



# Oracle Database Migration to PostgreSQL on Azure

Tech Mahindra is Certified Cloud Adoption Framework (CAF) Ready Partner,  
and our Azure Cloud offerings are aligned to CAF

# ABOUT TECH MAHINDRA'S ORACLE TO POSTGRESQL ON AZURE MIGRATION SERVICE

Rated as 'Leader' by leading analysts in the Cloud space, Tech Mahindra has successfully implemented large scale Azure transformational deals using our Agile-based Migration Delivery Methodology resulting in **3X faster business adoption.**

TechM helps migration of Oracle databases to PostgreSQL Azure using Azure Native pathways or Alternate pathways with EPAS (EDB Postgres Advanced Server) on Azure Cloud.

## Customer's challenges with Oracle at on-prem:

- ✓ High Licensing cost.
- ✓ Depends heavily on built-in authentication system.
- ✓ Not open source. The developers can not directly access any Oracle component simply by including the header file in their project.
- ✓ Need additional efforts for rolling out updates, upgrades, security patches, monitoring, troubleshoot and manage at scale.

## WHAT WE OFFER

Our portfolio of services includes **C-A-D-I-M-S**

- Consulting / Strategy / Advisory
- Database Assessment , Design
- Deployment & Configuration
- Database Migration & Data Modernization\*
- Managed Services

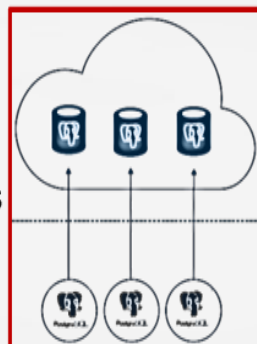
## Why PostgreSQL on Azure ?

Enterprise-ready			Seamless Migration	Developer Productivity	
Industry standard SLA and TCO	Enterprise grade scale with Azure - Scale PostgreSQL databases across 100s of nodes with Azure	Secure and compliant with Advanced Threat Protection and Azure IP Advantage	Fully managed Open-Source Software community database PostgreSQL	Built-in intelligence optimizes performance and security, has interfaces for AI/ ML	Integrates Azure services with streamlined provisioning and management experience for common OSS frameworks and languages

## Why Oracle to PostgreSQL on Azure

- 1 ✓ PostgreSQL is **highly compatible with Oracle** with reduced Migration effort/cost and Risk.
  - ✓ Oracle DB objects like SP, Queries, datatypes, packages, sequence etc. migrate to PostgreSQL with no code/ little Changes.
  - ✓ Migration cost not costlier than upgrading from one major version of oracle to the next major version of oracle.

- 2 ✓ **Manage Community Version**
  - ✓ Automatic Updates
  - ✓ Automatic security fixes
  - ✓ Automatic new feature updates



- 3 ✓ Oracle to Azure database for PostgreSQL migration **reduces overall cost of ownership by up to 95% in savings\***

- \*Oracle licensing for Enterprise Edition is based on number of processors
- \*\*Annual maintenance and support for Oracle is 22% of the annual license cost.
- \*\*\*This example accounts for the 50% list pricing for 3 years in the total.
- #Based on customer deployments at TechM

