



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)
1Q19	100.00%	853	n/a	n/a	265.1	600	2.3:1	486.7	571.4	1140	16	75.0	61.0	49.0	89.0	339.0
Jan '19	100.00%	853	n/a	n/a	265.1	600	2.3:1	449.6	527.5	1140	16	75.0	60.0	49.0	89.0	328.0
Feb '19	100.00%	749	n/a	n/a	241.6	600	2.5:1	471.1	561.4	860	16	75.0	61.0	49.0	88.0	362.0
Mar '19	100.00%	841	n/a	n/a	247.3	600	2.4:1	486.7	571.4	1017	16	75.0	61.0	49.0	88.0	362.0
2Q19	100.00%	903	n/a	n/a	227.2	650	2.9:1	515.4	571.6	1043	16	68.5	60.7	49.2	83.4	239.5
Apr '19	100.00%	524	n/a	n/a	199.5	600	3.0:1	515.4	571.6	657	16	68.0	60.0	49.0	84.0	242.0
May '19	100.00%	903	n/a	n/a	227.2	650	2.9:1	473.0	568.4	1043	16	70.0	60.0	49.0	85.0	244.0
Jun '19	100.00%	762	n/a	n/a	178.4	650	3.6:1	457.1	552.9	1003	16	68.0	60.0	49.0	82.0	221.0
3Q19	99.97%	958	n/a	n/a	246.8	750	3.0:1	503.2	592.1	1090	16	165.0	61.0	49.0	82.0	233.0
Jul '19	100.00%	578	n/a	n/a	222.2	650	2.9:1	503.2	588.6	814	16	67.5	60.7	49.2	80.2	210.4
Aug '19	99.90%	653	n/a	n/a	210.6	650	3.1:1	467.3	592.1	1090	16	352.8	60.7	49.2	83.4	244.3
Sep '19	100.00%	958	n/a	n/a	246.8	750	3.0:1	496.0	591.7	807	16	75.0	61.0	50.0	83.0	246.0
4Q19	100.00%	1156	n/a	n/a	322.5	850	2.6:1	533.8	646.4	803	16	69.0	61.0	49.0	80.5	222.5
Oct '19	100.00%	1043	n/a	n/a	291.1	750	2.6:1	501.7	634.3	803	16	69.6	60.1	48.7	80.2	239.6
Nov '19	100.00%	988	n/a	n/a	248.1	850	3.4:1	496.8	644.4	565	16	67.3	60.7	48.7	78.6	214.7
Dec '19	100.00%	1156	n/a	n/a	322.5	850	2.6:1	533.8	646.4	744	16	69.0	60.7	48.7	81.0	226.0
1Q20	100.00%	1119	n/a	n/a	232.6	900	3.9:1	539.1	651.8	2139	16	69.8	60.0	49.0	82.0	243.0
Jan '20	100.00%	981	n/a	n/a	232.6	850	3.7:1	539.1	642.9	1042	16	69.1	61.0	48.7	82.0	243.0
Feb '20	100.00%	1119	n/a	n/a	228.0	900	3.9:1	532.4	649.3	2139	16	71.0	60.0	49.0	82.0	252.0
Mar '20	100.00%	724	n/a	n/a	213.9	900	4.2:1	519.3	651.8	2139	16	69.5	60.0	48.7	83.0	213.0
2Q20	100.00%	1018	n/a	n/a	259.0	900	3.5:1	581.5	628.8	1947	16	71.0	60.0	49.0	85.0	234.0
Apr '20	100.00%	808	n/a	n/a	219.9	900	4.1:1	496.3	628.8	1354	16	67.9	60.0	49.0	83.0	219.0
May '20	100.00%	1015	n/a	n/a	259.0	900	3.5:1	470.5	625.0	1382	16	70.6	60.5	49.5	86.5	237.0
Jun '20	100.00%	1018	n/a	n/a	254.2	900	3.5:1	581.5	605.2	1947	16	74.4	65.0	54.0	91.0	253.0
