



Exadata Cloud at Customer

Features - Smart-Scan, Subsetting, In-Memory and HCC

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ISV Technical Valid Oracle LAD

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Licences & Systems Oracle LAD

Partner Enablement LAD Alliance & Channels

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Nuestros Valores

Integridad

Compliance

Trabajo en Equipo

Satisfacción del Cliente

Calidad

Ética

Innovación

Respeto Mutuo

Justicia

Comunicación

Como empresa líder en tecnología, aceptamos la **diversidad** en todas sus formas. Realmente creemos que la **innovación** comienza con la **inclusión**. Y esto solo se puede lograr con la cooperación de nuestros **partners**. Afirmamos nuestro **compromiso** de mantener un **ambiente respetuoso y libre de discriminación** y esperamos esto de nuestros **socios de negocios**.

Oracle espera que sus **partners** realicen negocios de manera **justa** y **ética**, cumplan con las leyes anticorrupción en todo el mundo, cooperen con las solicitudes de información de Oracle y eviten participar en cualquier actividad que implique incluso la apariencia de ser incorrecta.

Es vital que nuestros partners se adhieran al **Código de Ética y Conducta Comercial de Oracle**, que da los lineamientos sobre los valores que son esenciales para nuestro éxito como empresa. Estos valores son la base de todo lo que hacemos y lo que debemos vivir todos los días.



Utilice el código QR para acceder al Código de Ética y Conducta Comercial de Oracle.



SQL> select * from person where name = 'Marcel Lamarca'



Father, Caipira , husband, Cooker and son!

Graduated in Business Administration (FMU-SP)

Oracle DBA

19 year dedicated to study and support Oracle Databases.
7 years working with Exadata (On-prem, C@C and Cloud Services) .
About to complete 3 years at Oracle helping Customers and partners to cloud Oracle Latino-américa Alliances & Channels since 2022

Last book: “ I ‘am Ozzy”

Oracle Certified Professional (OCP)

10g, 11g and 12c.

Oracle Certified Specialist (OCE)

Grid/RAC Database Administrator

OCI Foundation

Oracle Autonomous Database Administrator.

Oracle Cloud Database Migration and integration

Next-steps: Always looking to become a better person



SQL> select * from person where name = ‘Alexandre Fagundes’



Father, Son, Husband, Cloud Architect

Bachelor of Information Systems
Oracle Applications & Databases Administrator
Certified Cloud Architect

Last book: “**Database Reliability Engineering: Designing and Operating Resilient Database Systems**” Charity Majors

Oracle E-Business Suite & Database Consultancy Services
since 2002

Next-steps: Mastering Cloud Engineering & Security



SQL> select * from person where name = 'Andre Sousa'



Janes and Raul's father, Son, Husband 25 years, dba old school

Graduated in Information Systems

I live a little away from everything even before the world changes

I'm working in Oracle for 21 with Oracle Database products adoption in South America, work mainly with ISVs and SIs helping them on different activities such as POCs, Application Validations, Tuning, he participated as advisor in more than 100 Migration and Upgrade projects.

Oracle Certified Professional 11g (OCP)

Safe harbor statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, timing, and pricing of any features or functionality described for Oracle's products may change and remains at the sole discretion of Oracle Corporation.



Agenda

Exadata C@C - Dom0 & DomU Overview

Exadata C@C - Node Subsetting

Exadata C@C - High Columnar Compression

Exadata C@C - In-Memory

Exadata C@C - Huge Pages

Exadata C@C - Smart Scan

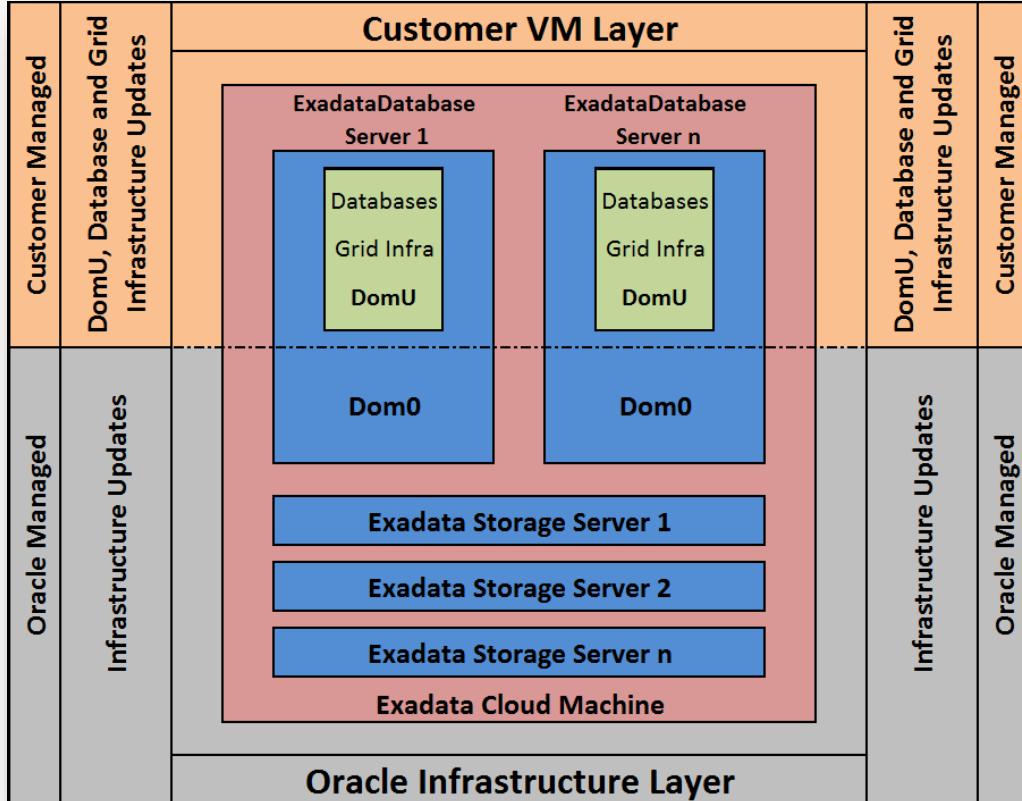
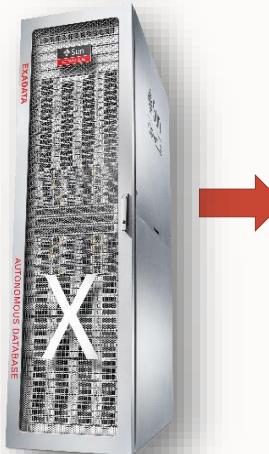
Exadata Cloud At Customer

