Sterling Order Management – Order Processing Benchmark Results

Sterling Commerce
An AT&T Company

Executive Summary

Amidst increased competitive pressure and growing customer demand, fulfilling orders across an extended supply chain has become increasingly complex. Sterling Order Management simplifies this complexity through robust multi-channel order management functionality that can intelligently broker orders across many disparate systems, provide a global view of all inventory across the supply chain, and help make changes to business processes on the fly.

As part of their long term planning initiative, a leading retailer asked Sterling Commerce to execute a set of benchmark tests to simulate the Sterling Order Management solution processing their anticipated 5-year, peak day volumes. In this benchmark study, the retailer provided the scenarios, the workload definition and the benchmark target volumes. Sterling Commerce exceeded the customers' expectations by offering an Order Management solution that is proven in the retail direct-to-consumer world.

The results of this benchmarking effort show the high performance and scalability of the Sterling Order Management solution. It can also grow to meet the needs of customers, especially for customers requiring high order volume throughput. High performance can be maintained at volumes representative of those found in customer environments. Customers and prospects can use the information presented here to determine the software, hardware, and network configurations necessary to support their processing volumes. The primary objective of this benchmarking study was to provide data points to support order management solution purchase and adoption decisions.

"The benchmark requirements were provided by a leading national retailer and the results further affirm Sterling Commerce's commitment to provide a best-in-class, high performing Order Management solution that will satisfy the requirements in the retail environment."

Janice Scanzio, VP of Engineering, Sterling Commerce

Benchmark Test Results Summary

The retailer requested that Sterling Commerce benchmark two different order management scenarios.

Benchmark Scenario 1 simulated Sterling Order Management processing medium orders at moderately high transaction volumes for a business line. The goal was to process over 200K order lines per hour concurrently with over 1M inventory adjustments per hour. In this scenario, the Sterling Commerce application processed:

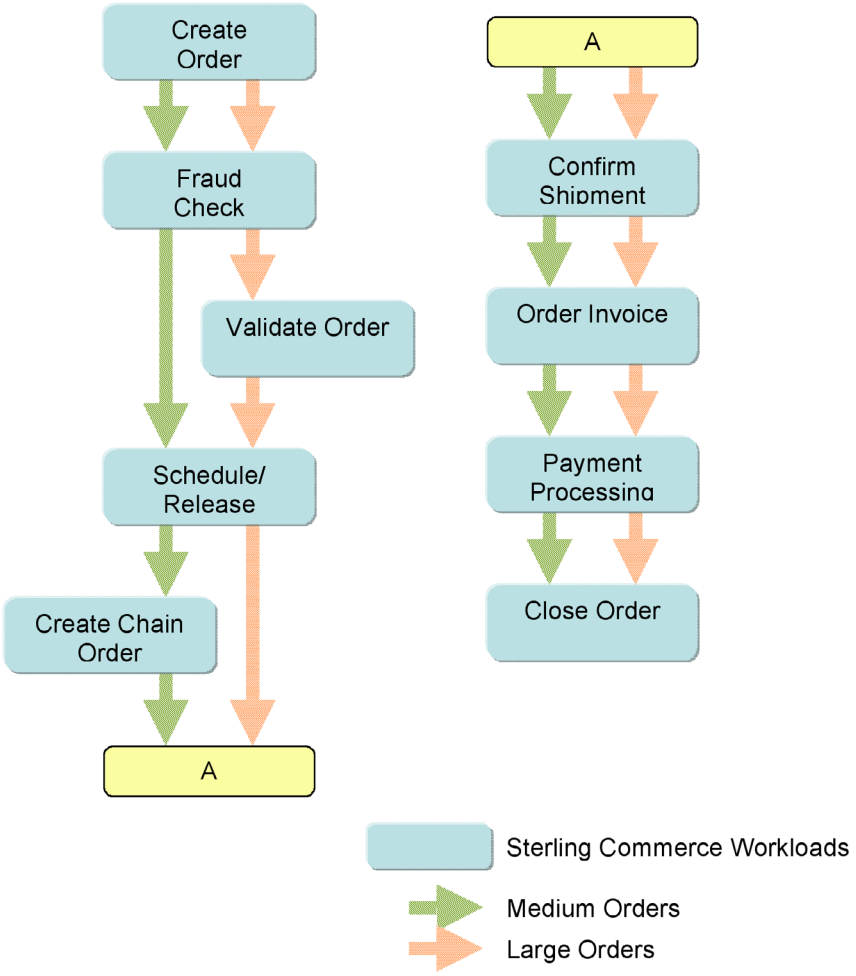
- Around 263K order lines per hour or 66K orders per hour with all orders being medium orders
- 1.3M inventory updates per hour

