EXITAS & MONIN

DATABASE MANAGED SERVICES

Who are we?

Firas Nohra - Monin

Oracle Database Engineer

Michiel Stubbe – Exitas

OCI Cloud Architect - Oracle DBA

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Agenda – Bring AI to your database

Oracle Native

- Select AI
  - Natural language to SQL

  & more
- AI Vector Search
  - Similarity search

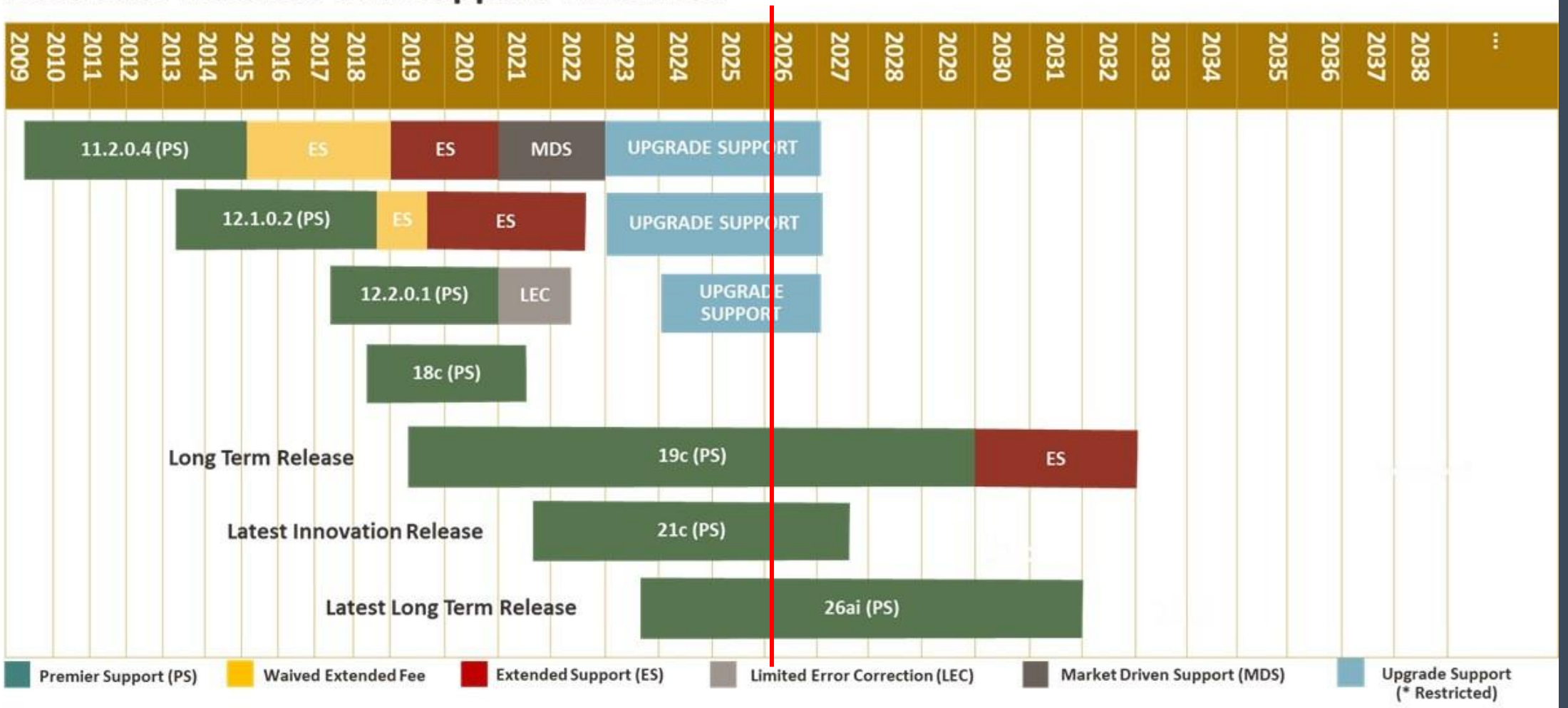
Open Standard

- MCP
  - Connect to the database from AI tools in a secure manner
  - Acts as a bridge to the database

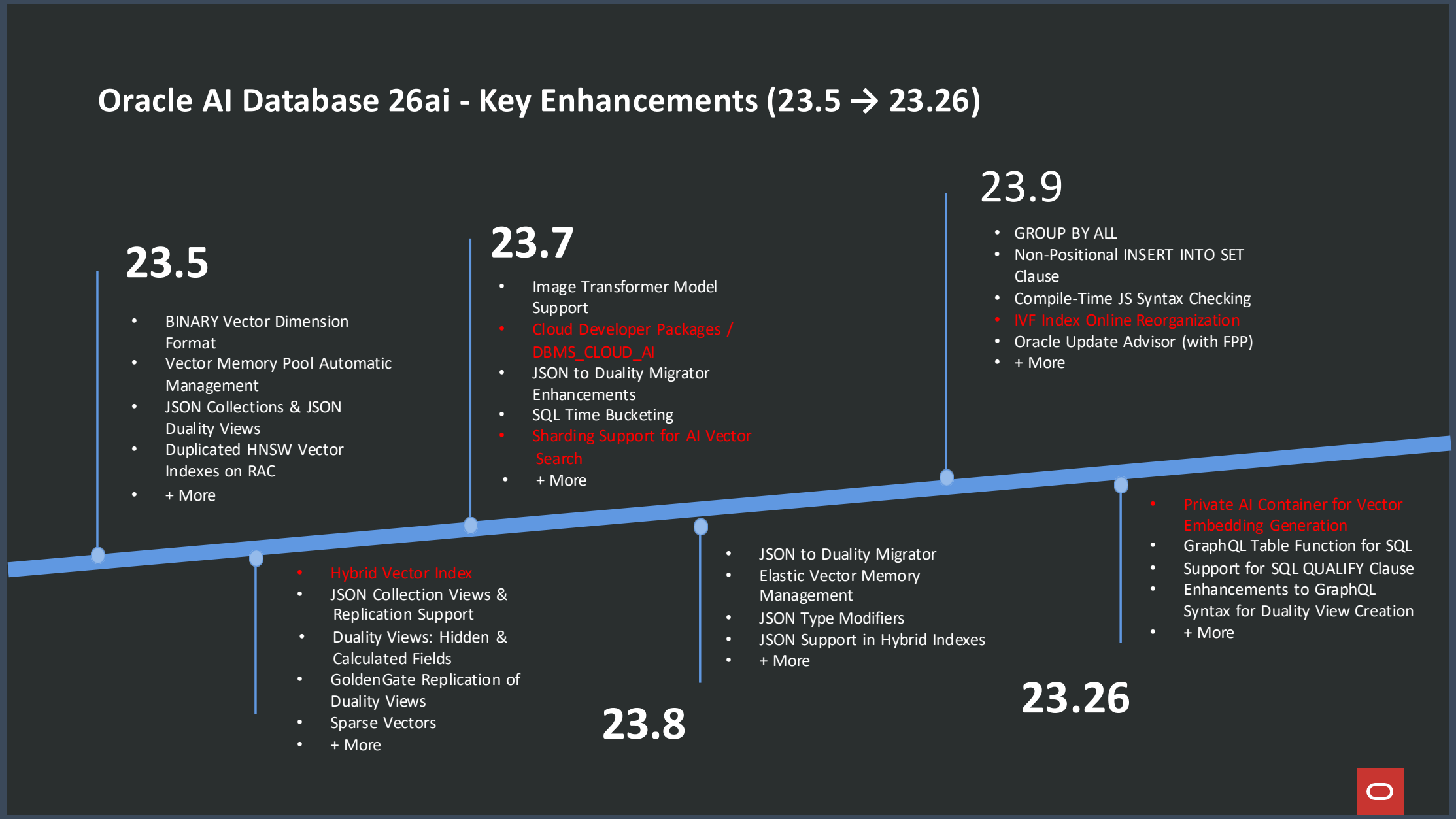
Oracle Database – Converged Data Architecture

Oracle's Converged
Data Architecture

Database Releases and Support Timelines



Oracle AI Database 26ai - Key Enhancements (23.5 → 23.26)



https://docs.oracle.com/en/database/oracle/oracle-database/26/nfcoa/appendixA.html

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Select AI

- Select AI Capability Matrix
  - https://docs.oracle.com/en/database/oracle/oracle-database/26/saicm/index.html

Capability	Autonomous AI Database 26ai	Autonomous AI Database 19c	Oracle AI Database 23.26.1	Oracle AI Database 23.7+	Oracle AI Database 19.30
NL2SQL	Y	Y	Y	Y	Y
- Feedback	Y	N	Y	N	N
- Auto Object Selection	Y	N	Y	N	N
RAG	Y	N	Y	N	N
SDG	Y	Y	Y	N	Y
AI Agent	Y	Y	Y	N	Y

AI Provider	Autonomous AI Database 26ai	Autonomous AI Database 19c	Oracle AI Database 23.26.1	Oracle AI Database 23.7+	Oracle AI Database 19.30
OCI GenAI Service	Y	Y	Y	Y	Y
OpenAI	Y	Y	Y	Y	Y
Azure OpenAI	Y	Y	Y	Y	Y
Cohere	Y	Y	Y	Y	Y
Google	Y	Y	Y	N	Y
Anthropic	Y	Y	Y	N	Y
Hugging Face	Y	Y	Y	N	Y
Amazon	Y	Y	Y	N	Y

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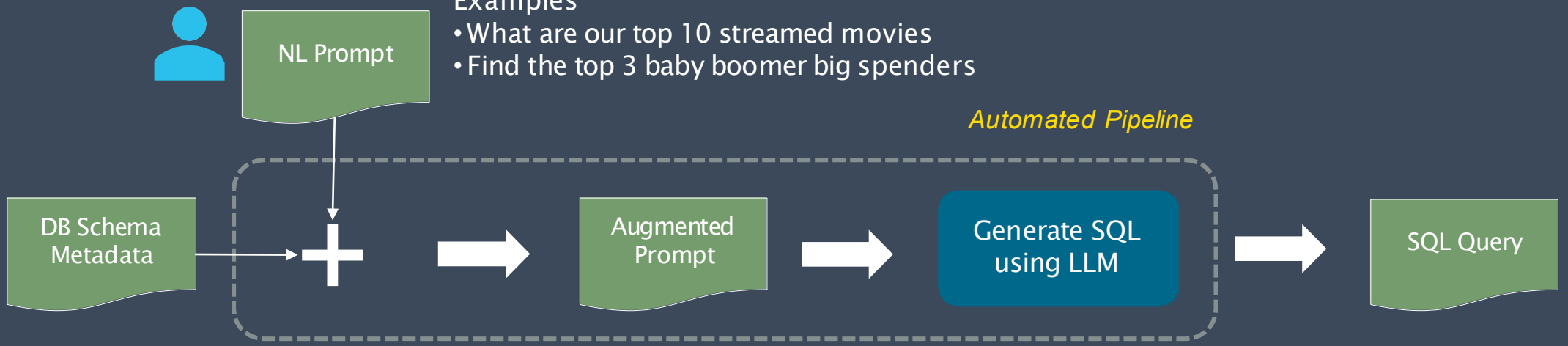
Select AI - Terminology

- NL2SQL
  - Natural language to SQL
- LLM
  - Large Language Model

Select AI



Metadata sent to LLM
- Table names
- Column names and data types
- Comments on tables and columns

```
SQL> SELECT AI SHOWSQL what are our top 10 streamed movies
```

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Select AI – Steps to implement

- Choose an LLM supporting NL2SQL
- Create a credential
- Create a profile (with the LLM chosen)
- Enable the profile
- Start querying

Select AI - AI providers

- OCI Generative AI
- OpenAI
- Azure OpenAI Service
- Cohere
- Google
- Anthropic
- Hugging Face
- Amazon Bedrock
- OpenAI-compatible providers
- Private endpoint hosted on OCI

