PEOPLESOFT ENTERPRISE ORDER MANAGEMENT (COUNTER SALES) 8.9 ONLINE USING ORACLE10*g* ON HEWLETT-PACKARD ITANIUM SERVERS

As a global leader in e-business applications, Oracle is committed to delivering high performance solutions that meet our customers' expectations. Business software must deliver rich functionality with robust performance. This performance must be maintained at volumes that are representative of customer environments.

Oracle benchmarks demonstrate our software's performance characteristics for a range of processing volumes in a specific configuration. Customers and prospects can use this information to determine the software, hardware, and network configurations necessary to support their processing volumes.

The primary objective of our benchmarking effort is to provide as many data points as possible to support this important decision.

SUMMARY OF RESULTS

This benchmark tested six different scenarios associated with the Counter Sale transaction for selected numbers of online users. The results are in seconds.

		Single User	Multi-User	# of Users
Scenario 1. Create New 5 Line Counter Sale Order	**S1**	9.35 sec.	10.07 sec.	5000
Scenario 2. Record a Payment on a 5 Line Counter Sale Order	**S2**	4.52 sec.	5.04 sec.	5000
Scenario 3. Perform a Margin Adjustment on 1 Line of a 5 Line Counter Sale Order	**S3**	3.19 sec.	3.52 sec.	4000
Scenario 4. Perform a Margin Adjustment on an Entire 25 Line Counter sale Order	**S4**	6.76 sec.	7.51 sec.	1000
Scenario 5. Create a Material Stock Request as part of an Alternate Source Lookup for 1 Line of a 5 Line Counter Sale Order	**S5**	6.42 sec.	7.22 sec.	4000
Scenario 6. Perform an Alternate Source Lookup on 1 Line of a 10 Line Counter Sale Order	**S6**	1.33 sec.	1.42 sec.	2500

* The actions and events that make up the average response times for each of the tested transactions are noted after the description of each transaction on Pages 2 and 3. Each of the six scenarios shown was actually run independently of the others as separate tests. They are reported together here for convenience. Consequently, any notional scenario aggregating events from among the six shown here would need to be tested with its own script, checkpoints and timers.

BENCHMARK PROFILE

In November 2005, Oracle (PeopleSoft) and Hewlett-Packard conducted a benchmark in Cupertino, CA, to measure the online performance of Oracle's PeopleSoft Enterprise Order Management (OM) 8.9 with Oracle10*g*™ 10.1.0.4. We used a 16-way Hewlett-Packard® Integrity™ rx8620 as the database server, running Hewlett-Packard® HP-UX 11i v2. Three 16-way Integrity rx8620 application servers also ran HP-UX 11i v2. Three HP ProLiant web servers ran Windows 2003. An HP StorageWorks XP1024 disk array was used for data storage.

The benchmark measured client response times for 1000 to 5000 concurrent users entering Counter Sale transactions and performing various steps. Our standard data composition model was used and the testing was conducted in a controlled environment with no other applications running. **The goal of this benchmark was to obtain initial performance metrics for PeopleSoft Order Management 8.9 Online, on Oracle10*g* and HP Itanium Servers.**

The figure below illustrates average update response times for a single user, and for a single user with 1000 to 5000 concurrent users entering their transactions or performing specific steps within the transaction.
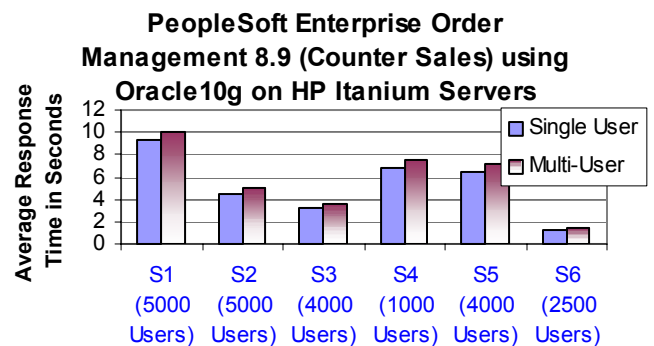

Figure 1: Average Response Times

Note that the scenario numbering shorthand in the 'X' axis of Figure 1 corresponds to the descriptions in the summary table above left.

