ORACLE® 12
E-BUSINESS SUITE

ORACLE®
Cloud Infrastructure

E-BUSINESS SUITE APPLICATIONS R12 (R12.2.5) ORDER MANAGEMENT (OLTP) BENCHMARK - USING ORACLE11*g* ON ORACLE'S CLOUD INFRASTRUCTURE

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 OLTP benchmark test was run on two 8-core servers.

Online Workload		
Number of Users	**Average Response (Sec)**	**90th Percentile Response Time (Sec)**
250 Users Insert Order	1.43	1.61
125 Users Pick Release	0.39	0.46
125 Users Ship Order	0.31	0.35
125 Users Insert Manual Invoice	0.43	0.53
125 Users View Customer Trans. Sales	0.77	0.86
Customer Trans. Tax	0.58	0.65
125 Users Order Summary Report	0.05	0.05
Weighted Average	0.72	0.82

Many factors can influence performance and your results may differ.

BENCHMARK PROFILE

In July 2018 Oracle conducted a benchmark in Pleasanton CA to measure the online (OLTP) performance of the Oracle E-Business Order to Cash business flow in an environment running Oracle E-Business Suite R12 (12.2.5) using the Oracle Database 11*g* (11.2.0.4.0) running on Oracle's Cloud Infrastructure (OCI) Bare-Metal Cloud 16.2.2 Database Service with Oracle® Linux® 6.8 (64-bit) OS. Moreover, the instance of 8 O*CPU*, 16 threads, 512 GB used the attached 22.8 TB NVMe SSDfor data storage and redo log storage.

The benchmark measured the Order to Cash OLTP business process response times for a Large database model. Testing was conducted in a controlled environment with no other applications running. **The goal of this Benchmark was to obtain reference online response times for the Oracle E-Business Suite R12 Benchmark, on an Oracle's Database Cloud Service.**

Ashburn Region with *Availability Domains*
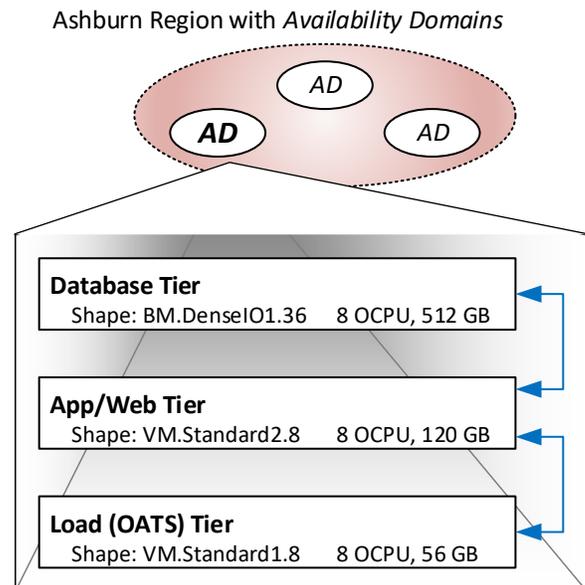
Figure 1: Oracle E-Business Suite Benchmark on Oracle Cloud Infrastructure

BENCHMARK METHODOLOGY

E-Business Suite 12 Benchmark 12.2.5 online processes can be initiated from a browser. For this benchmark, all runs used a browser to initiate the on-line user transactions.

Oracle® OATS® was used as the load driver, simulating concurrent users. It submitted transactions at an average rate of one every 2.5 - 5 minutes for each concurrent user.

Measurements were recorded on all of the servers when the user load was attained and the environment reached a steady state. Note that the measured response times may be shorter than a live user would experience as client and browser latency is not simulated by this load test system.

Figure 2 shows the configuration used for this benchmark run.

	VM.Standard2.8
	App/Web Server
	8-OCPU, (16 vCPU)
	120 GB
	~34% Utilized
	BM.DenseIO1.36
	DB Server
	8-OCPU, (16 vCPU)
	512 GB
	~43% Utilized
	Oracle NVMe SSD
	28.8 TB

Figure 2: 3-Tier Configuration

This benchmark was run as a "Physical" 3-Tier configuration with discrete machines hosting the Database and Application/Web server instances on their respective OS images.