API-compatible providers

LLM from Private Endpoint in OCI

Select AI

```
BEGIN
  DBMS_CLOUD.CREATE_CREDENTIAL(
    credential_name => 'GENAI_CRED',
    user_ocid       => 'ocid1.user.oc1..aaaa...',
    tenancy_ocid    => 'ocid1.tenancy.oc1..aaaa...',
    private_key     => '<your_api_key>',
    fingerprint     => '<your_fingerprint>'
  );
END;
/
```

```
BEGIN
  DBMS_CLOUD_AI.CREATE_PROFILE(
      profile_name =>'GENAI',
      attributes   =>'{"provider": "oci",
        "credential_name": "GENAI_CRED",
                        "object_list": [{"owner": "SH", "name": "customers"},
                          {"owner": "SH", "name": "countries"},
                          {"owner": "SH", "name": "supplementary_demographics"},
                        {"owner": "SH", "name": "profits"},
                        {"owner": "SH", "name": "promotions"},
                        {"owner": "SH", "name": "products"}]
       }');
END;
/
```

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Select AI

```
EXEC DBMS_CLOUD_AI.SET_PROFILE('GENAI');

SELECT DBMS_CLOUD_AI.get_profile() from dual;

DBMS_CLOUD_AI.GET_PROFILE()
--------------------------------------------------------------------------------
"GENAI"
```

```
SQL> select ai how many customers exist;
Number of Customers
-------------------
              55500
```

Select AI

- runsql
- showsql
- explainsql
- narrate
- feedback

- chat
- summarize

- Supports select AI Conversations
  - Session-Based
    - conversation=true in the AI profile
  - Long-Term
    - Use DBMS_CLOUD_AI.SET_CONVERSATION_ID

```
SQL> select ai explainsql how many customers in San Francisco are married;

RESPONSE
```

```
SQL> select ai summarize
Like countless other people around the globe, I stream music, and like more
than six hundred million of them I mainly use Spotify. Streaming currently
accounts for about eighty per cent of the American recording industry's
revenue, and in recent years Spotify's health is often consulted as a measure
for the health of the music business over all. Last spring, the International
Federation of the Phonographic Industry reported global revenues of $28.
... (skipped 1000 rows)


RESPONSE
--------------------------------------------------------------------------------
The music streaming industry, led by Spotify, has revolutionized the way
people consume music, with streaming accounting for 80% of the American
recording industry's revenue.
```

Select AI - Pitfalls

- Capabilities of the LLM used
- Minimize metadata
  - => Less is More!
- Improve your prompt
- The larger the prompt, the more tokens, resulting in higher cost.
- LLM Token limit

Select AI - Pitfalls

Quality of the metadata of the tables
Solution => Enrich objects with metadata.

- Comments vs Annotations (19.28 – 26ai)
  - “annotations":"true“ in AI profile

```
create table fruit (
  id           number        annotations (SurrogateKey, UI_Display 'Fruit ID', Classification 'Fruit Info'),
  name         varchar2(50)  annotations (UI_Display 'Fruit Name', Classification 'Fruit Info'),
  description  varchar2(50)  annotations (UI_Display 'Description', Classification 'Fruit Info')
)
annotations (UI_Display 'Fruit Table', Classification 'Fruit Info');
```

- Enhance metdata with constraints
  - “constraints":"true“ in AI profile

- Pre-join tables using views

Select AI – There is more…

- Select AI translate
- Synthetic data generation
- AI Proxy Database
- Agentic workflows with Select AI Agent
- Code generation
- Content generation

- Retrieval Augmented Generation

Select AI – Translate

- Works only with OCI GenAI Service
- Can also be used for the narrate functionality

```
BEGIN
DBMS_CLOUD_AI.CREATE_PROFILE(
      profile_name =>'GENAI_FRENCH',
      attributes   =>'{"provider": "oci",
        "credential_name": "GENAI_CRED",
                       "target_language": "french“
 }');
END;
/


SQL> select ai translate I need to translate this;

RESPONSE
--------------------
Je dois traduire ceci
```

Select AI – Synthetic data generation

```
BEGIN
   DBMS_CLOUD_AI.GENERATE_SYNTHETIC_DATA(
       profile_name => 'GENAI',
       object_list => '[{"owner": "ADB_USER", "name": "Director","record_count":5},
                        {"owner": "ADB_USER", "name": "Movie_Actor","record_count":5},
                        {"owner": "ADB_USER", "name": "Actor","record_count":10},
                        {"owner": "ADB_USER", "name": "Movie","record_count":5,
                         "user_prompt":"all movies released in 2009"}]'
   );
END;
/
PL/SQL procedure successfully completed.
```

```
SQL> select * from ADB_USER.Movie;

 MOVIE_ID TITLE                                              RELEASE_D                      GENRE                                                 DIRECTOR_ID
---------- -------------------------------------------------- --------- ---------------------------------------------------------------- -----------
         1 The Dark Knight                                    15-JUL-09                        Action                                               8
         2 Inglourious Basterds                               21-AUG-09                        War                                                  3
         3 Up in the Air                                      04-SEP-09                        Drama                                                6
         4 The Hangover                                       05-JUN-09                        Comedy                                               1
         5 District 9                                         14-AUG-09                        Science Fiction                                     10
```

Select AI – AI Proxy database

"total sales for this month"

"top 10 products by sales"

"top 10 sales region by product"

Sidecar ADB

LLM of your choice

Generate SQL

Federated query

Create materialized views for efficient data access

On-premises databases

Exadata

Exadata C@C

Object Storage

Applications - cloud & on premises

ORACLE E-BUSINESS SUITE

ORACLE PEOPLESOFT

ORACLE Cloud Applications

Cloud data sources

Exadata Database Service

AURORA DSQL

Azure SQL

aws

MySQL

Amazon REDSHIFT

databricks

snowflake

ICEBERG

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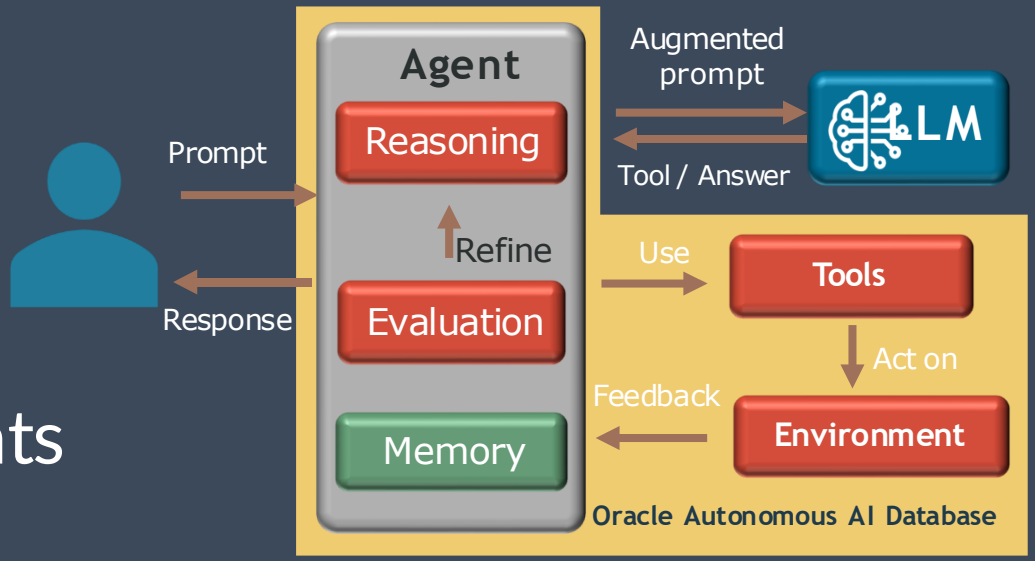
Select AI Agent



- Simple, automated framework to build, deploy, and manage AI agents
- Built-in ReAct agentic pattern

- Tool options
  - Build custom tools using PL/SQL
  - Invoke external tools using REST
  - Use cloud functions such as OCI Functions and AWS Lambda functions
  - Use Select AI-provided pre-built tools

Select AI Agent

```
SQL> BEGIN
  DBMS_CLOUD_AI_AGENT.CREATE_TEAM(
    team_name  => 'Return_Agency_Team',
    attributes => '{"agents": [{"name":"Customer_Return_Agent","task" : "Handle_Product_Return_Task"}],
                    "process": "sequential"}');
END;
/

SQL> EXEC DBMS_CLOUD_AI_AGENT.SET_TEAM('Return_Agency_Team');

SQL> select ai agent I want to return a smartphone case;

                '5. After the completion of a return or refund, ask if you can help with anything else.' ||
                '   End the task if user does not need help on anything else",
                "tools": ["Update_Order_Status_Tool"]}'
  );
END;
/
```

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Demo Select AI

AI Vector Search

AI Vector Search works by representing the semantic content of a document, image, video, or even relational data as a sequence of numbers, called a vector

Developers create a vector for an object by just passing the object to a built-in vectorization function

Oracle AI Vector Search natively stores vectors and compares vectors to find objects with similar semantic content

What is a Vector?

(Sweet, Crunchy, Juicy)

[0.7, 0.8, 0.6]

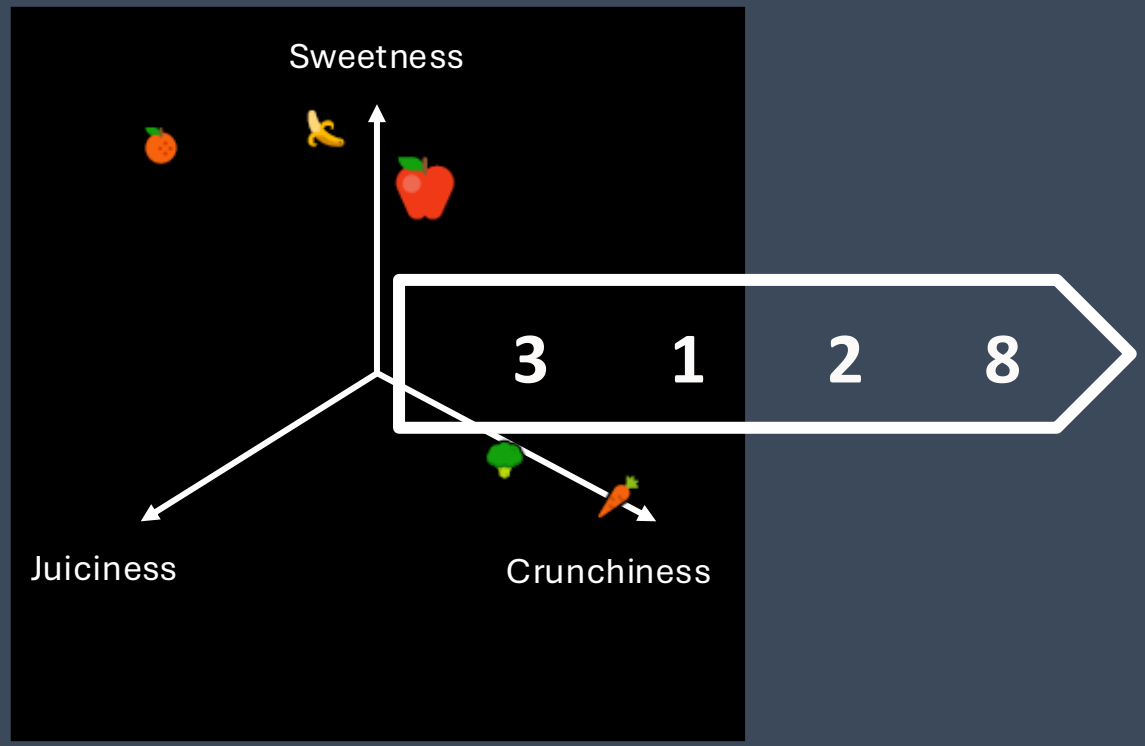
[0.2, 0.9, 0.2]

[0.9, 0.2, 0.3]

[0.8, 0.3, 0.9]

