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# Comparing Oracle Database Performance in the Cloud

September 2nd, 2020  
Oracle Global Leaders Meeting –North America  
Cloud Architectures for Data Warehousing  
Customer Panel



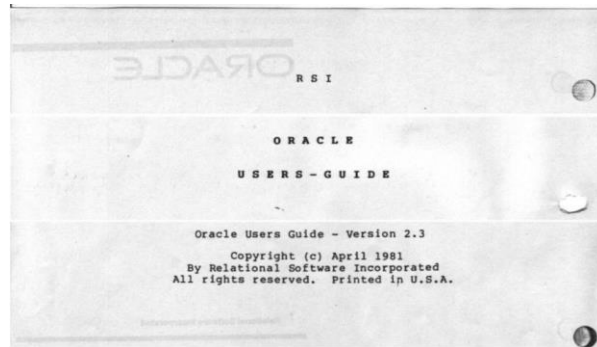
**ORACLE**  
ACE Director

**ORACLE**  
Certified Master



- 10.000+ hours of 24x7 on-call DBA
- First Oracle Certified Master in Europe: 2002
- Oracle ACE Director
- Master Technology Architect
- Master Data Architect
- Database Blog at: [juliandontcheff.wordpress.com](http://juliandontcheff.wordpress.com)

# THE ORACLE AUTONOMOUS DATA WAREHOUSE CLOUD:



# COMBINING CLOUD AND MACHINE LEARNING INTO THE WORLD'S FIRST SELF- DRIVING, AUTONOMOUS DATABASE

# EXTREMELY FAST

## TESTING SHOWED SIGNIFICANT SPEED IMPROVEMENT

- Inserting 500 million rows of data took less than three minutes, on average
- 1.6x performance improvement compared to published findings
- 14x performance acceleration



# FEATURE COMPARISON

## DATABASE PROVISIONING

MANUAL INSTALL\*



**4 HOURS**

DBCS



**1 HOUR**

**ADWC**



**SECONDS**

## SCALE UP / DOWN HARDWARE

PHYSICAL HARDWARE



Not possible as the hardware is not elastic

DBCS



**30 MINUTES**

**Database is down while scaling is happening**

**ADWC**



**SECONDS**

**Database remains active while scaling is happening**

\*assume hardware is already procured

# TESTING APPROACH

Utilizing an existing cloud based analytics application called PRETT [Platform Resource Enablement Tracking Tool] running on OACS [Oracle Analytics Cloud Service]. Data will be replicated in DBCS and ADWC to provide a real life application usage experience

The data will then be extrapolated and expand based on that existing application to simulate ADWC functionality.