METHODOLOGY

Mercury Interactive's LoadRunner® was used as the load driver, simulating concurrent users. It submitted transactions at an average rate of one every 15 or 20 minutes for each concurrent user.

Mercury Interactive's QuickTest® Professional was used to automatically submit transactions and to record the benchmark measurements on the client PC.

Measurements were recorded on all of the servers when the user load was attained and the environment reached a steady state.

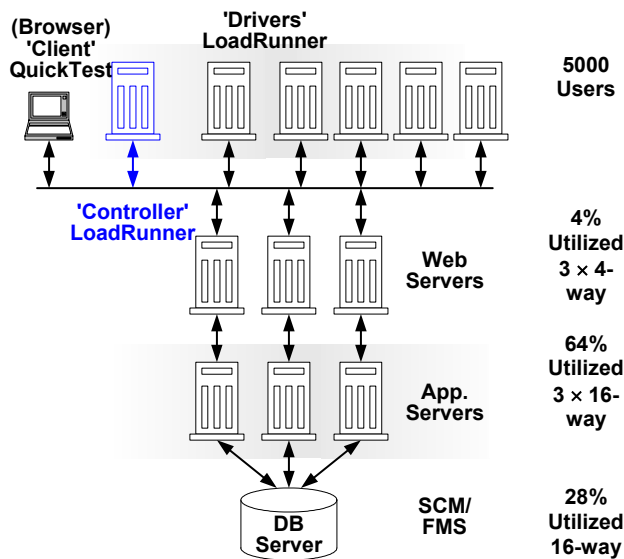Figure 2 shows a typical 4-tier benchmark configuration.

Figure 2: 4-Tier Configuration

This benchmark was run as a "Physical" 4-Tier configuration with discrete machines hosting all of the Database, Application, and Web server instances.

BUSINESS TRANSACTIONS

Oracle (PeopleSoft) defines a business transaction as a series of HTML pages that guide a user through a particular scenario, such as an order entry, order update, or order inquiry.

The following six scenarios tested in this benchmark were performed using the PeopleSoft Enterprise Order Management 8.9 Counter Sale transaction:

(Scenario 1) Create a 5 line Counter Sale Order: In this scenario the Average Response Time measured the time taken to create a new Counter Sale Order with 5 order lines using an existing customer with varying products through clicking the Complete Order button. The transaction time includes the time from when the add button was clicked on the Counter Sale menu through clicking the Complete Order button.

(Scenario 2) Record a Payment on a 5 line Counter Sale Order: In this scenario the Average Response Time measured the time taken to Record a Payment for a 5 line Counter Sale Order. A new 5 line Counter Sale Order was created and advanced to the point of clicking the Record Payment button. The transaction time includes the time from when the Record Payment button was clicked, a cash payment applied, the Print Receipt button clicked and the page allowed to redisplay.

(Scenario 3) Perform a Margin Adjustment on 1 line of a 5 line Counter Sale Order: In this scenario the Average Response Time measured the time taken to perform a margin adjustment on one line of a five line Counter Sale Order. A new 5 line Counter Sale Order was created and an initial price calculation done. The transaction time includes the time from when the Margin tab was selected, the first order line Margin Amount changed to 50 percent, the calculate price button clicked and the page redisplayed.

(Scenario 4) Perform a Margin Adjustment on an entire 25 line Counter Sale Order: In this scenario the Average Response Time measured the time taken to perform a margin adjustment at the order level for a 25 line Counter Sale Order. A new 25 line Counter Sale Order was created and an initial price calculation done. The transaction time includes the time from when a value is entered into the Margin Percent field, the Adjust Order Margins button clicked and the page redisplayed.

