



Cloud at Customer Academy 3.0

Exadata Cloud Features - EHCC, Smart Scan, In-Memory, Multitenant

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Nossos Valores

Integridade

Ética

Compliance

Inovação

Trabalho em
Equipe

Respeito
Mútuo

Satisfação
do Cliente

Justiça

Qualidade

Comunicação

Como empresa líder em tecnologia, abraçamos a **diversidade** em todas as suas formas. Acreditamos realmente que a **inovação** começa com a **inclusão**. E isso só pode ser alcançado com a cooperação de nossos **parceiros**. Afirmamos nosso **compromisso** em manter um **ambiente respeitoso** e **livre de discriminação** e esperamos isso dos nossos **parceiros de negócios**.

A Oracle espera que seus **parceiros** conduzam os negócios de forma **justa** e **ética**, para cumprir as leis anticorrupção em todo o mundo, para cooperar com os pedidos de informação da Oracle e evitar envolver-se em qualquer atividade que envolva até mesmo a aparência de impropriedade.

É vital que os nossos parceiros sejam aderentes aos valores do **Código de Ética e Conduta Empresarial da Oracle**, que baseia-se e implementa os valores que são essenciais para o nosso sucesso como empresa. Nossos valores são a base de tudo o que fazemos e todos nós devemos viver esses valores todos os dias.



Utilize o QR code para acessar o Código de Ética e Conduta Empresarial da Oracle.



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Exadata Academy 3.0 | Register Now

Oracle Exadata Cloud at Customer Academy

Visando capacitar nossos parceiros em OCI Services, criamos a Academia Oracle Exadata Cloud at Customer ou Academia Oracle ExaC@C.

A academia contará com **10 sessões de treinamentos**, a partir de **10 de julho**, que permitirá aos participantes conhecer os principais recursos e funcionalidades do Oracle ExaC@C. Também será uma excelente oportunidade para você esclarecer todas as suas dúvidas para obter a sua certificação!

Participe conosco dessa academia e descubra por que o Oracle ExaC@C é a maneira mais simples de migrar as cargas de trabalho críticas do Oracle Database de uma organização para a nuvem.

Confira a agenda a seguir e inscreva-se. Contamos com a sua participação!

Agenda

Troubleshooting tools – Demo Session

21 de agosto

10h às 11h30h (horário de Brasília)

Inscreva-se

Monitoring – Demo Session

28 de agosto

10h às 11h (horário de Brasília)

Inscreva-se

Smart Scan, HCC compression & In-Memory – Demo Session

11 de setembro

10h às 12h (horário de Brasília)

Inscreva-se

A&Q for Certification

18 de setembro

10h às 12h (horário de Brasília)

Inscreva-se

New Features - Demo Session

25 de setembro

10h às 12h (horário de Brasília)

Inscreva-se

view

10h às 12h (horário de Brasília)

Inscreva-se

PCA - Private Cloud Appliance

17 de julho

10h às 12h (horário de Brasília)

Inscreva-se

Patching – Demo Session

24 de julho

10h às 12h (horário de Brasília)

Inscreva-se

Backup & Restore – Demo Session

31 de julho

10h às 11h30h (horário de Brasília)

Inscreva-se



SCAN ME



Agenda

Exadata Features

Oracle Multitenant Database

Exadata Smart Scan

Exadata Hybrid Columnar Compression

Oracle In-Memory Database

Demo – Partitioning (DBMS_REDEFINITION)

