



**Altibase v7.1 on
KTNF KR580S1**

**TPC-H Rev. 3.0.0
TPC-Pricing Rev. 2.7.0**

**Report Date:
April 2, 2021**

Total System Cost

Composite Query per Hour Metric

Price / Performance

68,831,160^W

43,903.9 QphH@100GB

1,567,768.69^W/kQphH@100GB

Database Size

Database Manager

Operating System

Other Software

Availability Date

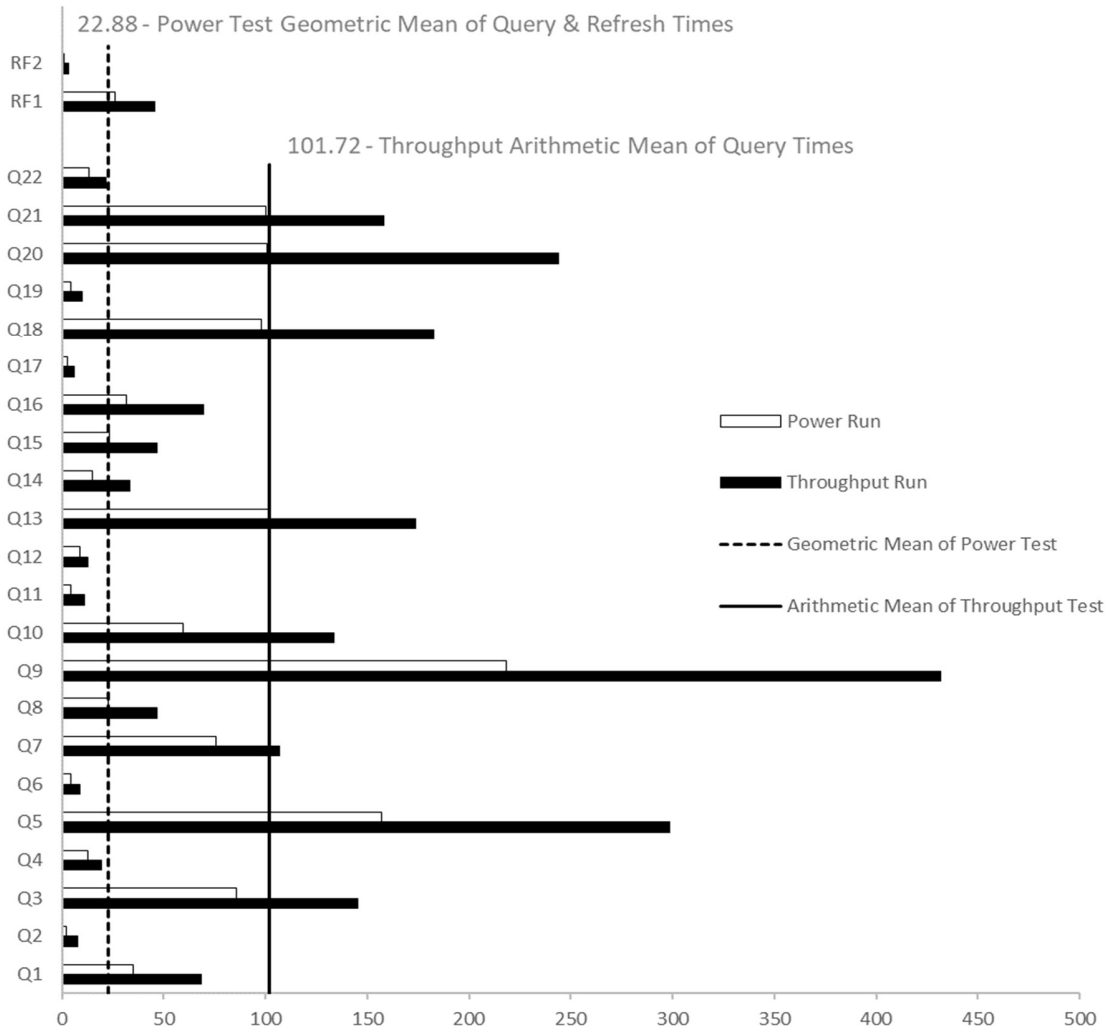
100GB

Altibase v7.1

RHEL 7.9

None

Available Now



Database Load Time = 00d 01h 13m 16s

Storage Redundancy Level

Load included backup: **N**

Base Tables and REDO Logs

RAID 1

Total Data Storage/Database Size = **154.23 GiB**

DBMS Temporary Space

No RAID (in-memory)

