

Oracle adatbázis újdonságok

Előadó: Okner Zsolt



HOUG
HUNGARIAN ORACLE USER GROUP

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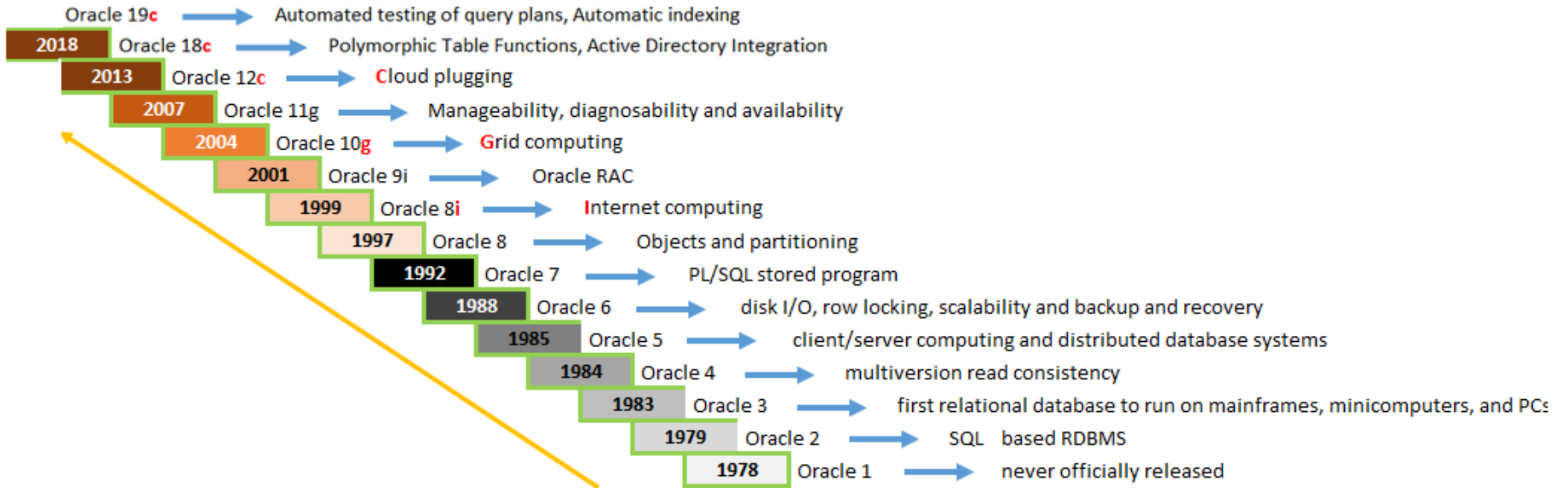
/ 2019.10.17.

Tartalom

- Oracle adatbázis jelenlegi helyzete
- Oracle adatbázis új funkciók
- Kitekintés az Openworld-re



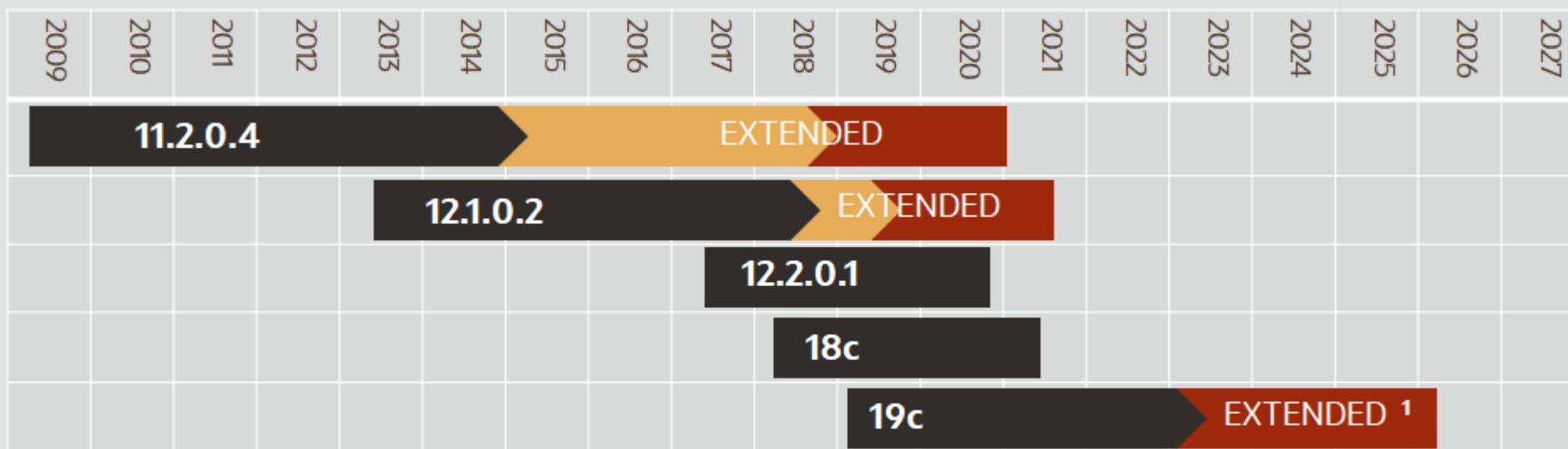
Oracle adatbázis fejlődése



Oracle adatbázis támogatása



Release and Support Timelines



■ Error Correction during Premier Support

■ Error Correction with Waived Extended Support Fee

■ Error Correction with Paid Extended Support

¹Oracle Database 19c is the most current long-term support release.

Oracle adatbázis támogatása



Release	Patching End Dates	Extended Support End Dates	Direct Upgrade Path to 19c
DB 11.2.0.4 (Terminal Patch Set)	31-Dec 2020 with ES/ULA	31.dec.20	Yes
	<i>(ES Fee waived through 31-Dec-2018)</i>	<i>(Requires ES Fees paid or Unlimited License Agreement w/ES enabled (ULA))</i>	
Database 12.1			
DB 12.1.0.1 (Initial Release)	31.aug.16	Not Available	No
DB 12.1.0.2 (Terminal Patch Set)	31-Jul-2021 with ES/ULA	31-Jul-2021	Yes
	<i>(ES Fee waived through 31-Jul-2019)</i>	<i>(Requires ES Fees paid or Unlimited License Agreement w/ES enabled (ULA))</i>	
Database 12.2			
DB 12.2.0.1 (Initial Release)	20.nov.20	Not Available	Yes
DB 18 (Annual Release)	08-June-2021	Not Available	Yes
DB 19 (Long Term Release)	31-Mar-2023 without ES/ULA	31-Mar-2026 *	
	31-Mar-2026 with ES/ULA	<i>(Requires Extended Support (ES) Fees paid or Unlimited License Agreement w/ES enabled (ULA))</i>	