(Scenario 5) Create a Material Stock Request as part of an Alternate Source Lookup on 1 line of a 5 line Counter Sale Order: In this scenario the Average Response Time measured the time taken to create a Material Stock Request (MSR) as part of an Alternate Source Lookup on 1 line of a 5 line Counter Sale Order. A new 5 line Counter Sale Order was created and an initial price calculation done. The transaction time includes the time from when the Alternate Source of Supply icon is clicked, a sourcing change done, the Accept button clicked and the return to the Order Entry page. In this scenario the sourcing change creates a Material Stock Request.

BUSINESS TRANSACTIONS CONTINUED

(Scenario 6) Perform an Alternate Source Lookup on 1 line of a 10 Line Counter Sale Order: In this scenario the Average Response Time measured the time taken to perform an Alternate Source of Supply lookup on 1 line of a 10 line Counter Sale Order. A new 10 line Counter Sale Order was created and an initial price calculation done. The transaction time includes the time from when the Alternate Source of Supply icon is clicked, a sourcing change done, the Accept button clicked and the return to the Order Entry page.

ONLINE TRANSACTION RESULTS

Table 1 shows average response times, in seconds, for each transaction scenario. The approximate order lines per hour (LPH) are also shown.

		Single User	Multi-User	Users	LPH
Create New 5 Line Order	S1	9.35	10.07	5000	100,000
Record Payment Step on a 5 Line Order	S2	4.52	5.04	5000	100,000
Margin Adjustment Step on 1 Line of a 5 Line Order	S3	3.19	3.52	4000	80,000
Margin Adjustment Step on the Entire 25 Line Order	S4	6.76	7.51	1000	75,000
Create MSR Step for 1 Line of a 5 Line Order	S5	6.42	7.22	4000	80,000
Alternate Source Lookup – 1 Line of a 10 Line Order	S6	1.33	1.42	2500	100,000

Table 1: Average Response Times

All scenarios processing 5 or 10 line sales orders utilized a 15-minute pace time. The Counter Sale Order Margin Adjustment transaction, which processed a 25 line sales order, used a 20-minute pace time.

Note that each scenario was run independently of the others. They are reported here together for convenience, but cannot be aggregated to extrapolate the response or throughput for another scenario whose workflow might incorporate events from among the six reported here.

Performance may vary on other hardware and software platforms and with other data composition models.

SERVER PERFORMANCE

Table 2 summarizes the average server CPU utilization measured for each online transaction.

	DB Server	App Servers	Web Servers
Scenario 1 5000 Users	27.4	52.92	2.63
Scenario 2 5000 Users	28.34	63.88	3.97
Scenario 3 4000 Users	18.65	63.54	4.07
Scenario 4 1000 Users	9.26	48.72	1.5
Scenario 5 4000 Users	27.97	64.26	4.2
Scenario 6 2500 Users	22.39	63.86	3.47

Table 2: Average CPU Utilization

DATA COMPOSITION

Database Requirements	Single Branch	Branch Group (DB Instance)	Value/ Comment
Order Management BU (Branch)	1	1500	US001
Inventory BU	5	1500	US010
Billing BU	1	1500	US001
Customers	1,000,000	1,000,000	
Locations	1,000,000	1,000,000	1 Location per customer
Users	Min = 1 Max = 10	Min = 100 Max = 5000	Vary users from 100 to 5000
Items	500,000	500,000	Clone of Item 10000
Items by Branch	10,000	8,000,000	5,000 items in all branches, 5,000 additional for 100 branches.
Products	500,000	500,000	Clone of Product 10000;
Orders/Day	67	100,000	5-50 lines per order. Average 5.4.
Order Lines/Day	360	540,000	See note 2
Order Schedules/Day	360	540,000	1 schedule per line
Price Rules	100,000	100,000	Set up by Customer Group and Product Group
Price Formulas	300,000	300,000	Three Price Formulas per Price Rule
Arbitration Plans	1	1	User PROMO
Price Lists	10 lists 5,000,000 details	10 lists 5,000,000 details	Create 10 Different Price Lists and attach them to Customer Groups. Each Customer would then be attached to a Price List via a Customer Group
History Order Headers	12,000	2,400,000	1 month to start. Grows
History Lines	60,000	12,000,000	
History Order Schedules	60,000	12,000,000	

Table 3: Order Management Data Composition

The test database was approximately 100 Gigabytes.

