



INFOSYS LOGS PERFORMANCE IMPROVEMENTS ON ORACLE CLOUD INFRASTRUCTURE VERSUS ON-PREMISES

Abstract

In today's world, database is expected to meet the dynamic business demands for increased volume of transactions and also for the variety of workload situations. IT teams must ensure that databases are performing as expected, using resources in the most optimal manner and enabling faster throughput. This paper gives IT leaders information on how Oracle Cloud Service offerings excel compared to traditional on-premises Oracle databases setups. These KPI measurements can enable IT teams with valuable performance metrics which help in designing optimal database platform solutions.

Introduction

Database technology has evolved from simple create, read, update, delete (CRUD) operations to more complex business-responsive, data analytical and transactional operations.

The main areas where database - key performance indicators (KPIs) measured are:

- **Response time** – This reflects how fast a database can churn out data when a query is submitted through an application interface. All online transaction processing (OLTP) activities fall under this category.
- **Batch process time** – This denotes how well the database performs when complex and bulk transactional business process activities like voluminous insertions and updates are submitted
- **Analysis time** – This pertains to time taken to execute multi-dimensional analysis of data for business intelligence like trends, complex calculations and data models All online analytical processing activities fall under this category

Database performance KPIs



Fig 1: Reference view of the most important database KPIs

The overall performance of the database across these KPIs should be fairly high in order to meet the minimum performance requirements.

Oracle Exadata – A modern, high-performing database

The on-premises Oracle-engineered Exadata platform, has been providing consistent performance across the above KPIs in a manner that exceeds expectations. Recently, Oracle has evolved its Exadata solution as a cloud offering by introducing the Exadata Cloud Service (ExaCS) on public cloud and Exadata Cloud at Customer as private cloud at customer datacenter behind own firewall. Infosys was early adopter of ExaCS/ ExaCC implementation started from Gen1 and moved to Gen2 platform. Infosys has been the leading system integrator for implementing and supporting Exadata Cloud solutions with its exclusive center of excellence that has built good credentials i.e. tools and accelerators to analyze, decide,

consolidate, optimize and migrate current landscape to Oracle Exadata Cloud Platform through automation.

Value delivered by Exadata cloud platform

1. Improvement in response time

Response time is measured as the average time taken for different kinds response natured activities . The activities can be as simple as logging into the system to more complex tasks like querying purchase orders for a period of 6 months in different regions. Response time is critical measure of performance for OLTP databases.

For ExaCS and ExaCC, Infosys recorded the following improvements in response time:

Scenario	As IS		Exadata Cloud	
	#of CPU	Memory	#of CPU	Memory
Customer1 – Average Online Logging	18	200	12	120
Customer2- Data set retrieval	32	300	16	200