Oracle adatbázis upgrade 19c-re



11^g

RELEASE 2

11.2.0.4

12^c

12.1.0.2

12^c

RELEASE 2

12.2.0.1

18^c

19^c

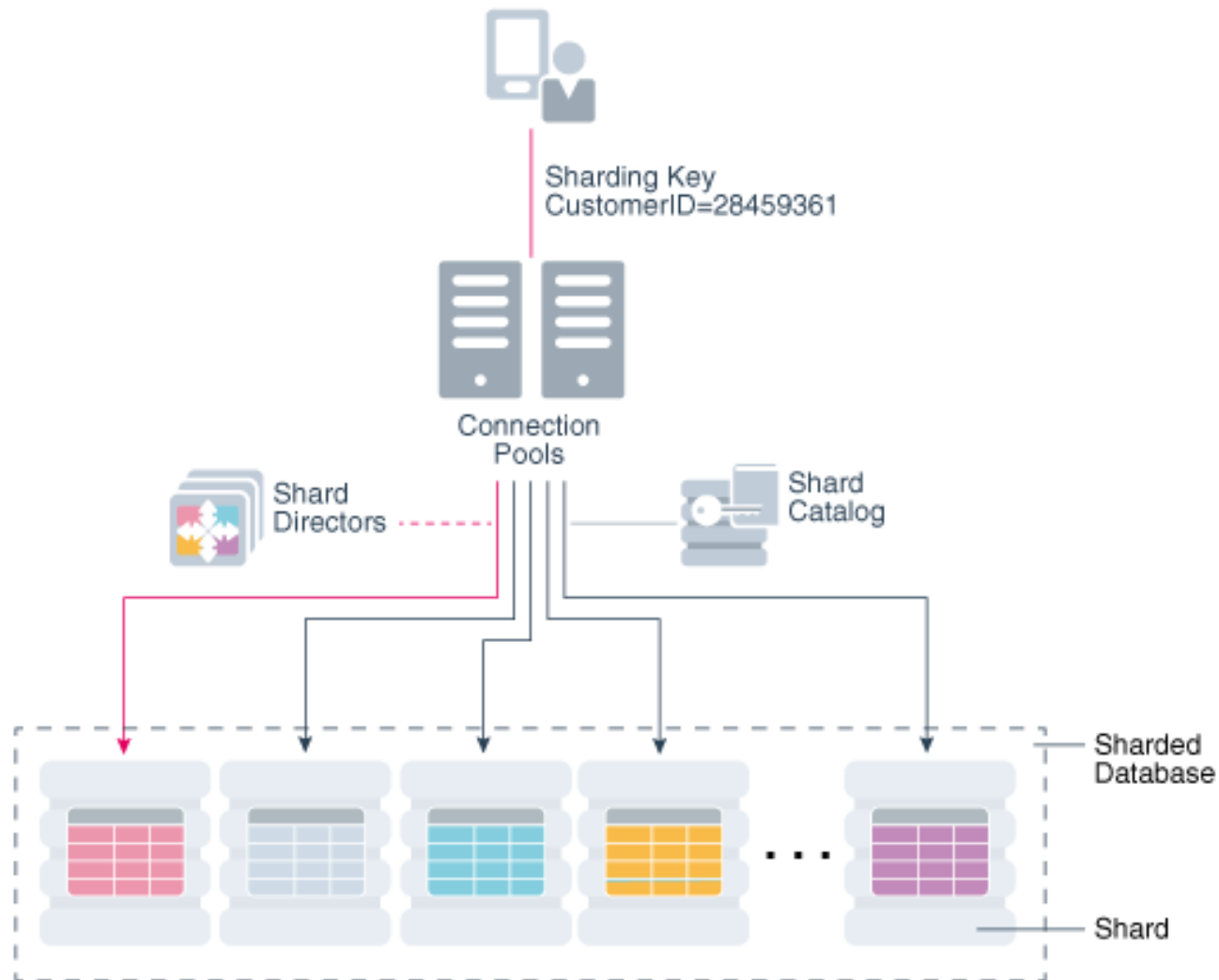
A large grey bracket on the left side of the slide groups the versions 11g, 12c, and 18c. A large grey arrow points from the center of this bracket towards the large red text "19c" on the right.

Oracle adatbázis upgrade 19c-re

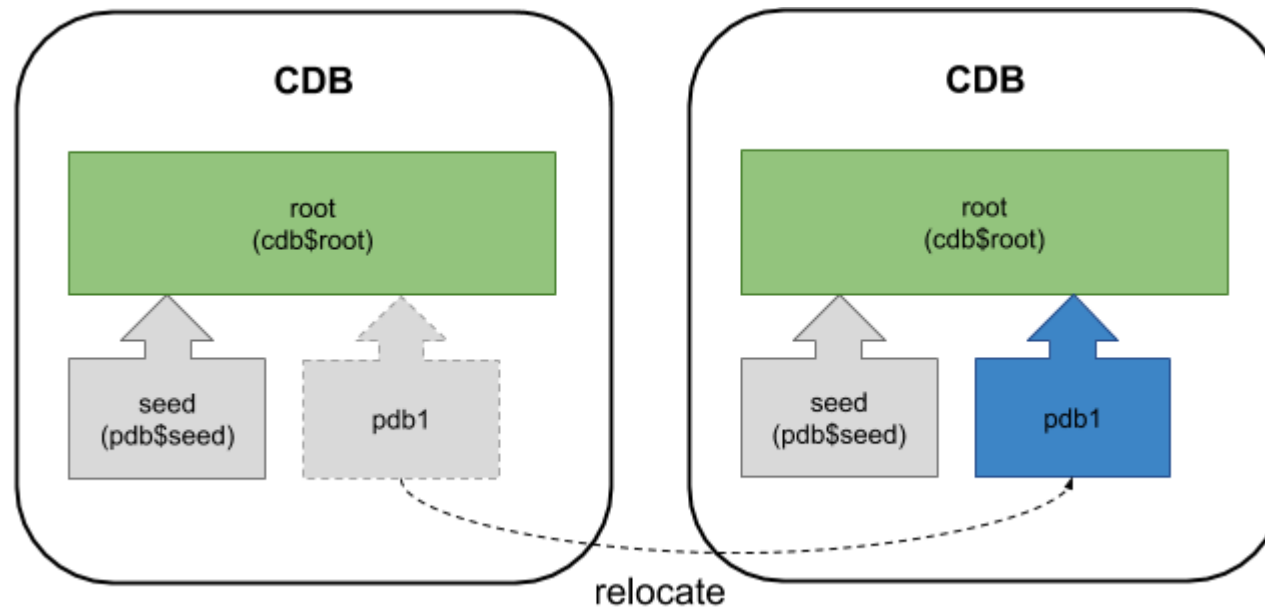


Indirect Upgrade Matrix				
Source Database		Intermediate upgrade path		Target database
12.1.0.1	-->	12.1.0.2/12.2.0.1	-->	19c
11.2.0.1/11.2.0.2/11.2.0.3	-->	11.2.0.4	-->	19c
11.1.0.6/11.1.0.7	-->	11.2.0.4	-->	19c
10.2.0.2, 10.2.0.3, 10.2.0.4, 10.2.0.5	-->	11.2.0.4/12.1.0.2	-->	19c
10.1.0.5	-->	11.2.0.4/12.1.0.2	-->	19c
9.2.0.8 or earlier	-->	11.2.0.4	-->	19c

