



# CounterPath

## How CounterPath accelerates their Postgres queries up to 1000x using pganalyze

*"pganalyze helps us narrow down the exact slow SQL queries we are looking for. It surfaces our most urgent issues to us so we can proactively work on improving performance as opposed to customers letting us know the current limits."*

**Jim O'Brien, VP Server Engineering, Operations and IT**  
CounterPath



## About CounterPath.

**CounterPath Corporation (NASDAQ: CPAH) is revolutionizing how people communicate in today's modern mobile workforce. Its award-winning Bria solutions for desktop and mobile devices enable organizations to leverage their existing PBX and hosted voice call servers to extend seamless and secure unified communications and collaboration services to users regardless of their location and network.**

The company's technology meets the unique requirements of a variety of industries, including service provider, contact center, retail, warehousing, hospitality, and healthcare verticals. CounterPath solutions are deployed worldwide by 8x8, Airbnb, AmeriSave, Aspect, BT, Citibank, Comcast, Fusion, Fuze, Honeywell, Liberty Global, Uber, Windstream, and others.

CounterPath solutions are built on open-source technologies, using PostgreSQL as a system of record for multiple core server products. Typically, applications are written in Java or C++ and access either the primary database, or run as a dedicated service that receives replicated data using the pglogical Postgres extension.

**60 countries**

Customers around the globe

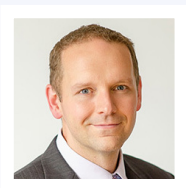
**320 million**

SQL queries per day

## How CounterPath uses pganalyze for Postgres Monitoring

**CounterPath is using pganalyze successfully to improve database performance, benefiting from, amongst other things:**

- ▶ Deep insights into Postgres that help surface important and urgent issues
- ▶ Query analysis and missing index checks
- ▶ pganalyze EXPLAIN Insights to learn how the database is actually executing queries and to see what's slow and what's fast
- ▶ Built-in pganalyze recommendations to optimize slow queries



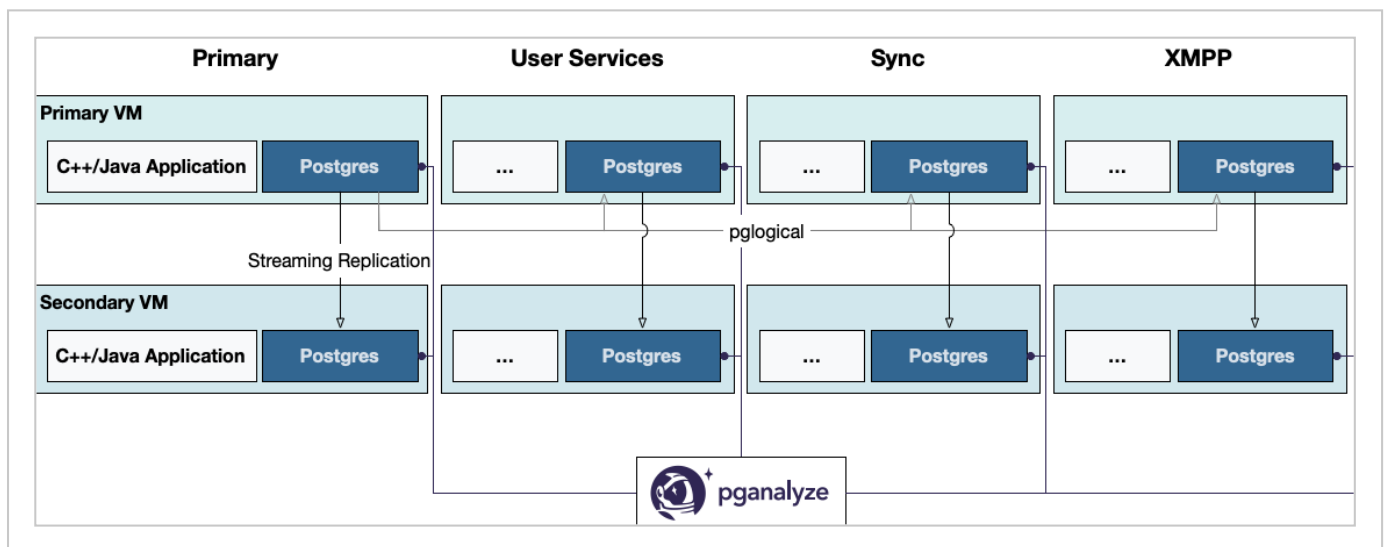
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## Postgres at CounterPath

The application team at CounterPath works with Postgres databases every day. They are a core component for the company's Stretto™ Platform, which provides services for Bria Solo, Bria Teams, and Bria Enterprise, as well as custom developed solutions.