Overview



Exadata Cloud at Customer - Dom0 and DomU

Roles and Responsibilities physical and virtual environments



About Dom0 Oracle Responsibilities

- Oracle Cloud Ops manage Exadata infrastructure (hardware, system software) & hypervisor (dom0);
- Oracle Support is responsible for update any version;
- For ExaCC gen1, Oracle Support open an SR and request customer formal approval;
- For Exacc Gen2, the customer is responsible for scheduling Dom0 maintenance and must provide at least 4 dates per year;

About DomU Customer Responsibilities

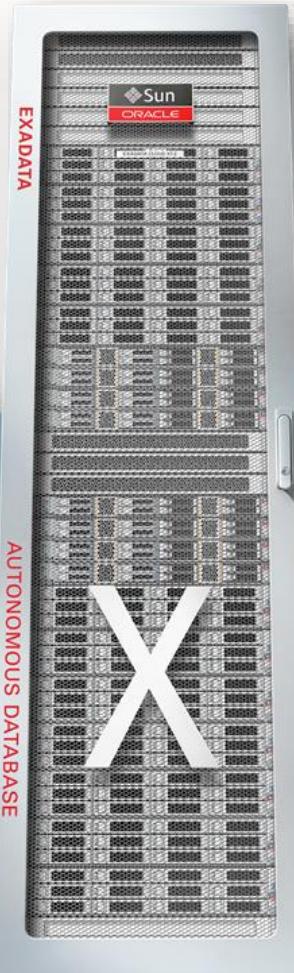
- Adjust license (BYOL or License included)
- Scale UP/Down resources
- For Exadata C@C Gen 1 DomU uses Xen for virtualization
- For Exadatada Cloud at Customer Gen2 DomU uses KVM
- Customer have root access to domU;
- The customer is responsible for any update or configuration change on DomU;

Exadata Cloud Most Powerful Database + Platform

All Exadata Features available with no extra costs

	Multitenant
	In-Memory DB
	Real Application Clusters
	Active Data Guard
	Partitioning
	Advanced Compression
	Advanced Security, Label Security, DB Vault
	Real Application Testing
	Advanced Analytics, Spatial and Graph
	Management Packs for Oracle Database

All Oracle Database Innovations



All Exadata DB Machine Innovations

Offload SQL to Storage	
InfiniBand Fabric	
Smart Flash Cache, Log	
Storage Indexes	
Columnar Flash Cache	
Hybrid Columnar Compression	
I/O Resource Management	
Network Resource Management	
In-Memory Fault Tolerance	
Exafusion Direct-to-Wire Protocol	

Exadata C@C Subsetting

Overview

Exadata Cloud at Customer - Subsetting General Information

Subsetting general print 1 on Exacc infrastructure

The screenshot shows the Oracle Cloud Infrastructure (OCI) console interface for managing an Exadata system. The top navigation bar includes the Oracle Cloud logo, a search bar, and account information for 'US Dev West (Seattle)'. Below the header, the system name 'scaqr07NodeSubsetting' is displayed, along with a large green 'EXA' logo and the status 'ACTIVE'.

The main content area is divided into several sections:

- General Information:** Details include Compartment (atpmgmt), OCID (...7brges), Creation date (Tue, Aug 3, 2021), Time Zone (UTC), Shape (Half Rack), Exadata System Model (Exadata Cloud@Customer X9M-2), and Lifecycle State (Active).
- Network:** IP addresses for Control Plane Server 1 and 2, Netmask (255.255.248.0), Gateway (10.32.144.1), HTTP Proxy (http://www-proxy-hqdc.us.oracle.com:80), DNS Servers (10.31.138.25), and NTP Servers (10.31.138.20).
- Exadata Resources:** Summary of DB Servers (4), Storage Servers (6), OCPUs (119 available, 248 total), Memory (GB) (3822 available, 5560 total), Local Storage (GB) (2250 available, 8972 total), and Exadata Storage (TB) (310.0 available, 383.0 total).
- Maintenance:** Maintenance Details (Once every quarter) and Next Maintenance (System is up to date).

Exadata Cloud at Customer - VM Cluster

Subsetting during VM Cluster creation

ORACLE Cloud Search for resources, services, and documentation US Dev West (Seattle) Help

Create VM Cluster

Choose a compartment
exacc-1943-2

Provide the display name
demo-vm-clu-001

Select a VM Cluster Network
scanaqr07adm01020304clu1-network

Choose the Oracle Grid Infrastructure version ⓘ
19.0.0.0

Configure VM cluster
Select DB Servers

No database servers selected for VM placement. Select database servers for VM placement to allocate VM resources.

