To 23c or Not To 23c, That is the Question...

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Director Enterprise Architecture
Oracle ACE Pro

Who is Troy Ligon?

- *Troy started his Oracle journey with version 3 and 2023 marks his 40th year focusing on Oracle solutions.*
- *Troy is one of less than 500 Oracle ACE's globally, is President of his local Oracle Users Group, and sits on Quest's Advisory Board of Directors for the IOUG.*
- *Ran his own successful consulting company for over a dozen years, catering to the Oracle needs of the Financial Services, Public Sector, and Utility Billing markets across the globe.*
- *Held senior roles at IBM, CitiBank, The Nielsen Company, American Express, PriceWaterhouseCoopers, and others.*
- *As an Enterprise Architect, Troy is currently Director of Infrastructure Architecture for InComm Payments, a global financial services firm managing annual volumes over $50billion across 43 countries.*

Troy is an avid motorsports fan and spends much of his spare time attending motorsports events around the country. When he's not architecting database systems or hanging out around a racetrack somewhere, you can typically find him on a beach, enjoying the waves.

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THE ORACLE DATABASE FORUM AT
BLUEPRINT 4D
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WHO'S JOINING ME?

- Database upgrade best practices and new features in Database 23c
- Protecting your data from ransomware and using zero trust frameworks
- Utilizing cloud or engineered service for innovation and cost reduction
- Data driven development using APEX, low code, and machine learning
- System management and observability through on-premises OEM and cloud-based solutions

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- What is it?
- How do I get it?
- What's in it for me?
- Do I want it?

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Projected Database Release and Support Timeline

- Innovation Release - 2 years of Premier Support, and no Extended Support
- Long Term Release - 5 years of Premier Support, and 3 years of Extended Support
- Always refer to MOS Note: Release Schedule of Current Database Releases (Doc ID 742060.1)

ANNOUNCING

Oracle Database 23c

Oracle Database 23c accelerates Oracle's mission to make it **simple** to develop and run all data-driven apps

BETA available in October 2022, on-premises and in Oracle Cloud

https://tinyurl.com/OracleBeta

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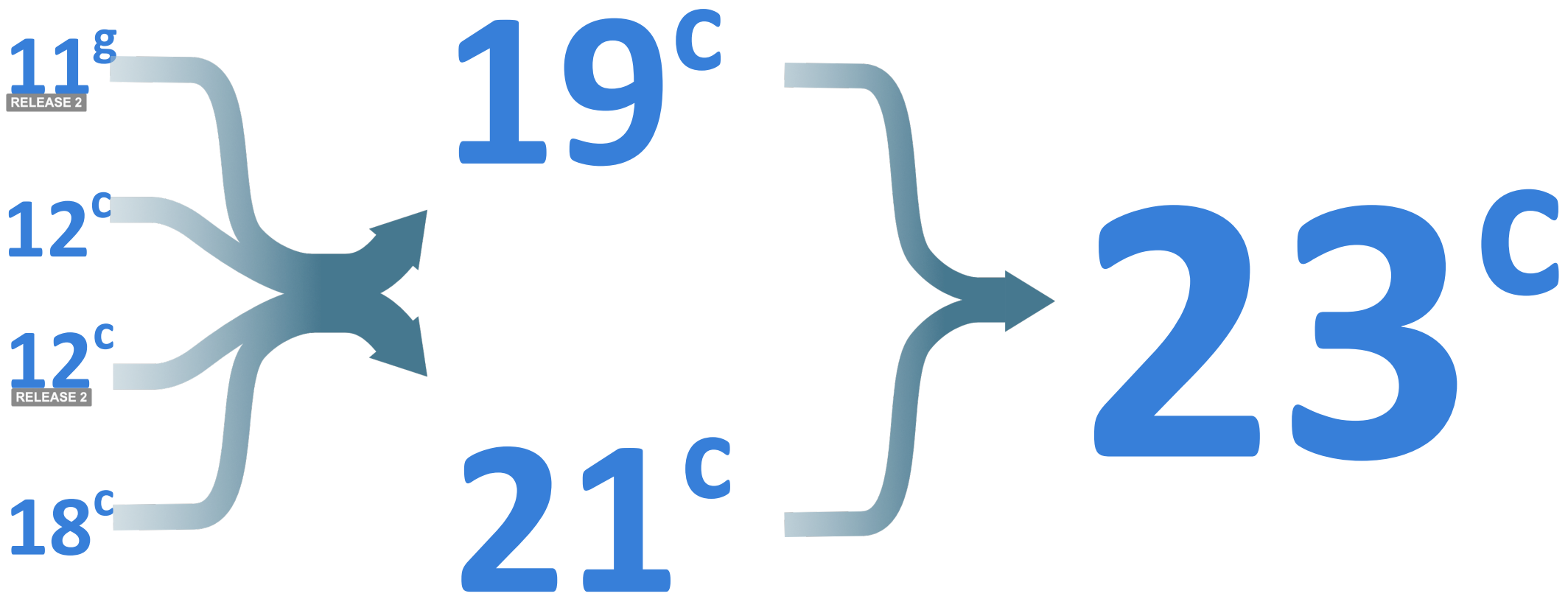
Upgrade Path to Oracle Database 23c



