



# Application Redesign Case Study

- **Role:** Head of Design
- **Company:** OtterTune
- **Timeline:** v1 to v2 Redesign
- **Technology:** AI-powered advisor for relational databases (AWS MySQL and PostgreSQL)
- **Location:** Remote (based in Pittsburgh, PA)

The screenshot shows the OtterTune application interface. At the top, there is a navigation bar with the OtterTune logo, the text "AWS Account: 389276", a "1 Pending Invitation" notification, and a user name "Barney Rubble". Below the navigation bar, the main content area has a heading "Connect Your IAM Role To OtterTune". It includes a sub-section "What is an IAM role?" with a link to "CloudFormation", "Terraform", or "AWS IAM Console". A section titled "1. Add the resource to your Terraform configuration and create your IAM role." contains a code snippet for Terraform:

```
module "ottertune-iam" {  
  source  = "ottertune/ottertune-iam/aws"  
  version = "0.0.7"  
  external_id = "16b6ce81-9005-4604-9b98-  
ae9f9692a131"  
  iam_role_name = "OtterTuneRole"  
}
```

Below this, a section titled "2. Enter in your AWS Account Number and IAM Role Name to connect." contains input fields for "AWS Account Number" and "IAM Role Name", and a "Connect" button. At the bottom of this section is a link to "Support Documentation". To the right of the main content area, there is a sidebar with the heading "Welcome to OtterTune!" and a message: "We look forward to working with you and providing recommendations to help you optimize your databases." It also includes a "Invite Team Members" button and sections titled "We Are ...", "Serious About Security", "Fully Transparent", and "Research-Based".



## Intended Users:

- **General Partners (GPs):**

Owners of accounts, responsible for inviting and approving investors.

- **Investors:** Primarily 60+ year old males, not very tech-savvy, used to manual processes.

- **Fund Administrators (FAs):**

Tech-savvy individuals handling background checks and administrative tasks.

**Fleet Level Overview**

**Overall Health**  
Score: Sep 22, 2022  
**95**

Database: 58%  
Resource: 91%  
Table: 97%  
Index: 34%  
Query: 81%

**Two Week Health Overview**

Mar 21 Mar 23 Mar 25 Mar 27 Mar 29 Mar 31 Apr 2

**Important Action Items**

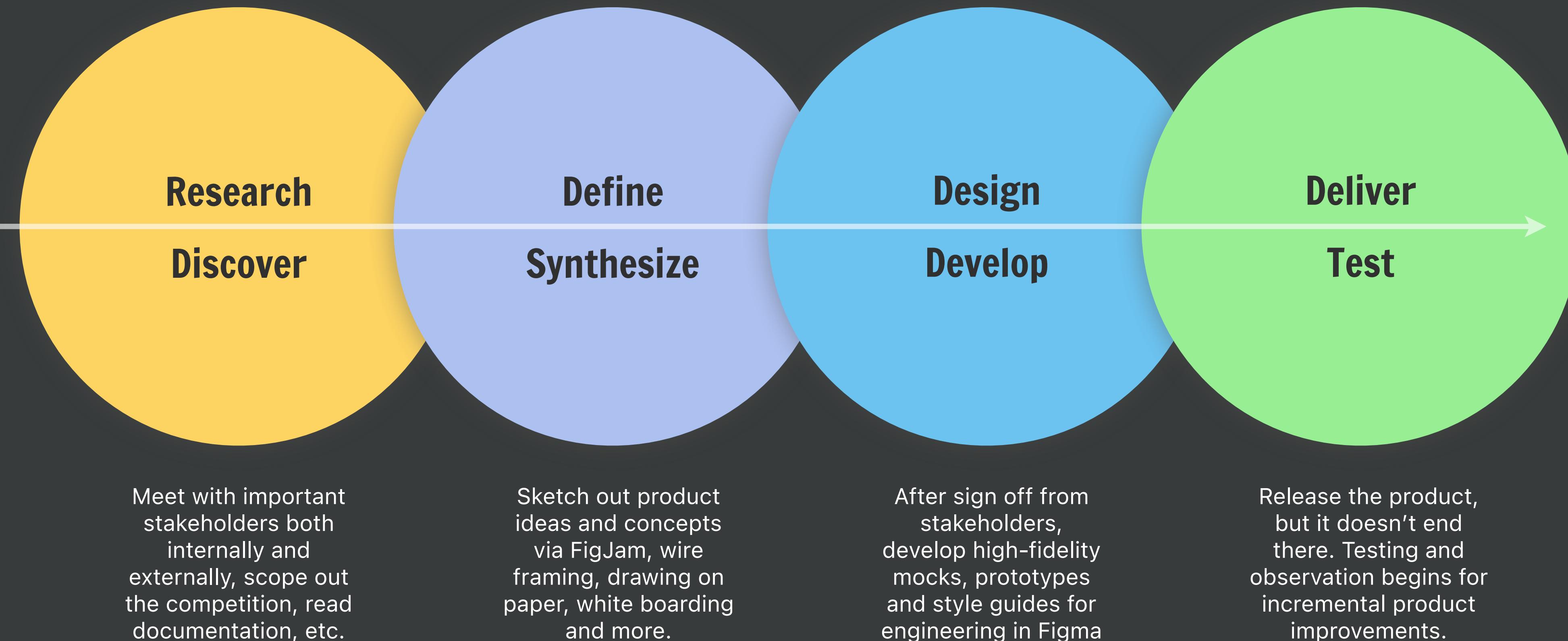
- ⚠ Your AWS Account 9879873457 needs to be reconnected.
- 💡 Review 32 recommendations in [testdb-99-foobar](#) (in cluster testdb-99)

[Show 4 More ToDos](#)

**Enabled Database Instances In This Fleet:**

Database Instance Identifier	Size	Region	Agent	Health
aurora-mysql-56-test Engine: MySQL v8.0 • Role: Writer Instance	db.t3.micro	us-west-2	✓	98 (3)
sqlgateway-history-rds-de-dbconsolidationsqlhistor_dsdek_99387-db2383... Engine: Aurora MySQL v5.7 • Role: Writer Instance	db.t4g.medium	ap-southeast-1	✓	91 (12)
foobardb-29387-instance3984				

## The Design Process:



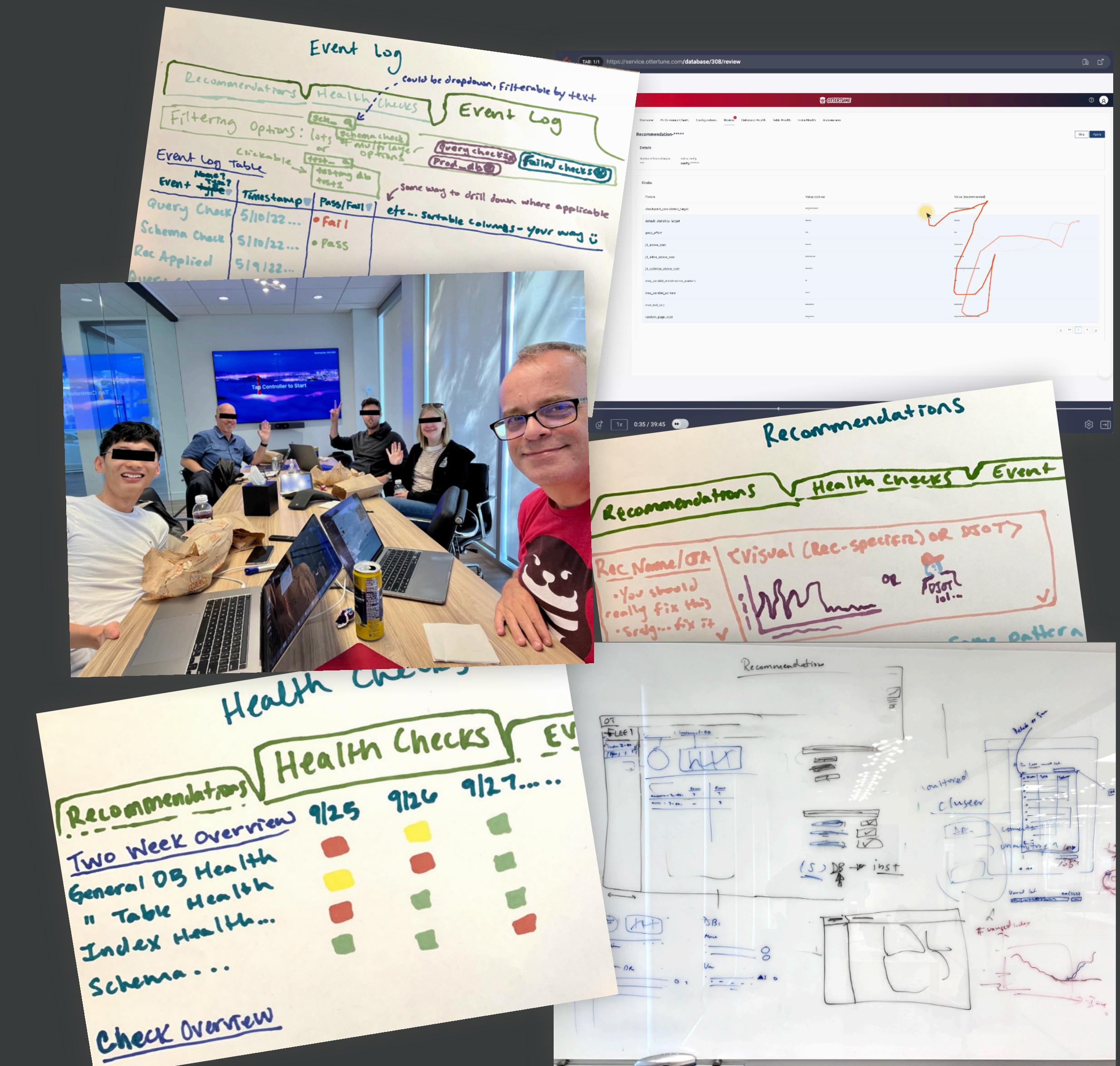
# The Design Process:

## 1. Research & Discover

### • Methods

- Reviewed HotJar user videos and internal documentation.
- Ongoing conversations on Google Meet and offsite meetings with product management, founders, engineering and marketing to white board, sketch and wire-frame ideas, concepts, requirements and goals for the redesign.
- Engage in competitive analysis (e.g. Dynatrace, Datadog, EverSQL, pganalyze, Vantage, etc). Most were either all text dashboards or all charts. Not a healthy balance between the two.
- Engaged with power users for feedback. This included both design partners as well as paying members of the application.

\* Product discussions, HotJar video analysis, sketches, white boarding.

