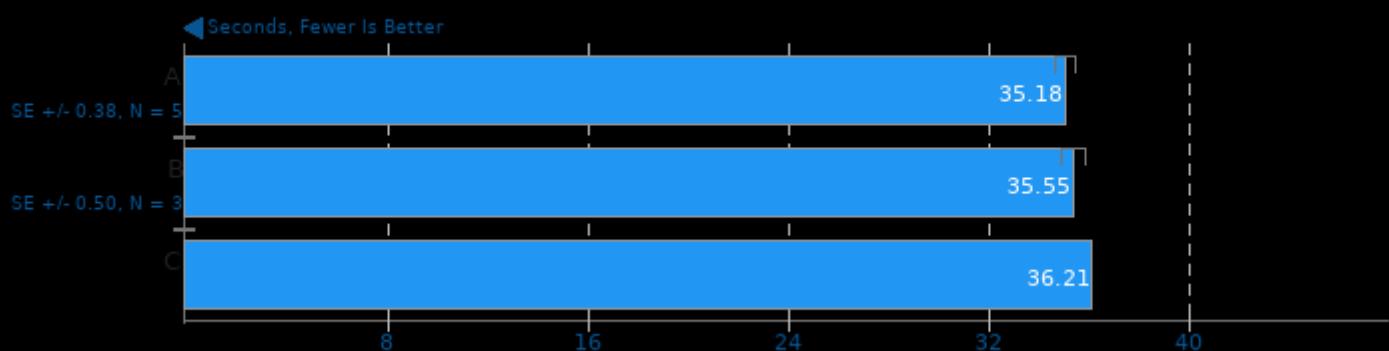
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 2000 - Calculate Pi Benchmark Using Dataframe



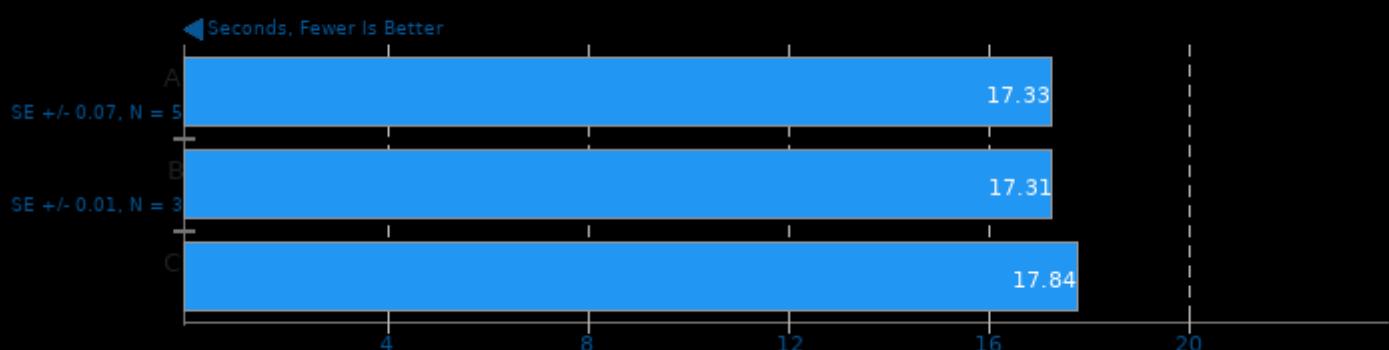
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 1000 - SHA-512 Benchmark Time