In Benchmark Scenario 2, the retailer wanted Sterling Commerce to simulate the processing and brokering of orders for multiple business lines with considerably larger orders at over 1M order lines per hour. In this scenario, Sterling Commerce processed:

- Around 1.3M order lines per hour or 26.7K orders per hour of which
  - 80% were large orders and
  - 20% were medium orders
- 1.2M inventory updates per hour

The large orders were made up of 1 to 185 order lines with an average of 65 lines. The medium orders were made up of 1 to 20 order lines with an average of 4 order lines. Each order request (both large and medium) goes through several steps starting from creating and scheduling the order, through shipment and payment as shown in the following diagram.

This graph shows the order pipeline:



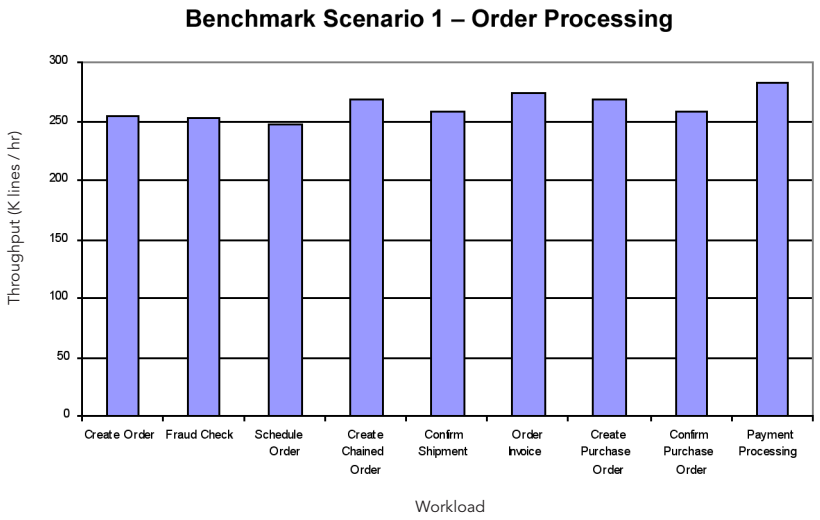
For Benchmark Scenario 1, Sterling Order Management simulated medium orders with order lines ranging from 1 to 20 (with an average of 4) at the following rates:

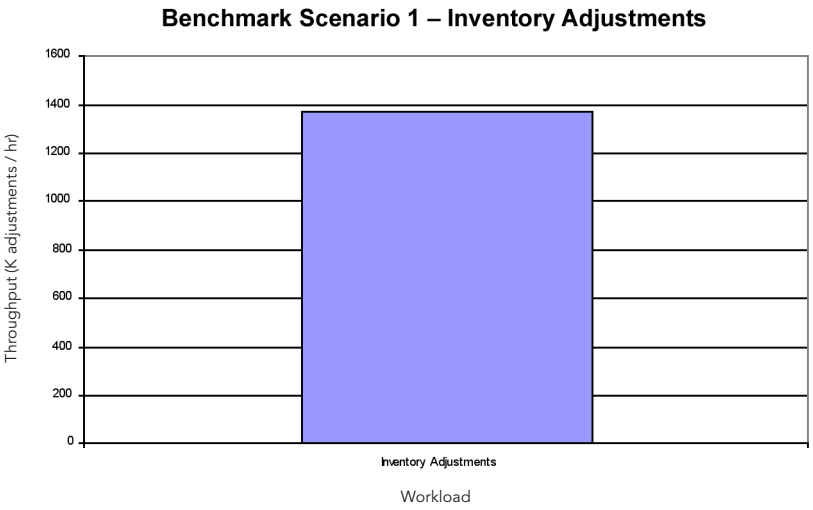
- For medium orders, processed 263K order lines per hour
- For inventory adjustments, processed 1.3M inventory updates per hour

This table shows the order processing workload in Benchmark Scenario 1.

