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MySQL HeatWave

Describe MySQL HeatWave

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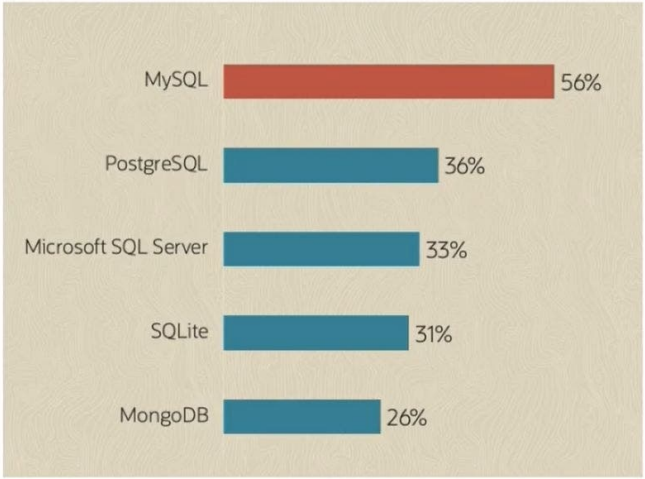
Objectives

- MySQL HeatWave Background
- MySQL HeatWave Features Overview
- MySQL HeatWave Security and Ease Of Use

MySQL Is the #1 Open-Source Database

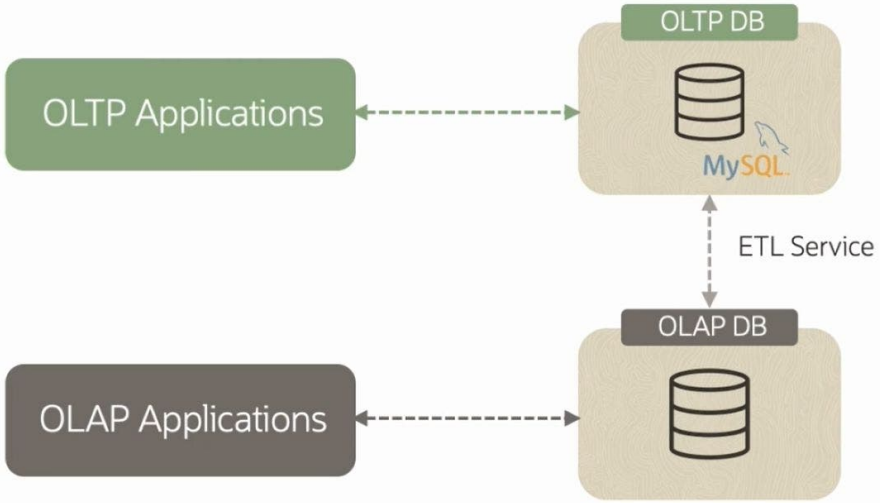
MySQL is the most popular database for developers.

Rank Jan 2021	Rank Dec 2020	Rank Jan 2020	DBMS	Database Model	S Jan 2021
1.	1.	1.	Oracle	Relational, Multi-model	1322.93
2.	2.	2.	MySQL	Relational, Multi-model	1252.06
3.	3.	3.	Microsoft SQL Server	Relational, Multi-model	1031.23
4.	4.	4.	PostgreSQL	Relational, Multi-model	552.23
5.	5.	5.	MongoDB	Document, Multi-model	457.22