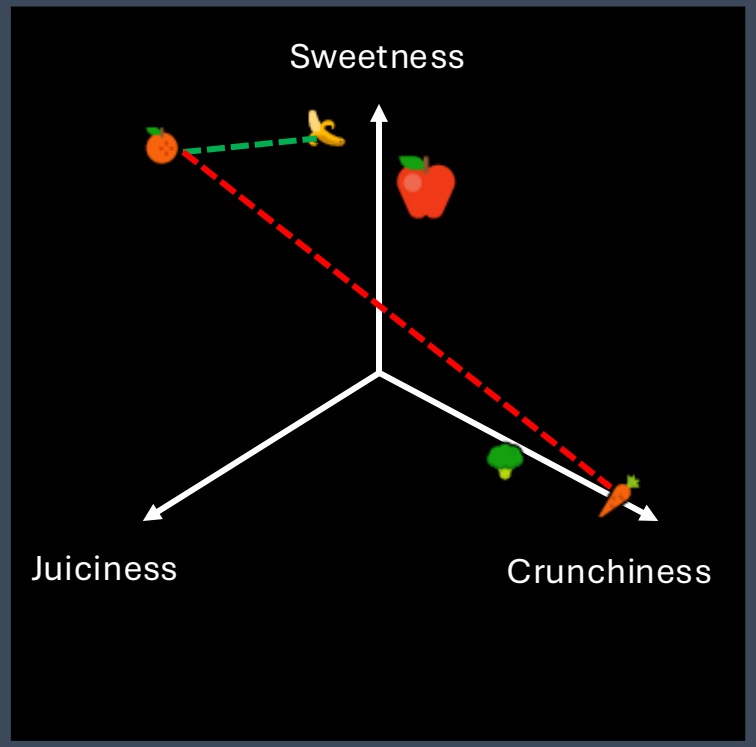
[0.1, 0.6, 0.2]

2 6 2 3

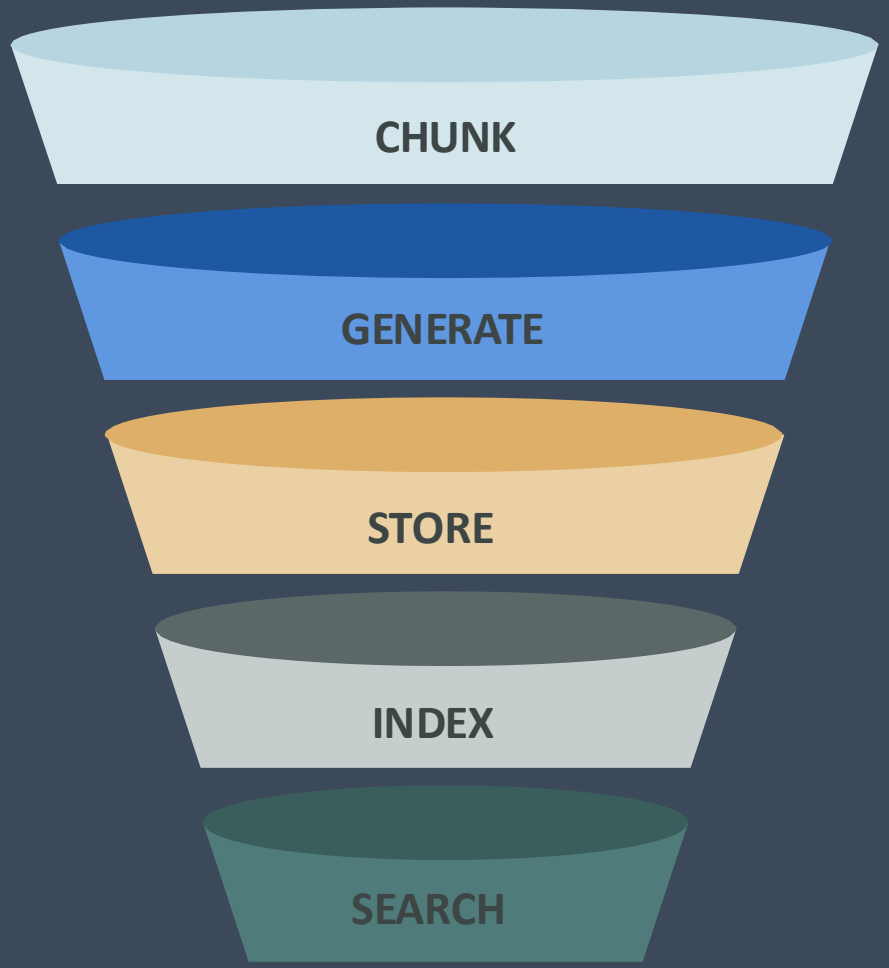


AI Vector Search - Similarity

Similarity Property: **Items that are more similar**
also produce vectors that are closer together



AI Vector Search



Process unstructured data and generate chunks

Generate vector embeddings from unstructured data

Store vectors in table columns using new VECTOR type

Build approximate vector indexes on VECTOR columns

Perform AI Vector Search on VECTOR columns using SQL

AI Vector Search - Chunking

- Chunking is the process of breaking large documents into smaller, manageable segments for Large Language Models (LLMs).
- It is essential to overcome:
  - input token limits
  - improve retrieval accuracy
  - enhance semantic relevance
  - reduce costs/latency

```
FOR c IN (
        SELECT
          json_value(t.column_value, '$.chunk_data') AS chunk_text
        FROM TABLE(
          DBMS_VECTOR_CHAIN.UTL_TO_CHUNKS(
            rec.clean_text,
            JSON('{
              "by": "words",
              "max": 120,
              "overlap": 20,
              "split": "recursively",
              "normalize": "all"
            }')
          )
        ) t
      ) LOOP
```

AI Vector Search - Generate Vectors

```
BEGIN
  DBMS_VECTOR.LOAD_ONNX_MODEL_CLOUD(
    uri      => 'https://objectstorage.eu-frankfurt-1.oraclecloud.com/n/frw2twlqn9kz/b/ML_Models/o/m_e5_base.onnx',
    credential => 'OCI_GENAI',
    model_name      => 'MULTILINGUAL_E5_BASE'
  );
END;
/


DECLARE
  v_count NUMBER := 0;
BEGIN
  FOR rec IN (
    SELECT chunk_id, chunk_for_embed
    FROM chatbot_ai.hd_ai_chunks
    WHERE embedding_vec IS NULL
  ) LOOP

    UPDATE chatbot_ai.hd_ai_chunks
    SET embedding_vec = VECTOR_EMBEDDING(MULTILINGUAL_E5_BASE  USING rec.chunk_for_embed AS DATA)
    WHERE chunk_id = rec.chunk_id;

  END LOOP;

  COMMIT;
END;
/
```

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AI Vector Search - Store Vectors

- Vector dimension must match the dimension of the machine learning model to embed the vectors.

```
CREATE TABLE chatbot_ai.hd_ai_chunks (
    chunk_id        NUMBER GENERATED ALWAYS AS IDENTITY PRIMARY KEY,
    ticket_id       NUMBER NOT NULL,
    item_code       VARCHAR2(50),
    subject         VARCHAR2(500),
    status          VARCHAR2(50),
    issue_type      VARCHAR2(100),
    create_date     DATE,
    chunk_index     NUMBER NOT NULL,
    chunk_text      CLOB NOT NULL,
    chunk_for_embed VARCHAR2(4000),
    chunk_length    NUMBER,
    embedding_vec   VECTOR(768)
);
```

```
MY_VECTOR
--------------------------------------------------------------------------------
[-3.8644433E-002,7.27762729E-002,-6.99380785E-003,-7.29616638E-003,8.81515723E-003,-6.36086
,6.54895976E-003,-4.98352237E-002,-1.98450759E-002,-4.69920859E-002,1.03937693E-001,-8.9675
.42030744E-002,-2.42071413E-002,1.91592015E-002,4.93750861E-003,6.30867062E-003,-1.2412782
36343E-002,-6.20212057E-004,7.16803446E-002,5.33913262E-003,1.92087796E-002,-9.91346464E-00
E-002,-1.20323906E-002,-2.63888612E-002,-4.14666645E-002,6.24738075E-002,-4.68838811E-002,1
E-002,4.31706719E-002,-7.83751085E-002,1.24918474E-002,5.42060696E-002,4.33742851E-002,2.52
02,-1.26893111E-002,2.66182888E-002,-7.5068539E-003,-3.70341614E-002,1.9485198E-002,-2.9213
2513991E-003,4.22973074E-002,3.37974578E-002,-4.23457436E-002,-6.32970929E-002,3.84950414E-
6683E-002,1.36383837E-002,2.76547611E-001,6.35802001E-002,-1.69337578E-002,-3.25948372E-002
613E-002,2.64223926E-002,5.44404797E-002,-2.97637819E-003,1.0656476E-002,4.55005579E-002,-9
02,-5.6408301E-002,-5.93017961E-004,1.07500203E-001,-6.81523681E-002,1.85917076E-002,3.7531
```

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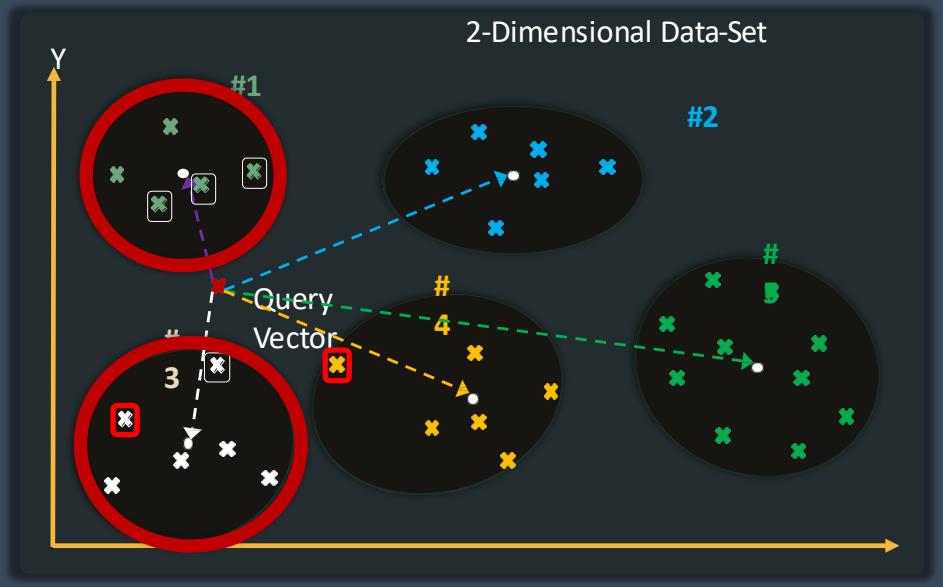
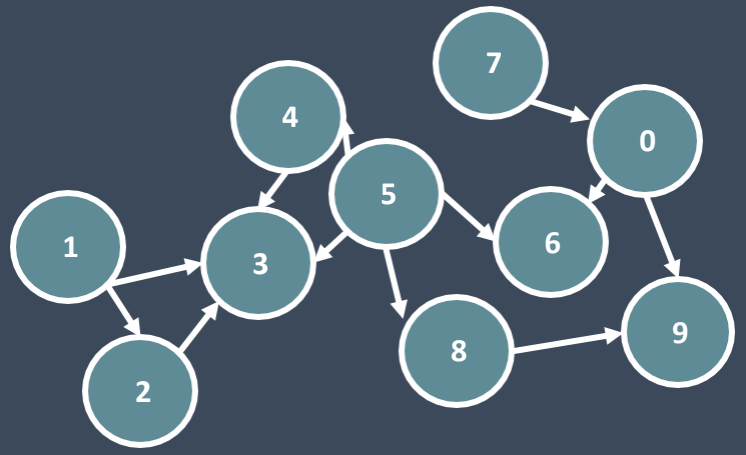
AI Vector Search - Index Vectors



Partition Vector Index (e.g., **IVF_FLAT** index)



Graph Vector Index (e.g., **HNSW** Index)

- Efficient scale-out index for unlimited data size
- In-Memory only index - highly efficient for both accuracy and speed

