IBM/Ariba International Competency Center

Buyer 7.06 Certification Benchmarks

On pSeries S80 with AIX 4.3.3

buyer706_pS80_103101.pdf

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Oct. 31, 2001

Introduction

This document describes the benchmark certification work on Ariba Buyer 7.06 that was completed at the IBM San Mateo Solution Performance Center (SPC) during the August-September 2001 time frame. If one is not familiar with the Ariba Buyer product and its implementation on pSeries with AIX and DB2, there are several reference documents that are listed in the appendix. Also found in the appendix is the Ariba document that describes the benchmark and certification process.

Lab Configuration

The hardware and software used for the benchmarks consisted of the following:

Application Server

Hardware:

Server:	IBM RS/6000 model S80
CPU:	24 x Power3-II 450 MHz
Memory:	16 GB
Disk:	5 x 9.1 GB, SCSI
Network interface:	100 Mbps Ethernet

Software:

OS:	AIX 4.3.3 + Maintenance Level 8
Web server:	IBM HTTP Server 1.3.12.2
Web Application Server:	WebSphere 3.5.4
Application software:	Ariba Buyer 7.0.6
Database client:	DB2 UDB Client 7.1 + FixPack 3

Database Server

Hardware:

Server:	IBM RS/6000 44p model 270
CPU:	4 x Power3-II 375 MHz
Memory:	4 GB
Disk:	2 x 36.4 GB, SCSI Exp Plus Expansion Unit with 10 x 9.1 GB.
Network interface:	100 Mbps Ethernet

Software:

OS:	AIX 4.3.3 + Maintenance Level 8
Database server:	DB2 UDB 7.1 + FixPack 3

Web Client

Hardware:

Server:	IBM Netfinity 5500, M20
CPU:	4 x 500 MHz
Memory:	2 GB
Disk:	3 x 9.1 GB
Network interface:	100 Mbps Ethernet

Software:

OS:	NT 4.0 SP6a
Application:	LoadRunner 6.5 Fix Pack 1b

San Mateo Strategy

The San Mateo SPC was chosen for the benchmark in order to maximize hardware resources. The plan was to set up the benchmark environment on the hardware described above and run multiple iterations of the benchmark with the goal of achieving certification across multiple data points. The application server used for the testing was a RS/6000 S85 with 24 450 MHz processors and 16 GB of memory. Processors and memory were logically adjusted for each iteration of testing in order to create different configurations. This was accomplished through the use of the CPU_DEALLOCATE command for processors and RMSS for memory.

The testing window at San Mateo was limited by the availability of the hardware and facilities. A single benchmark run takes around eight hours with set up and conclusion activities. Therefore, some of the benchmark activities that were planned had to be deferred. For example, all of the benchmarks that are documented in the Results section were performed with the full complement of 16 GB of memory active. Obtaining benchmarks with multiple data points for memory remains a project for future considerations.

WebSphere Implementation

The initial setup did not include the use of the WebSphere Application Server (WAS). After some preliminary testing, it was decided to install WAS since it was needed for testing with Secure Sockets Layer (SSL) and to test with Ariba's ProxyServlet for http proxy.

There were two problems worth noting in the implementation of WebSphere. The first problem was encountered after installation of WebSphere 3.5.4. Symptoms of a problem were fairly obvious: the IBM HTTP Sever (IHS) would not start. To resolve this problem, a WebSphere fix PQ47372 was applied. This fix can be downloaded from:
ftp://ftp.software.ibm.com/software/websphere/appserv/support/fixes/pq47372/3024/AIX/.

The second problem with our implementation of WebSphere was encountered when attempting to start WAS. Again symptoms of a problem were very obvious: WAS would not start. This problem is well documented at the DB2 Online Support site: *http://www-4.ibm.com/cgi-bin/db2www/data/db2/udb/winos2unix/support/document.d2w/report?last_page=list.d2w&fn=1009742*. The problem is resolved through the use of EXTSHM to allow more than 11 shared memory segments per process.

```
In DB2 client (ID which owns WebSphere)
        export EXTSHM=ON

Under ID that owns DB2:
        export EXTSHM=ON
        db2set DB2ENVLIST=EXTSHM
        db2start
```

A Note on SSL

After installing the WebSphere Application Server, we were able to configure the Buyer to use SSL.   Initial benchmarks with SSL running showed little impact on overall performance. However, shortly after beginning

benchmarks with SSL, the rules of certification changed whereby caching images was not allowed. This severely altered our results and due to our time constraints at San Mateo, it was decided to continue benchmarking with SSL disabled. Functionally, SSL worked fine. Performance tuning and benchmarking was postponed for another time and place.