DB Újdonságok 12cR2 - Sharding



DB Újdonságok 12cR2 - PDB Clone and Relocate

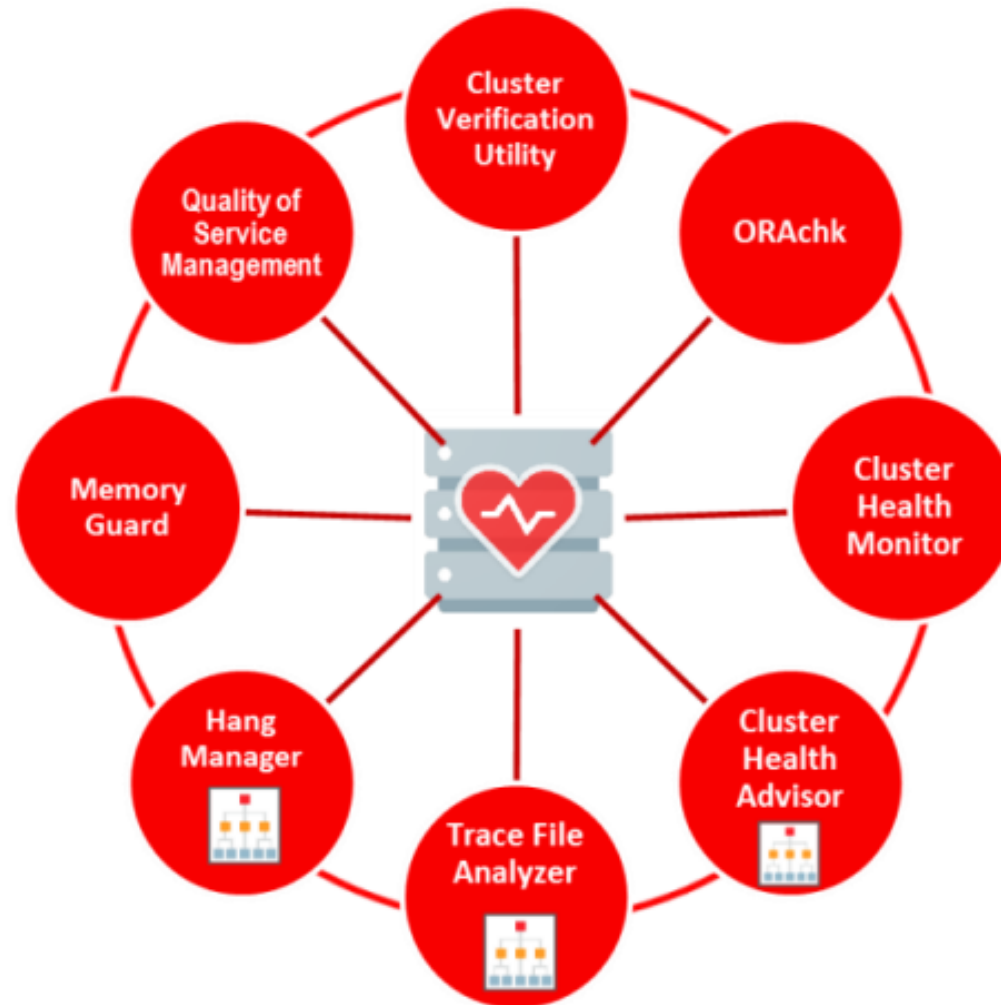


DB Újdonságok 12cR2 – In-Memory enhancements

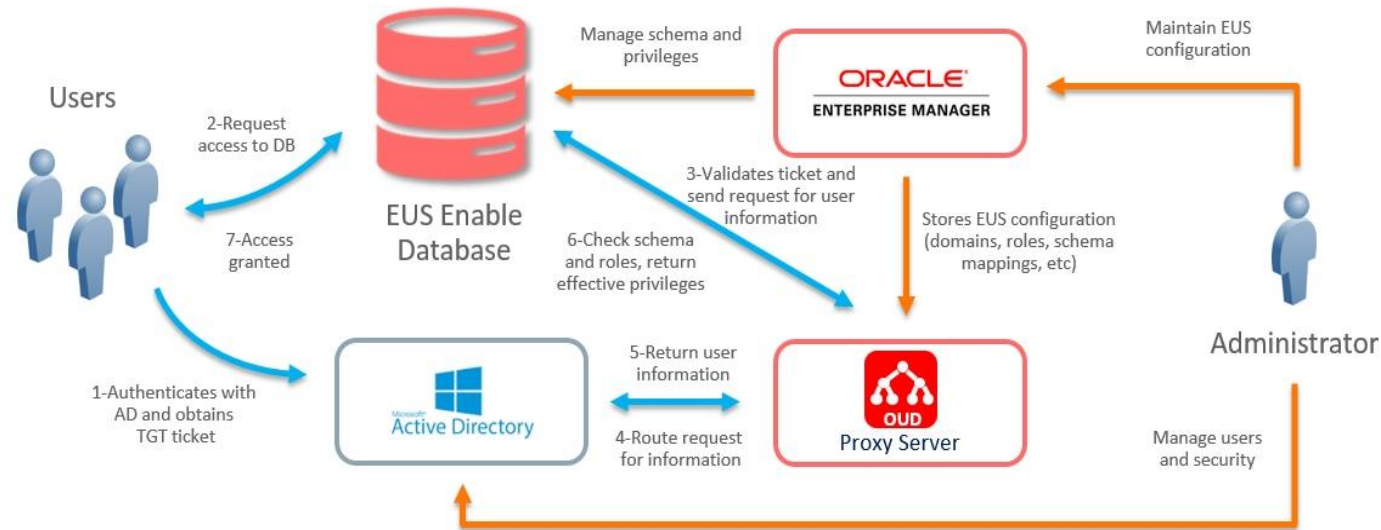


- In-Memory JSON columns
- In-Memory Expressions
- In-Memory Fast-Start
- In-Memory on Active Data Guard
- In-Memory on Exadata Flash Cache
- Dynamic In-Memory area