Demo – Exadata EHCC

Demo – In-Memory

Demo – Creating a PDB using *dbaascli*

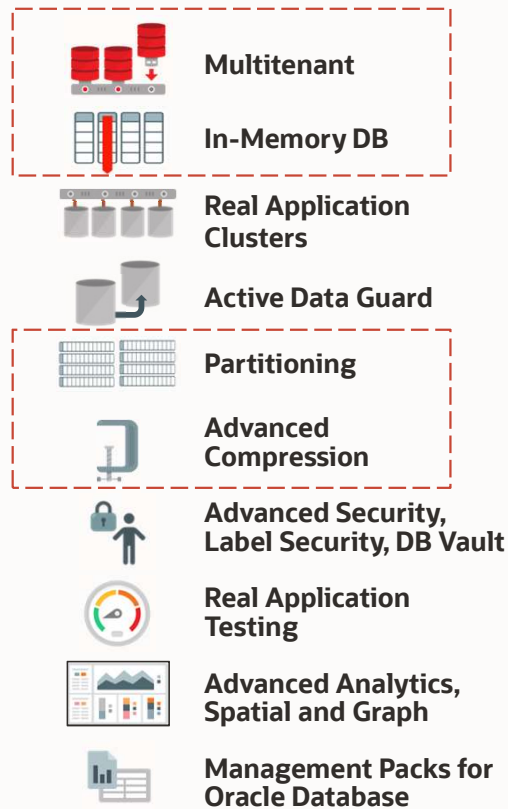




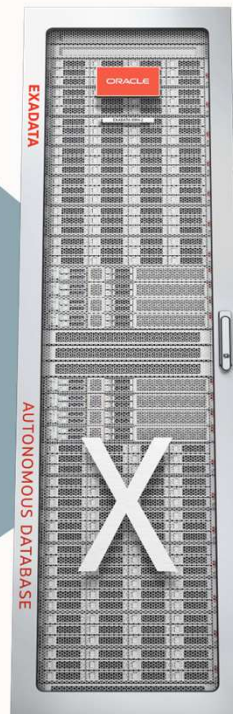
Exadata Features



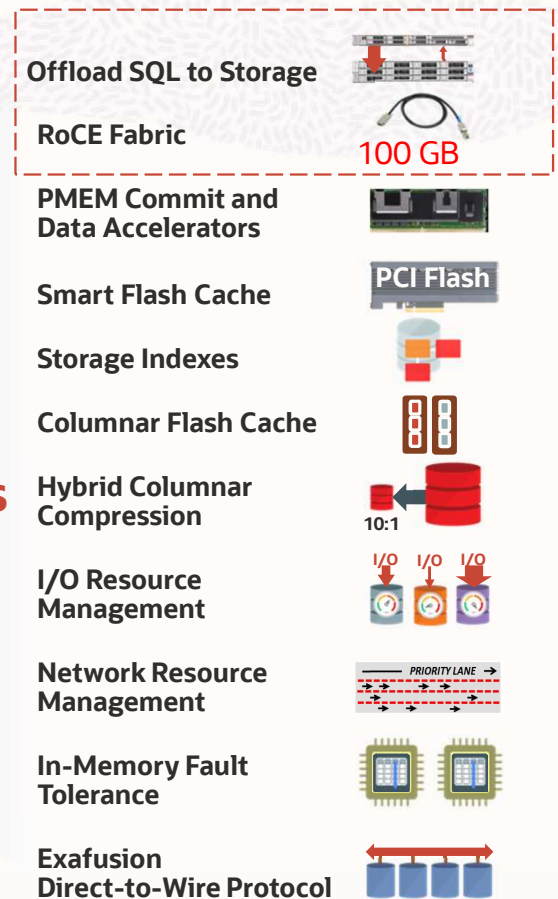
Oracle **Exadata** Database and **Platform** Innovations



All Oracle Database Innovations



All Exadata Innovations





Oracle Multitenant Database

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Oracle 19C Multitenant Administrators Guide



SCAN ME

Database / Oracle / Oracle Database / Release 19

Administrator's Guide



Expand

Title and Copyright Information

► Preface

▼ Changes in This Release for Oracle Multitenant Administrator's Guide

► Changes in Oracle Database Release 19c, Version 19.1

► Changes in Oracle Database Release 18c, Version 18.1

► Part I Multitenant Architecture

▼ Part II Creating and Configuring a Multitenant Environment

► 3 Overview of Configuring and Managing a Multitenant Environment

► 4 Creating and Configuring a CDB

▼ Part III Creating and Removing PDBs and Application Containers

Changes in This Release for Oracle Multitenant Administrator's Guide

There are changes in this document for recent releases of Oracle Database.

- [Changes in Oracle Database Release 19c, Version 19.1](#)
Oracle Multitenant Administrator's Guide for Oracle Database release 19c, version 19.1 has the following changes.
- [Changes in Oracle Database Release 18c, Version 18.1](#)

Changes in Oracle Database Release 19c, Version 19.1

Oracle Multitenant Administrator's Guide for Oracle Database release 19c, version 19.1 has the following changes.

- [New Features](#)
The following major features are new in this release.

Parent topic: [Changes in This Release for Oracle Multitenant Administrator's Guide](#)



Changes in This Release for Oracle Multitenant Administrator's Guide

Changes in Oracle Database Release 19c, Version 19.1

Changes in Oracle Database Release 18c, Version 18.1



Dbaascli **create PDB** options



```
# dbaascli pdb create --pdbName <value> --dbName <value>

[--maxCPU <value>]
[--maxSize <value>]
[--pdbAdminUserName <value>]
[--lockPDBAdminAccount <value>]
[--resume [--sessionID <value>]]
[--executePrereqs <value>]
[--waitForCompletion <value>]
```



Dbaascli PDB delete **options**

```
# dbaascli pdb delete --dbName value
```

```
{ --pdbName value | --pdbUID value }  
  
[--executePrereqs value]  
  
[--waitForCompletion value]  
  
[--resume [--sessionID value]]  
  
[--allStandbyPrepared]  
  
[--cleanupRelocatedPDB]
```



