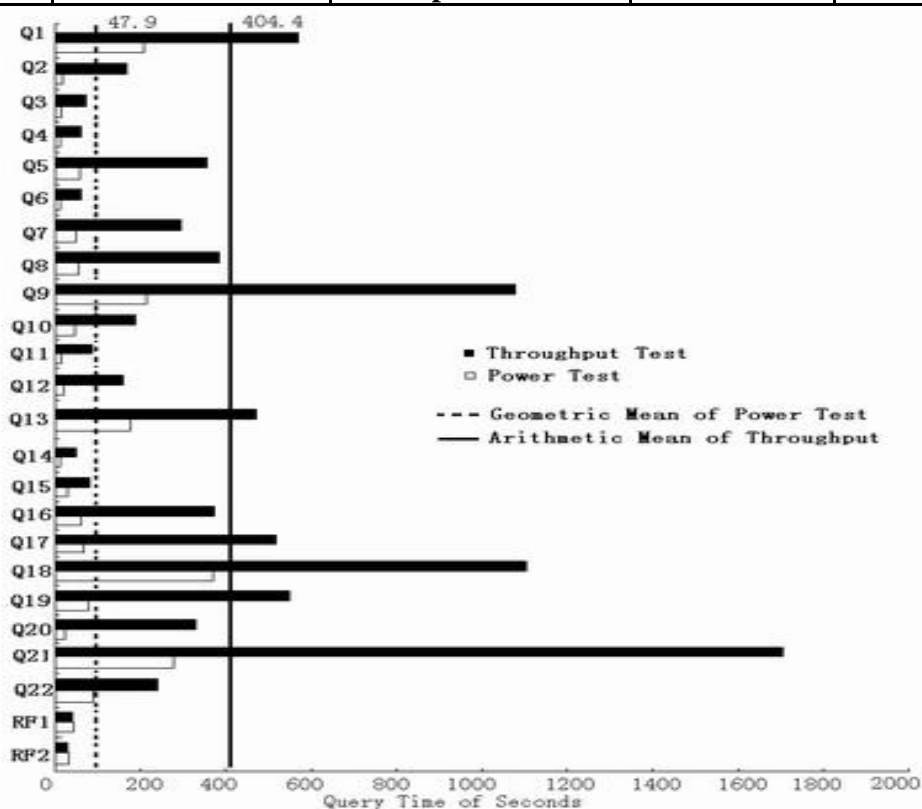
		<b>Langchao SP3000 with IBM DB2 UDB 8.1</b>		<b>TPC-H Rev 2.0</b>	
				<b>Report Date: April 14, 2004</b>	
<b>Total System Cost</b>		<b>Composite Query-per-hour Metric</b>		<b>Price/Performance</b>	
<b>RMB 5,041,227</b>		<b>5618.0 QphH@100GB</b>		<b>RMB 897 QphH@100GB</b>	
<b>Database Size</b>	<b>Database Manager</b>	<b>Operating System</b>	<b>Other Software</b>	<b>Availability Date</b>	
<b>100GB</b>	<b>IBM DB2 UDB 8.1</b>	<b>Microsoft Windows Server 2003 Enterprise Edition</b>	<b>Microsoft Platform SDK</b>	<b>April 14, 2004</b>	
					
<b>Database Load Time: 2:04:25</b>		<b>Load Included Backup: Y</b>		<b>Total Data Storage / Database Size:78.66</b>	
<b>RAID (Base Table only): Y</b>		<b>RAID (Base Tables and Auxiliary Data Structures): Y</b>		<b>RAID (ALL): Only for logs</b>	
<b>Configuration</b>					
Processors	4	Intel Itanium 2 Processor 1.5 GHz / 6 MB L3 Cache			
Memory	16	2 GB DDR DIMM			
Disk Controllers	8	Emulex LP9002L FibreChannel HBA			
Disk Drives	112	73 GB 15K RPM FibreChannel Drives			
	2	146 GB 10K RPM Ultra320 SCSI Drives			
Total Disk Storage		7865.7GB			



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**Langchao SP3000  
with  
IBM DB2 UDB 8.1**