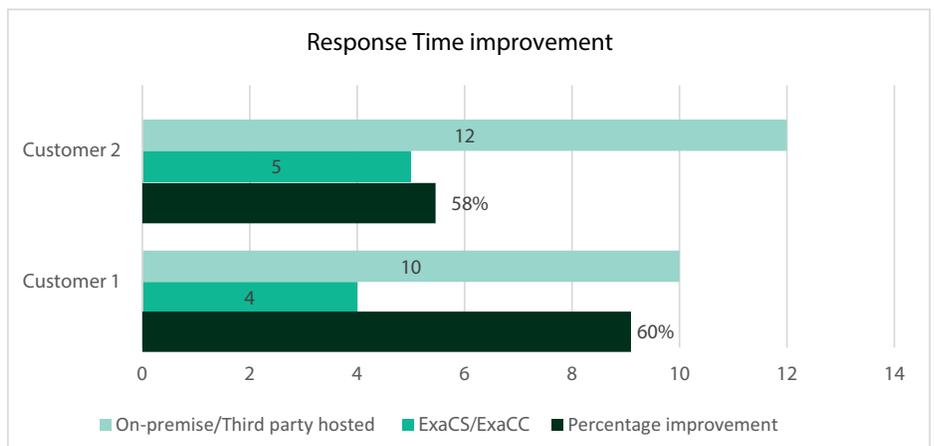
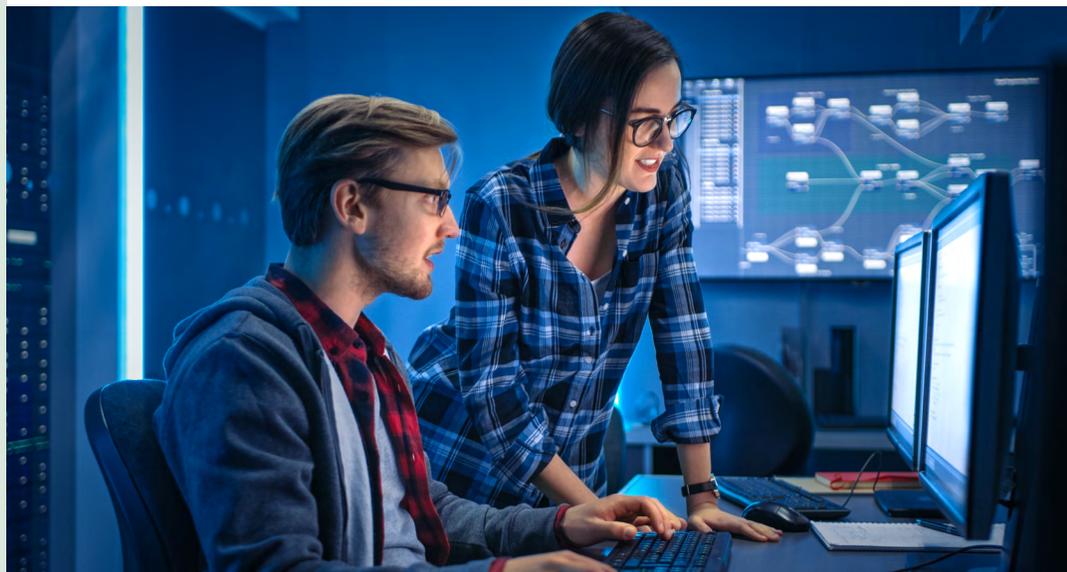


