



# Goldilocks v3.1 Standard Edition on KTNF KR580S1

TPC-H Rev. 2.17.3  
 TPC-Pricing Rev. 2.3.0

Report Date:  
 December 20, 2018

Total System Cost

Composite Query per Hour Metric

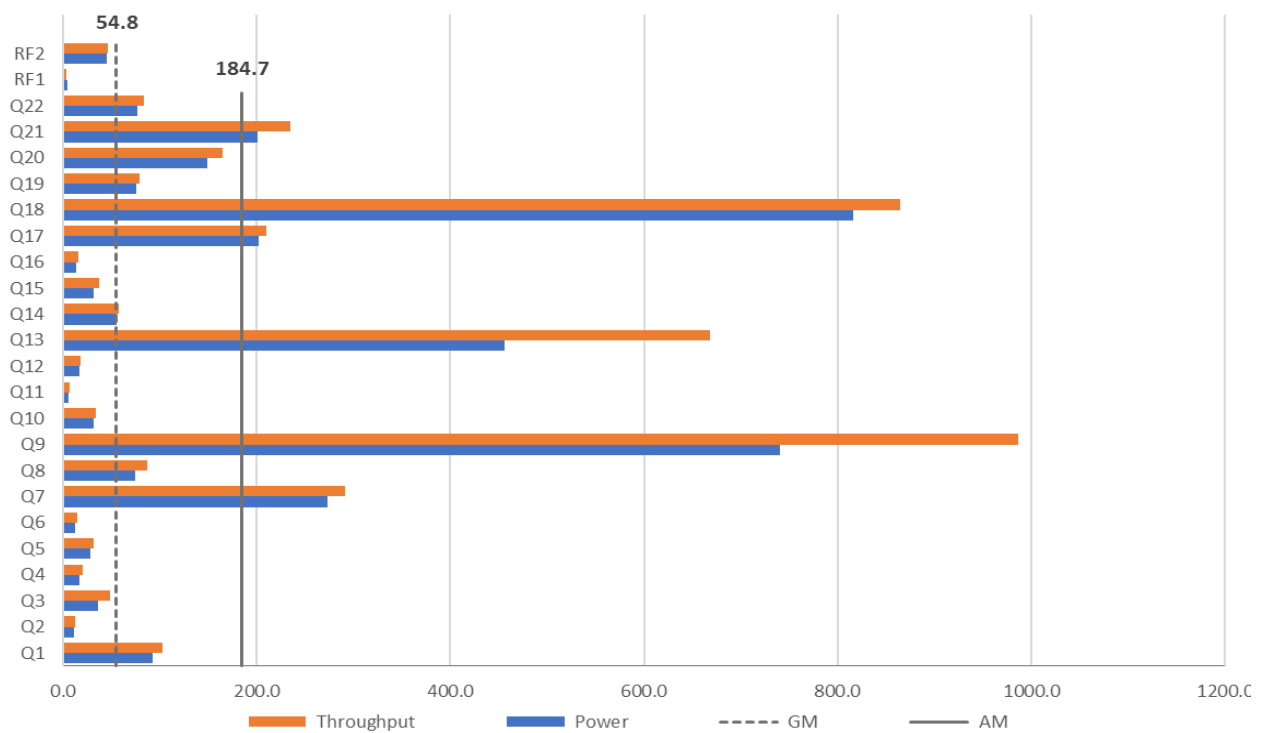
Price / Performance

**450,416,000W**

**24,037 QphH@100GB**

**18,739W/QphH@100GB**

Database Size	Database Manager	Operating System	Other Software	Availability Date
100GB	Goldilocks v3.1 Standard Edition	RHEL 7.6	None	Available Now



Database Load Time = <b>00d 00h 39m 37s</b>	Storage Redundancy Level	
Load included backup: <b>N</b>	Base Tables and REDO logs	<b>RAID 1</b>
Total Data Storage/Database Size = <b>196.29</b>	DBMS Temporary Space	<b>No RAID (in-memory)</b>
Memory/Database Size = <b>4,608%</b>	OS and DBMS Software	<b>No RAID</b>

System Components	System Total	Per Node
Nodes:	6	1
Intel(R) Xeon(R) Gold 6150 @ 2.70GHz	12	2
Cores/Threads:	216/216	36/36
Memory:	4,608GB	768GB
Internal Disk Drives (256GB SATA SSD):	12	2
(600GB SAS HDD 10Krpm):	30	5
<b>Total Storage</b>	<b>19,629GB</b>	<b>3,271.5GB</b>



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Description	Part Number	Key	Unit Price	Qty	Price	3-Yr. Maint. Price
<b><u>Hardware</u></b>						
Server - KTNF KR580S1		1	26,250,000 ₩	6	157,500,000 ₩	
DB Server-K580S1 Barebone	HDD0043A	1	(included)			
Intel Xeon Scalable Gold 6150 Processor (18Core 2.7GHz/24.75MB)	HAK0097A	1	(included)	2		
64GB DDR4 2400 ECC RDIMM Memory	HCL0015A	1	(included)	12		
256GB 2.5" SATA SSD	HCZ0032A	1	(included)	2		
600GB 2.5" hot-swap SAS HDD 10Krpm		1	(included)	5		
Broadcom MEGARAID SAS 9361-8i RAID Card (1GB Cache)	HCH0037A	1	(included)	1		
Intel 2port 10G LC Fiber Server Adapter	HBV0080A	1	(included)	1		
SFP+ Transceiver	HCW0009A	1	(included)	2		
Trackball Mini Keyboard	HDM0001A	1	(included)	1		
KTNF 27-inch Monitor	HDM0002A	1	(included)	1		
Maintenance - 7x24x4 Care Pack (3-yrs)		1	4,500,000 ₩	6		27,000,000 ₩
Server Rack(42U)	RAC0001A	1	1,150,000 ₩	1	1,150,000 ₩	
Dell EMC Switch S4128F-ON (7x24x4 Onsite Service, 3-yrs)	S4128F-ON-RA	2	6,400,000 ₩	1	6,400,000 ₩	
<b>Hardware Sub Total</b>					<b>165,050,000 ₩</b>	<b>27,000,000 ₩</b>
<b><u>Software</u></b>						
Red Hat Enterprise Linux Server Standard 3yrs	RH00004F3	3	3,978,000 ₩	6	23,868,000 ₩	
RHEL Server Standard Maintenance - 3yrs 24x7x4hrs	RH00003F3	3	6,468,000 ₩	6		38,808,000 ₩
Goldilocks v3.1 Standard Edition		4	96,000,000 ₩	6	576,000,000 ₩	
Goldilocks v3.1 Standard Edition Technical Supports – 1yr 24x7x4hrs		4	10,000,000 ₩	3		30,000,000 ₩
<b>Software Sub Total</b>					<b>599,868,000 ₩</b>	<b>68,808,000 ₩</b>

**Discounts\***

SW Discount - RHEL	- 10,008,000 ₩	- 16,302,000 ₩
SW Discount - Goldilocks	- 384,000,000 ₩	

**Discounts Sub Total** - 394,008,000 ₩ - 16,302,000 ₩

**Total** 370,910,000 ₩ 79,506,000 ₩

\* 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.

**Pricing Key**

- |                   |                        |
|-------------------|------------------------|
| 1) KTNF Co., Ltd  | 2) DAEWON CTS CO. LTD. |
| 3) Rockplace Inc. | 4) Sunjesoft Inc.      |

**3 Yr. cost of ownership KRW(₩): 450,416,000 ₩**

**QphH@100GB: 24,037**

**₩/QphH@100GB: 18,739 ₩**

All of the prices are based on South Korea's currency, KRW (₩, Korean Won) and excluded VAT.

**Benchmark implementation and results independantly audited by Francois Raab of InfoSizing ([www.sizing.com](http://www.sizing.com))**

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](mailto:pricing@tpc.org). Thank you.