DB Újdonságok 12cR2 – Autonomous Health Framework

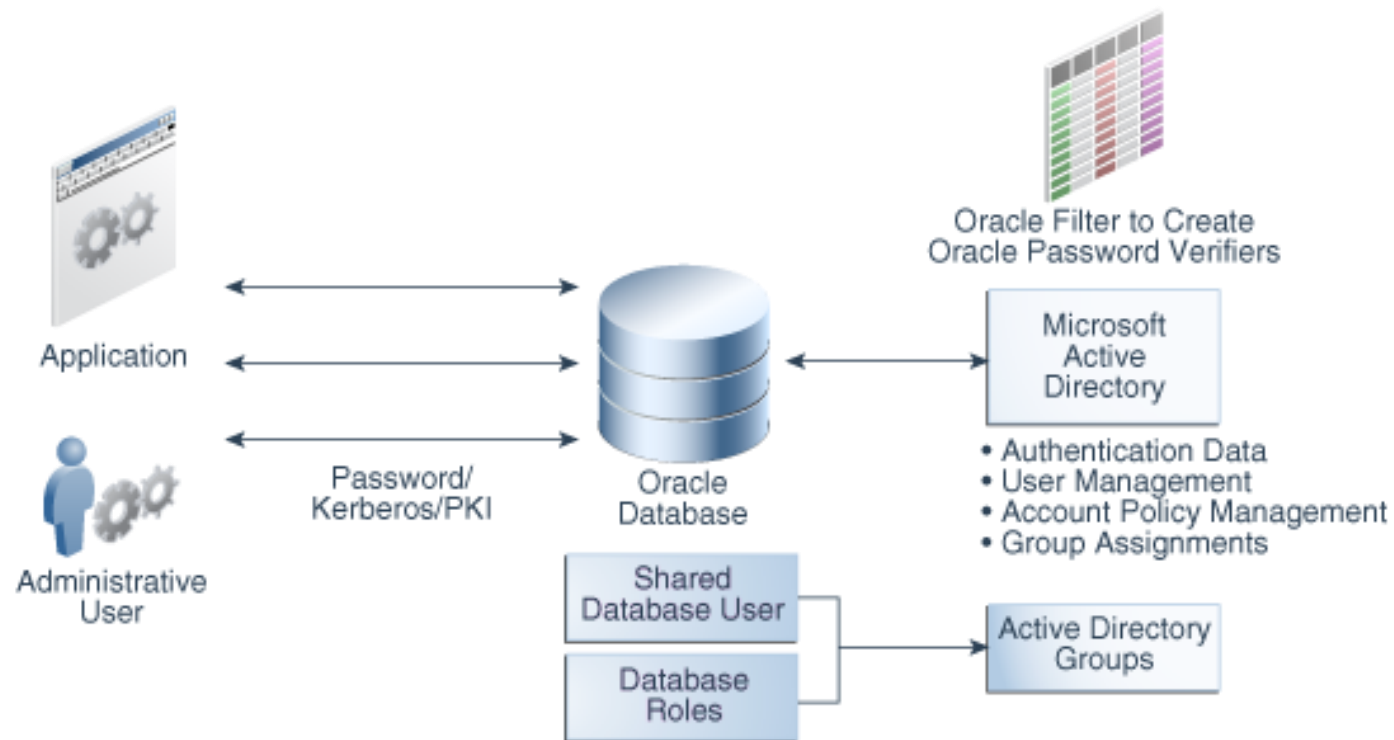


DB újdonságok 18c – Active Directory Integration



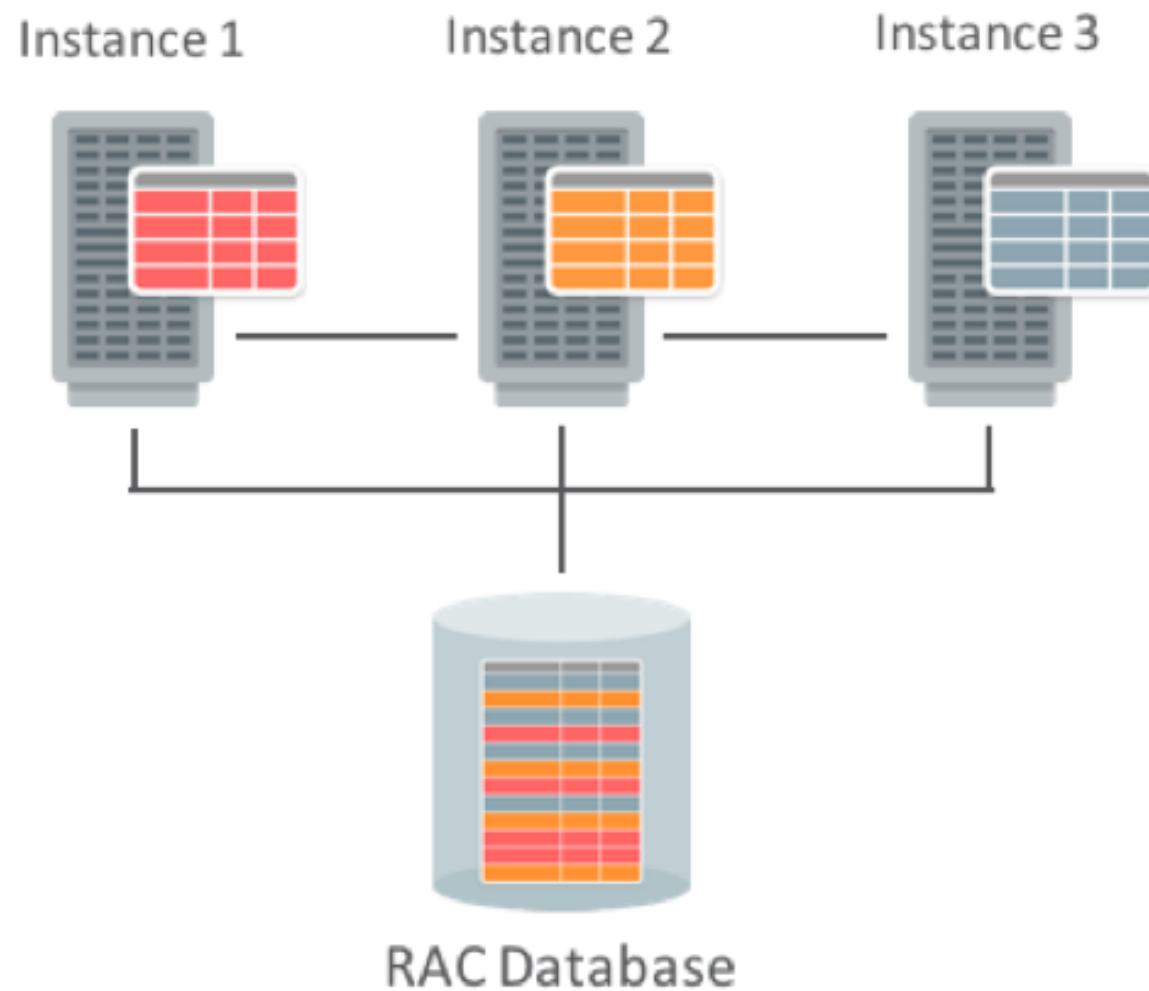
Architektúra 18c előtt

DB újdonságok 18c – Active Directory Integration



Architektúra 18c-től kezdődően

DB újdonságok 18c – RAC Sharding



DB újdonságok 18c – PDB Snapshot Carousel



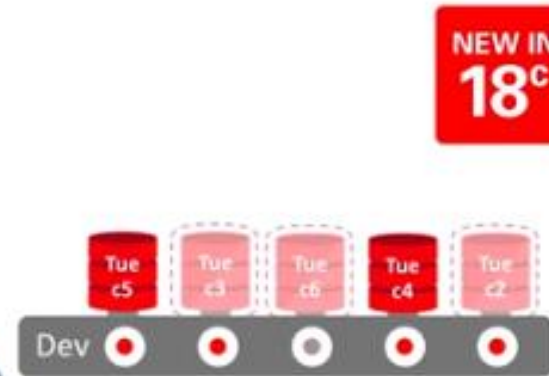
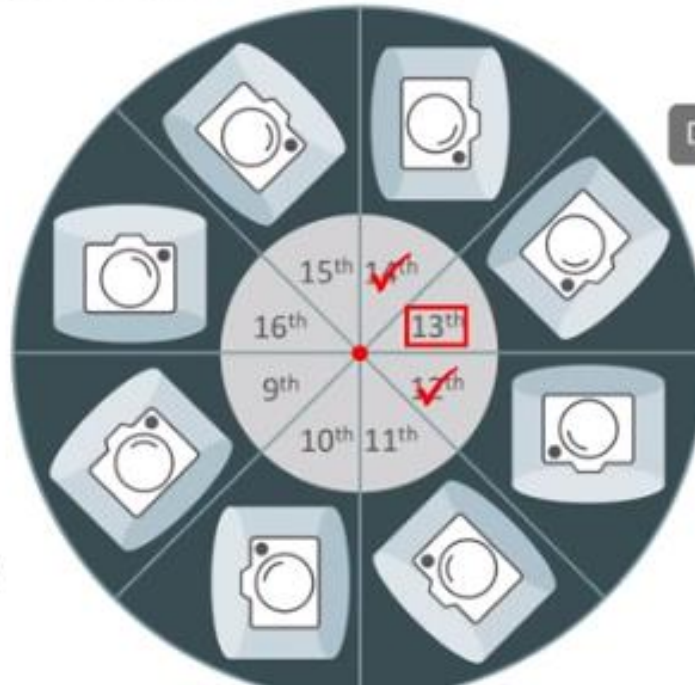
Snapshot Carousel

Ideal source for debugging date-specific problems



Date-specific bug

1. Reported on Friday