Fig 2: Improvements in response time as recorded by Infosys in ExaCC and ExaCC



2. Improvement in batch processing time

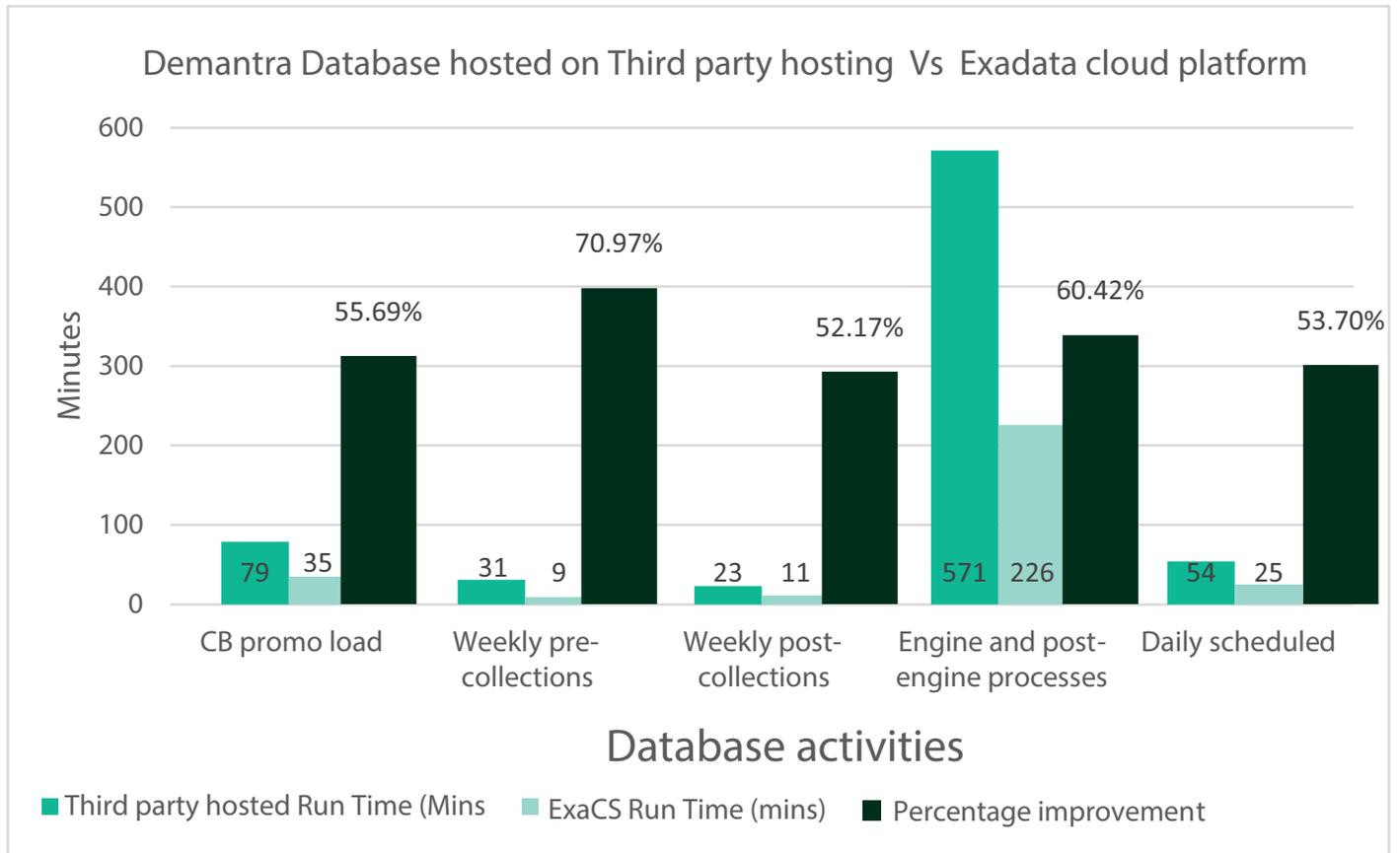
Batch processing activity involves complex business data computation including CRUD activities.

As part of Infosys solution batch load performance were measured for Oracle E-Business Suite (EBS) hosted on Exadata cloud platform in comparison to similar load execution on third party hosted environment.

Job Name	Third Party hosting Run Time (Mins)	ExaCS Run Time (Mins)	% Improvement in Performance
Engine and Post Engine Processes	571	226	60%
Accrual Reconciliation Load Run	250	20	92%
BO PO Extract	173	121	30%
Auto-invoice Master Program	140	1	99%
CB Promo Load	79	35	56%
Receipt Import	55	40	27%
Daily – Scheduled	54	25	54%
Memory-Based Snapshot	53	3	93%
Request Set Planning Data Collection	35	12	65%

Oracle Demantra is one of the industry standard forecasting application, which is memory and CPU-intensive application.

Demantra application workload is mix of batch processing and analytical transactions. Infosys solution hosted on ExaCS excelled in optimized use of memory and compute resources for improvised performance.



3: Comparison of performance benchmarks of Oracle Demantra hosted on third party hosting Vs ExaCS

3. Improvements in mixed load performance

One of the customers was having 600+ application databases hosted on multiple platforms and these applications were built on Java, Microsoft.net and Oracle technologies etc. Infosys migrated the databases to Exadata Cloud Platform which improved performance significantly for all the applications.