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**Numerical Quantities**

**Measurement Results:**

Database Scale Factor = 100GB  
 Total Data Storage / Database Size = 196.29  
 Start of database load time = 12-10-2018 17:31:28  
 End of database load time = 12-10-2018 18:11:05  
 Database Load Time = 00d 00h 39m 37s  
 Query Streams for Throughput Test = 108  
 TPC-H Power = 6,569.7  
 TPC-H Throughput = 87,945.7  
 TPC-H Composite Query-per-Hour Rating (QphH@100GB) = 24,307.0  
 Total System Price Over 3 Years (₩, KRW) = 450,416,000₩  
 TPC-H Price/Performance Metric (₩/QphH@100GB) = 18,739

**Measurement Intervals:**

Measurement Interval in Throughput Test (Ts) = 9,726 seconds

**Duration of Stream Execution:**

Power Run	Seed	RF1 Start RF1 End	Query Start Query End	RF2 Start RF2 End	Duration (sec)
	1210181105	2018-12-10 18:11:06	2018-12-10 18:11:10	2018-12-10 19:08:05	00 00:56:55 3,415
		2018-12-10 18:11:10	2018-12-10 19:08:05	2018-12-10 19:08:50	

Throughput Stream	Seed	RF1 Start RF1 End	Query Start Query End	RF2 Start RF2 End	Duration
1	1210181106	2018-12-10 20:22:14	2018-12-10 19:08:49	2018-12-10 20:22:19	00 01:05:45 3,945
		2018-12-10 20:22:19	2018-12-10 20:14:34	2018-12-10 20:23:05	
2	1210181107	2018-12-10 20:23:05	2018-12-10 19:08:49	2018-12-10 20:23:09	00 01:08:00 4,080
		2018-12-10 20:23:09	2018-12-10 20:16:49	2018-12-10 20:23:56	
3	1210181108	2018-12-10 20:23:56	2018-12-10 19:08:49	2018-12-10 20:23:59	00 01:06:07 3,967
		2018-12-10 20:23:59	2018-12-10 20:14:56	2018-12-10 20:24:46	
4	1210181109	2018-12-10 20:24:46	2018-12-10 19:08:49	2018-12-10 20:24:49	00 01:06:57 4,017
		2018-12-10 20:24:49	2018-12-10 20:15:46	2018-12-10 20:25:36	
5	1210181110	2018-12-10 20:25:36	2018-12-10 19:08:49	2018-12-10 20:25:40	00 01:09:36 4,176
		2018-12-10 20:25:40	2018-12-10 20:18:25	2018-12-10 20:26:24	
6	1210181111	2018-12-10 20:26:24	2018-12-10 19:08:49	2018-12-10 20:26:27	00 01:02:07 3,727
		2018-12-10 20:26:27	2018-12-10 20:10:56	2018-12-10 20:27:12	
7	1210181112	2018-12-10 20:27:12	2018-12-10 19:08:49	2018-12-10 20:27:15	00 01:08:23 4,103
		2018-12-10 20:27:15	2018-12-10 20:17:12	2018-12-10 20:28:03	
8	1210181113	2018-12-10 20:28:03	2018-12-10 19:08:49	2018-12-10 20:28:05	00 01:09:48 4,188
		2018-12-10 20:28:05	2018-12-10 20:18:37	2018-12-10 20:28:53	
9	1210181114	2018-12-10 20:28:53	2018-12-10 19:08:49	2018-12-10 20:28:55	00 01:09:53 4,193
		2018-12-10 20:28:55	2018-12-10 20:18:42	2018-12-10 20:29:40	
10	1210181115	2018-12-10 20:29:40	2018-12-10 19:08:49	2018-12-10 20:29:43	00 01:08:38 4,118
		2018-12-10 20:29:43	2018-12-10 20:17:27	2018-12-10 20:30:28	
11	1210181116	2018-12-10 20:30:28	2018-12-10 19:08:49	2018-12-10 20:30:31	00 01:13:26 4,406
		2018-12-10 20:30:31	2018-12-10 20:22:15	2018-12-10 20:31:18	
12	1210181117	2018-12-10 20:31:18	2018-12-10 19:08:49	2018-12-10 20:31:21	00 01:11:03 4,263
		2018-12-10 20:31:21	2018-12-10 20:19:52	2018-12-10 20:32:09	
13	1210181118	2018-12-10 20:32:09	2018-12-10 19:08:49	2018-12-10 20:32:12	00 01:03:56 3,836
		2018-12-10 20:32:12	2018-12-10 20:12:45	2018-12-10 20:33:01	
14	1210181119	2018-12-10 20:33:01	2018-12-10 19:08:49	2018-12-10 20:33:04	00 01:09:39 4,179
		2018-12-10 20:33:04	2018-12-10 20:18:28	2018-12-10 20:33:52	
15	1210181120	2018-12-10 20:33:52	2018-12-10 19:08:49	2018-12-10 20:33:55	00 01:07:16 4,036
		2018-12-10 20:33:55	2018-12-10 20:16:05	2018-12-10 20:34:41	
16	1210181121	2018-12-10 20:34:41	2018-12-10 19:08:49	2018-12-10 20:34:44	00 01:05:59 3,959
		2018-12-10 20:34:44	2018-12-10 20:14:48	2018-12-10 20:35:30	
17	1210181122	2018-12-10 20:35:30	2018-12-10 19:08:49	2018-12-10 20:35:33	00 01:04:40 3,880
		2018-12-10 20:35:33	2018-12-10 20:13:29	2018-12-10 20:36:19	

Throughput Stream	Seed	RF1 Start RF1 End	Query Start Query End	RF2 Start RF2 End	Duration
18	1210181123	2018-12-10 20:36:19	2018-12-10 19:08:49	2018-12-10 20:36:21	00 01:02:35 3,755
		2018-12-10 20:36:21	2018-12-10 20:11:24	2018-12-10 20:37:09	
19	1210181124	2018-12-10 20:37:09	2018-12-10 19:08:49	2018-12-10 20:37:12	00 01:07:29 4,049
		2018-12-10 20:37:12	2018-12-10 20:16:18	2018-12-10 20:37:58	
20	1210181125	2018-12-10 20:37:58	2018-12-10 19:08:49	2018-12-10 20:38:01	00 01:07:07 4,027
		2018-12-10 20:38:01	2018-12-10 20:15:56	2018-12-10 20:38:47	
21	1210181126	2018-12-10 20:38:47	2018-12-10 19:08:49	2018-12-10 20:38:49	00 01:08:06 4,086
		2018-12-10 20:38:49	2018-12-10 20:16:55	2018-12-10 20:39:36	
22	1210181127	2018-12-10 20:39:36	2018-12-10 19:08:49	2018-12-10 20:39:38	00 01:06:51 4,011
		2018-12-10 20:39:38	2018-12-10 20:15:40	2018-12-10 20:40:24	
23	1210181128	2018-12-10 20:40:24	2018-12-10 19:08:49	2018-12-10 20:40:26	00 01:09:09 4,149
		2018-12-10 20:40:26	2018-12-10 20:17:58	2018-12-10 20:41:14	
24	1210181129	2018-12-10 20:41:14	2018-12-10 19:08:49	2018-12-10 20:41:17	00 01:06:07 3,967
		2018-12-10 20:41:17	2018-12-10 20:14:56	2018-12-10 20:42:02	
25	1210181130	2018-12-10 20:42:02	2018-12-10 19:08:49	2018-12-10 20:42:05	00 01:04:07 3,847
		2018-12-10 20:42:05	2018-12-10 20:12:56	2018-12-10 20:42:51	
26	1210181131	2018-12-10 20:42:51	2018-12-10 19:08:49	2018-12-10 20:42:54	00 01:07:54 4,074
		2018-12-10 20:42:54	2018-12-10 20:16:43	2018-12-10 20:43:41	
27	1210181132	2018-12-10 20:43:41	2018-12-10 19:08:49	2018-12-10 20:43:44	00 01:09:22 4,162
		2018-12-10 20:43:44	2018-12-10 20:18:11	2018-12-10 20:44:31	
28	1210181133	2018-12-10 20:44:31	2018-12-10 19:08:49	2018-12-10 20:44:34	00 01:09:40 4,180
		2018-12-10 20:44:34	2018-12-10 20:18:29	2018-12-10 20:45:22	
29	1210181134	2018-12-10 20:45:22	2018-12-10 19:08:49	2018-12-10 20:45:25	00 01:08:28 4,108
		2018-12-10 20:45:25	2018-12-10 20:17:17	2018-12-10 20:46:13	
30	1210181135	2018-12-10 20:46:13	2018-12-10 19:08:49	2018-12-10 20:46:16	00 01:09:25 4,165
		2018-12-10 20:46:16	2018-12-10 20:18:14	2018-12-10 20:47:04	
31	1210181136	2018-12-10 20:47:04	2018-12-10 19:08:49	2018-12-10 20:47:07	00 01:08:53 4,133
		2018-12-10 20:47:07	2018-12-10 20:17:42	2018-12-10 20:47:53	
32	1210181137	2018-12-10 20:47:53	2018-12-10 19:08:49	2018-12-10 20:47:56	00 01:04:19 3,859
		2018-12-10 20:47:56	2018-12-10 20:13:08	2018-12-10 20:48:43	
33	1210181138	2018-12-10 20:48:43	2018-12-10 19:08:49	2018-12-10 20:48:46	00 01:07:13 4,033
		2018-12-10 20:48:46	2018-12-10 20:16:02	2018-12-10 20:49:32	
34	1210181139	2018-12-10 20:49:32	2018-12-10 19:08:49	2018-12-10 20:49:35	00 01:08:32 4,112
		2018-12-10 20:49:35	2018-12-10 20:17:21	2018-12-10 20:50:23	