Order throughput per hour	
General Merchandise	
Create Order	256.5K
Fraud Check	254.4K
Schedule Order	249.3K
Create Chain Order	269.6K
Confirm Shipment	258.7K
Order Invoice	274.8K
Create PO	269.6K
Confirm PO	258.7K
Orders Paid	283.5K
Inventory Adjustments	
Adjust Inventory	1,378K

The following graphs show the order processing and inventory adjustment throughput tested in Benchmark Scenario 1.





In Benchmark Scenario 2, Sterling Order Management processed the following workloads concurrently at the following rates:

- For large orders, processed 1.3M order lines per hour
- For medium orders, processed 21K order lines per hour
- For inventory adjustments, processed 1,284K order updates per hour

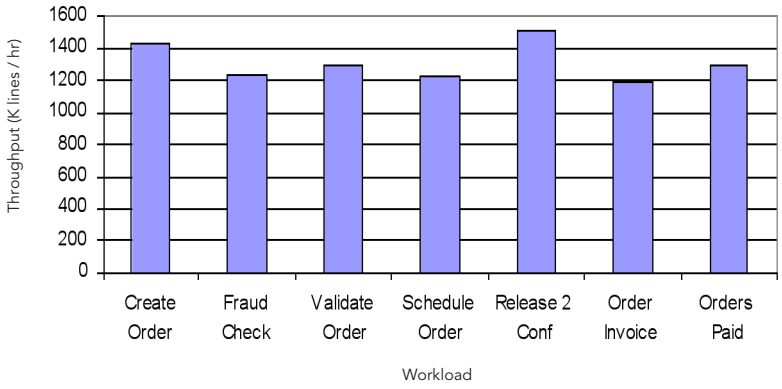
The following table shows order processing workload in Benchmark Scenario 2.

Order throughput / hour

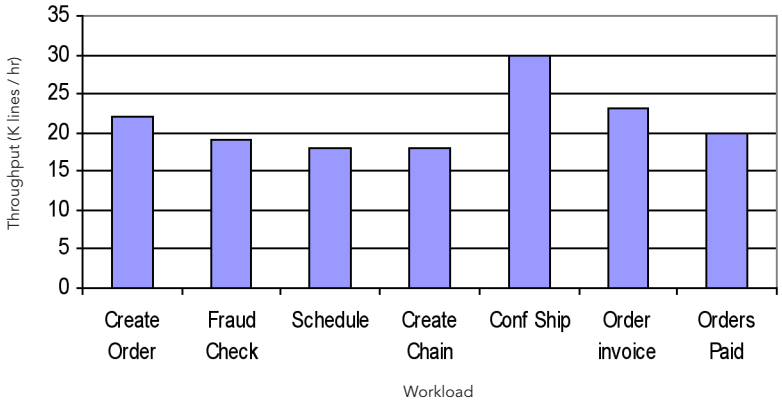
Large Orders	
Create Order	1,435K lines/hr
Fraud Check	1,238K lines/hr
Validate Order	1,299K lines/hr
Schedule Order	1,230K lines/hr
Confirm Shipment	1,509K lines/hr
Order Invoice	1,184K lines/hr
Orders Paid	1,299K lines/hr
Medium Orders	
Create Order	21.9K lines/hr
Fraud Check	19.0K lines/hr
Validate Order	18.1K lines/hr
Schedule Order	18.1K lines/hr
Confirm Shipment	29.8K lines/hr
Order Invoice	23.2K lines/hr
Orders Paid	20.0K lines/hr
Inventory Adjustments	
Adjust Inventory	1,284K inv adj/hr

The following graphs show the large and medium order processing and inventory adjustment throughput tested in Benchmark Scenario 2.