Results Matrix

The results of the benchmarks are summarized in the following table.

Number of Active Processors	Total number of Simulated Users	Average CPU % Under Load	Average Memory Usage	Average Disk I/O (kbps)	Requisition Approval Rate	Requisition Submit Rate	Certified by Ariba
24	1000	15	1GB	206	3986	3105	no
12	1000	34	1GB	194	3966	3083	no
8	950	56.5	1GB	164	3834	2964	no
6	900	48	1GB	174	3653	2879	yes
4	800	48	1GB	162	3357	2631	yes
2	650	76.75	1GB	136	2807	2229	yes

Number of Active Processors: The application server was a 24 way S85. This column represents the number of processors that were active for the particular run. Processors were taken off line through the use of the CPU_DEALLOCATE command.

Total Number of Simulated Users: This is the user load that was equally divided between the Requestor script and the Approver script.

Average CPU% Under Load: This is a calculated average of the CPU load on the application server. This number was derived by using the output from multiple SAR commands taken at roughly the same time as the Approval and Submit rates.

Average Memory Usage: All benchmarks represented in this table were run with the application server running with the full 16GB of memory. The value of 1GB represents the java heap size that was allocated to the Buyer 7.06 application.
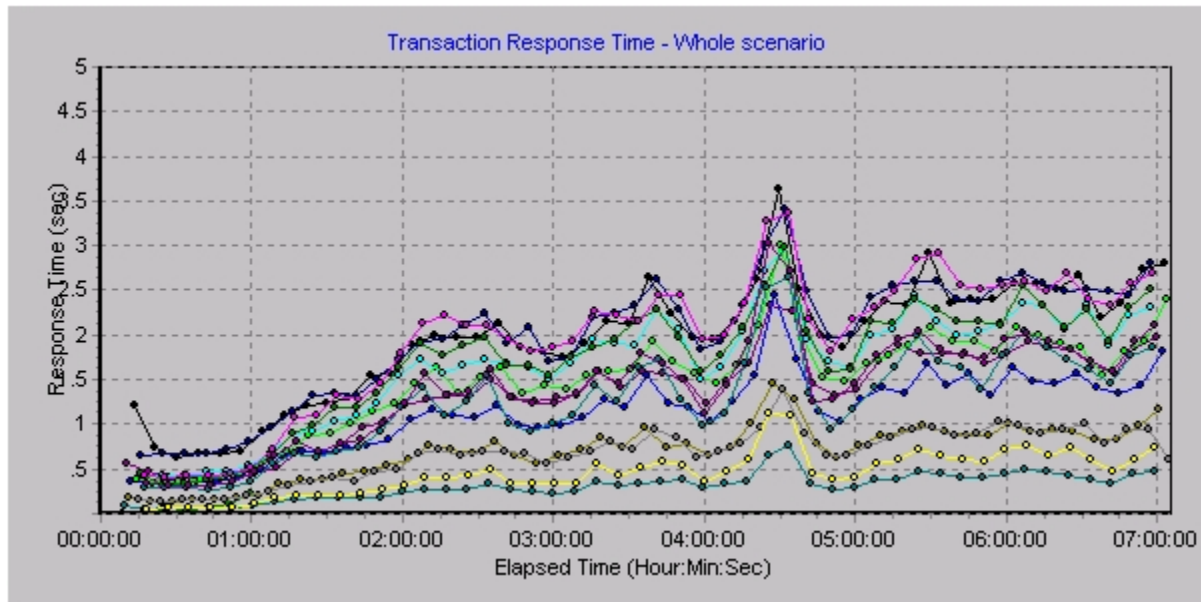
Average Disk I/O: This is an average calculated from output from IOSTAT. This number represents I/O activity on the database server during the same time frame as CPU%, Requisition Rate, and Approver Rate.

