DBtune: AI-powered database tuning

Perform Better. Spend Less.

Since the inception of relational database management systems (RDBMS) in the 1970s, the importance of configuration settings and tuning has been widely acknowledged in the pursuit of achieving peak performance. The dream of self-sustaining systems that tune and optimize themselves has long captivated database experts.

The challenge: Default database configurations often fall short of delivering optimal performance. The intricacies of data interaction, application behavior, and underlying hardware necessitate tailored configuration adjustments, also known as tuning.

The problem: Neglecting database tuning can trigger a range of issues. These include sluggish response times, inflated infrastructure costs, increased downtime, decreased productivity, dissatisfied end users, missed business opportunities. In today's competitive landscape, these consequences can significantly hinder an organization's growth and reputation.

The solution: DBtune's AI-powered, automated adaptive tuning service revolutionizes parameter tuning. It emerges as the go-to solution for PostgreSQL configuration challenges. Unlike traditional manual tuning, vendor-specific tools, or DIY approaches, DBtune leverages advanced intelligent machine learning to dynamically adapt, uncover and deliver optimal configuration settings, based on the specific workload and individual hardware constraints.

Why should you care?

- Enhance transaction performance up to 6x
- Slash query runtimes up to 10x
- Reduce infrastructure costs up to 50%
- Boost productivity
- Improve scalability
- Future-proof your application

DBtune diagram for self-managed PostgreSQL instance
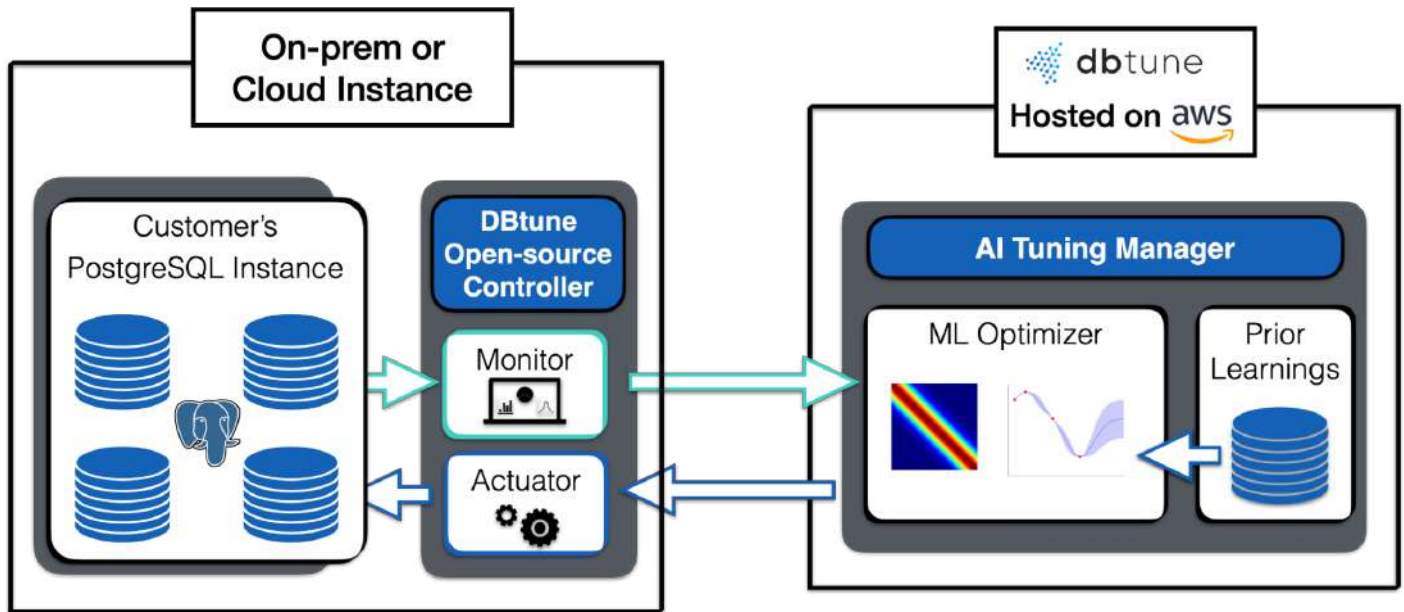
DBtune is an optimizer as a service (OaaS)

The DBtune SaaS has two components.
1. Client-side open source controller (on the left). Installed on same machine as the PostgreSQL instance. Collects runtime information (using psutil and pg_stat_statements), installs new configurations in the conf.d directory, and collects performance measurements.
2. DBtune's AI tuning manager (on the right). Receives performance data collected from the controller. Combined with data from previous sessions, it continuously analyzes new data and refines the internal machine learning models before automatically updating the PostgreSQL instance with a new configuration.

Features and capabilities

- User set optimization targets: Throughput or latency

- Deployed on premise or as SaaS

- Tune bare metal or cloud-based instances

- Compatible with managed services and self-managed instances

- Identify optimal configuration within 3 hours

> 📍 **The adoption of AI**
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> *Gartner survey finds 79% of corporate strategist see AI as critical to their success over the next two years* (Gartner, July 2023).

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dbtune

Create an account and start your free trial at **www.dbtune.com**
Get in touch at **info@dbtune.com**

DBtune performance result

These results were generated using the standard Wikipedia OLTPBench benchmark.

