EDB Postgres –
Why, What, and How
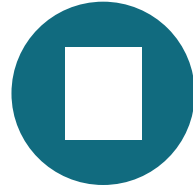
Davide.Tammaro@enterprisedb.com

Why EDB

Delivering our customers the Postgres they need

Your use cases

- New applications
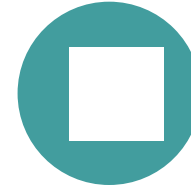- Database migrations
- Replatform to the cloud

Your requirements

- Availability
- Scalability
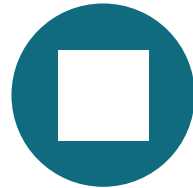- Flexibility
- Expertise

The database you need

- Postgres
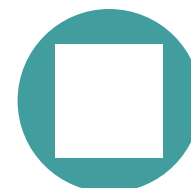- EDB Postgres Advanced Server
- EDB Postgres Extended Server

Where you want it

- On-premises | hybrid cloud | multi-cloud
- Virtual machines
- Kubernetes
- Cloud managed service

The tools you need

- EDB tools
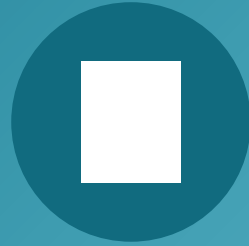- Open source tools

The help you need

- Expert 24/7 technical support
- Remote DBAs | Cloud DBAs
- Technical Account Managers
- Professional Services

Technical Support Levels

		Premium	Production	Basic
	Availability	**24 hours x 7 days**	**24 hours x 7 days**	**8am - 6pm / Mon - Fri**
Initial Response Service Level Objective	Severity-1	15 minutes	30 minutes	N/A
	Severity-2	30 minutes	60 minutes	N/A
	Severity-3	60 minutes	2 hours	4 hours
	Severity-4	1 business day	1 business day	1 business day
Remedy Service Level Objective	Severity-1	4 hours	24 hours	N/A
	Severity-2	8 hours	48 hours	N/A
	Severity-3	10 business days	15 business days	20 business days
	Severity-4	30 business days	45 business days	60 business days
Resolution Service Level Objective	Severity-1	24 hours	N/A	N/A
	Severity-2	5 days	N/A	N/A

The Database You Need

Fit Application and Business Requirements the Enterprise Way

EDB Community 360 Plan

Protect PostgreSQL with EDB expert support.

EDB Standard Plan

Strengthen and extend PostgreSQL with enhanced security, resiliency, reliability, and optimization.

EDB Enterprise Plan

Migrate costly Oracle workloads to Postgres or elevate Postgres to enterprise-grade with advanced security, reliability, and much more.

EDB Community 360 Plan
- PostgreSQL

- Open source tools
- Community PostgreSQL
- EDB & community support
- Cloudnativepg Kubernetes operator

EDB Standard Plan
- Advanced Replication*
- Transparent Data Encryption
- PostgreSQL

- Open source tools
- Community PostgreSQL
- EDB & community support
- EDB Postgres for Kubernetes
- EDB tools & extensions – including PEM
- EDB Postgres Distributed Add-on*
- EDB Postgres Advanced Server

EDB Enterprise Plan
- Oracle Compatibility
- Superset of SQL
- Advanced Security
- Advanced Replication*
- Transparent Data Encryption
- PostgreSQL

- Open source tools
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Fit Application and Business Requirements the Enterprise Way
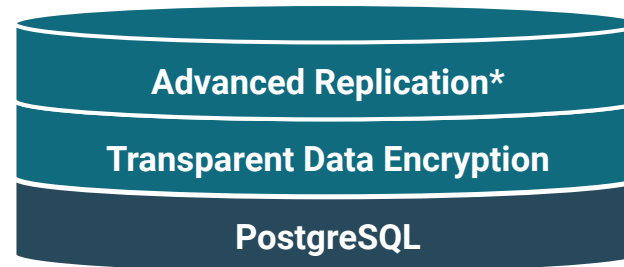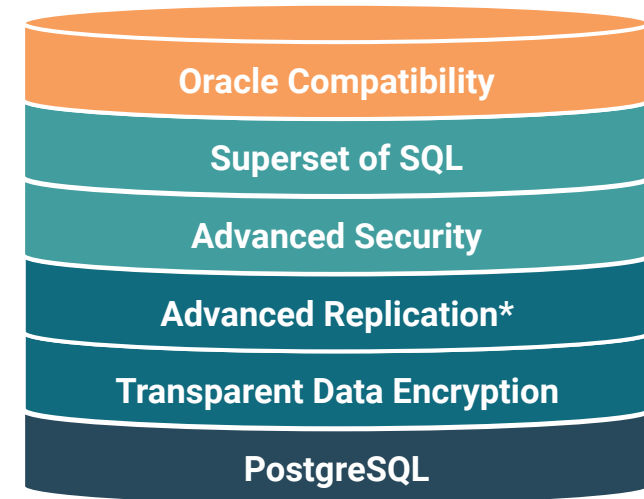
EDB Community 360 Plan

Protect PostgreSQL with EDB expert support.