Requisition Approval Rate: This number was computed from the Ariba Buyer Core Server Metrics file. It is the sum of four consecutive snapshots taken during times of full user load.

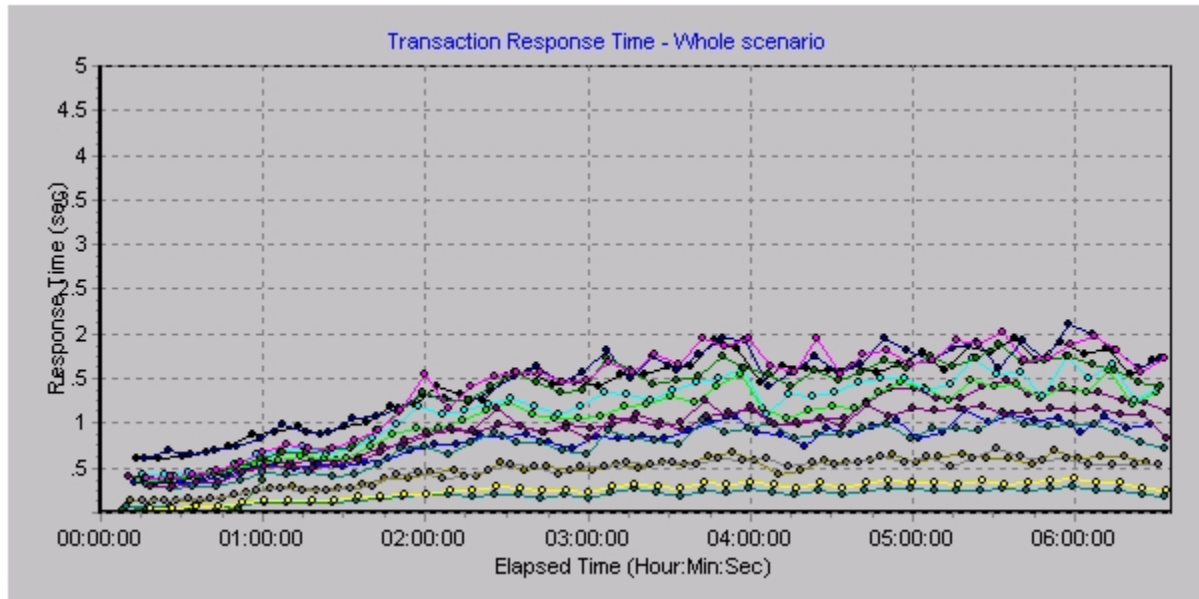**Requisition Submit Rate:** See Requisition Approval Rate above.

Certified by Ariba: Results for 2,4,and 6 way were submitted to Ariba and were certified as passing their certification criteria. The 8 way run was submitted but narrowly rejected. The 12 and 24 way runs were not submitted.