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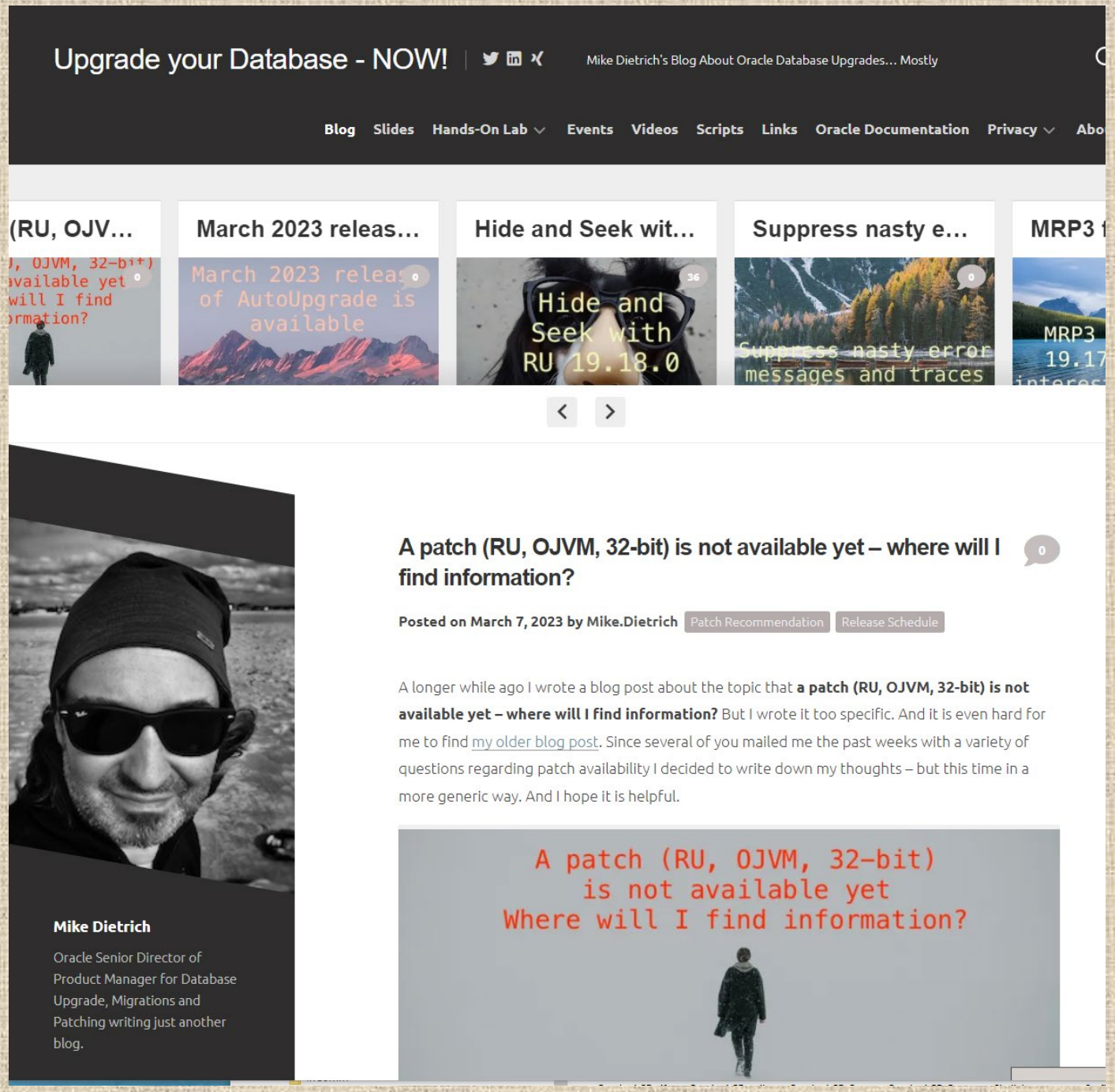

