ORACLE 12 E-BUSINESS SUITE

ORACLE Cloud Infrastructure

ORACLE E-BUSINESS BENCHMARK REV. 1.0

E-BUSINESS SUITE APPLICATIONS R12 (R12.2.5) HR (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)**
600 Users Cash Expense		0.43	0.53
600 Users Credit Expense		0.32	0.41
600 Users Submit Timecard		0.21	0.26
600 Users View Payslip			
(Search)		(0.40)	(0.50)
Net Weighted Averages		0.32	0.40
(Search)		(0.40)	(0.50)

Many factors can influence performance and your results may differ. Notes times are Save/Update or (Search).

BENCHMARK PROFILE

In July 2018 Oracle® conducted a benchmark in Pleasanton, CA to measure the online (OLTP) performance of the Oracle E-Business HR 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 28.8 TB NVMe SSDfor data storage and redo log storage.

The benchmark measured the HR Self-Service OLTP business process response times for an Extra-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 Oracle's Cloud Infrastructure.**

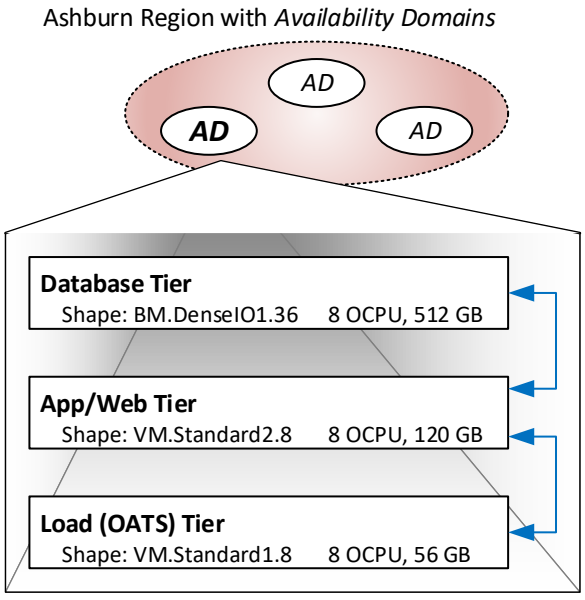

Figure 1: Oracle E-Business Suite Benchmark on Oracle Cloud Infrastructure

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 6 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.

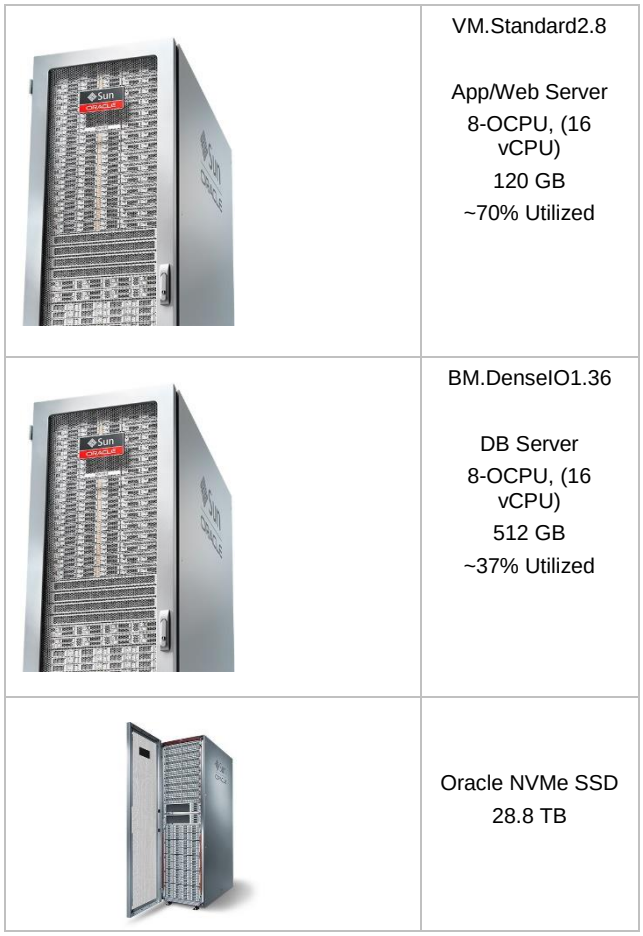

Figure 2: 3-Tier Configuration

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

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

Oracle Application Product Flow	Users	Pacing in Min
HR Self-Service	(2,400)	
Cash Expenses	600	6
Credit Expenses	600	6
Submit Time Card	600	6
View Payslip	600	6
	2,400	

Table 1: Online Transaction Mix

HR Self-Service OLTP Processes

Cash Expenses: The user navigates to the "Expenses Home" and enters various travel and lodging expenses including airfare, car rental, hotel, entertainment, meals, etc. Finally, the user clicks on "Submit" to enter the completed expense report. The response time is to 'save' the entry.

