



# From DBA to DB Agents

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[PostgreSQL & AI Summit](#)

PostgreSQL Conference Europe 2025, Community Events Day

# My journey with Postgres



Started as a DBA in 2012



Manual performance tuning, upgrades, backups



Supported dev teams with query design and troubleshooting



A lot has changed, but core instincts remain valuable



# DBA responsibilities



Installation & Configuration



Maintenance & Optimization



Monitoring & Observability



Upgrades & Migrations



Backup & Recovery



Lock management & Schema migrations



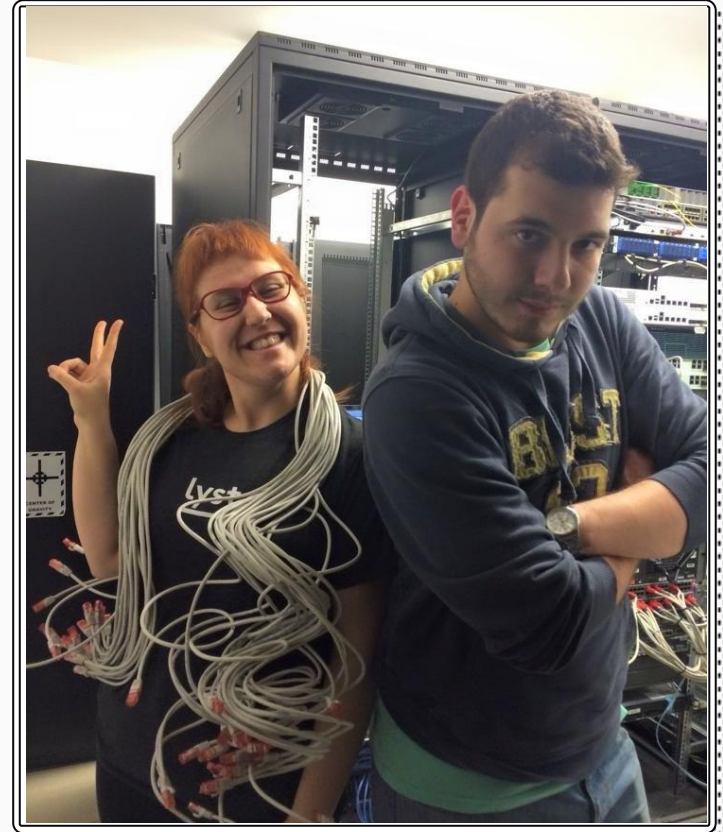
Performance & Query tuning



Automation & Tooling



## A lost trade: DBA



What does a PostgreSQL DBA do? (Turkish, 2015)

# DevOps, Site Reliability & Platform Engineering



IT automation & orchestration tools emerged (e.g Ansible, Chef, Puppet, Saltstack)



Provisioning & Configuration management



Application deployment & Continuous delivery



Security & Compliance

# Ansible's Playbook concept



New patterns: Configuration as Data (YAML files),  
Infrastructure as Code, Infrastructure as Data



A Playbook contains Plays. Plays contain Tasks.  
Tasks call Modules.



In Ansible, Playbooks organize Tasks. Roles organize  
Playbooks.



Suddenly you could manage lots of resources

# Ansible's Playbook concept

```
- block:
  - name: Install pg_hba.conf
    template:
      src: "{{ hba }}"
      dest: "{{ postgres_conf_dir }}/pg_hba.conf"
      owner: "{{ postgres_user }}"
      group: "{{ postgres_group }}"
      mode: "0644"
    when: _postgres_create_hba_file
    notify:
      - Note Postgres reload required

  - name: Set a fact for contents of pg_hba.conf
    set_fact:
      postgres_pg_hba_config: "{{
        lookup('ansible.builtin.template', hba)
        |split('\n')
        |reject('match', '#')
        |list
      }}"
    when:
      hba != ''
  vars:
    tmpl: pg_hba.conf.j2
    hba: "{{ postgres_hba_template|default(tmpl) }}"
```

[Example](#) from open source TPA project (past contributor)



# Let's talk about on-call



**joshobrien77**  
@joshobrien77 · Follow

Any tips on how to get to sleep when pager duty rips you out of bed seconds before you are sound asleep?