Innovative Enterprises Across Many Industries Run MySQL

MySQL Is Optimized for OLTP, Not Designed for Analytic Processing



Separate analytics database

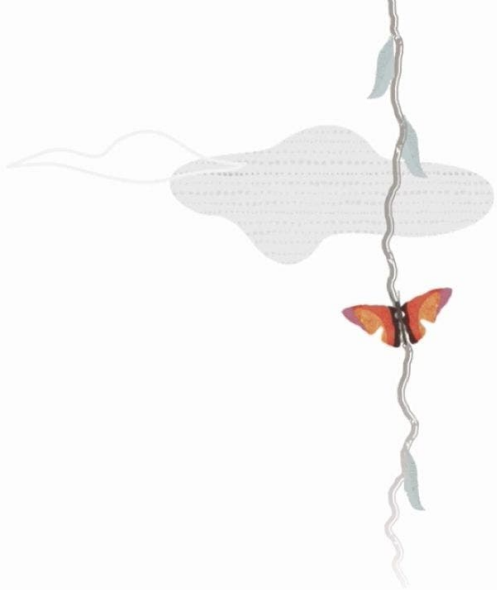
Complex ETL

No real-time analytics

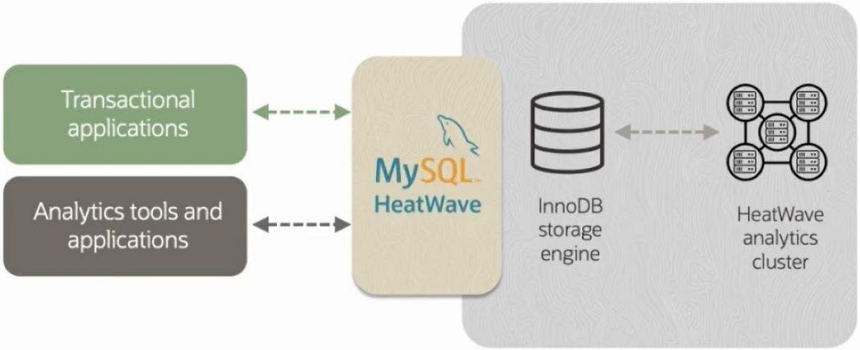
Security & compliance risks

Increased costs

MySQL HeatWave Features Overview



One database Is Better than Two



1 > 2 with MySQL HeatWave

One service for OTLP & OLAP

No ETL duplication

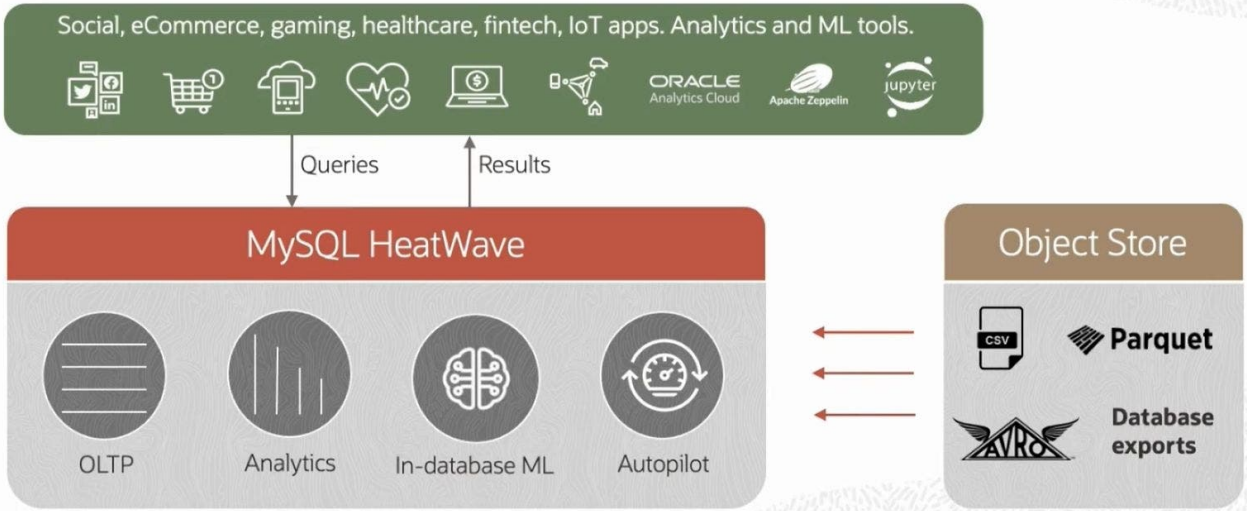
Unmatched performance, at a fraction of the cost

Real-time analytics

Improved security

Applications work without changes

MySQL HeatWave: One Database for OLTP, OLAP, ML & Lakehouse



For both non-MySQL and MySQL workloads

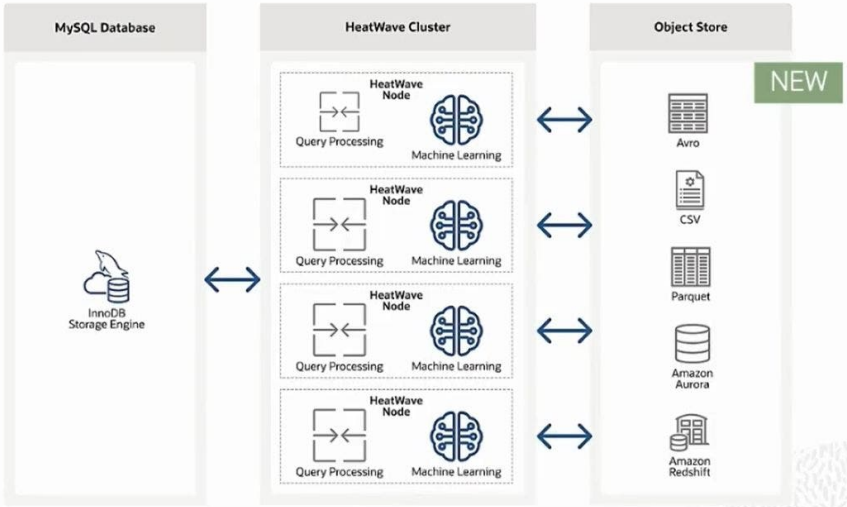
Data remains in object store, processing is done in HeatWave

