



Consolidated Tape Association

Key Operating Metrics of Tape A&B U.S. Equities Securities Information Processor (CTA SIP)

CQS: Quote Feed (Tape A&B)																
Quarter	System Availability (1)	Peak Messages Per Second (thousands)	Capacity Messages Per Second (millions)	Capacity vs Peak Ratio	Peak Messages Per 100 Milliseconds (thousands) (2)	Capacity Messages Per 100 Milliseconds (thousands)	Capacity vs Peak Ratio	Peak Messages Per 10 Milliseconds (thousands)	Peak Messages Per 1 Millisecond (thousands)	Peak Transactions Per Day (millions)	Capacity Transactions Per Day (billions)	Average Latency (us) (3)	Median Latency (us) (3)	10th Percentile Latency (us)	90th Percentile Latency (us)	99th Percentile Latency (us)
1Q16	100.00%	615	n/a	n/a	163.3	392	2.4:1	n/a	n/a	1338	16	490	220	150	1,080	3,890
2Q16	100.00%	618	n/a	n/a	168.4	400	2.4:1	n/a	n/a	1093	16	490	220	150	1,090	4,000
3Q16	100.00%	541	n/a	n/a	185.5	450	2.4:1	n/a	n/a	1027	16	470	210	150	970	3860
4Q16	99.99%	785	n/a	n/a	210.8	450	2.1:1	n/a	n/a	1150	16	260	80	60	280	1570
1Q17	100.00%	530	n/a	n/a	175.7	450	2.6:1	n/a	n/a	720	16	145	81	63	257	1097
2Q17	100.00%	543	n/a	n/a	189.2	450	2.4:1	n/a	n/a	676	16	150	82	63	281	1114
3Q17	100.00%	519	n/a	n/a	165.4	450	2.7:1	n/a	n/a	546	16	141	83	64	251	1020
4Q17	100.00%	527	n/a	n/a	187.2	450	2.4:1	n/a	n/a	782	16	121	87	70	164	722
1Q18	100.00%	691	n/a	n/a	182.6	450	2.5:1	n/a	n/a	1571	16	130	84	68	180	861
2Q18	100.00%	660	n/a	n/a	195.5	450	2.3:1	n/a	n/a	985	16	134	84	66	174	860
3Q18	100.00%	790	n/a	n/a	232.6	450	1.9:1	n/a	n/a	684	16	131	85	66	179	810
4Q18	100.00%	942	n/a	n/a	249.6	600	2.4:1	n/a	n/a	1755	16	97	60	49	100	371
1Q19	100.00%	853	n/a	n/a	265.1	600	2.3:1	486.7	571.4	1140	16	75	61	49	89	339
Jan '19	100.00%	853	n/a	n/a	265.1	600	2.3:1	449.6	527.5	1140	16	75	60	49	89	328
Feb '19	100.00%	749	n/a	n/a	241.6	600	2.5:1	471.1	561.4	860	16	75	61	49	88	362
Mar '19	100.00%	841	n/a	n/a	247.3	600	2.4:1	486.7	571.4	1017	16	75	61	49	88	362
2Q19	100.00%	903	n/a	n/a	227.2	650	2.9:1	515.4	571.6	1043	16	69	61	49	83	240
Apr '19	100.00%	524	n/a	n/a	199.5	600	3.0:1	515.4	571.6	657	16	68	60	49	84	242
May '19	100.00%	903	n/a	n/a	227.2	650	2.9:1	473.0	568.4	1043	16	70	60	49	85	244
Jun '19	100.00%	762	n/a	n/a	178.4	650	3.6:1	457.1	552.9	1003	16	68	60	49	82	221
3Q19	99.97%	958	n/a	n/a	246.8	750	3.0:1	503.2	592.1	1090	16	165	61	49	82	233
Jul '19	100.00%	578	n/a	n/a	222.2	650	2.9:1	503.2	588.6	814	16	68	61	49	80	210
Aug '19	99.90%	653	n/a	n/a	210.6	650	3.1:1	467.3	592.1	1090	16	353	61	49	83	244
Sep '19	100.00%	958	n/a	n/a	246.8	750	3.0:1	496.0	591.7	807	16	75	61	50	83	246
4Q19	100.00%	1156	n/a	n/a	322.5	850	2.6:1	533.8	646.4	803	16	69	61	49	80	223
Oct '19	100.00%	1043	n/a	n/a	291.1	750	2.6:1	501.7	634.3	803	16	70	60	49	80	240
Nov '19	100.00%	988	n/a	n/a	248.1	850	3.4:1	496.8	644.4	565	16	67	61	49	79	215
Dec '19	100.00%	1156	n/a	n/a	322.5	850	2.6:1	533.8	646.4	744	16	69	61	49	81	226
1Q20	100.00%	1119	n/a	n/a	232.6	900	3.9:1	539.1	651.8	2139	16	70	60	49	82	243
Jan '20	100.00%	981	n/a	n/a	232.6	850	3.7:1	539.1	642.9	1042	16	69	61	49	82	243
Feb '20	100.00%	1119	n/a	n/a	228.0	900	3.9:1	532.4	649.3	2139	16	71	60	49	82	252
Mar '20	100.00%	724	n/a	n/a	213.9	900	4.2:1	519.3	651.8	2139	16	70	60	49	82	213
2Q20	100.00%	1018	n/a	n/a	259.0	900	3.5:1	581.5	628.8	1947	16	71	60	49	85	234
Apr '20	100.00%	808	n/a	n/a	219.9	900	4.1:1	496.3	628.8	1354	16	68	60	49	83	219
May '20	100.00%	1015	n/a	n/a	259.0	900	3.5:1	470.5	625.0	1382	16	71	61	50	87	237
Jun '20	100.00%	1018	n/a	n/a	254.2	900	3.5:1	581.5	605.2	1947	16	74	65	54	91	253
3Q20																
Jul '20	100.00%	1005	n/a	n/a	274.6	950	3.5:1	526.6	688.0	1396	12	26	16	14	19	27
Aug '20	100.00%	699	n/a	n/a	230.6	950	4.1:1	490.6	703.2	1027	12	17	16	14	19	24