Configure the Exadata storage

Specify the usable Exadata storage (TB)
2

Minimum 2 TB. Available storage: 310 TB.

ⓘ You cannot change the following Exadata storage allocation options after creating the VM cluster.

Allocate storage for Exadata sparse snapshots ⓘ

Allocate storage for local backups ⓘ

Usable storage allocation: 1.6 TB (80%) Data, 0.4 TB (20%) Reco, 0 TB (0%) Sparse snapshots

Create VM Cluster Cancel

Resources VM Clusters in exacc-1943-2

Name
VMCluster-202110040714

Create VM Cluster

VM Cluster Networks VM Clusters DB Servers Autonomous Exadata VM Clusters

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Exadata Cloud at Customer - Available Nodes

Subsetting check and manage available nodes

Change DB Servers

[Help](#)

Select a minimum of two database servers for VM placement. Maximum resources available for allocation per VM are based on the selected Database Servers.

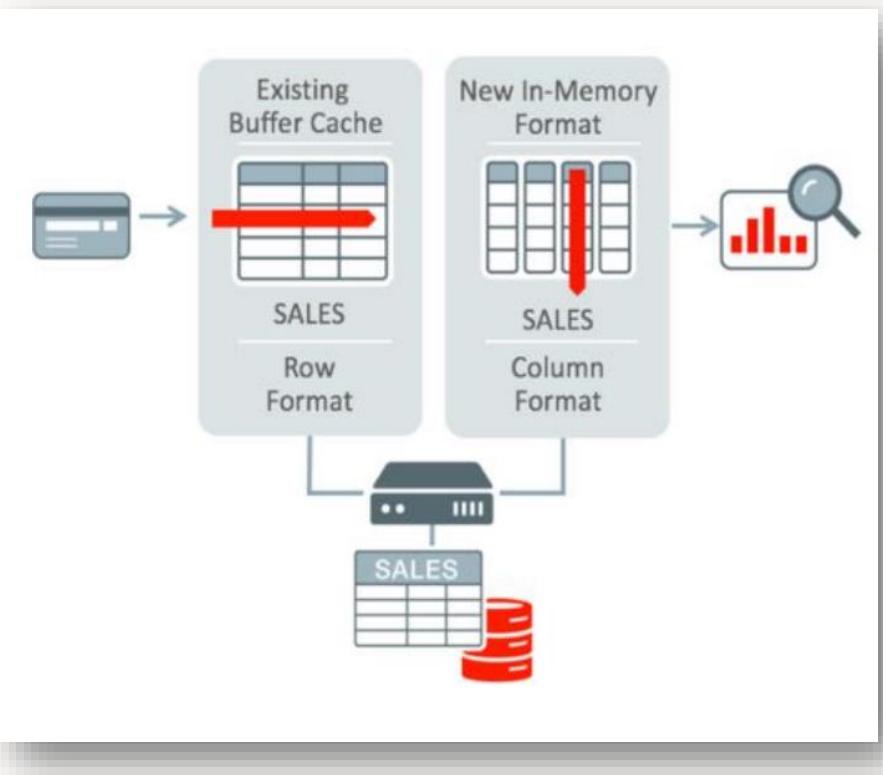
<input type="checkbox"/>	DB Server Name	Selection Eligibility	Available OCPUs	Available Memory (GB)	Available Local Storage (GB)	Number of VM Clusters on DB Server
<input type="checkbox"/>	dbServer-1	Insufficient resources <i>i</i>	16	200	120	-
<input type="checkbox"/>	dbServer-2	Insufficient resources <i>i</i>	16	200	120	-

[Save Changes](#) [Cancel](#)



Oracle Database - In Memory Feature

Understanding Exadata In-Memory Characteristics



In-Memory

- Dual-Format Architecture – Both row and column formats for table
- Transactions benefit with existing row format
- Analytics benefit with In-Memory columnar format – Simultaneously active and consistent
- Blazing Fast Analytic Scans – SIMD on Compressed Columnar Data Formats
- Seamlessly built into Oracle RDBMS – RAC, Data Guard, Flashback, etc.

Exadata EHCC

High columnar compression - Overview

Hybrid Columnar Compression is a feature included in Exadata Storage Server. This feature allows the database to reduce the number of physical reads and writes required to utilize a table, so large amounts of data can be processed quickly without generating high I/O rates. You can use Exadata Hybrid Columnar Compression at several levels:

- Table Level
- Partition Level
- Tablespace Level

There are two types of Exadata Hybrid Columnar:

- Warehouse Compression

Otimiza o desempenho de consultas. Indicado para aplicações do tipo *Warehouse*.

Disponível em duas opções: *Query High* e *Query Low*.

