Lawson M3 on IBM POWER7 and IBM i 7.1

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Statement of Approval....3
Introduction....4
Benchmark Methodology....5
IBM POWER7 Results....6
IBM i 7.1 Results....7
Summary....8
Appendix A....9
Trademarks and Disclaimers....11

Statement of Approval

Lawson M3 has reviewed, verified, and approved results for their applications which are shown in this report.

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Introduction

This paper describes testing that was done with Lawson M3 10.1 on the new IBM® POWER7™ 750 and the IBM i 7.1 operating system. This report highlights the benefits of the latest IBM POWER® hardware and IBM i™ operating system. First it shows how runtime performance on the new POWER7 has improved over a similarly configured POWER6® system. Second it shows the runtime performance of IBM i 7.1 compared to IBM i 6.1.

Overall the results show a 46% runtime performance improvement with the latest POWER7 750 model over a comparable POWER6 model. Also the results show that runtime performance with IBM i 7.1 has increased by 2% over IBM i 6.1. Thus a significant improvement can be seen when moving to the latest IBM POWER hardware and IBM i operating system.

Note: All testing was done using the 32-bit IBM Technology for Java, or IT4J, JVM.

Benchmark Methodology

The IBM test team used the Lawson M3 Order Entry Benchmark kit for all results in this report. The benchmark kit uses a load generation tool to simulate a number of virtual users entering orders at a reasonable rate. The Order Entry transaction, OIS100, is what is used for this. The Order Entry transaction was chosen for its relative complexity and connection to a real life scenario. Further, it's easily repeatable, can be run infinitely and allows for a large variance in data.

The results from the order entry tests can be calculated into an entity called Universal Performance Unit or UPX. UPX is the sizing indicator used by Lawson M3 for customer sizings. The UPX is a theoretical transaction consisting of an average CPU time required for a typical customer load. A theoretical number of UPX'es per hour can calculated via a user number, activity and the production timeframe.

Thus even though a customer may have many other transactions types than just the order entry transaction that is running here, the results here likely still apply, since all other transaction can be derived via CPU time from this one transaction using UPX. It's is the overall performance of the Lawson M3 Business Engine to handle high volumes of transactions that is being stressed, the transaction type in not key in this, since all business logic share the same application foundation and architectural design.

Only a small number of virtual users, or vusers, were used to drive the scenario. The vusers were configured to wait an average of one second between each step. Thus there is almost no key think time between steps of a transaction. This is not at all representative of a customer environment, however, the goal of the benchmark is to achieve the maximum throughput from the Lawson M3 Business Engine on a given system configuration

The benchmark scenario works as follows:
After logging in, the user performed an order entry operation consisting of seven steps:

1. Create a new order
2. Enter order line 1
3. Enter order line 2
4. Enter order line 3
5. Enter order line 4
6. Enter order line 5
7. Close the order

Throughput is calculated by counting the number of fully invoiced order lines once every minute throughout the benchmark test. Once the run was complete, the number of invoiced order lines per hour over a particular measurement interval was calculated from this data. The measurement interval was defined to be a 90 minute period beginning 15 minutes after all vusers had started. The reported throughput metric for this benchmark is *number of invoiced order lines per hour*. An invoiced order line is one that has completed all of the interactive and batch processing required for that order and the order lines to have a status of 77 or completed. To demonstrate that the results were repeatable, each result consisted of two runs with identical parameters.