The complete E-Business Suite benchmark consists of a mix of on-line transactions and batch processes running in parallel. This test utilized a single flow of OLTP transactions. The following table describes the on-line transactions included in the benchmark run.

Oracle Application Product Flow	% Overall	Pacing in Min
Order to Cash (Order Management)		
Create & Book Order	25	5
Pick Release	12.5	2.5
Ship Confirm / ITS	12.5	2.5
Receivables – Invoice	12.5	2.5
Receivables – Customer Tran	12.5	2.5
Receivables – Customer Rep.	12.5	2.5
Order Summary Report	12.5	2.5
	100%	

Table 1: Online Transaction Mix

Order to Cash OLTP Processes

Create & Book Order: The user navigates to the "Orders" page, enters customer information and creates a 5-line order. Finally, the user clicks on "Book Order" to enter the completed order. The response time is to 'save' the entry.

Pick Release: The user navigates to the "Shipping/Release Sales Orders" page and enters the order number and clicks on "Execute Now." Finally, the user clicks on "OK" to acknowledge that "Pick Release Only" has completed. The response time is to 'save' the entry.

Ship Confirm: The user navigates to the "Shipping/Transactions" page and enters "From Order Number" and "To Order Number" before clicking on "Find." Finally, the user clicks through the confirmation steps and then clicks on "OK" to acknowledge that "ship Confirm" has completed. The response time is to 'save' the entry.

Receivables – Insert Invoice: The user navigates to the "Transactions/Transactions" page and enters Source, Reference Number, and Line Item information. After entering 5 items, the user save the form. The response time is to 'save' the entry.

BENCHMARK RESULTS

Online Business Metrics	Achieved Output
Self-Service	
Number of Order Lines Created	29,200
Number of Invoice Lines Created	40,490
Number of Order Summary Reports	2,920

Table 2: Online Transactions Completed (1,000 Users)

|	1,000 Users	
	Avg.	**90th%**
Order to Cash		
250 Concurrent Users Insert Order	1.429	1.611
125 Concurrent Users Pick Release	0.39	10.459
125 Concurrent Users Ship Order	0.307	0.351
125 Concurrent Users Insert Manual Invoice	0.429	0.531
125 Users View Customer Trans. Sales	0.771	0.857
Customer Trans. Tax	0.576	0.652
125 Concurrent Users Order Summary Report	0.046	0.055
Weighted Average	0.72	0.82
Transactions/min	~323	

Table 3: Detailed Online Transaction Response Times

The transaction rate is estimated by dividing the number of running users by the average pacing.

R12 Application changes, data model additions and test methodology improvements render direct comparison to previous Oracle E-Business release 11.5.10 and 11.5.9 results invalid.

SERVER PERFORMANCE

Figure 3 shows the running load on the Database and App/Web servers. The plot shown is the average across the processors in the Database server (a total of 8 cores) and the processors (8 cores) in the Application server.
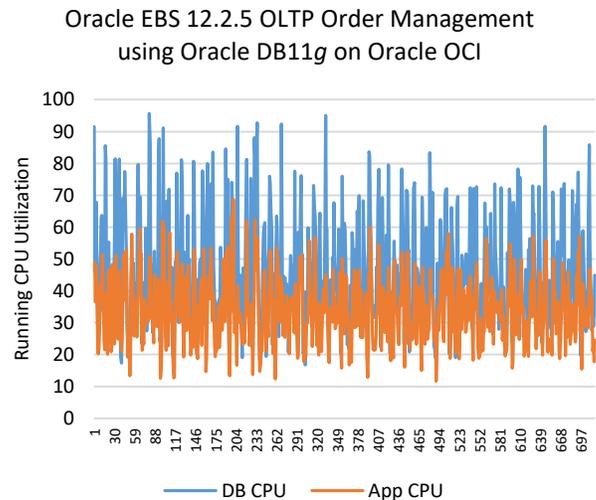
Figure 3: Monitored CPU Utilization

Each server scaled smoothly as users were added, keeping the load fairly constant over the steady state period.