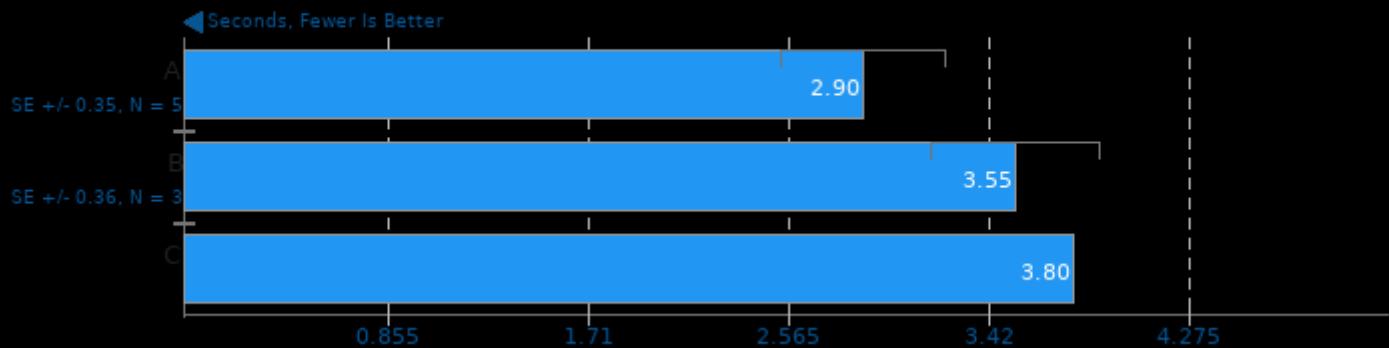
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 1000 - Calculate Pi Benchmark



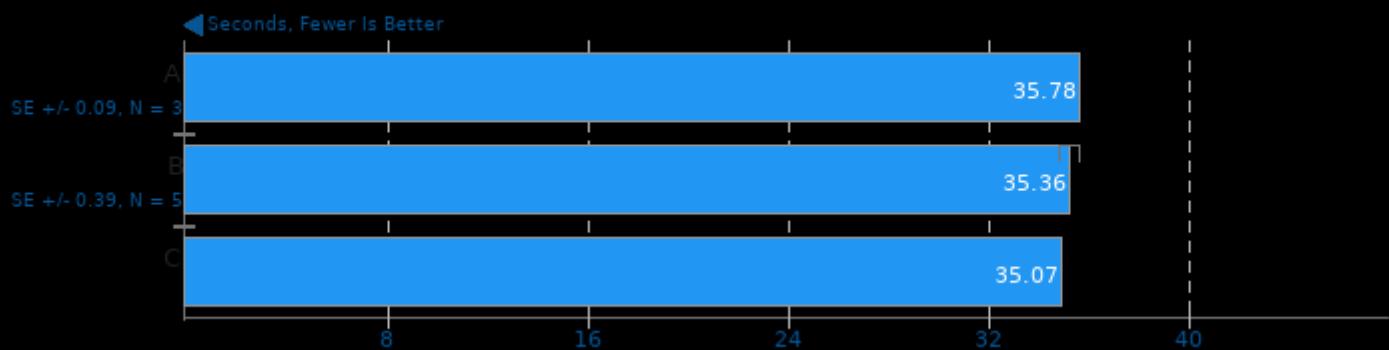
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 1000 - Calculate Pi Benchmark Using Dataframe



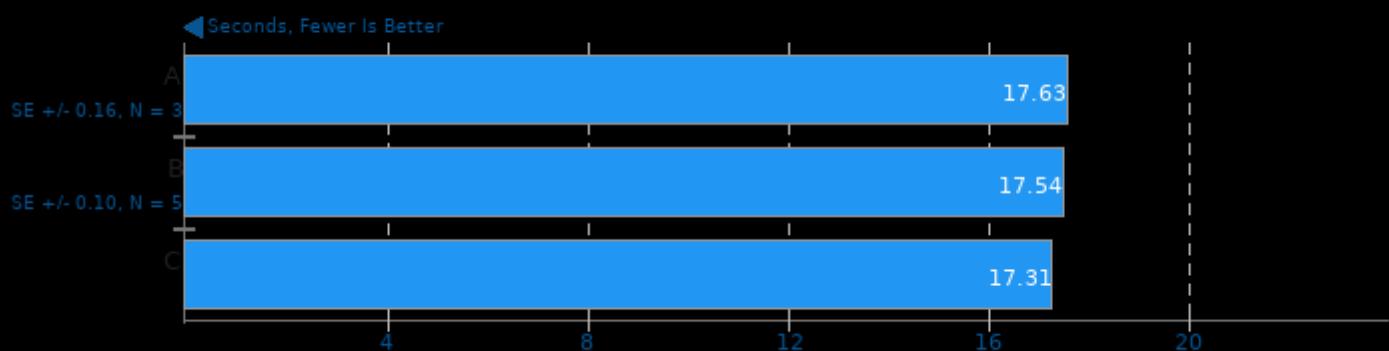
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 2000 - SHA-512 Benchmark Time



