



Strategy | Consulting | Digital | Technology | Operations

# Oracle Public Cloud The Enterprise Cloud

September 2016

High performance. Delivered.





Oracle Built an  
Infrastructure Cloud



Oracle says it's better  
than the other clouds.



Is it?

## We set out to answer that question...

Swingbench is used to generate the initial data for testing, which is delivered to each platform in the same way. Swingbench is then used to execute the various test scenarios consistently across the platforms.



### The performance test types were executed in two phases:

- **Vanilla Configuration** – execute against an Oracle 12c database with no database parameters applied.
- **Database Tuning** – execution of same test cycles with common tuning adjustments across test subjects focused on global parameters



### Each phase consisted of the following test cycles:

- **Low Utilization** – Execution of 150Gb swingbench dataset for 40 vusers over 60 min.
- **Medium Utilization** – Execution of 150Gb swingbench dataset for 80 vusers over 60 min.
- **High Utilization** – Execution of 150Gb swingbench dataset for 200 vusers over 60 min.

# Platforms



Compute Cloud



DB Services

## IaaS (Compute)

Oracle Compute Cloud (IaaS) – OC2M (2 OCPU/4 vCPU, 30GB of Memory)

Other Cloud server deployed with general purpose SSD  
– 4 vCPU, 30GB of Memory

## Leading Cloud Provider

Other Cloud server deployed with provisioned IOPS SSD (12,000 IOPS)  
– 4 vCPU, 30GB of Memory

Other Cloud server deployed with provisioned IOPS SSD (12,000 IOPS)  
– 16 vCPU, 122GB of Memory

## On-Prem x86

Representative of commodity hardware install (leveraged Exadata X4 with no off-loading) – 24 cores, 256 GB of Memory

## Bare Metal – NVME

Bare Metal (Next Gen) Oracle cloud servers with solid state drives  
– 36 cores, xxx GB of Memory

## Bare Metal – Non-NVME

Bare Metal (Next Gen) Oracle cloud servers with block storage  
– 36 cores, xxx GB of Memory

## DBCS (No RAC)

Oracle Database Cloud Service (DBCS) – OC2M (2 OCPU, 30GB of Memory)

## DBCS (RAC)

Oracle Database Cloud Service (DBCS) using a two node RAC configuration  
– each node is an OC1M (1 OCPU, 15GB of Memory)

## Other Cloud DBaaS

Other Cloud DBaaS solution – 4 vCPU, 30GB of Memory

## Exadata CS

Oracle's Exadata in the cloud – 1/8<sup>th</sup> Rack (28 cores, 240GB of Memory)

## On-Prem Exadata

On-Premise Exadata X4-2 – 1/8<sup>th</sup> Rack (24 cores, 256GB of Memory)

So what did we learn?

# The Enterprise Cloud is Here!

Oracle's DBaaS solutions (DBCS and Exadata Cloud Service) have **standard tuning delivered out of the box**