Memory/Database Size = **512%**

OS and DBMS Software

RAID 1

System Configuration:	KTNF KR580S1
Processors/Model	2 x Intel(R) Xeon(R) Gold 6140 @ 2.30GHz
Cores/Threads:	36/72
Memory:	512 GB
OS and DBMS Disk Drives:	2 x 600 GB SAS HDD 10,000RPM (RAID1)
Base Tables Disk Drives :	2 x 3,840 GB SATA 6Gbps SSD (RAID1)
REDO Logs Disk Drives	2 x 3,840 GB SATA 6Gbps SSD (RAID1)
Total Storage	15,422.70 GiB



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Description	Part Number	Key	Unit Price	Qty	Price	3-Yr. Maint. Price
<u>Hardware</u>						
Server - KTNF KR580S1		1	23,820,000 ₩	1	23,820,000 ₩	
DB Server-KR580S1 Barebone	HDD0043A	1	(included)			
Intel Xeon Scalable Gold 6140 Processor (18Core 2.3GHz/24.75MB)	HAK0116A	1	(included)	2		
64GB DDR4 2400 ECC RDIMM Memory	HCL0015A	1	(included)	8		
3.84TB 2.5" hot-swap SATA SSD	HCZ0045A	1	(included)	2		
3.84TB 2.5" hot-swap SATA SSD	HCZ0045A	1	(included)	2		
600GB 2.5" hot-swap SAS HDD 10Krpm	HBH0010A	1	(included)	2		
Broadcom MEGARAID SAS 9361-8i	HCH0037A	1	(included)	1		
RAID Card (1GB Cache)	HBV0080A	1	(included)	2		
Intel Dual Port 10G SFP+ Network Adapter	HBV0080A	1	(included)	2		
SFP+ Transceiver	HCW0009A	1	(included)	4		
Trackball Mini Keyboard	HDM0001A	1	(included)	1		
KTNF 27-inch Monitor	HDM0002A	1	(included)	1		
Hardware Sub Total					23,820,000₩	4,500,000₩
<u>Software</u>						
Red Hat Enterprise Linux Server Standard 3yrs	RH00004F3	2	4,089,000 ₩	1	4,089,000 ₩	
RHEL Server Standard Maintenance - 3yrs 24x7x4hrs	RP-CPS(OS)	2	6,000,000 ₩	1		6,000,000 ₩
Altibase v7.1		3	83,520,000 ₩	1	83,520,000 ₩	
Altibase v7.1 Technical Supports - 1yr 24x7x4hrs		3	24,220,800 ₩	3		72,662,400 ₩
Software Sub Total					87,609,000₩	78,662,400₩
<u>Discounts*</u>						
SW Discount - RHEL					-1,689,000 ₩	
SW Support Discount - RHEL						-3,000,000 ₩
SW Discount - Altibase					-59,299,200 ₩	
SW Support Discount - Altibase						-61,772,040 ₩

Discounts Sub Total		-60,988,200₩	-64,772,040₩
Total		50,440,800₩	18,390,360₩
<p>* All discounts are based on Korea list prices and for similar quantities and configurations. Discounts for similarly sized configurations will be similar to those quoted here, but may vary based on the components in the configuration.</p>			
Pricing Key		3 Yr. cost of ownership KRW(₩):	68,831,160
1) KTNF Co., Ltd.	2) Rockplace Inc.	QphH@100GB:	43,903.9
3) Altibase Corp.		W/kQphH@100GB:	1,567,768.69
All of the prices are based on South Korea's currency, KRW (₩, Korean Won) and excluded VAT.			
Benchmark implementation and results independantly audited by Doug Johnson of InfoSizing (www.sizing.com)			
<p>Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing sections of the TPC benchmark pricing specifications. If you find that the stated prices are not available according to these terms, please inform the TPC at pricing@tpc.org. Thank you.</p>			