IBM POWER7 Results

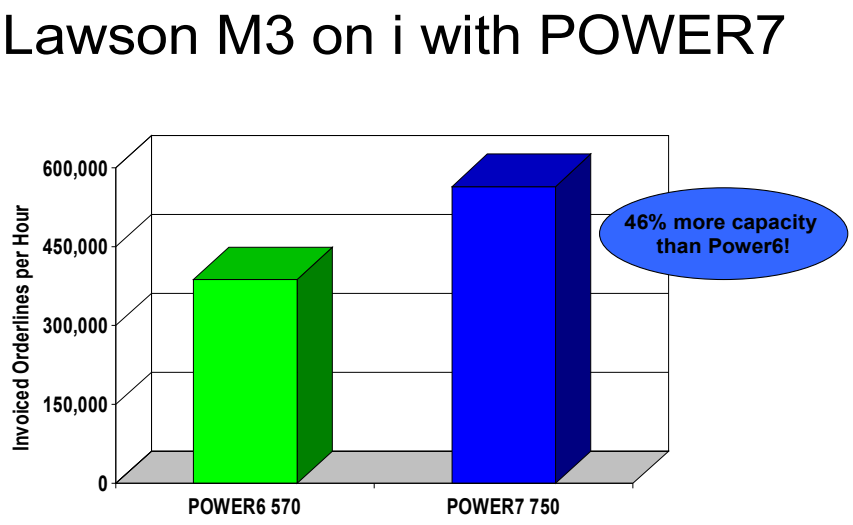
System Configuration:

POWER6 570:
Model: IBM POWER6 570, Edition Feature: 7540
Number of Processors: 4, Chip Speed: 4.2 GHz
CPW rating: 16,200
Main storage: 64 GB
Disk: 54 arms (type 4327), 15k rpm, 70GB capacity
Disk configuration: Single ASP with device parity protection
Disk IOP: Disks spread across two 571F IOPs (390 MB write cache)
Network: 100Mbps Ethernet, full duplex

POWER7 750:
Model: IBM POWER7 750, Edition Feature: 8336
Number of Processors: 4, Chip Speed: 3.55 GHz,
CPW rating: 26,200
Main storage: 64 GB
Disk: 48 arms (type 433D), 15k rpm, 280GB capacity
Disk configuration: Single ASP with device parity protection
Disk IOP: Disks spread across one 572F IOPs (390 MB write cache)
Network: 100Mbps Ethernet, full duplex

Results:

The chart below shows the results for the new IBM POWER7 750 versus a similarly configured IBM POWER6 570. As the chart shows a 46% improvement is seen when moving up to the new IBM POWER7 750.



Note: CPU utilization was at 95% or higher for all runs

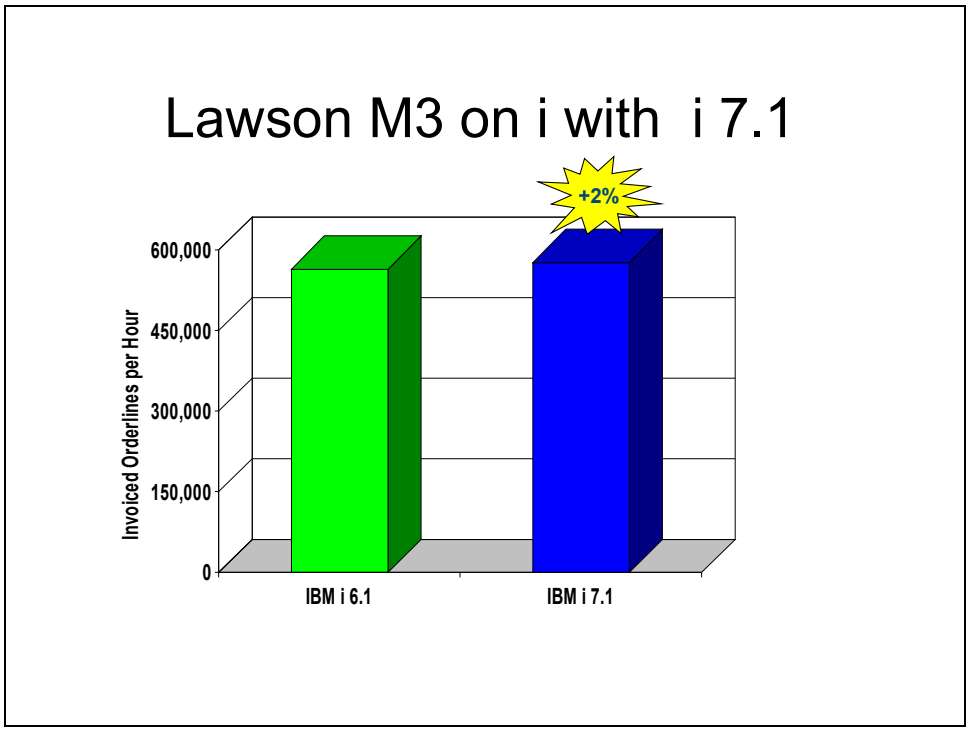
IBM i 7.1 Results

System Configuration:

IBM i 6.1.and IBM i 7.1:
Model: IBM POWER7 750, Edition Feature: 8336
Number of Processors: 4, Chip Speed: 3.55 GHz,
CPW rating: 26,200
Main storage: 64 GB
Disk: 48 arms (type 433D), 15k rpm, 280GB capacity
Disk configuration: Single ASP with device parity protection
Disk IOP: Disks spread across one 572F IOPs (390 MB write cache)
Network: 100Mbps Ethernet, full duplex

Results:

The chart below shows the results for the new IBM i 7.1 compared to IBM i 6.1. As the chart shows a 2% improvement is seen when moving up to the latest IBM i operating system.



Note: CPU utilization was at 95% or higher for all runs

Summary

As the results in this paper have shown, Lawson M3 10.1 sees significant performance benefit when moving to the latest IBM POWER hardware and IBM i operating system.

Overall the results show a 46% runtime performance improvement with the latest POWER7 750 model over a comparable POWER6 model. Also the results show that runtime performance with IBM i 7.1 has increased by 2% over IBM i 6.1. Thus a significant improvement can be seen when moving to the latest IBM POWER hardware and IBM i operating system.
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Appendix A.

Detailed Results: IBM POWER7

POWER6 570:
The POWER6 570 invoiced 388,857 order lines per hour in one run and 386,122 order lines per hour in the second run. In both runs, 175 virtual users were used.

Response time. Table 1 shows the average response time for each Web browser transaction on the POWER6 570. Response times do not include the average think time for each transaction and they measure the entire length of the run, not just the 90 minute measurement interval.

Step	Number per Order	Average Response Time (seconds)	
		Run 1	Run 2
Create Order Head	1	0.238	0.248
Insert Order Line	5	0.140	0.144
Close Order	1	0.138	0.145

Table 1. Average response times for the POWER6 570

POWER7 750:
The POWER7 750 invoiced 564,472 order lines per hour in one run and 565,352 order lines per hour in the second run. In both runs, 237 virtual users were used.

Response time. Table 2 shows the average response time for each Web browser transaction on the POWER7 750. Response times do not include the average think time for each transaction and they measure the entire length of the run, not just the 90 minute measurement interval.

Step	Number per Order	Average Response Time (seconds)	
		Run 1	Run 2
Create Order Head	1	0.122	0.126
Insert Order Line	5	0.069	0.072
Close Order	1	0.066	0.069

Table 2. Average response times for the POWER7 750

Detailed Results: IBM i 7.1

IBM i 6.1:
IBM i 6.1 invoiced 564,472 order lines per hour in one run and 565,352 order lines per hour in the second run. In both runs, 237 virtual users were used.

Response time. Table 3 shows the average response time for each Web browser transaction on IBM i 6.1. Response times do not include the average think time for each transaction and they measure the entire length of the run, not just the 90 minute measurement interval.

Step	Number per Order	Average Response Time (seconds)	
		Run 1	Run 2
Create Order Head	1	0.122	0.126
Insert Order Line	5	0.069	0.072
Close Order	1	0.066	0.069

Table 3. Average response times for IBM i 6.1

IBM i 7.1
IBM i 7.1 invoiced 576,662 order lines per hour in one run and 577,662 order lines per hour in the second run. In both runs, 244 virtual users were used.

Response time. Table 4 shows the average response time for each Web browser transaction on IBM i 7.1. Response times do not include the average think time for each transaction and they measure the entire length of the run, not just the 90 minute measurement interval.

Step	Number per Order	Average Response Time (seconds)	
		Run 1	Run 2
Create Order Head	1	0.123	0.126
Insert Order Line	5	0.083	0.080
Close Order	1	0.067	0.069

Table 4. Average response times for IBM i 7.1

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