3Q20	100.00%	1005	n/a	n/a	274.6	950	3.5:1	526.6	703.2	1853	16	20.3	16.5	14.1	19.3	27.6
Jul '20	100.00%	1005	n/a	n/a	274.6	950	3.5:1	526.6	688.0	1396	16	26.2	16.3	13.9	19.1	27.1
Aug '20	100.00%	699	n/a	n/a	230.6	950	4.1:1	490.6	703.2	1027	16	17.0	16.1	13.9	18.9	24.3
Sep '20	100.00%	784	n/a	n/a	232.7	950	4.1:1	501.2	643.5	1853	16	19.5	16.8	14.5	19.9	37.3
4Q20	100.00%	991	n/a	n/a	263.0	950	3.6:1	525.9	698.0	1542	16	18.4	16.6	14.4	19.5	27.5
Oct '20	100.00%	991	n/a	n/a	263.0	950	3.6:1	511.7	657.4	1390	16	19.8	16.8	14.3	19.9	34.4
Nov '20	100.00%	826	n/a	n/a	223.6	950	4.2:1	525.9	685.3	1542	16	18.6	16.6	14.3	19.5	27.6
Dec '20	100.00%	778	n/a	n/a	228.0	950	4.2:1	519.7	698.0	1119	16	16.9	16.6	14.3	19.3	25.3
1Q21	100.00%	960	n/a	n/a	240.4	950	4.0:1	567.3	721.1	2566	16	17.3	16.6	14.3	19.5	26.8
Jan '21	100.00%	766	n/a	n/a	219.3	950	4.3:1	565.5	696.4	1636	16	17.3	16.6	14.3	19.5	26.8
Feb '21	100.00%	695	n/a	n/a	230.9	950	4.1:1	539.2	721.1	2126	16	17.1	16.6	14.3	19.3	26.3
Mar '21	100.00%	960	n/a	n/a	240.4	950	4.0:1	567.3	691.6	2566	16	17.3	16.8	14.5	19.5	28.2
2Q21	99.99%	796	n/a	n/a	250.7	950	3.8:1	563.8	716.9	2081	16	17.3	16.6	14.3	19.5	26.8
Apr '21	100.00%	678	n/a	n/a	231.6	950	4.1:1	554.8	716.9	1599	16	17.2	16.6	14.3	19.3	28.5
May '21	99.97%	796	n/a	n/a	250.7	950	3.8:1	557.1	700.3	2081	16	17.3	16.6	14.3	19.7	27.1
Jun '21	100.00%	730	n/a	n/a	211.5	950	4.5:1	563.8	708.7	1552	16	17.3	17.0	14.8	19.7	25.0
3Q21	100.00%	1030	n/a	n/a	292.2	950	3.3:1	576.1	704.1	2073	16	17.5	17.1	14.7	19.9	26.0
Jul '21	100.00%	675	n/a	n/a	235.0	950	4.0:1	576.1	704.1	2073	16	24.5	17.0	14.8	19.7	25.8
Aug '21	100.00%	631	n/a	n/a	220.0	950	4.3:1	536.5	670.9	1811	16	17.3	16.9	14.7	19.7	25.1
Sep '21	100.00%	1030	n/a	n/a	292.2	950	3.3:1	567.0	678.8	2040	16	17.7	17.1	14.7	20.1	28.4
4Q21	100.00%	921	n/a	n/a	274.2	950	3.5:1	563.0	707.1	2151	16	17.5	17.1	14.7	19.9	26.5
Oct '21	100.00%	921	n/a	n/a	274.2	950	3.5:1	563.0	707.1	2014	16	17.6	17.1	14.7	19.9	27.3
Nov '21	100.00%	813	n/a	n/a	220.5	950	4.3:1	533.9	646.8	1939	16	17.4	17.1	14.7	19.9	25.2
Dec '21	100.00%	868	n/a	n/a	230.1	950	4.1:1	543.6	655.6	2151	16	17.5	17.1	14.9	20.1	27.2

(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
1Q19	100.00%	77.2	n/a	n/a	38.3	105	2.7:1	84.1	117.6	41.7	1000	147.0	102.0	77.0	198.0	823.0
