



# Apache Polaris: an Open Source Iceberg REST Catalog

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April 18, 2025



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**Caused by:**

**org.apache.iceberg.exceptions.NotFoundException: Failed to open input stream for file:  
s3://some/path/to/table/metadata/13648-45c53fb2-5124-4541-ace3-c63ed91e1d26.metadata.json**

# Why Iceberg REST Catalog

Server handles commits (more reliable and faster)

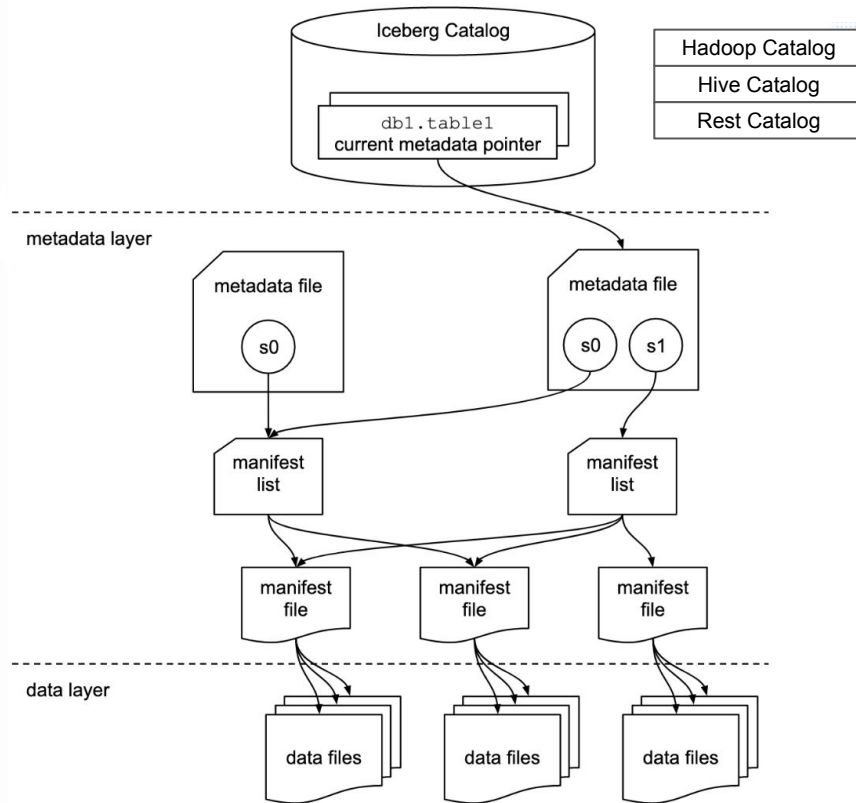
Server writes metadata.json files, fixing client compatible issues

Better support for multiple language clients, such as Python, Rust, Go

Advanced feature, e.g., multi-table transaction

Catalog

Files





An interoperable, open source catalog for Apache Iceberg™



Centralized,  
cross-engine security  
and access



Cross-engine read and  
write interoperability



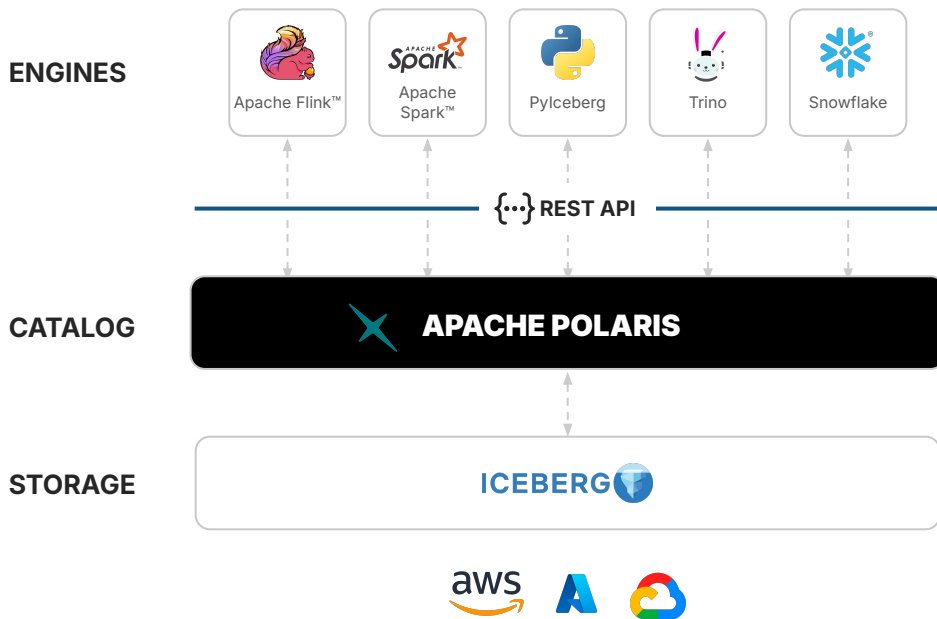
Run anywhere,  
no lock-in

Apache Polaris is currently undergoing Incubation at the Apache Software Foundation