Results: 6 Way

Transaction Response Time - Whole scenario
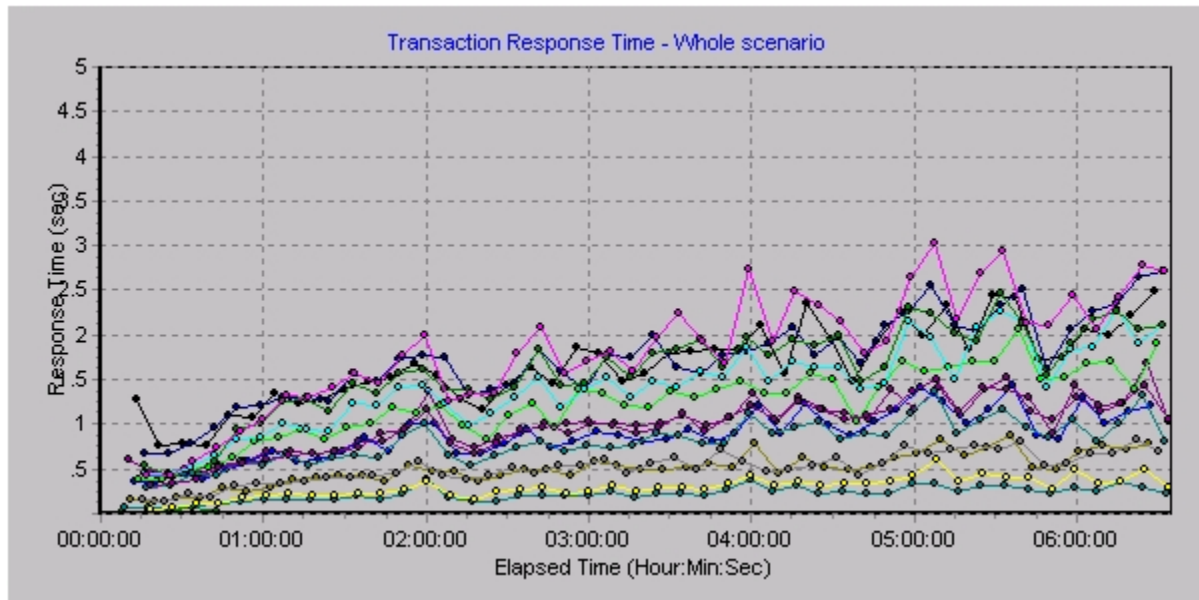
Transaction Performance Summary Report

Scenario: C:\Program Files\Mercury Interactive\LoadRunner\scenario\s80.lrs
Result:

                 e:\lr_results\sixway_ssl2
Start Time: 19 - Sep - 01   21:28:19
End Time: 20 - Sep - 01   04:33:34
Duration: 07:05:15 (25,515sec)

| Transaction | Pass | Fail | Min | *Performance (sec)* | | | |
				Avg	Max	90th Percentile	PopStdDev
Actions_Transaction	31,289	472	151.06	335.43	3,766.61	502.03	284.380
AddItemPage	14,184	3	0.22	1.16	9.09	2.61	0.998
ApprovalPage	17,107	2	0.11	0.70	5.66	1.83	0.704
ApproveOK	23,786	4	0.16	1.47	15.49	3.45	1.502
BackToCatalog	7,031	1	0.42	2.06	10.34	4.33	1.517
BringURL	49,448	4	0.03	0.32	4.52	0.91	0.422
ChooseReq	14,235	0	0.11	0.73	6.22	1.88	0.715
EnterSearch	21,147	2	0.36	2.01	10.45	4.27	1.494
Login	49,311	5	0.06	1.37	10.86	3.06	1.130
Logout	45,190	7	0.05	0.48	7.84	1.42	0.682
ReqCatalogSrch_Transaction	13,901	463	569.70	751.89	1,153.95	876.84	112.032
SelectItem	21,082	5	0.22	1.53	9.41	3.52	1.311
SelectPR	23,910	4	0.16	1.79	12.02	3.95	1.557
Submit	13,947	0	0.22	2.05	11.14	4.80	1.798
Summary	13,991	5	0.23	1.74	10.75	3.97	1.467
ViewPR	23,853	3	0.11	1.31	16.56	3.17	1.373
vuser_end_Transaction	900	0	0.00	0.00	0.03	0.00	0.001
vuser_init_Transaction	900	0	0.00	0.07	1.02	0.27	0.139
Total:	385,212	980					

(*) Performance data was only calculated for successful transactions.

Results: 4 Way

Transaction Performance Summary Report

Scenario: C:\Program Files\Mercury Interactive\LoadRunner\scenario\s80.lrs
Result:

        e:\lr_results\fourway_ssl3
Start Time: 21 - Sep - 01   18:24:17
End Time: 22 - Sep - 01   00:59:32
Duration: 06:35:15 (23,715sec)