(1) Service level guidelines: (A) 99.98% system availability; (B) 10 minute recovery time for full system failures; (C) Operations production support 24x5 in primary and backup data center and test support provided on Tuesdays, Thursdays, and Saturdays.

(2) Beginning 1Q14, capacity planning interval changed from 1-second to 100-microseconds.

(3) Message latency is measured beginning with the time-stamp taken as an inbound Participant message arrives at the network entrance to the CTS/CQS environment, through processing by the system into a consolidated message for Data Recipients, to the time-stamp taken as the outbound message arrives at the network exit from the environment. Latency is represented in milliseconds.

CTS: Trade Feed (Tape A&B)																
Quarter	System Availability (1)	Peak Messages Per Second (thousands)	Capacity Messages Per Second (thousands)	Capacity vs Peak Ratio	Peak Messages Per 100 Milliseconds (thousands) (2)	Capacity Messages Per 100 Milliseconds (thousands)	Capacity vs Peak Ratio	Peak Messages Per 10 Milliseconds (thousands)	Peak Messages Per 1 Millisecond (thousands)	Peak Transactions Per Day (millions)	Capacity Transactions Per Day (millions)	Average Latency (3)	Median Latency (3)	10th Percentile Latency	90th Percentile Latency	99th Percentile Latency
1Q16	100.00%	123.0	n/a	n/a	42.4	86	2.0:1	n/a	n/a	49.8	1000	330	250	160	430	1,730
2Q16	100.00%	91.9	n/a	n/a	37.4	96	2.6:1	n/a	n/a	45.6	1000	340	240	190	450	1,730
3Q16	100.00%	98.2	n/a	n/a	41.5	105	2.5:1	n/a	n/a	33.8	1000	320	240	200	440	1,650
4Q16	100.00%	94.3	n/a	n/a	38.7	105	2.7:1	n/a	n/a	49.3	1000	250	160	130	310	1,410
1Q17	100.00%	121.8	n/a	n/a	45.4	105	2.3:1	n/a	n/a	32.9	1000	167	115	83	218	1,023
2Q17	100.00%	98.2	n/a	n/a	51.0	105	2.1:1	n/a	n/a	32.4	1000	154	113	83	210	848
3Q17	100.00%	88.3	n/a	n/a	46.9	105	2.2:1	n/a	n/a	29.2	1000	144	113	83	199	708
4Q17	100.00%	67.6	n/a	n/a	39.6	105	2.7:1	n/a	n/a	38.5	1000	151	120	87	205	708
1Q18	100.00%	68.0	n/a	n/a	35.8	105	2.9:1	n/a	n/a	57.3	1000	147	119	87	198	662
2Q18	100.00%	77.3	n/a	n/a	35.8	105	2.9:1	n/a	n/a	40.2	1000	150	121	87	202	716
3Q18	100.00%	77.4	n/a	n/a	31.0	105	3.4:1	n/a	n/a	40.1	1000	150	122	85	206	648
4Q18	100.00%	91.9	n/a	n/a	39.8	105	2.6:1	n/a	n/a	55.3	1000	164	112	85	193	783