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SQL Enhancements

- BOOLEAN Datatype
- SELECT without FROM clause
- IF [NOT] EXISTS for DDL statements
- Column aliases in GROUP BY and HAVING clauses
- Multi-value INSERT statements
- Direct JOINs in UPDATE statements
- Schema-level privileges

BOOLEAN Datatype

```
CREATE TABLE troy (line VARCHAR2(100), active BOOLEAN);
INSERT INTO troy VALUES ('this line appears',true);
INSERT INTO troy VALUES ('this line does not appear',false);
INSERT INTO troy VALUES ('this line appears',1);
INSERT INTO troy VALUES ('this line does not appear',0);
INSERT INTO troy VALUES ('this line appears','t');
INSERT INTO troy VALUES ('this line does not appear','f');
```

```
SELECT line FROM troy WHERE active;
```

```
LINE
--------------------------
this line appears
this line appears
this line appears
```

SELECT without FROM clause

```
SQL> SELECT SYSDATE FROM DUAL;
SYSDATE
-------------------------------------------
2023-01-24 12:36:57
```

```
SQL> SELECT 'hello world' FROM DUAL;
'HELLO WORLD'
-------------------------------------------
Hello world
```

```
SQL> SELECT 1+1 FROM DUAL;
1+1
-------------------------------------
2
```

SELECT without FROM clause

```
SQL> SELECT SYSDATE;
SYSDATE
---------------------------------
2023-01-24 12:36:57
```

```
SQL> SELECT 'hello world';
'HELLO WORLD'
-----------------------------------
Hello world
```

```
SQL> SELECT 1+1;
1+1
-----------------------
2
```

IF [NOT] EXISTS for DDL statements

SQL> CREATE TABLE IF NOT EXISTS troy (line VARCHAR2(100), active BOOLEAN);
Table created.

SQL> CREATE TABLE IF NOT EXISTS troy (line VARCHAR2(100), active BOOLEAN);
Table created.

SQL> DROP TABLE IF EXISTS troy (line VARCHAR2(100), active BOOLEAN);
Table dropped.

SQL> DROP TABLE IF EXISTS troy (line VARCHAR2(100), active BOOLEAN);
Table dropped.