2. "Bracket" problem
3. Eliminate Monday
4. Eliminate Wednesday
5. Drill-in on Tuesday

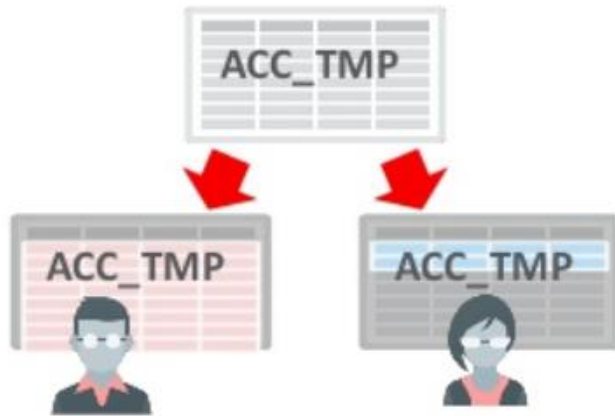


NEW IN
18^c

March 2018
16th
Friday
#B4PDB production
these were always

March 2018
13th
Tuesday
#B4PDB we managed
DBs individually

DB újdonságok 18c – Private Temporary Tables



Global temporary tables

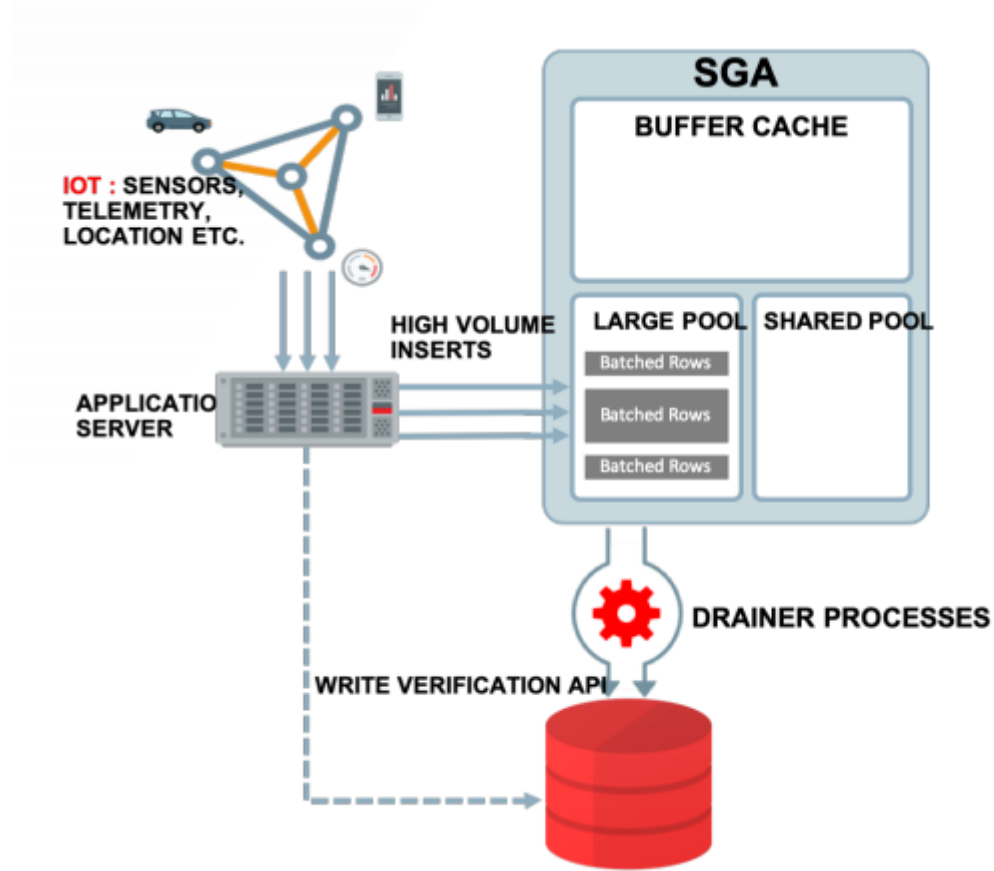
- Persistent, shared (global) table definition
- Temporary, private (session-based) data content
 - Data physically exists for a transaction or session
 - Session-private statistics