PostgreSQL

- Open source tools
- Community PostgreSQL
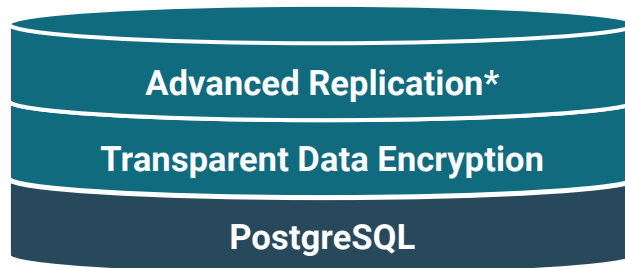- EDB & community support
- Cloudnativepg Kubernetes operator

Ideal for organizations with an OS-first strategy, as well as those using PostgreSQL for admin and operational applications.

Fit Application and Business Requirements the Enterprise Way

EDB Standard Plan

Strengthen and extend PostgreSQL with enhanced security, resiliency, reliability, and optimization.

Advanced Replication*

Transparent Data Encryption
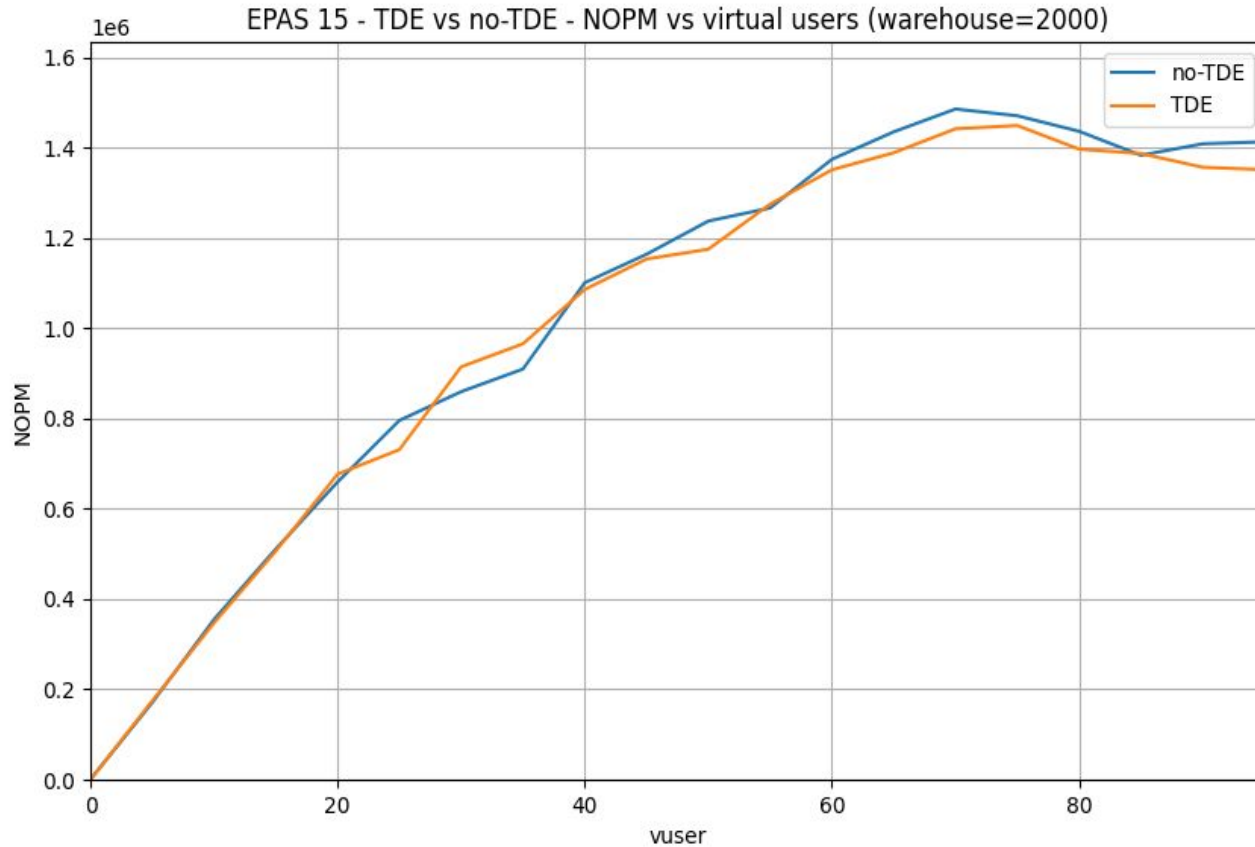
PostgreSQL

- Open source tools
- Community PostgreSQL
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- EDB tools & extensions – including PEM
- EDB Postgres Distributed Add-on*
- EDB Postgres Advanced Server

Perfect for organizations that want to use Postgres with best-of-breed tools for business-critical applications.