## SPRINT 1 BASELINE

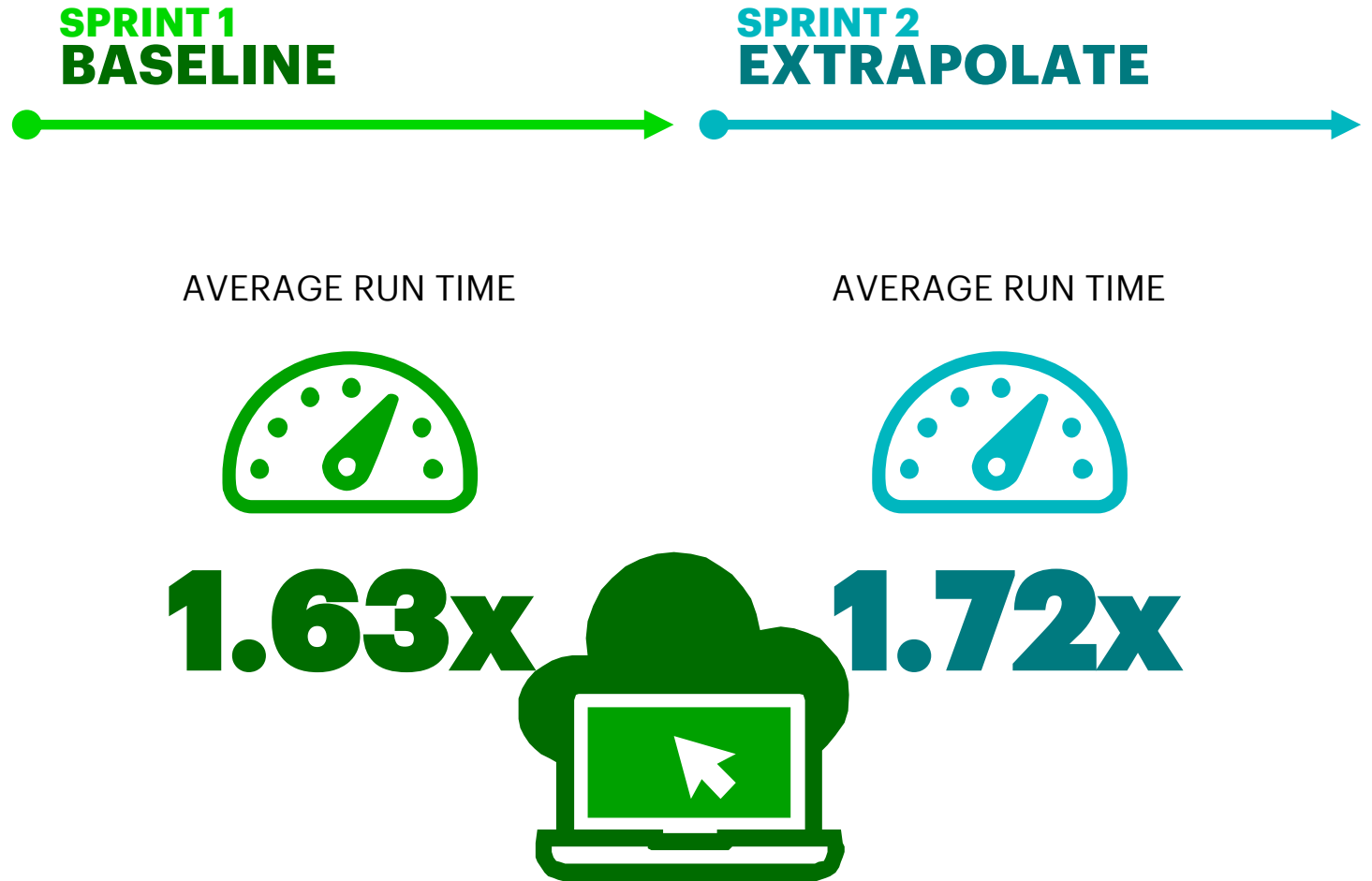
- Compare like to like data volume in OACS[DBCS] to OACS[ADWC]
- 3 Month Data volume
- Run and compare performance in OACS[ADWC] and compare with baseline OACS[DBCS] information

## SPRINT 2 EXTRAPOLATE

- Create 9 years of data on ADWC based on the 3 month live data to then compare performance on high volume data.

# TESTING RESULTS

**ADWC IS  
CONSISTENTLY  
PERFORMING  
FASTER**



# New Performance Tests: Oracle ADW and Major Cloud DW

Other Cloud DWs are a solid offering that performed well in the tests, especially in the smaller cloud- and data-size scenarios

With its data-caching and parallel-execution capabilities, they showed performance above and beyond that which would be expected from a traditional database engine

