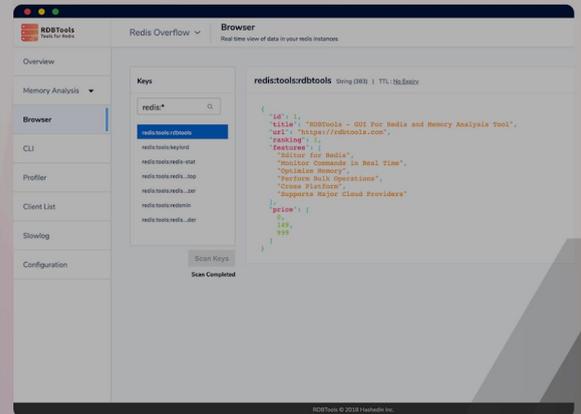


# RDBTools: GUI for Redis Optimization



## Executive Summary

Redis is an open source in-memory data structure store that is used primarily as a database, cache and message broker. Memory optimization is the biggest challenge while using Redis as it is an in-memory database. As developers save more data to Redis, the memory consumption increases, and so does the cost of maintenance with additional hardware requirements and Redis clusters. RDBTools is a cross-platform GUI for redis developed by HashedIn to reduce the memory usage and improve the application performance.

# Problem Statement

Redis open source supports various data structures such as Strings, Hashes, Lists, Sets etc and is widely used by global companies including GitHub, StackOverflow, Instagram, and many more. Popularly used by developers as a memory cache for temporary storage of data, Redis easily provides the raw data. However, Redis open source does not work effectively to interpret the memory usage, execute capacity planning, or gain business insights for cluster data.

A dedicated tool for analyzing the Redis Database could make this possible.

## Business Requirements

### End Objective

To create a tool for Redis database to optimize the application and reduce the memory usage.

### Key Challenges

Memory optimization is the biggest challenge while using Redis. As developers save more data to Redis, the memory consumption increases, and so does the costs of maintenance with additional hardware requirements. The key challenges while using open-source Redis were as follows:

- ▶ Managing configurations becomes difficult as more data is stored in Redis.
- ▶ There is more scope for errors with the management of large Redis servers.
- ▶ Lack of GUI for visibility to analyze the database to gain insights.

The solution was to build a tool with a good GUI that provides easy access and visibility to manage the data in Redis.

## Solution Approach

### Our Solution Structure

HashedIn initiated the Redis -RDBTools open source project in 2012 to develop a solution for Redis memory usage optimization. With further improvements, HashedIn launched the new version of the RDB tool in April 2018 at the Redis conference. RDBTools is designed to provide users with a great UI to access and manage Redis. Equipped with these analytical capabilities, developers can easily manage their Redis configuration to reduce memory usage, identify patterns, and access real-time performance metrics.

## Solution Features and User Interface

Designed for Redis optimization RDBTools comes with features like superior GUI and analytical features. The key features and interface highlights of the tool are as follows:

### 1) GUI Feature For Redis Data

RDBTools comes with a great GUI to manage Redis data. Equipped with user friendly keyboard navigation, it allows users to explore and interact with the data in Redis. With the new GUI, users can execute bulk operations, reverse engineer Python and Java objects. Additionally, developers can also scan keys and perform CRUD operations.

### 2) Analysis Feature For Redis Memory

The RDBTool offers Zero-Impact offline memory analysis and key expiry analysis. The tool has advanced analysis feature and the search feature that empower users to analyze Redis memory usage by key patterns and identify memory leaks. The tool helps developers track memory usage by key patterns and discover strategies to reduce memory usage.

### 3) Tracing Feature For Redis Commands

The RDBTool is equipped with features to identify top key patterns, keys, and commands. The feature allows users to filter data by Client IP Address, Key or Command and work across all cluster nodes. Users can also use the tool to Debug Lua Scripts.

### 4) Intuitive CLI Feature

In addition to an intelligently designed GUI, the tool also comes with features that allow autocomplete with Sytax highlighting and integrated help documentation.

### 5) Features To Manage Redis

The tool also provides real-time performance metrics allowing users to easily manage Redis configuration, view connected clients, and inspect slow commands.

## Technology Stack

- ▶ **Back end:** Django, Python, SQLite, PostgreSQL
- ▶ **Front end:** React JS

# Business Outcomes

By using the RDBTools, users can optimize their Redis usage and save costs. The tool provides the following key business benefits:

- Provides GUI to explore and manage large Redis data.
- Enables monitoring of Redis commands in real-time.
- Offers analysis and recommendations for improving Redis memory usage.
- Reduces overall costs for maintaining Redis Database.
- Gives intelligent business insights from Redis Data.

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*HashedIn is an IT services and consulting company that builds intelligent SaaS solutions for its global clients. With nearly a decade of SaaS expertise, HashedIn has built robust solutions for 100+ clients worldwide, including companies like Honeywell, NetApp, WinZip (a Corel Company), and Aruba. Learn about Intelligent SaaS Solutions, mail us at: [contact@hashedin.com](mailto:contact@hashedin.com)*

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