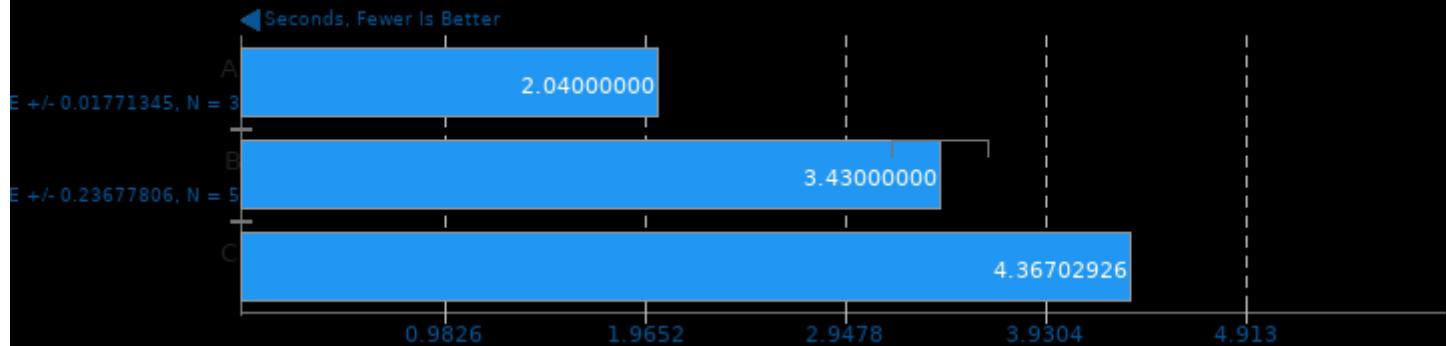
## Apache Spark 3.3

Row Count: 40000000 - Partitions: 2000 - Calculate Pi Benchmark



## Apache Spark 3.3

Row Count: 40000000 - Partitions: 2000 - Calculate Pi Benchmark Using Dataframe



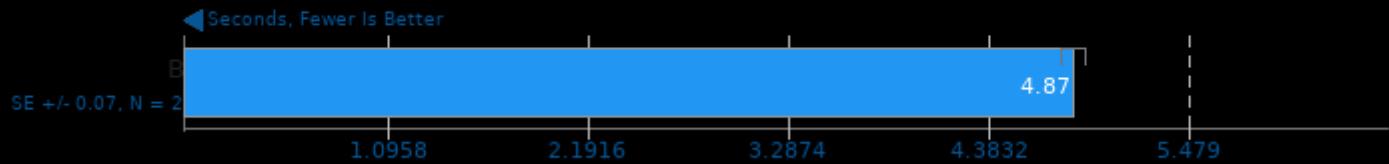
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 500 - Group By Test Time



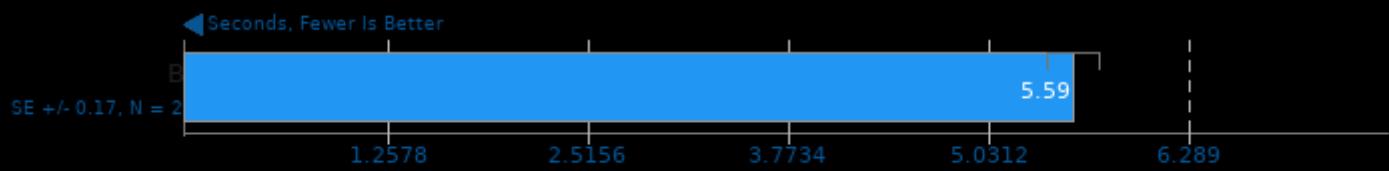
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 500 - Repartition Test Time