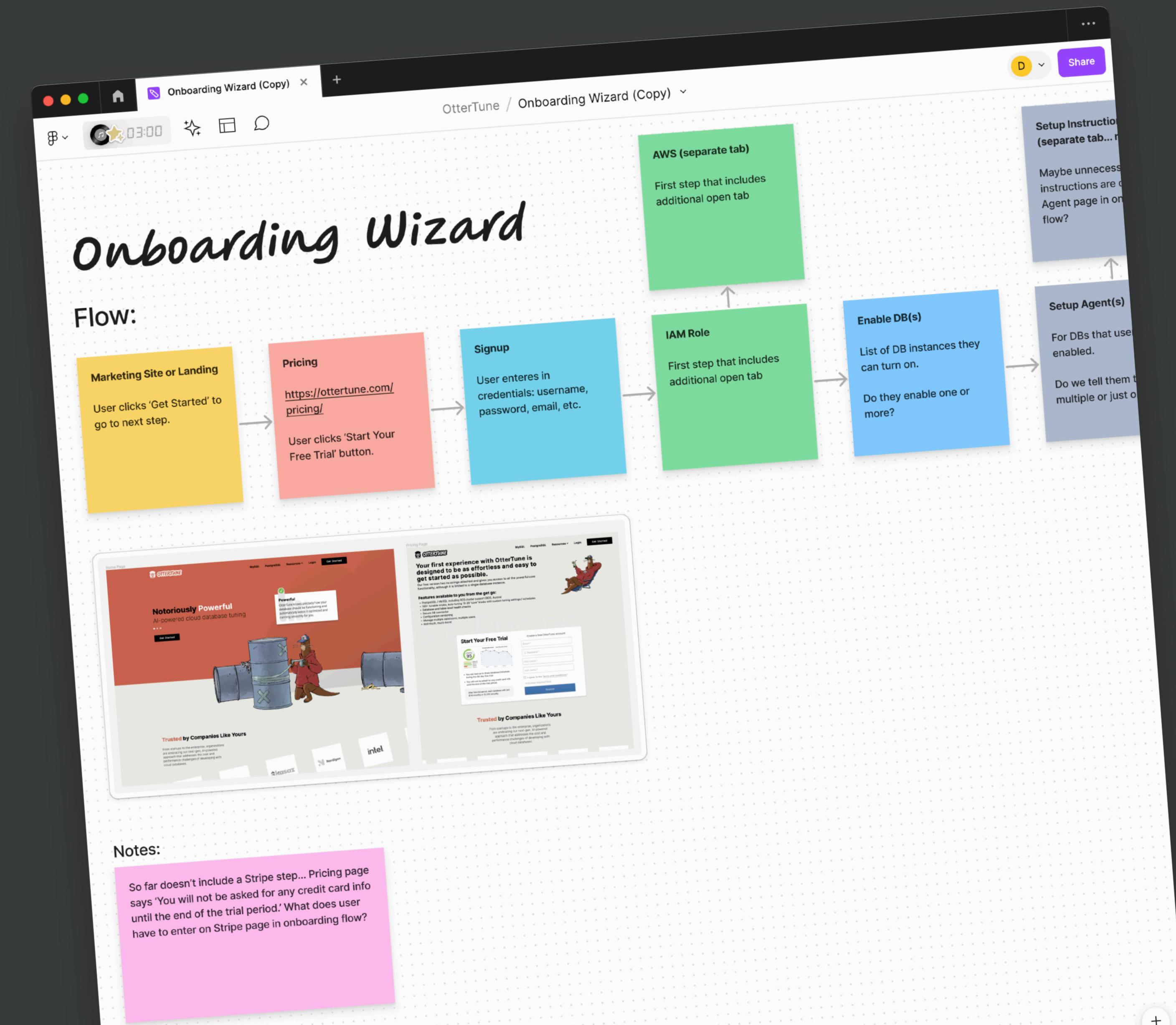


# The Design Process:

## 2. Define & Synthesize:

- Activities

- After initial research process, began process of putting down ideas into Figma for basic prototyping.
- Developed a site map for navigation and feature flows.
- Iteratively refined design concepts and feedback, regularly presenting to stakeholders ensuring alignment with product goals and requirements.

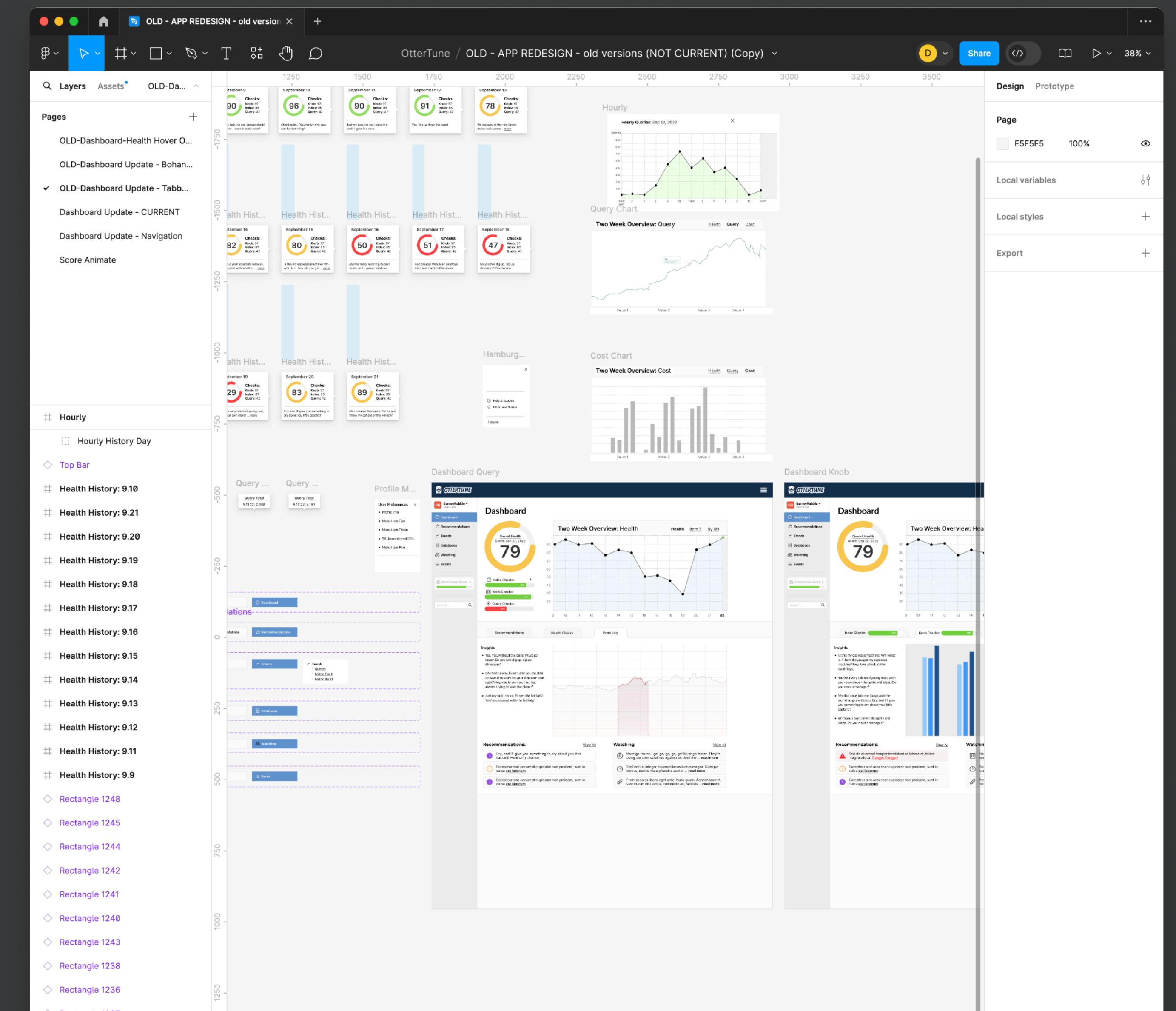


# The Design Process:

## 3. Design & Develop

### • Activities

- Built high-definition feature prototypes in Figma, incorporating feedback through Figma's commenting feature, Slack, Google Meet and offsite meetings.
- Final feature flows were added to Jira for reference either as screenshots and/or video walk throughs of Figma prototypes.
- Updated designs based on ongoing discussions and feedback.



# The Design Process:

## 4. Deliver & Test

- Activities

- Collaborated closely with engineers to ensure fidelity to Figma mocks.
- Figma served as a UI style guide for engineering to refer to throughout the implementation process.
- Conducted regular reviews and weekly bug bashes to test the product before release.

- **THE PRODUCT IS RELEASED!!**

- Continued to analyze and monitor live product through HotJar user activity videos and traffic log data to make ongoing incremental improvements.



# Key Redesign Features:

## • Fleet Dashboard

- Transitioned from a simple list to a comprehensive overview with animated health scores, time charts, aggregated fleet database recommendations and database listings.
- Health scores would animate in, both the circle and bars below, similar to a car dashboard turning on.
- Round up of most critical recommendations from various fleet databases for user to immediately jump to.
- List of databases, with active databases listed first followed by databases not added to OtterTune from AWS.
- Each database listed number of recommendations for user to jump straight to.

OTTERTUNE

AWS Account: 389276 Database Instance Recommendations Events Tuning Options Performance Charts

## Fleet Level Overview

Overall Health Score: Sep 22, 2022 **95**

Database: 58% Resource: 91% Table: 97% Index: 34% Query: 81%

Two Week Health Overview

Mar 21 Mar 23 Mar 25 Mar 27 Mar 29 Mar 31 Apr 2

### Important Action Items

🔌 Your AWS Account 9879873457 needs to be [reconnected](#).

💡 Review 32 recommendations in [testdb-99-foobar](#) (in cluster [testdb-99](#))

[DB Health](#)

Show 4 More ToDos

### Enabled Database Instances In This Fleet:

[+ Add Database Instances](#)

Database Instance Identifier	Size	Region	Agent	Health
aurora-mysql-56-test	dbt3.micro	us-west-2	✓	98
sqlgateway-history-rds-de-dbconsolidationsqlhistor_dsdek_99387-db2383...	db.t4g.medium	ap-southeast-1	✓	91
foobardb-29387-instance3984	dbt3.micro	af-south-1	+	83
postgresql-29827-live-db	dbt3.micro	af-south-1	+	41

# Key Redesign Features:

- **Database Dashboard**

- Enhanced from text-heavy notifications to a visually engaging page with overall health scores and recommendations previews.
- Page consisted of immediate database insights (e.g. workload activity, active or inactive, etc.), recommendations specifically for knobs, indexes and tables.
- Page had same health score presentation and animation, but health score was specific to the database.

OTTERTUNE

AWS Account: 389276 → auora-mysql-2334-foobar56-test-instance-1 → Recommendations 9 Events 9 Tuning Options Performance Charts

1 Pending Invitation Barney Rubble

## Database Instance Dashboard

DB Identifier: auora-mysql-2334-foobar56-test-instance-1

Region: us-east-2b Engine: PostgreSQL v12.0 Memory: 32 GiB Storage Size: 2,000 GiB Instance Type: 2,000 GiB vCPU: 8

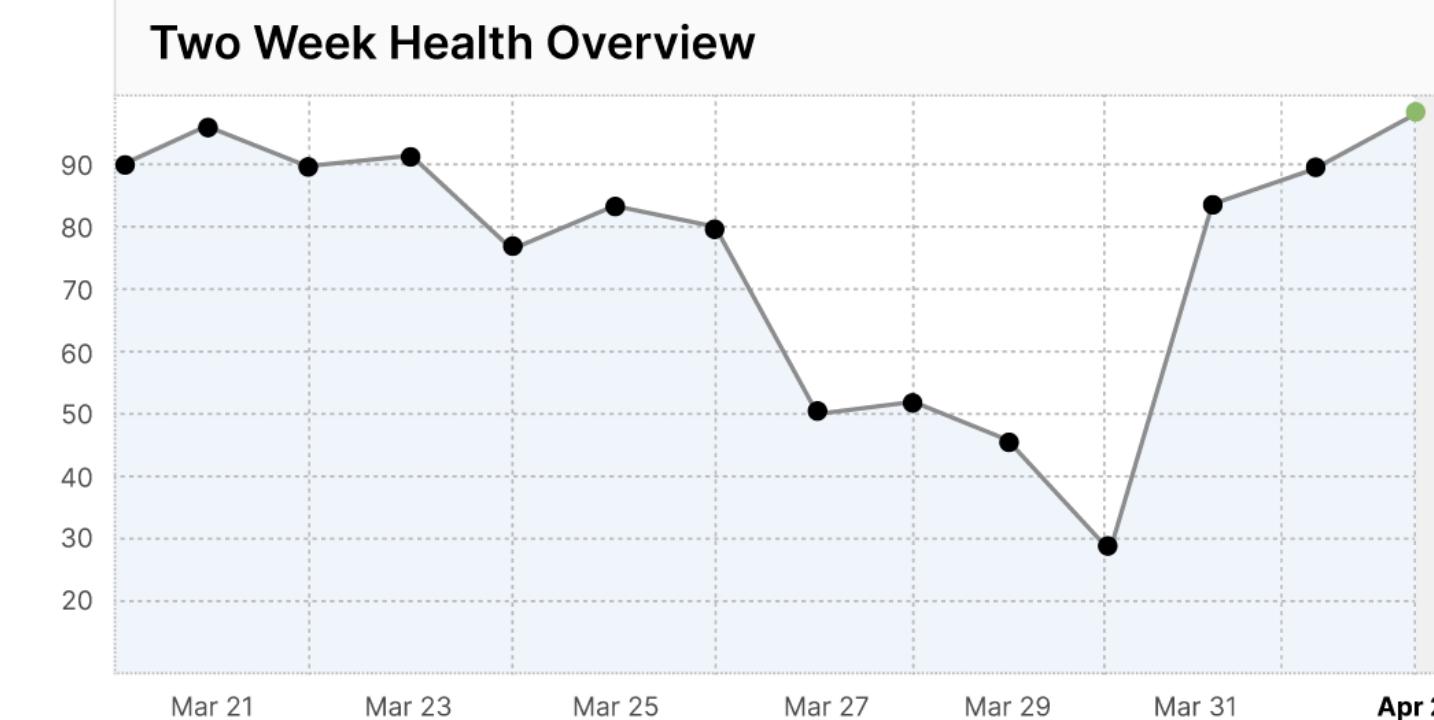
Database Settings



Overall Health  
Score: Sep 22, 2022  
**95**

Database: 58%  
Resource: 91%  
Table: 97%  
Index: 34%  
Query: 81%

### Two Week Health Overview



Date	Health Score
Mar 21	90
Mar 22	92
Mar 23	90
Mar 24	78
Mar 25	82
Mar 26	80
Mar 27	50
Mar 28	52
Mar 29	45
Mar 30	30
Mar 31	82
Apr 2	92