Jan '19	100.00%	76.5	n/a	n/a	38.3	105	2.7:1	80.1	115.1	41.7	1000	147.0	103.0	80.0	194.0	882.0
Feb '19	100.00%	76.5	n/a	n/a	37.0	105	2.8:1	81.0	117.6	39.2	1000	144.0	102.0	78.0	198.0	823.0
Mar '19	100.00%	77.2	n/a	n/a	36.8	105	2.9:1	84.1	113.4	41.5	1000	149.0	100.0	72.0	199.0	810.0
2Q19	100.00%	98.4	n/a	n/a	43.8	250	5.7:1	144.9	230.7	49.8	1000	138.9	94.0	69.7	179.5	647.8
Apr '19	100.00%	76.3	n/a	n/a	37.2	105	2.8:1	81.9	113.5	41.7	1000	142.0	100.0	77.0	196.0	709.0
May '19	100.00%	98.3	n/a	n/a	43.8	105	2.4:1	117.3	168.7	49.6	1000	156.4	94.9	76.3	190.5	708.5
Jun '19	100.00%	98.4	n/a	n/a	40.1	250	6.2:1	144.9	230.7	49.8	1000	110.4	70.0	54.9	129.9	391.9
3Q19	99.82%	134.3	n/a	n/a	54.1	250	4.6:1	174.8	245.2	55.6	1000	115.0	64.0	50.0	117.0	377.0
Jul '19	100.00%	59.2	n/a	n/a	32.8	250	7.6:1	162.5	245.2	50.2	1000	83.8	64.1	50.1	117.6	369.2
Aug '19	99.46%	75.8	n/a	n/a	39.8	250	6.3:1	162.5	240.2	55.6	1000	174.1	64.4	50.8	114.7	374.8
Sep '19	100.00%	134.3	n/a	n/a	54.1	250	4.6:1	174.8	232.0	50.7	1000	86.0	65.0	49.0	118.0	388.0
4Q19	100.00%	207.4	n/a	n/a	80.9	300	3.7:1	174.7	233.1	48.0	1000	87.0	66.0	50.0	119.0	435.0
Oct '19	100.00%	207.4	n/a	n/a	80.9	300	3.7:1	169.7	233.1	48.0	1000	88.3	66.4	50.1	121.7	437.3
Nov '19	100.00%	128.9	n/a	n/a	51.6	300	5.8:1	156.1	224.2	47.1	1000	87.0	65.4	49.2	118.2	437.3
Dec '19	100.00%	170.2	n/a	n/a	77.8	300	3.9:1	174.7	228.7	47.2	1000	87.0	66.0	50.0	119.0	427.0
1Q20	100.00%	130.2	n/a	n/a	67.5	300	4.4:1	165.5	261.2	89.2	1000	88.1	65.0	43.5	116.0	440.5
Jan '20	100.00%	125.9	n/a	n/a	50.9	300	5.9:1	153.8	240.7	50.5	1000	87.1	65.0	43.0	118.0	430.0
Feb '20	100.00%	130.2	n/a	n/a	47.1	300	6.4:1	165.5	261.2	89.2	1000	88.3	65.0	43.0	117.0	440.0
Mar '20	100.00%	123.6	n/a	n/a	67.5	300	4.4:1	156.0	229.1	87.4	1000	89.0	64.5	45.0	107.0	454.0
2Q20	100.00%	150.5	n/a	n/a	85.4	300	3.5:1	192.0	248.3	76.9	1000	94.5	66.0	47.0	115.0	482.0
Apr '20	100.00%	150.5	n/a	n/a	85.4	300	3.5:1	184.7	232.5	76.9	1000	91.2	65.0	44.0	112.0	484.0
May '20	100.00%	143.8	n/a	n/a	66.4	300	4.5:1	161.9	226.3	63.9	1000	92.4	65.5	45.5	114.5	464.5
Jun '20	100.00%	124.7	n/a	n/a	54.4	300	5.5:1	192.0	248.3	73.6	1000	99.1	71.0	50.0	122.0	484.0
3Q20	100.00%	125.6	n/a	n/a	84.4	350	4.1:1	200.3	326.3	60.4	500	19.2	17.8	15.1	21.3	29.0