EDB TDE Encryption

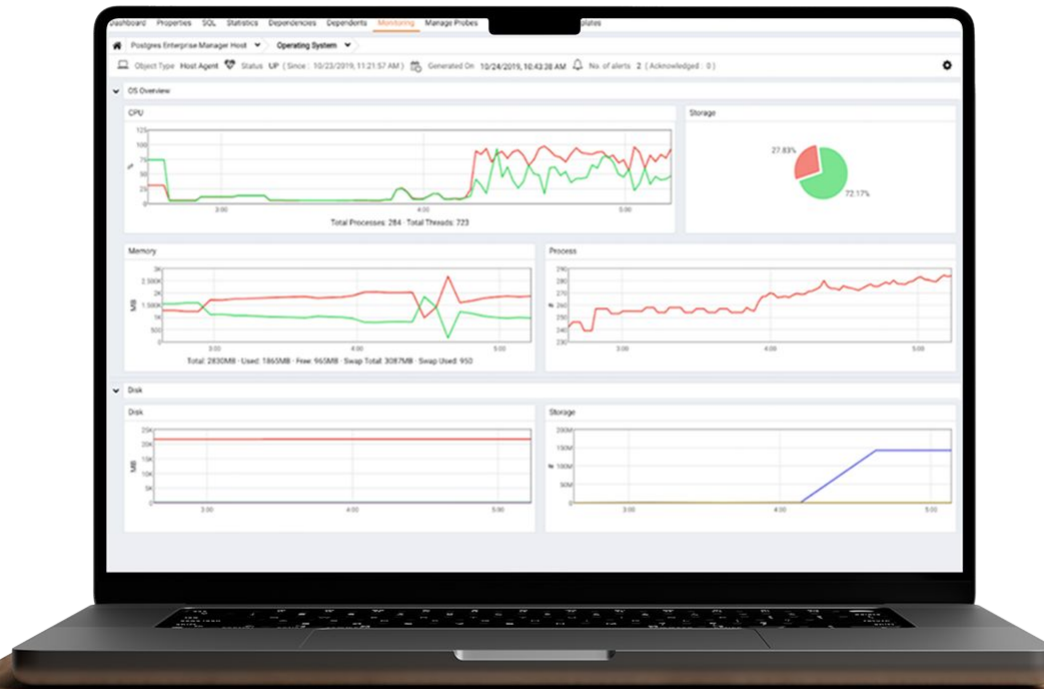You can't achieve this with open source database level encryption (i.e. pg_crypto)

EPAS 15 - TDE vs no-TDE - NOPM vs virtual users (warehouse=2000)

New-Orders per minute (NOPM)

No-TDE	TDE-enabled	Added Overhead
1447296	1341344	7.3%

https://www.enterprisedb.com/blog/TDE-Postgres-Advanced-Server-15-Launch

Observability Through Postgres Enterprise Manager (PEM)

Manage from one interface

One place to visualize and manage everything Postgres

Optimize database performance

In-depth diagnostics for database reports and tuning

Monitor system health

Built-in dashboards and customizable alert thresholds

Reduce admin burden

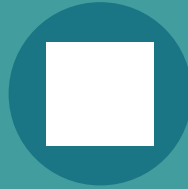Accomplish bulk changes and routine tasks

Replication

Advanced logical replication for Postgres

Maintain extreme high availability

Postgres clusters deployed with BDR keep top-tier applications running.
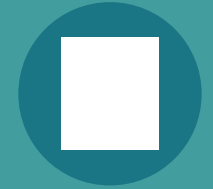
Choose the level of consistency

Robust capabilities provide flexibility to meet application data loss requirements.

Upgrade with near-zero downtime

Rolling upgrades eliminate the largest source of unwanted production downtime.

Oracle and SQL server integrations

Minimize application migration cutover times and avoid unnecessary additional licenses.

EDB Postgres Distributed (PGD)
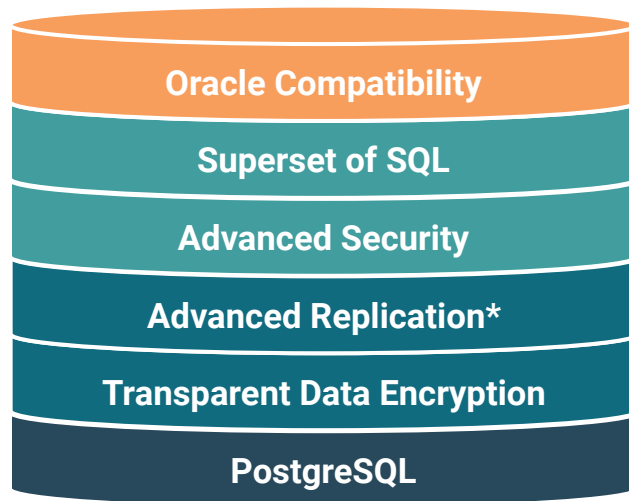
Solve performance & scalability issues

Use case	ClickUp, a SaaS project management and collaboration company experienced massive growth with customers spanning individuals to large enterprises supporting over 100,000 teams globally.
Need	Provide consistent performance to their international customer base while scaling up their business in multiple regions.
Solution	ClickUp selected EDB Postgres Distributed to address the geo-distributed needs of their customer base, and later upgraded to gain improved performance, rolling upgrades, and high availability.
Value	EDB Postgres Distributed has contributed to up to 99.999% uptime for 12 consecutive months of ClickUp's 7 node global deployment.

