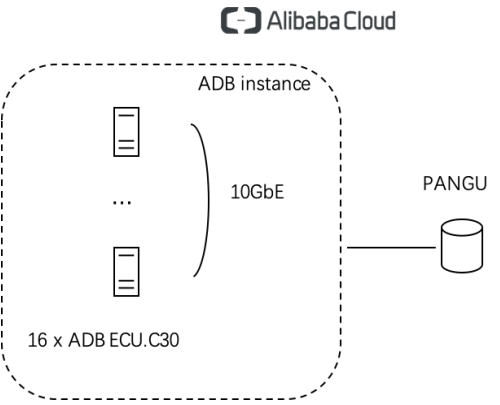
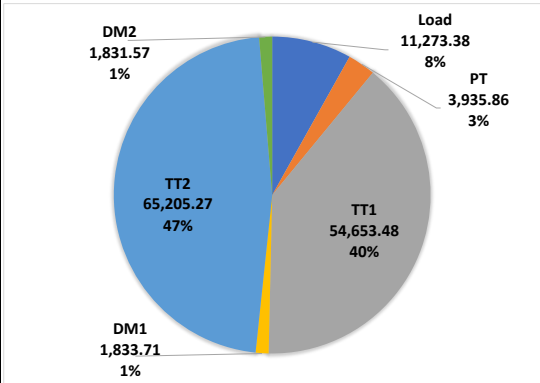
 Alibaba Cloud	<b>Alibaba Cloud AnalyticDB</b>		TPC-DS: 2.10.1 TPC-Pricing: 2.4.0 Report Date: Apr. 26, 2019	
Total System Cost	TPC-DS Throughput	Price/Performance	System Availability Date	
<b>¥3,172,347</b> RMB	<b>2,684,357</b> QphDS@10000GB	<b>¥1.19</b> RMB/QphDS@10000GB	<b>As of Publication</b>	
Dataset Size <sup>1</sup>	Database Manager	Operation System	Other Software	Cluster
10,000 GB	Alibaba Cloud AnalyticDB 2.7	Alibaba Group Enterprise Linux Server 7.2 (Paladin)	N/A	Yes
 <p style="text-align: center;"><b>Benchmarked Configuration</b></p>		 <p style="text-align: center;"><b>Elapsed Time</b></p>		
Load includes backup = No		RAID = No		
<b>System Configuration:</b>		<b>Alibaba Cloud AnalyticDB Cluster</b>		
Servers:		16 x ECU C30		
Total Processors/Cores/Threads:		1,024 virtual cores (threads)		
Total Memory:		6,144 GB		
Total Storage:		120,992 GB (including PANGU)		
Storage Ratio:		12.10		
<b>Server Configuration:</b>		<b>Per node (ECU C30)</b>		
Processors/Cores/Threads:		64 virtual cores (threads)		
Memory:		384 GB		
Network:		10Gbps		
Storage Device:		2,242 GB SSD		
<b>Object Storage Service Configuration:</b>		<b>PANGU Storage</b>		
Storage Capacity:		8 TB x 10 = 80,000 GB		
<p>1. Dataset Size includes only raw data (i.e., no temp, index, redundant storage space, etc.).</p> <p>2. Total Storage = 2,442 * 16 (ECU SSD) + 8,192 * 10 (PANGU) = 120,992 GB</p> <p>3. Storage Ratio = Total Storage / SF = 120,992 GB / 10,000 GB</p>				

Alibaba Cloud		Alibaba Cloud AnalyticDB			TPC-DS: 2.10.1 TPC-Pricing: 2.4.0 Report Date: Apr.26, 2019		
Description	Part Number	Src	Unit Price (RMB)	Qty	Ext. Price (RMB)	3-Year Maint. (RMB)	
<b>Licence Compute and Software Services</b>							
<u>AnalyticDB (South China 1 Region) (3-Year Pre-Pay)</u>			1	3,168,000.00	1	3,168,000.00	included
- ECU Instance C30 (included in AnalyticDB)	C30		1		16		included
- PANGU cloud storage (SATA cloud disks 8,000 GB, included in AnalyticDB)			1		10		included
<b>Licence Computer and Software Services Sub-Total</b>					<b>3,168,000.00</b>	<b>0.00</b>	
<b>Other Components</b>							
Lenovo MIIX 210 Laptop (Includes spares)		2	1,449.00	3	4,347.00		
<b>Other Components Sub-Total</b>					<b>4,347.00</b>	<b>0.00</b>	
1 = Alibaba Cloud, 2 = Tmall.com					<b>3-Year Cost of Ownership</b>		<b>3,172,347.00</b>
All prices are based on 3-year pre-paid subscriptions.					<b>QphDS@10000GB</b>		<b>2,684,357</b>
<b>Audited by Francois Raab, InfoSizing</b>					<b>RMB/QphDS@10000GB</b>		<b>1.19</b>
<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 specifications. If you find that the stated prices are not available according to these terms, please inform at <a href="mailto:pricing@tpc.org">pricing@tpc.org</a>. Thank you.</p>							