## Database Insights

Workload Classification: Your workload is read-only. [100.0% rows read / 0.0% rows written]

Peak Time: Your workload peak is between 06:25 and 08:25 (UTC), where it executes 1.2% more transaction on average (16.2 TPS) than other time (16.0 TPS).

Disk Read/Write IOPS: Your database uses 1.8 read IOPS and 3.8 write IOPS on average. [32.1% disk reads / 67.9% disk writes]

## Recent Activity In This Instance

Recommendations Events

Knobs:

Best Configuration:

- P99 Query Latency: 4.82ms • Improvement: 22% ↑
- Configuration: config-49202 - INACTIVE

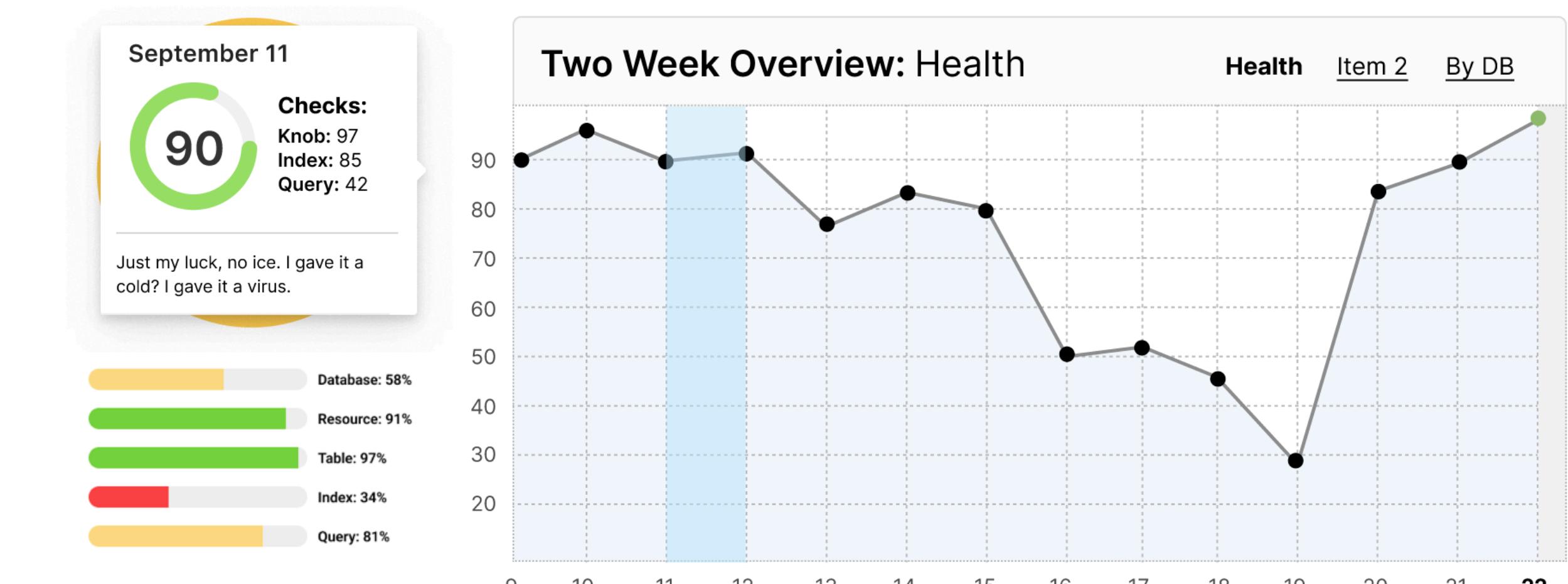
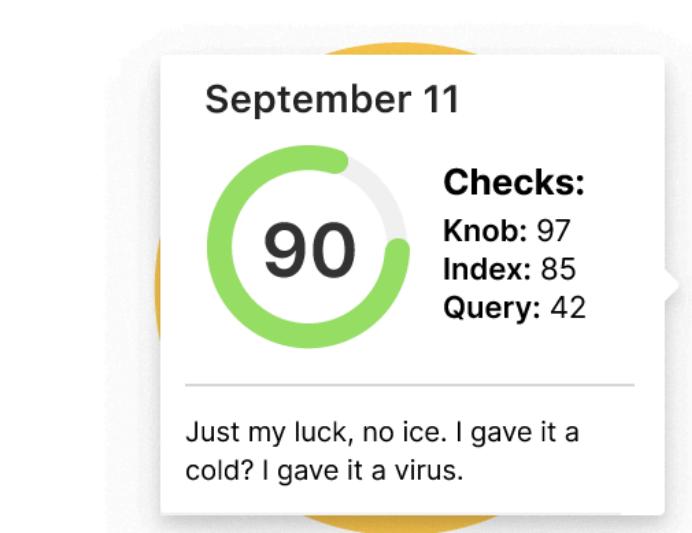
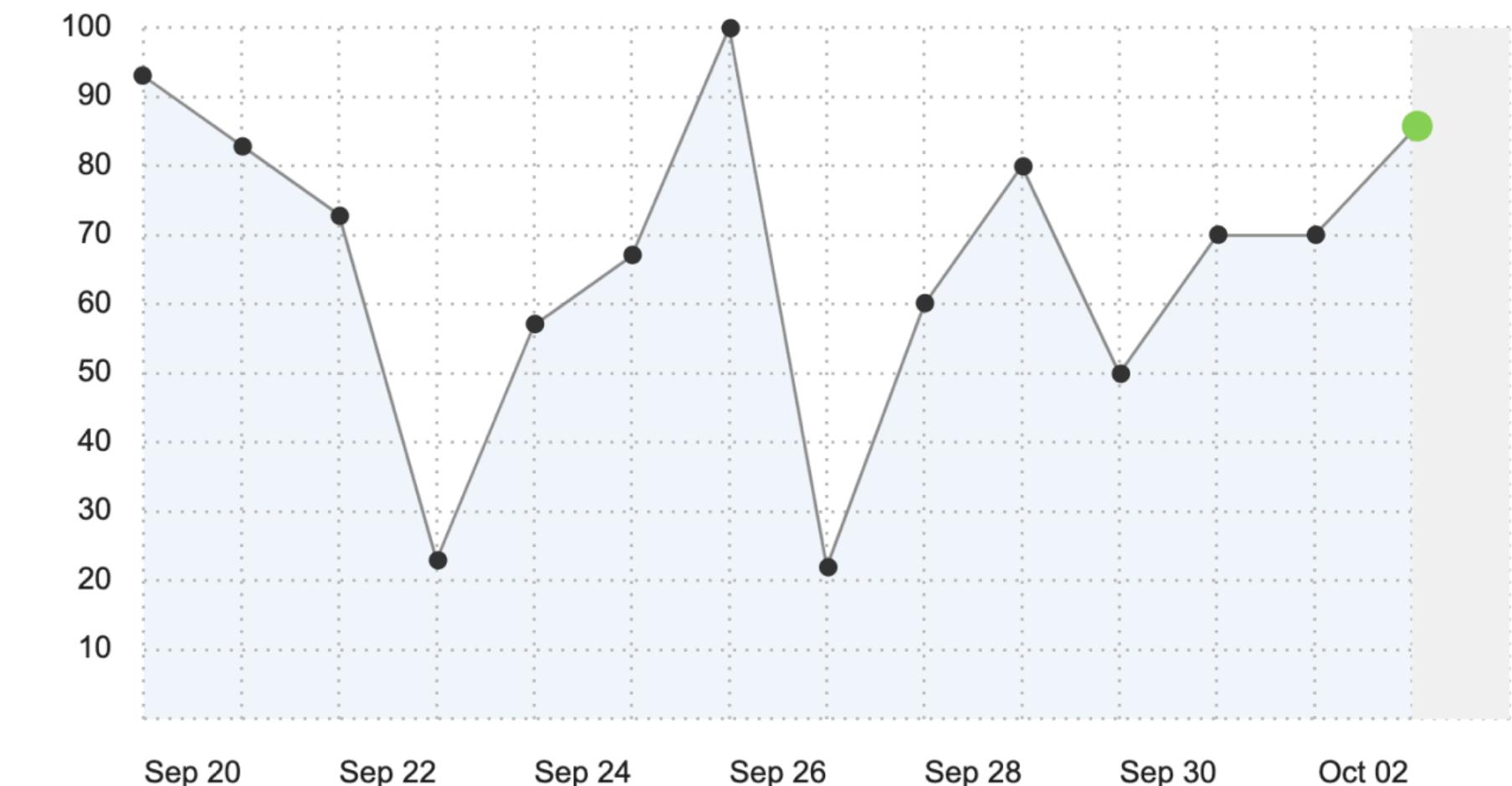
Current Status:

- P99 Query Latency: 7.61ms • Status: Monitoring
- Current Config: config-48298

## Key Redesign Features:

### • Health Scores

- Added visual health scores across various views for quick assessment and access to recommendations.
- As the dashboard would load, health scores would animate in, both the circle and bars below, similar to a car dashboard turning on.
- Goal was to immediately provide the user with a visual cue on the health of one's fleet and dashboard.
- 85-100 was green (healthy)
- 70-84 was yellow (warning)
- 0-69 was red (emergency, must fix)
- Chart showed a two-week history of a fleet and dashboards health scores. Hovering over a date column showed overall health and individual health scores.



# Key Redesign Features:

- **Knob Recommendations**

- Introduced new feature for recommending database knob adjustments with options for automatic updates, approval, or manual implementation.
- OtterTune performed DB checks every 10-15 minutes. Either a user could dismiss the recommendation or the recommendation would no longer appear once the recommendation was applied and checked.