Throughput Stream	Seed	RF1 Start RF1 End	Query Start Query End	RF2 Start RF2 End	Duration
35	1210181140	2018-12-10 20:50:23	2018-12-10 19:08:49	2018-12-10 20:50:26	00 01:11:04 4,264
		2018-12-10 20:50:26	2018-12-10 20:19:53	2018-12-10 20:51:16	
36	1210181141	2018-12-10 20:51:16	2018-12-10 19:08:49	2018-12-10 20:51:19	00 01:06:17 3,977
		2018-12-10 20:51:19	2018-12-10 20:15:06	2018-12-10 20:52:07	
37	1210181142	2018-12-10 20:52:07	2018-12-10 19:08:49	2018-12-10 20:52:10	00 01:03:55 3,835
		2018-12-10 20:52:10	2018-12-10 20:12:44	2018-12-10 20:52:58	
38	1210181143	2018-12-10 20:52:58	2018-12-10 19:08:49	2018-12-10 20:53:01	00 01:08:40 4,120
		2018-12-10 20:53:01	2018-12-10 20:17:29	2018-12-10 20:53:50	
39	1210181144	2018-12-10 20:53:50	2018-12-10 19:08:49	2018-12-10 20:53:53	00 01:09:34 4,174
		2018-12-10 20:53:53	2018-12-10 20:18:23	2018-12-10 20:54:42	
40	1210181145	2018-12-10 20:54:42	2018-12-10 19:08:49	2018-12-10 20:54:44	00 01:06:56 4,016
		2018-12-10 20:54:44	2018-12-10 20:15:45	2018-12-10 20:55:32	
41	1210181146	2018-12-10 20:55:32	2018-12-10 19:08:49	2018-12-10 20:55:35	00 01:12:58 4,378
		2018-12-10 20:55:35	2018-12-10 20:21:47	2018-12-10 20:56:23	
42	1210181147	2018-12-10 20:56:23	2018-12-10 19:08:49	2018-12-10 20:56:26	00 01:09:37 4,177
		2018-12-10 20:56:26	2018-12-10 20:18:26	2018-12-10 20:57:13	
43	1210181148	2018-12-10 20:57:13	2018-12-10 19:08:49	2018-12-10 20:57:16	00 01:05:04 3,904
		2018-12-10 20:57:16	2018-12-10 20:13:53	2018-12-10 20:58:03	
44	1210181149	2018-12-10 20:58:03	2018-12-10 19:08:49	2018-12-10 20:58:06	00 01:10:01 4,201
		2018-12-10 20:58:06	2018-12-10 20:18:50	2018-12-10 20:58:53	
45	1210181150	2018-12-10 20:58:53	2018-12-10 19:08:49	2018-12-10 20:58:56	00 01:06:34 3,994
		2018-12-10 20:58:56	2018-12-10 20:15:23	2018-12-10 20:59:42	
46	1210181151	2018-12-10 20:59:42	2018-12-10 19:08:49	2018-12-10 20:59:44	00 01:08:25 4,105
		2018-12-10 20:59:44	2018-12-10 20:17:14	2018-12-10 21:00:32	
47	1210181152	2018-12-10 21:00:32	2018-12-10 19:08:49	2018-12-10 21:00:35	00 01:06:03 3,963
		2018-12-10 21:00:35	2018-12-10 20:14:52	2018-12-10 21:01:21	
48	1210181153	2018-12-10 21:01:21	2018-12-10 19:08:49	2018-12-10 21:01:24	00 01:06:43 4,003
		2018-12-10 21:01:24	2018-12-10 20:15:32	2018-12-10 21:02:12	
49	1210181154	2018-12-10 21:02:12	2018-12-10 19:08:49	2018-12-10 21:02:14	00 01:08:27 4,107
		2018-12-10 21:02:14	2018-12-10 20:17:16	2018-12-10 21:03:00	
50	1210181155	2018-12-10 21:03:00	2018-12-10 19:08:49	2018-12-10 21:03:03	00 01:08:15 4,095
		2018-12-10 21:03:03	2018-12-10 20:17:04	2018-12-10 21:03:48	
51	1210181156	2018-12-10 21:03:48	2018-12-10 19:08:49	2018-12-10 21:03:51	00 01:08:31 4,111
		2018-12-10 21:03:51	2018-12-10 20:17:20	2018-12-10 21:04:37	

Throughput Stream	Seed	RF1 Start RF1 End	Query Start Query End	RF2 Start RF2 End	Duration
52	1210181157	2018-12-10 21:04:37	2018-12-10 19:08:49	2018-12-10 21:04:40	00 01:07:37 4,057
		2018-12-10 21:04:40	2018-12-10 20:16:26	2018-12-10 21:05:26	
53	1210181158	2018-12-10 21:05:26	2018-12-10 19:08:49	2018-12-10 21:05:29	00 01:13:12 4,392
		2018-12-10 21:05:29	2018-12-10 20:22:01	2018-12-10 21:06:14	
54	1210181159	2018-12-10 21:06:14	2018-12-10 19:08:49	2018-12-10 21:06:17	00 01:05:56 3,956
		2018-12-10 21:06:17	2018-12-10 20:14:45	2018-12-10 21:07:03	
55	1210181160	2018-12-10 21:07:03	2018-12-10 19:08:49	2018-12-10 21:07:05	00 01:09:33 4,173
		2018-12-10 21:07:05	2018-12-10 20:18:22	2018-12-10 21:07:51	
56	1210181161	2018-12-10 21:07:51	2018-12-10 19:08:49	2018-12-10 21:07:54	00 01:07:55 4,075
		2018-12-10 21:07:54	2018-12-10 20:16:44	2018-12-10 21:08:39	
57	1210181162	2018-12-10 21:08:39	2018-12-10 19:08:49	2018-12-10 21:08:41	00 01:06:07 3,967
		2018-12-10 21:08:41	2018-12-10 20:14:56	2018-12-10 21:09:28	
58	1210181163	2018-12-10 21:09:28	2018-12-10 19:08:49	2018-12-10 21:09:31	00 01:07:46 4,066
		2018-12-10 21:09:31	2018-12-10 20:16:35	2018-12-10 21:10:16	
59	1210181164	2018-12-10 21:10:16	2018-12-10 19:08:49	2018-12-10 21:10:18	00 01:12:41 4,361
		2018-12-10 21:10:18	2018-12-10 20:21:30	2018-12-10 21:11:04	
60	1210181165	2018-12-10 21:11:04	2018-12-10 19:08:49	2018-12-10 21:11:07	00 01:09:44 4,184
		2018-12-10 21:11:07	2018-12-10 20:18:33	2018-12-10 21:11:53	
61	1210181166	2018-12-10 21:11:53	2018-12-10 19:08:49	2018-12-10 21:11:56	00 01:05:48 3,948
		2018-12-10 21:11:56	2018-12-10 20:14:37	2018-12-10 21:12:41	
62	1210181167	2018-12-10 21:12:41	2018-12-10 19:08:49	2018-12-10 21:12:43	00 01:08:20 4,100
		2018-12-10 21:12:43	2018-12-10 20:17:09	2018-12-10 21:13:29	
63	1210181168	2018-12-10 21:13:29	2018-12-10 19:08:49	2018-12-10 21:13:32	00 01:10:13 4,213
		2018-12-10 21:13:32	2018-12-10 20:19:02	2018-12-10 21:14:17	
64	1210181169	2018-12-10 21:14:17	2018-12-10 19:08:49	2018-12-10 21:14:20	00 01:03:43 3,823
		2018-12-10 21:14:20	2018-12-10 20:12:32	2018-12-10 21:15:06	
65	1210181170	2018-12-10 21:15:06	2018-12-10 19:08:49	2018-12-10 21:15:09	00 01:08:17 4,097
		2018-12-10 21:15:09	2018-12-10 20:17:06	2018-12-10 21:15:54	
66	1210181171	2018-12-10 21:15:54	2018-12-10 19:08:49	2018-12-10 21:15:57	00 01:07:41 4,061
		2018-12-10 21:15:57	2018-12-10 20:16:30	2018-12-10 21:16:42	
67	1210181172	2018-12-10 21:16:42	2018-12-10 19:08:49	2018-12-10 21:16:45	00 01:04:37 3,877
		2018-12-10 21:16:45	2018-12-10 20:13:26	2018-12-10 21:17:31	
68	1210181173	2018-12-10 21:17:31	2018-12-10 19:08:49	2018-12-10 21:17:33	00 01:06:30 3,990
		2018-12-10 21:17:33	2018-12-10 20:15:19	2018-12-10 21:18:19	



