

Case Study

AI-POWERED DATABASE PERFORMANCE ADVISOR ON AMAZON BEDROCK FOR MYDBOPS

At a Glance

Mydbops, an open-source database consulting and managed services company, partnered with AceCloud to build an AI-powered database performance advisor on Amazon Bedrock. The advisor analyzes query statistics, execution plans, wait events and instance metrics from Amazon RDS and Amazon Aurora databases, and produces root-cause analysis and prioritized optimization recommendations grounded in Mydbops DBA runbooks.

The engagement addressed a scaling problem in expert-led database tuning: how to bring consistent, data-driven performance insight to many databases without giving an AI system any ability to change them. The platform runs in a strictly read-only, advisory mode.

Outcomes

- Automated collection of query, schema, wait-event and instance metadata from Amazon RDS and Amazon Aurora through read-only access.

- Combined deterministic rule-based pre-analysis with Amazon Bedrock models for root-cause analysis and recommendations.
- Grounded every recommendation in Mydbops DBA runbooks and tuning guides through Bedrock Knowledge Bases.
- Validated AI output against the collected schema before it reaches an engineer.
- Kept the platform advisory-only, with no write access to customer databases or infrastructure.
- Delivered a dashboard and severity-based alerting for DBA and engineering teams in an eight-week engagement.

The Client

Mydbops is an open-source database consulting and managed services company established in 2015, specializing in MySQL, MariaDB, PostgreSQL, MongoDB, TiDB and Cassandra. Trusted by 800+ clients, including 30+ unicorns, Mydbops manages mission-critical databases that power billions of transactions daily across fintech, SaaS, healthcare, logistics and e-commerce.

Its services include 24/7 managed database operations, performance tuning, consulting, migrations, upgrades and automation for databases on Amazon RDS, Amazon Aurora and self-managed Amazon EC2. Mydbops is ISO and PCI-DSS certified.

The Challenge

Finding why a database is slow is skilled, time-consuming work. Engineers must read slow query logs, execution plans, wait events and instance metrics, and decide whether the answer is a query rewrite, a missing index, a configuration change or a differently sized instance. As the number of databases under management grows, doing this by hand for every one becomes difficult to scale.

Applying AI to the problem raised its own concerns. Generic model advice can be plausible but wrong, such as recommending an index on a column that does not exist. Customer query data is sensitive. And any tool that could modify a production database would be unacceptable. Mydbops needed AI that was grounded, verified, privacy-preserving and strictly advisory.

The Solution

AceCloud designed a pipeline in the AWS Asia Pacific (Mumbai) region in which deterministic analysis comes first, AI reasoning second and validation last. Amazon EventBridge Scheduler triggers scheduled or on-demand analysis runs, and AWS Step Functions orchestrates each run with retries and parallel processing per database.

- **Read-Only Collection with Data Protection**

AWS Lambda collectors use dedicated read-only database users and cross-account IAM roles limited to describe, get and read operations to gather query statistics, execution plans, schema metadata and instance metrics. Amazon CloudWatch Database Insights, Enhanced Monitoring, slow query logs and AWS Compute Optimizer add query-level, OS-level and rightsizing signals.

Queries are normalized and literal values masked before metadata leaves the database layer. Credentials are held in AWS Secrets Manager with automatic rotation, and masked snapshots are stored in an encrypted Amazon S3 data lake for historical and trend analysis.

- **Rules First, AI Second**

A Lambda rule engine detects inefficient query patterns and bottlenecks deterministically. Amazon Bedrock foundation models then analyze the findings and metadata to produce root-cause analysis and recommendations across query optimization, indexing, configuration and instance rightsizing, in a structured output format.

- **Grounded and Validated Recommendations**

Amazon Bedrock Knowledge Bases ground model responses in Mydbops DBA runbooks, tuning guides and AWS best practices. Amazon Bedrock Guardrails

filter sensitive information and enforce advisory-only responses. A Lambda validator then checks each recommendation against the collected schema and metadata before it is stored.