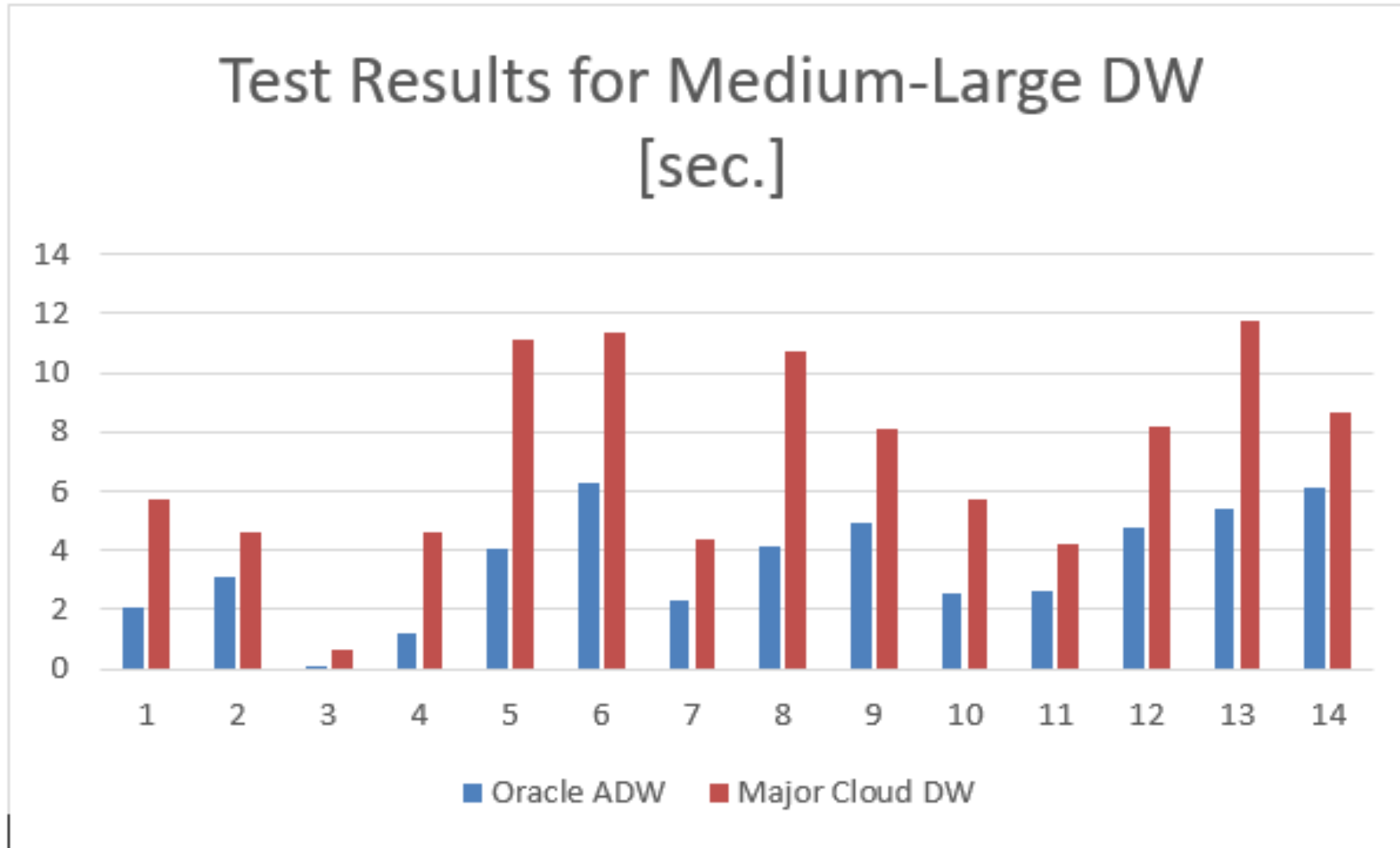
Nevertheless, Oracle ADW essentially matched or exceeded that performance in the small and medium scenarios, and it clearly exceeded it in the large scenario

At the same time, when it comes to heavy workloads ADW delivers higher performance at much lower costs

**With its winning performance/cost ratio—and the operational advantages offered by its extensive autonomous capabilities—Oracle ADW should be considered by companies that want to run their enterprise data warehouse in the cloud**



# Accenture New Performance Tests



# TCO Savings for Autonomous Data Warehouse

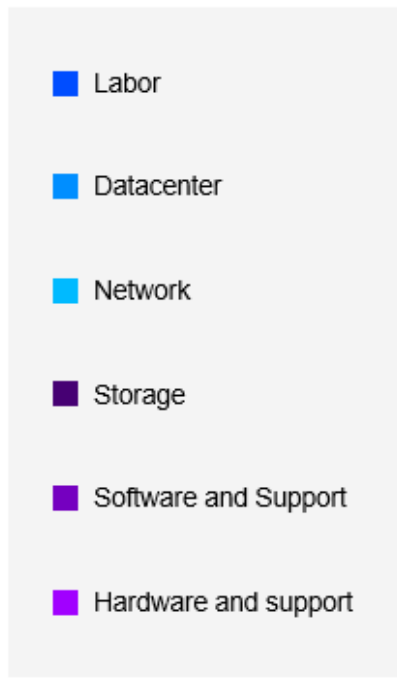
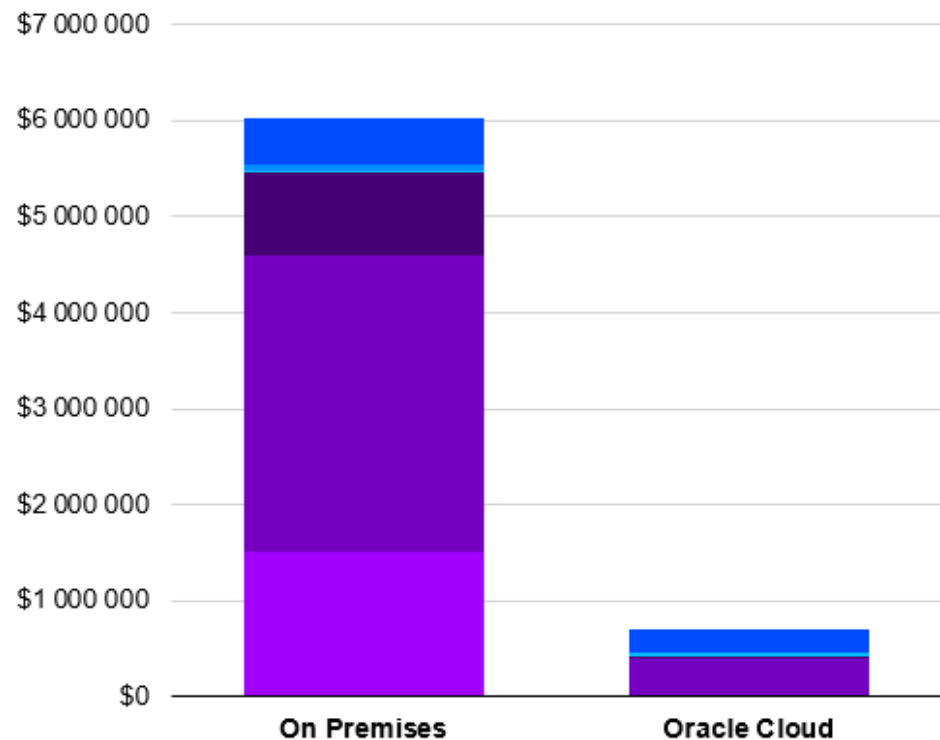
A client TCO analysis