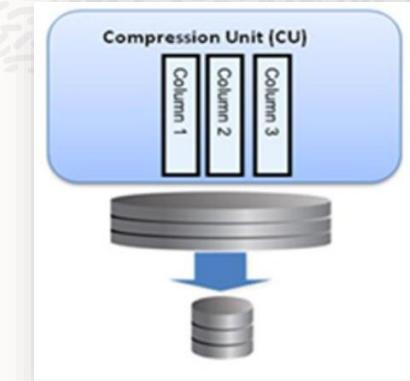
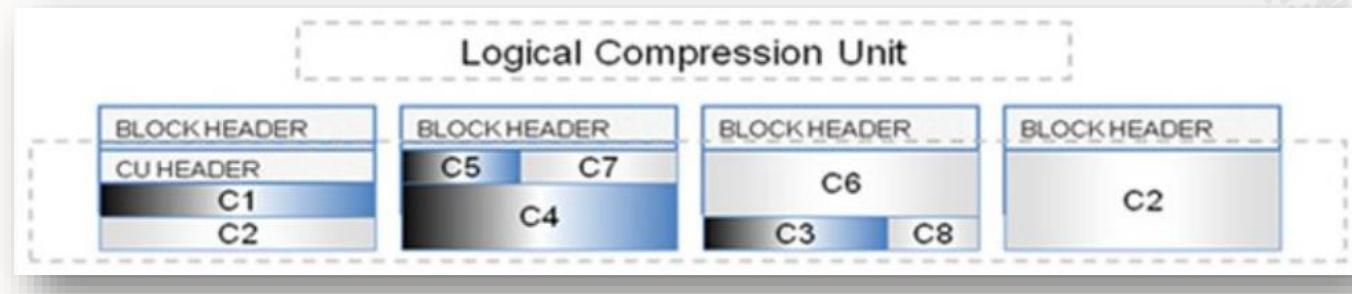
- Compress for Archive

Foco na compressão máxima dos dados. Adequado para dados que não mudam com frequência.

Disponível em duas opções: *Archive High* e *Archive Low*.

Exadata - High Columnar Compression

Understanding Exadata EHCC Compression types and caricaturists



Features of Exadata Hybrid Columnar Compression (EHCC):

- The tables are organized into Compression Units (UC).
- CUs are larger than database blocks. With CUs, data is organized by columns and not by records.
- Each column is compressed separately.
- The average storage reduction varies between 10x and 15x.
- There are cases where the reduction of a table by 52x was achieved.
- Data decompression is performed by the Exadata Storage Server.
- If the table is partitioned, it is allowed to use different forms of compression for the same table.
- It may be necessary to re-compress the table after some modifications, as per Metalink note Nro 1332853.1 Not recommended for tables that are frequently modified.
- Not allowed in Index Organized Tables (IOT) type tables

Exadata Cloud at Customer - EHCC

Some compress and compress sample results

TABLE_NAME	PAR	COMPRESS	COMPRESS_FOR	BLOCKS	NUM_ROWS	NET_MB	BLOCKS_MB
TESTE_OLTP	NO	DISABLED		9077	2160000	51.5	284

TABLE_NAME	PAR	COMPRESS	COMPRESS_FOR	BLOCKS	NUM_ROWS	NET_MB	BLOCKS_MB
TESTE_OLTP	NO	ENABLED	QUERY HIGH	9077	2160000	51.5	284

TABLE_NAME	PAR	COMPRESS	COMPRESS_FOR	BLOCKS	NUM_ROWS	NET_MB	BLOCKS_MB
TESTE_OLTP	NO	DISABLED		9077	2160000	51.5	284

Exadata Smart Scan

Off Loading query - Overview



Exadata Cloud at Customer - Smart Scan

Here is the Smart-Scan cam do for you... (off-Loading querying)

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Exadata Cloud at Customer - Smart Scan

Here is the Smart-Scan cam do for you... (off-Loading querying)

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.

How does Smart Scan work?

- Database servers or compute nodes send additional query details to the storage cells via a protocol known as iDB (Intelligent Database Protocol)
- Storage cells can take over a large portion of the data-intensive query processing
- Exadata storage cells can search the storage layer with this added intelligence about the query and send only the relevant bytes, not all the database blocks, to the database compute nodes
- The Smart Scan sends a more concentrated set of rows and columns directly to the program Global Area(PGA) of the requesting process instead of the data buffers in the SGA