| | | | | *Performance (sec)* | | | |
Transaction	Pass	Fail	Min	Avg	Max	90th Percentile	PopStdDev
Actions_Transaction	26,494	400	151.73	327.63	3,715.13	409.52	289.326
AddItemPage	11,811	1	0.22	0.81	6.22	1.86	0.725
ApprovalPage	14,211	0	0.09	0.47	7.58	1.17	0.545
ApproveOK	20,281	0	0.16	0.94	9.70	2.22	0.961
BackToCatalog	5,863	0	0.41	1.50	7.73	3.41	1.206
BringURL	40,301	1	0.03	0.20	3.69	0.53	0.326
ChooseReq	11,845	0	0.11	0.48	4.92	1.19	0.537
EnterSearch	17,633	1	0.34	1.45	8.25	3.27	1.167
Login	40,192	2	0.06	0.99	7.77	2.25	0.835
Logout	38,051	0	0.05	0.26	4.66	0.78	0.433
ReqCatalogSrch_Transaction	11,557	400	571.47	747.68	1,107.86	871.34	111.534
SelectItem	17,577	2	0.22	1.10	7.45	2.64	1.003
SelectPR	20,382	0	0.16	1.35	8.13	3.38	1.264
Submit	11,601	1	0.23	1.47	9.11	3.80	1.443
Summary	11,640	1	0.23	1.21	8.31	2.97	1.126
ViewPR	20,332	0	0.09	0.77	8.02	1.89	0.819
vuser_end_Transaction	800	0	0.00	0.00	0.02	0.00	0.001
vuser_init_Transaction	800	0	0.00	0.05	0.64	0.19	0.106
Total:	**321,371**	**809**					

(*) Performance data was only calculated for successful transactions.

Results: 2 Way

Transaction Response Time - Whole scenario

Transaction Performance Summary Report

Scenario: C:\Program Files\Mercury Interactive\LoadRunner\scenario\s80.lrs
Result:
e:\lr_results\twoway_ssl\2way_ssl.lrr1
Start Time: 24 - Sep - 01   08:59:19
End Time: 24 - Sep - 01   15:34:04
Duration: 06:34:45 (23,685sec)

Transaction	Pass	Fail	Min	Avg	Max	90th Percentile	PopStdDev
Actions_Transaction	21,244	370	151.22	334.93	3,739.97	489.72	309.033
AddItemPage	9,700	4	0.22	0.89	8.02	2.33	0.966
ApprovalPage	11,577	2	0.11	0.52	7.73	1.47	0.714
ApproveOK	16,998	8	0.16	1.01	10.63	2.66	1.171
BackToCatalog	4,841	4	0.42	1.78	8.81	4.38	1.621
BringURL	32,887	4	0.03	0.22	5.20	0.61	0.442
ChooseReq	9,734	1	0.11	0.52	5.88	1.50	0.676
EnterSearch	14,479	8	0.36	1.70	9.64	4.20	1.556
Login	32,795	7	0.06	1.01	9.02	2.59	1.057
Logout	30,716	17	0.05	0.30	8.81	0.97	0.597
ReqCatalogSrch_Transaction	9,472	357	577.33	750.14	1,196.97	874.25	112.072
SelectItem	14,423	7	0.22	1.26	9.97	3.38	1.334
SelectPR	17,089	3	0.16	1.65	10.00	4.31	1.613
Submit	9,498	5	0.24	1.88	12.23	5.03	1.973
Summary	9,536	9	0.25	1.46	10.08	3.97	1.551
ViewPR	17,048	9	0.11	0.82	9.30	2.30	0.987
vuser_end_Transaction	650	0	0.00	0.00	0.02	0.00	0.000
vuser_init_Transaction	650	0	0.00	0.04	0.39	0.14	0.077
Total:	263,337	815					

(*) Performance data was only calculated for successful transactions.

Publications

1. Implementing and Optimizing Ariba Buyer 7.0.4 Multiserver on AIX

2. IBM UNIX Solution Series for e-business, Ariba Buyer 7.0.3 Implementation Guide

3. Ariba Buyer 7.0 Scalability Certification Program

4. Ariba Buyer Database Configuration Guide, Version 7.0.6, August 2001.

5. Ariba Buyer Web Server Configuration Guide, Version 7.0.6, August 2001.

6. Ariba Buyer AIX Installation Guide, Version 7.0.6, August 2001.