

Symmetric multiprocessing (SMP) scaling

Stockfish 8 and Komodo 10.4 under Windows & Linux

Windows: Windows 10 Professional 64-Bit, Dual AMD Opteron 6376 @ 2.3 GHz

Linux: Ubuntu Server 16.04 LTS (HVM) 64-Bit, Amazon EC2 Instance, m4.16xlarge, Intel Xeon E5-2686v4 @ 2.3 GHz

Engines: default settings, 128 MB Hash

Cutechess-Cli: no draw and resign rules, no ponder, no learning, no tablebases, 1500 diff. opening positions, changing colors

TC = time control, T = number of threads, Elostat Start Elo = 3000

Windows - 1 thread vs 2 threads

TC = 60" + 0.05"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T2	: 3031	6	6	3000	58.7 %	73.7 %	21.59
2 Stockfish 8 T1	: 2969	6	6	3000	41.3 %	73.7 %	20.33

Result : 1761.0/3000 (+655,=2212,-133)
Perf. : 58.7 %
Elo : 3061

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T2	: 3044	8	8	3000	62.3 %	59.1 %	18.48
2 Komodo 10.4 T1	: 2956	8	8	3000	37.7 %	59.1 %	17.44

Result : 1868.5/3000 (+982,=1773,-245)
Perf. : 62.3 %
Elo : 3087

Linux - 1 thread vs 2 threads

TC = 10" + 0.1"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T2	: 3039	7	7	3000	61.0 %	68.1 %	19.84
2 Stockfish 8 T1	: 2961	7	7	3000	39.0 %	68.1 %	18.73

Result : 1830.0/3000 (+809,=2042,-149)
Perf. : 61.0 %
Elo : 3078

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T2	: 3044	8	8	3000	62.3 %	55.2 %	17.02
2 Komodo 10.4 T1	: 2956	8	8	3000	37.7 %	55.2 %	16.06

Result : 1868.5/3000 (+1040,=1657,-303)
Perf. : 62.3 %
Elo : 3087

Windows - 1 thread vs 4 threads

TC = 60" + 0.05"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T4	: 3056	7	7	3000	65.6 %	65.7 %	23.08
2 Stockfish 8 T1	: 2944	7	7	3000	34.4 %	65.7 %	20.66

Result : 1968.0/3000 (+982,=1972,-46)
Perf. : 65.6 %
Elo : 3112

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T4	: 3076	8	8	3000	70.6 %	51.5 %	20.04
2 Komodo 10.4 T1	: 2924	8	8	3000	29.4 %	51.5 %	17.71

Result : 2118.0/3000 (+1345,=1546,-109)
Perf. : 70.6 %
Elo : 3152

Linux - 1 thread vs 4 threads

TC = 10" + 0.1"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T4	: 3064	7	7	3000	67.6 %	61.2 %	21.41
2 Stockfish 8 T1	: 2936	7	7	3000	32.4 %	61.2 %	19.39

Result : 2028.5/3000 (+1111,=1835,-54)
Perf. : 67.6 %
Elo : 3128

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T4	: 3084	9	9	3000	72.4 %	47.4 %	18.51
2 Komodo 10.4 T1	: 2916	9	9	3000	27.7 %	47.4 %	16.29

Result : 2170.5/3000 (+1459,=1423,-118)
Perf. : 72.4 %
Elo : 3167

Windows - 1 thread vs 8 threads

TC = 60" + 0.05"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T8	: 3079	8	8	3000	71.2 %	56.4 %	23.87
2 Stockfish 8 T1	: 2921	8	8	3000	28.8 %	56.4 %	20.40

Result : 2135.5/3000 (+1289,=1693,-18)
Perf. : 71.2 %
Elo : 3157

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T8	: 3104	9	9	3000	76.8 %	42.7 %	21.19
2 Komodo 10.4 T1	: 2896	9	9	3000	23.2 %	42.7 %	17.82

Result : 2305.5/3000 (+1665,=1281,-54)
Perf. : 76.8 %
Elo : 3208

Linux - 1 thread vs 8 threads

TC = 10" + 0.1"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T8	: 3093	8	8	3000	74.4 %	50.4 %	22.35
2 Stockfish 8 T1	: 2907	8	8	3000	25.6 %	50.4 %	19.38

Result : 2232.5/3000 (+1477,=1511,-12)
Perf. : 74.4 %
Elo : 3185

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T8	: 3121	10	10	3000	80.1 %	35.8 %	19.47
2 Komodo 10.4 T1	: 2879	10	10	3000	19.9 %	35.8 %	16.25

Result : 2404.0/3000 (+1867,=1074,-59)
Perf. : 80.1 %
Elo : 3242

Windows - 1 thread vs 16 threads

TC = 60" + 0.05"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T16	: 3101	9	9	3000	76.1 %	47.4 %	24.93
2 Stockfish 8 T1	: 2899	9	9	3000	23.9 %	47.4 %	20.16

Result : 2283.0/3000 (+1572,=1422,-6)
 Perf. : 76.1 %
 Elo : 3201

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T16	: 3140	11	11	3000	83.3 %	32.0 %	21.31
2 Komodo 10.4 T1	: 2860	11	11	3000	16.7 %	32.0 %	17.38

Result : 2499.5/3000 (+2020,=959,-21)
 Perf. : 83.3 %
 Elo : 3279

Linux - 1 thread vs 16 threads

TC = 10" + 0.1"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T16	: 3114	9	9	3000	78.9 %	41.7 %	23.25
2 Stockfish 8 T1	: 2886	9	9	3000	21.1 %	41.7 %	19.33

Result : 2366.0/3000 (+1741,=1250,-9)
 Perf. : 78.9 %
 Elo : 3229

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T16	: 3157	12	12	3000	86.0 %	26.8 %	20.43
2 Komodo 10.4 T1	: 2843	12	12	3000	14.0 %	26.8 %	16.14