Column aliases in GROUP BY and HAVING clauses

```
SQL> SELECT first||' '||middle||' '||last AS name,
EXTRACT(YEAR FROM appointment_date) AS age
GROUP BY first||' '||middle||' '||last
HAVING EXTRACT(YEAR FROM appointment_date) > 2020;
```

```
SQL> SELECT first||' '||middle||' '||last AS name,
EXTRACT(YEAR FROM appointment_date) AS age
GROUP BY name
HAVING age > 2020;
```

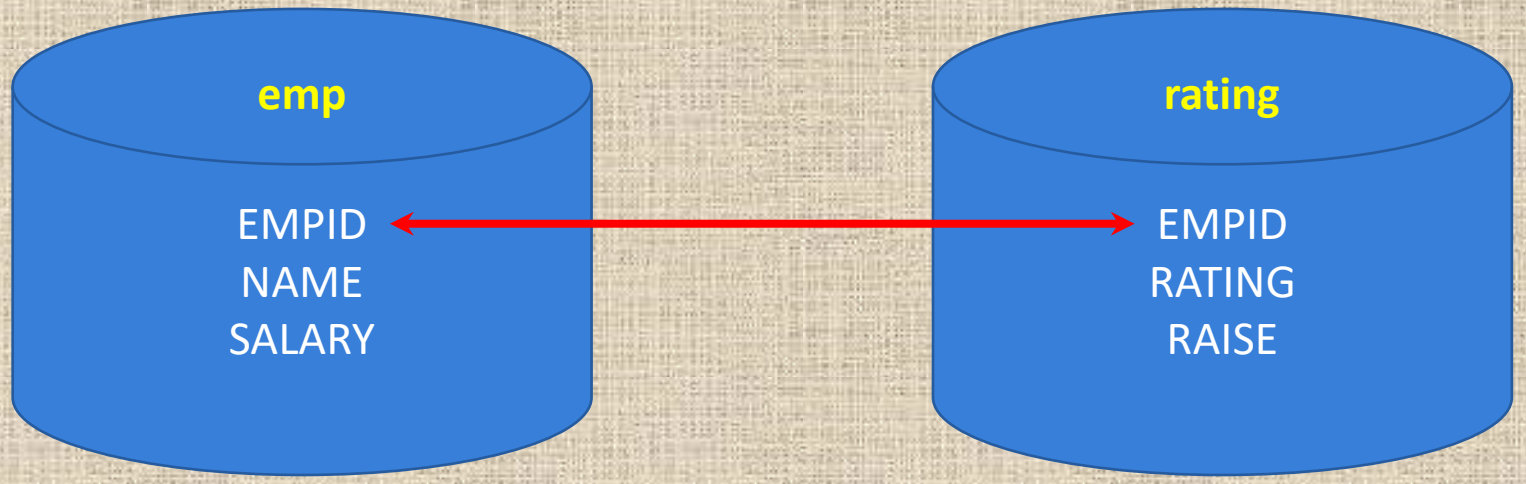
Multi-value INSERT statements

```
SQL> INSERT INTO troy VALUES (1,'hello')(2,'world')(3,'!');
3 row(s) inserted.

SQL> SELECT * FROM troy;
SEQ         WORD
----------  --------------------------
         1  hello
         2  world
         3  !
```

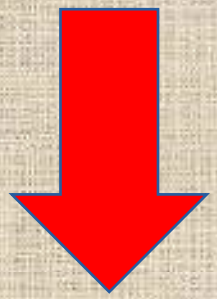
Direct JOINs in UPDATE statements

```
SQL> UPDATE emp e SET e.salary = e.salary + r.raise
FROM reviews r
WHERE e.empid=r.empid
AND r.rating='top performer';
```



Schema-level privileges

```
SQL> GRANT SELECT ON hr.emp TO troy;
SQL> GRANT SELECT ON hr.dept TO troy;
....
SQL> GRANT SELECT ON hr.orders TO troy;
SQL> GRANT SELECT ON hr.vendor TO troy;
```