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Numerical Quantities

Measurement Results:

Database Scale Factor = 100GB
 Total Data Storage / Database Size = 154.23
 Start of database load time = 2021-02-03 8:46:47 AM
 End of database load time = 2021-02-03 10:00:03 AM
 Database Load Time = 00d 01h 13m 16s
 Query Streams for Throughput Test = 36
 TPC-H Power = 15,733.9
 TPC-H Throughput = 122,509.5
 TPC-H Composite Query-per-Hour Rating (QphH@100GB) = 43,903.9
 Total System Price Over 3 Years (₩, KRW) = 68,831,160₩
 TPC-H Price/Performance Metric (₩/kQphH@100GB) = 1,567,768.69

Measurement Intervals:

Measurement Interval in Throughput Test (Ts) = 2,327.33 seconds

Duration of Stream Execution:

Power Run	Seed	Query Start Time	Total Time (hh:mm:ss)	RF1 Start Time	RF2 Start Time
		Query End Time		RF1 End Time	RF2 End Time
	203100003	2021-02-03 10:17:25	00:19:41	2021-02-03 10:16:59	2021-02-03 10:37:06
		2021-02-03 10:37:06		2021-02-03 10:17:25	2021-02-03 10:37:07

Throughput Stream	Seed	Query Start Time	Total Time (hh:mm:ss)	RF1 Start Time	RF2 Start Time
		Query End Time		RF1 End Time	RF2 End Time
1	203100004	2021-02-03 10:37:08	00:36:22	2021-02-03 10:37:08	2021-02-03 10:39:40
		2021-02-03 11:13:30		2021-02-03 10:39:40	2021-02-03 10:39:44
2	203100005	2021-02-03 10:37:08	00:37:59	2021-02-03 10:39:44	2021-02-03 10:40:25
		2021-02-03 11:15:07		2021-02-03 10:40:25	2021-02-03 10:40:28