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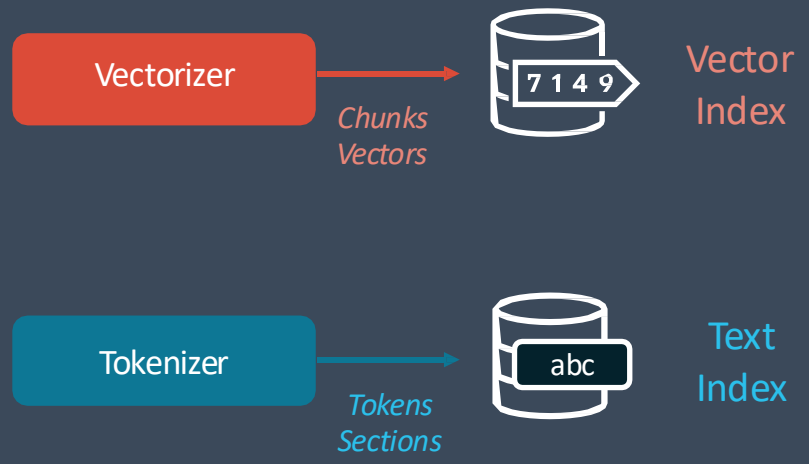
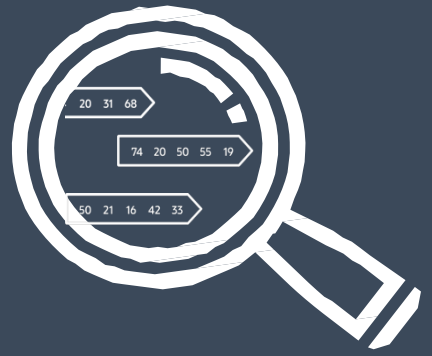
AI Vector Search - Hybrid Vector Index

- Hybrid Vector Index is a single index for searching by **Similarity** and by **Keywords**
- Combines the power of AI Vector Search with Text Search




```
CREATE HYBRID VECTOR INDEX hvx_tickets ON
  chatbot_ai.hd_ai_chunks(chunk_text)
  FILTER BY status, issue_type, create_date
  PARAMETERS( 'MODEL MULTILINGUAL_E5_BASE VECTOR_IDXTYPE IVF MEMORY 1G')
  PARALLEL 4;
```

AI Vector Search – Top K



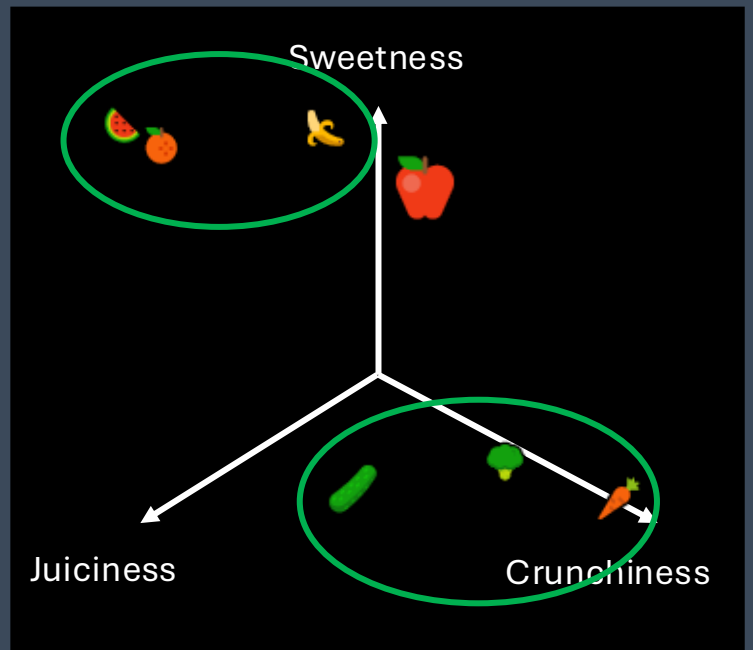
User Query

Query Vector

ML Embedding Model

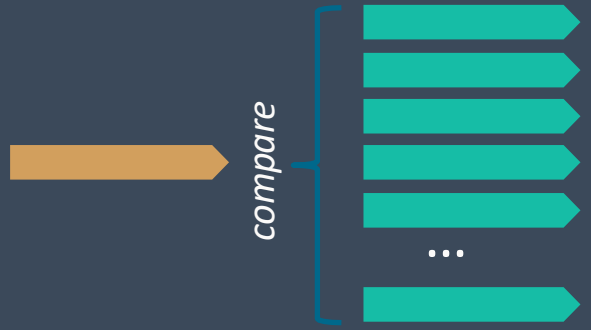
AI Vector Search

Top K matches



[0.9, 0.3, 1.0]

[0.2, 0.7, 0.8]




```
SELECT incident_text FROM SUPPORT_INCIDENTS
ORDER BY VECTOR_DISTANCE(incident_vector,
SELECT VECTOR_EMBEDDING(embedding_model USING :question_text AS data))
FETCH FIRST 10 ROWS ONLY
```

AI Vector Search - And now what?

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AI Vector Search - Use Cases

Find Similar Support Tickets

Biometric pattern recognition

Find Similar Products

Detect manufacturing anomalies

Product Recommendation

Natural language catalog search

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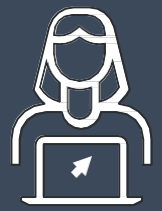
AI Vector Search – Retrieval Augmented Generation

Vectorize Question

An end-user's human language question is encoded as a vector

1

AI Vector



User

Retrieval Augmented Generation (RAG)

GenAI

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AI Vector Search – Retrieval Augmented Generation

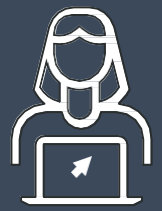
Vectorize Question
An end-user's human language question is encoded as a vector

1

AI Vector

2

Find Related Data
AI Vector Search finds private database data that matches the user's vector including product info and other support tickets for the same laptop



User

Retrieval Augmented Generation (RAG)

Product Info

Support Tickets

GenAI

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AI Vector Search – Retrieval Augmented Generation

Vectorize Question
An end-user's human language question is encoded as a vector

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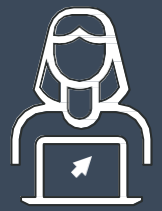

User

Retrieval Augmented Generation (RAG)

Product Info

Support Tickets

GenAI

3

Augment Prompt
The user's question is augmented with this
private data

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AI Vector Search – Retrieval Augmented Generation

Vectorize Question
An end-user's human language question is encoded as a vector

1

AI Vector

2

Find Related Data
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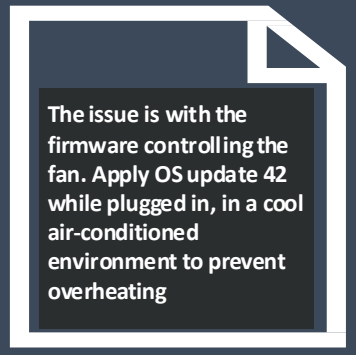

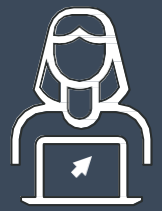

User

Retrieval Augmented Generation (RAG)

Product Info

Support Tickets

GenAI

3

Augment Prompt
The user's question is augmented with this
private data

4

Ask LLM
The combination is sent to an LLM to provide an informed answer to the question

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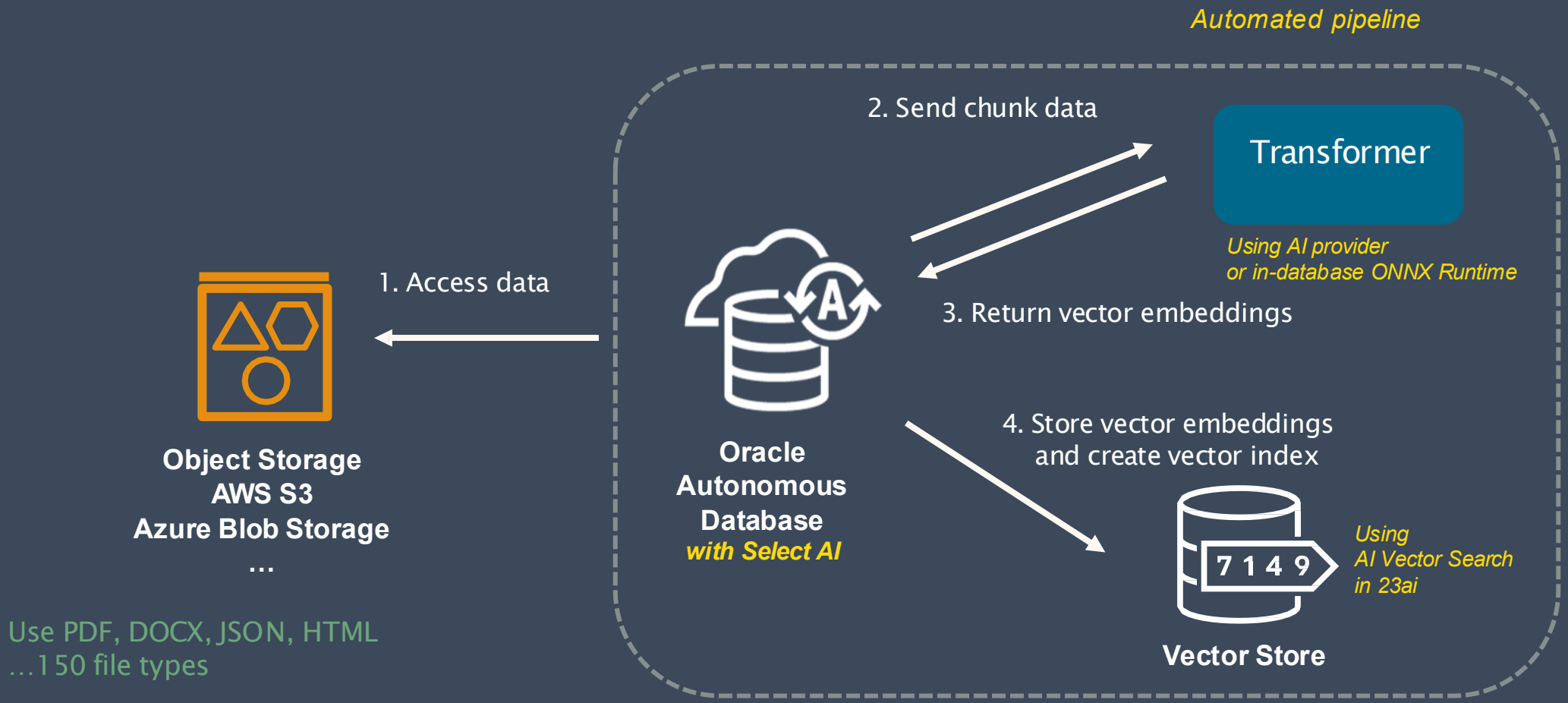
Demo Select AI

Select AI – Retrieval Augmented Generation (RAG)

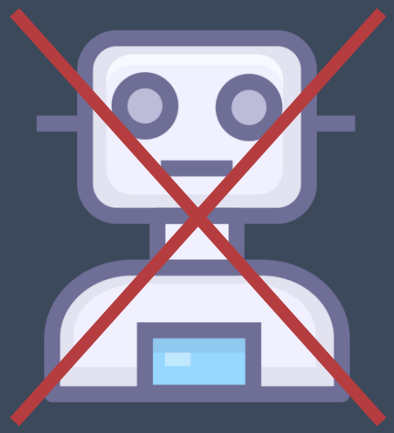


Select AI – Retrieval Augmented Generation (RAG)