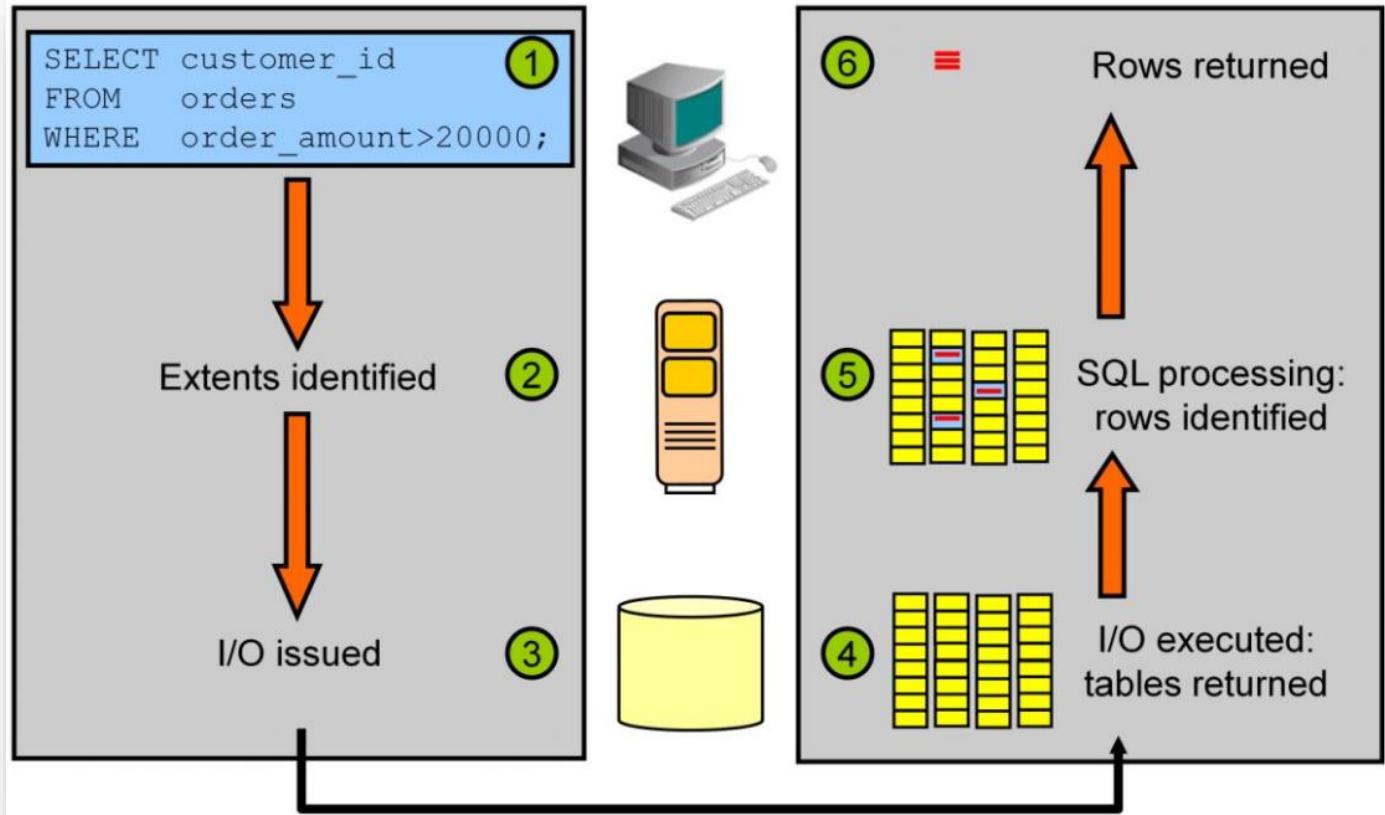
Smart Scan includes

- Full Table and Fast Full Index Scans: Scans are performed inside Exadata Storage Server, rather than transporting all the data to the database server.
- Predicate filtering: Only the requested rows are returned to the database server, rather than all the rows in a table.
- Column filtering: Only the requested columns are returned to the database server, rather than all the table columns.
- Join filtering: Join processing using Bloom filters are offloaded to Exadata Storage Server



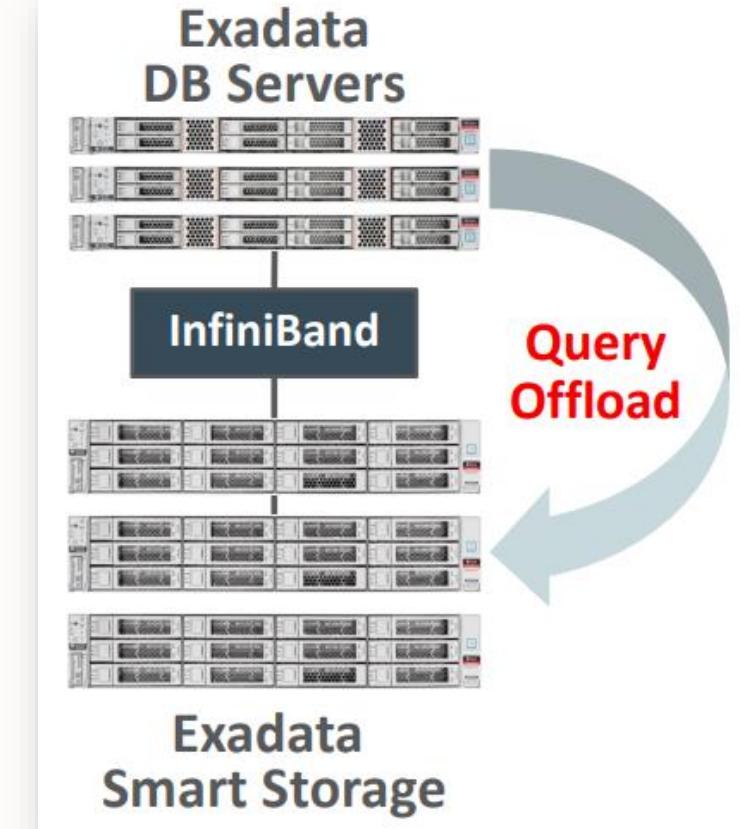
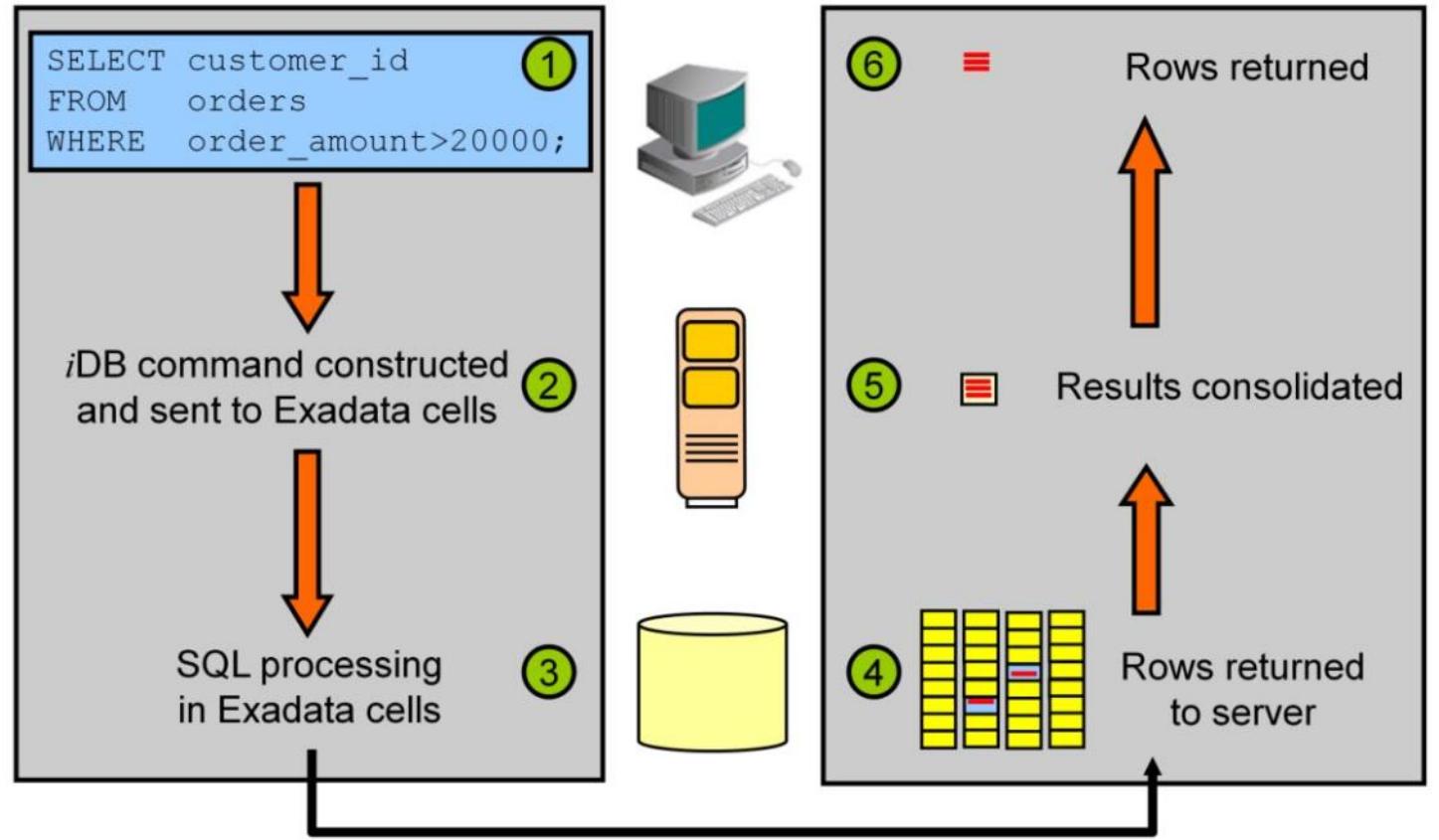
On-prem, OCI Dbcs and other Database Products