Massive Amount of Data Stored in Files

- Databases are systems of record.
- Files are repository for other types of data (for example, IoT, web content, log files).
- Over 80% of the data we generate is in files.
- 99.5% of collected data remains unused.
  - Lack of time, resources, and expertise to process different data formats across different data sources

MySQL HeatWave Lakehouse

Query half a PB data in the object store—in a variety of file formats



- Query data in MySQL, in the object store, or across both—using standard SQL syntax.
- Up to 500 TB of data—the HeatWave cluster scales to 512 nodes
- Querying the data in the object store is as fast as querying the database – **an industry first!**
- Scale out data processing in the object store, data is not copied to the MySQL Database: for both MySQL and non-MySQL workloads

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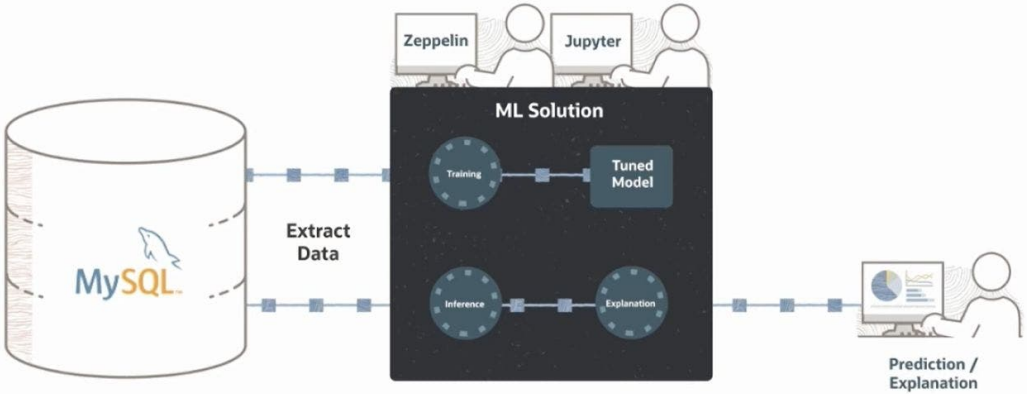
Need to ETL Data to a Separate ML Solution for Training and Inference

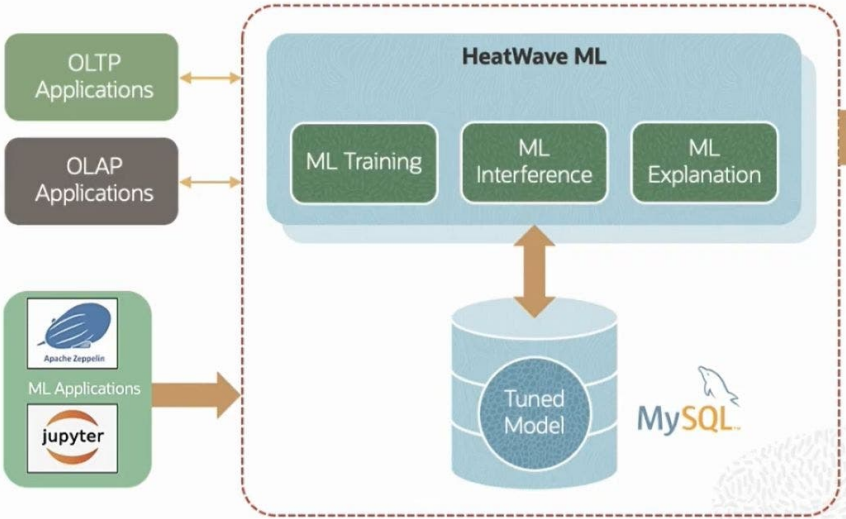


- Complex, time-consuming
- Increases costs and risks
- Need to learn new tools/languages

And it gets worse when using other databases...