# Cross-engine read and write

Apache Iceberg's open source REST protocol for multiple engines to read and write: Apache Flink™, Apache Spark™, Trino and many more.

- Table/View APIs
- OAuth2
- Multi-Catalog



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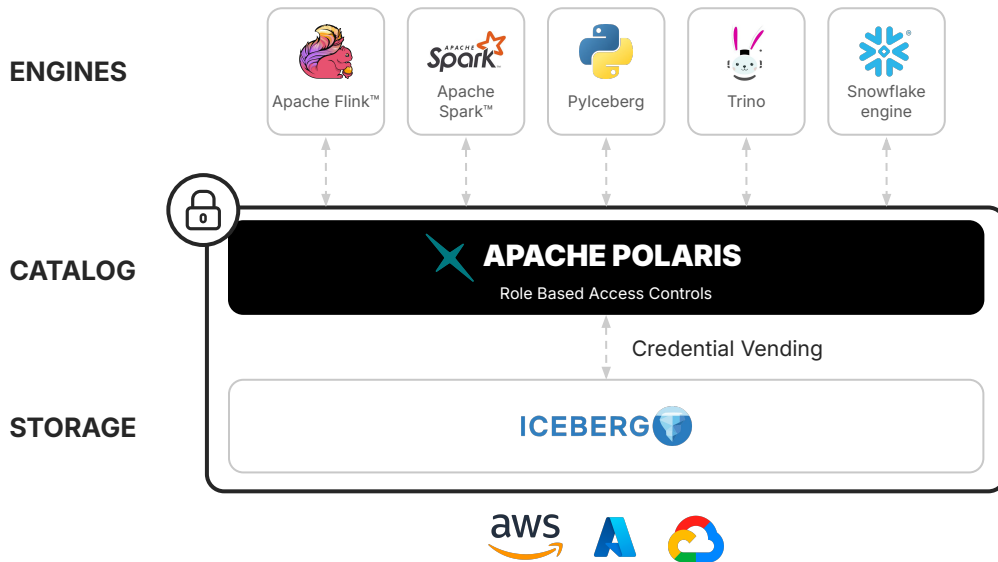


# Centralized, security and access

Define users, principals and roles in Apache Polaris

Manage RBAC on Iceberg tables for users or roles

Manage security at the storage layer by vending scoped credentials to engines during query execution



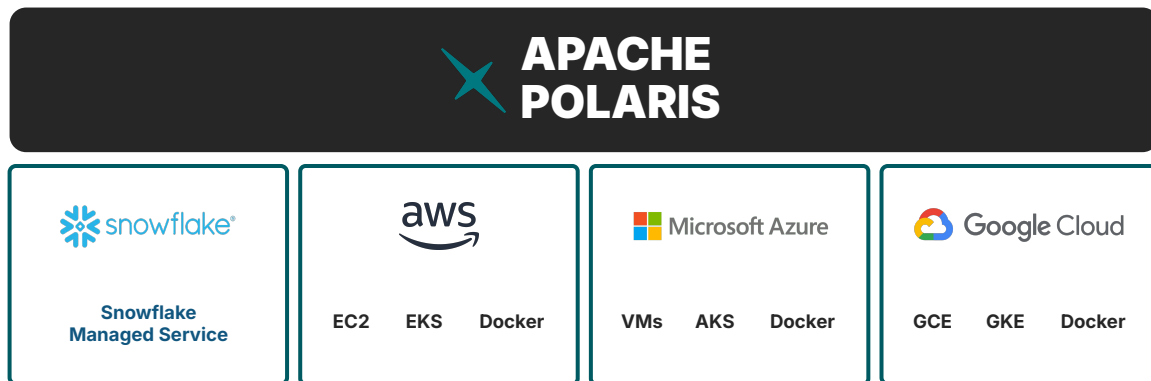
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# Run anywhere, no lock-in

Deploy in your own infrastructure in a container (e.g. Docker, Kubernetes)