NO Exadata Sql querying patch...



Exadata Cloud at Customer - Smart Scan

Exadata off load querying patch...



Exadata - Smart Scan - Enable / Disable

Understanding when off-load querying are used to happen and how to enable it

When It Happens

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

Smart Scan includes

How to enable It on Exadata

- `cell_offload_processing` parameter value set to TRUE (default)
- `cell.smart_scan_capable='TRUE'` on ASM instance

Exadata - Smart Scan - Enable / Disable

How to check off-load querying on explain plan results



```
SQL> select plan_table_output from table(dbms_xplan.display());  
  
PLAN_TABLE_OUTPUT  
-----  
  
Plan hash value: 2711292053  
  
| Id  | Operation          | Name           | Rows  | Bytes | Cost (%CPU)| Time       |  
-----  
|   0 | SELECT STATEMENT   |                |        |        |      (1) | 00:00:01 |  
|   1 |  TABLE ACCESS STORAGE FULL| TESTE_OLTP_CC_QHY_PT | 20M  | 476M  | 22486 (1) | 00:00:01 |  
  
8 rows selected.
```

MOS Useful link's and Documents

Free MOS training and certifications

The screenshot shows the Oracle My Oracle Support website. The homepage features a banner about 'My Oracle Support: Year of Innovation' and three call-to-action buttons: 'New user? Register here', 'Watch', and 'Explore'. Below this is a section titled 'Welcome to My Oracle Support!' with a brief description and a list of features. The sign-in page is also visible on the right side.

- First contact for resolution, support and technical assistance through Service Request (SR) ticketing system.
- Online Resources via My Oracle Support Portal.
- Knowledge Base
 - Known issues and bugs.
 - Guides and tutorials.
- Updated information on patches, bug fixes, security, alerts, new features
- How to use My Oracle Support -How-to Training Video Series (Doc ID 603505.1)



Exadata Cloud at Customer - General Links

ExaCC General Useful doc's and tips

- Oracle Exadata Best Practices (Doc ID 757552.1)
- Exadata Critical Issues (Doc ID 1270094.1)
- Exadata Cloud Support Information Center (Doc ID 2522950.2)
- Getting Started with Oracle E-Business Suite on Oracle Exadata Cloud@Customer Gen 2 (Doc ID 2774983.1)
- Cloud@Customer Gen 2 (Doc ID 2758998.1)
- Cloud Infrastructure or Oracle Cloud at Customer (Doc ID 2368508.1)
- Release Schedule of Current Database Releases (Doc ID 742060.1)