Throughput Stream	Seed	Query Start Time	Total Time (hh:mm:ss)	RF1 Start Time	RF2 Start Time
		Query End Time		RF1 End Time	RF2 End Time
3	203100006	2021-02-03 10:37:08	00:37:35	2021-02-03 10:40:28	2021-02-03 10:41:02
		2021-02-03 11:14:43		2021-02-03 10:41:02	2021-02-03 10:41:05
4	203100007	2021-02-03 10:37:08	00:37:57	2021-02-03 10:41:05	2021-02-03 10:41:43
		2021-02-03 11:15:05		2021-02-03 10:41:43	2021-02-03 10:41:47
5	203100008	2021-02-03 10:37:08	00:37:18	2021-02-03 10:41:47	2021-02-03 10:42:53
		2021-02-03 11:14:26		2021-02-03 10:42:53	2021-02-03 10:42:57
6	203100009	2021-02-03 10:37:08	00:38:48	2021-02-03 10:42:57	2021-02-03 10:43:30
		2021-02-03 11:15:56		2021-02-03 10:43:30	2021-02-03 10:43:32
7	203100010	2021-02-03 10:37:08	00:36:47	2021-02-03 10:43:32	2021-02-03 10:44:05
		2021-02-03 11:13:55		2021-02-03 10:44:05	2021-02-03 10:44:08
8	203100011	2021-02-03 10:37:08	00:34:51	2021-02-03 10:44:08	2021-02-03 10:44:41
		2021-02-03 11:11:59		2021-02-03 10:44:41	2021-02-03 10:44:44
9	203100012	2021-02-03 10:37:08	00:37:38	2021-02-03 10:44:44	2021-02-03 10:45:15
		2021-02-03 11:14:46		2021-02-03 10:45:15	2021-02-03 10:45:18
10	203100013	2021-02-03 10:37:08	00:37:21	2021-02-03 10:45:18	2021-02-03 10:45:54
		2021-02-03 11:14:29		2021-02-03 10:45:54	2021-02-03 10:45:57
11	203100014	2021-02-03 10:37:08	00:36:48	2021-02-03 10:45:57	2021-02-03 10:46:41
		2021-02-03 11:13:56		2021-02-03 10:46:41	2021-02-03 10:46:44
12	203100015	2021-02-03 10:37:08	00:37:23	2021-02-03 10:46:44	2021-02-03 10:47:24
		2021-02-03 11:14:31		2021-02-03 10:47:24	2021-02-03 10:47:29
13	203100016	2021-02-03 10:37:08	00:36:16	2021-02-03 10:47:29	2021-02-03 10:48:04
		2021-02-03 11:13:24		2021-02-03 10:48:04	2021-02-03 10:48:08
14	203100017	2021-02-03 10:37:08	00:37:06	2021-02-03 10:48:08	2021-02-03 10:48:50
		2021-02-03 11:14:14		2021-02-03 10:48:50	2021-02-03 10:48:55
15	203100018	2021-02-03 10:37:08	00:38:19	2021-02-03 10:48:55	2021-02-03 10:50:19
		2021-02-03 11:15:27		2021-02-03 10:50:19	2021-02-03 10:50:22
16	203100019	2021-02-03 10:37:08	00:36:02	2021-02-03 10:50:22	2021-02-03 10:50:56
		2021-02-03 11:13:10		2021-02-03 10:50:56	2021-02-03 10:51:00
17	203100020	2021-02-03 10:37:08	00:37:30	2021-02-03 10:51:00	2021-02-03 10:51:36
		2021-02-03 11:14:38		2021-02-03 10:51:36	2021-02-03 10:51:40
18	203100021	2021-02-03 10:37:08	00:37:05	2021-02-03 10:51:40	2021-02-03 10:52:44
		2021-02-03 11:14:13		2021-02-03 10:52:44	2021-02-03 10:52:48
19	203100022	2021-02-03 10:37:08	00:35:50	2021-02-03 10:52:48	2021-02-03 10:53:39
		2021-02-03 11:12:58		2021-02-03 10:53:39	2021-02-03 10:53:43
20	203100023	2021-02-03 10:37:08	00:36:57	2021-02-03 10:53:43	2021-02-03 10:54:36
		2021-02-03 11:14:05		2021-02-03 10:54:36	2021-02-03 10:54:40
21	203100024	2021-02-03 10:37:08	00:37:23	2021-02-03 10:54:40	2021-02-03 10:55:14
		2021-02-03 11:14:31		2021-02-03 10:55:14	2021-02-03 10:55:18
22	203100025	2021-02-03 10:37:08	00:37:46	2021-02-03 10:55:18	2021-02-03 10:55:51
		2021-02-03 11:14:54		2021-02-03 10:55:51	2021-02-03 10:55:54