Dbaascli PDB **commands** used on Demo



```
# dbaascli admin showLatestStackVersion
```

```
# dbaascli database getDetails --dbname dbpetro
```

```
# dbaascli pdb create --dbName dbpetro --pdbName PDB1 --maxsize 5G --maxcpu 2 --executePrereqs
```

```
# dbaascli pdb getDetails --dbname dbpetro --pdbName PDB1
```

```
# dbaascli pdb delete --dbName dbpetro --pdbName PDB1 --executePrereqs
```

```
# dbaascli pdb delete --dbName dbpetro --pdbName PDB1
```





Oracle In-Memory Database

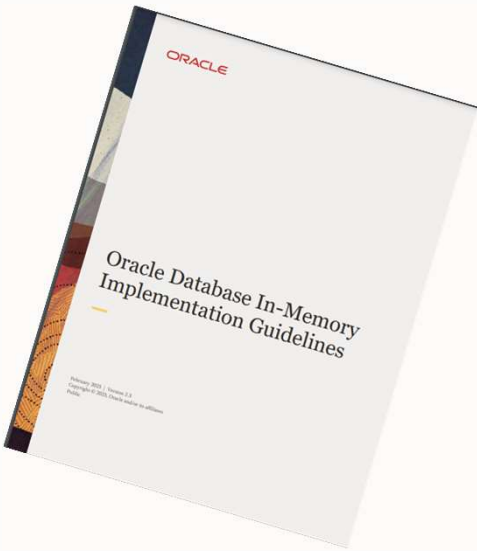
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Oracle Database In-memory Implementation Guide



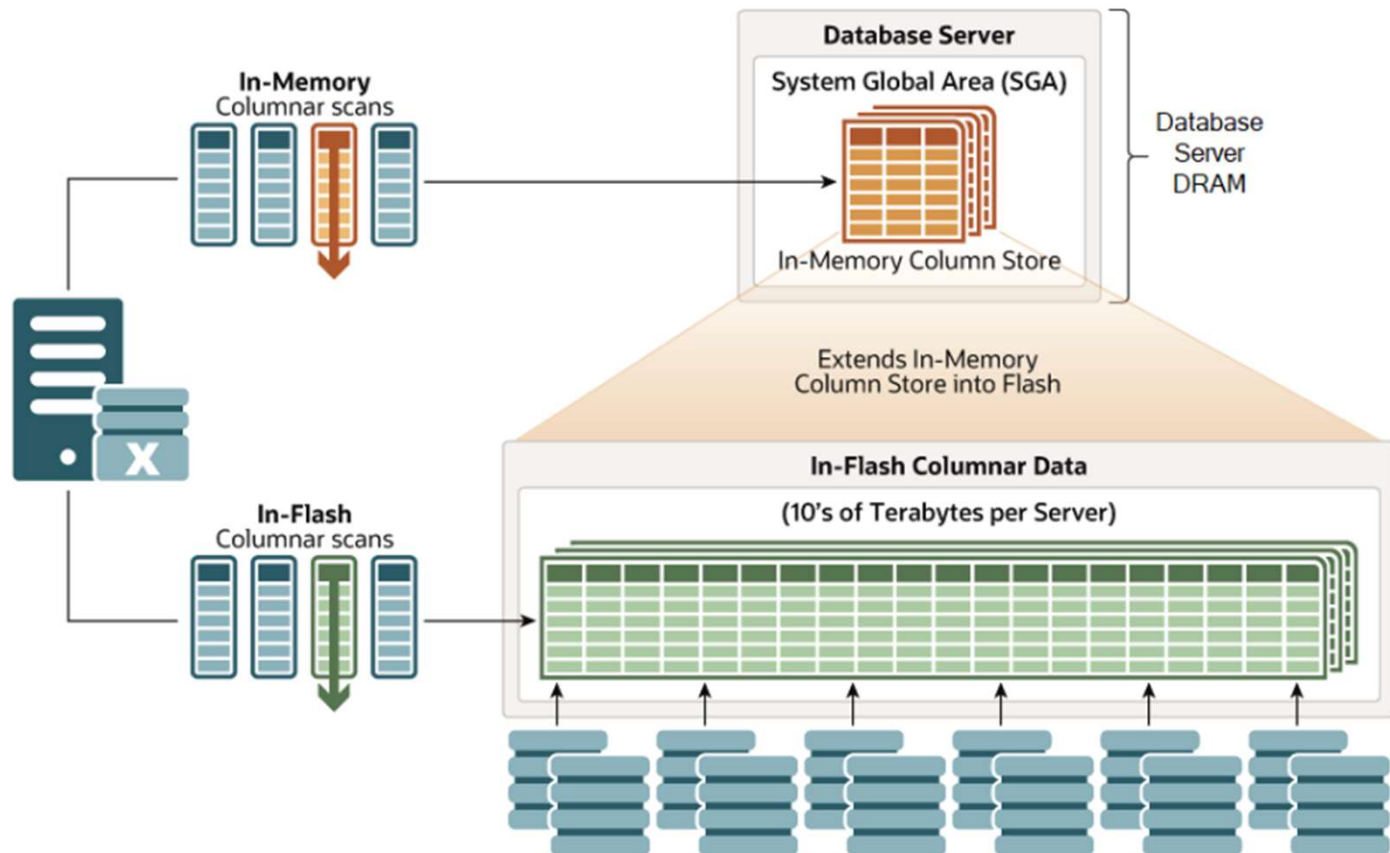
- Is specifically targeted at analytical workloads, which is why the IM column store is populated in a columnar format.



