

# Postgres (Pro) on Azure 2022

Alexey Shishkin  
[a.shishkin@postgrespro.com](mailto:a.shishkin@postgrespro.com)

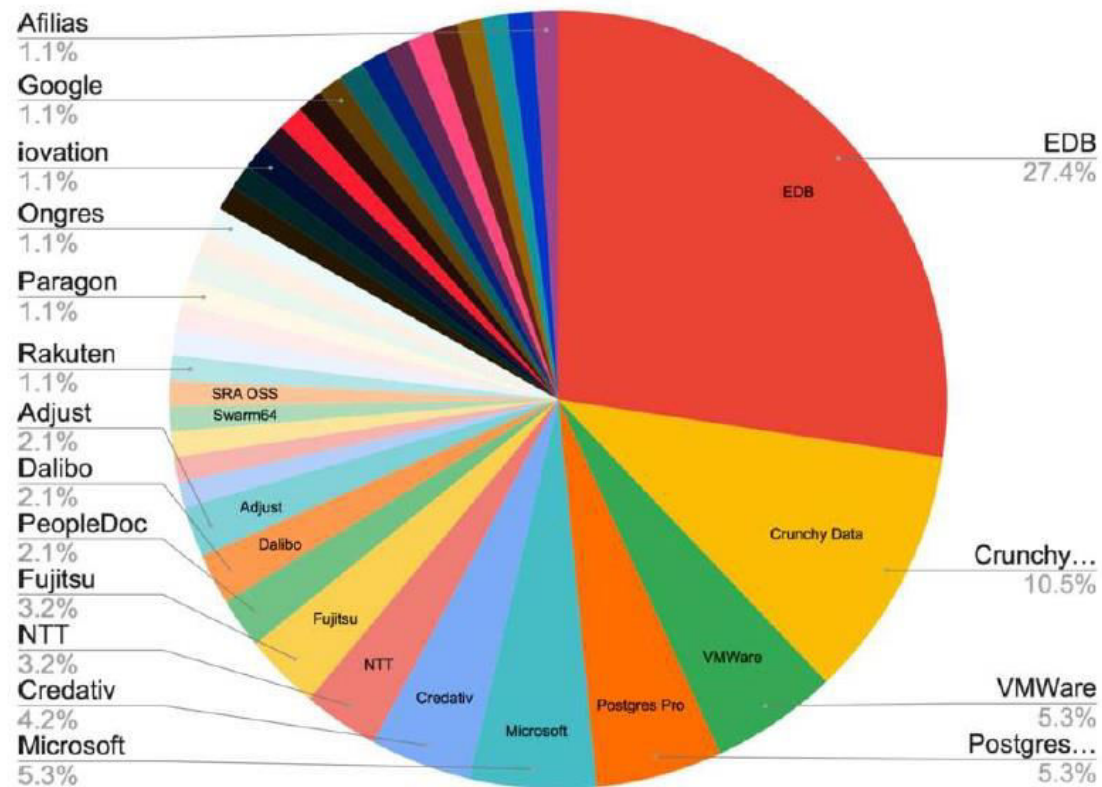
[postgrespro.com](https://postgrespro.com)

# Postgres Professional (1/2)

- ◆ Postgres Professional, established in 2015, is a key contributor to PostgreSQL community
- ◆ At Postgres Professional we develop Postgres Pro database, a private PostgreSQL fork
- ◆ Postgres Professional specializes in PostgreSQL development, 24x7 technical support and other professional services (database migration, audit, performance tuning, education and certification for PostgreSQL)

# Postgres Professional (2/2)

Postgres contributors (PostgreSQL.org + PG 13 Release Notes) w.o. personal or freelancers



# Postgres (Pro) on Azure

- ◆ Why Postgres Pro on Azure ?
  - Azure is one of the 'big three' cloud vendors
  - PostgreSQL is the world's most advanced open-source relational database
  - Postgres Pro is the most functional PostgreSQL-based database

# Postgres Pro vs PostgreSQL on Azure

- ◆ There are PostgreSQL offers on Azure from other vendors
- ◆ Postgres Pro includes all functionality of PostgreSQL and has additional features on top of it
- ◆ Postgres Pro versioning scheme is based on the PostgreSQL one and has an additional decimal place (14.2.1 vs 14.2), which allows shorter release cycle