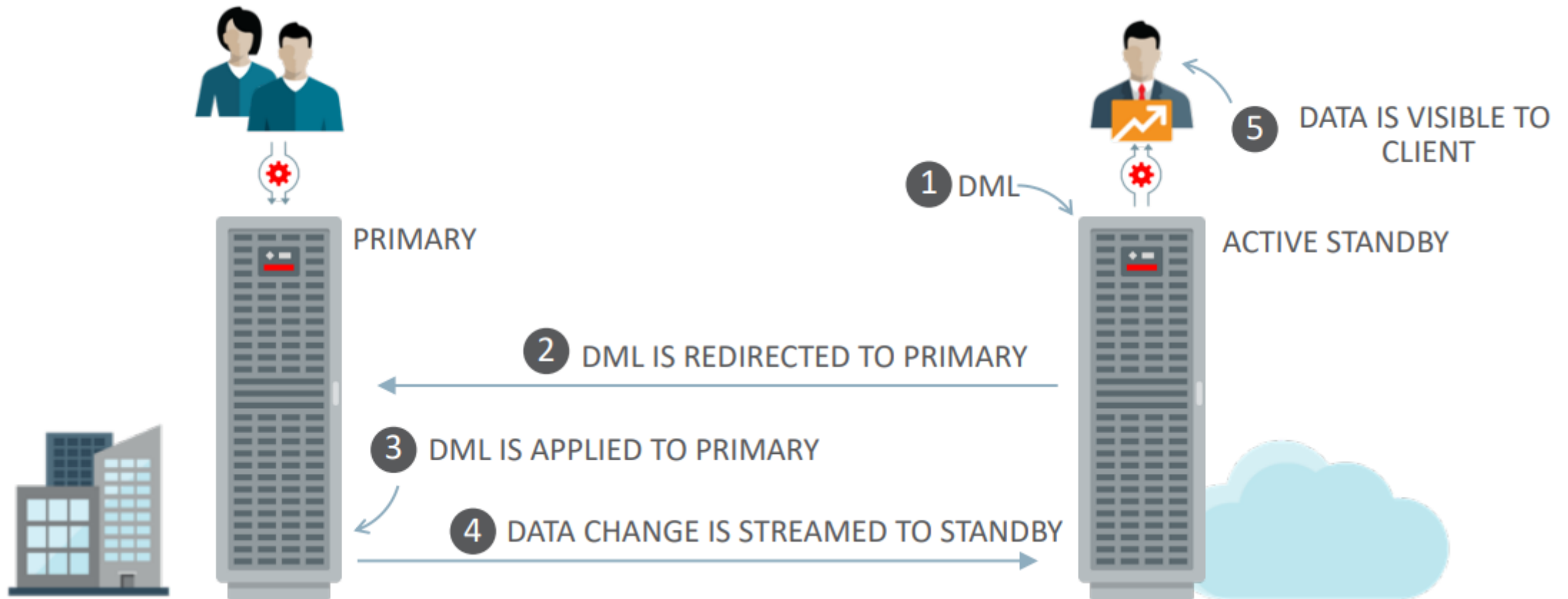
Private temporary tables (18c)

- Temporary, private (session-based) table definition
 - Private table name and shape
- Temporary, private (session-based) data content
 - Session or transaction duration