- Can even be enabled for whole database
- Can even be enabled at table level
- Total memory area controlled by `inmemory_size` parameter
- `INMEMORY_FORCE` - this parameter can be used to enable the Base Level feature or enable only Cell Memory and not allocate the IM column store (this is for Exadata only).



Oracle Database In-memory Diagram





Exadata Smart Scan

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Exadata Advantages Increase Every Year

**Dramatically Better
Performance and Cost!**

- Smart Scan
- IO Resource Management

2008

- Unified InfiniBand
- DB Processors in Storage
- Scale-Out Storage
- Scale-Out Servers

X2

- 8 Socket Database Machine
- 10 GigE Client Network
- Storage Expansion Rack

X5

- Extreme Flash Storage
- PCIe NVMe Flash
- Elastic Configurations
- Capacity on Demand
- Trusted Partitions
- Exadata Cloud Service

X8

- Smart Fusion Block Transfer
- Direct-to-wire Protocol

- 24-core CPUs in DB Server
- 25 GigE Client Network
- Exadata Cloud@Customer
- 16-core CPUs in Storage Server
- Extended Storage Server

X8M

- RoCE Network Fabric
- Exadata RDMA Memory Acceleration

X9M

- 32-core CPUs in DB Server
- Up to 2TB DDR4 Memory in DB Server
- 18TB disk drives in Storage Server

- Storage Index Persistence
- Columnar Cache Persistence
- Automatic Indexing
- Autonomous Database on Exadata Cloud@Customer
- KVM Virtualization

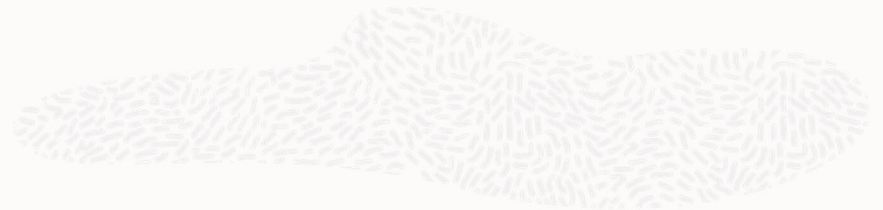
X10M

- 96-core CPUs in DB Server
- 32-core CPUs in Storage Server
- Up to 3TB DDR5 Memory in DB Server
- 1.25TB Exadata RDMA Memory
- 22TB disk drives in Storage Server
- 30.72 TB capacity-optimized flash

- Oracle Linux 8 and UEK 6
- Centralized OS User Identification and Authorization