Let's take a closer look:



Postgres is the main persistent datastore, and in addition Redis is being used as a communication channel between different services. The overall architecture is still quite traditional, primarily built on virtual machines. Currently, databases and services live together on the VM, as opposed to being separated out like in a Microservices model. All the

lightweight services, such as provisioning, admin, etc. run by themselves. All the information data goes into a primary database and **pglogical is used to replicate the data into specialized services.**

After initially building on a proprietary in-memory database, CounterPath switched to Postgres many years ago, having first used PostgreSQL 8.4, and currently running their systems on Postgres 11.

The heavy use of Postgres at CounterPath doesn't come without its challenges. Scaling out Postgres and achieving predictable query performance has been difficult for the team. When the team encountered database issues, they had to manually log in to the database and look at the Postgres statistics tables, or use JMX (for their Java applications) to see which functions and associated SQL queries were taking a long time to run.

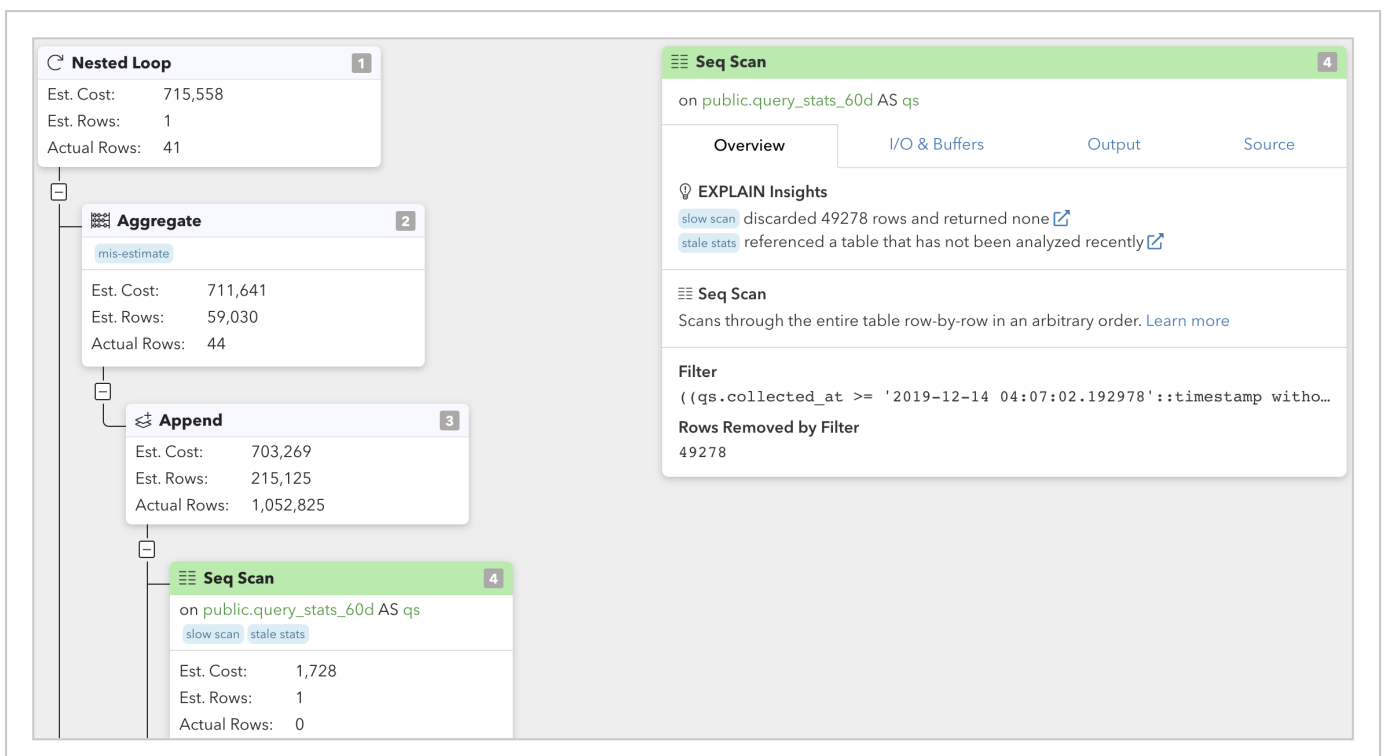
## Deep insights and recommendations on database performance optimization

**Before switching to pganalyze, detailed query statistics and meaningful insights into the database were often not available.** In order to get actionable information on database performance, Jim O'Brien (VP Server Engineering,

Operations and IT) and his team had to manually look into the database logs to see information about slow queries. There was built-in friction that made answering questions like **“Why is this customer having a slow experience? Is our database having issues?”** harder than it needed to be.

