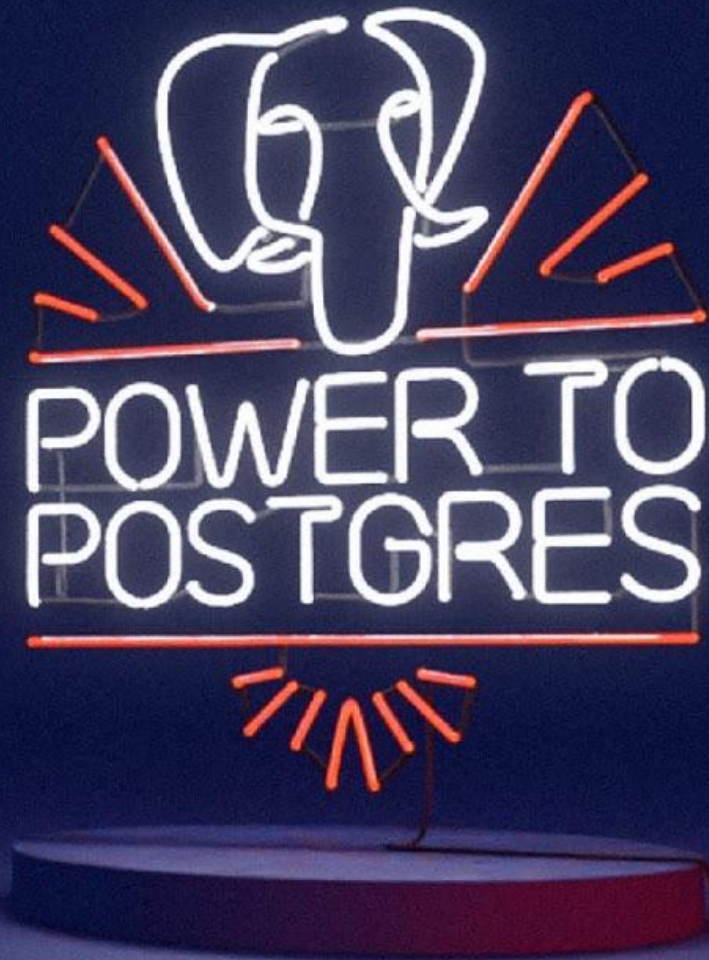# Ask the Expert:

Critical Steps in Planning and Managing your database migration projects to PostgreSQL

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EDB™

Our speakers

Host

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Agenda

Migration, what migration?

Why migration?

Migration strategies

Key steps in migration

Migration tools

Best Practices

Demo

Migration, what migration?

Type of database migration options

Rehosting	Replatforming	Restructuring
(aka "Lift and Shift") Move to a new OS or cloud platform	Change the database technology with minimal impact to the application	(aka Refactoring) Break up a monolithic application and database to move to micro/mini-services

Why migration?

Why would you migrate?

Price
High license cost

Restrictive and complicated contracts

Agility
70% of new apps use open source

Adopt modern software architectures

Deployment options
Organizations move to any Cloud

Transition to Containers / Cloud Native

Innovation
Open Source tends to innovate faster

Consolidation
Focus IT spend on fewer platforms

PostgreSQL fits many workloads

Future-proof
PostgreSQL inherently innovates as the market evolves

What obstacles exist?

Migrations are hard
- Much assessment and effort required
- Across schema, data, and application

Skills
- Businesses have invested vendor database training
- Concern of losing those skills/expertise

Troublesome contracts
- Proprietary licenses can be complicated
- Audits can be disruptive

Apps designed for a specific database
- Database-specifics ingrained in the app
- Difficult to migrate one without the other

Strategic migration options to consider

Knowing your data	**Clean your data**	**Maintenance & Protection**	**Governance**

Migration strategies
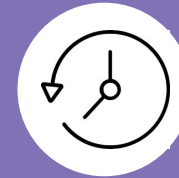
Migration strategies