Alibaba Cloud		Alibaba Cloud AnalyticDB		TPC-DS: 2.10.1 TPC-Pricing: 2.4.0 Report Date: Apr.26, 2019	
<b>Metrics Details:</b>					
<b>Name</b>	<b>Value</b>	<b>Unit</b>			
Scale Factor (SF)	10000	GB			
Streams	4	Stream			
Queries (Q)	396	Queries			
T_load	11,273.4	Second			
T_ld	0.1253	Hour			
T_pt	4.3733	Hour			
T_tt1	14,033.6	Second			
T_tt2	16,524.3	Second			
T_dm1	1,833.8	Second			
T_dm2	1,831.6	Second			
T_tt	8.4884	Hour			
T_dm	1.0182	Hour			
<b>Load Step</b>					
	<b>Start</b>	<b>End</b>	<b>(sec.)</b>	<b>(hh:mm:ss)</b>	
Build	04/25/19 01:54:20.74	04/25/19 04:47:32.67	10,391.93	2:53:12	
Audit	04/25/19 04:47:32.68	04/25/19 04:59:34.59	721.91	0:12:02	
Finish	04/25/19 04:59:34.60	04/25/19 05:14:16.05	881.45	0:14:41	
<b>Reported</b>	<b>04/25/19 01:54:20.74</b>	<b>04/25/19 05:14:16.05</b>	<b>11,273.38</b>	<b>3:07:53</b>	
<b>Test</b>					
	<b>Start</b>	<b>End</b>	<b>(sec.)</b>	<b>(hh:mm:ss)</b>	
Power	04/25/19 05:27:07.34	04/25/19 06:32:43.20	3,935.86	1:05:36	
Thruput-1	04/25/19 06:32:43.26	04/25/19 10:26:36.80	14,033.54	3:53:54	
Thruput-2	04/25/19 10:57:26.22	04/25/19 15:32:50.48	16,524.26	4:35:24	
DM-1	04/25/19 10:26:52.45	04/25/19 10:57:26.16	1,833.71	0:30:34	
DM-2	04/25/19 15:33:13.04	04/25/19 16:03:44.62	1,831.58	0:30:32	
<b>Stream</b>					
	<b>Start</b>	<b>End</b>	<b>(sec.)</b>	<b>(hh:mm:ss)</b>	
Pt - 0	04/25/19 05:27:07.34	04/25/19 06:32:43.20	3,935.86	1:05:36	
Tt1 - 1	04/25/19 06:32:43.26	04/25/19 10:21:57.57	13,754.31	3:49:14	
Tt1 - 2	04/25/19 06:32:43.26	04/25/19 10:26:36.80	14,033.54	3:53:54	
Tt1 - 3	04/25/19 06:32:43.26	04/25/19 10:17:56.03	13,512.77	3:45:13	
Tt1 - 4	04/25/19 06:32:43.26	04/25/19 10:15:16.12	13,352.86	3:42:33	
Tt2 - 5	04/25/19 10:57:26.22	04/25/19 15:23:24.13	15,957.91	4:25:58	
Tt2 - 6	04/25/19 10:57:26.22	04/25/19 15:31:02.76	16,416.55	4:33:37	
Tt2 - 7	04/25/19 10:57:26.22	04/25/19 15:32:50.48	16,524.26	4:35:24	
Tt2 - 8	04/25/19 10:57:26.22	04/25/19 15:29:12.77	16,306.55	4:31:47	
DMt1 - 1	04/25/19 10:26:52.45	04/25/19 10:42:07.75	915.31	0:15:15	
DMt1 - 2	04/25/19 10:42:07.76	04/25/19 10:57:26.16	918.40	0:15:18	
DMt2 - 3	04/25/19 15:33:13.04	04/25/19 15:48:10.12	897.08	0:14:57	
DMt2 - 4	04/25/19 15:48:10.13	04/25/19 16:03:44.62	934.49	0:15:34	



**Timing Intervals for Refresh Functions (in Seconds)**

DM Fx	R-Run 1	R-Run 2	R-Run 3	R-Run 4	Min	25%tile	Median	75%tile	Max
LF_CR	27.1	26.1	24.1	27.1	24.1	25.6	26.6	27.1	27.1
LF_CS	114.3	112.5	111.8	110.8	110.8	111.6	112.2	113.0	114.3
LF_I	17.9	17.8	17.8	17.6	17.6	17.8	17.8	17.8	17.9
LF_SR	54.9	48.4	47.6	48.2	47.6	48.1	48.3	50.0	54.9
LF_SS	120.0	121.8	120.1	119.1	119.1	119.8	120.1	120.5	121.8
LF_WR	24.5	22.9	21.0	22.7	21.0	22.3	22.8	23.3	24.5
LF_WS	70.9	76.5	75.7	73.8	70.9	73.1	74.8	75.9	76.5
DF_CS	60.1	54.1	54.6	55.1	54.1	54.5	54.9	56.4	60.1
DF_SS	117.4	109.3	102.0	107.5	102.0	106.1	108.4	111.3	117.4
DF_WS	24.1	25.6	24.7	25.8	24.1	24.6	25.2	25.7	25.8
DF_I	4.7	4.1	3.9	4.0	3.9	4.0	4.1	4.3	4.7