Jul '20	100.00%	125.6	n/a	n/a	60.2	350	5.8:1	198.0	305.7	56.4	500	19.2	17.7	15.1	21.1	29.1
Aug '20	100.00%	69.6	n/a	n/a	39.4	350	8.9:1	185.2	326.3	57.3	500	18.4	17.7	14.9	20.9	27.9
Sep '20	100.00%	86.7	n/a	n/a	84.4	350	4.1:1	200.3	299.9	60.4	500	20.0	18.2	15.5	21.8	31.1
4Q20	100.00%	114.7	n/a	n/a	59.8	350	5.9:1	204.4	282.7	82.2	500	19.3	17.8	15.4	21.3	29.3
Oct '20	100.00%	114.7	n/a	n/a	59.8	350	5.9:1	156.1	281.7	59.5	500	19.8	18.0	15.4	21.8	31.0
Nov '20	100.00%	83.4	n/a	n/a	49.2	350	7.1:1	204.4	278.6	82.2	500	19.5	17.9	15.4	21.3	29.6
Dec '20	100.00%	92.0	n/a	n/a	40.6	350	8.6:1	164.8	282.7	58.0	500	18.7	17.8	15.2	21.1	28.3
1Q21	100.00%	101.1	n/a	n/a	47.0	350	7.4:1	213.2	383.9	93.9	500	20.2	17.8	15.2	21.3	29.9
Jan '21	100.00%	84.9	n/a	n/a	39.1	350	9.0:1	159.8	291.8	93.9	500	19.8	17.8	15.2	21.1	29.9
Feb '21	100.00%	66.3	n/a	n/a	39.3	350	8.9:1	178.7	364.5	78.3	500	21.0	17.7	15.1	21.1	29.9
Mar '21	100.00%	101.1	n/a	n/a	47.0	350	7.4:1	213.2	383.9	83.1	720	19.9	18.0	15.2	21.6	29.3
2Q21	99.99%	99.3	n/a	n/a	51.9	350	6.7:1	194.6	372.1	66.9	720	20.9	18.0	15.4	21.8	29.6
Apr '21	100.00%	66.5	n/a	n/a	37.3	350	9.4:1	194.6	372.1	57.1	720	19.6	17.8	15.2	21.3	29.6
May '21	99.97%	70.9	n/a	n/a	38.8	350	9.0:1	178.6	271.7	65.2	720	26.7	18.0	15.4	21.8	31.1
Jun '21	100.00%	99.3	n/a	n/a	51.9	350	6.7:1	152.1	265.4	66.9	720	19.4	18.4	15.8	21.8	29.2
3Q21	100.00%	104.9	n/a	n/a	56.9	350	6.2:1	229.2	382.4	70.1	720	19.4	18.5	15.8	21.9	29.3
Jul '21	100.00%	67.3	n/a	n/a	35.6	350	9.8:1	198.2	275.4	70.1	720	25.4	18.4	15.8	22.0	29.6
Aug '21	100.00%	69.8	n/a	n/a	37.2	350	9.4:1	139.3	262.0	61.8	720	19.0	18.3	15.8	21.8	28.7
Sep '21	100.00%	104.9	n/a	n/a	56.9	350	6.2:1	229.2	382.4	68.1	720	19.7	18.5	15.9	22.2	30.2
4Q21	100.00%	113.2	n/a	n/a	58.7	350	6.0:1	188.4	293.4	75.8	720	19.6	18.5	15.8	21.9	29.6
Oct '21	100.00%	74.0	n/a	n/a	44.2	350	7.9:1	188.4	279.3	63.4	720	19.6	18.5	15.8	21.9	29.6
Nov '21	100.00%	112.4	n/a	n/a	52.1	350	6.7:1	161.5	293.4	75.7	720	19.5	18.3	15.8	21.7	29.3
Dec '21	100.00%	113.2	n/a	n/a	58.7	350	6.0:1	174.7	267.8	75.8	720	19.6	18.5	15.9	22.2	29.9

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(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 microseconds.