"Big Bang" Migration

One-time boxed event

Requires downtime

Less complex

"Trickle" Migration

Is more complex
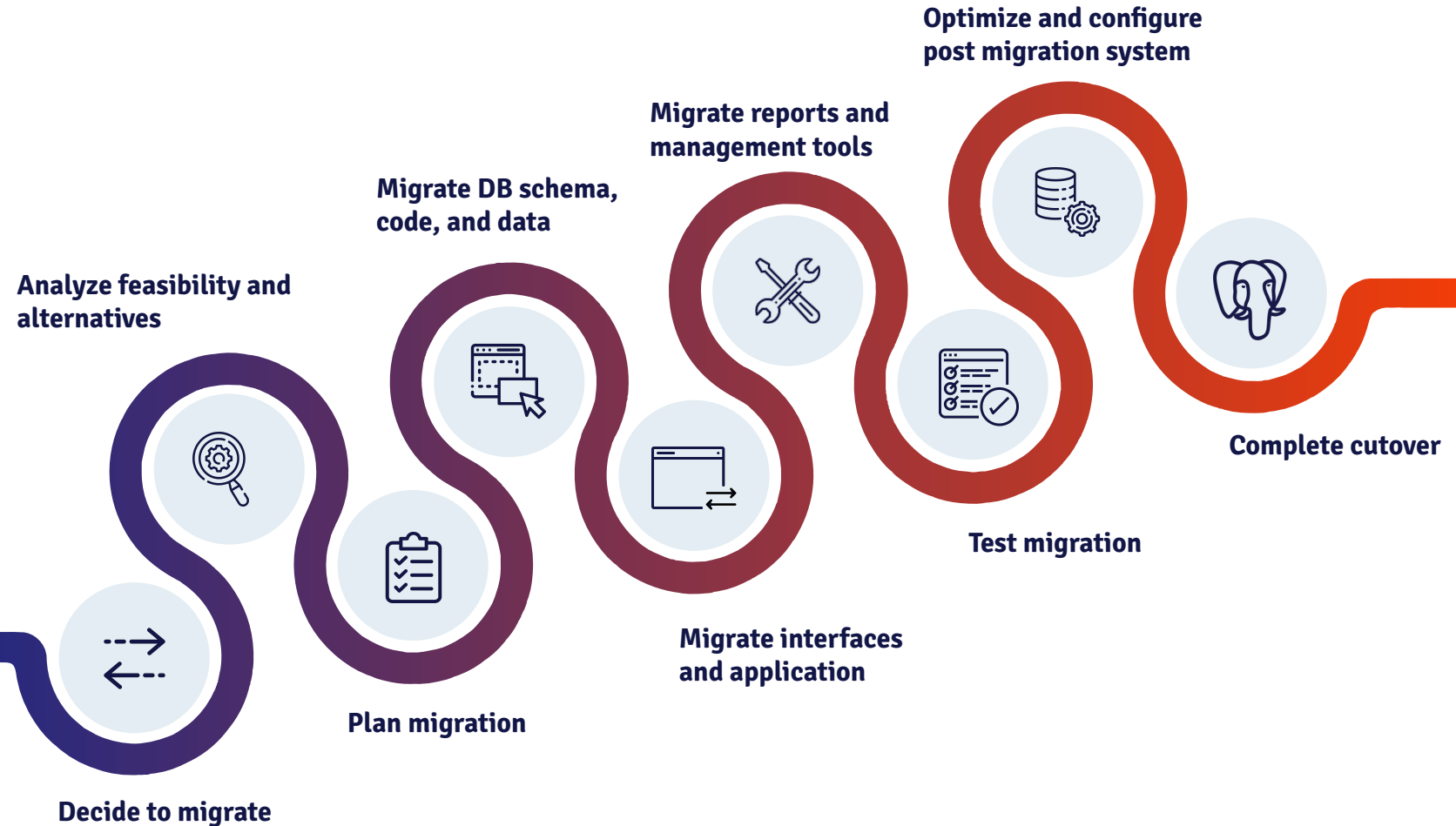
Double resources long time

Reduce risks

"Zero downtime" Migration

Less business disruption

Downtime limited to switch application

Key steps in migration

Application Database Migration Journey

What are the steps in moving to a different database?

- Optimize and configure post migration system
- Migrate reports and management tools
- Migrate DB schema, code, and data
- Analyze feasibility and alternatives
- Complete cutover
- Test migration
- Migrate interfaces and application
- Plan migration
- Decide to migrate

What factors should be considered when migrating?

Schemas
- Objects and code
- Mapping data types
- Handling syntax differences
- Raising incompatibilities

Data
- Methodology: Bulk, ongoing, fallback
- Tools: ETL, validation

Infrastructure
- Hosting (cloud, on-prem, DBaaS)
- Deployment (VM, k8s)
- DMBS Optimization
- HA Requirements
- Security and Encryption

Application
- Code
- Languages
- Connectors
- Syntax
- Performance
- Optimization
- Indexing

Migration tools

How to migrate

Manual

- Using database (schema) unload / load utilities
- Rewrite stored procedures, triggers, code
- Can be error prone
- Time consuming
- Database links

Tools

- Tools fit in 80/20 rule
  - 80% automated, 20% requires manual intervention
- Save time
- Replication
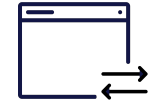
What types of tools and capabilities are needed?