Description	Year 1		Year 2 through 5	
	Associated Cost on Premises (130 Cores)	Associated Autonomous DW Cost (92 Cores)	Associated Cost on Premises (130 Cores)	Associated Autonomous DW Cost (92 Cores)
5 x Exadata 1/4 racks (130 cores) (25% Discount)	\$1,262,250	Included	\$0	Included
Hardware and OS Support	\$252,450	Included	\$252,450	Included
Oracle EE, RAC, Partitioning, Diagnostics (@ 60% discount) (65 licenses)	\$2,522,000	\$394,260	\$0	\$394,260
Annual Support for DB and options	\$554,840	included	\$554,840	Included
Exadata Storage (480TB) (60% Discount)	\$720,000	\$0	\$0	\$0
Exadata Storage Support	\$158,400	\$0	\$158,400	\$0
ADW Storage (8TB)	\$0	\$21,310	\$0	\$21,310
Labor – FTE @ \$165,000 ea.	\$495,000	\$247,500	\$495,000	\$247,500
Datacenter	\$54,000	Included	\$54,000	Included
Network Costs	\$15,600	\$31,200	\$15,600	\$31,200
Oracle Fast Connect		\$11,385		\$11,385
<b>Total Cost</b>	<b>\$6,034,540</b>	<b>\$705,655</b>	<b>\$1,530,290</b>	<b>\$705,655</b>
	<b>88% TCO Year 1</b>		<b>54% TCO Years 2–5</b>	

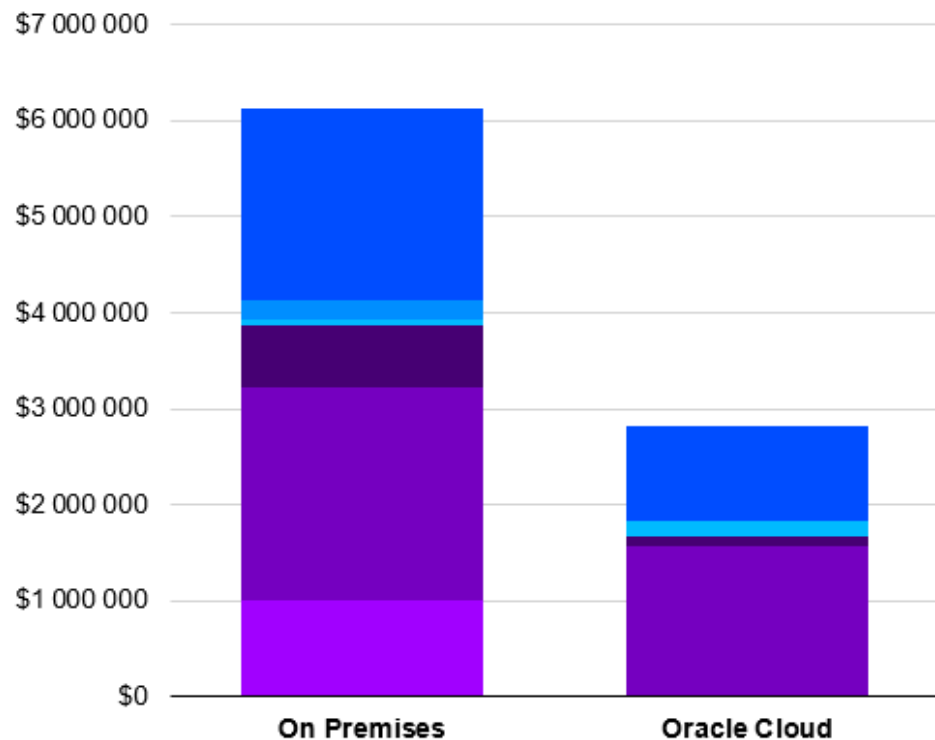
# TCO savings for Autonomous Data Warehouse – a graphical view