TPC-H Revision 2.0

Report Date: April 14, 2004

Description	Part Number	Source	Unit Price	Qty	Ext. Price	3-Yr. Maint.
<b>Server Hardware</b>						
Langchao SP3000	SSP300000003	1	342,600	1	342,600	
4 Itanium 2 Processors		1	91,400	4	365,600	
2GB DDR ECC DIMMs		1	15,000	16	240,000	
Seagate ST3146807LC, 146GB Ultra320 SCSI Disk Drive		1	9,000	2	18,000	
Fiber Optic Cable, MultiMode 2Gb LC to LC 10M		1	1,000	8	8,000	
Emulex LP9002L- PCI64, 2GB, FC, single port		1	15,000	8	120,000	
USB keyboard & Mouse		1	300	1	300	
15" Monitor		1	1,200	1	1,200	
Rack 42U		1	15,000	1	15,000	
3 yr.Maint		1	30,000	1		30,000
					<b>Subtotal</b>	<b>30,000</b>
					1,371,700	
<b>Server Storage</b>						
Langchao NS8800s - 14-slot Rackmount, single RAID controller , dual PSMs with dual AC inputs, dual ACMs and dual LSMs.	UNS8800S001	1	137,600	8	1,100,800	
Seagate_ST373453LC_73GB_15K_RP M		1	14,000	112	1,568,000	
3 yr.Maint		1	50,000	1		50,000
					<b>Subtotal</b>	<b>50,000</b>
					2,668,800	
<b>Hardware and maintance Discount</b>						
Large volume discount on Langchao hardware		1	40%	1	1,543,800	32,000
					<b>Hardware subtotal</b>	<b>48,000</b>
					2,235,800	
<b>Server Software</b>						
DB2 UDB ESE V8.1 License/1-year Maint.	D518GLL	2	373,315.70	4	1,493,262.80	
DB2 UDB ESE V8.1 Support - 1 Yr/Proc	E00BILL	2	74,663.14	8		597,305.56



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DB2 UDB ESE V8.1 DPF License/1-year Maint.	D518JLL	2	112,135.59	4	448,542.34	
DB2 UDB ESE V8.1 DPF Support - 1 Yr/Proc	E00BJLL	2	22,427.12	8		179,416.92
Microsoft Windows Server 2003 Enterprise Edition		1	39,000	1	39,000	
Operating System Support Package	Included with System			1		
<b>Subtotal</b>					1,980,805.1	776,722.04
<b>Total</b>					<b>4,216,505</b>	<b>824,722</b>

Pricing: 1 – Langchao ( Price Contact: Zhen Peng, [pengzhen@langchao.com](mailto:pengzhen@langchao.com) ); 2 – IBM  
 \*All discounts are based on China Yuan (RMB) list prices and for similar quantities and configurations

**3-Year Cost of Ownership: RMB 5,041,227**  
**QphH @ 100GB: 5618.0**  
**RMB / QphH @ 100GB: RMB 897**

Price used in TPC benchmarks reflect 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 specification.

If you find that stated prices are not available according to these terms, please inform the TPC at [pricing@tpc.org](mailto:pricing@tpc.org). Thank you.



**Langchao SP3000  
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IBM DB2 UDB 8.1**

TPC-H Revision 2.0

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**Measurement Results:**

Database Scale Factor	100
Total Data Storage/Database Size	7865.7
Start of Database Load	11:21:40
End of Database Load	13:26:05
Database Load Time	2:04:25
Query Streams for Throughput Test	5
TPC-H Power	7513.1
TPC-H Throughput	4200.7
TPC-H Composite Query-per-Hour (QphH@100GB)	5618.0
Total System Price over 3 Years (RMB)	5,041,227
TPC-H Price/Performance Metric ( RMB /QphH@100GB)	897