**Exadata Cloud Service** provides the same level of performance as that of the on-premises solution



Oracle's Compute Cloud showed **consistent high performance**

**The underlying storage solution for OPC appears to be a clear advantage.**

**Bare Metal Cloud** provides a powerful, enterprise grade solution for performance hungry applications

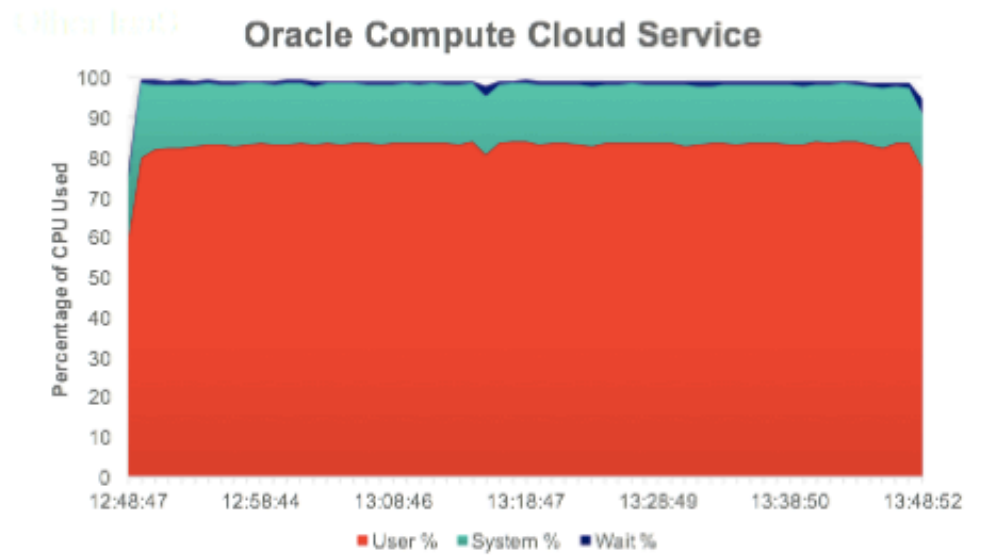
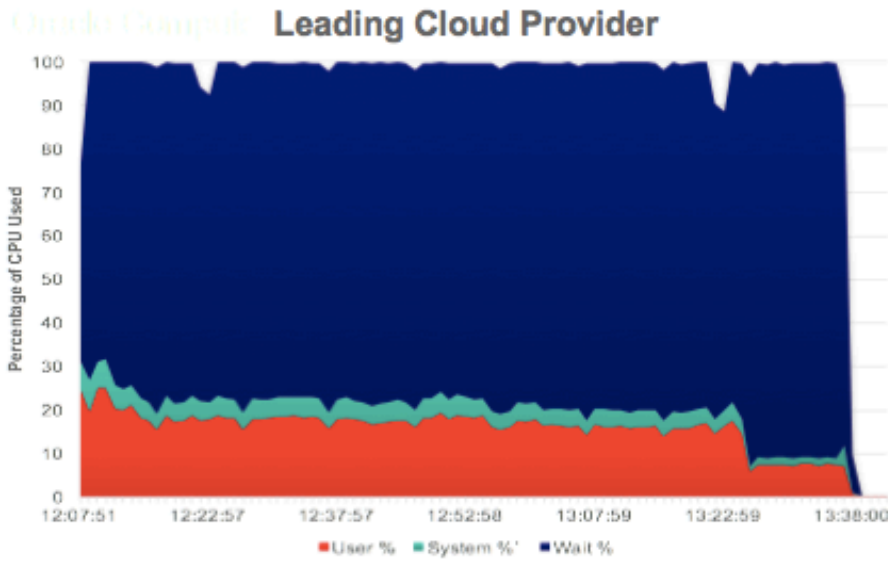
# 1. Oracle's Cloud is Fast