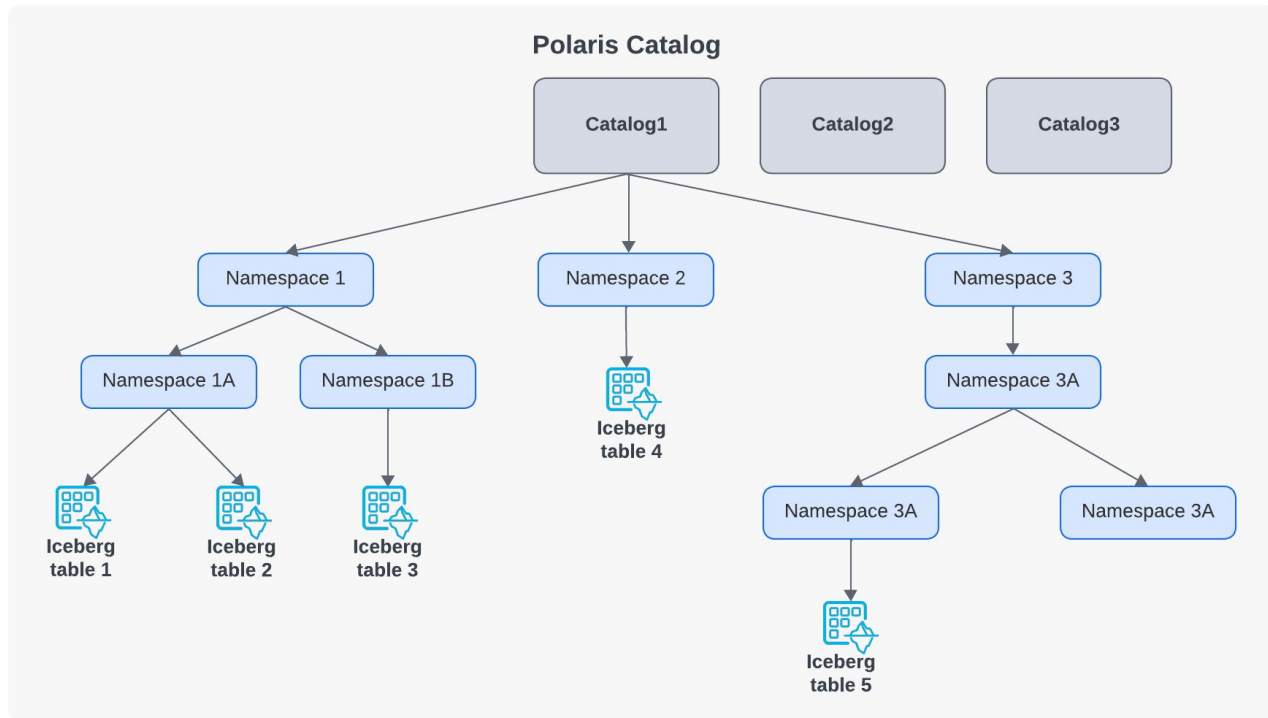
Flexibility to switch infrastructure and retain RBAC, namespaces, and table definitions



