

## UTP Q1 2019 - March TAPE C QUOTE METRICS

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 Transactions Per Day (millions)	Capacity Transactions Per Day (millions)	Average Latency (ms)	Median Latency (ms)	10th Percentile Latency (ms)	90th Percentile Latency (ms)	99th Percentile Latency (ms)
1Q16	100.00%	249.5	1,244.6	5.0:1	60.1	215.0	3.6:1	366.2	2,285.8	0.92	0.47	0.39	1.04	9.80
2Q16	99.99%	291.9	1,244.6	4.3:1	83.0	215.0	2.6:1	282.5	2,285.8	0.78	0.46	0.39	0.93	5.73
3Q16	100.00%	412.5	1,244.6	3.0:1	78.9	215.0	2.7:1	261.8	2,285.8	0.76	0.46	0.39	0.93	5.39
4Q16	100.00%	222.9	2,809.8	12.6:1	75.9	283.1	3.7:1	292.4	8,121.4	0.193	0.018	0.017	0.020	0.028
1Q17	99.99%	245.7	2,809.8	11.4:1	60.4	283.1	4.7:1	200.9	8,121.4	0.018	0.017	0.016	0.019	0.024
2Q17	99.99%	267.8	2,809.8	10.5:1	62.9	283.1	4.5:1	216.0	8,121.4	0.017	0.016	0.015	0.018	0.024
3Q17	100.00%	300.1	2,809.8	9.4:1	68.3	283.1	4.1:1	186.1	5,461.5	0.017	0.016	0.015	0.018	0.023
4Q17	100.00%	275.5	2,809.8	10.2:1	61.0	283.1	4.6:1	232.1	5,461.5	0.017	0.016	0.015	0.018	0.022
1Q18	100.00%	266.4	2,809.8	10.5:1	72.3	283.1	3.9:1	412.3	5,461.5	0.017	0.016	0.015	0.018	0.022
Jan 2018	n/a	179.6	2,809.8	15.6:1	57.8	283.1	4.9:1	179.0	5,461.5	0.017	0.016	0.015	0.018	0.022
Feb 2018	n/a	219.8	2,809.8	12.8:1	72.3	283.1	3.9:1	412.3	5,461.5	0.017	0.016	0.015	0.018	0.022
Mar 2018	n/a	266.4	2,809.8	10.5:1	64.4	283.1	4.4:1	325.4	5,461.5	0.017	0.016	0.015	0.018	0.022
2Q18	100.00%	317.6	2,809.8	8.8:1	68.5	283.1	4.1:1	279.8	5,461.5	0.017	0.017	0.016	0.018	0.023
Apr 2018	n/a	188.6	2,809.8	14.9:1	59.8	283.1	4.7:1	279.8	5,461.5	0.017	0.016	0.015	0.018	0.023
May 2018	n/a	219.8	2,809.8	12.8:1	62.7	283.1	4.5:1	223.1	5,461.5	0.017	0.017	0.016	0.018	0.023
Jun 2018	n/a	317.6	2,809.8	8.8:1	68.5	283.1	4.1:1	237.6	5,461.5	0.017	0.017	0.016	0.018	0.023
3Q18	100.00%	295.6	2,809.8	9.5:1	70.7	283.1	4.0:1	205.3	5,461.5	0.017	0.016	0.015	0.018	0.022
Jul 2018	n/a	210.3	2,809.8	13.4:1	70.7	283.1	4.0:1	197.8	5,461.5	0.017	0.016	0.015	0.018	0.022
Aug 2018	n/a	218.3	2,809.8	12.9:1	63.9	283.1	4.4:1	205.3	5,461.5	0.017	0.016	0.015	0.018	0.023
Sep 2018	n/a	295.6	2,809.8	9.5:1	67.7	283.1	4.2:1	193.3	5,461.5	0.017	0.016	0.015	0.018	0.022
4Q18	100.00%	297.6	3,075.9	10.3:1	83.7	308.4	3.7:1	476.1	5,461.5	0.017	0.017	0.016	0.019	0.024
Oct 2018	n/a	230.7	3,075.9	13.3:1	74.3	308.4	4.2:1	476.1	5,461.5	0.017	0.016	0.015	0.019	0.024
Nov 2018	n/a	285.6	3,075.9	10.8:1	83.7	308.4	3.7:1	343.9	5,461.5	0.017	0.017	0.016	0.018	0.024
Dec 2018	n/a	297.6	3,075.9	10.3:1	80.4	308.4	3.8:1	407.1	5,461.5	0.017	0.017	0.016	0.019	0.025
1Q19	100.00%	372.3	3,075.9	8.3:1	81.6	308.4	3.8:1	321.5	5,461.5	0.017	0.017	0.016	0.019	0.025
Jan 2019	n/a	251.3	3,075.9	12.2:1	81.6	308.4	3.8:1	321.5	5,461.5	0.017	0.017	0.016	0.019	0.024
Feb 2019	n/a	265.2	3,075.9	11.6:1	73.9	308.4	4.2:1	259.4	5,461.5	0.017	0.016	0.015	0.018	0.025
Mar 2019	n/a	372.3	3,075.9	8.3:1	75.9	308.4	4.1:1	295.3	5,461.5	0.017	0.017	0.016	0.019	0.025

(1) Beginning Q1 2016 measurement of System Availability is reflective of the entire environment and no longer by data service, on a quarterly basis in accordance with the SLA with the UTP committee. Service level guidelines remain: (A) 99.98% system availability; (B) 10 minute recovery time for full system failures; (C) Operations production support 24x6 in primary and secondary data center and test support provided on Saturdays.