Table 1: KPIs of mixed jobs in custom applications on Exadata Cloud at Customer

Application type	Performance parameter	Data points	On-premises time	Exadata Cloud at Customer time	Improvement in performance
Shared services application	Critical job	Job run time	1 hour, 30 minutes	1 hour	33%
Disbursement database	Batch process	Staging to custom tables	5 hours, 9 minutes	1 hour, 3 minutes	80%
		Populating to base tables	3 hours, 42 minutes	1 hour, 19 minutes	64%
		Data processing	4 hours, 8 minutes	1 hour, 51 minutes	55%
		Second pass of data processing	1 hour, 52 minutes	23 minutes	79%
Application data store	Batch	Data processing	59 minutes	34 minutes	~ 42%
File management interface	Application response time	Login to console	20 to 25 seconds	12 to 16 seconds	~ 30%





Key process improvements

Average trial balance report

- 50% improvement from 30 minutes to under 15 minutes

Daily income statement snapshot

- 64% improvement from 13 minutes to under 5 minutes

Month-end extraction for finance datastore

- 79% improvement from 70 minutes to under 15 minutes

Net book value for finance datastore

- 90% improvement from 23 minutes to under 2 minutes

An average 55% improvement in overall processing time for top running processes



General ledger batch process improvements

Job 1: Average file processing time

- 32% reduction from 27 minutes to 18 minutes

Job 2: Average file processing time

- 40% improvement from 38 minutes to 23 minutes

Job 3: Average file processing time

- 20% reduction from 14 minutes to 11 minutes

Fig 4: Specific workload improvements achieved with Exadata Cloud Service and Oracle EBS



4. Analytical workspace : Performance improvements

Autonomous data warehouse cloud (ADWC) services provide automated database operations with enhanced performance, elasticity and scalability.

Infosys recorded the following performance improvements for a workload on the on-premise hosted Database Vs ADWC and also with added Oracle Analytical Cloud (OAC) workload. ATP query performance over non-ATP was found to be significantly better.