Throughput Stream	Seed	RF1 Start RF1 End	Query Start Query End	RF2 Start RF2 End	Duration
69	1210181174	2018-12-10 21:18:19	2018-12-10 19:08:49	2018-12-10 21:18:22	00 01:07:53 4,073
		2018-12-10 21:18:22	2018-12-10 20:16:42	2018-12-10 21:19:08	
70	1210181175	2018-12-10 21:19:08	2018-12-10 19:08:49	2018-12-10 21:19:11	00 01:09:39 4,179
		2018-12-10 21:19:11	2018-12-10 20:18:28	2018-12-10 21:19:57	
71	1210181176	2018-12-10 21:19:57	2018-12-10 19:08:49	2018-12-10 21:19:59	00 01:05:32 3,932
		2018-12-10 21:19:59	2018-12-10 20:14:21	2018-12-10 21:20:45	
72	1210181177	2018-12-10 21:20:45	2018-12-10 19:08:49	2018-12-10 21:20:48	00 01:05:00 3,900
		2018-12-10 21:20:48	2018-12-10 20:13:49	2018-12-10 21:21:33	
73	1210181178	2018-12-10 21:21:33	2018-12-10 19:08:49	2018-12-10 21:21:35	00 01:05:09 3,909
		2018-12-10 21:21:35	2018-12-10 20:13:58	2018-12-10 21:22:22	
74	1210181179	2018-12-10 21:22:22	2018-12-10 19:08:49	2018-12-10 21:22:25	00 01:07:36 4,056
		2018-12-10 21:22:25	2018-12-10 20:16:25	2018-12-10 21:23:11	
75	1210181180	2018-12-10 21:23:11	2018-12-10 19:08:49	2018-12-10 21:23:13	00 01:08:07 4,087
		2018-12-10 21:23:13	2018-12-10 20:16:56	2018-12-10 21:24:01	
76	1210181181	2018-12-10 21:24:01	2018-12-10 19:08:49	2018-12-10 21:24:04	00 01:09:58 4,198
		2018-12-10 21:24:04	2018-12-10 20:18:47	2018-12-10 21:24:51	
77	1210181182	2018-12-10 21:24:51	2018-12-10 19:08:49	2018-12-10 21:24:54	00 01:07:31 4,051
		2018-12-10 21:24:54	2018-12-10 20:16:20	2018-12-10 21:25:42	
78	1210181183	2018-12-10 21:25:42	2018-12-10 19:08:49	2018-12-10 21:25:45	00 01:05:26 3,926
		2018-12-10 21:25:45	2018-12-10 20:14:15	2018-12-10 21:26:31	
79	1210181184	2018-12-10 21:26:31	2018-12-10 19:08:49	2018-12-10 21:26:33	00 01:09:12 4,152
		2018-12-10 21:26:33	2018-12-10 20:18:01	2018-12-10 21:27:19	
80	1210181185	2018-12-10 21:27:19	2018-12-10 19:08:49	2018-12-10 21:27:22	00 01:04:10 3,850
		2018-12-10 21:27:22	2018-12-10 20:12:59	2018-12-10 21:28:07	
81	1210181186	2018-12-10 21:28:07	2018-12-10 19:08:49	2018-12-10 21:28:10	00 01:08:28 4,108
		2018-12-10 21:28:10	2018-12-10 20:17:17	2018-12-10 21:28:56	
82	1210181187	2018-12-10 21:28:56	2018-12-10 19:08:49	2018-12-10 21:28:58	00 01:09:21 4,161
		2018-12-10 21:28:58	2018-12-10 20:18:10	2018-12-10 21:29:44	
83	1210181188	2018-12-10 21:29:44	2018-12-10 19:08:49	2018-12-10 21:29:46	00 01:07:38 4,058
		2018-12-10 21:29:46	2018-12-10 20:16:27	2018-12-10 21:30:34	
84	1210181189	2018-12-10 21:30:34	2018-12-10 19:08:49	2018-12-10 21:30:36	00 01:05:06 3,906
		2018-12-10 21:30:36	2018-12-10 20:13:55	2018-12-10 21:31:23	
85	1210181190	2018-12-10 21:31:23	2018-12-10 19:08:49	2018-12-10 21:31:25	00 01:08:07 4,087
		2018-12-10 21:31:25	2018-12-10 20:16:56	2018-12-10 21:32:13	

Throughput Stream	Seed	RF1 Start RF1 End	Query Start Query End	RF2 Start RF2 End	Duration
86	1210181191	2018-12-10 21:32:13	2018-12-10 19:08:49	2018-12-10 21:32:15	00 01:07:44 4,064
		2018-12-10 21:32:15	2018-12-10 20:16:33	2018-12-10 21:33:00	
87	1210181192	2018-12-10 21:33:00	2018-12-10 19:08:49	2018-12-10 21:33:03	00 01:07:38 4,058
		2018-12-10 21:33:03	2018-12-10 20:16:27	2018-12-10 21:33:50	
88	1210181193	2018-12-10 21:33:50	2018-12-10 19:08:49	2018-12-10 21:33:52	00 01:07:49 4,069
		2018-12-10 21:33:52	2018-12-10 20:16:38	2018-12-10 21:34:38	
89	1210181194	2018-12-10 21:34:38	2018-12-10 19:08:49	2018-12-10 21:34:41	00 01:04:47 3,887
		2018-12-10 21:34:41	2018-12-10 20:13:36	2018-12-10 21:35:26	
90	1210181195	2018-12-10 21:35:26	2018-12-10 19:08:49	2018-12-10 21:35:29	00 01:07:57 4,077
		2018-12-10 21:35:29	2018-12-10 20:16:46	2018-12-10 21:36:15	
91	1210181196	2018-12-10 21:36:15	2018-12-10 19:08:49	2018-12-10 21:36:18	00 01:07:27 4,047
		2018-12-10 21:36:18	2018-12-10 20:16:16	2018-12-10 21:37:04	
92	1210181197	2018-12-10 21:37:04	2018-12-10 19:08:49	2018-12-10 21:37:07	00 01:08:32 4,112
		2018-12-10 21:37:07	2018-12-10 20:17:21	2018-12-10 21:37:52	
93	1210181198	2018-12-10 21:37:52	2018-12-10 19:08:49	2018-12-10 21:37:55	00 01:07:58 4,078
		2018-12-10 21:37:55	2018-12-10 20:16:47	2018-12-10 21:38:41	
94	1210181199	2018-12-10 21:38:41	2018-12-10 19:08:49	2018-12-10 21:38:44	00 01:09:53 4,193
		2018-12-10 21:38:44	2018-12-10 20:18:42	2018-12-10 21:39:31	
95	1210181200	2018-12-10 21:39:31	2018-12-10 19:08:49	2018-12-10 21:39:33	00 01:08:24 4,104
		2018-12-10 21:39:33	2018-12-10 20:17:13	2018-12-10 21:40:20	
96	1210181201	2018-12-10 21:40:20	2018-12-10 19:08:49	2018-12-10 21:40:22	00 01:09:17 4,157
		2018-12-10 21:40:22	2018-12-10 20:18:06	2018-12-10 21:41:09	
97	1210181202	2018-12-10 21:41:09	2018-12-10 19:08:49	2018-12-10 21:41:12	00 01:07:33 4,053
		2018-12-10 21:41:12	2018-12-10 20:16:22	2018-12-10 21:41:59	
98	1210181203	2018-12-10 21:41:59	2018-12-10 19:08:49	2018-12-10 21:42:02	00 01:08:21 4,101
		2018-12-10 21:42:02	2018-12-10 20:17:10	2018-12-10 21:42:48	
99	1210181204	2018-12-10 21:42:48	2018-12-10 19:08:49	2018-12-10 21:42:50	00 01:08:35 4,115
		2018-12-10 21:42:50	2018-12-10 20:17:24	2018-12-10 21:43:35	
100	1210181205	2018-12-10 21:43:35	2018-12-10 19:08:49	2018-12-10 21:43:38	00 01:08:33 4,113
		2018-12-10 21:43:38	2018-12-10 20:17:22	2018-12-10 21:44:22	
101	1210181206	2018-12-10 21:44:22	2018-12-10 19:08:49	2018-12-10 21:44:25	00 01:09:22 4,162
		2018-12-10 21:44:25	2018-12-10 20:18:11	2018-12-10 21:45:11	
102	1210181207	2018-12-10 21:45:11	2018-12-10 19:08:49	2018-12-10 21:45:14	00 01:05:24 3,924
		2018-12-10 21:45:14	2018-12-10 20:14:13	2018-12-10 21:46:00	