Asia Pacific   **North America**   **Europe**

App   **App**   **App**

M2   M3

Replication

ClickUp
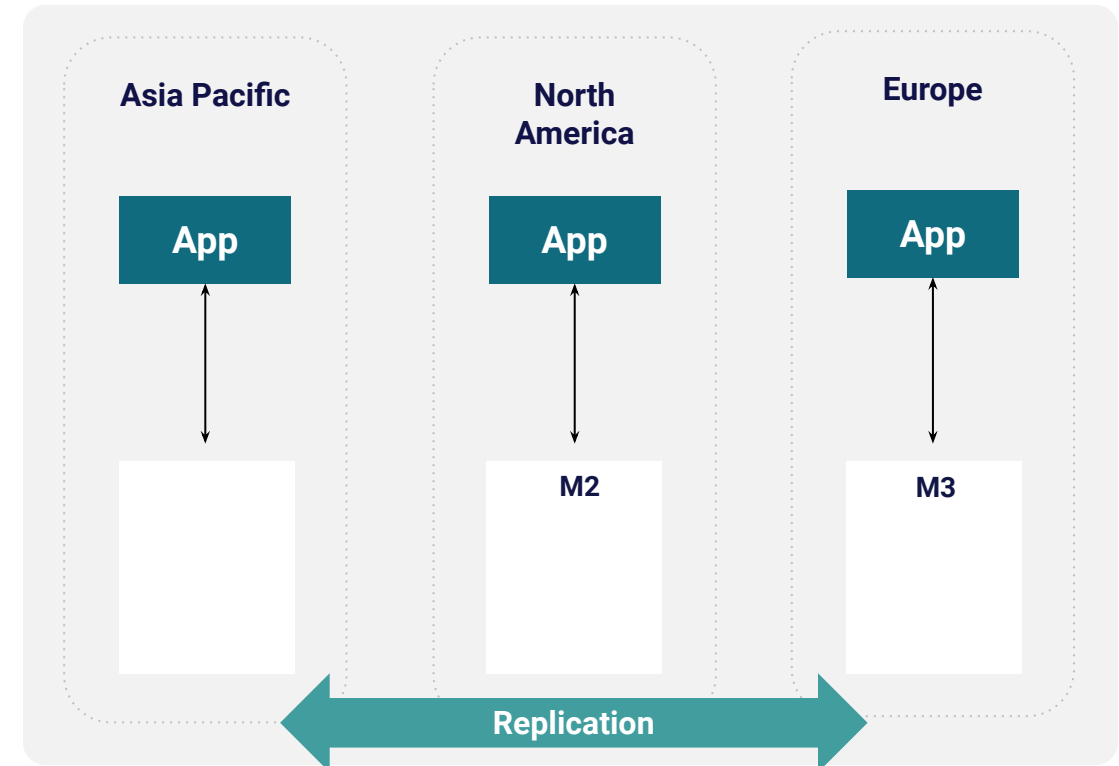
Fit Application and Business Requirements the Enterprise Way

EDB Enterprise Plan

Migrate costly Oracle workloads to Postgres or elevate Postgres to enterprise-grade with advanced security, reliability, and much more.

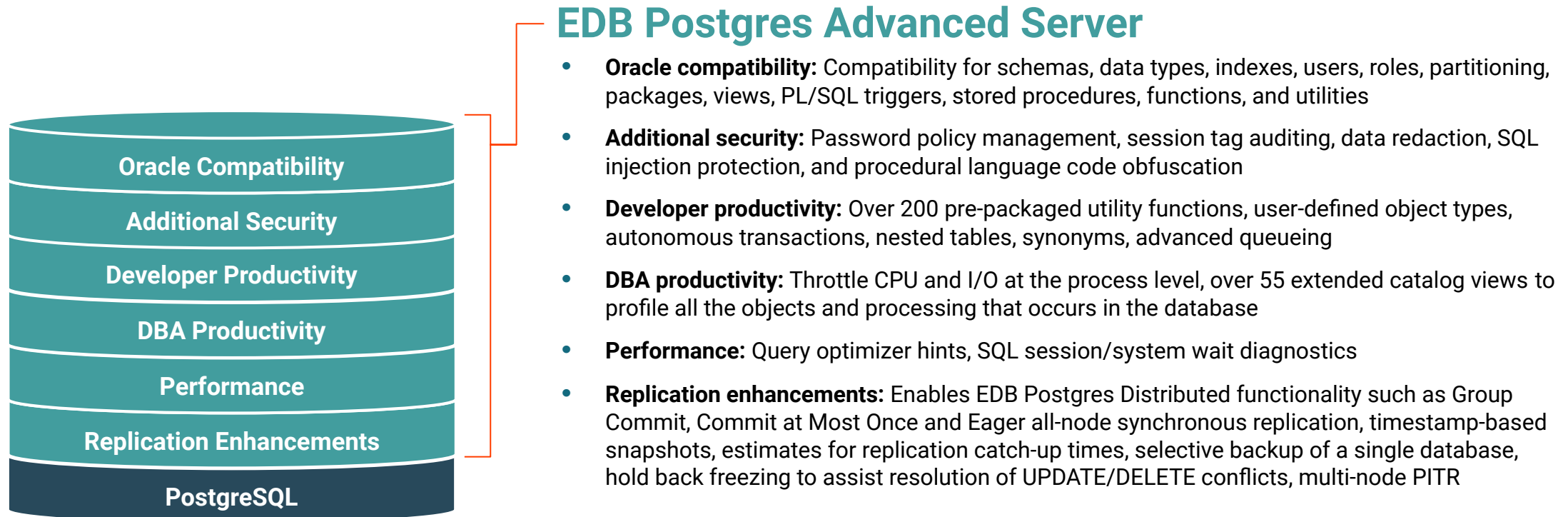| |
|---|
| **Oracle Compatibility** |
| **Superset of SQL** |
| **Advanced Security** |
| **Advanced Replication*** |
| **Transparent Data Encryption** |
| **PostgreSQL** |

