dbtune

AI-powered PostgreSQL tuning

Perform better, spend less.

Since the inception of PostgreSQL in the 1980s, the importance of server parameters and tuning has been widely acknowledged in the pursuit of achieving high performance. The dream of auto-tuning systems has long captivated database experts.

The challenge

Default PostgreSQL server configurations often fall short of delivering optimal performance. The intricacies of data interaction, application behavior, and underlying hardware necessitate tailored server parameter adjustments, also known as tuning.

The solution

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

The problem

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

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

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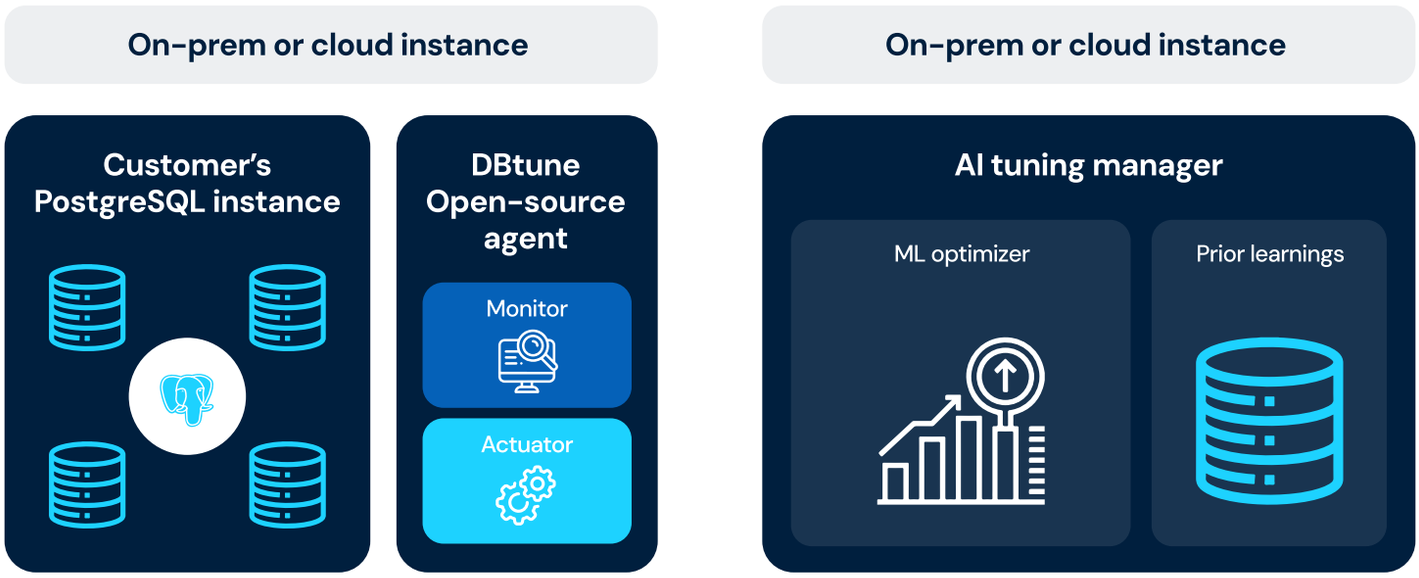
DBtune diagram for self-managed PostgreSQL instance



DBtune is an optimizer as a service (OaaS)

The DBtune SaaS has two components

1. Client-side open source agent (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 agent. Combined with prior domain-specific knowledge about PostgreSQL server parameters, it continuously analyzes new data and refines the internal machine learning models before automatically updating the PostgreSQL instance with a new set of server parameters.

Features and capabilities

- User set optimization targets: Throughput or latency
- Deployed on-premises or as SaaS
- Provides optimal configuration within 3 hours
- Tune bare metal or cloud-based instances