Exadata Cloud at Customer - Troublesoothing

ExaCC Troubleshooting useful doc's and tips



- How To Collect Sosreport on Oracle Linux (Doc ID 1500235.1)
- How to Create Sosreport in Alternate Location? (Doc ID 2163668.1)
- Oracle Exadata Database Machine EXAchk (Doc ID 1070954.1)
- Autonomous Health Framework Compliance Checks and Diagnostics: <https://docs.oracle.com/en/engineered-systems/health-diagnostics/autonomous-health-framework>
- Autonomous Health Framework (AHF) - Including TFA and ORAchk/EXAchk (Doc ID 2550798.1)
- HugePages on Oracle Linux 64-bit (Doc ID 361468.1)
- When And Why To Use HugePages on Linux x86-64? (Doc ID 2314903.1)
- USE_LARGE_PAGES To Enable HugePages (Doc ID 1392497.1)
- ORA-00845 Raised When Starting Instance (Doc ID 465048.1)
- HugePages on Linux: What It Is... and What It Is Not... (Doc ID 361323.1)
- Shell Script to Calculate Values Recommended Linux HugePages / HugeTLB Configuration (Doc ID 401749.1)
- Troubleshooting Exadata Database Service on Cloud@Customer Systems : <https://docs.oracle.com/en-us/iaas/exadata/doc/ecc-troubleshooting-systems.html#GUID-84CF1009-A4FA-4C73-8C16-5EC556D8F1A1>
- Quick Instructions For Obtaining The Automatic Workload Repository (AWR) Report (Doc ID 1086120.1)
- Performance Diagnosis with Automatic Workload Repository (AWR) (Doc ID 1674086.1)
- ExaWatcher Utility On Exadata and SuperCluster Compute and Storage Nodes (Doc ID 1617454.1)

Exadata Cloud at Customer - Migration Notes

ExaCC Migration useful doc's and tips

- Creating a Physical Standby Database for 11g Through 19c Databases (Doc ID 2275154.1)
- Creating a Physical Standby using RMAN Duplicate (RAC or Non-RAC) (Doc ID 1617946.1)
- Using Transportable Tablespaces to Migrate Oracle E-Business Suite Release 12.2 Using Oracle Database 19c Enterprise Edition On a Multitenant Environment (Doc ID 2674405.1)
- V4 Reduce Transportable Tablespace Downtime using Cross Platform Incremental Backup (Doc ID 2471245.1)
- Cross Platform Database Migration using ZDLRA (Doc ID 2460552.1)
- Is GG certified for EBS Database Migrations and upgrades (Doc ID 2491869.1)
- [BACKUP AND RECOVER BEST PRACTICES FOR RECOVER APPLIANCE] <https://www.oracle.com/a/otn/docs/oda-backup-recovery-technical-brief.pdf>
- [WALLET MANAGER] <https://docs.oracle.com/en/database/oracle/oracle-database/19/dbimi/using-oracle-wallet-manager.html#GUID-D0AA8373-B0AC-4DD8-9FA9-403E345E5A71>
- [ORACLE DATABASE 19C SECURITY GUIDE] <https://docs.oracle.com/en/database/oracle/oracle-database/19/dbseg>



Exadata Cloud at Customer - Backup & Restore

ExaCC Backup and Restore useful doc's and tips

- Exadata Backup & Restore Best Practices using Cloud Object Storage (Doc ID 2709419.1)
- Exadata Cloud Compute Node Backup and Restore Operations (Doc ID 2809393.1)
- <https://docs.oracle.com/en/cloud/cloud-at-customer/exadata-cloud-at-customer/exacc/back-and-recover.html>
- <https://docs.oracle.com/en/engineered-systems/exadata-cloud-at-customer/ecccm/ecc-manage-db-backup-and-recovery.html#GUID-07D1B1D6-4A06-4859-B7DF-4C3A681A6B40>
- <https://docs.oracle.com/en/engineered-systems/exadata-cloud-at-customer/ecccm/ecc-manage-db-backup-and-recovery.html#GUID-C9538B0B-8565-438C-8102-A8BC0AAA677C>

Exadata Cloud at Customer - Upgrade

Upgrading Exacc useful doc's and tips

- to Oracle 19c Release using DBUA (Doc ID 2543981.1)
- Oracle 19c Complete Checklist for upgrading Oracle 12c, 18c Container Database (CDB)
- 19c Database Self-Guided Upgrade with Best Practices (Doc ID 1919.2)
- Upgrading to 19c Oracle Grid Infrastructure on Exadata Cloud Service (ExaCS) and Exadata Cloud at Customer Gen2 (ExaCC) (Doc ID 2624992.1)
- Exadata Cloud at Customer Gen2 ExaCC (Doc ID 2624992.1)
- Upgrading to 19c Oracle Grid Infrastructure on Gen 1 Exadata Cloud at Customer (Doc ID 2709296.1)
- Upgrading to 19c Oracle Database on Gen 1 Exadata Cloud at Customer (Doc ID 2709284.1)