## Recommendations

DB Identifier: [aura-mysql-2334-foobar56-test-instance-1](#)

Region: us-east-2b Engine: PostgreSQL 12 Memory: 32 GiB Storage Size: 2,000 GiB Instance Type: 2,000 GiB vCPU: 8

[Knobs](#) [Indexes](#) [Queries](#)

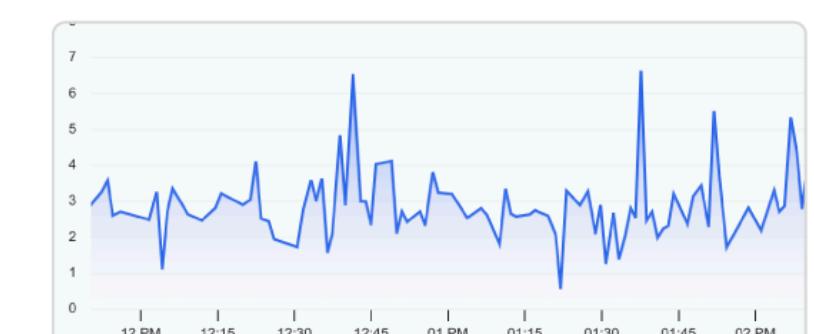
Recommendation Type ▾

**Tune Knob max\_connection**

[aurora-mysql-56-test-instance-5](#)

Related check: Connection utilization (DB Check) (> details: Your database uses 10 of its 200 available connections on average (5%). This value can indicate efficient connection management. You can increase your max connection.)

Instance & Visual Overview



→ [Apply Selected Recommendations](#)

### Applied Recommendations

More Configs: [◀](#) [1](#) [▶](#)

▼ **config-58933: 2 Knob Recommendations Applied - P99 Query Latency: 4.3 (ms)**

 Processing recommendation...

#### Knob Name:

- tmp\_table\_size
- max\_heap\_table\_size

From

XX

To

YY

YY

YY

▼ **config-49369: 12 Knob Recommendations Applied - P99 Query Latency: 4.3 (ms)**

[View Configuration](#)

#### Knob Name:

- autovacuum\_analyze\_scale\_factor
- autovacuum\_analyze\_threshold
- array\_nulls
- cpu\_operator\_cost
- cursor\_tuple\_fraction
- default\_statistics\_target

From

0.01

To

0.05

27

50

off

on

0.0017

0.0025

0.09

0.1

83

100

# Key Redesign Features:

- **Index and Query Recommendations**

- Transformed informational content into actionable recommendations with SQL code for easy implementation.
- Query recommendations were observations and analysis only. It did not (yet) provide corrected SQL code for the user to take, although that was the ultimate plan.

## Recommendations

DB Identifier: auora-mysql-2334-foobar56-test-instance-1

Region: us-east-2b Engine: PostgreSQL 12 Memory: 32 GiB Storage Size: 2,000 GiB Instance Type: 2,000 GiB vCPU: 8

Knobs

Indexes

Queries

Tables

### Unused Indexes

Index	Logical DB	Table
<input type="checkbox"/> numericmetric_partition_41_pkey Columns: (Date, Product Name, ID, Region, Item, Item, 1+1+1, LOWER(email), Item) Type: BTree	foobardb-29387-instance3984 Schema: Public	numericmetric_partition_41
<input type="checkbox"/> foobardb-29387-instance3984-re... Columns: (Date, Product Name, ID, Region, Item, Item, 1+1+1, LOWER(email), Item) Type: BTree	foobardb-29387-instance3984-foobar... Schema: Public	partitionednumericmetric_partition_1011
<input checked="" type="checkbox"/> foobardb-29387-instance3984 Columns: (Date, Product Name, ID, Region, Item, Item, 1+1+1, LOWER(email), Item) Type: BTree	partitionedstringmetric_partition_735 Schema: Public	partitionednumericmetric_partition_329
<input checked="" type="checkbox"/> numericmetric_partition_744_session_id_idx Columns: (Date, Product Name, ID, Region, Item, Item, 1+1+1, LOWER(email), Item) Type: BTree	aurora-mysql-56-test Schema: Public	PostgresQueryStats
<input type="checkbox"/> numericmetric_partition_744_session_id_idx Columns: (Date, Product Name, ID, Region, Item, Item, 1+1+1, LOWER(email), Item) Type: BTree	testdb-99 Schema: Public	partitionednumericmetric_partition_236_long_name-breaking_to_next_line

→ Copy Command Lines To Delete Unused Indexes

### Duplicate Indexes

Index	Logical DB	Table
<input type="checkbox"/> numericmetric_partition_41_pkey	foobardb-29387-instance3984-foobar	partitionednumericmetric_partition_645
<input checked="" type="checkbox"/> numericmetric_partition_744_session_id...	foobardb-29387-instance3984-foobar Schema: Public	partitionednumericmetric_partition_645

ires:

## mendations

content into actionable code for easy implementation.

Observations and analysis only. Suggested SQL code for the user to take, and a plan.

# Recommendations

DB Identifier: auora-mysql-2334-foobar56-test-instance-1

Region: us-east-2b Engine: PostgreSQL 12 Memory: 32 GiB Storage Size: 2,000 GiB Instance Type: 2,000 GiB vCPU: 8

### Query Code: 3 Issues

```
import { LocalizationProvider } from '@mui/x-date-pickers';
import { AdapterDayjs } from '@mui/x-date-pickers/AdapterDayjs'

function App({ children }) {
  return (
    <LocalizationProvider dateAdapter={AdapterDayjs}>
      {children}
    </LocalizationProvider>
  );
}
```

**Issue 1: Missing Indexes**  
**Recommendation:** Add indexes to tables notification\_configurations, notification\_rules, and notification\_configurations  
**Select all columns is not good practice**  
So you two dig up, dig up dinosaurs? Must go faster. Remind me to thank John for a lovely weekend. Eventually, you do plan to have dinosaurs on your dinosaur tour, right? God creates dinosaurs. God destroys dinosaurs. God creates Man. Man destroys God. Man creates Dinosaurs.

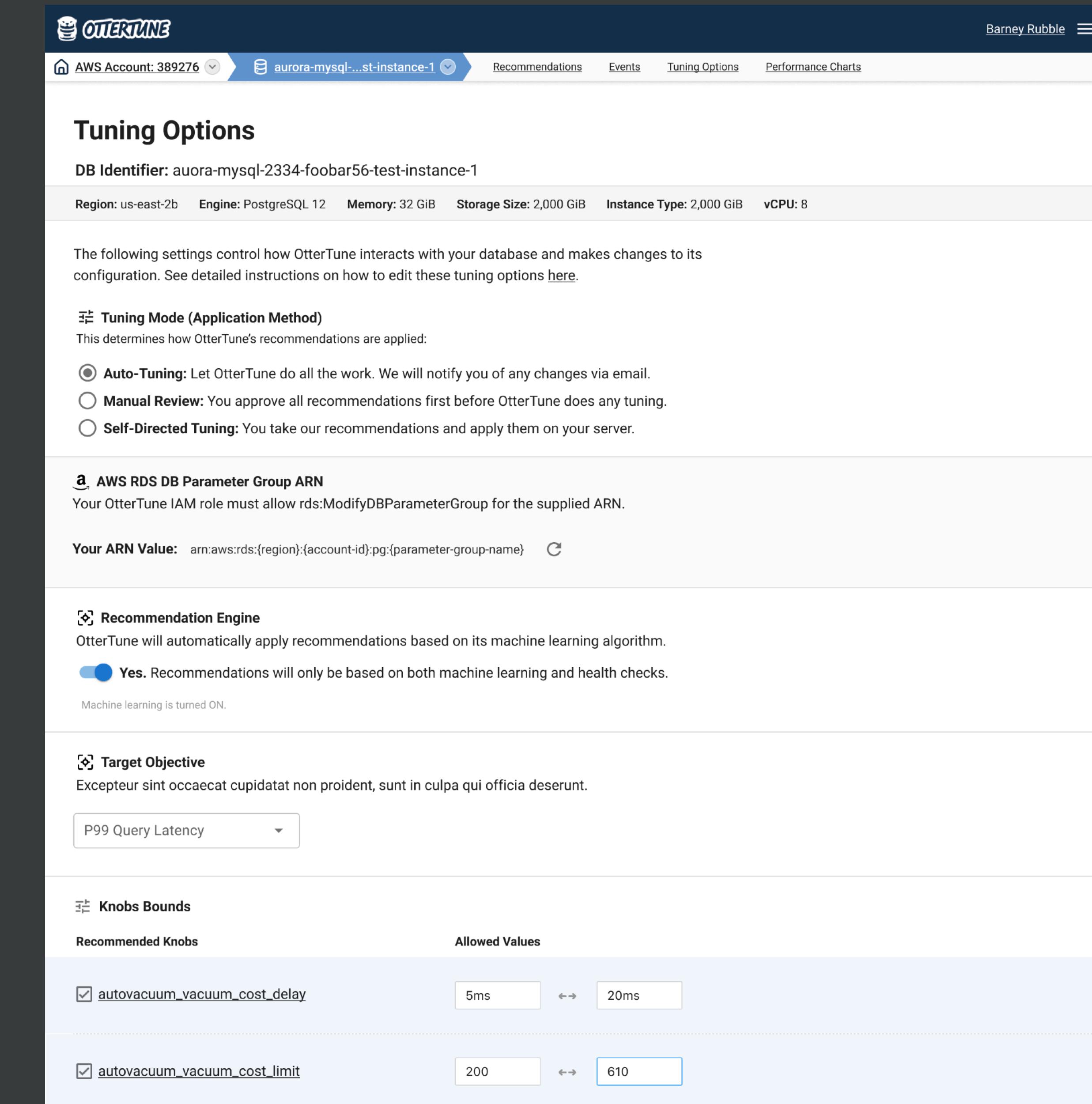
**Issue 2: Foobar Foobar**  
**Recommendation:** Your scientists were so preoccupied with whether or not they could, they didn't stop to think if they should.  
**Limit without order by will cause non-deterministic result**  
This thing comes fully loaded. AM/FM radio, reclining bucket seats, and... power windows. You're a very talented young man, with your own clever thoughts and ideas. Do you need a manager? Do you have any idea how long it takes those cups to decompose.

**Issue 3: Laboris Nisi Ut Aliquip**  
**Recommendation:** Remind me to thank John for a lovely weekend. God help us, we're in the hands of engineers. I was part of something special. I gave it a virus.  
**Insert too many values at one query**  
You know what? It is beets. I've crashed into a beet truck. You're a very talented young man, with your own clever thoughts and ideas. Do you need a manager? Must go faster... go, go, go, go, go! Yeah, but your scientists were so preoccupied with whether or not they could, they didn't stop to think if they should.

# Key Redesign Features:

- **Tuning Options**

- Provided flexible tuning options, including automatic tuning, approval-based tuning, and manual implementation.
- User could select from the following options:
  - **Auto-Tuning:** user would allow OtterTune to automatically change settings for knobs, indexes, tables and more. They would receive email notifications of any change made.
  - **Manual Review:** OtterTune would request permission to make changes on their database, but after user approved first.
  - **Self-Directed:** OtterTune would present the user with recommendations for the user to do on their own in their database console. If needed, SQL code was provided.
  - Users at first typically selected Manual Review in order to gain trust from the OtterTune application. If it did what they wanted and expected, they often switched to Auto-Tuning mode.



The screenshot shows the 'Tuning Options' page for an Aurora MySQL database instance. The top navigation bar includes 'AWS Account: 389276', 'aurora-mysql-...st-instance-1', and links for 'Recommendations', 'Events', 'Tuning Options', and 'Performance Charts'. The user is identified as 'Barney Rubble'.

**DB Identifier:** aurora-mysql-2334-foobar56-test-instance-1

**Region:** us-east-2b   **Engine:** PostgreSQL 12   **Memory:** 32 GiB   **Storage Size:** 2,000 GiB   **Instance Type:** 2,000 GiB   **vCPU:** 8

The page describes how OtterTune interacts with the database and provides a link to edit tuning options.

**Tuning Mode (Application Method):**

This determines how OtterTune's recommendations are applied:

- Auto-Tuning:** Let OtterTune do all the work. We will notify you of any changes via email.
- Manual Review:** You approve all recommendations first before OtterTune does any tuning.
- Self-Directed Tuning:** You take our recommendations and apply them on your server.