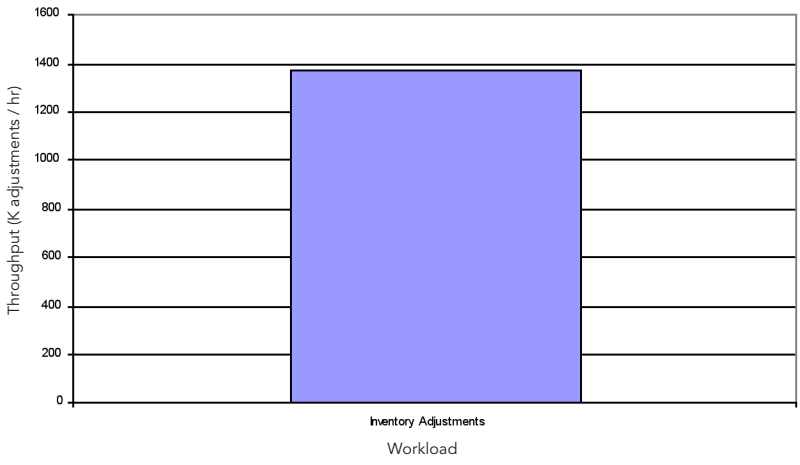
Benchmark Scenario 2 – Order Processing (Large Orders)



Benchmark Scenario 2 – Order Processing (Medium Orders)



Benchmark Scenario 2 – Inventory Adjustments



System Configuration

The benchmark was conducted on version 7.9 of Sterling Order Management, and the following hardware components:

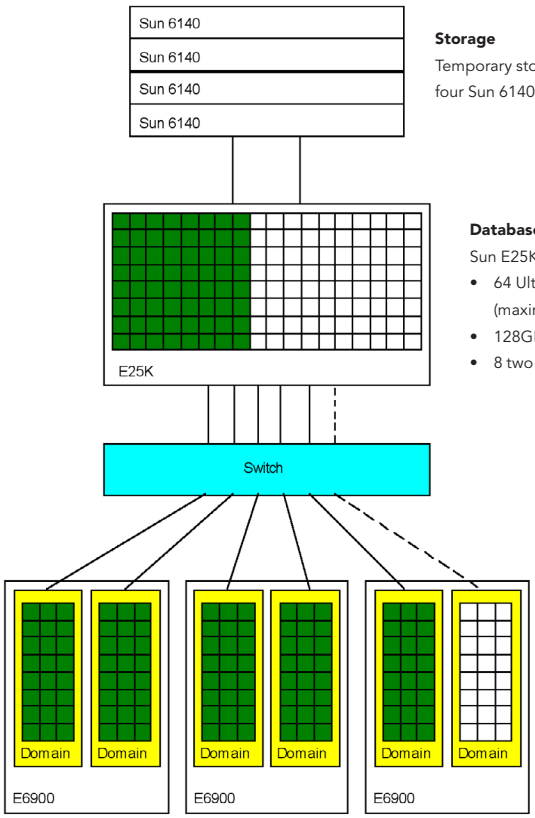
- A Sun E25K for the database server
- Three Sun E6900s for the mid-tier nodes
- Four temporary entry-level Sun 6140 storage arrays (for Benchmark Scenario 1)
- Hitachi 9990 (for Benchmark Scenario 2)

The software components used in the test are summarized in the table below:

Software	Version
Sterling Order Management	7.9
Application Server	IBM WebSphere ND 6.1.0.13 cf130745.06
Application Server JDK	Sun JDK 1.5.1_08, 64-bit
Database Management System	Oracle 10.2.0.2
Operating System	Solaris 5.10 Generic_127111-11

- The test used the standard generally-available Sterling Order Management version 7.9.
- As depicted in the following two diagrams, the Sterling agents and the application servers ran on three Sun E6900s. Each E6900 was configured into two domains. Each configured domain had 24 UltraSPARC IV+ 1.5GHz cores, 48GB memory and a 2 GB fiber channel adapter. Benchmark Scenario 1 used five domains and Benchmark Scenario 2 used all six domains.
- The WebSphere JVMs were configured with 1.75GB heaps.
- The benchmark implemented the database server on a Sun E25K. For Benchmark Scenario 1, we enabled and used 64 cores. The rest of the cores were disabled or kept off-line. In Benchmark Scenario 2, an additional 16 cores were enabled bringing the total available cores to 80.
- Finally, Benchmark Scenario 1 used four entry-level Sun 6140 storage arrays because the preferred SAN storage, a Hitachi 9990, was not available. In Benchmark Scenario 2, the 6140s were replaced with the Hitachi 9990.