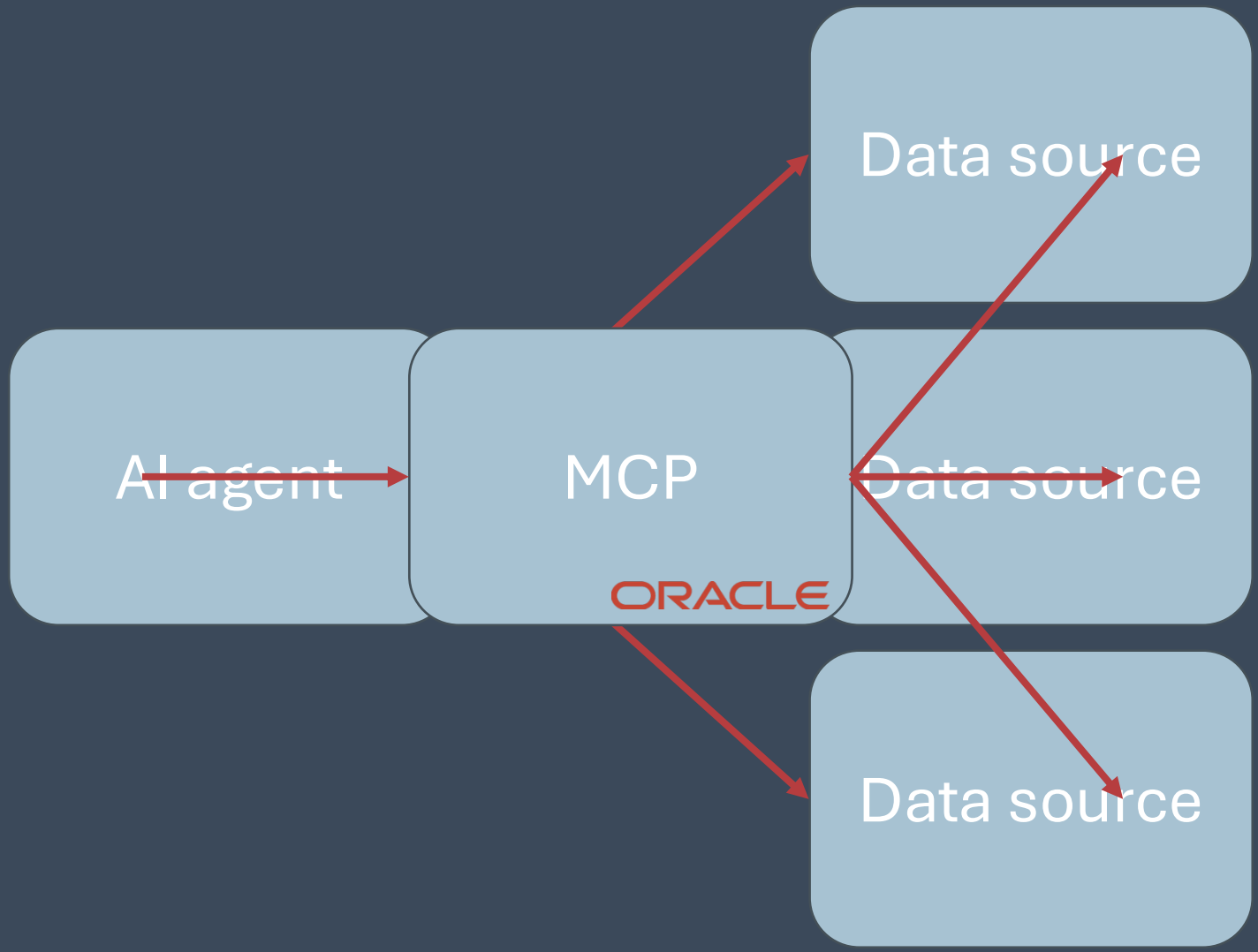
```
BEGIN
    DBMS_CLOUD_AI.CREATE_PROFILE(
        profile_name =>'OCI_ORACLE',
        attributes   =>'{"provider": "oci",
          "credential_name": "OPENAI_CRED",
          "vector_index_name": "MY_INDEX",
          "temperature": 0.2,
          "max_tokens": 4096
        }');
END;
/

EXEC DBMS_CLOUD_AI.SET_PROFILE('OCI_ORACLE');

SELECT AI narrate how can I deploy an oracle machine learning model;
```

What is MCP?

Model Context Protocol

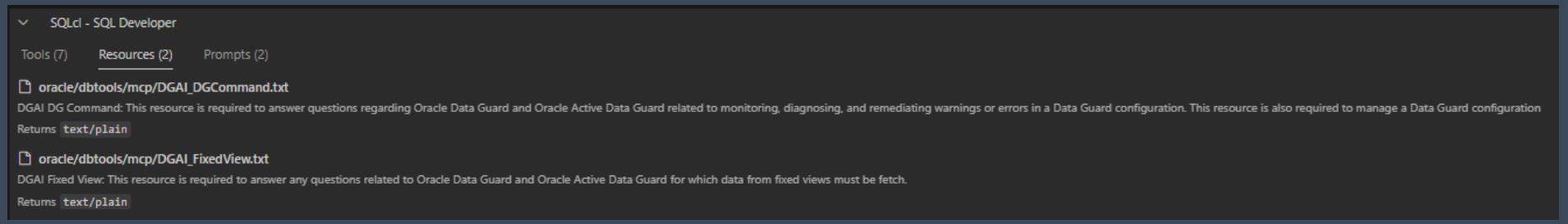


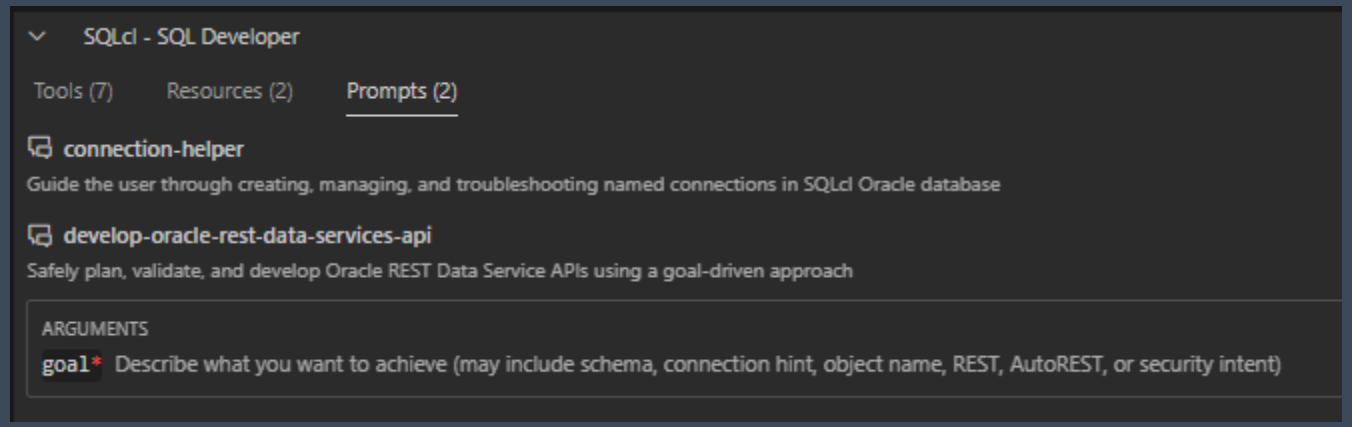
What is a MCP server?



Oracle's take on it

Oracle’s Implementation of MCP





EXITAS & MONIN
DATABASE MANAGED SERVICES

Oracle's Implementation of MCP

Built-in Tools

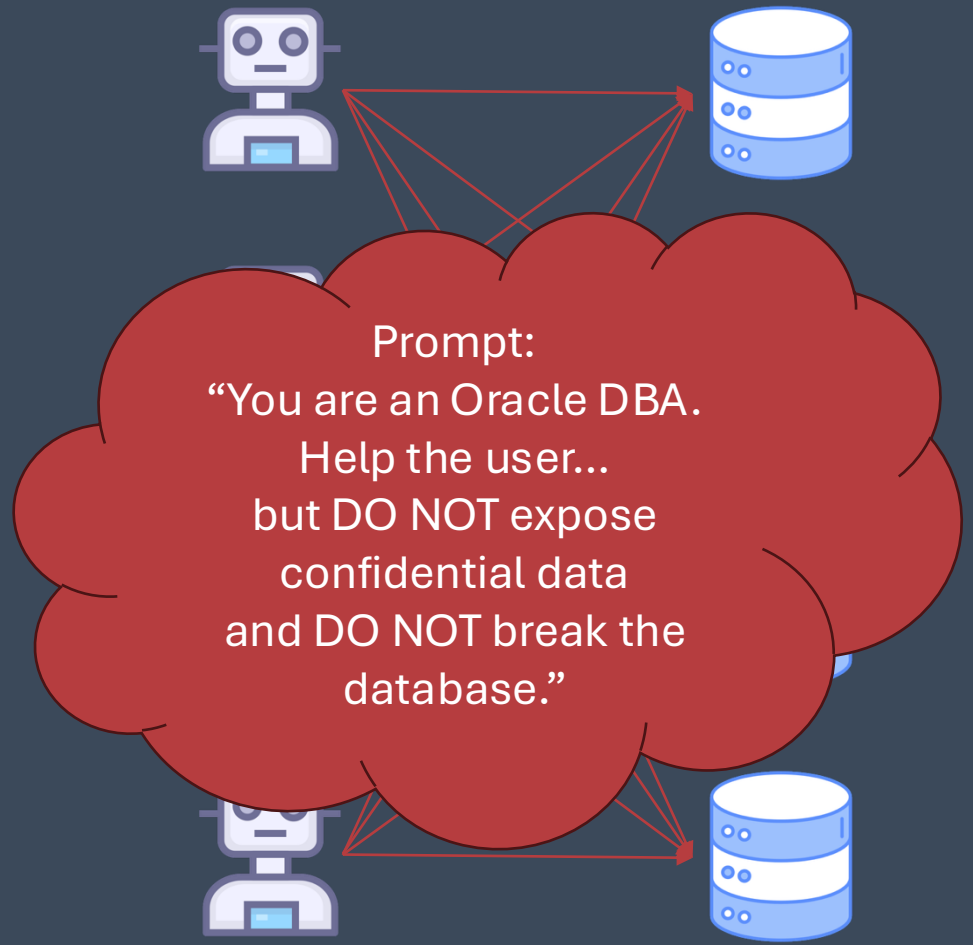
- List-connections
- Connect
- Disconnect
- Schema-information
- Run-sql
- Run-sqlcl
- Run-sql-async

Oracle 26ai Features

- Vector search
- JSON duality
- Property graph
- SQL firewall
- True Cache
- Schema-information

Yes but why ?

Why use MCP servers?



1 Agent x 1 Database = 1 Connection

4 Agent x 4 Database = 16 Connection

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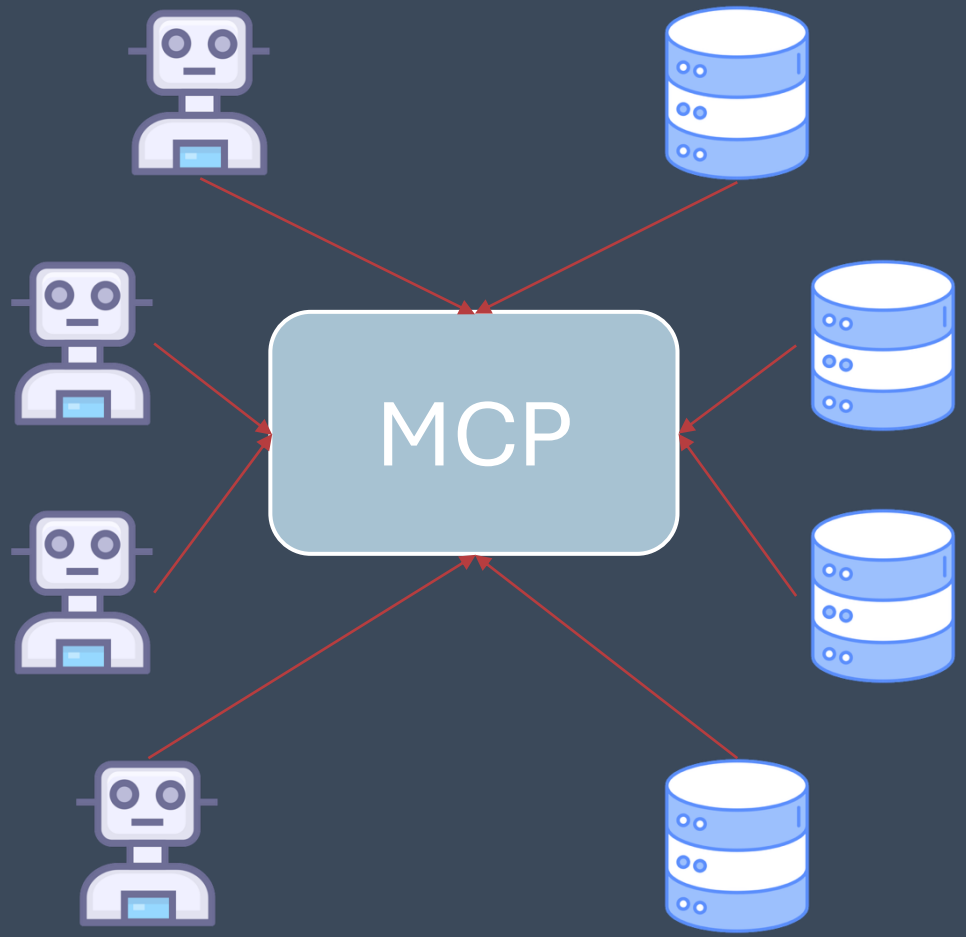
DATABASE MANAGED SERVICES

Why use MCP servers?