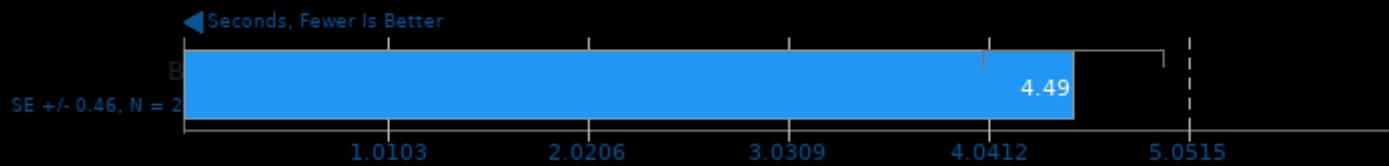
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 500 - Inner Join Test Time



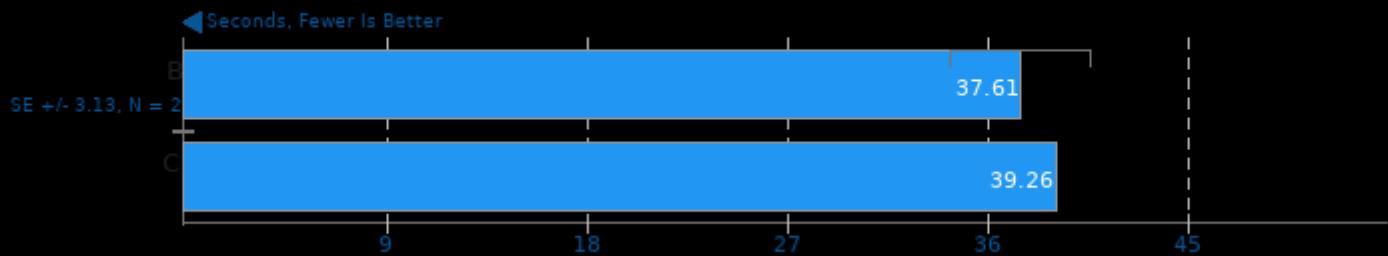
## Apache Spark 3.3

Row Count: 1000000 - Partitions: 500 - Broadcast Inner Join Test Time



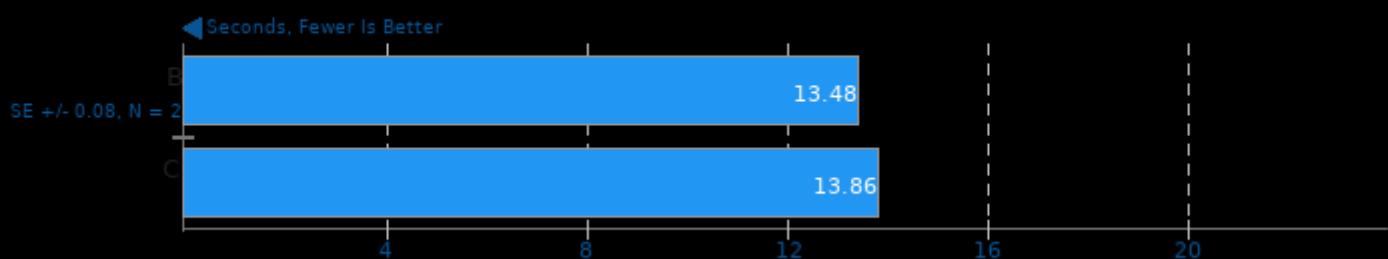
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 100 - Group By Test Time



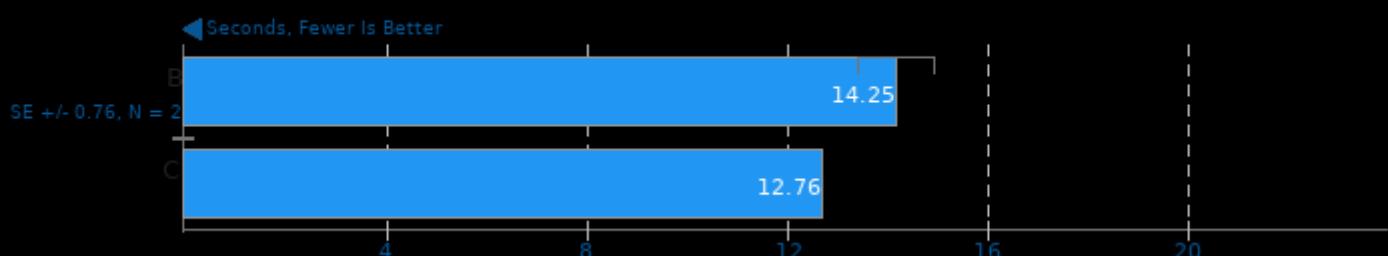
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 100 - Repartition Test Time