**AWS RDS DB Parameter Group ARN:**

Your OtterTune IAM role must allow rds:ModifyDBParameterGroup for the supplied ARN.

**Your ARN Value:** arn:aws:rds:{region}:{account-id}:pg:{parameter-group-name} [Copy](#)

**Recommendation Engine:**

OtterTune will automatically apply recommendations based on its machine learning algorithm.

**Yes.** Recommendations will only be based on both machine learning and health checks.

Machine learning is turned ON.

**Target Objective:**

Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt.

P99 Query Latency

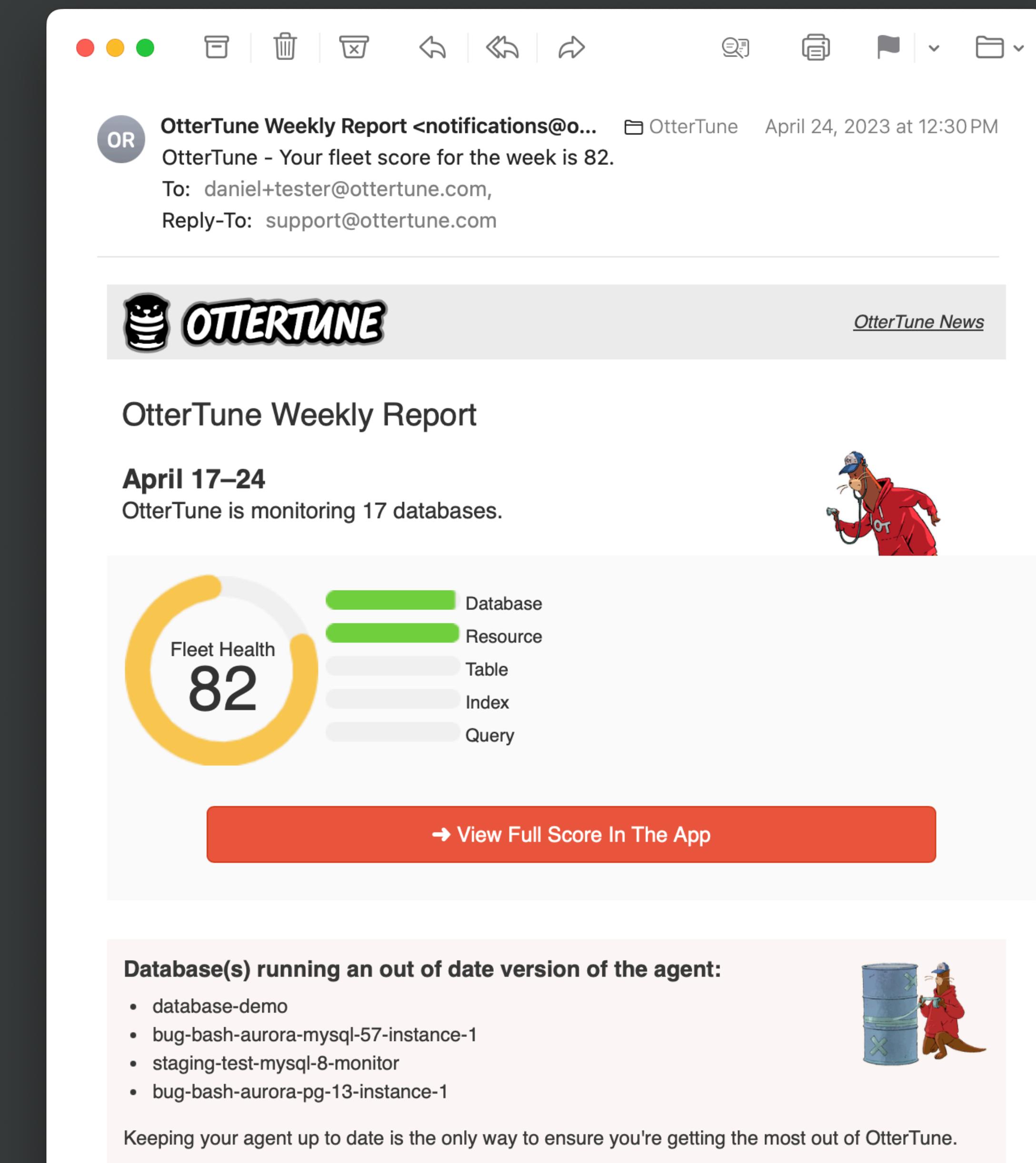
**Knobs Bounds:**

Recommended Knobs	Allowed Values
<input checked="" type="checkbox"/> <u>autovacuum_vacuum_cost_delay</u>	5ms <input type="button"/> 20ms
<input checked="" type="checkbox"/> <u>autovacuum_vacuum_cost_limit</u>	200 <input type="button"/> 610

# Key Redesign Features:

- **Email Notifications**

- Redesigned email notifications to better match with company branding, health score UI and easier ability to read.
- I started the design process in Figma for the email redesign but then finished it by coding out the email in HTML and (inline) CSS to get the true feel for how it would look and delivered to various email clients.



The image shows a comparison between an email client interface and a web browser interface for an 'OtterTune Weekly Report'.

**Email Client View:** The top half shows an email message from 'OtterTune Weekly Report <notifications@ottertune.com>' to 'daniel+tester@ottertune.com' on April 24, 2023, at 12:30 PM. The message content includes the subject 'OtterTune - Your fleet score for the week is 82.', and the 'To:' and 'Reply-To:' fields. The email header includes standard Mac OS X window controls (red, yellow, green buttons) and a toolbar with icons for search, print, and file operations.

**Web Browser View:** The bottom half shows the 'OtterTune Weekly Report' page. It features the 'OtterTune' logo and a sub-header 'OtterTune News'. The main content area is titled 'OtterTune Weekly Report' and includes the date 'April 17–24' and the text 'OtterTune is monitoring 17 databases.' To the right of the text is a cartoon character of an otter wearing a red 'OTTERTUNE' jacket and a stethoscope. Below this is a 'Fleet Health' section with a large yellow circle containing the number '82'. To the right of the circle is a legend with colored bars: green for 'Database', green for 'Resource', light gray for 'Table', light gray for 'Index', and light gray for 'Query'. A red button at the bottom of this section says '→ View Full Score In The App'. The bottom part of the page contains a section titled 'Database(s) running an out of date version of the agent:' with a list of database names: 'database-demo', 'bug-bash-aurora-mysql-57-instance-1', 'staging-test-mysql-8-monitor', and 'bug-bash-aurora-pg-13-instance-1'. To the right of this list is another cartoon character of an otter standing next to a blue barrel with a green 'X' on it. A footer at the bottom of the page says 'Keeping your agent up to date is the only way to ensure you're getting the most out of OtterTune.'

# Key Redesign Features:

- **Onboarding**

- Improved onboarding flow, increasing success rates from 10% to over 30%.
- Connecting a user's IAM permissions on AWS was the most critical access point in onboarding customers.
- Without IAM, OtterTune was useless to a user. There was nothing to report on without access to their account.
- CloudFormation was by far the most popular method used and was visible by default when accessing the page. More advanced, high-end DBAs tended to prefer using Terraform or the AWS IAM Console.
- The redesign allowed for messaging about why they could use and trust OtterTune to make changes to improve their database performance.

## Connect Your IAM Role To OtterTune

To securely connect to AWS, OtterTune requires an IAM Role with read-only permissions. The simplest way to do this is to create the role automatically via CloudFormation.



?

[What is an IAM role?](#)

CloudFormation ⓘ Terraform ⓘ AWS IAM Console ⓘ

1. Create an IAM Role from your AWS IAM Console. Specify another AWS Account ID as the trusted entity and select 'Require External ID'. If you need more instructions, [click here](#).