- **Delivery to DBA and Engineering Teams**

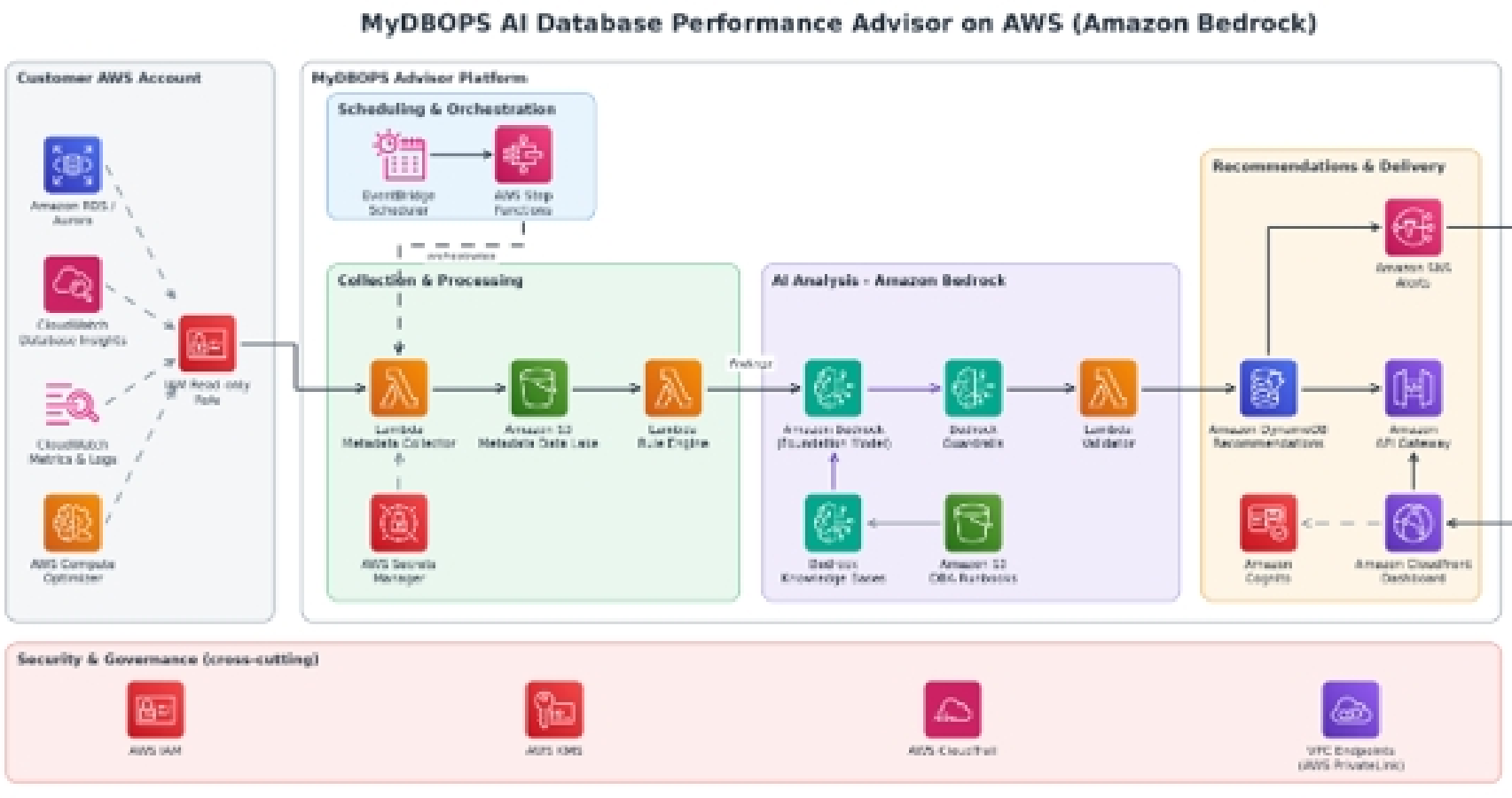
Validated recommendations, with severity, status and history, are stored in Amazon DynamoDB and exposed through Amazon API Gateway with Amazon Cognito authentication. A web dashboard delivered through Amazon CloudFront lets teams review recommendations, and Amazon SNS sends alerts for critical and high-severity findings.

- **Security and Governance**

All traffic to Amazon Bedrock and other AWS services stays on the AWS network through AWS PrivateLink. Data at rest is encrypted with AWS KMS, AWS CloudTrail audits every API call, including cross-account access, and Amazon CloudWatch dashboards and alarms monitor pipeline health, Bedrock usage and cost.

Architectural Diagram

The diagram below shows how a request moves through the solution end to end.



Results and Benefits

- **Faster, More Consistent Analysis:** Routine investigation work is automated, so DBAs can focus on the decisions that need expert judgment.
- **Trustworthy Recommendations:** Rule-based pre-analysis, runbook grounding and schema validation reduce the risk of unreliable AI advice. [insert recommendation accuracy from DBA UAT]
- **Zero Write Access:** Read-only roles and database users mean the platform cannot modify customer data or infrastructure.
- **Customer Data Protection:** Query normalization, literal masking, encryption and full audit trails protect sensitive information.
- **Performance and Cost Insight:** Findings span query tuning, configuration and instance rightsizing, supporting both performance and cost optimization on AWS.

AWS Services Used

The solution draws on a focused set of AWS services, each handling a specific part of the workflow:

- Amazon Bedrock (Foundation Models, Knowledge Bases, Guardrails)
- Amazon RDS
- Amazon Aurora
- Amazon CloudWatch
- Amazon EventBridge Scheduler
- AWS Lambda
- Amazon S3
- Amazon DynamoDB
- Amazon API Gateway
- Amazon SNS

Conclusion

With AceCloud, Mydbops built an AI performance advisor that keeps the rigor of expert database engineering: deterministic rules, runbook-grounded AI, validated output and read-only access. The result gives DBA and engineering teams faster, data-driven insight into query performance, resource usage and cost, and a foundation Mydbops can extend across its database fleet.

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About Us

Years of Exp
15+

Data Center
10+

Awards
100+

AceCloud is a leading provider of end-to-end cloud computing solutions to global organizations across industries at scale. It offers a full spectrum of cloud services, including Public Cloud, Application Hosting, AWS Services, Managed Security Services, and Hosted Virtual Desktop Solutions.

AceCloud is a brand of Real Time Data Services (RTDS) group of companies - a leading provider of information technology capabilities specializing in Cloud Computing and Cloud Telephony. RTDS Group has an employee base of 600+ across India, the US, and the UK, supporting over 20,000+ customers and IT infrastructure in 10+ data centers spanning the globe. It offers industry-leading technological solutions that help customers streamline their operations and enhance efficiency.

As an advanced consulting and certified AWS Well-Architected Partner, AceCloud recently achieved the prestigious AWS Storage Competency and is also recognized as an Amazon RDS Service Delivery Partner. These achievements underscore its deep expertise in AWS technologies and commitment to delivering high-quality cloud solutions.

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- Public Sector
- Amazon RDS Delivery
- Storage Services Competency
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