A client TCO analysis

## Year 1 cost comparison of On Premises vs. Oracle Cloud

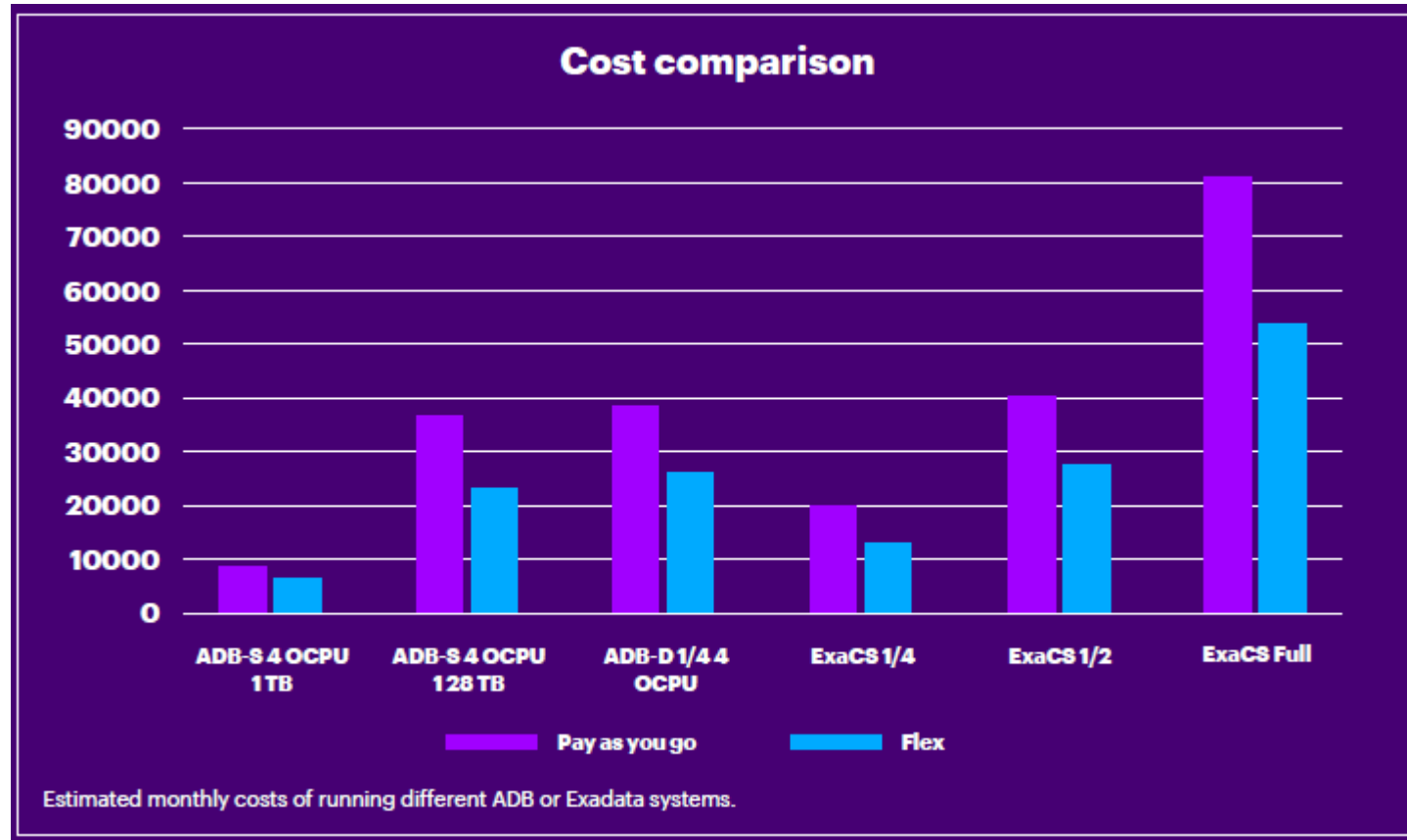


## Years 2 through 5 cost comparison of On Premises vs. Oracle Cloud



# Comparing monthly costs of Exadata and Autonomous

There are two options when purchasing these database services—the “Pay as you Go” model and the “Monthly Flex” model. The figure below illustrates how these payment models compare across the three databases.





# Comparing monthly costs of Exadata and Autonomous

- ADB-D will often be appropriate for companies that want to run their mission-critical systems in a secure isolation zone, on a highly available platform, and take advantage of Exadata Performance
- ADB-S will often be attractive to companies that want to move to the cloud quickly; do not want to maintain any infrastructure; and do not require full isolation or control over maintenance schedules for their workloads
- The ExaCS platform, like ADB-D, offers dedicated performance and true isolation, and can handle mission-critical workloads and can be an especially good option for companies wanting to consolidate multiple databases on a highly available system
- In addition, ExaCS works with many traditional applications, such as Oracle e-Business Suite, Siebel, PeopleSoft and JD Edwards, that are not yet supported on the Autonomous Database platform

## Comparison of deployment features with Exadata X8 shapes

	CPU	Storage	Scaling	Deployment	Supported DB versions (as of Q1 / 2020)
ADB-S	128	128 TB	Auto-matic/Manual	Minutes	19C
ADB-D 1/4	100	128 TB	Manual	Around 4h	19C
ADB-D 1/2	200	179 TB	Manual	Around 6h	19C