- Open source tools
- Community PostgreSQL
- EDB & community support
- EDB Postgres for Kubernetes
- EDB tools & extensions – including PEM
- EDB Postgres Distributed Add-on*
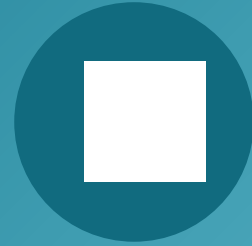- EDB Postgres Advanced Server

Best choice for Oracle modernization and savings, mission-critical applications.

EDB Postgres Advanced Server (EPAS)

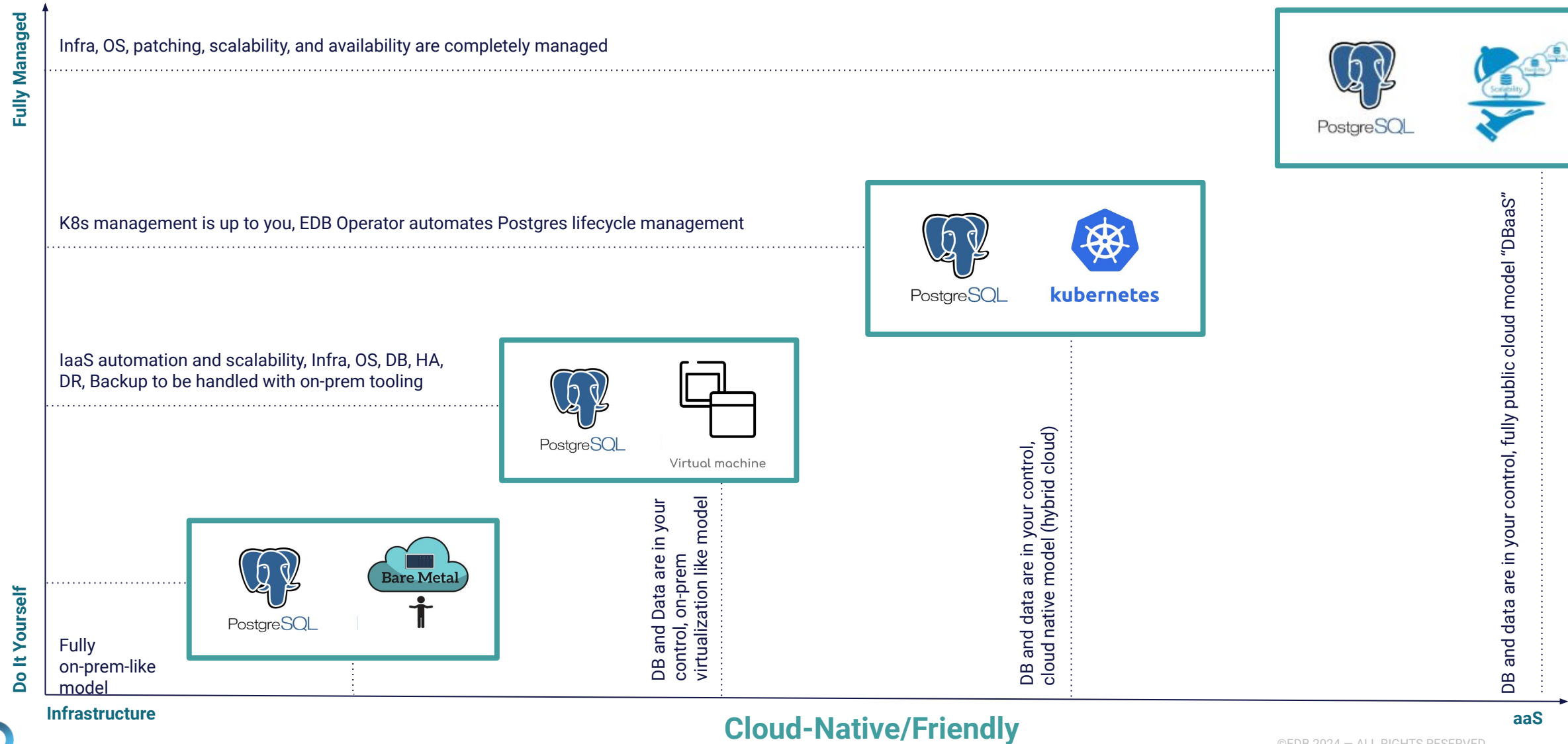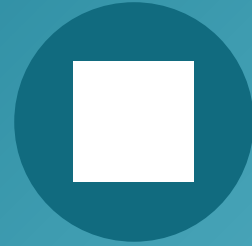Enterprise-ready, Oracle or PostgreSQL Compatible