# PostgreSQL Migration Pathways on Azure

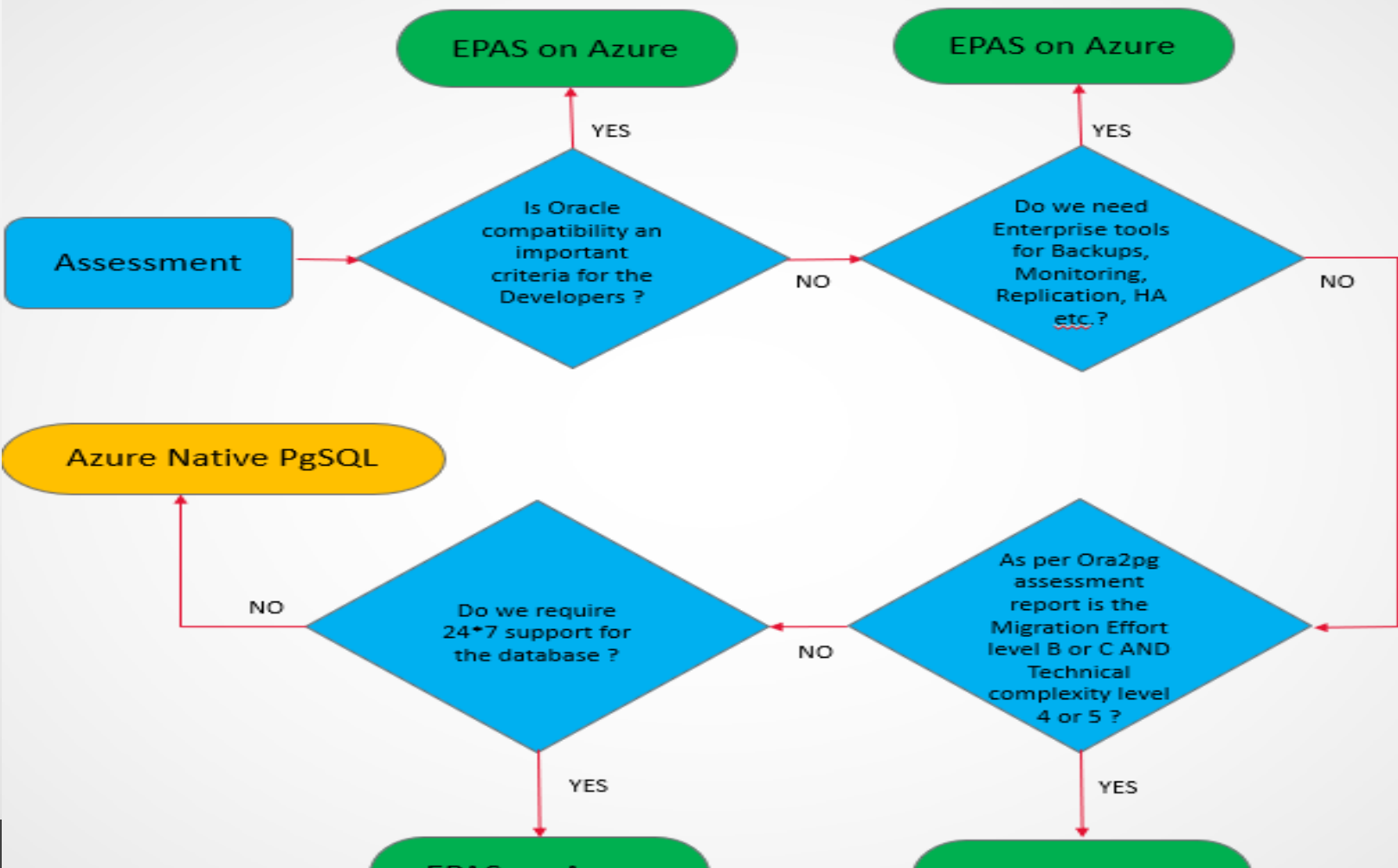
## Azure Native PostgreSQL (IaaS or PaaS)

- Built on open-source PostgreSQL.
- Lacks support for many Oracle-compatible features, e.g., Pro\*C, Bulk Data Loader, PL/SQL Debugger etc.
- Difficult for Oracle Developers/DBAs to adopt.
- Limited Security features.
- Self-supported database. No vendor Technical support available.