Oracle's Compute Cloud showed consistent high performance



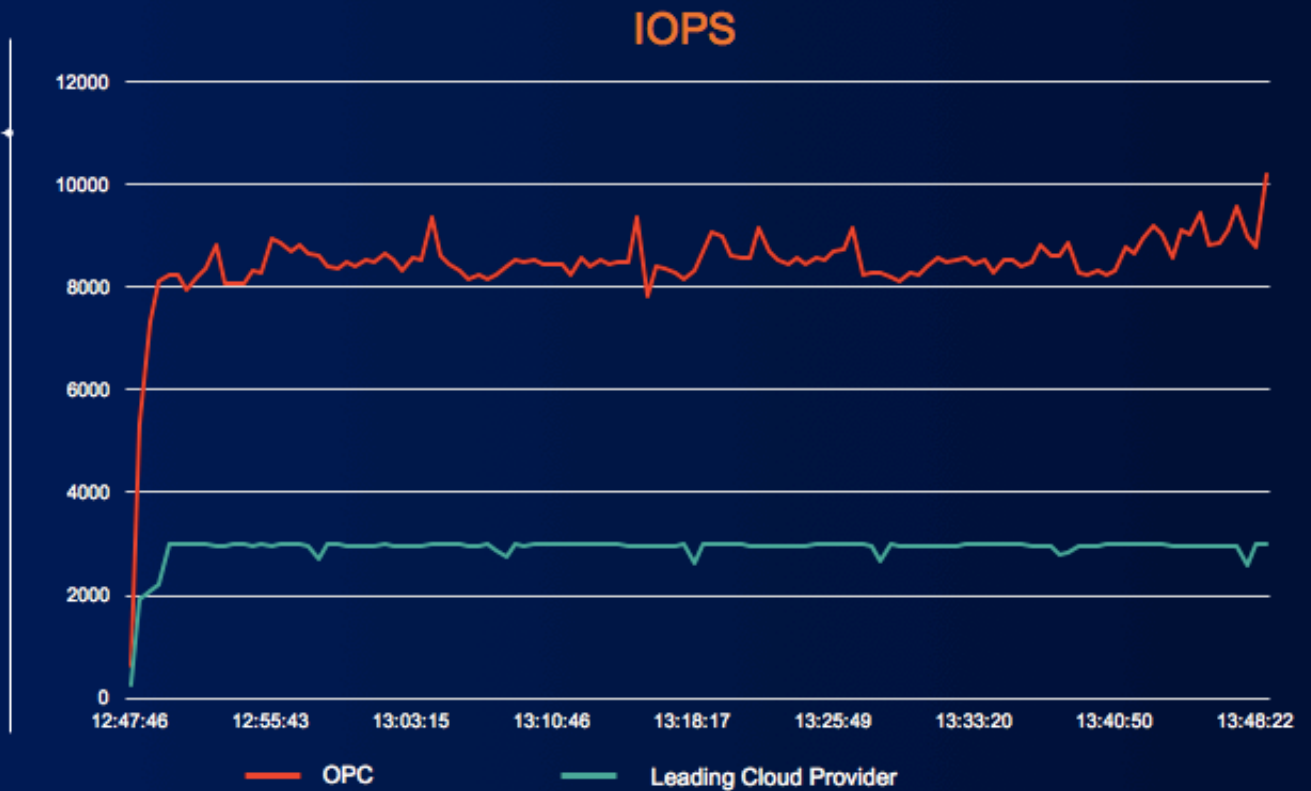
	IaaS		DBaaS	
	Oracle IaaS	Leading Cloud Provider	Oracle DBCS	Leading DBaaS Provider
vCPU	4	4	4	4
Memory	30GB	30GB	30GB	30GB
SGA	6GB	6GB	12GB AMM	12GB AMM
Disk Type	Latency Optimized	General Disk	Throughput Optimized	General Disk
<b>Total Transactions</b>	<b>4,837,067.00</b>	<b>1,397,270.00</b>	<b>3,598,654.00</b>	<b>1,419,827.00</b>
<b>Transactions per Second</b>	<b>1,343.63</b>	<b>388.13</b>	<b>999.63</b>	<b>394.40</b>
<b>Avg Response Time (ms)</b>	<b>75.08</b>	<b>457.85</b>	<b>125.63</b>	<b>428.76</b>

# 1. Oracle's Cloud is Fast





# 1. Oracle's Cloud is Fast



## 2. The Oracle Cloud Block Storage... Rocks!



	Oracle IaaS	Leading Cloud Provider			Oracle IaaS
vCPU	4	4	4	16	8
Memory	30GB	30GB	30GB	122GB	60GB
Disk Type	Latency Optimized	General Disk	Dedicated IOPS	Dedicated IOPS	Latency Optimized
Specified IOPS	N/A	N/A*	12,000	12,000	N/A
Disk Size	612GB	612GB	612GB	612GB	612GB
Total Transactions	4,837,067	1,397,270	2,790,773	5,445,992	8,510,204
Transactions per Second	1,343.63	388.13	775.21	1,512.78	2,363.95
Avg Response Time (ms)	75.08	457.85	135.95	67.62	19.00

## 2. The Oracle Cloud Block Storage... Rocks!



	Oracle IaaS	Leading Cloud Provider			Oracle IaaS
vCPU	4	4	4	16	8
Memory	30GB	30GB	30GB	122GB	60GB
Disk Type	Latency Optimized	General Disk	Dedicated IOPS	Dedicated IOPS	Latency Optimized
Specified IOPS	N/A	N/A*	12,000	12,000	N/A
Disk Size	612GB	612GB	612GB	612GB	612GB
Server List Price per Month	\$150	\$243.76	\$243.76	\$973.56	\$300
Disk List Price per Month	\$50	\$60.00	\$825.00	\$825.00	\$50
Total List Price per Month	\$200	\$303.76	\$1068.76	\$1798.56	\$350