Today, CounterPath developers are looking at pganalyze multiple times per week to get a **prioritized view** of what they should be working on next, and what could be improved upon.

The team is also actively looking at EXPLAIN plans via **pganalyze EXPLAIN insights** to see how the database is actually executing a query. This lets them identify what parts of a query could be optimized.



## Proactive database analysis leading to better customer experience

With pganalyze, the CounterPath team can be proactive and doesn't have to rely on customer feedback to discover database issues. As described by Jim in his role as manager and team lead:

"It is great that **we now can be proactive as opposed to reactive** when working on improvements. We are not just using pganalyze to get insights on user load, but also for doing QA. For example, by performing activities like doing a large-scale load test against the sync server to see what pganalyze can tell us about it."

Jamie adds, "We use pganalyze frequently to identify problem areas to work on in our database setup. It's instrumental to see how often each query is called, not just which queries are slow."



*"With pganalyze's help, we improved a query that led to an instant CPU utilization drop from 400% down to 25% on the live database server. It was really cool to see such a dramatic difference."*

**Jamie Strachan, Development Team Lead**  
CounterPath

## The impact of pganalyze

### 1) Reduced database CPU utilization by 16x

Jamie Strachan (Development Team Lead) remembers a specific improvement that pganalyze helped his team make.

“We were excited when we started to use pganalyze and saw all the insights it could give us. pganalyze empowers us to understand how we can improve Postgres performance. After setting up pganalyze, we optimized the sync server for our Bria Solo product and **improved some queries by orders of magnitude**. We had a query that was filtering only by `account_id`, but the existing index was `(user_id, account_id)`, so we were constantly doing sequential scans over all accounts.

Adding a temporary index on `account_id` (until we could patch the code to add the `user_id` to the query) caused the CPU to drop instantly from 400% down to 25%.”

### 2) Reduced database startup time by 4x

Jamie also recalls another big win for CounterPath was reducing database startup times: “Some of our systems took 10 or even 20 minutes to replicate. But



thanks to changing our shared\_buffers setup, and a few other changes, we improved performance 4x. This has had a real benefit to us as it speeds up maintenance tremendously.”

### **3) Optimized Postgres Query Performance by up to 1000x**

When asked for further examples, Jamie mentioned that one particular query his team had took over 1 second to run, which is now taking 1/10th of a millisecond to run.

“We were running this query 100s of times a minute. After getting insights from pganalyze we optimized the query and improved it 1000x. With pganalyze, we can push query improvements regularly with every new patch release. **Today, we are running pganalyze on basically every service we have.**”

## Conclusion

With the help of pganalyze, CounterPath receives detailed query statistics and meaningful insights into their database, can be proactive as opposed to reactive on managing their customers' experiences, and can catch potential issues before they become real problems. Thanks to the detailed analytics and the built-in recommendations, CounterPath engineers are working more efficiently.



*"Recently, after using pganalyze to gain insights into a performance issue, it helped us optimize 5 queries that helped improve performance by 1000x."*

**Jim O'Brien, VP Server Engineering, Operations and IT**  
*CounterPath*

## Try pganalyze for free

pganalyze can save you and your development team many hours spent debugging database performance, and lets you spend that time on strategic efforts and application development instead.

Get started easily with a [free 14-day trial](#), or [learn more about our Enterprise product](#).

If you want, you can also [request a personal demo](#).



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**Jim O'Brien, VP Server Engineering, Operations and IT**  
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# About pganalyze.

**DBAs and developers use pganalyze to identify the root cause of performance issues, optimize queries and to get alerts about critical issues. pganalyze surfaces opportunities to optimize Postgres performance and gives recommendations that help speed up queries. It comes with helpful security features like PII filtering and SSO integration.**

Founded in 2012, pganalyze provides deep, actionable insights into Postgres. Specializing in PostgreSQL database monitoring and optimization, pganalyze gives automatic insights into Postgres query plans, helps improve Postgres query performance with its Index Advisor, and lets you perform query drill-down analysis, observe per-query statistics and conduct trend analysis - all in one platform that integrates with **both self-managed Postgres servers as well as Database-as-a-service providers** like Amazon RDS.

Today, hundreds of customers with teams ranging from 5 to thousands of engineers are using pganalyze **in the cloud or on-premise.**

Get started easily with a [free 14-day trial](#), or [learn more about our Enterprise product](#).

If you want, you can also [request a personal demo](#).