Throughput Stream	Seed	RF1 Start RF1 End	Query Start Query End	RF2 Start RF2 End	Duration
103	1210181208	2018-12-10 21:46:00	2018-12-10 19:08:49	2018-12-10 21:46:03	00 01:08:28 4,108
		2018-12-10 21:46:03	2018-12-10 20:17:17	2018-12-10 21:46:50	
104	1210181209	2018-12-10 21:46:50	2018-12-10 19:08:49	2018-12-10 21:46:52	00 01:07:28 4,048
		2018-12-10 21:46:52	2018-12-10 20:16:17	2018-12-10 21:47:38	
105	1210181210	2018-12-10 21:47:38	2018-12-10 19:08:49	2018-12-10 21:47:41	00 01:08:08 4,088
		2018-12-10 21:47:41	2018-12-10 20:16:57	2018-12-10 21:48:27	
106	1210181211	2018-12-10 21:48:27	2018-12-10 19:08:49	2018-12-10 21:48:30	00 01:07:33 4,053
		2018-12-10 21:48:30	2018-12-10 20:16:22	2018-12-10 21:49:16	
107	1210181212	2018-12-10 21:49:16	2018-12-10 19:08:49	2018-12-10 21:49:19	00 01:08:58 4,138
		2018-12-10 21:49:19	2018-12-10 20:17:47	2018-12-10 21:50:07	
108	1210181213	2018-12-10 21:50:07	2018-12-10 19:08:49	2018-12-10 21:50:09	00 01:07:48 4,068
		2018-12-10 21:50:09	2018-12-10 20:16:37	2018-12-10 21:50:55	

#### Query Execution Times (Query1~Query12):

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
0	92.2	11.4	36.4	17.1	27.6	12.1	273.3	73.7	740.0	31.6	5.3	17.0
1	99.5	10.3	50.9	18.2	29.0	12.3	317.2	80.5	978.5	30.9	6.5	17.3
2	102.6	10.9	50.5	19.2	32.3	27.4	290.0	84.8	1,028.3	38.4	6.2	17.9
3	102.8	9.7	47.3	21.6	32.7	18.0	261.5	103.8	971.5	32.1	6.2	18.2
4	103.0	11.4	47.9	19.8	39.6	15.3	291.9	84.7	914.5	32.1	6.7	19.0
5	102.9	10.4	47.6	18.9	31.1	13.7	327.5	83.1	1,029.1	31.9	7.0	18.0
6	102.2	9.9	55.8	18.4	30.2	14.7	256.7	85.9	871.5	42.2	6.2	18.0
7	101.4	12.1	46.2	18.3	28.5	13.1	271.2	82.4	1,054.3	33.6	6.4	17.7
8	100.6	11.8	45.3	19.8	36.2	13.0	335.3	83.4	1,023.9	32.0	6.1	18.8
9	102.2	10.4	46.6	19.3	27.4	14.5	311.2	103.7	1,097.2	33.0	6.5	18.2
10	103.1	12.8	46.4	19.0	29.8	23.2	256.2	83.0	1,081.2	31.3	6.5	18.2
11	104.7	11.5	44.9	18.7	30.5	13.7	261.3	85.0	1,160.6	33.9	6.7	17.9
12	112.0	11.7	44.5	20.0	31.0	14.0	330.5	87.7	1,127.2	30.9	6.7	18.0
13	100.2	10.6	49.1	18.3	27.7	13.2	278.5	79.7	849.5	34.9	6.5	17.8
14	100.4	24.1	40.1	20.0	33.5	12.8	284.6	88.4	1,039.9	30.9	6.0	17.7
15	103.9	9.8	47.1	19.4	31.3	13.9	326.7	89.6	1,003.3	32.4	6.1	17.9
16	114.6	9.9	52.4	19.2	30.6	14.9	268.8	82.7	883.2	33.4	6.6	17.8

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
17	99.4	10.5	64.9	18.7	33.2	13.4	301.7	83.7	854.8	32.0	7.1	16.5
18	103.2	10.1	46.0	25.2	31.4	13.1	253.2	84.5	817.4	32.3	6.6	17.7
19	100.3	11.4	44.3	27.7	29.9	13.5	314.7	83.4	1,011.9	31.5	5.9	24.5
20	102.0	9.5	46.6	21.8	31.1	13.3	261.1	84.3	1,062.0	33.4	6.4	17.4
21	100.0	9.2	46.5	19.5	31.5	13.0	300.0	84.8	980.7	31.1	7.1	18.0
22	103.0	17.3	44.6	18.8	31.6	13.1	295.6	83.1	858.6	33.0	6.9	18.2
23	101.7	13.5	44.9	20.0	29.8	13.6	273.1	88.4	1,013.0	32.9	6.4	17.8
24	102.2	11.8	50.9	18.7	32.1	12.7	297.8	80.4	823.1	32.4	6.3	18.0
25	101.4	11.5	45.8	19.7	33.6	12.8	269.9	87.9	823.7	35.4	7.0	17.0
26	101.1	10.8	44.9	19.1	38.0	12.4	327.7	87.0	1,004.8	32.7	6.7	17.7
27	102.8	11.4	46.3	20.1	29.8	14.4	263.5	86.8	1,017.8	31.6	6.2	18.2
28	108.6	10.3	48.3	20.0	31.2	13.8	308.0	88.1	1,047.1	47.4	5.8	18.6
29	99.9	10.5	45.6	18.9	30.4	13.1	307.4	93.3	930.4	45.9	6.5	17.4
30	102.7	10.3	46.9	18.7	32.6	13.5	345.6	85.4	1,033.0	32.5	6.6	18.3
31	99.8	25.6	51.9	19.4	32.7	13.0	327.0	79.5	1,043.9	30.7	6.5	17.9
32	103.4	10.6	47.9	19.9	30.4	13.7	267.8	88.7	830.7	32.2	6.2	21.5
33	101.0	10.8	48.1	19.6	31.7	13.9	288.5	84.3	972.8	32.2	6.8	17.4
34	113.0	9.5	49.8	19.1	29.9	13.7	271.1	85.7	919.2	30.6	7.4	17.6
35	103.4	10.9	45.8	19.2	30.3	12.9	301.7	87.9	1,067.1	32.6	6.1	17.7
36	99.4	11.0	46.9	21.2	31.0	13.5	261.7	88.4	928.9	32.0	6.7	18.2
37	100.4	11.6	44.3	18.0	30.4	12.9	262.7	82.6	966.5	30.8	6.5	17.2
38	101.1	11.5	45.2	21.8	38.3	14.9	270.6	86.2	957.6	32.3	7.0	17.5
39	102.4	9.8	67.8	19.0	30.1	13.0	318.1	89.4	979.0	32.8	6.4	17.2
40	100.0	10.3	47.0	19.6	31.4	13.9	259.0	82.5	918.9	32.7	6.8	18.9
41	100.3	22.5	45.7	19.1	29.7	14.1	255.7	85.8	1,165.8	32.3	6.4	16.9
42	100.9	10.5	45.0	19.4	28.4	14.7	313.6	84.7	1,097.8	31.0	6.7	17.9
43	100.0	10.7	44.9	18.5	33.6	22.4	277.6	87.6	841.1	39.3	5.8	17.8
44	101.7	9.7	42.1	22.1	31.4	19.1	276.5	119.6	1,101.1	33.2	6.1	17.6
45	102.7	12.5	50.4	19.7	45.0	13.6	262.6	86.7	968.9	33.0	6.3	18.0
46	98.4	11.2	46.1	19.4	29.2	13.2	268.9	83.9	1,011.8	32.1	6.6	18.2
47	100.2	9.9	52.6	18.7	29.3	13.9	271.2	83.4	922.5	45.4	6.5	17.8
48	100.4	13.9	44.2	20.0	30.6	13.6	314.6	87.3	858.7	32.2	6.9	18.1
49	101.1	9.9	46.1	18.6	32.6	11.4	306.3	79.6	1,126.7	31.7	5.6	17.3
50	101.0	9.5	46.0	19.3	29.1	13.8	321.7	111.0	1,097.1	34.1	6.6	17.5