Throughput Stream	Seed	Query Start Time	Total Time (hh:mm:ss)	RF1 Start Time	RF2 Start Time
		Query End Time		RF1 End Time	RF2 End Time
23	203100026	2021-02-03 10:37:08	00:38:00	2021-02-03 10:55:54	2021-02-03 10:56:27
		2021-02-03 11:15:08		2021-02-03 10:56:27	2021-02-03 10:56:30
24	203100027	2021-02-03 10:37:08	00:37:31	2021-02-03 10:56:30	2021-02-03 10:57:25
		2021-02-03 11:14:39		2021-02-03 10:57:25	2021-02-03 10:57:29
25	203100028	2021-02-03 10:37:08	00:38:42	2021-02-03 10:57:29	2021-02-03 10:58:22
		2021-02-03 11:15:50		2021-02-03 10:58:22	2021-02-03 10:58:27
26	203100029	2021-02-03 10:37:08	00:37:52	2021-02-03 10:58:27	2021-02-03 10:59:05
		2021-02-03 11:15:00		2021-02-03 10:59:05	2021-02-03 10:59:08
27	203100030	2021-02-03 10:37:08	00:37:51	2021-02-03 10:59:08	2021-02-03 10:59:42
		2021-02-03 11:14:59		2021-02-03 10:59:42	2021-02-03 10:59:45
28	203100031	2021-02-03 10:37:08	00:37:56	2021-02-03 10:59:45	2021-02-03 11:00:21
		2021-02-03 11:15:04		2021-02-03 11:00:21	2021-02-03 11:00:23
29	203100032	2021-02-03 10:37:08	00:38:03	2021-02-03 11:00:23	2021-02-03 11:00:58
		2021-02-03 11:15:11		2021-02-03 11:00:58	2021-02-03 11:01:08
30	203100033	2021-02-03 10:37:08	00:35:04	2021-02-03 11:01:08	2021-02-03 11:02:09
		2021-02-03 11:12:12		2021-02-03 11:02:09	2021-02-03 11:02:13
31	203100034	2021-02-03 10:37:08	00:37:27	2021-02-03 11:02:13	2021-02-03 11:02:49
		2021-02-03 11:14:35		2021-02-03 11:02:49	2021-02-03 11:02:52
32	203100035	2021-02-03 10:37:08	00:37:18	2021-02-03 11:02:52	2021-02-03 11:03:39
		2021-02-03 11:14:26		2021-02-03 11:03:39	2021-02-03 11:03:42
33	203100036	2021-02-03 10:37:08	00:37:06	2021-02-03 11:03:42	2021-02-03 11:04:15
		2021-02-03 11:14:14		2021-02-03 11:04:15	2021-02-03 11:04:17
34	203100037	2021-02-03 10:37:08	00:37:56	2021-02-03 11:04:17	2021-02-03 11:05:18
		2021-02-03 11:15:04		2021-02-03 11:05:18	2021-02-03 11:05:21
35	203100038	2021-02-03 10:37:08	00:37:14	2021-02-03 11:05:21	2021-02-03 11:05:55
		2021-02-03 11:14:22		2021-02-03 11:05:55	2021-02-03 11:05:58
36	203100039	2021-02-03 10:37:08	00:38:10	2021-02-03 11:05:58	2021-02-03 11:06:32
		2021-02-03 11:15:18		2021-02-03 11:06:32	2021-02-03 11:06:35

Query Execution Times (Query1~Query12):