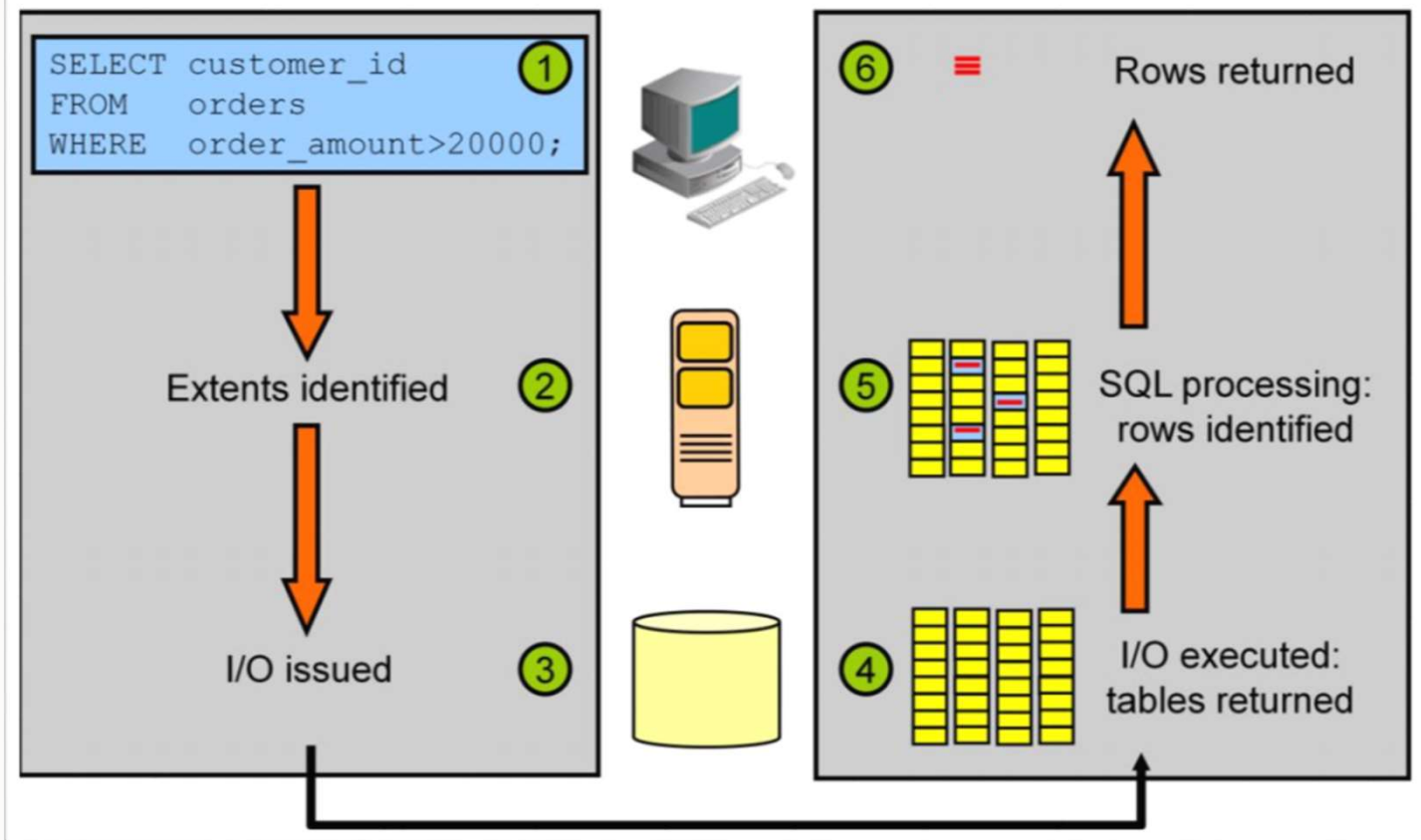


What Exadata Smart Scan Is?