The adoption of AI

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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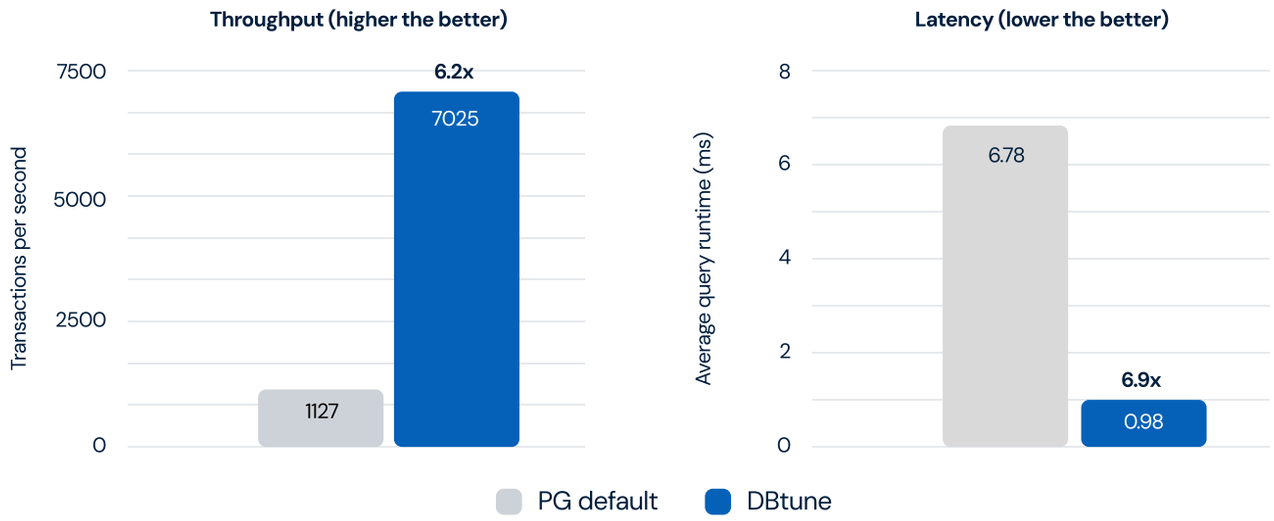
DBtune performance result

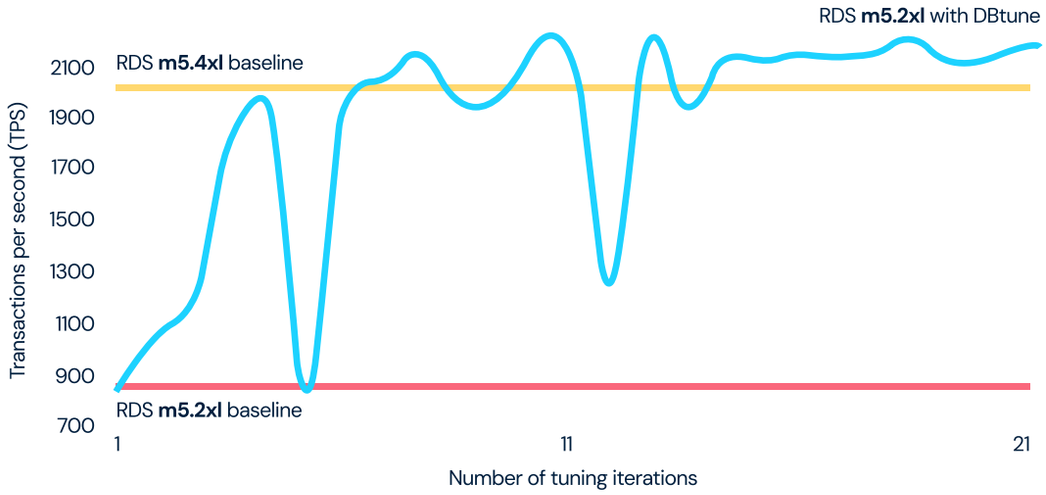
These results were generated using the standard Epinions.com OLTPBench PostgreSQL benchmark.



Compared to default PostgreSQL configuration, DBtune improves the average query runtime (AQR) by 6.9x from 6.78 ms to 0.98 ms. Additionally, DBtune simultaneously improves the transactions per second (TPS) by 6.2x from 1127 to 7025.

Proof of savings on Amazon RDS PostgreSQL

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).



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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 PostgreSQL
DBtune save $8,638 per year of RDS cost by matching 4xlarge performance on a 2xlarge 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	$2,400	$8,637

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 DBtunes 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."

Anant Kumar
Airtel CIO digital

"DBtune seamlessly integrated into a production system of a mission critical Airtel application. We've been impressed by the reliability and robustness of the DBtune product, and the team has enjoyed evaluating the platform."

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 airtel Anteo

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