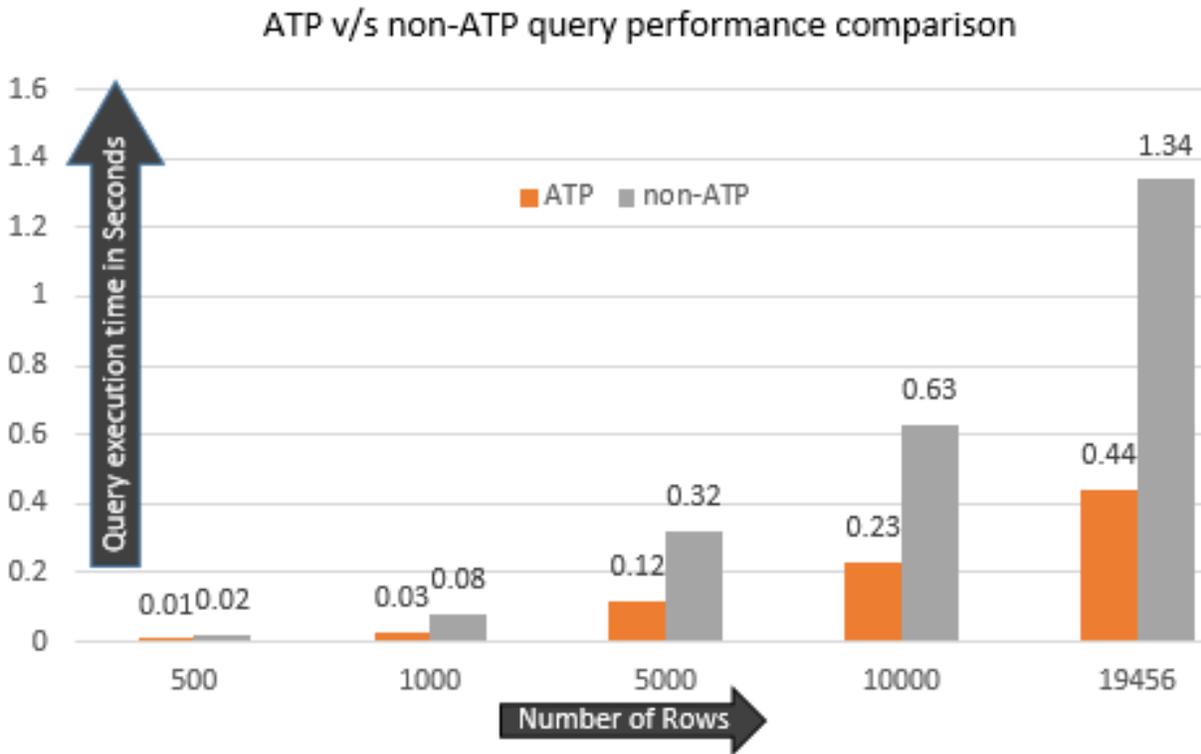
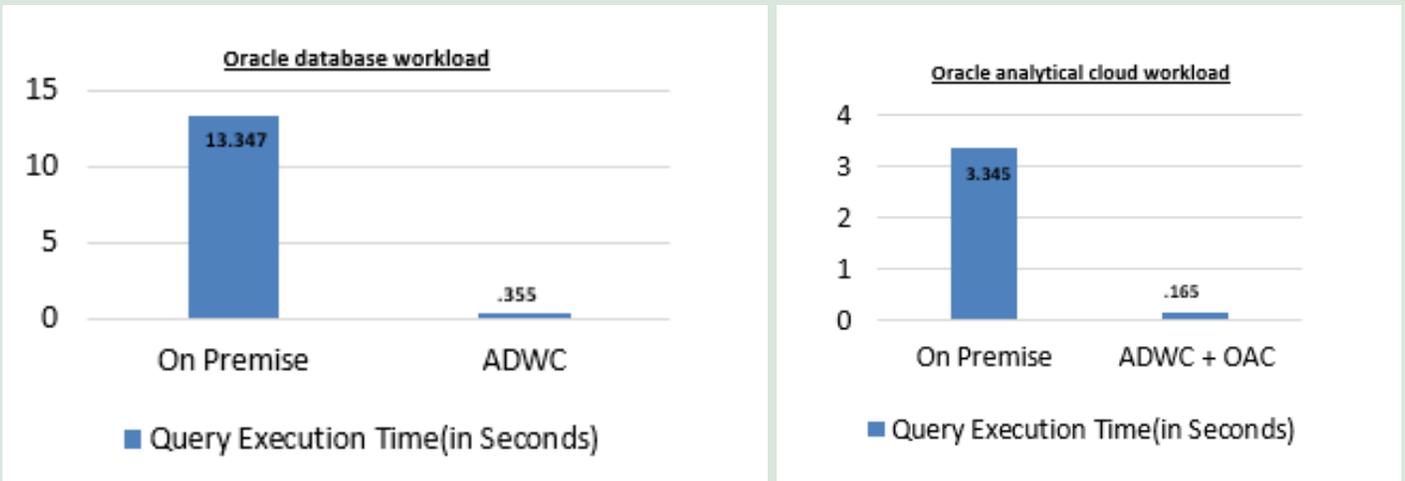


Fig 5: Comparison of KPIs for executing query workloads and autonomous transaction processing workloads on on-premises and autonomous data warehouse cloud

Conclusion

Exadata Cloud Service and Exadata Cloud at Customer are two of the latest database offerings from Oracle that promise superior performance improvements over the traditional oracle database setup. Since database performance is important to ensure business responsiveness, enterprises must track specific KPIs like response time, batch processing time and analysis time to determine if their databases are meeting the performance KPIs. As stated, Infosys continues to excel in resolving customer's business challenges by adopting Oracle Exadata cloud platform and applying Infosys IPs.



About the Authors



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Girish has experience of 21 years in Oracle database and application technologies. He is a cloud practitioner and has experience in designing and implementation of large-scale database migrations on Oracle Exadata. Girish has also created automation assets for Oracle cloud.



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