Throughput (higher the better) — **Latency (lower the better)**
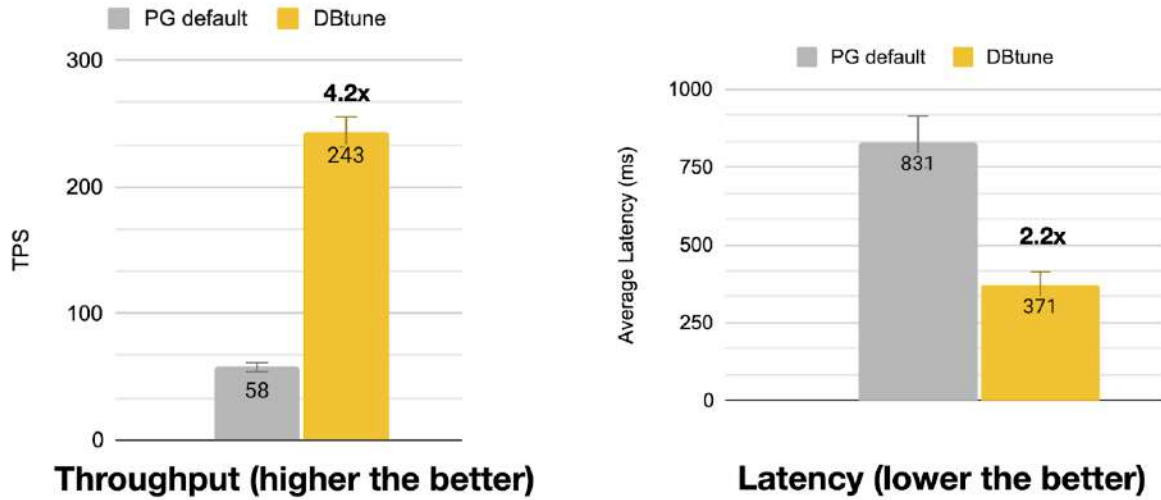
Compared to default PostgreSQL configuration, called the PG default in the figure, DBtune improved performance by 4.2x from 58 to 243 transactions per second. When optimization target is set to latency, DBtune increased the performance by 2.2x, reducing average latency (ms) from 831 ms to 371 ms.

Proof of savings on Amazon RDS

These results show the performance impact on the cost of the cloud instance of tuning RDS *m5.2xLarge* cloud instance on TPCC. In the chart, we display throughput (TPS) improvements while tuning an RDS *m5.2xlarge* instance. The performance in TPS is on the y-axis and time in terms of tuning iterations is on the x-axis. The baseline *m5.2xlarge* PostgreSQL DBMS by RDS achieves 888 TPS (red line).
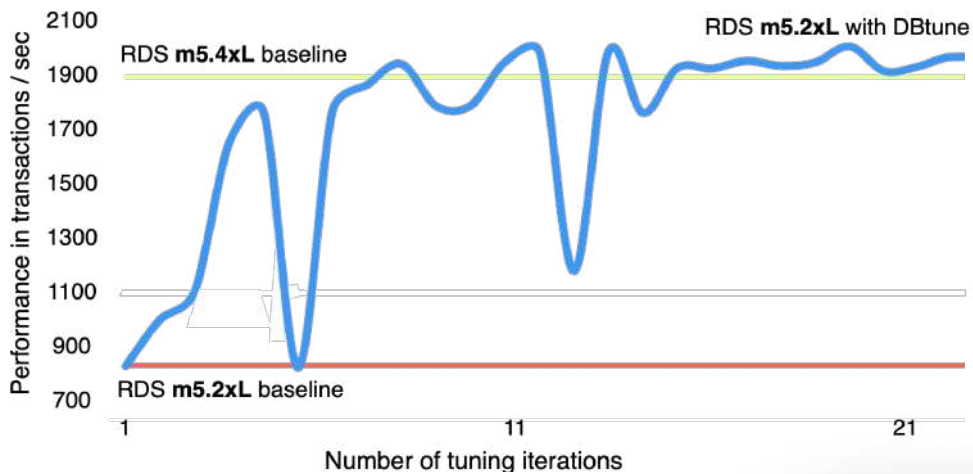
Doubling the machine size to *m5.4xlarge* for the same workload nearly doubles throughput to 1889 TPS (green line).

The blue line represents DBtune's performance improvement on *m5.2xlarge* through machine-learning-driven optimization. After 21 iterative configurations, a stable state exceeds 1900 TPS. At its peak, DBtune accelerates performance by 2.25x, from 888 to 1998 TPS, surpassing the gains from doubling the instance size.

📍 50% saving on Amazon RDS

DBtune save $8,638 per year of RDS cost by matching 4xL performance on a 2xL instance. This equates to a 50% saving.

AWS RDS instance type	Cores	RAM	IOPS	Instance	EBS	Total
db.m5.4xlarge	8	64 GBs	4000	$12,475	$4,800	$17,275
db.m5.2xlarge	4	32 GBs	2000	$6,237	$2400	$8,637

Leveraging automation and AI, DBtune optimizes the *m5.2xlarge* AWS instance to match the performance of the larger *m5.4xlarge* instance. This reduces the annual cost from $17,275 to $8,637, saving users $8,638 per instance. For companies with many instances, these savings become substantial.

Testimonials

Martin Engdahl
DbVisualizer CEO

We see a lot of potential in DBtune's ability to optimize our customers' workloads. This is a state-of-the-art optimizing service that is robust and flexible enough to integrate tightly with our platform.

Clement Pang
Co-founder at Wavefront by VMware

We saw a 34% improvement in our FoundationDB testbed, while we were hoping for a 10% improvement...DBtune exceeded our team's expectations.

Peder Refsnes
Anteo CTO

It only took 10 minutes to set up DBtune on our Google Cloud PostgreSQL data platform...The process was easy and pleasant.

DbVisualizer

vmware®

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