## 2. The Oracle Cloud Block Storage... Rocks!



	Oracle IaaS		Leading Cloud Provider	
vCPU	4	8	4	16
Memory	30GB	60GB	30GB	122GB
Disk Type	Latency Optimized	Latency Optimized	General Disk	Dedicated IOPS
Specified IOPS	N/A	N/A	N/A*	12,000
Disk Size	612GB	612GB	612GB	612GB
Total Transactions	4,837,067	8,510,204	1,397,270	5,445,992
Transactions Per Second (TPS)	1343.63	2,363.95	388.13	1512.78
Average Response Time	75.08	19.00	457.85	12.36
<b>Cost per Month</b>	<b>\$200.00</b>	<b>\$350.00</b>	<b>\$300.76</b>	<b>\$1,828.56</b>
<b>Trans / \$1 / Hr each Month</b>	<b>24,185.34</b>	<b>24,314.86</b>	<b>4,645.80</b>	<b>2,978.30</b>
<b>Cost of One Transaction per Second</b>	<b>\$0.15</b>	<b>\$0.15</b>	<b>\$0.77</b>	<b>\$1.21</b>

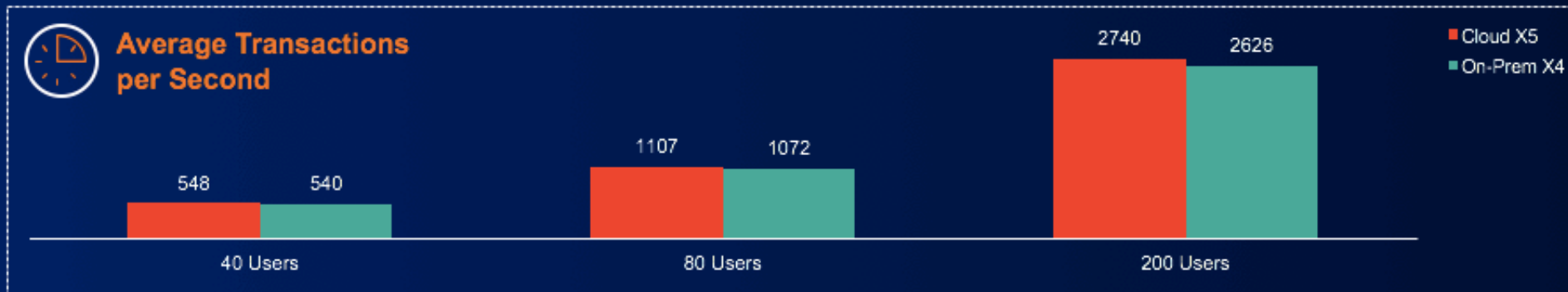
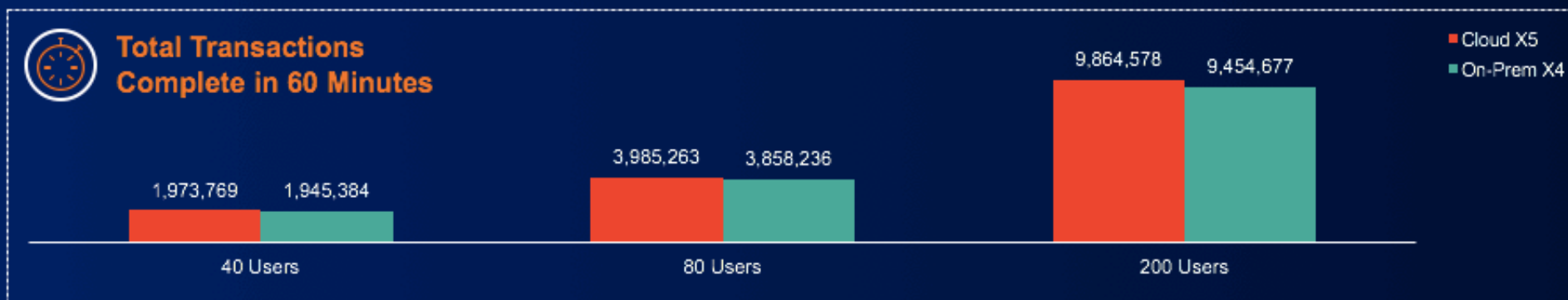
### 3. Exadata in the Cloud is the Real Deal