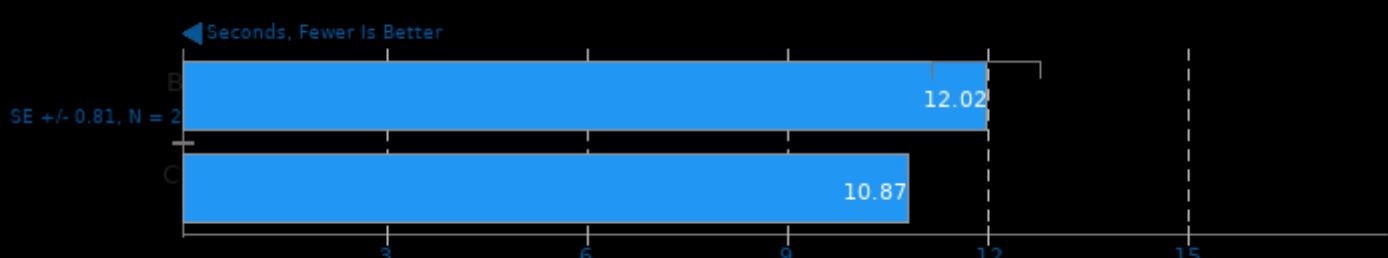
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 100 - Inner Join Test Time



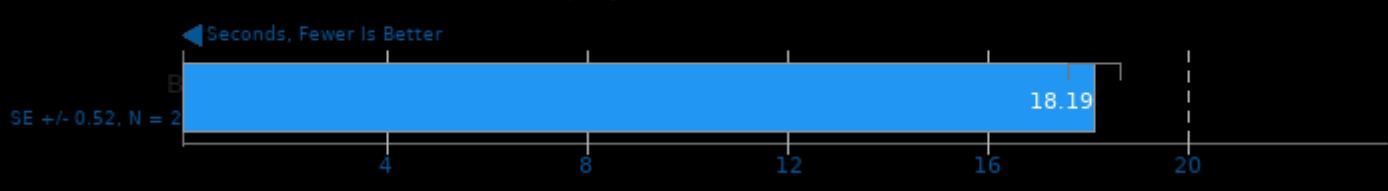
## Apache Spark 3.3

Row Count: 20000000 - Partitions: 100 - Broadcast Inner Join Test Time



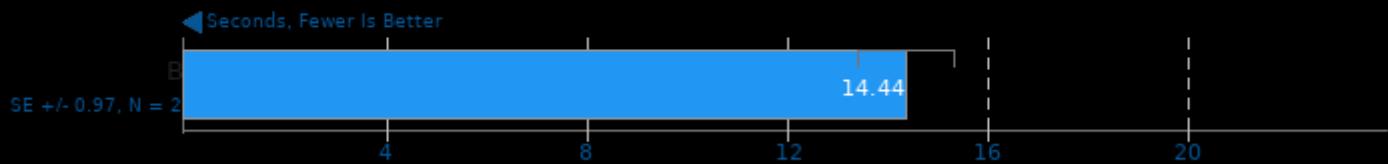
## Apache Spark 3.3

Row Count: 10000000 - Partitions: 2000 - Group By Test Time



## Apache Spark 3.3

Row Count: 10000000 - Partitions: 2000 - Repartition Test Time



## Apache Spark 3.3

Row Count: 10000000 - Partitions: 2000 - Inner Join Test Time



## Apache Spark 3.3

Row Count: 10000000 - Partitions: 2000 - Broadcast Inner Join Test Time



*This file was automatically generated via the Phoronix Test Suite benchmarking software on Friday, 29 March 2024 05:04.*