Result : 2578.5/3000 (+2176,=805,-19)
 Perf. : 86.0 %
 Elo : 3315

Linux - 1 thread vs 32 threads

TC = 10" + 0.1"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T32	: 3117	10	9	3000	79.4 %	40.7 %	23.01
2 Stockfish 8 T1	: 2883	9	10	3000	20.6 %	40.7 %	19.42

Result : 2382.0/3000 (+1772,=1220,-8)
 Perf. : 79.4 %
 Elo : 3234

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T32	: 3167	13	12	3000	87.2 %	24.8 %	20.19
2 Komodo 10.4 T1	: 2833	12	13	3000	12.8 %	24.8 %	16.26

Result : 2617.5/3000 (+2246,=743,-11)
 Perf. : 87.2 %
 Elo : 3334

Windows - 2 threads vs 4 threads

TC = 60" + 0.05"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T4	: 3027	6	6	3000	57.7 %	76.5 %	22.95
2 Stockfish 8 T2	: 2973	6	6	3000	42.3 %	76.5 %	21.61

Result : 1732.0/3000 (+584,=2296,-120)
 Perf. : 57.7 %
 Elo : 3054

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T4	: 3043	8	8	3000	62.2 %	60.7 %	19.82
2 Komodo 10.4 T2	: 2957	8	8	3000	37.8 %	60.7 %	18.23

Result : 1867.0/3000 (+956,=1822,-222)
 Perf. : 62.2 %
 Elo : 3087

Linux - 2 threads vs 4 threads

TC = 10" + 0.1"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T4	: 3031	6	6	3000	58.9 %	72.2 %	21.22
2 Stockfish 8 T2	: 2969	6	6	3000	41.1 %	72.2 %	20.22

Result : 1766.0/3000 (+683,=2166,-151)
 Perf. : 58.9 %
 Elo : 3062

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T4	: 3036	8	8	3000	60.1 %	57.3 %	18.24
2 Komodo 10.4 T2	: 2964	8	8	3000	39.9 %	57.3 %	17.08

Result : 1803.0/3000 (+944,=1718,-338)
 Perf. : 60.1 %
 Elo : 3071

Windows - 4 threads vs 8 threads

TC = 60" + 0.05"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T8	: 3024	6	6	3000	56.9 %	78.5 %	24.39
2 Stockfish 8 T4	: 2976	6	6	3000	43.1 %	78.5 %	23.11

Result : 1707.0/3000 (+529,=2356,-115)
 Perf. : 56.9 %
 Elo : 3048

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T8	: 3037	7	7	3000	60.4 %	64.4 %	20.70
2 Komodo 10.4 T4	: 2963	7	7	3000	39.6 %	64.4 %	19.59

Result : 1812.5/3000 (+847,=1931,-222)
 Perf. : 60.4 %
 Elo : 3073

Linux - 4 threads vs 8 threads

TC = 10" + 0.1"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T8	: 3024	6	6	3000	57.0 %	76.0 %	22.77
2 Stockfish 8 T4	: 2976	6	6	3000	43.0 %	76.0 %	21.90

Result : 1709.0/3000 (+569,=2280,-151)
 Perf. : 57.0 %
 Elo : 3049

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T8	: 3033	8	8	3000	59.4 %	61.6 %	19.39
2 Komodo 10.4 T4	: 2967	8	8	3000	40.6 %	61.6 %	18.65

Result : 1780.5/3000 (+857,=1847,-296)
 Perf. : 59.4 %
 Elo : 3066

Windows - 8 threads vs 16 threads

TC = 60" + 0.05"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T16	: 3023	5	5	3000	56.5 %	80.0 %	25.68
2 Stockfish 8 T8	: 2977	5	5	3000	43.5 %	80.0 %	24.31

Result : 1694.0/3000 (+494,=2400,-106)
 Perf. : 56.5 %
 Elo : 3045

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T16	: 3033	7	7	3000	59.2 %	65.6 %	21.22
2 Komodo 10.4 T8	: 2967	7	7	3000	40.8 %	65.6 %	20.47

Result : 1777.5/3000 (+793,=1969,-238)
 Perf. : 59.2 %
 Elo : 3065

Linux - 8 threads vs 16 threads

TC = 10" + 0.1"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T16	: 3016	8	8	1514	54.5 %	79.4 %	24.20
2 Stockfish 8 T8	: 2984	8	8	1514	45.5 %	79.4 %	23.73

Result : 825.0/1514 (+224,=1202,-88)
 Perf. : 54.5 %
 Elo : 3031

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T16	: 3022	10	10	1512	56.3 %	65.3 %	20.56
2 Komodo 10.4 T8	: 2978	10	10	1512	43.7 %	65.3 %	19.88

Result : 851.5/1512 (+358,=987,-167)
 Perf. : 56.3 %
 Elo : 3044

Linux - 16 threads vs 32 threads

TC = 10" + 0.1"

Program	Elo	+	-	Games	Score	Draws	Depth
1 Stockfish 8 T32	: 3003	6	6	1800	50.9 %	84.4 %	25.62
2 Stockfish 8 T16	: 2997	6	6	1800	49.1 %	84.4 %	25.90

Result : 915.5/1800 (+156,=1519,-125)
 Perf. : 50.9 %
 Elo : 3006

Program	Elo	+	-	Games	Score	Draws	Depth
1 Komodo 10.4 T32	: 3006	9	9	1606	51.7 %	69.2 %	20.82
2 Komodo 10.4 T16	: 2994	9	9	1606	48.3 %	69.2 %	21.34

Result : 830.0/1606 (+274,=1112,-220)
 Perf. : 51.7 %
 Elo : 3012