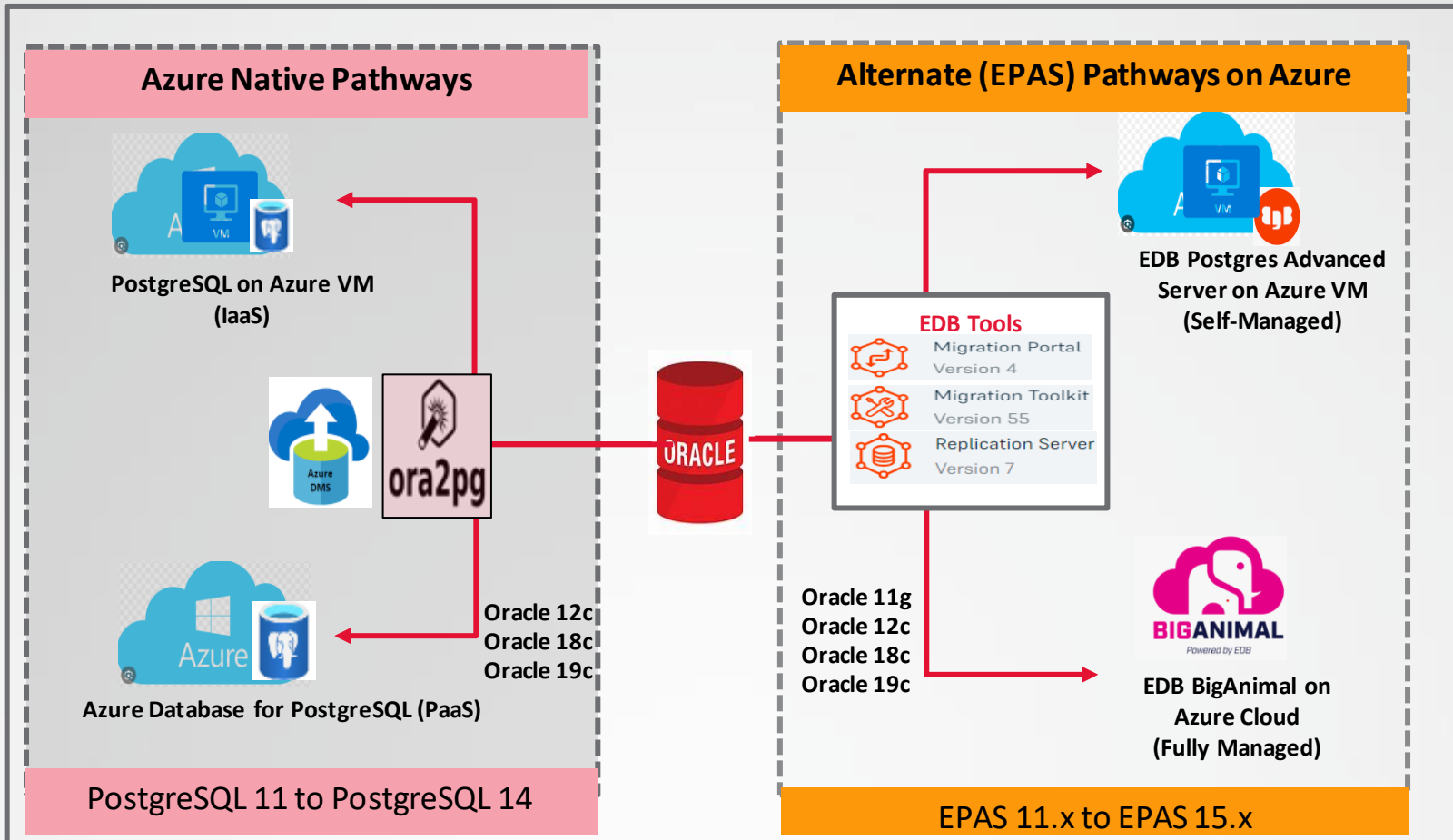
## EDB Postgres Advanced Server on Azure Cloud (Self-managed or Fully Managed)

- Built on open-source PostgreSQL, but enhanced with addition of many enterprise-class features and tools.
- All these and most other Oracle compatible features are supported.
- Easy for Oracle Developers/DBAs to adopt since it understands and executes Oracle's PL/SQL commands natively without performance issues and without difficult-to-debug emulation.
- Many enhanced Security features, e.g., Row Level Security, SQL injection protection, Data Redaction/Dynamic Data Masking etc.
- 24/7 Technical Support is available for the database.

## Decision Tree



# TechM's Migration Approach - Oracle to PostgreSQL on Azure



## We follow Cloud Adoption Framework for the migration

### Assess

- Analysis of technology-related issues, compatibility of client, application server, data access and database features.
- Tool based assessment for Oracle database objects
- Existing landing zone assessment and recommendation for the best practices.
- Evaluation of application code dependency on Oracle-specific frameworks (e.g., Pro\*C, Bulk Data Loader, PL/SQL Debugger etc.) compared to open classes.
- Estimation of re-code work, syntax corrections and the time necessary to complete migration.
- HA requirements.