Credit Card Expenses: The user navigates to the "Expenses Home" and enters various travel and lodging expenses including airfare, car rental, hotel, entertainment, meals, etc. Finally, the user clicks on "Submit" to enter the completed expense report. The response time is to 'save' the entry.

Create Timecard: The user navigates to the "Create Timecard" button and enters information about their project, the type(s) of tasks undertaken and the hours spent. Finally, the user clicks on "Submit" to enter the completed time card. The response time is to 'save' the entry.

View Payslip: The user navigates to the "Employee Self-Service" page and clicks on 'Payslip.' The response time is for the 'retrieval' of the search.

BENCHMARK RESULTS

Online Business Metrics		Achieved Output
Number of Cash Expenses Created		16,800
Number of Credit Expenses Created		16,800
Number of Timecards Created		8,690

Table 2: Online Transactions Completed (2,400 Users)

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.

	2,400 Users	
	Avg. (Sec)	90th% (Sec)
HR Self-Service		
Submit Cash Expenses	0.433	0.531
Submit Credit Card Expenses	0.323	0.411
Submit Project Timecard	0.214	0.256
View Emp. Payslip Search	0.399	0.499
Weighted Average Saves	0.32	0.40
Weighted Avg. Searches	0.4	0.5
Transactions/min	~390	

Table 3: Detailed Online Transaction Response Times

The transaction rate is estimated by dividing the number of running users by the average pacing. The OATS output suggested that the realized rate was closer to 383 transactions per minute (~23,007 transactions per hour).

SERVER PERFORMANCE

Figure 3 shows the Steady-State CPU for the database server.

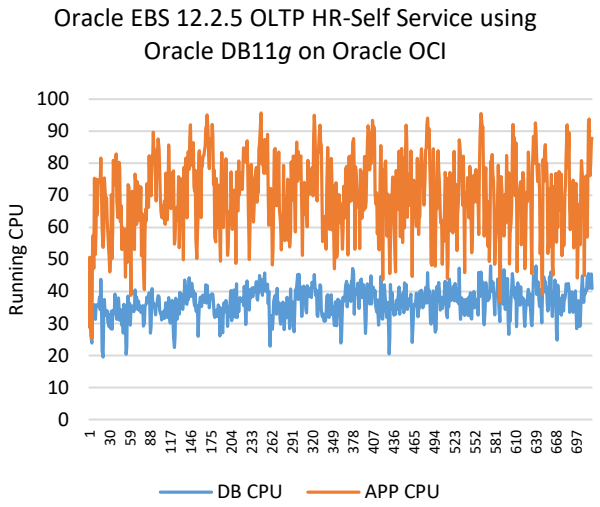

Figure 3: Running DB Server CPU Utilization

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		32.1	4.5	0	63.4
App/Web Server		65.2	4.9	0	29.9

Table 4: Average CPU Utilization Breakout

Total Memory Used By:	2,400 Users
Database Server	329 GB
App/Web Server	46 GB

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		2,400 Users
IO/Sec	Avg	6,336
	Peak	9,261
KB Written/Sec	Avg	32,239
	Peak	50,423
KB Read/Sec	Avg	203
	Peak	12,791

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 Combos	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 (~329 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 (~46 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 (~35 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.

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)

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

Oracle
Applications Performance & Benchmarks
500 Oracle Parkway
Redwood Shores, California 94065
Tel 650/506-7000
Fax 650/506-7000
Email eBSkit_us@oracle.com
World Wide Web http://www.oracle.com

Integrated Cloud Applications & Platform Services

E-Business R12 OLTP HR Flow
July 2018

Oracle Corporation
World Headquarters
500 Oracle Parkway
Redwood Shores, CA 94065
U.S.A.

Worldwide Inquiries:
Phone: +1.650.506.7000
Fax: +1.650.506.7200

oracle.com

Oracle is committed to developing practices and products that help protect the environment

Hardware and Software, Engineered to Work Together