# Postgres Pro on Azure - editions

- ◆ Postgres Pro database comes in two editions:
  - Standard
  - Enterprise
- ◆ Postgres Pro Standard uses BYOL scheme (customers only pay for Azure infrastructure)
- ◆ Postgres Pro Enterprise has a license fee (customers have one month trial period)

# Postgres Pro Standard

- ◆ Postgres Pro Standard is the most actual PostgreSQL version with some additional patches applied and extensions added
- ◆ It includes new features developed by Postgres Professional, as well as third-party patches already accepted by the PostgreSQL community for the upcoming PostgreSQL versions
- ◆ Postgres Pro Standard users thus have early access to important features and fixes
- ◆ Complete list of Postgres Pro Standard features:

<https://postgrespro.com/docs/postgrespro/14/intro-pgpro-vs-pg>

# Postgres Pro Enterprise

- ◆ Postgres Pro Enterprise contains more features on top of Postgres Pro Standard to work with large databases and process lots of transactions
- ◆ Some of the features are built into Postgres Pro Enterprise kernel, the others are available as extensions
- ◆ Complete list of Postgres Pro Enterprise features:

<https://postgrespro.com/docs/enterprise/13/intro-pgpro-vs-pg>



## Postgres Pro Enterprise features – (1/10)

- ◆ Online database minor version upgrade:
  - allows to decrease database availability SLA for maintenance

## Postgres Pro Enterprise features – (2/10)

- ◆ 'pgpro\_pwr' extension is designed to discover most resource-intensive activities in your database
  - enables you to generate workload reports, which help to troubleshoot database performance issues

## Postgres Pro Enterprise features – (3/10)

- ◆ restoration of corrupted WAL data from in-memory WAL buffers
- provides protection against some types of data corruption that may occur because of hardware faults

## Postgres Pro Enterprise features – (4/10)

- ◆ backup and recovery manager - 'pg\_probackup'
  - incremental backup
  - automatic data consistency checks and on-demand backup validation without actual data recovery
  - parallel tasks execution
  - and many more

## Postgres Pro Enterprise features – (5/10)

- ◆ compressed file system (CFS)
  - enables page level compression of database

## Postgres Pro Enterprise features – (6/10)

- ◆ 'pgpro\_scheduler' extension provides background workers for database task scheduling
  - scheduling, monitoring, and managing job execution within database

## Postgres Pro Enterprise features – (7/10)

- ◆ 'pg\_pathman' extension that provides optimized partitioning mechanism and functions to manage partitions
  - supports a huge number of partitions in a single table (10K+)
  - supports online tasks with partitions

## Postgres Pro Enterprise features – (8/10)

- ◆ 'aqo' extension for adaptive query optimization
  - improves cardinality estimation, which can optimize execution plans and, consequently, speed up query execution



## Postgres Pro Enterprise features – (9/10)

- ◆ 64-bit transaction IDs that are not subject to wraparound
- ◆ support for autonomous transactions

## Postgres Pro Enterprise features – (10/10)

- ◆ 'pg\_proaudit' extension
  - enables detailed logging of various security events
- ◆ advanced authentication policies
  - that provide effective password management and access control

# Postgres Pro on Azure - offers

- ◆ Postgres Pro offers on Azure are available as:
  - Virtual machine (VM)
  - VM with Docker image (Docker)
  - Azure Container (Container) - can either be a part of Azure Container Instances (ACI) or Azure Kubernetes Service (AKS)
- ◆ Postgres Pro Standard is available in VM, Docker and Container offers
- ◆ Postgres Pro Enterprise is available in VM and Container offers

# Postgres Pro on Azure - OS and version

- ◆ We use CentOS 7 for VM offers and Debian 10 for VM, Docker and Container offers
- ◆ All existing Postgres Pro versions are available on Azure Marketplace:
  - Postgres Pro Standard - 9.5(EOL), 9.6(EOL), 10, 11, 12, 13, 14
  - Postgres Pro Enterprise - 9.6(EOL), 10, 11, 12, 13, 14(will be released soon)

# Postgres Pro on Azure - Marketplace

- ◆ Links to the offers with the latest versions of Postgres Pro on Azure Marketplace:

<https://postgrespro.com/products/postgrespro/azure>

- ◆ You can choose a specific version of Postgres Pro offer on Azure Marketplace:

<https://azuremarketplace.microsoft.com/en-us/marketplace/apps?search=postgres%20pro&page=1>

- ◆ Or you can search for 'postgres pro' on Azure Portal:

<https://portal.azure.com/#create/hub>

- ◆ Azure CLI can be used to get Postgres Pro offers as well:

<https://docs.microsoft.com/en-us/cli/azure/install-azure-cli>

# Postgres Pro on Azure - content of VM offer (1/2)

- ◆ Postgres Pro Standard or Enterprise of specific version
  - main database - TCP-port 5433
- ◆ Zabbix server/agent
  - Apache web server - TCP-ports 80/443
  - PostgreSQL database as Zabbix storage - TCP port 5432
- ◆ 'mamonsu' agent
  - sends Postgres Pro database metrics to Zabbix server
  - tunes Postgres Pro database settings of 'postgresql.auto.conf' upon VM's first startup

## Postgres Pro on Azure - content of VM offer (2/2)

- ◆ HA-cluster Patroni (Consul as DCS, HAProxy for load-balancing)
- ◆ 'az' CLI to connect to Azure Blob Storage (backup and restore)
- ◆ various useful Linux utilities (screen, dstat, git, make, gcc, bison, flex, patch etc.)
- ◆ latest OS updates and security fixes applied
- ◆ OS firewall is turned on
- ◆ VM's OS disk size is 30 GB

# Postgres Pro on Azure - content of Docker offer

- ◆ Postgres Pro Standard or Enterprise of specific version - TCP-port 5433
- ◆ 'mamonsu tune' runs upon Postgres Pro Standard or Enterprise startup in Docker to tune database settings of 'postgresql.auto.conf'
- ◆ Docker Engine (community edition)
- ◆ Docker image size is 170-180 MB depending on Postgres Pro Standard or Enterprise version
- ◆ 'debian:10-slim' is used to build Docker image
- ◆ latest updates and security fixes applied
- ◆ OS firewall is turned on
- ◆ VM's OS disk size is 30 GB



# Postgres Pro on Azure - content of Container offer

- ◆ The same 'Dockerfile' is used both for Container and Docker offers:
  - Postgres Pro Standard or Enterprise of specific version - TCP-port 5433
  - 'mamonsu tune' runs upon Postgres Pro Standard or Enterprise startup in Docker to tune database settings of 'postgresql.auto.conf'
  - 'debian:10-slim' is used to build Container image
  - latest updates and security fixes applied
- ◆ Sample 'yaml' files are available to run Azure Container either in ACI or AKS:
  - <https://pgpro.blob.core.windows.net/yaml/pgpro-azure-container.yaml>
  - <https://pgpro.blob.core.windows.net/yaml/pgpro-aks-deployment.yaml>
  - <https://pgpro.blob.core.windows.net/yaml/pgpro-aks-service.yaml>

# Postgres Pro on Azure - Quick start guide (1/3)

- ◆ Quick start guide (general information)

<https://postgrespro.com/products/postgrespro/azure/standard>

<https://postgrespro.com/products/postgrespro/azure/enterprise>

- ◆ Postgres Pro Enterprise Multimaster and CFS

<https://postgrespro.com/products/postgrespro/azure/enterprise#multimaster>

<https://postgrespro.com/products/postgrespro/azure/enterprise#cfs>

# Postgres Pro on Azure - Quick start guide (2/3)



## ◆ Postgres Pro database backup and restore

<https://postgrespro.com/products/postgrespro/azure/standard#dbbackup>

<https://postgrespro.com/products/postgrespro/azure/enterprise#dbbackup>

## ◆ Postgres Pro database high availability

<https://postgrespro.com/products/postgrespro/azure/standard#dba>

<https://postgrespro.com/products/postgrespro/azure/enterprise#dba>

# Postgres Pro on Azure - Quick start guide (3/3)

- ◆ Postgres Pro Standard (Docker) quick start guide

<https://postgrespro.com/products/postgrespro/azure/standard#vmdockerquickstartguide>

- ◆ Postgres Pro Standard (Container) quick start guide

<https://postgrespro.com/products/postgrespro/azure/standard#dockerquickstartguide>

# Postgres Pro on Azure - Support & Feedback

- ◆ In case of issues or questions, you can contact us via e-mail [cloud-support@postgrespro.com](mailto:cloud-support@postgrespro.com)
- ◆ Any kind of feedback about Postgres Pro on Azure is highly appreciated !

Postgres (Pro) on Azure

# Demo

[postgrespro.com](https://postgrespro.com)

# Postgres (Pro) on Azure

## Q & A

[postgrespro.com](https://postgrespro.com)







**+7(495)1500691**

**cloud-support@postgrespro.com**



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