# Entity Hierarchy

**Catalogs** are INTERNAL (read/write) or EXTERNAL (read-only for now)

**Namespaces** can be nested arbitrarily deep



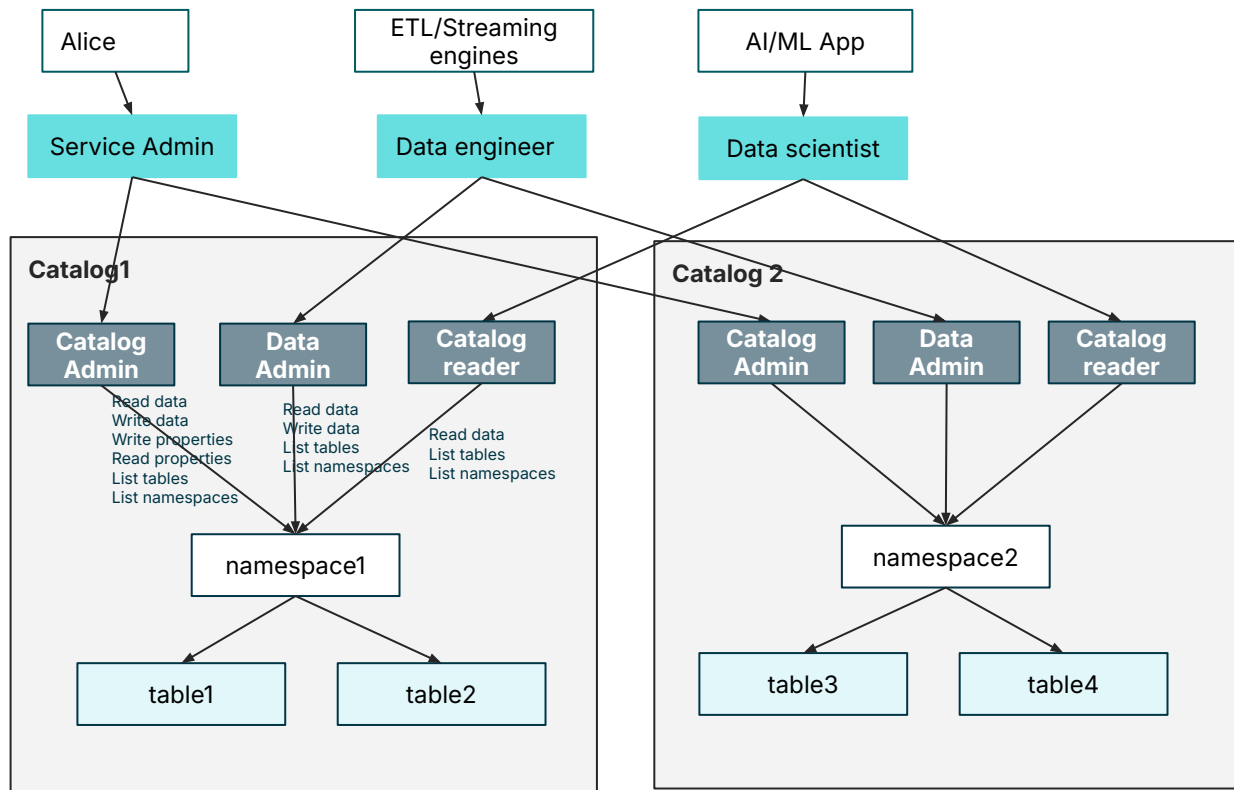


# Permission model

**Principal:** Identity for applications or users

**Catalog Role:** Groupings of permissions on entities

**Principal Role:**  
Connection between  
Principals and Catalog  
Roles



**Try Apache Polaris in  
Just 5 Minutes**

# DEMO

- Try Polaris with Spark SQL

Git clone and Run Polaris locally

```
git clone git@github.com:apache/polaris.git  
./gradlew run
```

Connect Polaris with Spark SQL in another terminal

```
./regtests/run_spark_sql.sh
```

Run Spark SQL comm

```
create database db1;  
show databases;  
create table db1.table1 (id int, name string);  
insert into db1.table1 values (1, 'a');  
select * from db1.table1;  
insert into db1.table1 values (2, 'b');  
call polaris.system.expire_snapshots('db1.table1',  
timestamp '2024-9-6');
```



# What's next? A Community-Driven Roadmap

- Catalog synchronization powered by Notification APIs
  - External catalogs -> Polaris
  - Polaris -> External catalogs
- More storage options, e.g., HDFS(issue [#85](#))
- Support table types other than Iceberg, e.g., Hive table via federation
- More governance features, e.g., Column masking, encryption
- Advance Iceberg Catalog features
  - Multi-table transaction, WIP, PR [#238](#)
  - Commit conflict resolution
  - Server-side planning
- Migration tool for HMS users

# Join the Community!

- Perfect Time to Join
  - **Diverse Expertise:** PPMC includes members from leading organizations like **Snowflake, Dremio, Google, Microsoft, AWS, and Confluent.**
  - **Be Part of Innovation:** Contribute to a cutting-edge project with a strong community.
- Get Involved
  - **Join the Community:** Engage with us on the dev list and chat channel.
  - **Contribute to code base:**
    - Adding new features
    - Bug fixes
    - Documentation enhancement
  - **Share Feedback:** Your experiences and suggestions are valuable to us.



# Resources

- GitHub Repo: <https://github.com/apache/polaris>
- Official Website: <https://polaris.apache.org/>
- Mailing List: [dev@polaris.apache.org](mailto:dev@polaris.apache.org)
- Slack channel:  
[https://join.slack.com/t/apache-polaris/shared\\_invite/zt-2y3l3r0fr-VtoW42ltir~nSzCYOrQgfw](https://join.slack.com/t/apache-polaris/shared_invite/zt-2y3l3r0fr-VtoW42ltir~nSzCYOrQgfw)