Parameter	40 Users		80 Users		200 Users	
	Exadata		Exadata		Exadata	
	Exadata Cloud	X4 On Prem	Exadata Cloud	X4 On Prem	Exadata Cloud	X4 On Prem
#CPU	28	28	28	28	28	28
RAM (GB)	240	256	240	256	240	256
SGA	6G	6G	6G	6G	6G	6G
Log file sync (ms)	0.35	0.37	0.31	0.57	0.19	1.43
Log file parallel write (ms)	0.25	0.29	0.31	0.32	0.33	0.39
Total Trans	1,973,769	1,945,384	3,985,263	3,858,236	9,864,578	9,454,677
TPS	548.27	540.38	1107.02	1071.73	2740.16	2626.3
Avg Resp Time	3.36	4.42	2.6	4.65	3.26	6.62

### 3. Exadata in the Cloud is the Real Deal

Exadata Cloud Service provides the same level of performance as that of the on-premise solution.



### 3. Exadata in the Cloud is the Real Deal

Exadata Cloud Service is a price-competitive option for running Oracle databases.

#### Comparison Includes:

- Database EE
- RAC
- Advanced Security
- OEM Diagnostics
- OEM Tuning

Based on an 1/8 Rack with sub-capacity licensing for 16 cores

	On-Prem	Cloud Service
1st Year Cost	\$1,500,560.00	\$480,000.00
2nd Year Cost	\$252,560.00	\$480,000.00
3rd Year Cost	\$252,560.00	\$480,000.00
<b>Total Cost Over 3 Years</b>	<b>\$2,005,680.00</b>	<b>\$1,440,000.00</b>
4th Year Cost	\$252,560.00	\$480,000.00
5th Year Cost	\$252,560.00	\$480,000.00
<b>Total Cost Over 5 Years</b>	<b>\$2,510,800.00</b>	<b>\$2,400,000.00</b>

## 4. Oracle Database Cloud Services are Easy to Use

- ✓ Leverages many of the common database tuning standards we recommend
- ✓ Take advantage of junior DBAs for basic operations on DBCS

	Vanilla	Tuned
#CPU	4	4
RAM (GB)	30	30
SGA (Auto Mem Mgmt)	12GB	12GB
log file sync (ms)	1.23	1.28
log file parallel write (ms)	0.76	0.83
Total Trans	2,032,728	2,001,618
TPS	564.65	556
Avg Resp Time	11.78	8.41



## 5. Bare Metal Cloud is Powerful

The efficient architecture and fast disk solution offer a powerful cloud

	40 Users	80 Users	200 Users	40 Users	80 Users	200 Users	40 Users	80 Users	200 Users
<b>vCPU</b>		4			16			28	
<b>RAM (GB)</b>		256			256			256	
<b>Disk Type</b>		NVMe			NVMe			NVMe	
<b>SGA / PGA</b>		6G / 2G			6G / 2G			6G / 2G	
<b>log file sync (ms)</b>	0.12	0.12	0.15	0.12	0.17	0.25	0.10	0.15	0.18
<b>log file parallel write (ms)</b>	0.07	0.07	0.09	0.09	0.10	0.09	0.08	0.08	0.09
<b>Total Transactions</b>	2,219,067	4,387,582	10,916,571	2,219,669	4,432,172	10,804,564	2,219,052	4,430,040	10,827,150
<b>Transactions Per Second</b>	616.41	1,218.77	3,032.38	616.57	1,231.16	3,001.27	616.40	1,230.57	3,007.54
<b>Avg Resp Time</b>	1.45	1.92	2.42	1.47	1.46	2.97	1.50	1.74	2.99



This is **AWESOME!**

I've got a TON of options  
for my Oracle Databases!

How the heck do I know what's  
best for my Database?!

# Accenture Oracle Business Group Infrastructure-as-a-Service Decision Tree

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