

## UTP Q4 2017 - October 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
Apr 2016	n/a	253.8	1,244.6	4.9:1	76.8	215.0	2.8:1	206.1	2,285.8	0.71	0.46	0.39	0.87	4.81
May 2016	n/a	265.2	1,244.6	4.7:1	80.3	215.0	2.7:1	220.2	2,285.8	0.79	0.46	0.39	0.93	5.93
Jun 2016	n/a	291.9	1,244.6	4.3:1	83.0	215.0	2.6:1	282.5	2,285.8	0.83	0.46	0.39	1.00	6.32
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
Jul 2016	n/a	229.3	1,244.6	5.4:1	75.6	215.0	2.8:1	196.6	2,285.8	0.76	0.46	0.39	0.94	5.90
Aug 2016	n/a	235.7	1,244.6	5.3:1	73.5	215.0	2.9:1	183.5	2,285.8	0.71	0.46	0.39	0.92	4.93
Sep 2016	n/a	412.5	1,244.6	3.0:1	78.9	215.0	2.7:1	261.8	2,285.8	0.82	0.46	0.39	0.92	6.12
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
Oct 2016	n/a	212.8	2,809.8	13.2:1	75.9	283.1	3.7:1	192.7	8,121.4	0.526	0.457	0.386	0.852	4.358
Nov 2016	n/a	186.5	2,809.8	15.1:1	58.4	283.1	4.8:1	292.4	8,121.4	0.019	0.018	0.017	0.020	0.027
Dec 2016	n/a	222.9	2,809.8	12.6:1	65.0	283.1	4.4:1	182.0	8,121.4	0.019	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
Jan 2017	n/a	165.5	2,809.8	17.0:1	55.5	283.1	5.1:1	161.7	8,121.4	0.019	0.018	0.017	0.020	0.027
Feb 2017	n/a	165.6	2,809.8	17.0:1	59.0	283.1	4.8:1	160.4	8,121.4	0.018	0.017	0.016	0.019	0.024
Mar 2017	n/a	245.7	2,809.8	11.4:1	60.4	283.1	4.7:1	200.9	8,121.4	0.017	0.016	0.015	0.018	0.023
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
Apr 2017	n/a	167.7	2,809.8	16.8:1	61.0	283.1	4.6:1	177.0	8,121.4	0.017	0.016	0.015	0.018	0.024
May 2017	n/a	214.3	2,809.8	13.1:1	61.4	283.1	4.6:1	188.9	8,121.4	0.017	0.016	0.015	0.018	0.024
Jun 2017	n/a	267.8	2,809.8	10.5:1	62.9	283.1	4.5:1	216.0	8,121.4	0.017	0.017	0.016	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
Jul 2017	n/a	218.0	2,809.8	12.9:1	57.8	283.1	4.9:1	185.2	5,461.5	0.017	0.016	0.015	0.018	0.023
Aug 2017	n/a	192.9	2,809.8	14.6:1	68.3	283.1	4.1:1	186.1	5,461.5	0.017	0.016	0.015	0.018	0.023
Sep 2017	n/a	300.1	2,809.8	9.4:1	63.3	283.1	4.5:1	171.0	5,461.5	0.017	0.016	0.015	0.018	0.023
4Q17	100.00%	184.8	2,809.8	15.2:1	60.4	283.1	4.7:1	161.4	5,461.5	0.017	0.016	0.015	0.018	0.022
Oct 2017	n/a	184.8	2,809.8	15.2:1	60.4	283.1	4.7:1	161.4	5,461.5	0.017	0.016	0.015	0.018	0.022

(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 Q4 2017 - October 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
Apr 2016	n/a	64.3	613.7	9.5:1	28.2	132.8	4.7:1	15.3	232.0	0.59	0.48	0.41	0.67	1.87
May 2016	n/a	65.3	613.7	9.4:1	26.1	132.8	5.1:1	15.3	232.0	0.60	0.48	0.41	0.68	2.00
Jun 2016	n/a	100.3	613.7	6.1:1	26.5	132.8	5.0:1	18.3	232.0	0.63	0.48	0.41	0.70	2.32
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
Jul 2016	n/a	59.0	613.7	10.4:1	22.4	132.8	5.9:1	13.6	232.0	0.62	0.48	0.41	0.69	2.01
Aug 2016	n/a	65.4	613.7	9.4:1	28.7	132.8	4.6:1	13.4	232.0	0.60	0.48	0.41	0.68	1.96
Sep 2016	n/a	142.6	613.7	4.3:1	34.6	132.8	3.8:1	14.1	232.0	0.64	0.48	0.41	0.70	2.05
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
Oct 2016	n/a	46.1	2,741.2	59.5:1	22.4	300.0	13.4:1	13.0	4,608.8	0.422	0.476	0.406	0.674	1.779
Nov 2016	n/a	59.1	2,741.2	46.4:1	20.2	300.0	14.9:1	20.3	4,608.8	0.019	0.019	0.018	0.021	0.026
Dec 2016	n/a	76.5	2,741.2	35.8:1	20.0	300.0	15.0:1	15.4	4,608.8	0.020	0.019	0.017	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
Jan 2017	n/a	42.9	2,741.2	63.9:1	16.5	300.0	18.2:1	13.1	4,608.8	0.020	0.019	0.017	0.022	0.028
Feb 2017	n/a	47.1	2,741.2	58.2:1	16.4	300.0	18.3:1	14.3	4,608.8	0.019	0.018	0.017	0.021	0.025
Mar 2017	n/a	82.4	2,741.2	33.3:1	22.0	300.0	13.6:1	14.7	4,608.8	0.018	0.017	0.016	0.020	0.023
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
Apr 2017	n/a	46.8	2,741.2	58.5:1	16.9	300.0	17.8:1	13.4	4,608.8	0.018	0.017	0.016	0.020	0.024
May 2017	n/a	60.5	2,741.2	45.3:1	18.7	300.0	16.1:1	15.4	4,608.8	0.018	0.017	0.016	0.020	0.024
Jun 2017	n/a	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	0.019	0.023
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
Jul 2017	n/a	59.3	2,741.2	46.2:1	19.7	300.0	15.2:1	15.8	3,691.9	0.018	0.017	0.016	0.020	0.023
Aug 2017	n/a	70.7	2,741.2	38.8:1	30.2	300.0	9.9:1	14.7	3,691.9	0.021	0.017	0.016	0.020	0.023
Sep 2017	n/a	93.0	2,741.2	29.5:1	22.8	300.0	13.2:1	13.5	3,691.9	0.018	0.018	0.016	0.020	0.023
4Q17	100.00%	47.2	2,741.2	58.1:1	16.7	300.0	18.0:1	15.8	3,691.9	0.018	0.017	0.016	0.019	0.022
Oct 2017	n/a	47.2	2,741.2	58.1:1	16.7	300.0	18.0:1	15.8	3,691.9	0.018	0.017	0.016	0.019	0.022

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