691523222388

Account ID

6d222960-3e66-47af-9029-1616376dc0bb

External ID

2. Add a new policy to the role with the following permissions.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Action": [
        "rds:Describe*",
        "rds>List*",
        "pi:DescribeDimensionKeys",
        "pi:GetResourceMetrics",
        "cloudwatch:Get*",
        "cloudwatch>List*",
        "cloudwatch:Describe*",
        "ce:Get*",
        "ce>List*",
        "ce:Describe*",
        "budgets:Describe*"
      ],
      "Effect": "Allow",
      "Resource": "*"
    }
  ]
}
```

3. Name and create your role in the AWS Console.

4. Enter in your AWS account number and IAM Role Name to connect.

AWS Account Number ...

IAM Role Name ...

### Welcome to OtterTune!

We look forward to working with you and providing recommendations to help you optimize your databases.

?

[Invite Team Members](#) (optional) ⓘ

### We Are ...

#### Serious About Security

OtterTune does not require access to application data, and what permissions you grant to OtterTune are customizable.

#### Fully Transparent

You have total control over what, when, and how OtterTune applies its recommendations to your database.

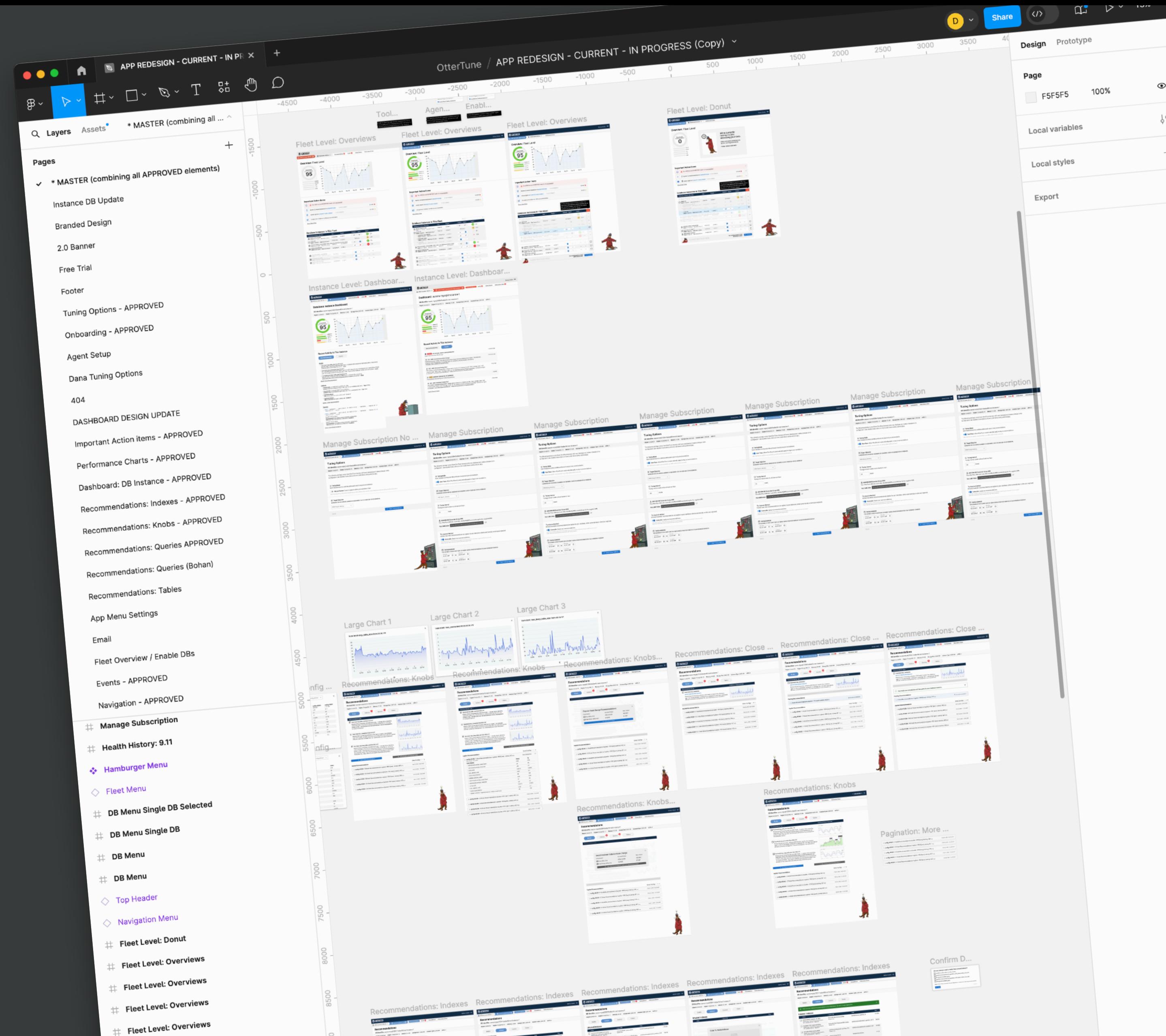
#### Research-Based

OtterTune was founded by database management systems and machine learning researchers from Carnegie Mellon University.

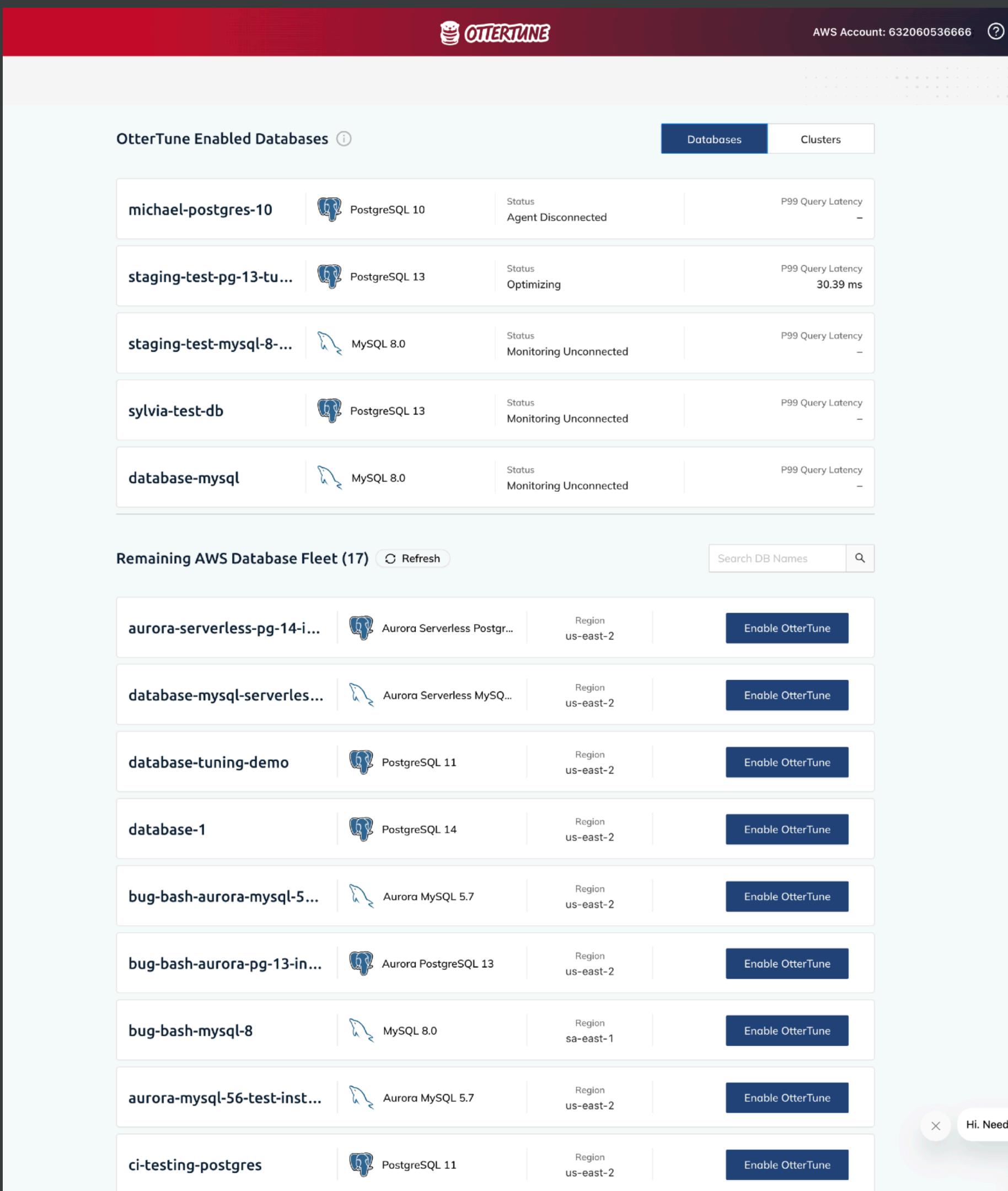
# Outcome:

## • Results of Redesign

- **Efficiency Gains:** Users were able to complete tasks more quickly and efficiently, thanks to the streamlined interface and improved navigation.
- **Revenue Growth:** The improved onboarding flow led to a higher success rate in user setup. Connecting a user's AWS IAM permissions improved from a completion rate of 10% to 25%, with later additional improvements bringing that to 35%.
- **Scalability:** The redesign included a complete rewrite of the backend and frontend, making the application more scalable and easier to maintain and update.
- **Positive Feedback From Users and Stakeholders:** The redesign received positive feedback from stakeholders, including the executive team, engineering team, and power users, validating the design decisions.
- **Brand Refresh:** The redesign was accompanied by a site rebranding, enhancing the company's image and aligning with its new strategic focus.



# Redesign Comparisons: Fleet Dashboard

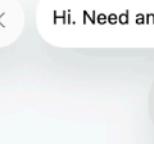


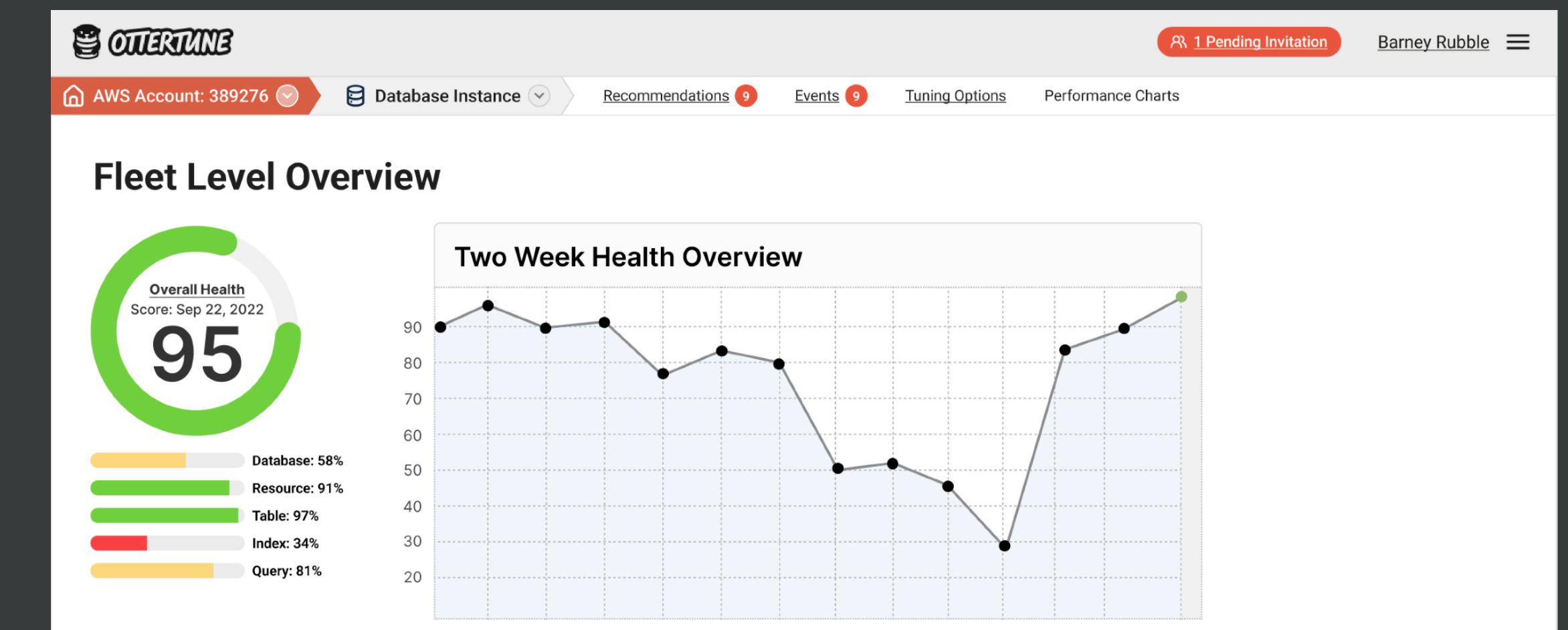
**OtterTune Enabled Databases**

Name	Type	Status	P99 Query Latency
michael-postgres-10	PostgreSQL 10	Agent Disconnected	-
staging-test-pg-13-tu...	PostgreSQL 13	Optimizing	30.39 ms
staging-test-mysql-8...	MySQL 8.0	Monitoring Unconnected	-
sylvia-test-db	PostgreSQL 13	Monitoring Unconnected	-
database-mysql	MySQL 8.0	Monitoring Unconnected	-

**Remaining AWS Database Fleet (17)**

Name	Type	Region	Action
aurora-serverless-pg-14-i...	Aurora Serverless Postgr...	us-east-2	Enable OtterTune
database-mysql-serverles...	Aurora Serverless MySQL...	us-east-2	Enable OtterTune
database-tuning-demo	PostgreSQL 11	us-east-2	Enable OtterTune
database-1	PostgreSQL 14	us-east-2	Enable OtterTune
bug-bash-aurora-mysql-5...	Aurora MySQL 5.7	us-east-2	Enable OtterTune