BENCHMARK ENVIRONMENT

HARDWARE CONFIGURATION

Database Server:

A Hewlett-Packard® Integrity™ rx8620 was used as the database server. It was equipped with the following:

- 16×1.6 GHz Intel® Itanium®2 Processors, each with16 Kilobytes of Level-1 Cache, 256 Kilobytes of Level-2 Cache and 6 Megabytes of Level-3 Cache
- 64 Gigabytes of Memory
- 1 SAN-Connected HP StorageWorks XP1024 disk array with 4 fibre-channel connections
- ~8.7 Terabytes of total Disk Space available (120×73 GB), approximately 1.1 TB of RAID 1 storage used for this benchmark ($+ 4 \times 73$ GB internal disk drives)
- $4 \times$ Hewlett-Packard® Tachyon™ XL2 Fibre Channel Host Bus Adapters

Application Server(s):

$3 \times$ Hewlett-Packard® Integrity™ rx8620s were used as the application servers. They were equipped with the following:

- 16×1.6 GHz Intel® Itanium®2 Processors, each with16 Kilobytes of Level-1 Cache, 256 Kilobytes of Level-2 Cache and 6 Megabytes of Level-3 Cache
- 64 Gigabytes of Memory
- ~ 292 GB of total Disk space (4×73 GB)

Web Server(s):

$2 \times$ Hewlett-Packard® ProLiant® DL585 G1s were used as web servers. They were equipped with the following:

- 2×2.4 GHz AMD® Opteron™ dual core processors, each with 1 Megabyte of Level 2 Cache
- 10 Gigabytes of Memory
- 1 SmartArray 5i SCSI Adapter
- ~ 292 GB of total Disk space (4×73 GB) RAID 5

A Hewlett-Packard® ProLiant® DL580 G2 was used as a web server. It was equipped with the following:

- 4×3.0 GHz Intel® Pentium® 4 Xeon™ MP processors, each with 1 Megabyte of Level 2 Cache (HyperThreading enabled)
- 8 Gigabytes of Memory
- 1 SmartArray 5i SCSI Adapter
- ~ 292 GB of total Disk space (4×73 GB) RAID 5

Load Simulation Driver:

1 × Hewlett-Packard® ProLiant™ DL580 G2 served as the driver controller, it was equipped with the following:

- 4 × 3.0 GHz Intel® Pentium® 4 Xeon™ MP processors, each with 1 Megabyte of Level 2 Cache (HyperThreading enabled)
- 8 Gigabytes of Memory

5 × Hewlett-Packard® ProLiant™ DL360 G3s served as the drivers, they were equipped with the following:

- 4 × 2.4 GHz Intel® Pentium® 4 Xeon™ MP processors, each with 512 Kilobytes of Level 2 Cache (HyperThreading enabled)
- 4 Gigabytes of Memory

QuickTest Client PC:

Hewlett-Packard® D530 SFF desktop (DC578AV) with the following:

- 1 × 2.99 GHz Intel® Pentium® 4 Processor, with 512 Kilobytes of Level-2 Cache
- 1 Gigabyte of Memory

SOFTWARE VERSIONS

Oracle's PeopleSoft Order Management 8.9

Oracle's PeopleSoft Enterprise (PeopleTools) 8.46.05

Oracle10*g*™ 10.1.0.4 (64-bit) with PeopleSoft-required patches

Hewlett-Packard® HP-UX® 11i v.2 (11.23) (64-bit) (on the database server and application servers)

Microsoft® Windows® 2003 Enterprise Server w/SP 1 (on the drivers)

Microsoft® Windows® XP Professional Version 2002 Server w/SP 2 (on the client)

Mercury Interactive's LoadRunner® 8

Mercury Interactive's QuickTest® Professional 6.5

BEA Tuxedo® 8.1 RP135, BEA Jolt 8.1

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