EDB Postgres Advanced Server

- **Oracle compatibility:** Compatibility for schemas, data types, indexes, users, roles, partitioning, packages, views, PL/SQL triggers, stored procedures, functions, and utilities

- **Additional security:** Password policy management, session tag auditing, data redaction, SQL injection protection, and procedural language code obfuscation

- **Developer productivity:** Over 200 pre-packaged utility functions, user-defined object types, autonomous transactions, nested tables, synonyms, advanced queueing

- **DBA productivity:** Throttle CPU and I/O at the process level, over 55 extended catalog views to profile all the objects and processing that occurs in the database

- **Performance:** Query optimizer hints, SQL session/system wait diagnostics

- **Replication enhancements:** Enables EDB Postgres Distributed functionality such as Group Commit, Commit at Most Once and Eager all-node synchronous replication, timestamp-based snapshots, estimates for replication catch-up times, selective backup of a single database, hold back freezing to assist resolution of UPDATE/DELETE conflicts, multi-node PITR

Oracle Compatibility

Additional Security

Developer Productivity

DBA Productivity

Performance

Replication Enhancements

PostgreSQL

Where You Want It

Meet Customers Where They Are

Fully Managed

Infra, OS, patching, scalability, and availability are completely managed

K8s management is up to you, EDB Operator automates Postgres lifecycle management

IaaS automation and scalability, Infra, OS, DB, HA, DR, Backup to be handled with on-prem tooling

Virtual machine

Do It Yourself

Bare Metal

Fully
on-prem-like
model

DB and Data are in your control, on-prem virtualization like model

DB and data are in your control, cloud native model (hybrid cloud)

DB and data are in your control, fully public cloud model "DBaaS"

Infrastructure → **aaS**

Cloud-Native/Friendly

The Tools You Need

High Availability Architectures for Postgres

Multi-master **(five 9s)** vs. primary-standby (four 9s)

Deployment architecture	Cluster management	Data replication	

Multi-Master (extreme HA)

Primary-Standby

EDB Postgres Distributed (PGD)

EDB Failover Manager ("EFM")

Patroni

Asynchronous (eventual consistency): Prioritize performance/low-latency

Synchronous (strong consistency): Prioritize consistency & durability

Bidirectional Logical Replication

M1 ⇄ M2

Unidirectional Physical Replication

P1 ⇒ S1

Bidirectional Logical Replication

M1 ⇄ M2

Unidirectional Physical Replication

P1 ⇒ S1

Note: Patroni is an open source toolkit that is supported by EDB

Backup and Recovery Manager (Barman)

Building best-of-breed backup tools to support your needs

Best Backup Tool for Postgres

Uses native PostgreSQL features to support RPO=0, server-side parallel compression, and incremental backup
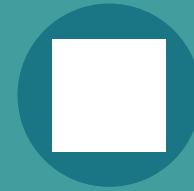
Best Backup Tool for the Cloud

Seamlessly integrate with public cloud platforms and leverage cloud technologies to augment Postgres backup capabilities

Added support for Postgres 17+ incremental backups:

Add `--incremental` command-line option to specify parent full (or incremental) backup

`latest-full` and `latest` shortcut backup ID

Estimated Cluster Size: useful to have an estimation of data dir size of a restore when recovering compressed or incremental backup. In JSON format, this is stored as `cluster_size`

The core execution loop

```
configure
```

↓

```
(config.yml)
```

```
(provision)
```

```
deploy
```
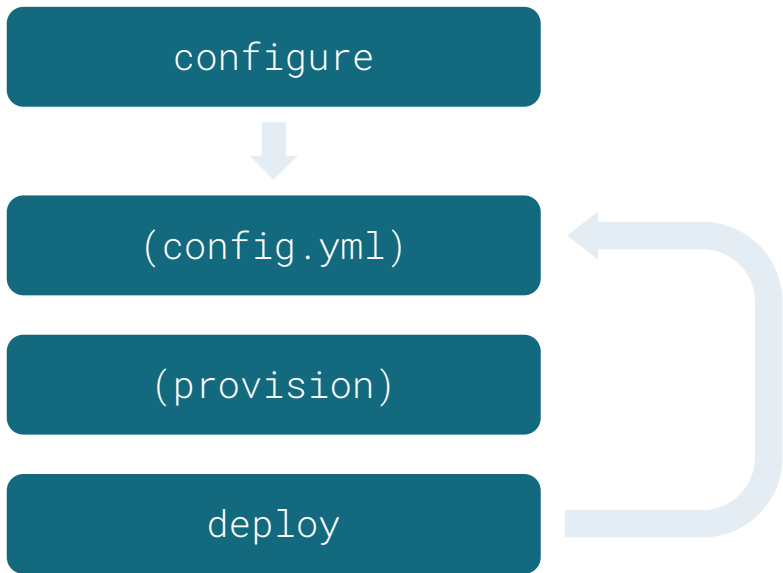
Trusted Postgres Architect (TPA)
Open Source from EDB

```
>tpaexec configure mycluster \
 --architecture M1 \
 --postgresql 15 \
 --enable-patroni_
```

config.yml
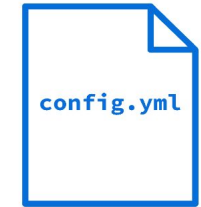
```
>tpaexec provision \
 mycluster_
```

```
>tpaexec deploy \
 mycluster_
```
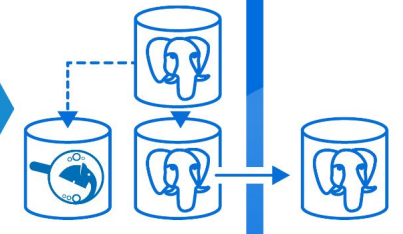
TPA deploys and configures
robust Postgres architectures