ExaCS Base	48	74 TB	Manual	Around 4h	11.2, 12.1, 12.2, 18C, 19C
ExaCS 1/4	100	149 TB	Manual	Around 4h	11.2, 12.1, 12.2, 18C, 19C
ExaCS 1/2	200	299 TB	Manual	Around 6h	11.2, 12.1, 12.2, 18C, 19C
ExaCS Full	400	598 TB	Manual	Around 8h	11.2, 12.1, 12.2, 18C, 19C

# SPEED: FEEL THE NEED

	LEADING CLOUD PROVIDER	ORACLE CLOUD INFRASTRUCTURE	AUTONOMOUS DATA WAREHOUSE	
<b>vCPU</b>	<b>16</b>	<b>16 (8 OCPU)</b>	<b>16 (8 OCPU)</b>	<b>4 (2 OCPU)</b>
<b>Memory</b>	128 GB	120 GB		
<b>Disk Type</b>	SSD	NVME SSD	Exadata	Exadata
<b>Disk Size</b>	1 TB	6.4 TB	1 TB	1 TB
<b>Queries per Hour</b>	<b>65</b>	<b>1,264</b>	<b>11,975</b>	<b>2,453</b>

# MONEY: MAKE IT WORK

	LEADING CLOUD PROVIDER	ORACLE CLOUD INFRASTRUCTURE	AUTONOMOUS DATA WAREHOUSE	
			LARGER	SMALLER
<b>Queries per Hour</b>	65	1,264	11,975	2,453
<b>Term Commitment</b>	3 Years	None	3 Years	None
<b>Annual IaaS Cost</b>	\$5,352	\$8,928		
<b>Annual Oracle DB Support</b>	\$110,000*	\$55,000*	<b>\$101,580</b>	<b>\$46,812</b>
<b>Annual Infrastructure + Oracle DB Cost</b>	<b>\$115,352</b>	<b>\$63,928</b>		

\* Database licensing only includes Oracle Database Enterprise Edition and Advanced Security

# VALUE: MORE FOR LESS

	LEADING CLOUD PROVIDER	ORACLE CLOUD INFRASTRUCTURE	AUTONOMOUS DATA WAREHOUSE	
			LARGER	SMALLER
Annual Total Cost	\$352	\$63	\$101,580	\$46,812
Queries / Hour	1,200	1,200	11,975	2,400
Cost / Hour	\$0.293	\$0.0525	\$8.48	\$1.95
Cost / Query	\$0.2026	\$0.0058	\$0.0010	\$0.0022
Patching for Security	Days / Weeks / Months	Days / Weeks / Months	Real-Time	



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ON ORACLE  
CLOUD**

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