8:52 AM · Dec 17, 2019



**julian**   
@JulianVModesto · Follow

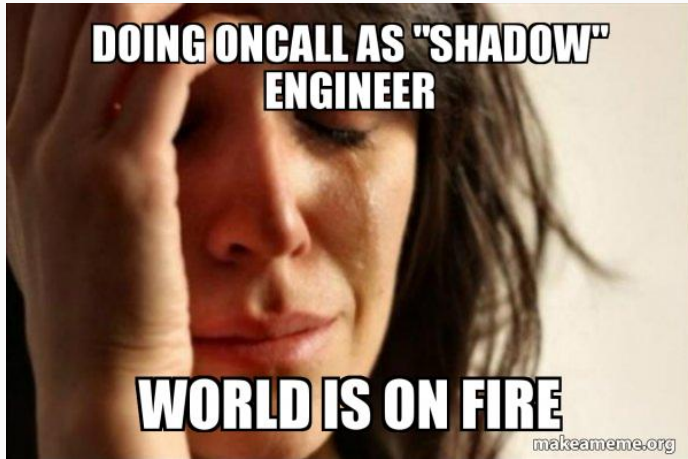
my greatest fear is getting a high priority page while on-call in a packed broadway theater and like pagerduty plays a progressively louder and louder quacking siren and alexander hamilton himself comes up to slap me and my phone out of my hand and walks me out of the theater

11:03 PM · Jan 28, 2020





# How an AI agent can help



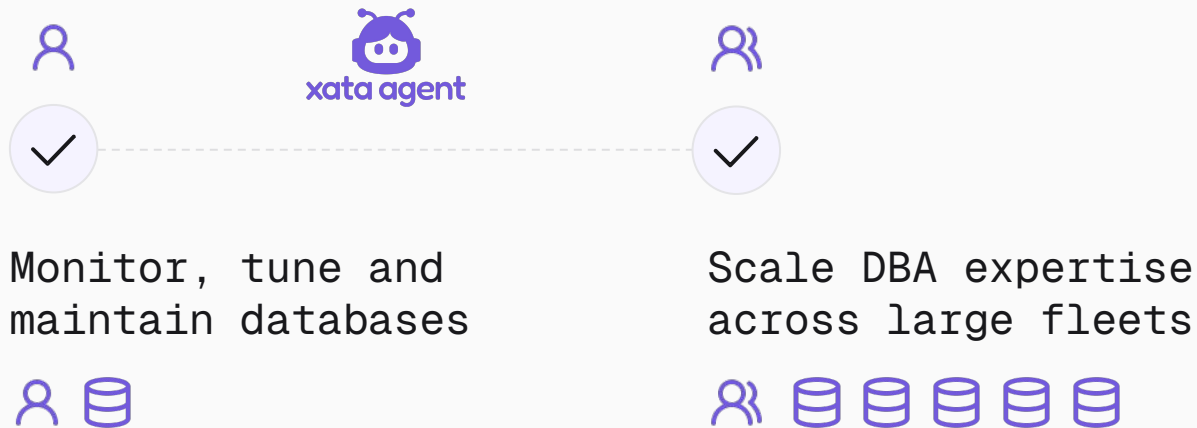
## Picture this:

An agent that's **always on-call**. No sleep. No burnout.  
No missed alerts. It watches your systems 24/7, reacts instantly  
and only wakes a human when it really matters.

## The big idea

**What if we could turn years of  
DBA/SRE instincts into a smart,  
LLM-powered Postgres agent?**

# From DBA to DB Agent



# Designing the Xata Agent



Internal tool for managing many Postgres clusters



Built on lessons from classic DBA work



Combines:

- SQL analysis
- Logs and metrics
- Prompted reasoning from LLMs

# Agent concepts: Playbooks

Imagine a DBA/SRE's playbook, then remember the Ansible playbooks. We inherited the same logic.

**Playbooks** are a sequence of steps that the Agent can follow to detect, diagnose, and fix issues in the Postgres database. Playbooks are written in English and you can easily create your own, or modify the pre-built ones.

# Agent concepts: Playbooks



U

⚡ Starter guide (75%)

- 📖 Connect to Database
- 📖 Collect Database Info
- ☁️ Cloud connect
- 🔔 Setup notifications

💬 Chat

📝 Playbooks

📊 Monitoring

Chat History



📄 New chat

📄 Common Database Errors

📄 Database Performance Issue...

📄 Optimizing Database Queries

📄 SQL Query for Top 10 Tracks ...