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
0	35.15	2.46	85.78	12.93	157.28	4.64	75.65	22.88	218.25	59.39	4.68	8.80
1	69.54	4.20	142.04	21.34	320.46	9.31	115.36	36.95	407.34	146.74	7.30	12.82
2	68.47	7.04	137.04	19.00	312.88	11.13	110.32	52.11	403.57	90.07	36.54	11.66
3	59.49	4.35	152.35	19.19	271.59	8.32	104.86	114.21	426.14	132.30	7.42	13.60
4	60.08	4.15	140.53	19.00	379.56	8.37	110.22	38.54	467.83	127.33	7.98	12.96
5	69.14	3.37	155.53	17.03	272.67	8.53	96.48	39.43	464.37	141.99	8.44	11.69
6	68.41	4.16	145.05	22.47	294.67	9.02	106.34	37.47	480.01	214.90	9.52	12.24
7	69.33	4.12	137.33	21.30	293.34	8.85	107.82	51.80	436.01	100.96	7.76	13.82
8	84.19	4.28	130.27	19.77	254.43	9.20	107.89	36.55	425.74	119.37	20.31	13.51
9	64.46	5.89	151.77	20.99	317.85	8.68	104.58	114.33	440.90	96.82	15.97	11.17
10	64.48	3.95	150.92	20.77	317.06	15.25	96.52	47.38	409.45	127.14	8.65	12.78
11	68.48	5.52	142.21	18.33	302.23	9.14	117.47	39.69	417.42	114.01	11.49	12.93
12	91.18	4.04	162.17	18.61	279.47	8.32	117.18	42.26	482.18	102.25	9.46	12.13
13	55.41	6.13	133.77	19.30	305.73	7.56	103.90	45.69	471.17	110.72	9.66	12.12
14	67.09	60.42	156.23	18.08	320.99	8.67	105.01	48.22	420.53	93.21	7.5	13.74
15	64.63	10.8	150.62	22.86	280.71	8.22	106.8	44.97	383.06	156.87	8.83	12.52
16	80.81	4.56	154.05	20.95	261.18	8.69	95.03	39.08	439.15	109.54	15.14	14
17	65.86	5.24	197.01	17.44	264.84	6.24	104.61	45.36	485.17	136.12	7.5	9.31
18	62.37	4.25	146.58	19.25	271.95	8.23	111.79	41.09	418.3	105.29	33.63	12.95
19	73.93	3.01	133.44	28.8	273.32	8.82	92.13	38.91	469.54	117.96	9.66	16.29
20	68.29	6.74	150.81	16.99	317.22	9.24	111.28	51.16	418.01	110.92	10.25	13.09
21	73.95	3.26	170.32	17.17	287.58	8.89	117.87	39.32	402.89	108.96	11.09	12.35
22	61.65	5.07	134.07	20.86	285.81	8.06	108.17	39.09	455.34	110.88	8.97	14.43
23	57.66	4.82	166.78	17.83	288.81	7.56	90.89	40.64	380.47	155.22	7.54	14.6
24	60.76	3.98	137.96	21.84	330.32	11.78	129.26	46.45	428.02	138.09	11.06	13.73
25	68.53	4.24	141.42	19.74	308.02	8.89	103.73	52.48	419.36	177.2	7.46	13.13
26	76.83	4.44	130.19	18.7	267.92	8.86	108	56.78	417.46	151.44	6.85	12.77
27	62.57	9.83	141.02	21.33	340.66	8.79	94.54	49.38	382.15	118.18	11.38	11.76
28	67.18	3.46	116.55	18.94	323.99	8.99	109.1	42.88	453.49	214.96	5.28	12.51
29	66.61	4.66	147.16	14.94	303.05	8.79	114.17	38.75	393.54	213.55	9.11	12.54
30	68.45	19.5	127.69	20.7	257.55	8.88	126.92	45.19	398.32	121.03	8.53	12.89
31	68.1	52.84	152.17	17.13	276.81	9.49	106.29	43.34	445.03	137.59	10.17	13.33
32	62.25	4.01	147.96	18.91	300.02	7.73	114.92	46.23	426.96	129.31	12.72	12.35
33	67.35	3.32	136.26	20.75	254.94	8.18	94.87	39.58	420.08	153.72	7.07	11.57

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
34	85	2.66	137.71	17.37	316.81	8.92	93.14	30.11	432.71	129.78	12.51	13.89
35	74.06	4.21	130.1	18.48	324.37	9.08	114.29	37.97	418.31	104.78	6.93	12.09
36	67.9	2.74	146.01	20.09	358.86	8.27	99.52	28.16	491.75	193.59	20.29	8.91
QI Min	35.15	2.46	85.78	12.93	157.28	4.64	75.65	22.88	218.25	59.39	4.68	8.8
QI Avg	67.56	7.88	143.75	19.44	294.46	8.8	106.13	46.07	425.68	131.68	11.21	12.62
QI Max	91.18	60.42	197.01	28.8	379.56	15.25	129.26	114.33	491.75	214.96	36.54	16.29

Query Execution Times (Query13~Query22, RF1, RF2):

Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
0	102.19	14.83	23.50	31.85	2.78	97.75	4.57	101.04	100.26	13.20	26.16	1.33
1	150.73	22.37	35.98	74.06	4.89	153.23	6.79	232.33	183.24	24.14	151.63	3.75
2	175.90	40.70	53.36	61.22	64.78	209.01	6.06	233.74	154.41	19.31	40.40	3.08
3	173.55	23.00	49.74	61.24	3.86	173.06	8.01	278.07	149.40	20.64	34.15	2.95
4	163.51	24.06	37.03	68.04	4.37	160.97	9.24	263.07	147.25	22.49	38.18	4.04
5	179.43	25.54	29.67	56.12	3.75	162.12	44.25	244.03	182.99	20.52	65.94	3.62
6	166.06	24.06	29.09	64.60	4.06	174.73	8.32	292.55	137.21	22.40	33.49	2.19
7	158.80	30.99	42.85	74.20	5.39	274.00	8.81	184.79	153.07	21.09	32.98	2.67
8	158.88	22.96	46.41	55.06	4.78	141.95	9.49	238.37	161.55	25.12	32.51	3.26
9	181.84	23.98	53.08	61.34	4.10	181.48	8.45	217.04	148.84	23.20	31.49	2.90
10	165.57	38.99	104.99	65.93	5.22	159.62	6.81	237.68	160.65	20.88	35.41	2.97
11	172.79	26.13	118.59	65.86	5.91	158.59	9.27	208.51	161.27	21.74	44.31	3.27
12	172.48	24.36	32.55	55.36	4.36	200.84	6.60	241.08	155.52	19.92	40.14	4.53
13	175.07	22.64	42.86	52.84	4.30	158.21	8.92	224.75	182.72	22.05	35.30	3.33
14	202.07	24.23	29.94	53.63	3.38	181.35	7.98	240.32	143.69	19.07	42.38	5.33
15	187.4	22.55	37.1	156.85	5.61	157.38	50.86	232.79	171.05	25.44	83.33	3.63
16	175.04	20.79	39.19	63.55	5.04	159.28	8.73	264.78	160.32	22.65	33.78	3.59
17	169.45	32.61	36	55.03	4.61	162.06	8.99	261.01	155.52	19.67	36.12	3.82
18	166.77	109.05	31.98	78.66	4.99	177.07	8.12	224.87	161.85	24.7	64.28	3.88
19	161.06	37.49	30.39	52.32	5.43	188.73	8.29	211.93	156.57	31.61	51.29	3.99
20	157.74	19.42	34.47	155.44	4.23	152.46	8.63	230.66	152.48	16.95	53	3.57
21	177.3	24.21	37.46	66.43	5.31	157.57	6.72	339.22	152.6	21.74	34.31	3.7
22	152.86	22.23	36.54	155.23	2.82	234.82	6.77	230.96	150.72	20.27	33.22	2.44
23	172.87	43.41	39.41	73.66	3.49	285.56	7.62	237.86	164.3	18.2	33.41	3.02
24	157.76	22.07	51.51	65.07	4.06	195.66	6.74	223.54	166.56	24.42	55.5	3.37

Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
25	155.08	21.2	50	64.74	4.03	268.96	7.58	255.7	152.97	16.68	53.13	4.78
26	277.15	26.11	35.61	39.82	3.23	170.74	7.47	260.63	164.24	26.1	37.84	2.88
27	170.25	109.38	50.72	66.12	5.04	192.17	3.86	256.74	143.33	21	34.07	3.74
28	167.48	21.66	34.5	52.74	6.34	158.8	6.46	262.93	165.37	21.92	35.23	2.74
29	161.71	56.31	36.77	60.21	4.66	185.08	9.43	261.1	157.38	22.57	34.58	9.55
30	175.86	23.48	32.99	59.77	4.56	189.52	7.89	215.5	157.08	20.66	61.8	3.21
31	174.29	22.42	38.05	68.94	4.54	183.6	8.38	230.6	167.24	15.44	36.08	3.21
32	156.95	19.99	117.03	54.94	3.91	159.17	4.35	260.62	156.86	20.39	46.94	3.34
33	186.05	24.44	116.31	61.29	3.68	161.78	8.22	263.94	158.59	23.65	32.78	2.19
34	200.56	21.84	33.63	67.58	3.22	221.26	4.97	270.23	147.76	23.34	60.47	3.14
35	170.05	109.6	37.64	56.61	5.79	178.62	7.17	225.2	166.45	21.63	34.19	3.1
36	176.17	19.56	29.47	59.69	4.11	149.38	4.74	231.21	150.1	18.42	33.71	3.32
QI Min	102.19	14.83	23.5	31.85	2.78	97.75	3.86	101.04	100.26	13.2	26.16	1.33
QI Avg	171.59	32.94	46.39	68.54	6.07	180.45	9.61	240.25	156.79	21.44	44.96	3.5
QI Max	277.15	109.6	118.59	156.85	64.78	285.56	50.86	339.22	183.24	31.61	151.63	9.55