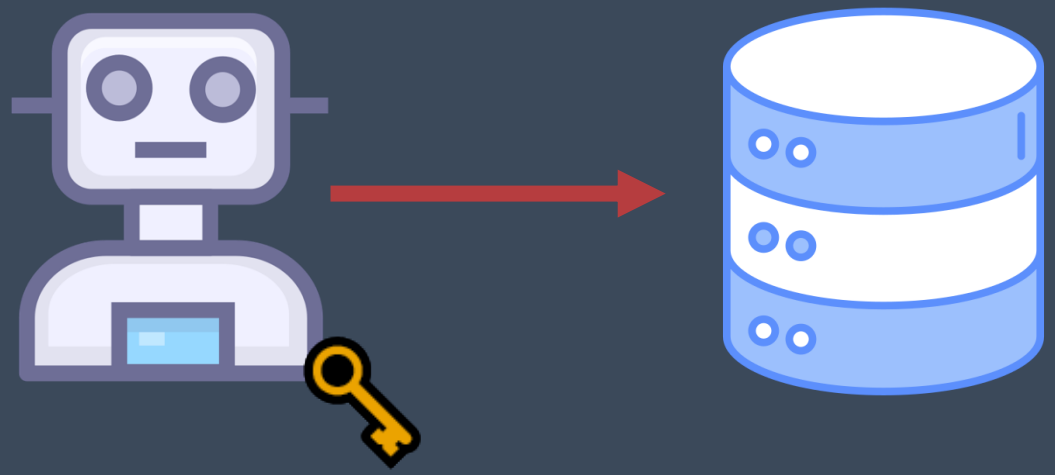


1 Agent + 1 Database = 1 Connection

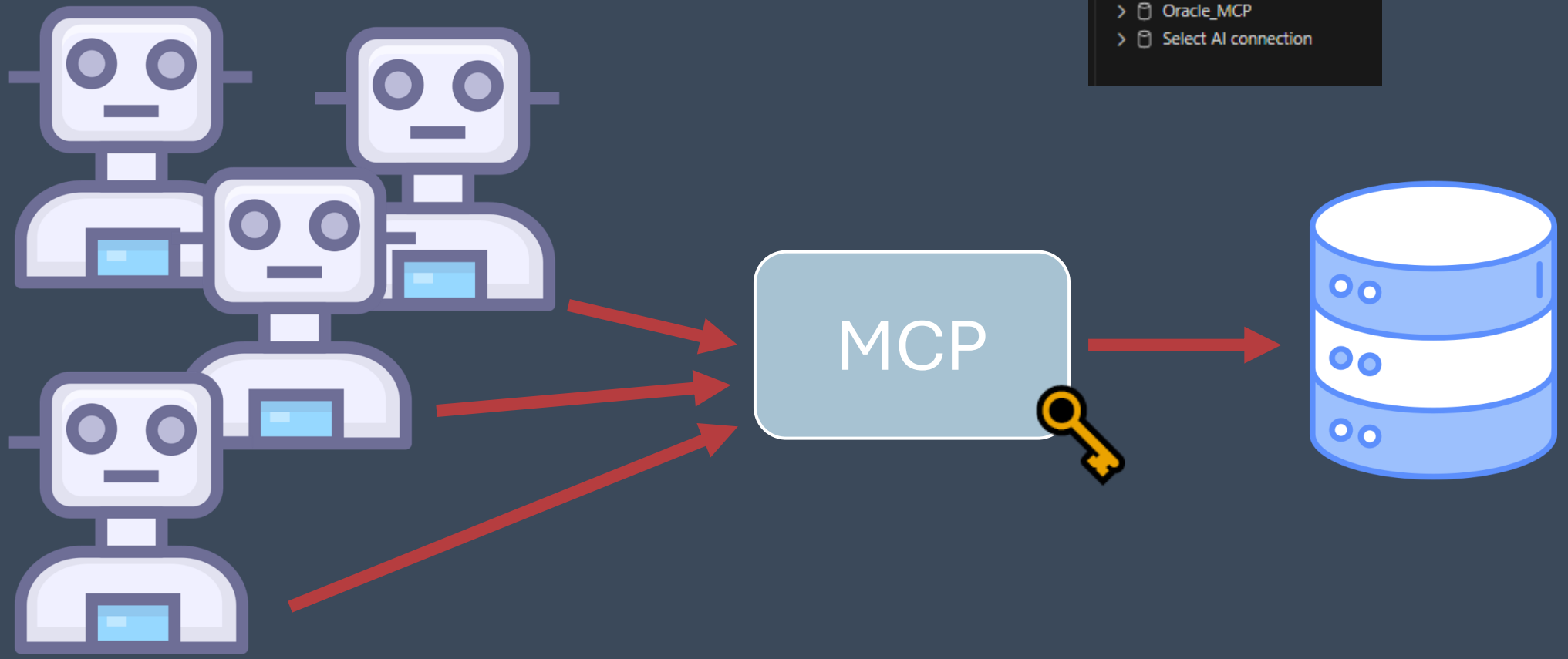
2 Agent + 2 Database = 4 Connection

4 Agent + 4 Database = 8 Connection

Why use MCP servers?



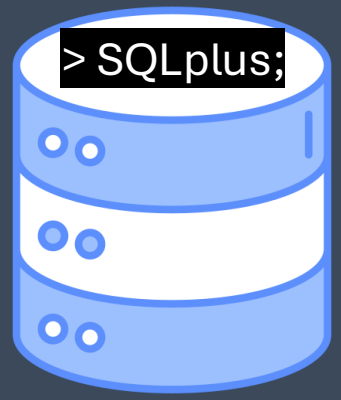
Why use MCP servers?



Why use MCP servers?

> DROP DATABASE production_db;

> DROP TABLE users;



> SQLplus;

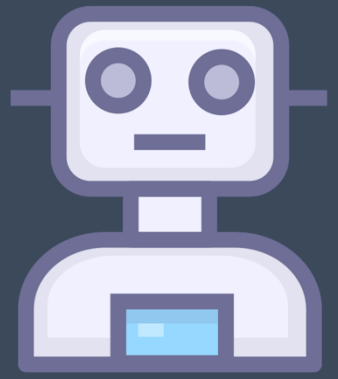
> TRUNCATE TABLE logs;

> DELETE FROM orders;

> UPDATE employees SET salary = 0;

> ALTER TABLE payments DROP CONSTRAINT fk_user_id;

Why use MCP?



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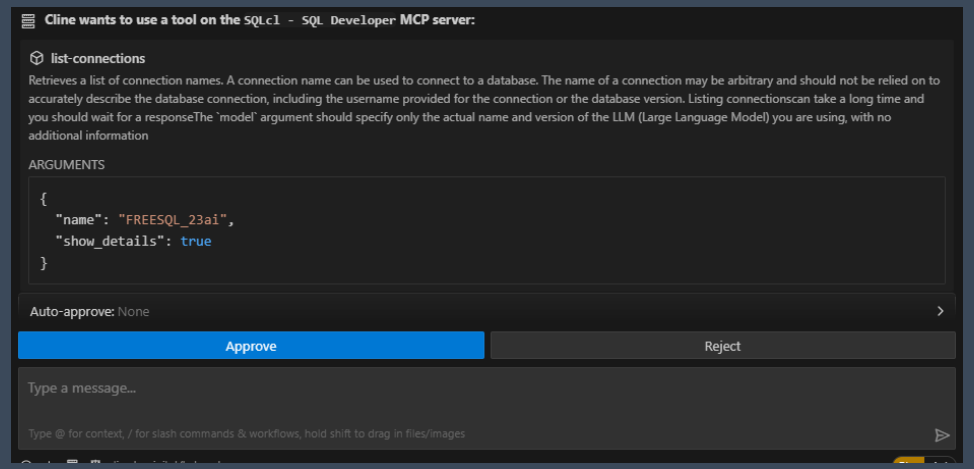
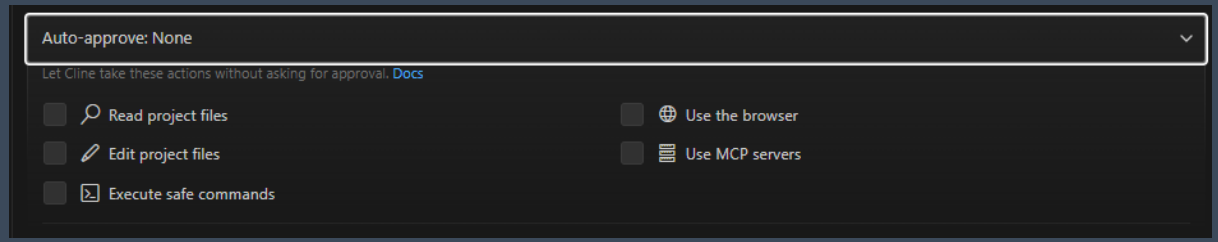
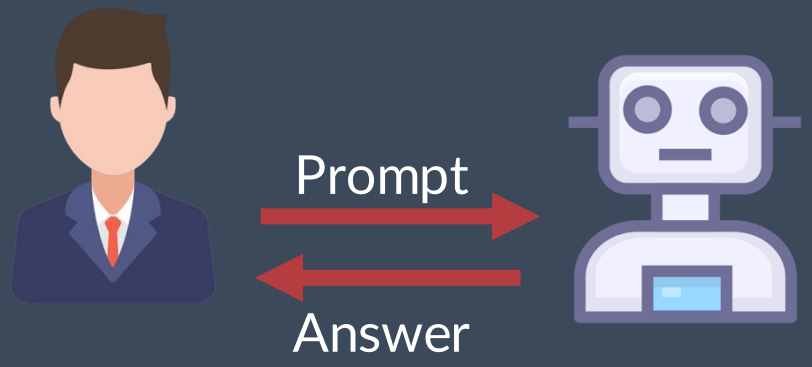