bug-bash-aurora-pg-13-in...	Aurora PostgreSQL 13	us-east-2	Enable OtterTune
bug-bash-mysql-8	MySQL 8.0	sa-east-1	Enable OtterTune
aurora-mysql-56-test-inst...	Aurora MySQL 5.7	us-east-2	Enable OtterTune
ci-testing-postgres	PostgreSQL 11	us-east-2	Enable OtterTune

Hi. Need any help? 

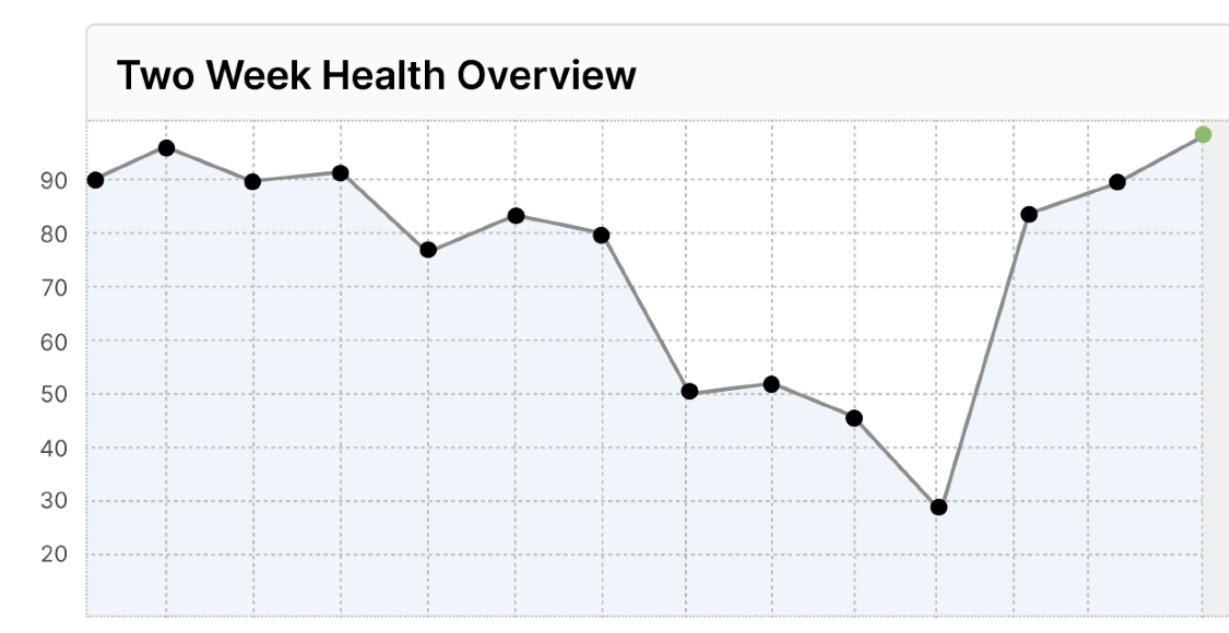



**Fleet Level Overview**

Overall Health Score: Sep 22, 2022 **95**

Category	Score
Database	58%
Resource	91%
Table	97%
Index	34%
Query	81%

**Two Week Health Overview**



Mar 21 Mar 23 Mar 25 Mar 27 Mar 29 Mar 31 Apr 2

**Important Action Items**

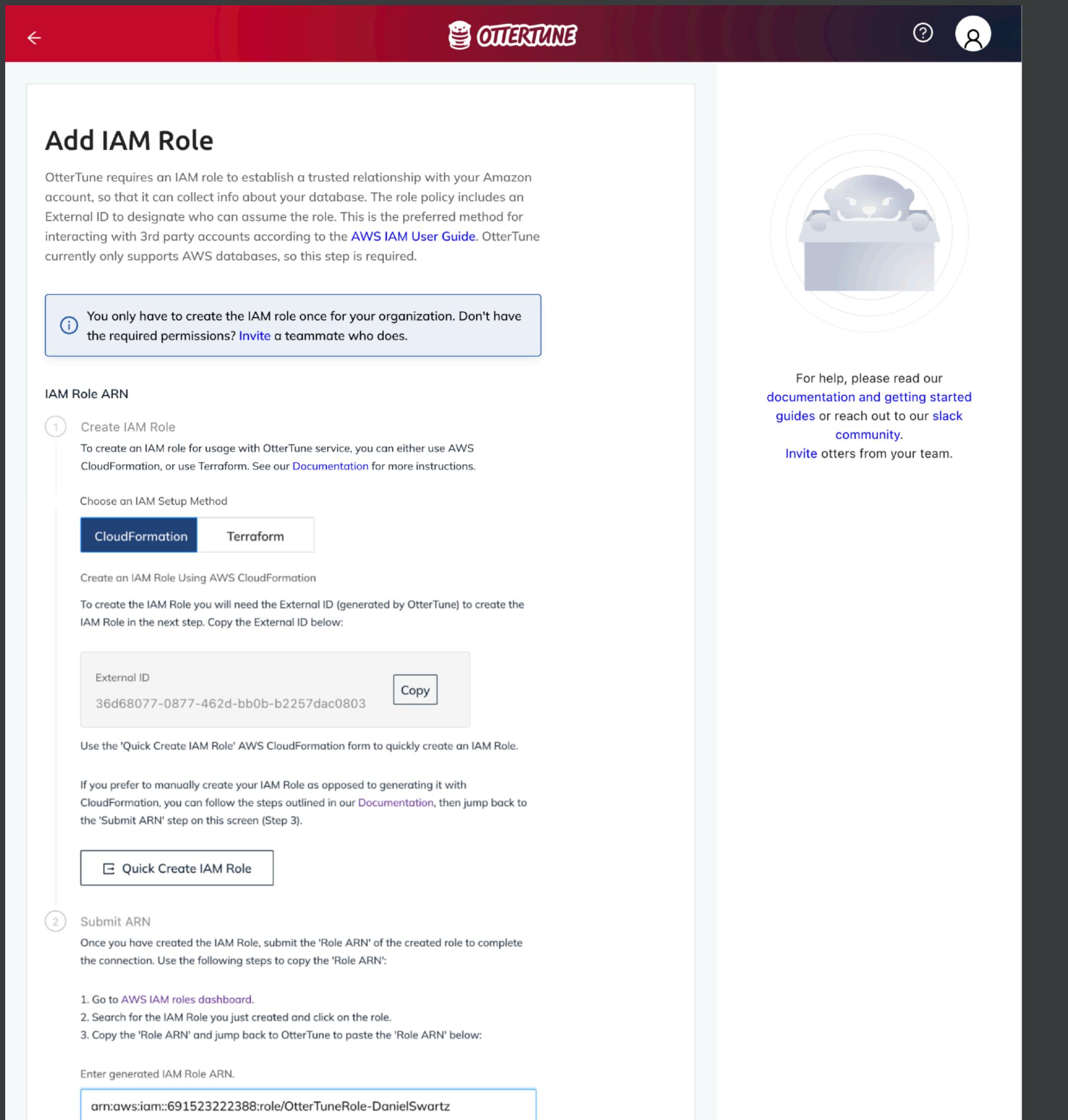
-  **⚠️** Your AWS Account 9879873457 needs to be [reconnected](#).
-  Review 32 recommendations in [testdb-99-foobar](#) (in cluster [testdb-99](#)) DB Health: 

Show 4 More ToDos

**Enabled Database Instances In This Fleet:**

Database Instance Identifier	Size	Region	Agent	Health
aurora-mysql-56-test	dbt3.micro	us-west-2	✓	 3
sqlgateway-history-rds-de-dbconsolidationsqlhistor_dsdek_99387-db2383...	db.t4g.medium	ap-southeast-1	✓	 12
foobardb-29387-instance3984	dbt3.micro	af-south-1	+	 83
postgresql-29827-live-db	dbt3.micro	af-south-1	+	 41

# Redesign Comparisons: Onboarding AWS IAM



**Add IAM Role**

OtterTune requires an IAM role to establish a trusted relationship with your Amazon account, so that it can collect info about your database. The role policy includes an External ID to designate who can assume the role. This is the preferred method for interacting with 3rd party accounts according to the [AWS IAM User Guide](#). OtterTune currently only supports AWS databases, so this step is required.

**1. Create IAM Role**

You only have to create the IAM role once for your organization. Don't have the required permissions? [Invite](#) a teammate who does.

**IAM Role ARN**

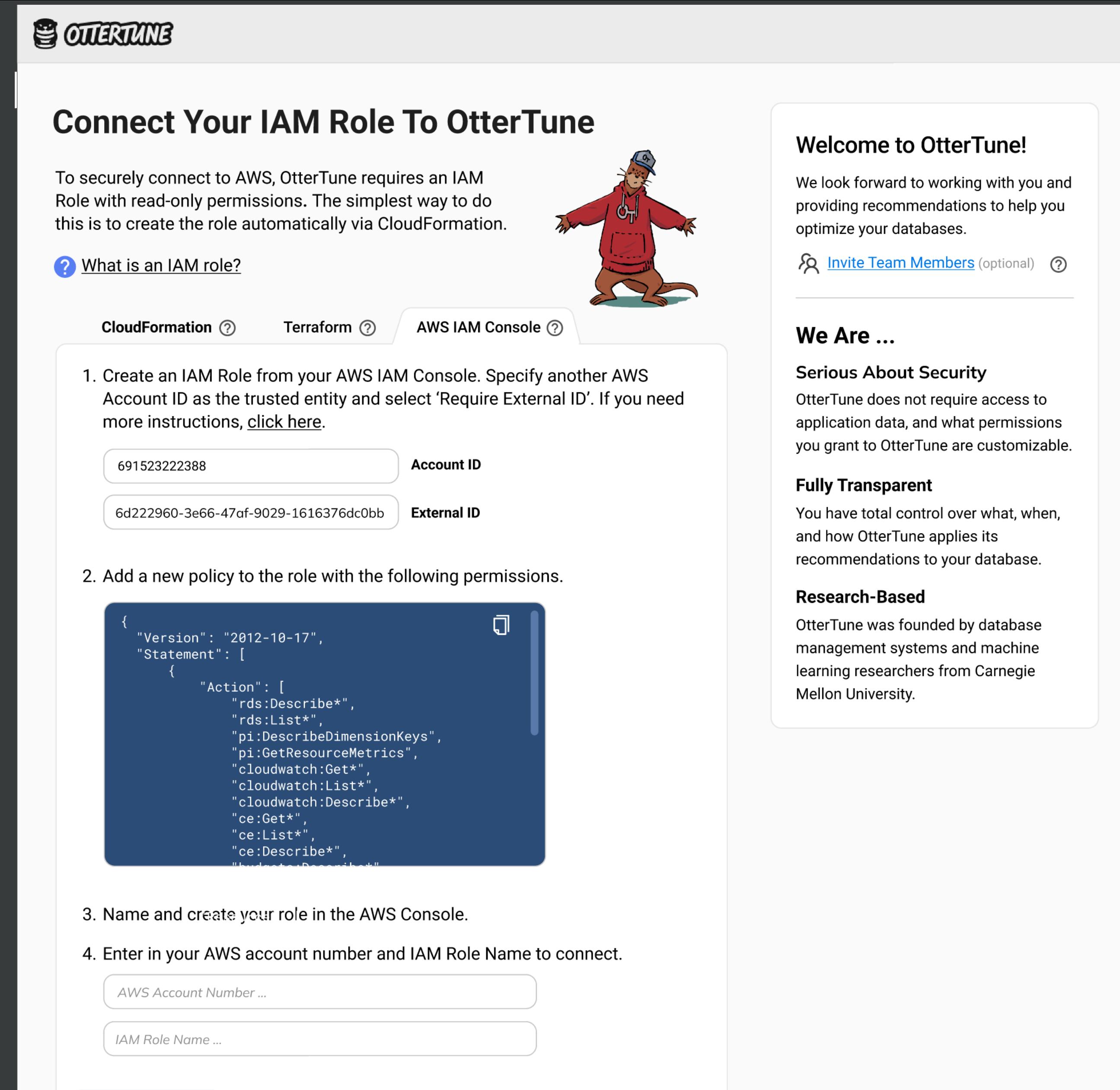
**2. Submit ARN**

Once you have created the IAM Role, submit the 'Role ARN' of the created role to complete the connection. Use the following steps to copy the 'Role ARN':

External ID: 36d68077-0877-462d-bb0b-b2257dac0803

**3. Enter generated IAM Role ARN.**

arn:aws:iam::691523222388:role/OtterTuneRole-DanielSwartz



**Connect Your IAM Role To OtterTune**

To securely connect to AWS, OtterTune requires an IAM Role with read-only permissions. The simplest way to do this is to create the role automatically via CloudFormation.

**What is an IAM role?**

**CloudFormation** [?](#) **Terraform** [?](#) **AWS IAM Console** [?](#)

**1. Create an IAM Role from your AWS IAM Console. Specify another AWS Account ID as the trusted entity and select 'Require External ID'. If you need more instructions, [click here](#).**

691523222388 **Account ID**

6d222960-3e66-47af-9029-1616376dc0bb **External ID**

**2. Add a new policy to the role with the following permissions.**

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Action": [
        "rds:Describe*",
        "rds>List*",
        "pi:DescribeDimensionKeys",
        "pi:GetResourceMetrics",
        "cloudwatch:Get*",
        "cloudwatch>List*",
        "cloudwatch:Describe*",
        "ce:Get*",
        "ce>List*",
        "ce:Describe*",
        "budgets:Describe*"
      ],
      "Effect": "Allow"
    }
  ]
}
```