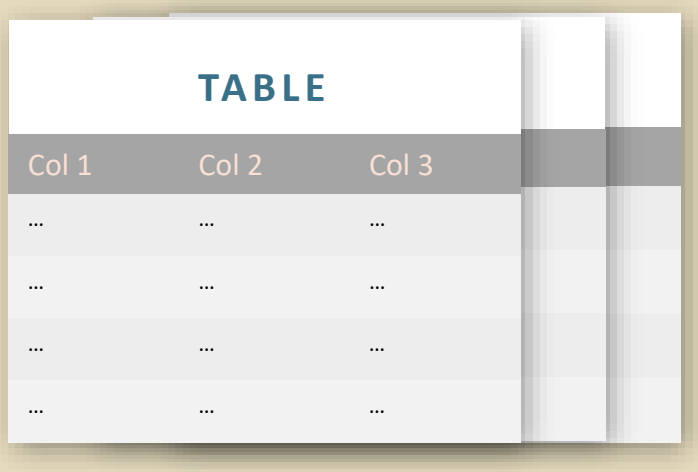
```
SQL> GRANT SELECT ANY TABLE ON SCHEMA hr TO troy;
```

JSON Document Relational Duality

Data is **stored as rows** in tables to provide the benefits of the relational model and SQL access

Data can be **accessed as JSON documents** to deliver the application simplicity of documents

Storage Format



Access Format

```
{
 "name1" : "String Value1",
 "name2" :
    {
     "name3" : "14:00",
     "name4" :  1234
    }
}
```

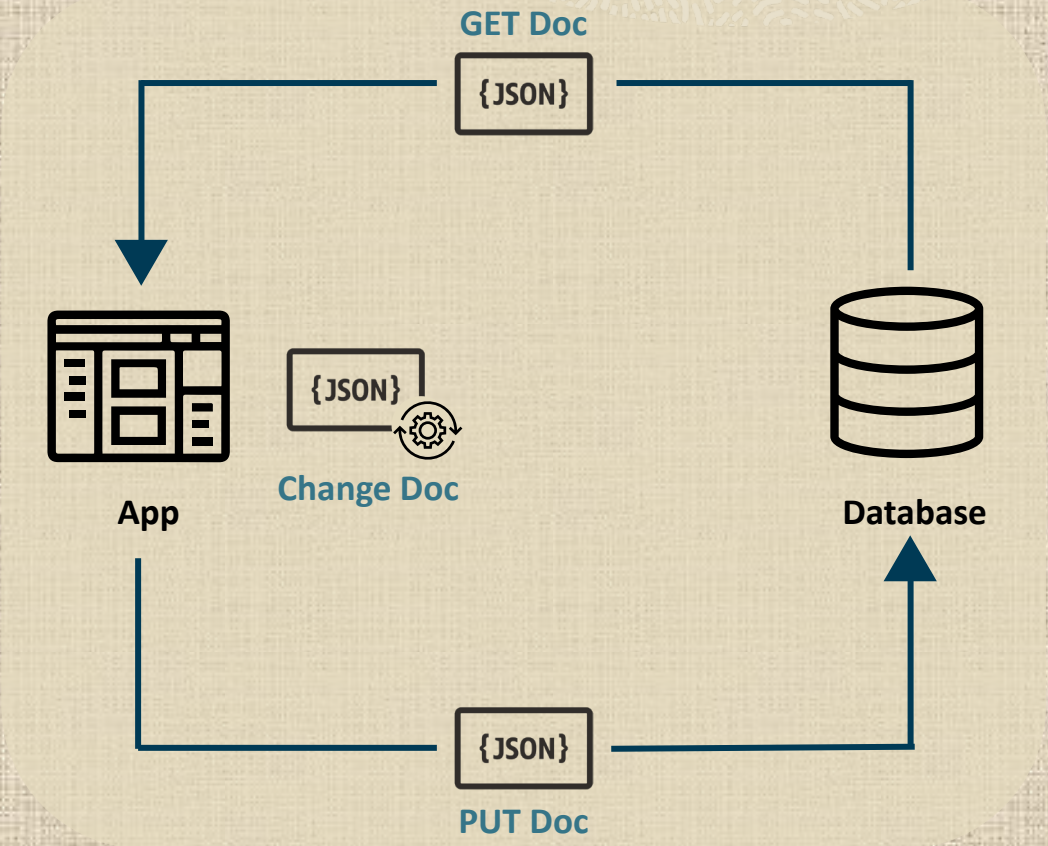
Extreme Simplicity for Developers

JSON Duality Views are extremely simple to access using REST:

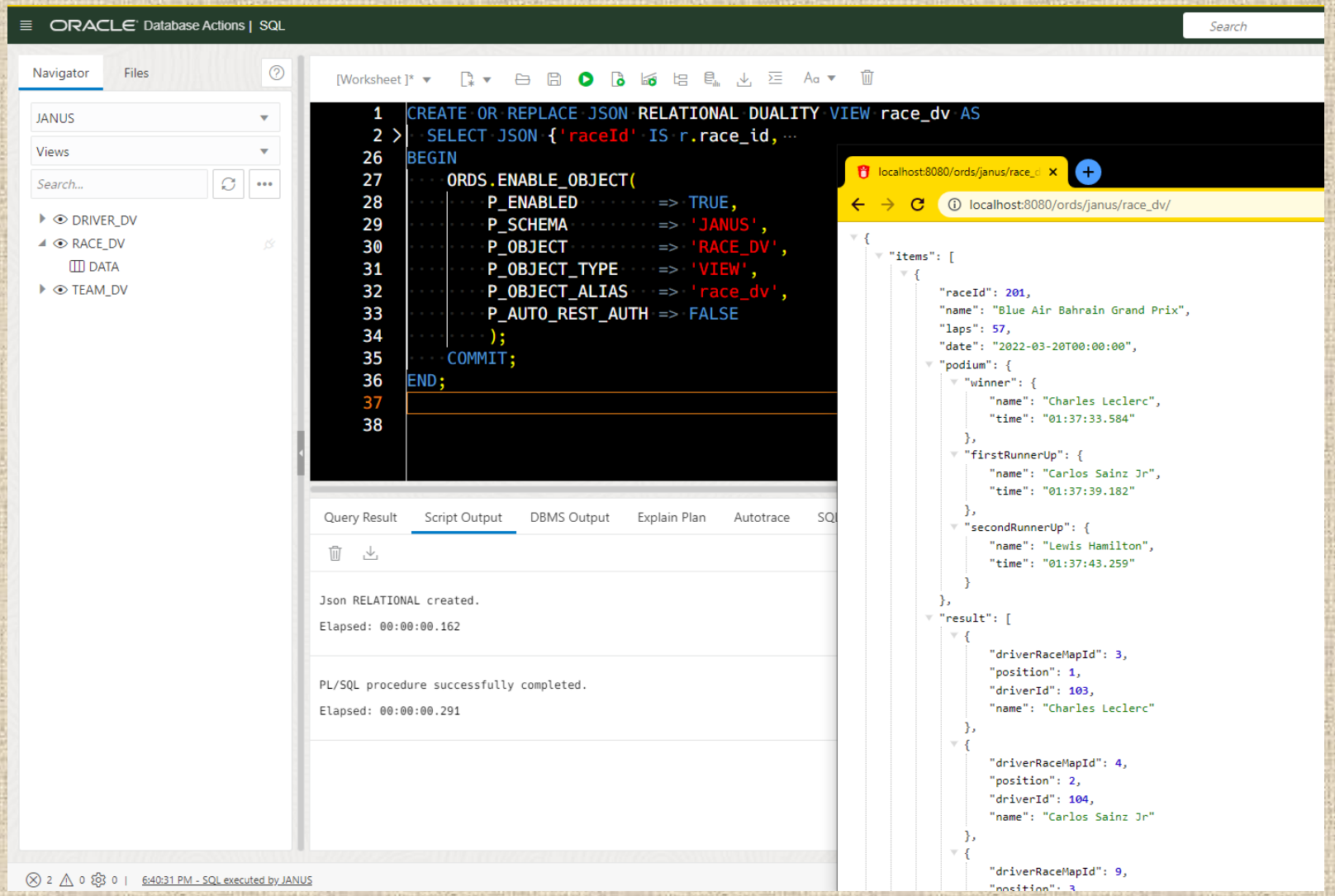
- GET a document from the View
- Make any changes needed to the document
- PUT the document back into the View