Assess Feasibility

Plan Migration

Migrate DB Schema, Code, and Data

Migrate Application & Interfaces

Migrate Reports & Management Tools

Test Migration

Optimize & Configure Post Migration System

Complete Cutover

Best Practices

What are some migration best practices?

Backup

Engage experts

Stick to the Plan

Practise

Train operations

Involve stakeholders

Test, test and test

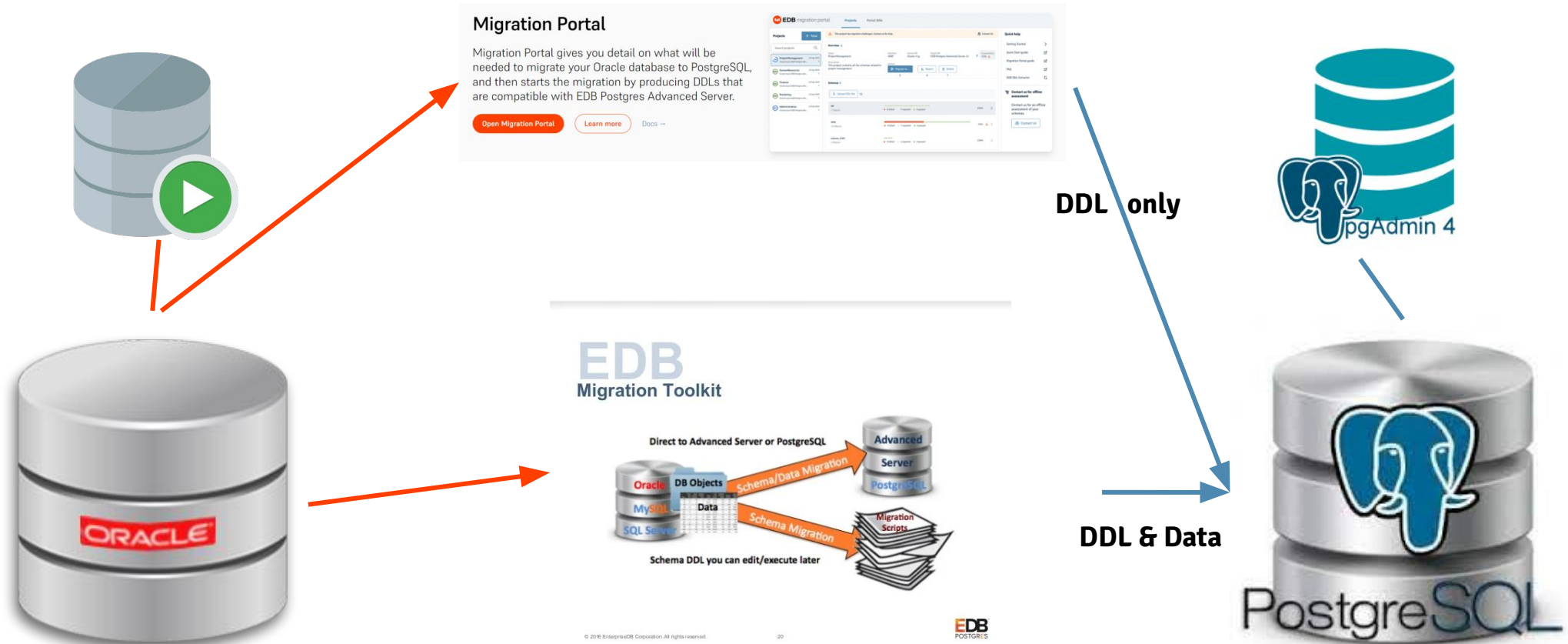**Defer index, constraint creation**

Demo

Demo

Migration portal

- Used Oracle DataPump to unload schema DDL
- Create new project and load schema DDL
- Assess the schema
- Look at what has been repaired
- Optional: show how to import DDL into Postgres

Migration toolkit

- Show SCOTT objects in SQLDeveloper
- Execute function in Oracle on SCOTT.EMP
- Show empty scottdb in PGAdmin (BigAnimal)
- Show MTK (Command Line)
- Run the migration
- Show results in scottdb with PGAdmin
- Execute function in Postgres on SCOTT.EMP

Demonstration

Migration Portal & Migration Toolkit

DDL only

DDL & Data

Thank you for attending
Ask the Expert: Critical Steps in Planning and Managing your database migration projects to PostgreSQL

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Ask the Expert: Taking High Availability To The Extreme