**Measurement Interval:**

Measurement Interval in Throughput Test (Ts) = 9,427 seconds

**Duration of Stream Execution:**

	Seed	Query Start Date/Time Query End Date/Time	RF1 Start Date/Time RF1 End Date/Time	RF2 Start Date/Time RF2 End Date/Time	Duration
<b>Stream 00</b>	403132605	04/03/04 13:47:03	04/03/04 13:46:20	04/03/04 14:18:51	0:33:04
		04/03/04 14:18:51	04/03/04 13:47:03	04/03/04 14:19:23	
<b>Stream 01</b>	403132606	04/03/04 14:19:30	04/03/04 14:19:31	04/03/04 16:51:34	2:32:34
		04/03/04 16:50:11	04/03/04 16:51:34	04/03/04 16:52:04	
<b>Stream 02</b>	403132607	04/03/04 14:19:30	04/03/04 16:52:04	04/03/04 16:52:42	2:33:41
		04/03/04 16:48:56	04/03/04 16:52:42	04/03/04 16:53:11	
<b>Stream 03</b>	403132608	04/03/04 14:19:30	04/03/04 16:53:11	04/03/04 16:53:50	2:34:50
		04/03/04 16:50:52	04/03/04 16:53:50	04/03/04 16:54:20	
<b>Stream 04</b>	403132609	04/03/04 14:19:31	04/03/04 16:54:20	04/03/04 16:54:59	2:35:47
		04/03/04 16:49:23	04/03/04 16:54:59	04/03/04 16:55:28	
<b>Stream 05</b>	403132610	04/03/04 14:19:31	04/03/04 16:55:28	04/03/04 16:56:07	2:37:06
		04/03/04 16:39:36	04/03/04 16:56:07	04/03/04 16:56:37	



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TPC-H Timing Intervals (in seconds):

Query	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Stream 00	207.3	18.3	13.4	11.8	58.7	11.6	48.8	53.5	213.5	45.7	15.4	21.3
Stream 01	423.1	227.8	92.4	27.9	318.8	59.9	319.8	481.5	923.6	206	67.7	198
Stream 02	725.3	406.6	81.3	78.7	365.9	47.7	307.6	384.9	1114.7	101.7	90	184.7
Stream 03	622.3	110.1	13.6	61.8	292.1	65	202.6	278.4	1163.7	189.1	94.8	21.4
Stream 04	571.7	31.9	97.4	50.7	274	67.1	319.6	411.4	1210.4	320.3	90.1	173.2
Stream 05	511	65.9	74	81.5	526.8	65.6	328.1	365.9	974.2	124.2	83.8	223.5
Minimum	423.1	31.9	13.6	27.9	274	47.7	202.6	278.4	923.6	101.7	67.7	21.4
Average	570.68	168.46	71.74	60.12	355.52	61.06	295.54	384.42	1077.32	188.26	85.28	160.16
Maximum	725.3	406.6	97.4	81.5	526.8	67.1	328.1	481.5	1210.4	320.3	94.8	223.5

Stream ID	Q13	Q14	Q15a	Q16	Q17	Q18	Q19	Q20	Q21	Q22	RF1	RF2
Stream 00	176.9	12.4	29.9	61.5	67.1	370.7	78.5	23.4	277.7	90.2	43.4	31.4
Stream 01	555.4	34	61.4	570.1	611.5	1108.9	542.3	488.9	1529.1	192.2	9123.3	30.1
Stream 02	493.3	59.3	82.1	328.2	487.5	1141.4	406.7	242.1	1562.8	273.6	37.6	29
Stream 03	449.6	43.8	82.1	160	473.6	1111.4	639	459.3	2318.2	229.4	39.3	29.9
Stream 04	455.7	74.1	109.3	289.6	435.4	1165.5	687.3	312.6	1572.5	272.1	39.3	28.9
Stream 05	402.5	39.4	76.5	515.6	572.4	990.2	464	144.1	1543.3	232.9	39.1	29.1
Minimum	402.5	34	61.4	160	435.4	990.2	406.7	144.1	1529.1	192.2	37.6	28.9
Average	471.3	50.12	82.28	372.7	516.08	1103.4	547.86	329.4	1705.18	240.04	1855.72	29.4
Maximum	555.4	74.1	109.3	570.1	611.5	1165.5	687.3	488.9	2318.2	273.6	9123.3	30.1