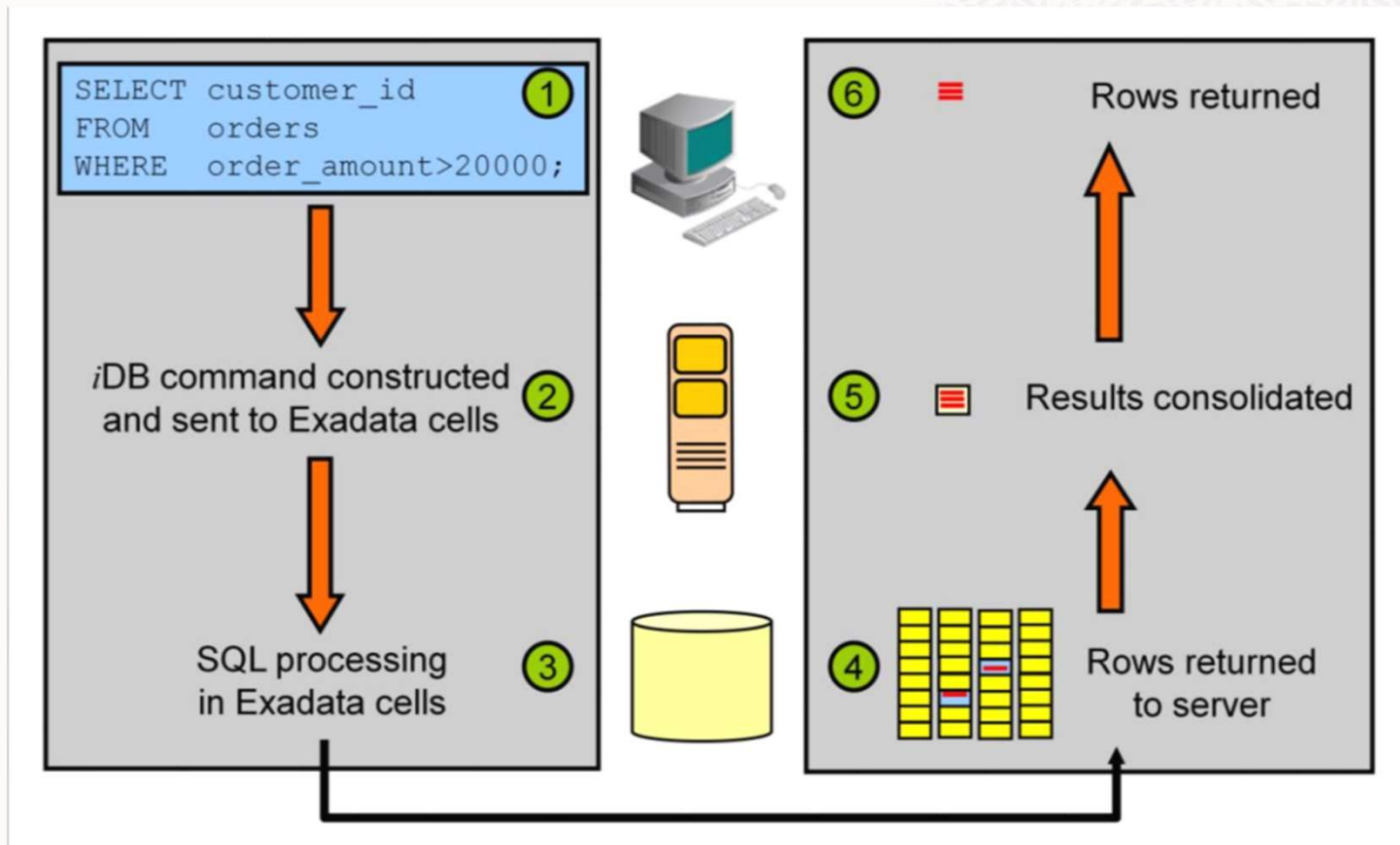


“**Smart Scan** is one of the great feature in Oracle Exadata. With this technology storage send only required rows to database node from **storage instead of entire Oracle Block**. Multiple rows are stored in one Oracle Block but non-exadata system return entire block even only one rows is required. On the other hand, Exadata Storage returns only **interested rows but not entire block**. “

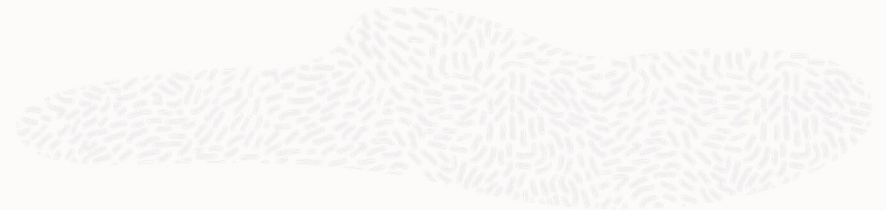
Oracle Database | No Exadata System



Exadata Cloud a Smart Scan | Off Load Querying



When Exadata **Smart Scan** Happens



- Full Table Scans
- Direct-path reads
- Not used by default for serial scans of small tables Can be forced via `_serial_direct_read=TRUE` at either session or system level
- Full Index Scans
- Direct-path reads are automatically used for parallel queries

Exadata Smart Scan Why it's not working?

- Scan performed on a full table
- A Scan performed on an index on a full table
- Full scan is performed on a compressed index
- Full scan is performed on a reverse key index
- The table has row-level dependency tracking enabled.
- The optimizer wants the scan to return rows in ROWID order
- A CLOB or LONG column is being scanned in a series
- A serial flashback query is being executed
- A query that references columns is referenced

Query Execution plan | Traditional Database Vs Exadata System

```
SQL> select * from table(dbms_xplan.display);
```

PLAN_TABLE_OUTPUT

Plan hash value: 970577077

Id	Operation	Name	Rows	Bytes	Cost (%CPU)	Time
0	SELECT STATEMENT		902	23452	10 (0)	00:00:01
1	TABLE ACCESS BY INDEX ROWID BATCHED	CUSTOMERS	902	23452	10 (0)	00:00:01
* 2	INDEX RANGE SCAN	CUSTOMERS_ID_PK	902		6 (0)	00:00:01

Predicate Information (identified by operation id):



```
PLAN_TABLE_OUTPUT
```

Plan hash value: 2008213504

Id	Operation	Name	Rows	Bytes	Cost (%CPU)	Time
0	SELECT STATEMENT		902	23452	306K (1)	00:00:12
* 1	TABLE ACCESS STORAGE FULL	CUSTOMERS	902	23452	306K (1)	00:00:12

Predicate Information (identified by operation id):

```
1 - storage("ID"<=1000 AND "ID">=100)
    filter("ID"<=1000 AND "ID">=100)
```



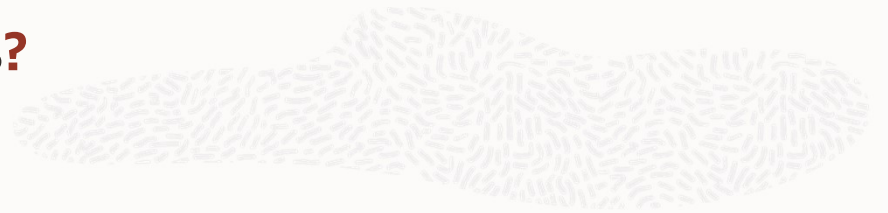


Exadata Hybrid Columnar Compression (EHCC)

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Exadata Hybrid Columnar Compression is?