### Plan

- Finalize the Target environment between Azure native PostgreSQL or EPAS on Azure based on various criteria listed in decision trees.
- For Azure native PostgreSQL choose between IaaS (PostgreSQL on Azure VM) or PaaS (Azure DB for PostgreSQL) model.
- For EPAS on Azure Cloud choose between self-managed (EPAS on Azure VM) or fully managed (EDB BigAnimal) model.
- Detailed database migration plan
- Map the required compute/storage/networking specifications to cloud services
- To-be architecture with all required components in Cloud
- Design roll-Back mechanism
- Detailed release plan
- Risk mitigation plan

### Ready

- Build the foundation infrastructure elements e.g., Azure VM (if needed), Network, Storage etc.
- Set up the tools i.e., ora2pg for Azure native implementation OR EDB Migration Portal, Toolkit and Replication server for EPAS on Azure.
- Entry and Exit criteria – verification definition
- Plan the RACI for different stakeholders.
- Plan the procedure for establishing connections with applications.
- End to end verification plan

### Migrate

- Schema Migration with DDLs of all objects.
- Code re-work and syntax correction for invalid objects.
- Functional & Performance Testing on small amount of dataset.
- Data Migration
- Data sync for incremental changes.
- UAT Testing.
- Establish connections with applications and sanity check
- Cut-over.
- Follow the release procedure for end-users after confirmation

### Manage

- Setup helpdesk for L1 onwards support required.
- Follow the managed service contract guidelines
- Establish applicable SLAs
- Plan KT sessions in case of new vendor or client taking hand-over.
- Hyper care support
- Managed service delivery model setup
- Finalize the classification and escalation matrix
- Establish governance model
- Establish the structure for meetings and reporting.
- Establish the protocols for escalation procedures etc.

- Assessment and Discovery
- Inventory build up and prioritization
- PoC/ PoV setup
- TCO

- To-be architecture
- Target database mapping
- Migration plan and release plan document
- Skill readiness plan

- Cloud landing zone readiness report
- Tools set-up

- Migration tracker
- UAT test reports

- DB managed service
- Security and performance baseline
- SLA management

# DATABASE MANAGED SERVICES

TechM will follow ITIL best practices for providing managed services for Database management. The support is split in to three categories the Level 1, Level 2 and Level 3 based on the nature of the support needed.

## ENGAGEMENT MODEL – RESOURCE AND DATABASE BASED



**Dedicated Model**  
Controlled / Customized



**Shared Model**  
Standardized / Optimized



**Hybrid Model**  
Best of Both Worlds

## INNOVATIVE SERVICE LEVELS WITH INDUSTRY LEADING SLA'S\*

Service Levels		Gold Service (Prod Env)			Silver Service (Prod + Non-Prod Env)			Bronze Service (Test /PoV Env)		
SLA		99.95%			99.7%			99.5%		
Severity #	Service Hours	Response Time	Resolution Time	Service Hours	Response Time	Resolution Time	Service Hours	Response Time	Resolution Time	
Sev-1	24 * 7	30 Mins*	2 Hrs	24 * 7	60 Mins*	3 Hrs	08:00 * 18:00 M-F	2 Hrs	8 Hrs	
Sev-2	24 * 7	60 Mins*	4 Hrs	24 * 7	90 Mins*	5 Hrs	08:00 * 18:00 M-F	4 Hrs	1 Biz day	
Sev-3	08:00 * 18:00 M-F	2 Hrs	8 Hrs	08:00 * 18:00 M-F	3 Hrs	8 Hrs	08:00 * 18:00 M-F	6 Hrs	2 Biz days	

## Common use cases for PostgreSQL on Azure

USE CASE	DESCRIPTION
Simplified Oracle migration to Azure	The ora2pg tool (a free utility) is widely used for Azure native PostgreSQL migrations. Besides licensed products like Cortex ( <a href="https://www.splendiddata.com/cortex/">https://www.splendiddata.com/cortex/</a> ) offer highly automated migration with greater efficiency, quality & speed. In case of Oracle to EDB Postgres Advanced Server (EPAS) on Azure, the EDB Migration portals & EDB Migration toolkit are used for the migration.
Reduce costs and boost productivity	Migrating of Oracle workloads to PostgreSQL on Azure in either form (Azure Native or EPAS on Azure) can yield significant savings over time. This is attributed to elimination of costly Oracle licenses plus the hardware, storage, and network costs associated with on-premises deployments.
Maintain Oracle application compatibility	EDB Postgres Advanced Server on Azure Cloud exhibits very high Oracle compatibility. Support for Pro*C, Bulk Data Loader, PL/SQL Debugger and many other Oracle compatible features make it very convenient and easily adoptable for Oracle developers and DBAs.
Optimize the PostgreSQL DB with a 99.99 percent SLA	Azure Database for PostgreSQL offers built-in high availability, elastic scaling for performance and industry-leading security and compliance, with an SLA of 99.99 percent. Similarly, EPAS on Azure offers high-availability that enables 99.99% availability requirements.



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