DB újdonságok 19c – Streaming Insert for IoT

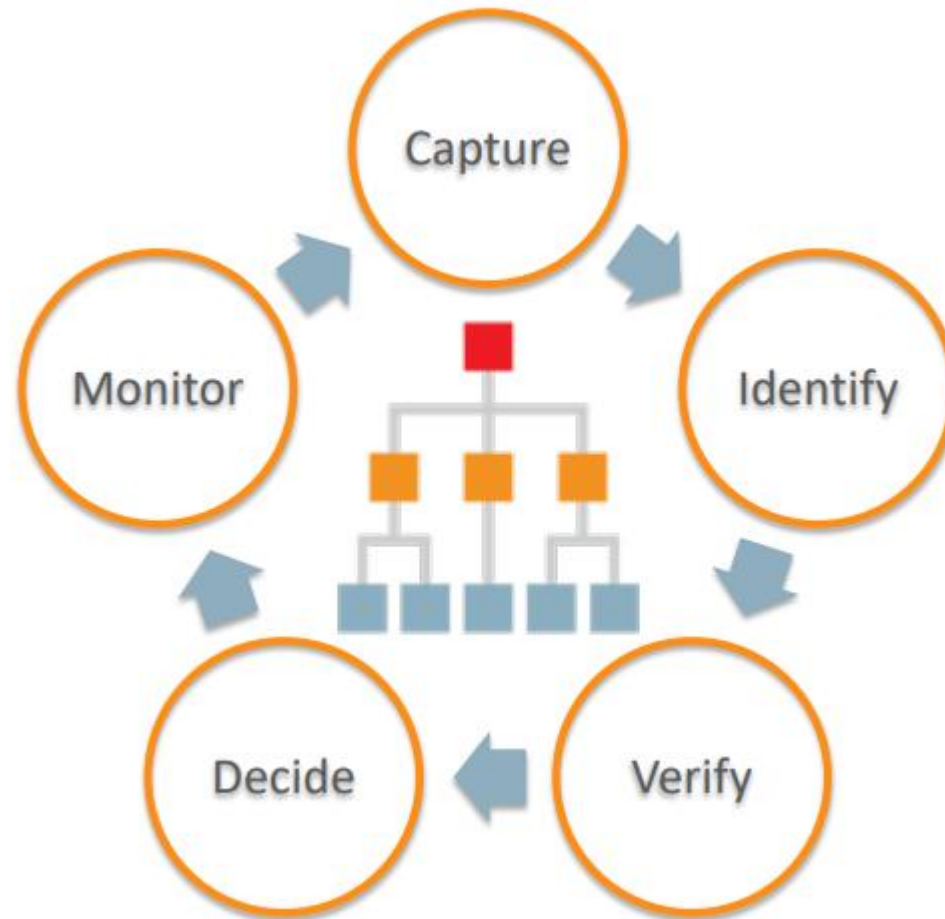


DB újdonságok 19c – ADG DML operations

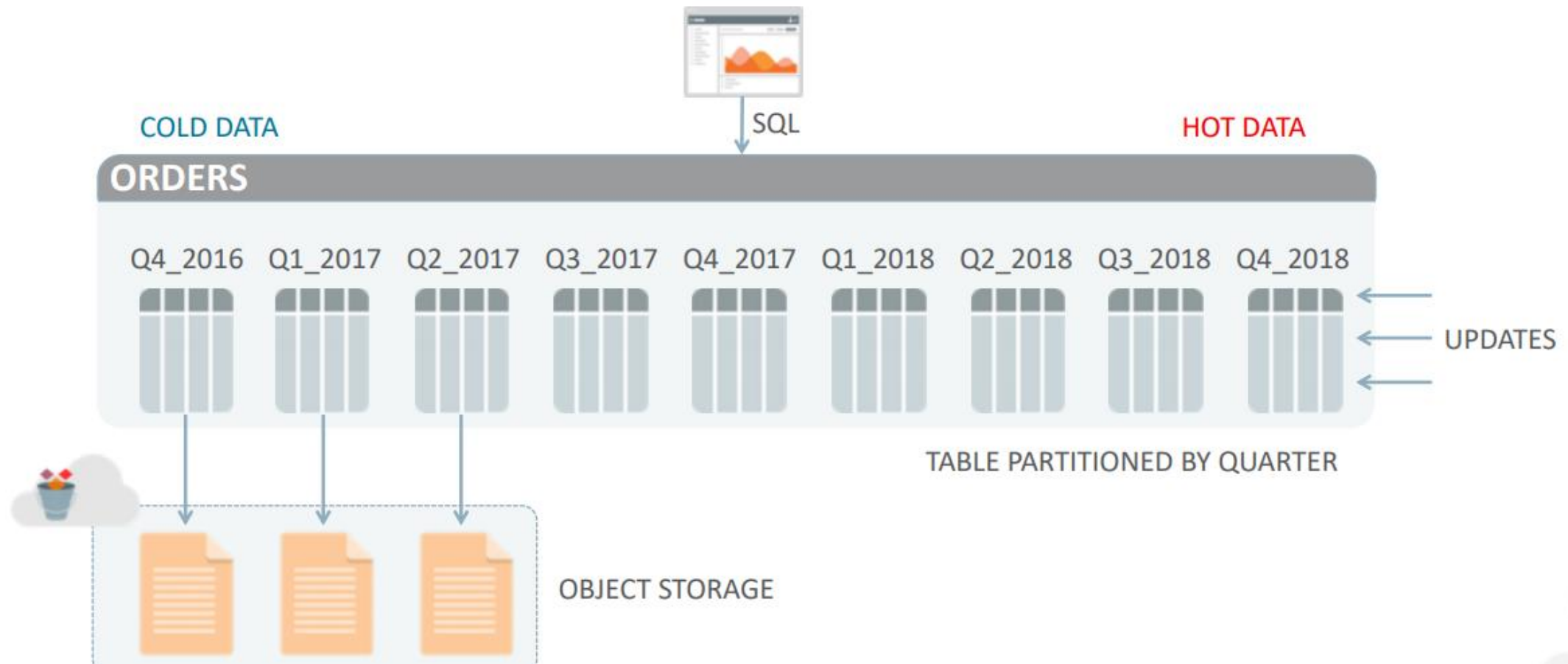


```
SQL> alter system set adg_redirect_dml = true scope = both sid = '*';
```

DB újdonságok 19c – Automatic Indexing



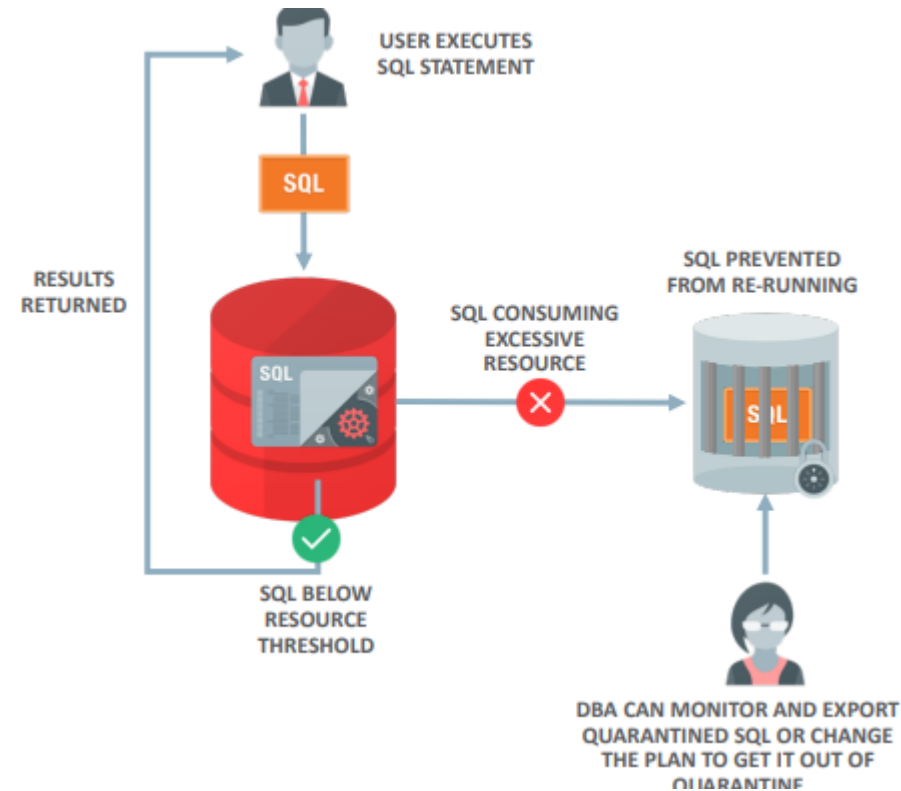
DB újdonságok 19c – Hybrid Partitioning Tables



DB újdonságok 19c – SQL Quarantine



- SQL execution plans consuming excessive resources are quarantined
- It's prevented from executing again
- Improves overall responsiveness of the system by stopping "rogue" SQL statements being continually resubmitted
- DBA can monitor quarantined statements in `V$SQL`
- Controlled by `DBMS_SQLQ` or `DBMS_RESOURCE_MANAGER`



Kivezetésre került funkciók

- Oracle Streams (Desupported – 19c)
- Oracle Multimedia (Desupported – 19c)



Openworld 2019 kitekintés



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Oracle Autonomous Linux



Applies Security Patches While Running

Autonomous Security – **No Human Errors, Omissions, Delays...**

Automatic continuous threat monitoring and exploit detection

Continuous configuration compliance checks

Tracks vulnerabilities in third-party software

Immediate **fleet-wide OS security patching** and remediation while running

Oracle Autonomous Linux



Oracle Autonomous Linux

Ksplice Live Real-Time Online Patching

The infographic illustrates the performance of Oracle Autonomous Linux's Ksplice Live Real-Time Online Patching. On the left, a series of grey arrows pointing right, each containing the binary code "011101", represent the patches being applied. A red box highlights "150 Million Patches". In the center, a red clock icon is labeled "4 hours" above it and "Applied to" below it. On the right, a grid of black server icons represents the infrastructure, with a green box highlighting "1.5 Million Cores".