Machine Learning with HeatWave ML

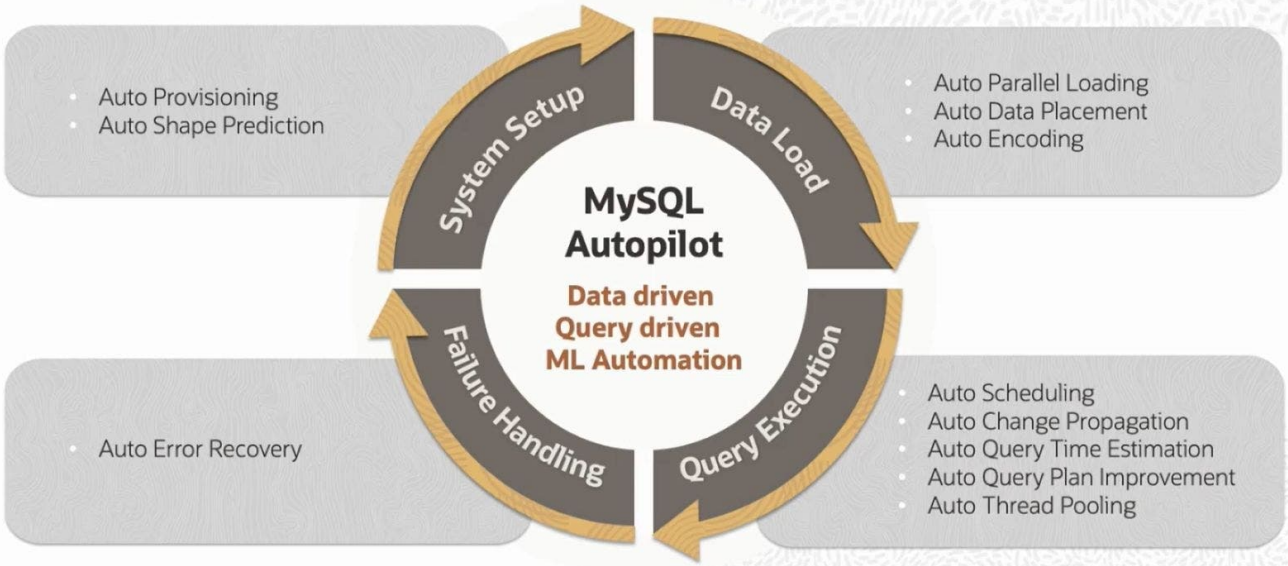
No ETL, secure, saves effort, no additional cost, faster



Prediction explainer

- Regulatory compliance
- Fairness
- Repeatability
- Causality
- Trust

What is MySQL Autopilot?



MySQL HeatWave Security and Ease of Use

MySQL HeatWave: Ease of Use

- **Fully Managed Service**
  - Automate time-consuming tasks
  - Configuration, security patching, backup, and monitoring
- **Instant Provisioning**
  - Connect to production-ready, preconfigured MySQL databases
  - Provision fast, reliable, and secure cloud storage
  - Set up fast, predictable networking
- **Latest Features**
  - Fast-paced delivery of new features for modern applications
  - X Dev API, MySQL Shell, Document Store

	Automation	MySQL On-Premises	MySQL Database Service
Database	High Availability	✗	✓
	Backup	✗	✓
	Security Patch & Upgrade	✗	✓
	Provision & Configure	✗	✓
OS	OS Security Patch & Upgrade	✗	✓
	OS Installation	✗	✓
Server	Hardware Purchase & Maintenance	✗	✓
Storage	Storage Purchase & Maintenance	✗	✓
Data Center	Rack & Space	✗	✓
	Power, HVAC, Networking	✗	✓

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MySQL HeatWave: Security First

- Built on Gen 2 Cloud Infrastructure - security-first design principles
- Data encrypted for privacy
- User data stored on OCI Block Volumes resistant to failure
- Gen2 provides maximum isolation and protection:
  - Oracle cannot see customer data.
  - Users cannot access our cloud control computer.