☐ Collapse menu

## Edit Playbook

Name

dailySummary

Description

Creates a daily summary of the agent

Playbook Content

🔄 Generate Content

Objective:

Provide a summary of the agent and PostgreSQL database for last 24 hours. Include the number of times each playbook ran, a health status for the databases monitored and any noteworthy events that occurred with links back to the chats from the agent.

Step 1:

Summarize the playbooks ran

Step 2:

Provide a health status for the databases monitored with a stoplight summary. This should include all key metrics being monitored by the agent.

Step 3:

Review events that occurred. Create a list or table of events that describe what happened at a very high level with a link to open the chat in the agent UI.

Write your playbook with clear steps and instructions for the AI agent to follow.

Cancel

🗑️ Delete

Update Playbook

# Agent concepts: Playbooks

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**📖 Playbooks**

📈 Monitoring

Chat History 🔍

- 📄 New chat
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- 📄 SQL Query for Top 10 Tracks ...

🔑 Collapse menu

## Playbooks

Create Custom Playbook

Name	Type	Description	Actions
<code>generalMonitoring</code>	Built-in	General monitoring of the database, checking logs, slow queries, main metrics, etc.	▶ ⋮
<code>investigateSlowQueries</code>	Built-in	Investigate slow queries using pg_stat_statements and EXPLAIN calls.	▶ ⋮
<code>investigateHighCpuUsage</code>	Built-in	Investigate high CPU usage. This playbook should be execute while the CPU usage is elevated.	▶ ⋮
<code>investigateLowMemory</code>	Built-in	Investigate low freeable memory. This playbook should be execute while the freeable memory is low.	▶ ⋮
<code>investigateHighConnectionCount</code>	Built-in	Investigate high connection count. This playbook should be execute while the connection count is elevated.	▶ ⋮
<code>tuneSettings</code>	Built-in	Tune configuration settings for the database, based on the instance type, the database schema.	▶ ⋮
<code>dailySummary</code>	Custom	Creates a daily summary of the agent	▶ ⋮

🔍 View Details

🕒 Schedule

📄 Copy Playbook



# Agent concepts: Schedules

Traditional DBA/SysAdmin/Platform roles relied on cron expressions to schedule maintenance and administration jobs and agent has the same ability.

**Schedules** are used to run playbooks at specified intervals. This way the Agent can detect issues 24/7, find the root cause, and fix them before they impact the users. Schedules are defined as cron expressions, or you can let the Agent decide the best time to run the playbook.

# Agent concepts: Tools

Traditional DBA/SysAdmin/Platform engineers relied on certain tools to monitor, backup, configure, upgrade the systems they managed. Agent provides a large library of pre-built tools for Postgres.

**Tools** are functions that can be called by the Agent to get information about the Postgres database, the instance/clusters on which it is running, and metrics and logs. Custom tools can be provided by integrations and by MCP servers.

# What the Agent does



**Finds root causes:** Pinpoint slow queries, deadlocks and performance bottlenecks and regressions



**Gets actionable fixes:** AI-powered suggestions from query optimization to suggesting indexes to infrastructure upgrades



**Ensures uptime:** Proactive monitoring to keep your database healthy. It monitors backups, upgrades, disk and more metrics.

# Future of Xata Agent



Building workflows for a **self-optimizing** database.



Approval workflows through Github to review changes recommended by the Agent



More extensible and customizable observability workflows inside the Xata Agent via MCP servers

# Challenges & Next steps



**Privacy:** Agent may include metadata (e.g., table names, logs) in LLM prompts sent to external APIs. Self-hosted LLMs are a path forward for sensitive environments.



**Cost:** AI models aren't free—but so far but cheaper than traditional observability tools, even with premium LLMs.



**Safety:** Risk of hallucinations or destructive actions.

- Agent is sandboxed: no arbitrary SQL execution without human approval.
- Future support for riskier actions will require gated workflows.



**Testing:** Testing an AI agent is not like testing normal code.

# The shift to autonomous agents



Can you trust an agent with your most critical infrastructure?



Just 2 years ago: “No way!”



Now? More and more teams are saying yes.

**“ Anything that is in the world when you’re born is **normal** and **ordinary** and is just a natural part of the way the world works. Anything invented after you’re thirty-five is against the natural order of things ”**

Douglas Adams

The Salmon of Doubt: Hitchhiking the Galaxy One Last Time, 2002





Postgres at scale

# Thank you!

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