**3. Name and create your role in the AWS Console.**

**4. Enter in your AWS account number and IAM Role Name to connect.**

AWS Account Number ...

IAM Role Name ...

**Welcome to OtterTune!**

We look forward to working with you and providing recommendations to help you optimize your databases.

[Invite Team Members](#) (optional) [?](#)

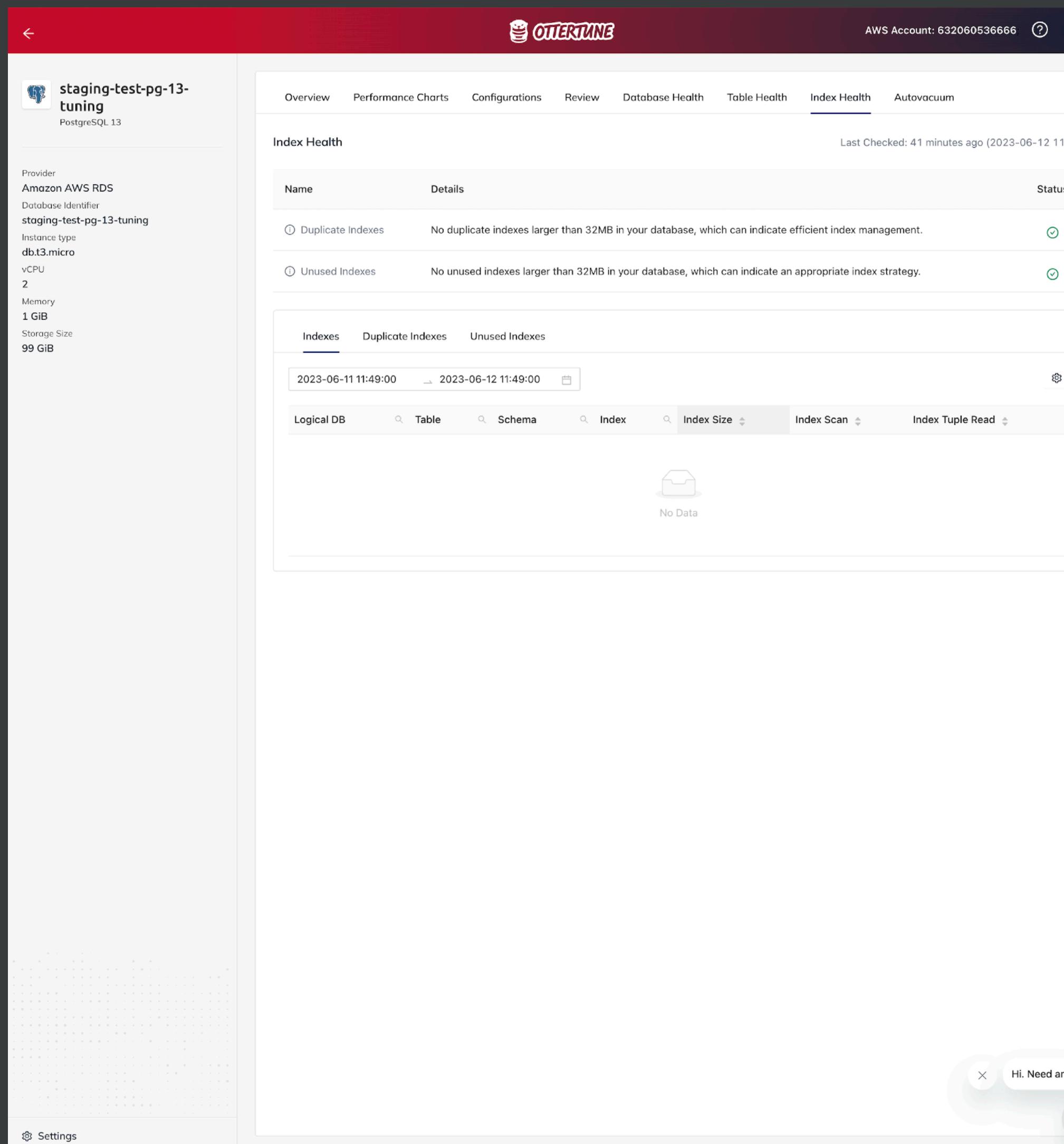
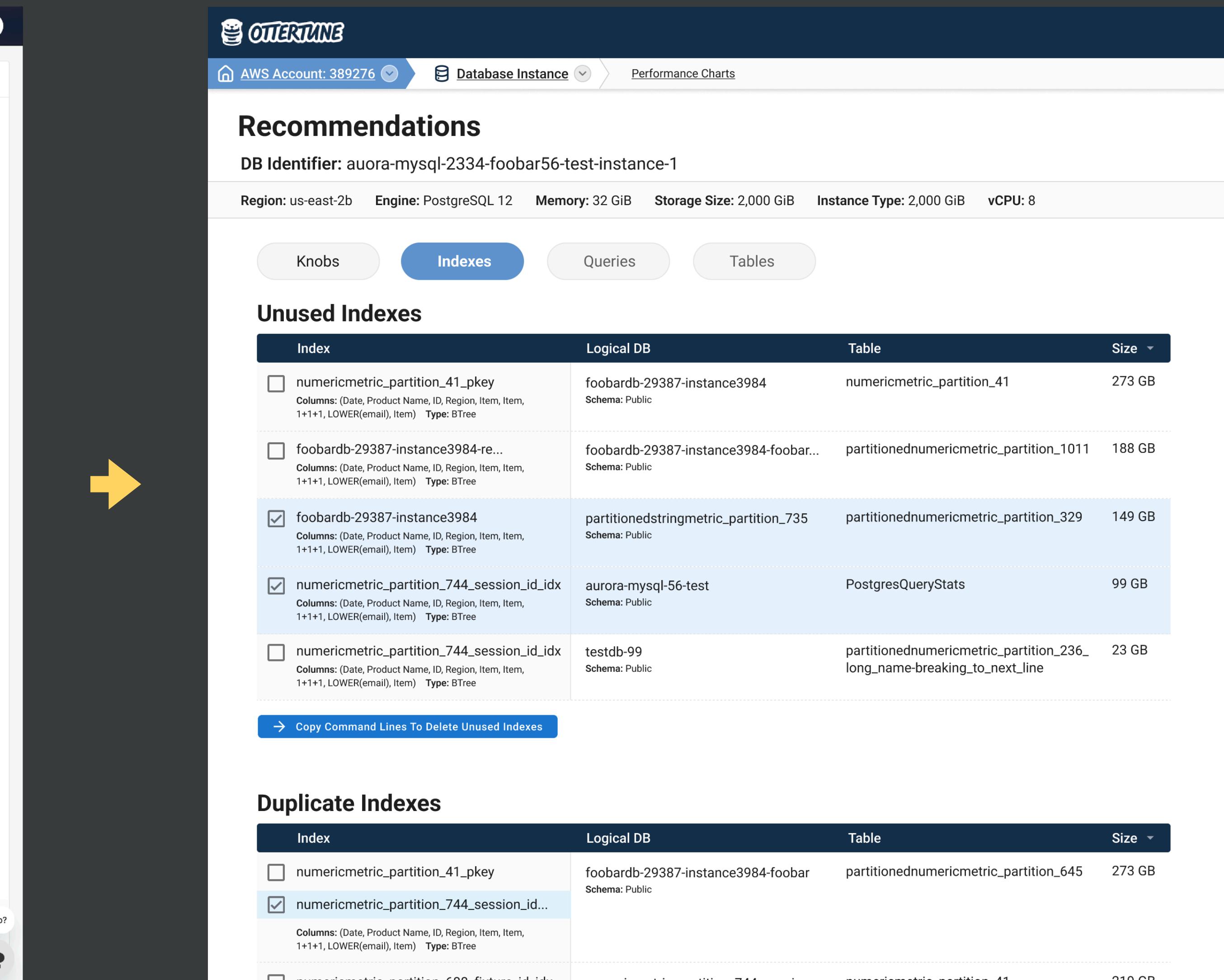
**We Are ...**

**Serious About Security**  
OtterTune does not require access to application data, and what permissions you grant to OtterTune are customizable.

**Fully Transparent**  
You have total control over what, when, and how OtterTune applies its recommendations to your database.

**Research-Based**  
OtterTune was founded by database management systems and machine learning researchers from Carnegie Mellon University.

# Redesign Comparisons: Index Health (originally no recommendations)

## Recommendations

DB Identifier: austra-mysql-2334-foobar56-test-instance-1

Region: us-east-2b Engine: PostgreSQL 12 Memory: 32 GiB Storage Size: 2,000 GiB Instance Type: 2,000 GiB vCPU: 8

Knobs Indexes Queries Tables

### Unused Indexes

Index	Logical DB	Table	Size
<input type="checkbox"/> numericmetric_partition_41_pkey Columns: (Date, Product Name, ID, Region, Item, Item, 1+1+1, LOWER(email), Item) Type: BTree	foobardb-29387-instance3984 Schema: Public	numericmetric_partition_41	273 GB
<input type="checkbox"/> foobardb-29387-instance3984-re... Columns: (Date, Product Name, ID, Region, Item, Item, 1+1+1, LOWER(email), Item) Type: BTree	foobardb-29387-instance3984-foobar... Schema: Public	partitionednumericmetric_partition_1011	188 GB
<input checked="" type="checkbox"/> foobardb-29387-instance3984 Columns: (Date, Product Name, ID, Region, Item, Item, 1+1+1, LOWER(email), Item) Type: BTree	partitionedstringmetric_partition_735 Schema: Public	partitionednumericmetric_partition_329	149 GB
<input checked="" type="checkbox"/> numericmetric_partition_744_session_id_idx Columns: (Date, Product Name, ID, Region, Item, Item, 1+1+1, LOWER(email), Item) Type: BTree	aurora-mysql-56-test Schema: Public	PostgresQueryStats	99 GB
<input type="checkbox"/> numericmetric_partition_744_session_id_idx Columns: (Date, Product Name, ID, Region, Item, Item, 1+1+1, LOWER(email), Item) Type: BTree	testdb-99 Schema: Public	partitionednumericmetric_partition_236_... long_name-breaking_to_next_line	23 GB

→ Copy Command Lines To Delete Unused Indexes

### Duplicate Indexes

Index	Logical DB	Table	Size
<input type="checkbox"/> numericmetric_partition_41_pkey	foobardb-29387-instance3984-foobar	partitionednumericmetric_partition_645	273 GB
<input checked="" type="checkbox"/> numericmetric_partition_744_session_id...	foobardb-29387-instance3984-foobar	partitionednumericmetric_partition_645	273 GB
<input type="checkbox"/> numericmetric_partition_688_fixture_id_idx	numericmetric_partition_744_session ...	numericmetric_partition_41	219 GB

# Redesign Comparisons: Email Notifications

Mac OS Mail interface

Subject: OtterTune Weekly Report <notifications@ottertune.com> | To: daniel+tester@ottertune.com | April 24, 2023 at 12:30 PM

OR OtterTune Weekly Report <notifications@ottertune.com> | To: daniel+tester@ottertune.com | April 24, 2023 at 12:30 PM

OtterTune - Your fleet score for the week is 82.

To: daniel+tester@ottertune.com,  
Reply-To: support@ottertune.com

**WEEKLY REPORT**  
September 19–26

**OtterTune is monitoring 1 database**



Congratulations your database passed its health check!

[View your Dashboard →](#)

**Health Report:**

 **daniel-test-database**

**CPU Utilization** 

Mac OS Mail interface

Subject: OtterTune Weekly Report <notifications@ottertune.com> | To: daniel+tester@ottertune.com | April 24, 2023 at 12:30 PM

OR OtterTune Weekly Report <notifications@ottertune.com> | To: daniel+tester@ottertune.com | April 24, 2023 at 12:30 PM

OtterTune - Your fleet score for the week is 82.

To: daniel+tester@ottertune.com,  
Reply-To: support@ottertune.com

**OtterTune Weekly Report**

**April 17–24**  
OtterTune is monitoring 17 databases.



**Fleet Health**  82

- Database
- Resource
- Table
- Index
- Query

[→ View Full Score In The App](#)

**Database(s) running an out of date version of the agent:**

- database-demo
- bug-bash-aurora-mysql-57-instance-1
- staging-test-mysql-8-monitor
- bug-bash-aurora-pg-13-instance-1



Keeping your agent up to date is the only way to ensure you're getting the most out of OtterTune.

# Questions