Online Workload	% User	% System	% I/O Wait	% Idle
Database Server	42.6	2.9	0.0	54.4
App/Web Server	31.9	1.9	0.0	66.1

Table 4: Average CPU Utilization Breakout

Average GB Used	1,000 Users
DB Server	346
App/Web	63

Table 5: Average Memory Utilization Breakout

I/O PERFORMANCE

Nine of Oracle's Solid State memory Volumes were used for storage. The workload requires optimal I/O performance.

I/O Performance		1,000 Users
IO/Sec	Avg	1,772
	Peak	3,724
KB Written/Sec	Avg	25,771
	Peak	54,112
KB Read/Sec	Avg	190
	Peak	9,657

Table 6: Average I/O Utilization Breakout

DATA COMPOSITION DESCRIPTION

Major data components for the model under test are summarized in the following table.

Application	Business Objects	Extra-Large Model
TCA	Organizations	1,100,000
	Contacts	4,900,000
	Contact Points	3,700,000
	Accounts	1,100,000
	Account Sites	1,090,000
	Account Site Uses	2,180,000
Contracts	Contracts	222,000
Install Base	Instances	1,300,000
	Trackable Items	5
HR	Managers	800
	Employees	250,000
	Payroll Users	250,000
	Users	20,000
	Credit Card Entries	4,000,000
	Supplier(s)	10,000
Assets	Asset Categories	984
General Ledger	GL Code Combinations	93,417

Table 7: Data Composition

TUNING

N/A

BENCHMARK ENVIRONMENT

HARDWARE CONFIGURATION

DATABASE SERVER

A single Bare Metal instance version 16.2.2 on Oracle Database Cloud Service with Shape BM.DenseIO1.36 (8 OCPU as 16 vCPU) was used. It was equipped with the following:

- 8 O*CPU* (16vcpu) running on 2.29 GHz Intel® Xeon™ E5-2699 v3

- 512 Gigabytes of Memory (~346 GB used at peak load)

- 9 × 3.2 TB Oracle NVMe SSD drives, for a total of 28.8 TB were used to host Linux and Oracle 11*g* Database software.

APPLICATION/WEB SERVER(S)

A single COMPUTE Instance of Oracle's Public Cloud 16.2.2 was used for this test. 1 × Oracle Linux COMPUTE Instance with Shape VM.Standard2.8 was used as an application server and web server.

- 8 O*CPU* (16vcpu) running on 2.0 GHz Intel® Xeon™ Platinum® 8167M

- 120 Gigabytes of Memory (~63 GB used at peak load)

- One Oracle Cloud Infrastructure Block Storage Volume for a total of 155 GB was used to host Linux and the Application Tier software.

LOAD DRIVER SERVER(S)

A single COMPUTE Instance of Oracle's Public Cloud 16.2.2 was used for this test. 1 × Oracle Linux COMPUTE Instance with Shape VM.Standard1.8 was used to host the load controller and agents.

- 8 O*CPU* (16vcpu) running on 2.29 GHz Intel® Xeon™ E5-2699 v3

- 56 Gigabytes of Memory (~33 GB used at peak load)

- One Oracle Cloud Infrastructure Block Storage Volume for a total of 155 GB was used to host Linux and the Application Test Suite Tier software.

Glossary and Acronyms:

NVMe   Non-Volatile Memory express

OASB   Oracle Applications Standard Benchmark

OATS   Oracle Application Test Suite

O*CPU*   Oracle CPU (1 physical core, for 2 execution threads with Hyper threading enabled)

OLTP   On Line Transaction Processing

SOFTWARE VERSIONS

Oracle's E-Business Suite (E-Business Suite Kit) R12.2.5

Oracle11*g* 11.2.0.4.0 (64-bit)

Oracle Linux 6.6 (64-bit) on the database server, app-tier server and ATS server.

Xen 4.3.1 OVM

Java HotSpot™ 64-bit server VM (build 14.3-b01), mixed mode

The following Java™ Standard Edition (SE) versions have all been used in the Oracle Apps environment:

- Java 1.6.0_17-b04

Oracle® Application Test Suite 12.5.2.537 (OATS)

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E-Business R12 OLTP OM Flow

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