150 Million Patches

4 hours

Applied to

1.5 Million Cores

150M patches applied in Gen 2 Cloud in 4 hours for Spectre/Meltdown Bugs – No Downtime

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Vmware in Oracle Cloud



Multi-Cloud Innovation:

Available : Q4 2019

ORACLE + **vmware**

VMware on Oracle Cloud Infrastructure

- Only cloud that lets you manage your own VMware-certified stack
 - You control version management, operations, upgrade time...
- Extend on-premise VMware environments to OCI
- Access to modern Oracle offerings like Autonomous Database and Exadata
- Lift-and-shift of VMware workloads to OCI
 - Leverage existing tools
 - Leverage existing operational procedures

Exadata újdonosságok – Exadata X8



New | Oracle Exadata X8

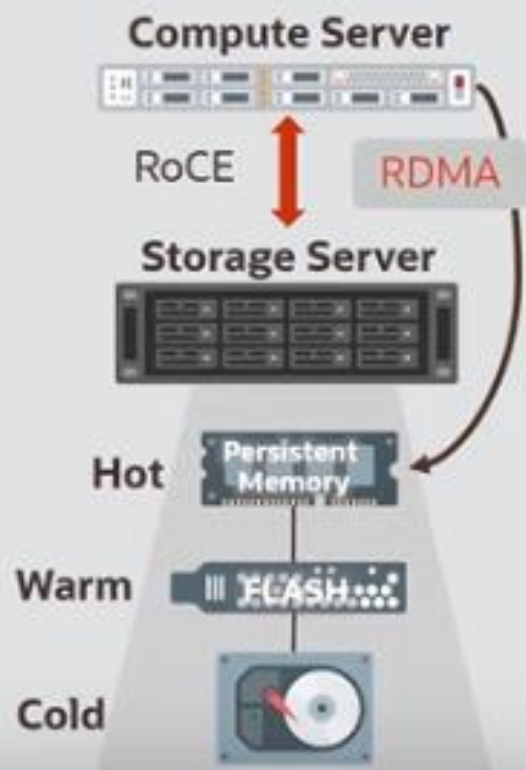
- Scale-out 2-socket and 8-socket **database** servers
 - 15% faster clock rate – latest 24 core Intel Cascade Lake
- Fast unified InfiniBand internal fabric
- Scale-out intelligent 2-socket **storage** servers
 - 60% more processing cores and 40% more storage capacity
- NEW Storage Server Extended (XT)
 - Low cost storage for infrequently accessed data



Exadata újdonságok – Exadata X8M



Announcing | Oracle Exadata X8M



- **New** 100Gb Ethernet + RoCE (RDMA over Converged Ethernet)
 - 2.5x faster networking
- RoCE and Persistent Memory (PMEM) for extreme performance
 - Storage Servers feature PMEM Accelerator in front of Flash memory
- Database uses RDMA instead of IO to access PMEM
 - Bypasses the network and IO software stack giving 10X lower latency
- Customers can choose RoCE-based Exadata
 - Or continue to use InfiniBand-based Exadata for compatibility

Autonomous Database Optimizations



Autonomous Database Optimizations

Autonomous Data Warehouse



Optimizes Complex SQL



Columnar Format



Creates Data Summaries

Autonomous Transaction Processing

Optimizes Response Time

Row Format

Creates Indexes

Exadata + Real Application Clusters + Multitenant

Autonomous Database Machine Learning



Autonomous Database Machine Learning

Database Infrastructure



Detection and recovery of failed/sick server, storage or switch/link

Database Operations



Hang Management
Anomaly Detection
Maintenance Slot Identification
Bug Identification and Prioritization

Workload Optimizations



Query Optimizer
Real-time statistics
Automatic Indexing

Free Autonomous Database



- Always-free “micro” instances with up to
 - 2 always free ADB instances per OCI tenancy
 - 20 GB database storage per instance
 - 1 OCPU per instance
- Runs on same infrastructure as ADW/ATP
- Full functionality, full experience, including
 - APEX
 - REST Interface (ORDS)
 - SQL Developer Web
 - Machine Learning Notebooks
- Ideally suited to requirements of developers and students



Free Autonomous Database



- 2 Autonomous Databases (Autonomous Data Warehouse or Autonomous Transaction Processing), each with 1 OCPU and 20 GB storage
- 2 Compute VMs, each with 1/8 OCPU and 1 GB memory
- 2 Block Volumes, 100 GB total, with up to 5 free backups
- 10 GB Object Storage, 10 GB Archive Storage, and 50,000/month API requests
- 1 Load Balancer, 10 Mbps bandwidth
- 10 TB/month Outbound Data Transfer
- 500 million ingestion Datapoints and 1 billion Datapoints for Monitoring Service
- 1 million Notification delivery options per month and 1000 emails per month

Oracle 20c

Next | Oracle Database Innovation Continues

Multi-model Enhancements

- Native Blockchain tables
- AutoML

Better Performance

- JSON binary representation
- Persistent memory store



20^c

2020

20c & Multitenant

De-support of Non-Container Database Architecture

- The Oracle Database non-CDB architecture will be de-supported from Oracle Database 20c onwards
- To ease the migration to this architecture, from Oracle Database 19c onwards, the multitenant architecture supports up to 3 user-created Pluggable Databases of any type
 - The Multitenant Option is required for deployment of 4 or more user-created PDBs



20c & Multitenant

Feature / Option / Pack	S E 2	E E	EE- ES	DBC S SE	DBC S EE	DBC S EE- HP	DBC S EE- EP	ExaC S	Notes
Oracle Multitenant - # of PDBs	3	25 2	409 6	3	3	4096	4096	4096	<p>The number value in each column indicates the maximum number of pluggable databases (PDBs) that can be created for each offering.</p> <ul style="list-style-type: none">For all offerings, if you are not licensed for Oracle Multitenant, then you may have up to 3 user-created PDBs in a given container database at any time.

Consolidation