EDB™

19

Deploy Postgres in Kubernetes

Container images and Kubernetes Operators
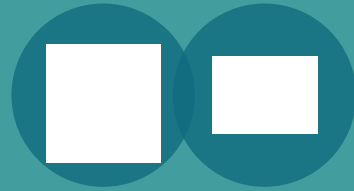
Postgres, EPAS, and PGD container images

Docker container images containing the database server with only the Postgres service exposed.

EDB Postgres for Kubernetes Operator

Responsible for deploying and managing Postgres and EDB Postgres Advanced Server containers and maintaining the desired state.

DEMO
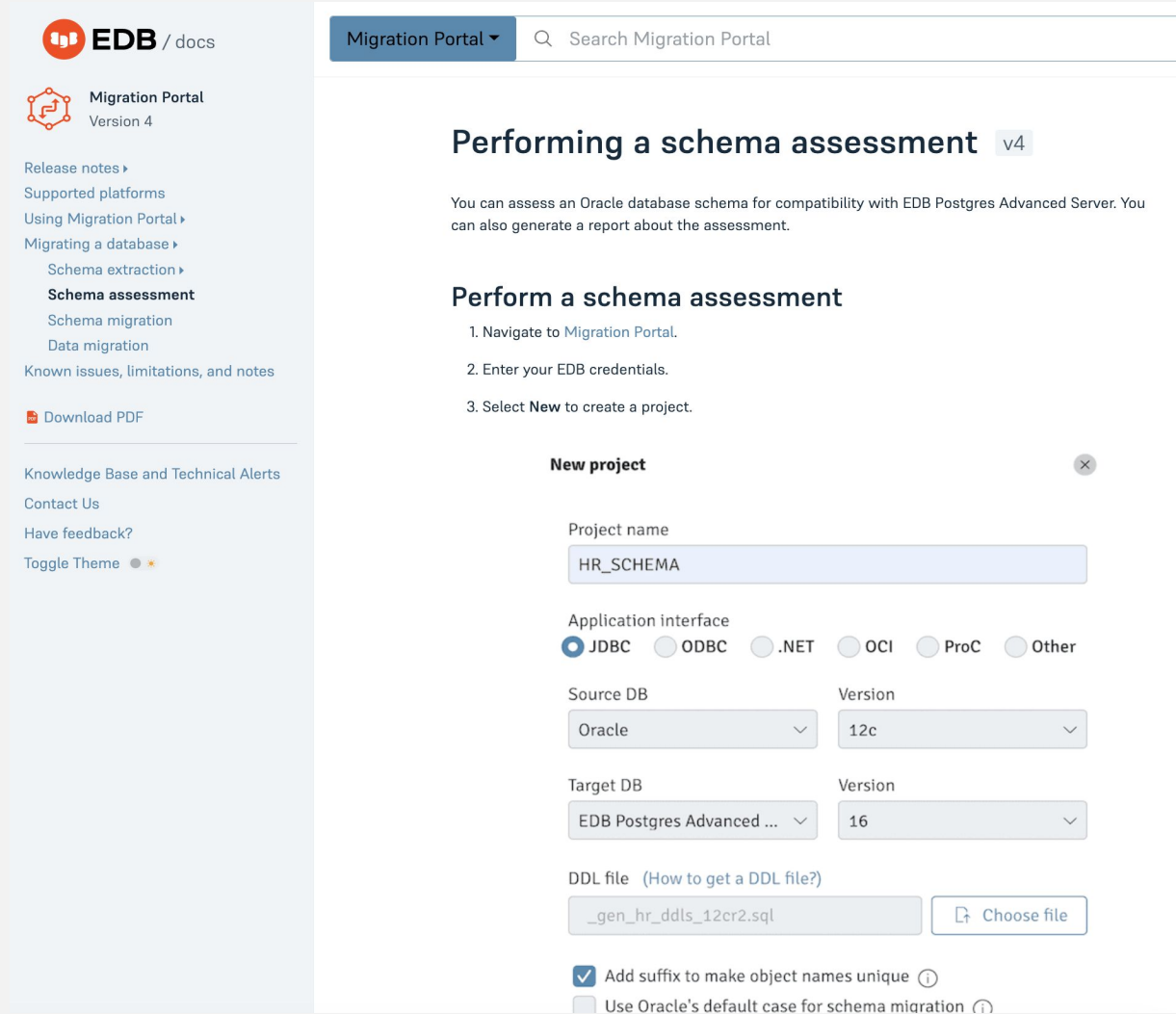
Assessment Phase

EDB automated the process and can do initial assessment for free

Assess complexity: Database layer

Migration complexity assessment is a key factor, in order to do not waste time and money.

SQL Assessment

EDB automated the process and can do initial assessment for free.
This will help to quantify application change efforts.