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
51	103.6	11.5	47.2	20.2	29.5	24.3	298.9	83.4	997.6	31.4	6.0	18.2
52	102.9	10.0	46.1	19.2	30.5	13.8	304.5	86.0	936.4	35.1	7.2	19.4
53	110.9	10.8	38.6	19.5	30.3	11.9	357.2	87.1	1,167.5	29.4	6.2	17.4
54	100.0	13.6	48.7	18.0	29.6	12.3	313.4	84.4	883.6	32.4	6.1	17.7
55	100.6	25.7	44.1	20.4	35.4	13.0	298.2	80.2	1,017.8	27.7	5.8	17.5
56	103.0	9.5	48.6	19.1	30.8	14.2	262.5	89.2	1,052.0	34.4	6.2	17.7
57	112.3	13.9	49.4	19.6	30.1	13.2	266.8	86.0	898.4	33.1	6.1	18.1
58	103.8	11.3	63.3	19.6	32.7	13.7	266.3	83.9	905.8	32.2	6.8	17.9
59	101.7	13.4	45.5	25.3	31.4	13.8	256.3	84.7	1,152.4	31.7	6.9	18.1
60	99.4	10.7	46.1	28.9	31.5	13.3	318.0	84.7	1,116.2	32.7	7.0	26.8
61	100.0	10.8	50.8	21.7	33.5	13.7	262.7	87.9	871.3	34.2	7.0	17.8
62	100.3	10.0	44.6	19.4	31.5	13.7	322.1	84.9	997.2	34.5	6.9	18.2
63	104.6	14.0	47.4	19.9	31.7	13.8	274.0	84.1	1,099.7	34.5	6.6	18.3
64	104.4	11.1	44.3	19.1	29.2	14.3	258.7	87.3	888.4	30.8	6.7	17.3
65	99.5	12.1	47.8	20.0	30.3	12.6	349.4	84.3	1,023.9	32.2	6.5	17.7
66	100.6	14.2	47.0	19.8	30.6	14.3	259.6	83.4	1,008.9	33.7	6.9	17.7
67	100.7	11.4	49.3	19.6	37.3	13.2	273.3	85.6	820.8	33.5	7.0	17.7
68	100.6	10.8	48.4	19.7	31.4	14.0	320.3	83.5	953.2	30.2	6.2	18.2
69	110.5	11.7	45.6	20.4	31.5	13.7	307.8	86.6	962.6	45.3	6.5	18.7
70	100.4	11.6	46.4	18.7	29.9	14.4	258.8	95.8	1,085.1	48.7	6.0	17.0
71	100.2	9.8	46.2	18.8	32.9	12.8	330.3	82.7	874.3	32.9	6.5	16.9
72	102.3	12.1	46.5	18.4	31.3	13.5	259.4	84.9	930.1	30.8	6.8	17.7
73	100.3	9.6	50.8	19.6	32.9	14.7	263.7	94.8	861.1	32.9	6.6	21.3
74	100.9	10.1	46.1	19.9	32.3	12.9	316.1	86.1	874.0	31.8	6.9	18.0
75	112.2	8.6	53.0	19.9	30.7	13.8	285.8	87.4	985.0	32.7	7.3	18.0
76	101.8	13.0	47.1	19.6	30.6	13.4	260.0	88.7	1,096.1	34.2	5.7	18.0
77	99.3	10.0	46.4	20.6	31.7	13.4	319.6	82.7	1,030.7	31.7	6.1	16.3
78	103.2	12.9	47.3	19.5	33.7	12.8	311.1	84.3	812.6	32.0	6.9	18.0
79	101.9	11.2	45.3	20.8	35.1	11.7	302.3	78.8	1,048.8	30.9	6.3	16.6
80	100.6	10.3	62.7	19.0	32.9	14.9	266.2	83.5	871.5	33.3	6.4	17.7
81	102.0	9.7	50.4	19.7	30.8	14.1	301.5	86.5	1,051.7	29.1	6.6	17.9
82	102.5	15.3	44.5	18.6	31.4	13.7	258.1	87.0	1,058.7	33.5	6.5	17.3
83	99.7	10.1	49.2	19.5	29.9	14.2	258.7	83.9	1,001.4	32.4	7.1	17.5
84	101.5	11.2	48.7	19.1	31.4	21.1	316.5	87.4	877.6	37.5	6.6	17.7

Stream ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
85	101.3	11.1	44.1	21.2	30.4	15.0	308.5	99.3	1,035.7	30.0	5.9	17.7
86	101.6	21.4	52.3	19.2	40.4	15.8	304.4	86.7	854.1	35.7	6.8	19.1
87	104.9	11.1	51.6	19.2	31.3	13.4	262.7	87.1	997.7	31.9	7.4	17.3
88	102.0	9.7	52.2	19.1	30.6	12.8	262.8	84.9	1,026.9	50.8	6.8	17.8
89	99.0	12.6	45.6	19.4	29.0	13.1	260.5	88.7	852.5	31.8	6.6	17.1
90	99.7	11.3	46.7	18.9	37.1	13.0	305.3	86.8	903.0	32.0	6.5	18.0
91	100.4	9.7	45.7	19.0	29.6	12.4	303.7	99.4	1,052.9	31.4	6.1	17.7
92	101.2	12.3	48.1	19.3	27.7	25.9	314.6	81.8	1,018.2	33.3	6.2	17.6
93	103.4	9.8	47.7	19.9	29.8	13.9	266.4	86.1	984.0	34.9	6.5	17.7
94	113.0	11.0	44.7	19.8	29.5	13.9	330.5	84.9	1,106.7	30.6	7.1	17.4
95	102.0	10.4	48.1	19.3	31.0	13.2	311.4	83.5	1,058.0	32.0	6.3	17.9
96	99.5	12.1	39.5	19.7	33.4	12.8	301.6	85.4	1,142.1	30.9	6.4	17.2
97	100.5	10.9	49.5	17.9	32.7	13.0	285.7	90.3	1,012.0	35.0	6.6	17.8
98	115.6	9.8	53.7	20.2	30.9	15.0	323.7	83.9	1,067.6	32.6	6.1	17.0
99	104.9	11.5	59.9	20.0	30.2	13.0	259.6	85.6	1,069.1	34.3	7.2	17.2
100	99.0	12.6	48.3	25.1	33.6	13.9	274.0	86.1	1,063.8	31.6	7.4	18.2
101	99.7	10.0	48.9	30.4	31.5	12.7	283.2	84.8	1,058.0	33.1	6.6	26.2
102	100.1	12.3	47.4	20.6	32.4	13.6	307.6	87.6	890.3	31.8	6.7	17.5
103	102.0	9.4	44.9	17.9	29.1	12.5	267.3	79.4	1,084.7	32.1	6.3	16.8
104	103.9	10.8	47.8	19.3	30.7	13.8	317.4	81.8	919.9	33.6	6.3	18.3
105	102.7	11.5	48.8	19.2	31.1	14.2	262.7	89.4	1,038.2	32.7	6.2	17.4
106	101.7	10.8	47.4	19.2	30.7	12.4	315.5	83.3	840.0	33.2	6.1	17.7
107	101.4	11.5	46.4	18.9	30.8	14.1	325.2	86.5	1,037.3	32.8	6.8	18.3
108	100.5	11.9	44.4	19.8	38.1	13.1	318.8	87.2	1,058.5	34.1	7.2	18.2
<b>Min.</b>	<b>92.2</b>	<b>8.6</b>	<b>36.4</b>	<b>17.1</b>	<b>27.4</b>	<b>11.4</b>	<b>253.2</b>	<b>73.7</b>	<b>740.0</b>	<b>27.7</b>	<b>5.3</b>	<b>16.3</b>
<b>Avg.</b>	<b>102.3</b>	<b>11.7</b>	<b>47.8</b>	<b>19.9</b>	<b>31.6</b>	<b>14.2</b>	<b>290.9</b>	<b>86.4</b>	<b>984.3</b>	<b>33.5</b>	<b>6.5</b>	<b>18.1</b>
<b>Max.</b>	<b>115.6</b>	<b>25.7</b>	<b>67.8</b>	<b>30.4</b>	<b>45.0</b>	<b>27.4</b>	<b>357.2</b>	<b>119.6</b>	<b>1,167.5</b>	<b>50.8</b>	<b>7.4</b>	<b>26.8</b>