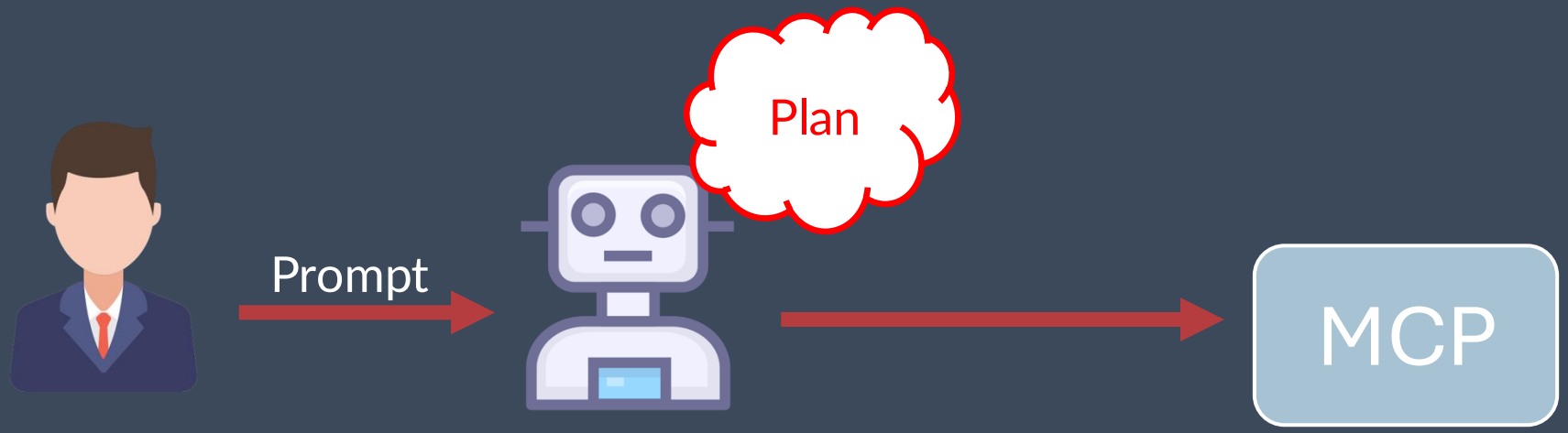


EXITAS & MONIN
DATABASE MANAGED SERVICES

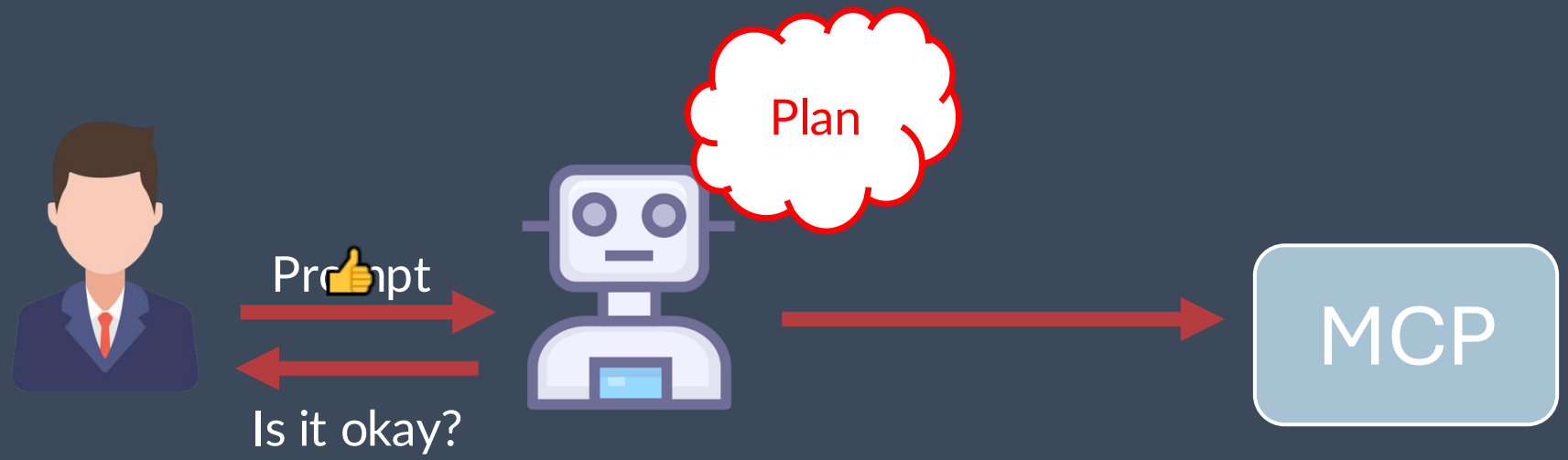
Why use MCP?



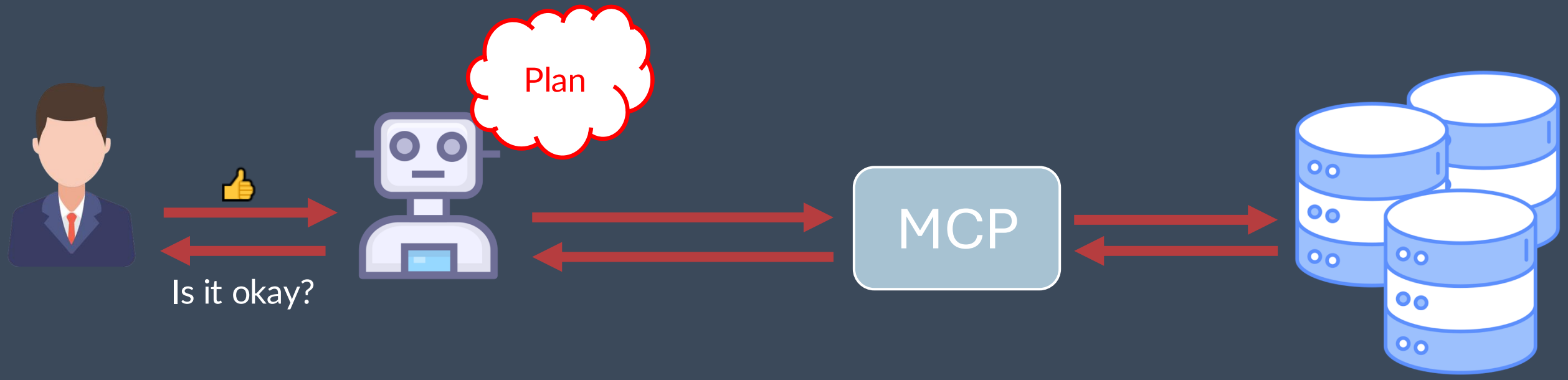
Why use MCP?



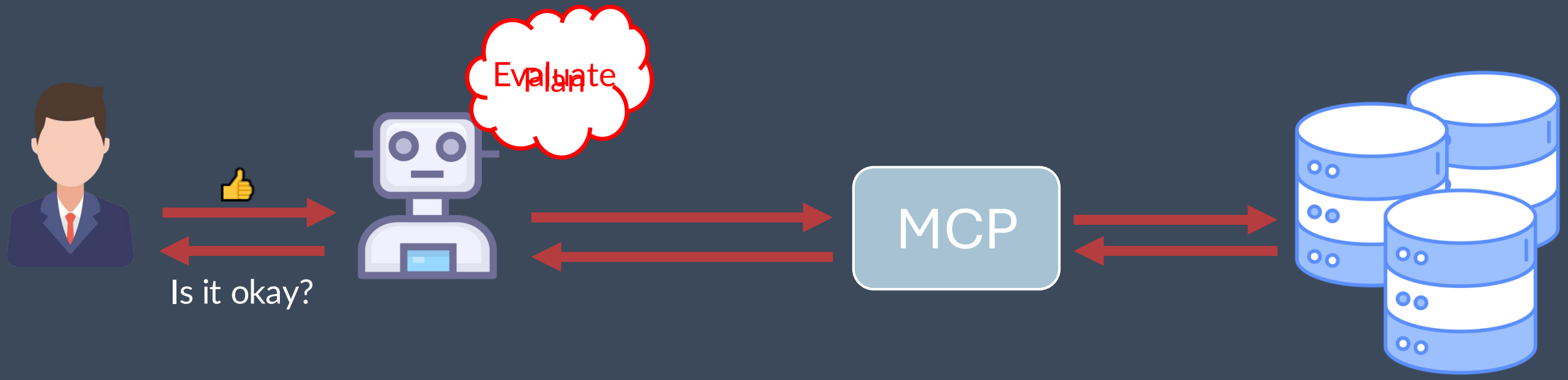
Why use MCP?



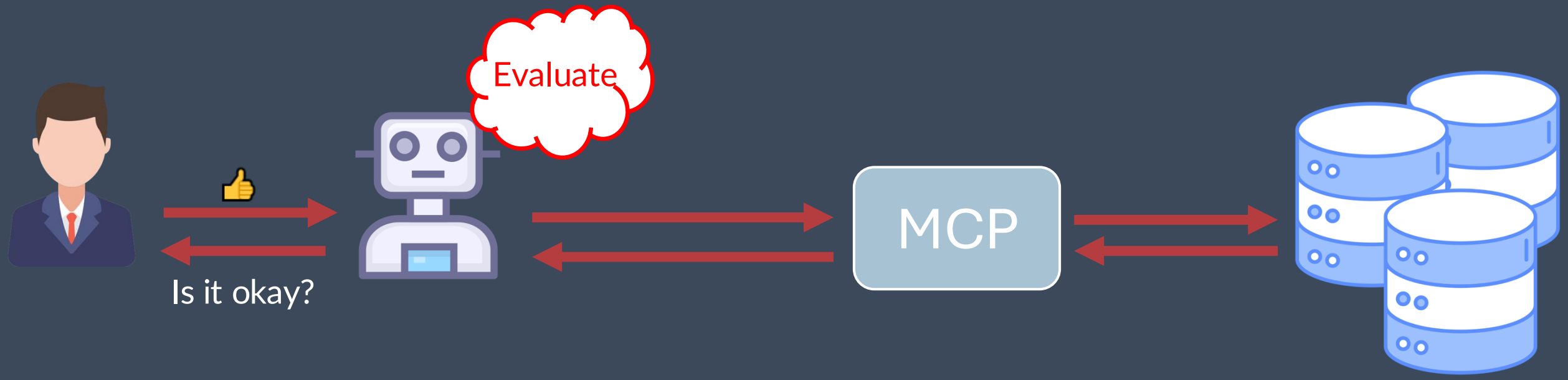
Why use MCP?



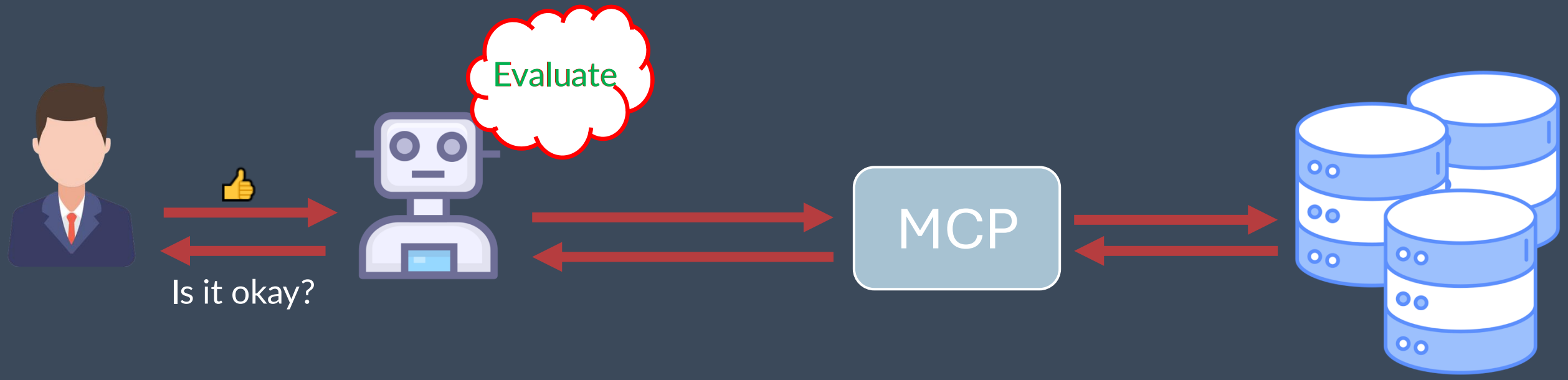
Why use MCP?