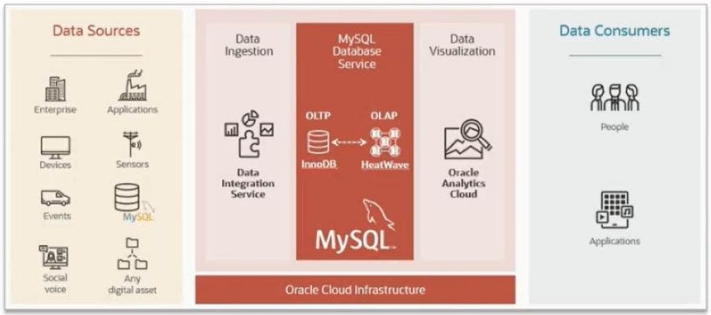
MySQL HeatWave: Security and Regulatory Compliance

- Reduce risk of data breaches
  - Protect your data with encryption, masking, firewall, and more
- Regulatory compliance (GDPR, PCI, HIPPA)
  - Advanced Security with MySQL Enterprise Edition
- Latest security updates
  - Latest MySQL security fixes from the MySQL team to limit exposure to security vulnerabilities

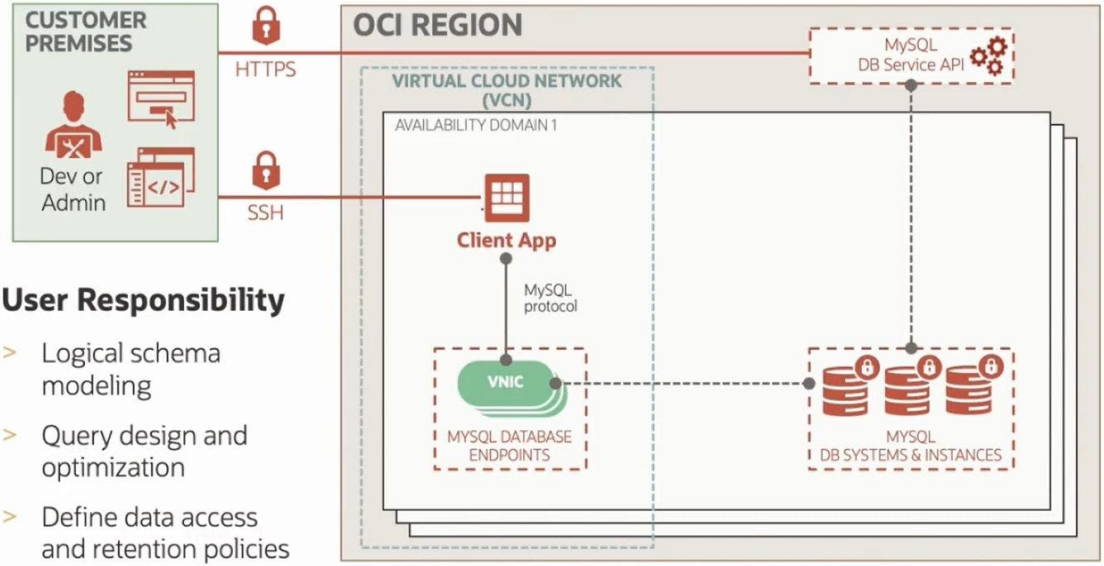
MySQL HeatWave: Enterprise Ready

- Built on MySQL Enterprise Edition
  - Highest reliability and security
  - 24x7 support from the MySQL Team
- Integration with Oracle Technologies
  - Oracle Data Integrator, Audit Vault, Container Engine for Kubernetes…
- 100% compatible with on-premises MySQL
  - Easy path to cloud
  - Hybrid cloud deployments
  - No cloud fork lock-in

Integration with Oracle Technologies



MySQL HeatWave: Focus on Your Business



User Responsibility

- Logical schema modeling
- Query design and optimization
- Define data access and retention policies

Oracle Responsibility

- Backup and recovery
- Database and OS patching
- Monitoring and log handling
- Security with advanced options available in MySQL Enterprise Edition

Requisites for Starting

- Tenancy to sign-in
- Compartment to store resources
- Group with granted policies

Remember: Describe the MySQL HeatWave

1. MySQL HeatWave is fully managed - all the mundane stuff, backup, patching are done for you by OCI.
2. MySQL HeatWave is the only fully managed database service that combines transactions, analytics, and machine learning services into one MySQL Database.
3. MySQL HeatWave Uses Advanced security for regulatory compliance. It has the tools you need to handle GDPR, PCI, and HIPPA.
4. Integrates with Oracle Technologies – MySQL HeatWave works well with other Oracle technologies on OCI without extra work.
5. MySQL Autopilot uses advanced machine-learning techniques to automate HeatWave, further improving performance and scalability and making it easier to use.

Summary

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- MySQL HeatWave Features Overview
- MySQL HeatWave Security and Ease Of Use