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

Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
0	456.4	54.9	31.5	13.6	201.6	816.4	75.8	148.7	200.6	76.4	4.2	45.2
1	634.0	51.7	33.0	15.3	191.1	814.6	74.2	140.0	256.6	82.7	4.1	45.9

Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
2	624.8	50.5	35.3	15.6	219.7	841.0	75.9	178.2	236.2	93.1	3.6	47.2
3	659.9	61.2	34.4	14.5	191.3	846.6	79.0	134.3	238.1	81.7	3.5	46.5
4	709.3	52.6	37.1	16.1	196.8	855.3	81.1	157.4	244.2	80.5	3.4	47.1
5	685.7	51.5	37.0	16.0	213.5	863.7	77.9	164.4	253.3	90.8	3.3	44.0
6	548.1	54.4	42.2	14.7	205.1	798.7	80.9	147.6	242.4	80.0	3.2	45.1
7	649.3	54.9	33.6	14.6	265.5	867.6	73.8	141.9	229.0	87.2	3.1	47.4
8	719.9	56.8	35.2	17.0	192.6	869.0	102.1	163.9	228.0	76.6	2.8	47.1
9	670.5	48.9	36.1	13.2	203.3	885.4	82.6	150.5	236.1	74.8	2.9	44.3
10	637.3	50.0	38.0	15.2	213.7	871.2	79.4	186.7	232.2	82.7	2.9	45.7
11	646.8	63.1	51.1	16.0	229.7	986.1	77.4	222.1	227.9	95.7	2.9	46.9
12	674.8	49.6	33.3	15.8	230.4	865.8	77.6	166.2	231.8	82.7	2.9	48.2
13	668.9	58.1	35.3	15.1	183.1	836.5	76.5	143.8	257.0	74.8	3.0	48.5
14	704.8	53.0	36.1	14.8	238.0	863.0	83.9	166.0	225.8	94.1	3.0	48.7
15	555.8	54.4	35.8	22.3	192.0	878.2	80.3	191.5	233.1	90.5	2.8	46.2
16	726.4	54.9	37.0	14.8	180.5	834.1	78.9	177.9	236.8	82.7	2.9	45.9
17	673.4	58.0	32.7	17.0	201.7	823.8	77.9	151.6	235.9	70.8	2.7	45.7
18	664.1	72.9	34.3	14.4	194.6	813.3	78.3	155.0	217.4	68.7	2.8	47.5
19	661.1	55.0	35.4	15.3	177.8	878.9	76.9	139.2	223.5	86.1	2.9	46.0
20	659.4	58.0	53.8	17.6	188.3	823.0	77.3	129.2	235.1	95.4	2.7	46.0
21	688.8	58.7	35.7	16.3	195.8	859.3	75.5	203.4	222.9	86.9	2.8	46.5
22	673.4	82.9	33.1	21.9	237.7	879.5	78.8	154.7	240.0	84.5	2.7	45.0
23	658.9	54.1	35.9	15.9	211.3	957.4	79.7	161.0	230.7	87.8	2.8	47.5
24	664.9	53.6	34.9	14.7	224.5	906.5	79.8	174.0	243.2	83.1	2.8	45.7
25	704.9	56.4	34.9	15.6	187.4	868.3	77.8	132.7	230.5	71.6	2.7	45.8
26	715.3	54.7	34.6	13.8	178.9	835.5	79.2	121.3	242.3	94.6	2.8	47.6
27	727.5	76.8	34.7	15.5	247.3	876.6	75.6	131.3	244.9	81.9	2.8	47.3
28	630.5	58.3	35.7	14.9	201.1	930.4	81.9	159.1	236.8	83.1	2.8	48.1
29	711.4	52.9	34.1	15.1	225.4	918.1	74.5	155.2	228.3	73.2	2.8	48.4
30	671.4	54.8	36.4	15.6	198.5	901.8	80.9	129.7	236.4	92.8	2.7	48.2
31	629.3	48.8	35.4	15.4	205.3	814.4	78.8	242.1	234.7	80.2	2.8	45.7
32	651.9	49.1	57.3	15.4	196.3	851.6	76.2	181.0	230.9	75.7	2.7	47.9
33	681.2	54.9	53.8	15.7	221.8	830.5	80.6	146.2	234.3	85.8	2.7	45.9
34	704.5	52.7	35.9	14.6	264.4	885.5	78.5	193.8	232.8	81.8	2.8	48.7
35	719.0	75.2	32.4	16.6	259.5	859.0	74.3	172.2	223.5	95.8	2.7	49.8

Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
36	691.1	54.8	33.9	15.1	226.7	821.0	78.4	193.0	223.2	80.0	2.7	48.3
37	567.7	60.3	34.8	14.7	209.7	818.9	76.1	160.8	225.0	82.3	2.6	48.8
38	684.8	56.7	36.7	14.4	224.9	893.2	77.5	209.2	237.9	80.0	2.8	48.7
39	664.1	52.8	34.3	15.9	197.3	880.2	78.6	249.4	234.1	81.4	2.7	49.0
40	681.6	58.2	47.6	16.7	224.1	858.5	78.0	196.5	231.0	82.3	2.8	48.1
41	685.5	75.0	34.0	16.3	232.3	916.6	80.7	214.0	240.2	87.9	2.6	47.9
42	651.7	52.2	33.9	15.7	204.7	895.2	79.2	148.0	239.4	85.8	2.7	47.2
43	699.8	55.1	34.8	14.5	220.9	816.6	80.2	165.3	229.3	87.7	2.7	47.2
44	727.4	58.3	34.9	13.0	173.4	873.8	75.8	134.5	230.5	97.9	2.7	47.7
45	627.3	53.0	35.6	16.0	190.2	908.9	78.2	138.2	249.4	76.3	2.6	45.8
46	692.8	56.5	34.5	15.0	222.0	878.2	76.2	153.6	253.8	82.3	2.7	47.8
47	716.2	52.5	37.0	15.2	194.5	839.5	75.1	152.1	227.6	80.6	2.6	46.4
48	645.0	54.1	33.7	14.6	192.1	951.2	74.2	174.8	240.3	81.7	2.7	47.8
49	633.9	50.6	34.3	15.6	178.6	856.0	91.6	145.4	222.0	91.3	2.6	45.9
50	590.0	57.7	36.1	14.9	187.5	883.6	75.2	137.2	231.3	73.3	2.7	45.5
51	732.2	51.5	38.0	15.2	213.9	819.3	78.6	176.8	227.3	85.5	2.5	46.0
52	713.3	58.8	54.2	15.2	206.2	839.6	79.9	165.1	229.2	83.3	2.6	46.4
53	703.9	47.5	33.5	16.4	261.8	875.2	77.0	167.7	234.9	86.7	2.6	45.6
54	661.5	55.0	33.9	15.2	198.7	837.5	76.1	172.4	262.1	82.8	2.7	45.7
55	716.2	63.9	35.6	15.6	250.2	847.7	76.0	183.4	218.9	78.0	2.7	45.7
56	673.3	55.6	35.6	18.1	185.6	894.9	76.6	138.5	238.5	70.2	2.7	45.2
57	728.5	53.3	35.6	15.5	177.6	849.7	78.6	158.6	242.5	79.6	2.7	46.7
58	717.0	59.1	35.1	17.8	258.9	871.3	81.4	148.5	238.4	79.9	2.6	45.0
59	703.5	73.8	36.6	13.9	249.6	916.3	77.9	191.5	236.8	79.3	2.6	46.0
60	679.8	58.0	34.5	14.6	219.2	823.8	80.2	134.9	237.7	84.7	2.7	45.8
61	710.2	59.4	49.5	21.5	231.0	807.9	79.0	160.0	235.7	81.5	2.6	45.1
62	696.1	57.7	36.2	16.6	170.4	866.2	75.2	187.0	233.6	77.2	2.6	45.8
63	702.4	71.6	36.5	24.5	183.5	905.7	79.7	131.1	235.7	93.0	2.6	45.7
64	597.9	48.3	33.5	15.1	220.2	872.3	73.4	153.8	222.5	73.1	2.7	46.1
65	682.0	52.8	35.4	14.9	182.9	830.9	75.4	174.4	228.5	82.6	2.7	45.2
66	657.7	51.0	34.7	15.3	200.4	886.1	77.2	177.7	242.3	80.9	2.6	45.8
67	733.4	55.7	35.5	15.2	189.3	844.3	77.7	139.3	239.2	77.4	2.7	45.5
68	640.5	81.3	37.2	15.4	217.1	837.8	74.4	135.8	238.3	74.7	2.7	46.1
69	704.7	53.5	35.1	14.9	183.9	854.8	80.1	164.4	238.2	81.2	2.6	46.2



Stream ID	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
70	616.5	54.5	35.8	15.2	214.7	919.5	86.4	182.9	229.2	90.6	2.6	45.8
71	682.1	49.8	33.9	15.0	201.8	824.7	74.1	198.8	218.3	68.3	2.6	46.2
72	679.3	50.5	35.1	15.5	186.1	823.6	81.1	168.8	226.0	79.1	2.6	44.8
73	688.9	60.1	49.8	14.8	199.2	834.9	84.3	164.7	228.2	74.8	2.5	46.9
74	728.2	59.7	56.3	15.3	222.8	860.6	76.8	159.1	229.3	92.2	2.7	45.7
75	697.7	56.9	36.6	15.3	226.0	861.3	78.7	136.5	236.2	86.3	2.6	48.0
76	677.6	73.6	33.7	15.9	255.4	847.4	76.9	166.3	231.0	90.3	2.6	47.0
77	584.8	51.9	35.7	15.2	195.0	907.8	78.0	152.5	233.7	86.8	2.6	48.8
78	709.8	60.4	35.2	14.3	210.8	803.7	75.5	202.1	237.3	81.8	2.6	45.9
79	630.8	59.5	32.9	15.5	197.4	894.9	75.2	214.5	228.2	92.9	2.6	45.9
80	592.7	56.9	35.7	15.0	214.1	867.2	79.5	151.1	222.9	94.7	2.5	45.4
81	650.4	54.6	47.2	15.7	188.1	868.5	77.8	165.7	236.9	81.9	2.6	45.6
82	667.3	80.5	36.1	14.6	256.7	864.0	82.4	167.0	227.0	77.6	2.6	45.6
83	688.8	59.5	34.7	15.3	192.0	850.0	78.5	178.9	253.8	82.3	2.6	47.4
84	672.0	57.4	35.8	14.8	206.5	821.8	80.5	129.2	237.8	72.6	2.6	46.4
85	645.6	54.6	34.5	14.4	222.4	856.8	72.2	151.0	226.2	88.0	2.5	47.8
86	773.7	60.7	36.8	15.3	195.1	867.1	79.2	149.9	243.7	84.2	2.5	45.0
87	657.2	50.6	33.2	15.2	195.9	923.4	74.0	143.6	243.3	84.6	2.5	46.8
88	563.9	49.0	38.8	13.8	233.3	916.5	75.2	184.1	232.9	84.2	2.6	45.7
89	623.7	60.1	34.4	15.7	235.2	889.2	73.0	162.7	218.1	98.5	2.6	45.6
90	674.0	57.5	33.7	15.2	183.6	916.8	102.2	205.0	228.8	81.0	2.5	46.4
91	649.6	50.9	36.9	14.6	187.0	845.7	75.5	141.3	227.1	89.7	2.7	46.4
92	711.0	56.1	43.2	16.3	191.7	842.3	80.0	138.2	235.2	90.6	2.6	45.4
93	673.7	54.0	50.4	15.3	205.8	889.5	80.7	162.2	239.9	85.3	2.6	46.3
94	618.5	48.8	33.4	15.3	220.5	888.1	79.2	173.8	221.8	83.8	2.5	47.2
95	670.8	55.8	33.7	15.7	194.0	809.1	78.7	172.6	254.1	85.6	2.5	46.2
96	687.9	51.1	35.5	14.6	200.1	817.1	83.4	150.4	238.2	77.2	2.5	47.2
97	636.8	55.3	34.9	22.1	196.0	860.7	73.7	190.2	233.0	77.2	2.6	47.4
98	606.9	53.0	34.8	15.5	173.9	909.0	76.2	132.5	234.2	87.7	2.5	45.8
99	659.9	52.0	36.0	18.4	221.3	873.1	78.5	132.5	245.5	83.7	2.5	44.8
100	559.1	76.4	36.3	14.1	238.7	855.7	77.4	221.9	232.6	86.2	2.6	44.7
101	693.8	60.2	36.7	16.1	211.6	829.3	79.4	196.3	232.7	79.7	2.6	46.2
102	563.5	51.2	48.3	17.6	251.4	877.8	75.4	164.1	221.8	84.2	2.6	46.7
103	615.9	63.2	32.5	15.5	189.9	880.0	74.2	218.3	230.6	84.6	2.5	46.9

<b>Stream ID</b>	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
104	663.3	69.4	34.0	22.1	191.0	916.9	76.3	144.9	236.8	88.5	2.5	45.6
105	663.5	55.5	35.2	15.2	189.9	904.5	79.3	136.4	241.7	91.5	2.6	46.4
106	756.9	54.6	36.0	15.2	241.4	827.1	79.6	203.9	234.6	84.4	2.7	46.5
107	682.8	55.7	33.1	16.0	206.3	865.3	79.7	159.3	228.2	81.3	2.5	48.3
108	594.5	54.3	36.3	15.4	209.4	846.8	75.7	150.2	250.1	82.3	2.5	45.7
<b>Min.</b>	<b>456.4</b>	<b>47.5</b>	<b>31.5</b>	<b>13.0</b>	<b>170.4</b>	<b>798.7</b>	<b>72.2</b>	<b>121.3</b>	<b>200.6</b>	<b>68.3</b>	<b>2.5</b>	<b>44.0</b>
<b>Avg.</b>	<b>666.0</b>	<b>57.2</b>	<b>37.0</b>	<b>15.7</b>	<b>209.1</b>	<b>864.6</b>	<b>78.5</b>	<b>164.9</b>	<b>234.3</b>	<b>83.4</b>	<b>2.7</b>	<b>46.5</b>
<b>Max.</b>	<b>773.7</b>	<b>82.9</b>	<b>57.3</b>	<b>24.5</b>	<b>265.5</b>	<b>986.1</b>	<b>102.2</b>	<b>249.4</b>	<b>262.1</b>	<b>98.5</b>	<b>4.2</b>	<b>49.8</b>