The database automatically detects the changes in the new document and modifies the underlying rows

- All duality views that share the same data immediately reflect this change
- Developers no longer have to worry about inconsistencies



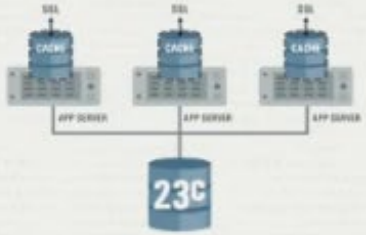
AutoREST API's for JSON Duality Views



Supported Endpoints

GET collection/
GET collection/:item
POST collection/
POST collection/batchload
PUT collection/:item
DELETE collection/:item
DELETE collection/q?=

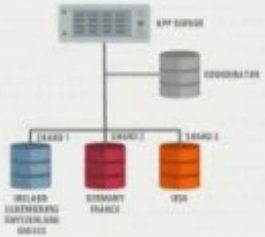
Core Database and Performance



TrueCache

Provides an in-memory, high performance cache that is always consistent with the database.

This results in more responsive applications and lower load on the database server.



Sharding Enhancements

New functionality makes it simpler to create and manage shard replicas. New sharding models also improve the distribution of data for shard keys with few unique values.

Inter-Instance Resource Management

DBAs can specify the priority of different databases running on the same server.

This enables better utilization of hardware and reduces the risk associated with server consolidation.

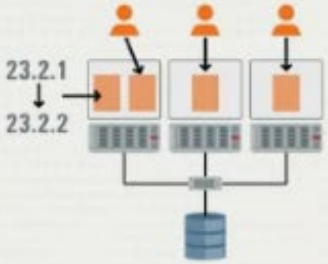
Priority Transactions

Automatic Transaction Abort

Low priority transactions that block high priority transactions can be automatically aborted.

This reduces the admin burden on the DBA whilst maintaining high transaction throughput.

High Availability



Dual Instance Rolling Patching

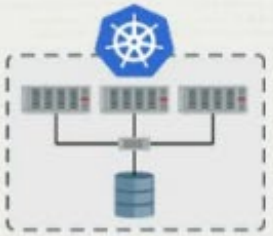
Users can now stand up two instances of a database on the same server, patching them in a rolling fashion.

Single server databases can now benefit from higher availability.

Auto SQL Repair

When the Oracle Database encounters critical SQL error or performance regression, it will look for alternative approaches to execute the statement.

Improves the over all availability of applications.



RAC on K8s & Podman

Users choosing to run Oracle Real Application Clusters in Kubernetes can now benefit from business continuity during planned and unplanned outages.

Read-Only Per-PDB Standbys

Per-PDB Data Guard now supports the PDBs being opened Read-Only.

This further increases the flexibility of solution supporting the offloading of reporting on the standby.

Misc New Features & Enhancements

- Increased Oracle Database Password Length: 1024 Byte Password
- Better Error Messages explaining why Statement Failed to Execute
- Fast Ingest (memory-optimize for Write) Enhancements
- Manage Flashback Database Logs Outside Fast Recovery Area
- Audit Object Actions at the Column Level for Tables &Views
- New Dev Role: *exec dbms_developer_admin.grant_privs('SCOTT');*
- Oracle Text Indexes with Automatic Maintenance
- Transportable Binary XML
- Blockchain Table Enhancements
- In-DB SQL Firewall

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Q&A

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