(2) Beginning Q1 2014, capacity planning interval changed from 1-second to 100-milliseconds.

(3) Beginning Q1 2016, 10th and 99th percentile latency measurements have been included.

# UTP Q1 2019 - March TAPE C TRADE METRICS

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 Transactions Per Day (millions)	Capacity Transactions Per Day (millions)	Average Latency (ms)	Median Latency (ms)	10th Percentile Latency (ms)	90th Percentile Latency (ms)	99th Percentile Latency (ms)
1Q16	100.00%	75.3	613.7	8.2:1	19.4	132.8	6.8:1	21.0	232.0	0.77	0.49	0.41	0.76	6.48
2Q16	99.99%	100.3	613.7	6.1:1	28.2	132.8	4.7:1	18.3	232.0	0.60	0.48	0.41	0.68	1.97
3Q16	100.00%	142.6	613.7	4.3:1	34.6	132.8	3.8:1	14.1	232.0	0.62	0.48	0.41	0.69	2.03
4Q16	100.00%	76.5	2,741.2	35.8:1	22.4	300.0	13.4:1	20.3	4,608.8	0.158	0.019	0.018	0.021	0.027
1Q17	99.99%	82.4	2,741.2	33.3:1	22.0	300.0	13.6:1	14.7	4,608.8	0.019	0.018	0.017	0.021	0.025
2Q17	99.99%	89.3	2,741.2	30.7:1	20.1	300.0	14.9:1	17.1	4,608.8	0.018	0.017	0.016	0.020	0.024
3Q17	100.00%	93.0	2,741.2	29.5:1	30.2	300.0	9.9:1	15.8	3,691.9	0.019	0.017	0.016	0.020	0.023
4Q17	100.00%	80.0	2,741.2	34.3:1	16.7	300.0	18.0:1	17.6	3,691.9	0.018	0.017	0.016	0.019	0.021
1Q18	100.00%	76.5	2,741.2	35.8:1	17.2	300.0	17.4:1	22.3	3,691.9	0.018	0.017	0.016	0.019	0.021
Jan 2018	n/a	47.3	2,741.2	58.0:1	17.2	300.0	17.4:1	15.2	3,691.9	0.018	0.017	0.016	0.019	0.021
Feb 2018	n/a	45.7	2,741.2	60.0:1	15.8	300.0	19.0:1	22.3	3,691.9	0.017	0.017	0.016	0.019	0.021
Mar 2018	n/a	76.5	2,741.2	35.8:1	16.2	300.0	18.6:1	17.9	3,691.9	0.018	0.017	0.016	0.019	0.021
2Q18	100.00%	98.1	2,741.2	28.0:1	18.5	300.0	16.3:1	17.2	3,691.9	0.017	0.017	0.016	0.019	0.021
Apr 2018	n/a	46.7	2,741.2	58.7:1	16.2	300.0	18.5:1	16.9	3,691.9	0.017	0.017	0.016	0.019	0.021
May 2018	n/a	58.8	2,741.2	46.7:1	15.2	300.0	19.8:1	15.8	3,691.9	0.017	0.017	0.016	0.019	0.021
Jun 2018	n/a	98.1	2,741.2	28.0:1	18.5	300.0	16.3:1	17.2	3,691.9	0.017	0.017	0.016	0.019	0.021
3Q18	100.00%	94.5	2,741.2	29.0:1	22.3	300.0	13.5:1	16.5	3,691.9	0.017	0.017	0.016	0.019	0.021
Jul 2018	n/a	56.2	2,741.2	48.8:1	15.7	300.0	19.1:1	16.2	3,691.9	0.018	0.017	0.016	0.019	0.021
Aug 2018	n/a	55.7	2,741.2	49.2:1	16.0	300.0	18.8:1	15.7	3,691.9	0.017	0.017	0.016	0.019	0.021
Sep 2018	n/a	94.5	2,741.2	29.0:1	22.3	300.0	13.5:1	16.5	3,691.9	0.017	0.017	0.016	0.019	0.021
4Q18	100.00%	68.5	3,143.7	45.9:1	18.5	300.0	16.2:1	22.1	4,200.0	0.017	0.017	0.016	0.019	0.021
Oct 2018	n/a	46.0	3,143.7	68.3:1	13.5	300.0	22.2:1	22.1	4,200.0	0.017	0.017	0.016	0.019	0.021
Nov 2018	n/a	68.5	3,143.7	45.9:1	18.5	300.0	16.2:1	19.0	4,200.0	0.018	0.017	0.016	0.019	0.021
Dec 2018	n/a	65.8	3,143.7	47.8:1	15.2	300.0	19.7:1	21.9	4,200.0	0.018	0.017	0.016	0.019	0.021
1Q19	100.00%	89.8	3,143.7	35.0:1	17.8	300.0	16.8:1	17.7	4,200.0	0.017	0.017	0.016	0.019	0.021
Jan 2019	n/a	54.1	3,143.7	58.1:1	17.8	300.0	16.8:1	17.7	4,200.0	0.018	0.017	0.016	0.019	0.021
Feb 2019	n/a	61.4	3,143.7	51.2:1	16.0	300.0	18.8:1	15.9	4,200.0	0.017	0.017	0.016	0.019	0.021
Mar 2019	n/a	89.8	3,143.7	35.0:1	16.5	300.0	18.2:1	17.1	4,200.0	0.017	0.017	0.016	0.019	0.021

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