1Q19	100.00%	77.2	n/a	n/a	38.3	105	2.7:1	84.1	117.6	41.7	1000	147	102	77	198	823
Jan '19	100.00%	76.5	n/a	n/a	38.3	105	2.7:1	80.1	115.1	41.7	1000	147	103	80	194	882
Feb '19	100.00%	76.5	n/a	n/a	37.0	105	2.8:1	81.0	117.6	39.2	1000	144	102	78	198	823
Mar '19	100.00%	77.2	n/a	n/a	36.8	105	2.9:1	84.1	113.4	41.5	1000	149	100	72	199	810
2Q19	100.00%	98.4	n/a	n/a	43.8	250	5.7:1	144.9	230.7	49.8	1000	143	94	70	179	648
Apr '19	100.00%	76.3	n/a	n/a	37.2	105	2.8:1	81.9	113.5	41.7	1000	142	100	77	196	709
May '19	100.00%	98.3	n/a	n/a	43.8	105	2.4:1	117.3	168.7	49.6	1000	156	95	76	191	709
Jun '19	100.00%	98.4	n/a	n/a	40.1	250	6.2:1	144.9	230.7	49.8	1000	110	70	55	130	392
3Q19	99.82%	134.3	n/a	n/a	54.1	250	4.6:1	174.8	245.2	55.6	1000	115	64	50	117	377
Jul '19	100.00%	59.2	n/a	n/a	32.8	250	7.6:1	162.5	245.2	50.2	1000	84	64	50	118	369
Aug '19	99.46%	75.8	n/a	n/a	39.8	250	6.3:1	162.5	240.2	55.6	1000	174	64	51	115	375
Sep '19	100.00%	134.3	n/a	n/a	54.1	250	4.6:1	174.8	232.0	50.7	1000	86	65	49	118	388
4Q19	100.00%	207.4	n/a	n/a	80.9	300	3.7:1	174.7	233.1	48.0	1000	87	66	50	119	435
Oct '19	100.00%	207.4	n/a	n/a	80.9	300	3.7:1	169.7	233.1	48.0	1000	88	66	50	122	437
Nov '19	100.00%	128.9	n/a	n/a	51.6	300	5.8:1	156.1	224.2	47.1	1000	87	65	49	118	437
Dec '19	100.00%	170.2	n/a	n/a	77.8	300	3.9:1	174.7	228.7	47.2	1000	87	66	50	119	427
1Q20	100.00%	130.2	n/a	n/a	67.5	300	4.4:1	165.5	261.2	89.2	1000	88	65	44	116	441
Jan '20	100.00%	125.9	n/a	n/a	50.9	300	5.9:1	153.8	240.7	50.5	1000	87	66	43	118	430
Feb '20	100.00%	130.2	n/a	n/a	47.1	300	6.4:1	165.5	261.2	89.2	1000	88	65	43	117	440
Mar '20	100.00%	123.6	n/a	n/a	67.5	300	4.4:1	156.0	229.1	87.4	1000	89	65	45	107	454
2Q20	100.00%	150.5	n/a	n/a	85.4	300	3.5:1	192.0	248.3	76.9	1000	94	66	47	115	482
Apr '20	100.00%	150.5	n/a	n/a	85.4	300	3.5:1	184.7	232.5	76.9	1000	91	65	44	112	484
May '20	100.00%	143.8	n/a	n/a	66.4	300	4.5:1	161.9	226.3	63.9	1000	92	66	46	115	465
Jun '20	100.00%	124.7	n/a	n/a	54.4	300	5.5:1	192.0	248.3	73.6	1000	99	71	50	122	484
3Q20																
Jul '20	100.00%	125.6	n/a	n/a	60.2	350	5.8:1	198.0	305.7	56.4	500	19	18	15	21	29
Aug '20	100.00%	69.6	n/a	n/a	39.4	350	8.9:1	185.2	326.3	57.3	500	18	18	15	21	28

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