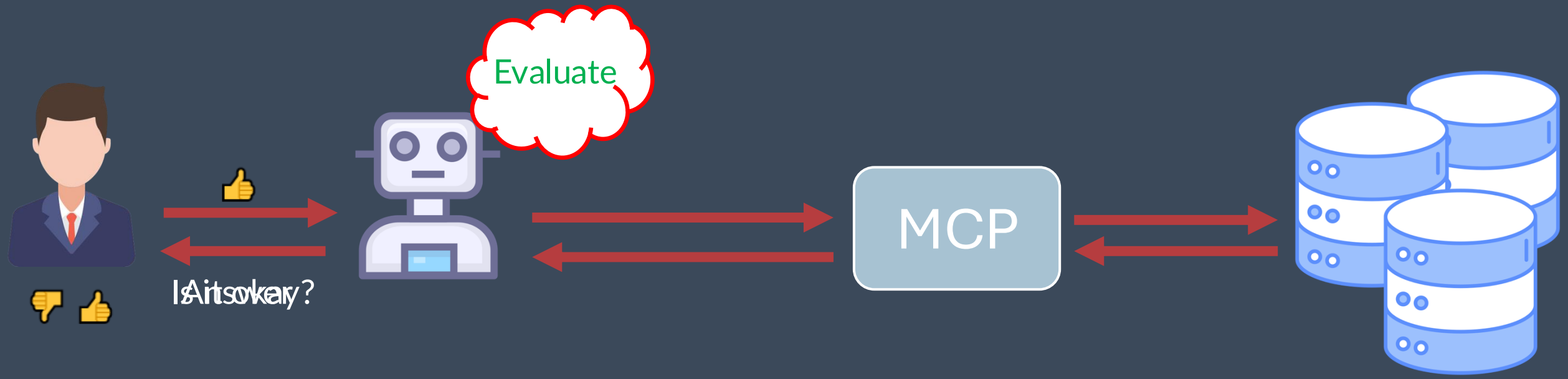
Why use MCP?



Why use MCP?



Why use MCP?



Why use MCP?

DBTOOLS$MCP_LOG

FREESQL_23ai > object > FIRAS_NOHRA_SCHEMA_YZ131 > TABLE > DBTOOLS$MCP_LOG

Columns | Data | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | JSON Schema | SQL

Insert | Export | Delete Selected | Commit | Undo All

ID	MCP_CLIENT	MODEL	END_POINT_TYPE	END_POINT_NAME	LOG_MESSAGE
10	21	Cline	UNKNOWN-LLM	tool	connect	Connect to FIRAS_NOHRA_SCHEMA_YZ131
11	22	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ SYSDATE FROM DUAL;
12	23	Cline	UNKNOWN-LLM	tool	schema-information	get schema metadata for FIRAS_NOHRA_SCHEMA_YZ131
13	24	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ table_name, tablespace_name FROM user_tables ORDER BY table_name;
14	25	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ object_type, COUNT(*) as count FROM user_objects GROUP BY object_type ORDER
15	26	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ * FROM v$option WHERE parameter = 'Vector Search' OR parameter = 'JSON' OR p
16	27	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ privilege FROM user_sys_privs WHERE privilege LIKE '%VECTOR%' OR privilege L
17	28	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ * FROM v$option WHERE parameter LIKE '%JSON%' OR parameter LIKE '%VECTOR%' C
18	29	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ banner FROM v$version WHERE banner LIKE '%Oracle Database%' OR banner LIKE '
19	30	Cline	UNKNOWN-LLM	tool	run-sql	CREATE /* LLM in use is UNKNOWN-LLM */ TABLE demo_json_duality (id NUMBER GENERATED ALWAYS AS IDENTITY PRIMARY K
20	31	Cline	UNKNOWN-LLM	tool	run-sql	INSERT /* LLM in use is UNKNOWN-LLM */ INTO demo_json_duality (json_data) VALUES (JSON('{"name": "John Doe", "age":
21	32	Cline	UNKNOWN-LLM	tool	run-sql	INSERT /* LLM in use is UNKNOWN-LLM */ INTO demo_json_duality (json_data) VALUES (JSON('{"name": "Jane Smith", "age
22	33	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ id, json_data FROM demo_json_duality;
23	34	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ id, json_data.name, json_data.age, json_data.department FROM demo_json_duali
24	35	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ id, json_data.name, json_data.age, json_data.department FROM demo_json_duali
25	36	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ id, json_data.name, json_data.age, json_data.department FROM demo_json_duali
26	61	Cline	UNKNOWN-LLM	tool	connect	Connect to FIRAS_NOHRA_SCHEMA_YZ131
27	62	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ SYSDATE FROM DUAL;
28	1	Cline	UNKNOWN-LLM	tool	connect	Connect to FIRAS_NOHRA_SCHEMA_YZ131
29	2	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ 1 AS test_result FROM DUAL;
30	3	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ SYSDATE AS current_date, USER AS current_user, 'Connection successful!' AS s
31	4	Cline	UNKNOWN-LLM	tool	disconnect	Disconnect from FIRAS_NOHRA_SCHEMA_YZ131
32	63	Cline	UNKNOWN-LLM	tool	run-sql	SELECT /* LLM in use is UNKNOWN-LLM */ table_name, column_name, data_type FROM user_tab_columns WHERE data_type = '
33	64	Cline	UNKNOWN-LLM	tool	run-sql	CREATE /* LLM in use is UNKNOWN-LLM */ TABLE employees_json (id NUMBER PRIMARY KEY, emp_data JSON);
34	65	Cline	UNKNOWN-LLM	tool	run-sql	INSERT /* LLM in use is UNKNOWN-LLM */ INTO employees_json VALUES (1, '{"name": "John Doe", "department": "Engineer

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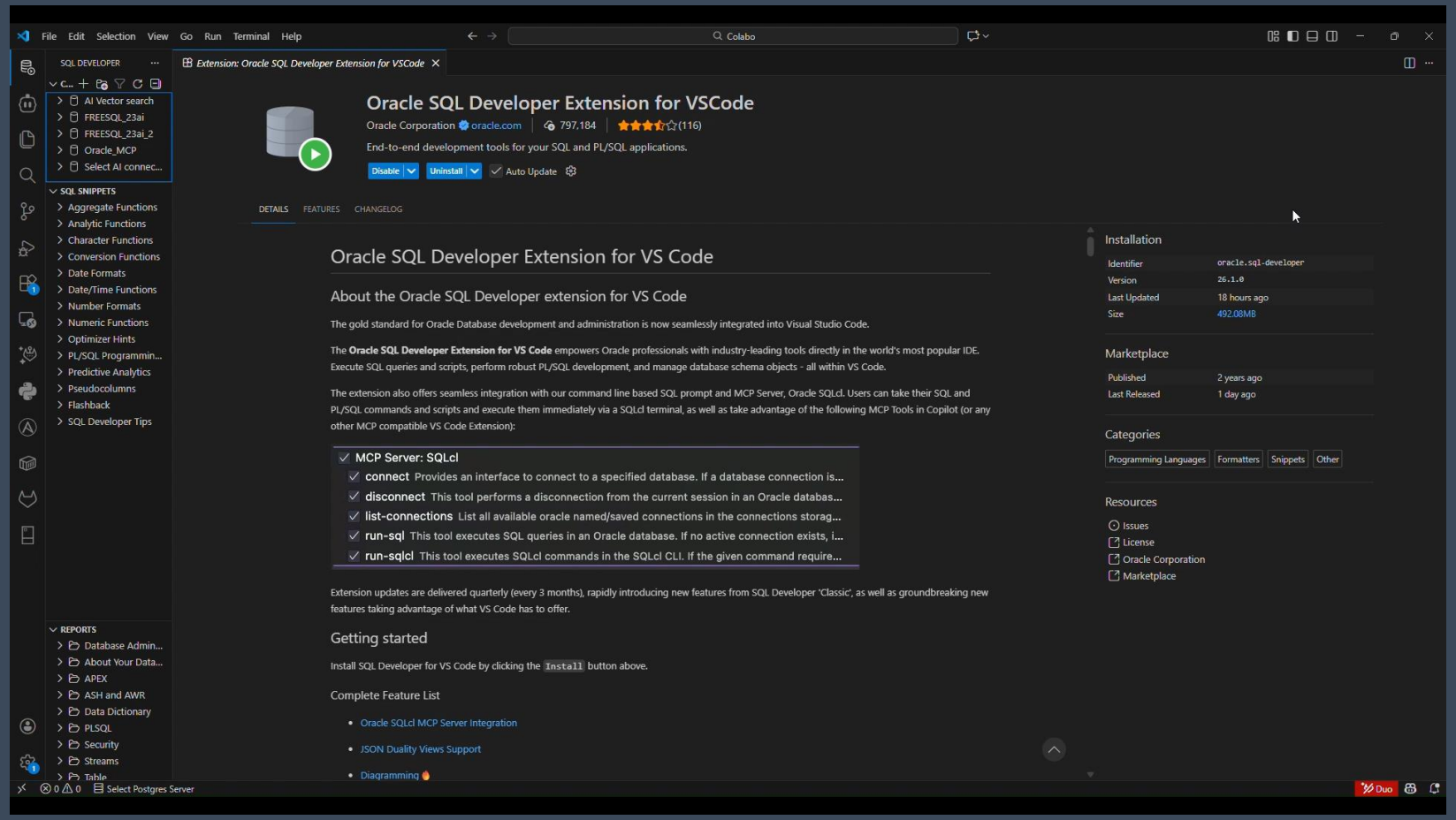
DATABASE MANAGED SERVICES

MCP - Guidelines & Best Practices

- Credential storage
- Least privilege
- Segregate duties
- Approval workflow
- Monitoring

MCP - Demo


File Edit Selection View Go Run Terminal Help
Colabo
SQL DEVELOPER
Extension: Oracle SQL Developer Extension for VSCode
AI Vector search
FREESQL_23ai
FREESQL_23ai_2
Oracle_MCP
Select AI connec...
SQL SNIPPETS
Aggregate Functions
Analytic Functions
Character Functions
Conversion Functions
Date Formats
Date/Time Functions
Number Formats
Numeric Functions
Optimizer Hints
PL/SQL Programmin...
Predictive Analytics
Pseudocolumns
Flashback
SQL Developer Tips
REPORTS
Database Admin...
About Your Data...
APEX
ASH and AWR
Data Dictionary
PLSQL
Security
Streams
Table
Oracle SQL Developer Extension for VSCode
Oracle Corporation oracle.com 797,184 (116)
End-to-end development tools for your SQL and PL/SQL applications.
Disable Uninstall Auto Update
DETAILS FEATURES CHANGELOG
Oracle SQL Developer Extension for VS Code
About the Oracle SQL Developer extension for VS Code
The gold standard for Oracle Database development and administration is now seamlessly integrated into Visual Studio Code.
The Oracle SQL Developer Extension for VS Code empowers Oracle professionals with industry-leading tools directly in the world's most popular IDE. Execute SQL queries and scripts, perform robust PL/SQL development, and manage database schema objects - all within VS Code.
The extension also offers seamless integration with our command line based SQL prompt and MCP Server, Oracle SQLcl. Users can take their SQL and PL/SQL commands and scripts and execute them immediately via a SQLcl terminal, as well as take advantage of the following MCP Tools in Copilot (or any other MCP compatible VS Code Extension):
MCP Server: SQLcl
connect Provides an interface to connect to a specified database. If a database connection is...
disconnect This tool performs a disconnection from the current session in an Oracle databas...
list-connections List all available oracle named/saved connections in the connections storag...
run-sql This tool executes SQL queries in an Oracle database. If no active connection exists, i...
run-sqlcl This tool executes SQLcl commands in the SQLcl CLI. If the given command require...
Extension updates are delivered quarterly (every 3 months), rapidly introducing new features from SQL Developer 'Classic', as well as groundbreaking new features taking advantage of what VS Code has to offer.
Getting started
Install SQL Developer for VS Code by clicking the Install button above.
Complete Feature List
Oracle SQLcl MCP Server Integration
JSON Duality Views Support
Diagramming
Installation
Identifier oracle.sql-developer
Version 26.1.0
Last Updated 18 hours ago
Size 492.08MB
Marketplace
Published 2 years ago
Last Released 1 day ago
Categories
Programming Languages Formatters Snippets Other
Resources
Issues
License
Oracle Corporation
Marketplace
Select Postgres Server
Duo

Summary

Oracle Native

- Select AI
  - Natural language to SQL
  - Agents
  - Retrieval Augmented Generation (RAG)
  - & more
- AI Vector Search
  - Similarity search
  - Retrieval Augmented Generation (RAG)

Open Standard

- MCP
  - Connect to the database from AI tools in a secure manner
  - Acts as a bridge
  - Oracle made its own implementation

Questions?

EXITAS & MONIN

DATABASE MANAGED SERVICES

michiel.stubbe@exitas.be

firas.nohra@monin-it.be