Assess complexity: application layer

Database is a good candidate to be migrated?

Let's deep dive into the application layer

SQL Assessment - Compatibility status

key value of EDB EPAS Oracle compatibility
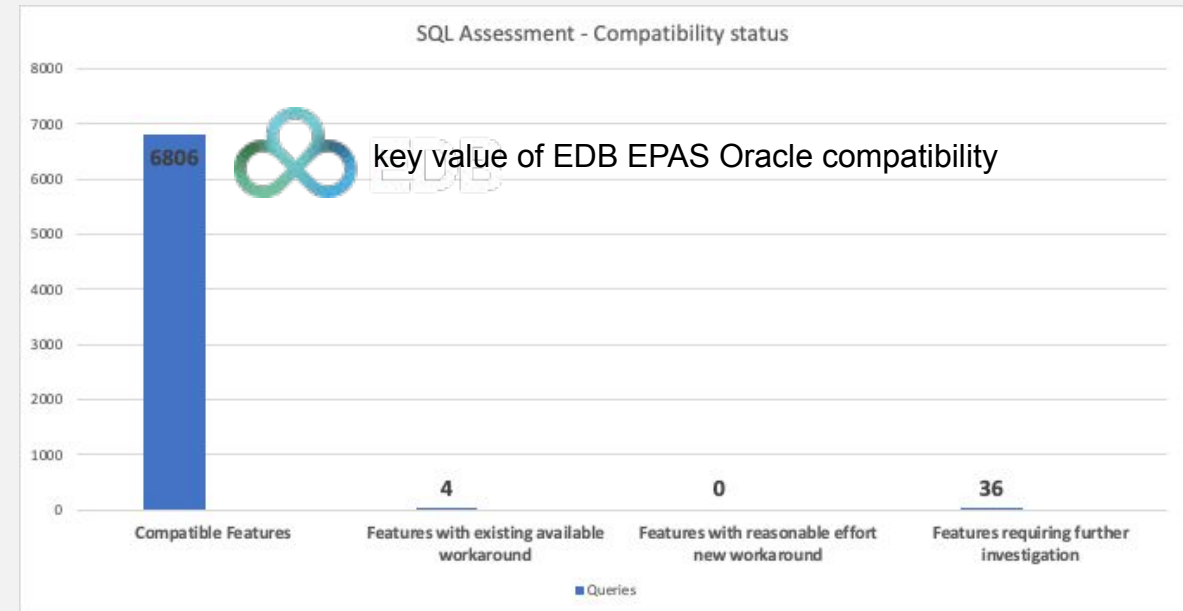
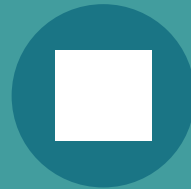| Migration / Compatibility Status	Queries	Occurrences
Compatible features	6806	17630
Features with existing available workaround	4	4
Features with reasonable effort new workaround	0	0
Features with no workaround or requiring further investigation	36	375
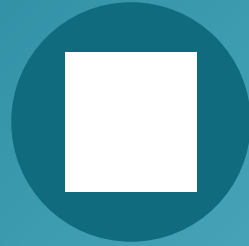
The Help You Need

Get Up and Running on Postgres

Services to expedite Postgres deployments on your infrastructure, including migrations to Postgres from other database management systems
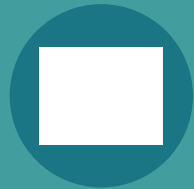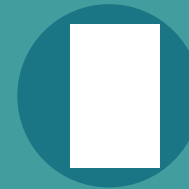
Quick Deploy	**Solution Design for Postgres**	**Migration Assessment**	**Migration Assistance**
Accelerate your implementation with proven architectures.	Get customized guidance and solutions from Postgres experts.	Create a clear path to Postgres from legacy DBs.	Ensure your applications speak the same language as your DBs.
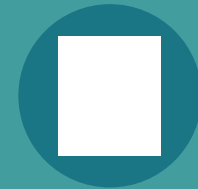
Technical Account Manager:
A trusted advisor, proactive assistance

Proactive assistance in preparing for future technology changes to ensure you get the most from Postgres and from your EDB products, solutions, and support benefits.
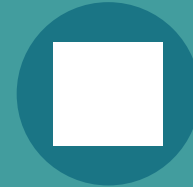
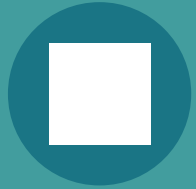| Knows your setup	Helps you succeed	Tracks Progress
Guides you to succeed with Postgres, tailored to your needs.	Helps you with upgrades, maintenance, and updates.	Provides project advice/monthly reviews to monitor results

Remote DBA

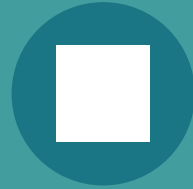You bring the environment and the architecture, we do the rest

24x7 managed operations	Augment your team	Understand DB growth trends	Postgres-certified DBAs	Get designated technical leads
Reduce downtime with remote monitoring and issue resolution.	Don't compromise on technical knowledge.	Anticipate increased capacity, hardware, and resource needs.	Tap into EDB's decades of experience.	Rely on a primary contact and technical leads.

Questions?

Thank you