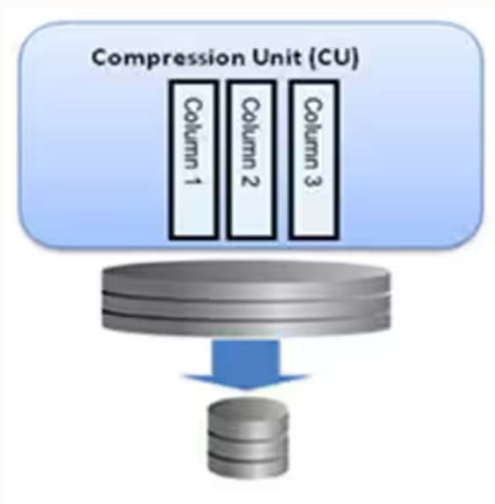


“Exadata Hybrid Columnar Compression is a feature included in Exadata Storage Server. This feature provides a high level of data compression about objects in an Oracle database and offers the ability to **customize the compression level**, depending on whether the environment is an OLTP environment (frequent reads and writes on non-sequential data) or an **OLTP environment**. Data warehousing (frequent queries for large amounts of data).”

Exadata Hybrid Columnar Compression

Exadata Hybrid Columnar Compression can be used at different levels:

- Partition Level
- Table Level
- Tablespace Level



There are two types of Exadata Hybrid Columnar Compression:

Warehouse Compression

- Query High
- Query Low

Online archival compression

- Archive High
- Archive Low





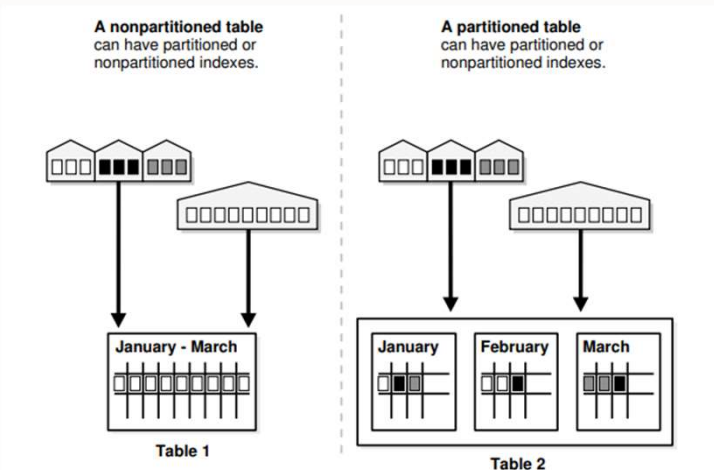
Oracle Database Partitioning

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Oracle Database **Partitioning** concepts

- A partitioned object has multiple pieces that can be managed either collectively or individually.



- This gives an administrator considerable flexibility in managing partitioned objects.
- From the perspective of the application, a partitioned table is identical to a nonpartitioned table
- No modifications are necessary when accessing a partitioned table using SQL queries and DML statements

- Partitioning feature allows you to partition tables and indexes



Oracle 19c **Partitioning** Guide



Database / Oracle / Oracle Database / Release 19

VLDB and Partitioning Guide

List of Tables

Title and Copyright Information

► Preface

▼ Changes in This Release for Oracle Database VLDB and Partitioning Guide

Changes for VLDB and Partitioning in Oracle Database 19c

Changes for VLDB and Partitioning in Oracle Database Release 18c

► 1 Introduction to Very Large Databases

▼ 2 Partitioning Concepts

▼ 2.1 Partitioning Overview

2 Partitioning Concepts

Partitioning enhances the performance, manageability, and availability of a wide variety of applications and helps reduce the total cost of ownership for storing large amounts of data.

Partitioning allows tables, indexes, and index-organized tables to be subdivided into smaller pieces, enabling these database objects to be managed and accessed at a finer level of granularity. Oracle provides a rich variety of partitioning strategies and extensions to address every business requirement. Because it is entirely

[in](#)[tw](#)[f](#)[en](#)

>|

2 Partitioning Concepts

2.1 Partitioning Overview

2.2 Benefits of Partitioning

2.3 Partitioning Strategies

2.4 Partitioning Extensions

2.5 Indexing on Partitioned Tables



Oracle Database DBMS_REDEFINITION

Connected to:
Oracle Database 19c EE High Perf Release 19.0.0.0.0 - Production
Version 19.16.0.0.0

```
SQL> EXEC DBMS_REDEFINITION.CAN_REDEF_TABLE (UNAME=>'ERP',TNAME=>'ORDERS');
```