Exadata Cloud at Customer - Patching

Exacc Patching useful doc's and tips

- Patch Set Updates for Oracle Products (Doc ID 854428.1)
- Exadata Cloud Service Software Versions (Doc ID 2333222.1)
- How to update the Exadata Image (OS) in Exadata Cloud at Customer (Doc ID 2391164.1)
- How to upgrade DBAAS Cloud Tooling using dbaascli (Doc ID 2350471.1)
- Primary Note for Database Proactive Patch Program (Doc ID 888.1)
- Updating Exadata Database Server Software using the DBNodeUpdate Utility and patchmgr (Doc ID 1553103.1)
- Exadata System Software Certification (Doc ID 2075007.1)
- Exadata Cloud Compute Node Backup and Restore Operations (Doc ID 2809393.1)
- How to boot Exadata database server with diagnostic ISO image (Doc ID 1947114.1)
- OPatch Error - Inventory load failed... OPatch cannot load inventory for the given Oracle Home (Doc ID 2075765.1)
- Steps to shut down or reboot an Exadata storage cell without affecting ASM (Doc ID 1188080.1)
- Gen 1 - Patching Exadata Cloud at Customer: <https://docs.oracle.com/en/cloud/cloud-at-customer/exadata-cloud-at-customer/exacc/patch.html>
- Gen 1 - Rolling Back a Patch or Failed Patch: <https://docs.oracle.com/en/cloud/cloud-at-customer/exadata-cloud-at-customer/exacc/roll-back-patch.html#GUID-0D1B9B1E-62E4-4A66-8D5D-6D1AC2B69A3F>
- Atualização do cloud tooling sem utilizar dbaascli (necessário em versões antigas):
<https://docs.oracle.com/en/cloud/paas/database-dbaas-cloud/csdbi/problems-administering-deployments.html#GUID-14724B31-FE0B-4D8C-BE36-CEE81FC84A5B>



Exadata Cloud at Customer - Monitoring

Exadata Cloud at Customer Monitoring useful doc's and tips

- Using Privilege Analysis - a feature of Oracle Database Enterprise Edition (Doc ID 2588251.1)
- Privilege Analysis is not Working in a Procedure PL/SQL block Using DBMS_PRIVILEGE_CAPTURE (Doc ID 2891332.1)
- AutoUpgrade.jar fails in preupgrade fixup phase with deadlock issues when DBA_PRIV_CAPTURES is enabled (Doc ID 593325.1)
- TFA-00104 Cannot establish connection with TFA Server" Error While Installing/Upgrading Trace File Analyzer (Doc ID 2301598.1)
- <https://community.oracle.com/mosc/discussion/3913477/without-database-vault-installed-use-of-dbms-privilege-capture-needs-licence>
- <https://community.oracle.com/mosc/discussion/4517433/how-to-use-dbms-privilege-capture-generate-result-when-using-database-wide-capture-and-database-link>
- https://docs.oracle.com/en/database/oracle/oracle-database/21/arpls/DBMS_PRIVILEGE_CAPTURE.html
- https://docs.oracle.com/en/database/oracle/oracle-database/19/arpls/DBMS_PRIVILEGE_CAPTURE.html
- https://docs.oracle.com/en/database/oracle/oracle-database/18/arpls/DBMS_PRIVILEGE_CAPTURE.html
- https://docs.oracle.com/en/database/oracle/oracle-database/12.2/arpls/DBMS_PRIVILEGE_CAPTURE.html

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- [WALLET MANAGER] <https://docs.oracle.com/en/database/oracle/oracle-database/19/dbimi/using-oracle-wallet-manager.html#GUID-D0AA8373-B0AC-4DD8-9FA9-403E345E5A71>
- [ORACLE DATABASE 19C SECURITY GUIDE] <https://docs.oracle.com/en/database/oracle/oracle-database/19/dbseg>
- <https://www.oracle.com/webfolder/s/assets/webtool/cloud-migration-advisor/index.html>
- <https://docs.oracle.com/en-us/iaas/Content/Database/Tasks/mig-onprembackup.htm>
- <https://docs.oracle.com/en/cloud/paas/database-dbaas-cloud/csdbi/create-hybrid-dr-deployment.html>

Exadata Cloud at Customer - Smart Scan Feature

ExaCC Smar-Scan useful doc's and tips



- Creating a Physical Standby Database for 11g Through 19c Databases (Doc ID 2275154.1)
- Creating a Physical Standby using RMAN Duplicate (RAC or Non-RAC) (Doc ID 1617946.1)
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- V4 Reduce Transportable Tablespace Downtime using Cross Platform Incremental Backup (Doc ID 2471245.1)
- Cross Platform Database Migration using ZDLRA (Doc ID 2460552.1)
- Is GG certified for EBS Database Migrations and upgrades (Doc ID 2491869.1)
- [BACKUP AND RECOVER BEST PRACTICES FOR RECOVER APPLIANCE] <https://www.oracle.com/a/otn/docs/oda-backup-recovery-technical-brief.pdf>
- [WALLET MANAGER] <https://docs.oracle.com/en/database/oracle/oracle-database/19/dbimi/using-oracle-wallet-manager.html#GUID-D0AA8373-BOAC-4DD8-9FA9-403E345E5A71>
- [ORACLE DATABASE 19C SECURITY GUIDE] <https://docs.oracle.com/en/database/oracle/oracle-database/19/dbseg>
- <https://www.oracle.com/webfolder/s/assets/webtool/cloud-migration-advisor/index.html>
- <https://docs.oracle.com/en-us/iaas/Content/Database/Tasks/mig-onprembackup.htm>
- <https://docs.oracle.com/en/cloud/paas/database-dbaas-cloud/csdbi/create-hybrid-dr-deployment.html>



"El analfabeto del siglo XXI no será el que no sepa leer y escribir, sino el que no pueda aprender, desaprender y reaprender".

Alvin Toffler.
1928 - 2016



Thank You 😊

Questions / Feedback / Training Suggestions

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Ask for help 😊

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