Diagram of the Benchmark Scenario 1 configuration:



Storage
Temporary storage arrays
four Sun 6140s

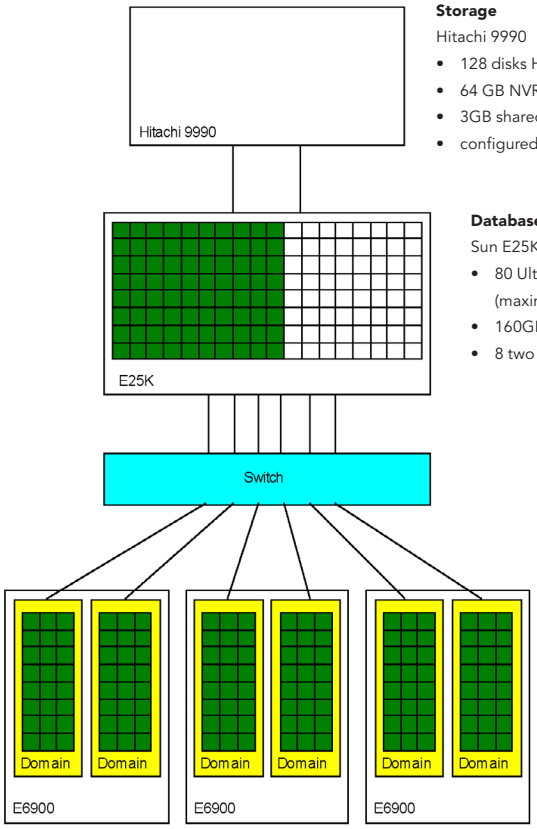
Database Server
Sun E25K
- 64 UltraSPARC IV+ 1.8GHz cores (maximum of 144 cores)
- 128GB memory
- 8 two Gigabit Fiber Channel Adapter

Agent / Application Server Nodes
Three Sun E6900 servers configured as two domains

Each domain configured with
- 24 UltraSPARC IV+ 1.5GHz cores
- 48GB memory
- two Gigabits Fiber Channel Adapter

Five domains were enabled.

Diagram of the Benchmark Scenario 2 configuration:



Storage
Hitachi 9990
- 128 disks HDS 146GB
- 64 GB NVRAM cache
- 3GB shared memory
- configured as RAID1+0

Database Server
Sun E25K
- 80 UltraSPARC IV+ 1.8GHz cores (maximum of 144 cores)
- 160GB memory
- 8 two Gigabit Fiber Channel Adapter

Agent / Application Server Nodes
Three Sun E6900 servers configured as two domains

Each domain configured with
- 24 UltraSPARC IV+ 1.5GHz cores
- 48GB memory
- two Gigabits Fiber Channel Adapter

Summary

In collaboration with a leading retailer, the above-mentioned benchmark tests were designed to simulate real-world challenges. The results demonstrate that Sterling Order Management can not only deliver high performance, but can also scale to the needs of the customer, especially for retailers requiring high order volume throughput.

To summarize, Sterling Order Management addresses the entire order process life cycle from order capture to settlement. It provides the flexibility to control fulfillment process by enabling customized, line-level order fulfillment. This capability can be based on any order-related attribute or condition, while adapting to dynamic variations in the process. The Sterling Order Management solution also manages complex fulfillment by automatically creating and tracking any order resulting from the original customer request.

About Sterling Commerce

Sterling Commerce, an AT&T Inc. (NYSE:T) company, helps companies optimize and transform their Business Collaboration Network quickly, easily and securely to accelerate revenues and reduce costs. More than 30,000 customers worldwide use Sterling Commerce applications and integration solutions to connect, communicate and collaborate with their customers, partners and suppliers so they can drive growth, adapt to change, enhance performance and protect the enterprise. Headquartered in Columbus, Ohio, Sterling Commerce has offices in 24 countries. Learn more at **www.sterlingcommerce.com**

Sterling Commerce
An AT&T Company

For all Sterling Commerce offices worldwide, visit **www.sterlingcommerce.com**

SC0690 12/08