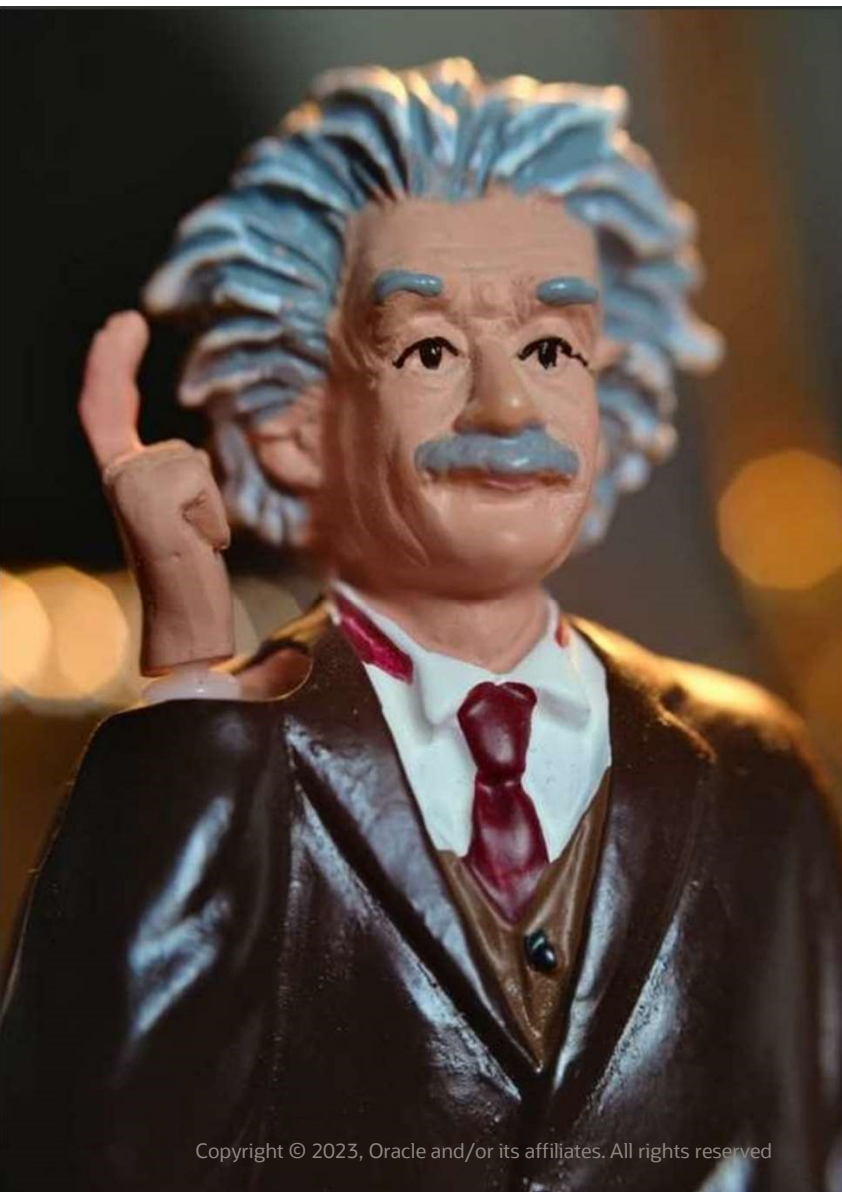
```
SQL> BEGIN  
DBMS_REDEFINITION.START_REDEF_TABLE(uname => 'ERP',ORIG_TABLE =>'ORDERS',INT_TABLE => 'ORDERS_PART');  
END;  
/
```

```
SQL> BEGIN  
DBMS_REDEFINITION.SYNC_INTERIM_TABLE(uname => 'ERP',ORIG_TABLE => 'ORDERS',INT_TABLE => 'ORDERS_PART');  
END;  
/
```

```
BEGIN  
DBMS_REDEFINITION.FINISH_REDEF_TABLE(uname => 'ERP', ORIG_TABLE =>'ORDERS', INT_TABLE => 'ORDERS_PART');  
END;  
/
```

Demo





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Demo 1 – Oracle Database Partitioning

- Creating a partitioned table
- Move no partitioned table to partitioned
- Using by DBMS_REDEFINITIONS (Procedure



Demo 2 – Oracle Database In-Memory

- Configuring Oracle Database (*In-Memory*)
- Configuring Table using In-Memory
- Rolling back *In-memory* Configuration

Demo 3 – Exadata Hybrid Table Compression

- EHCC compression Ratio check
- Compress a no partitioned table
- Compress a table partition

Demo 4 – Oracle Database Multitenant

- Creating a PDB using *dbaascli*
- Checking a PDB using *dbaascli*
- Deleting a PDB using *dbaascli*





Thank You 😊

Questions / Feedback / Training Suggestions

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Ask for help 😊



ORACLE

