



# Databases without Boundries

Sascha Scholing

Sales Director CEE/Turkey

# Agenda

- Wer ist EDB eigentlich?
- Postgres & Postgres Plus: was wir technologisch anbieten koennen
- Was wir betriebswirtschaftlich anbieten koennen
- Diskussion



Wer ist EDB?

# Wer ist EDB?

- EDB ist die Company, die Postgres enterprise faehig macht.
- EDB ist Postgress und Postgres ist Open Source.
- EDB ist fuer Postgress, was Red Hat fuer Linux ist.
- Wir sind zwar nur 200 Mitarbeiter weltweit,
- aber wir haben 1.5 Mio Downloads pro Jahr ueber unsere Server
- Wir haben tausende von Entwicklern in der Community, vermutlich mehr als jeder kommerzielle Datenbankanbieter
- Postgress ist die fuenftmeistgenutzte Datenbank der Welt nach Oracle, DB2, SQL Server und Sybase(SAP)
- EDB hat als einziges Unternehmen die Tools, die Postgres enterprisefaehig machen und damit als echte Alternative zu den vier Marktfuehrer gilt
- EDB hat HP als strategischen Partner, der als einziger, first and second level support anbieten kann, ausser uns selbst.
- Wir haben den Hauptsitz in den USA uns koennen auf allen drei grossen Kontinenten Support anbieten.
- Wir haben tausende von Kunden mit Postgress Open Source Millionen

# EDB ist ein Gartner Magic Quadrant Leader



Enterprise-class features, tools & compatibility

Product road-map

Control

Services & training

Indemnification

24/7 support

*Enabling commercial adoption of Postgres*

**POSTGRES**  
innovation



**ENTERPRISE**  
reliability

Advanced features

Low cost

No vendor lock-in

Thousands of developers

Fast development cycles

# EnterpriseDB Product Overview

## Cloud Enablement

Cloud Database for Amazon Web Services

Open Stack Support\*

APIs to enable the Platform as a Service\*

## Tools

xDB Replication Server

Back and Recovery Tool

Failover Manager

Migration Tool Kit

## Management and Monitoring

Postgres Enterprise Management (PEM)

Stack Builder & Update Monitor

## The Database

### PostgreSQL / Postgres Plus Advanced Server

#### Core

PostgreSQL

OR

Postgres Plus Advanced Server

#### Extension

Components (PostGIS, pgPool, pgBouncer, SQL/Protect, PL/Perl Python TCL, FDW)

Connectors (.Net, JDBC, ODBC, OCL)

Utilities (EDBLoader, EDBPlus, ECPGPlus)

\* Roadmap



# EDB Customers

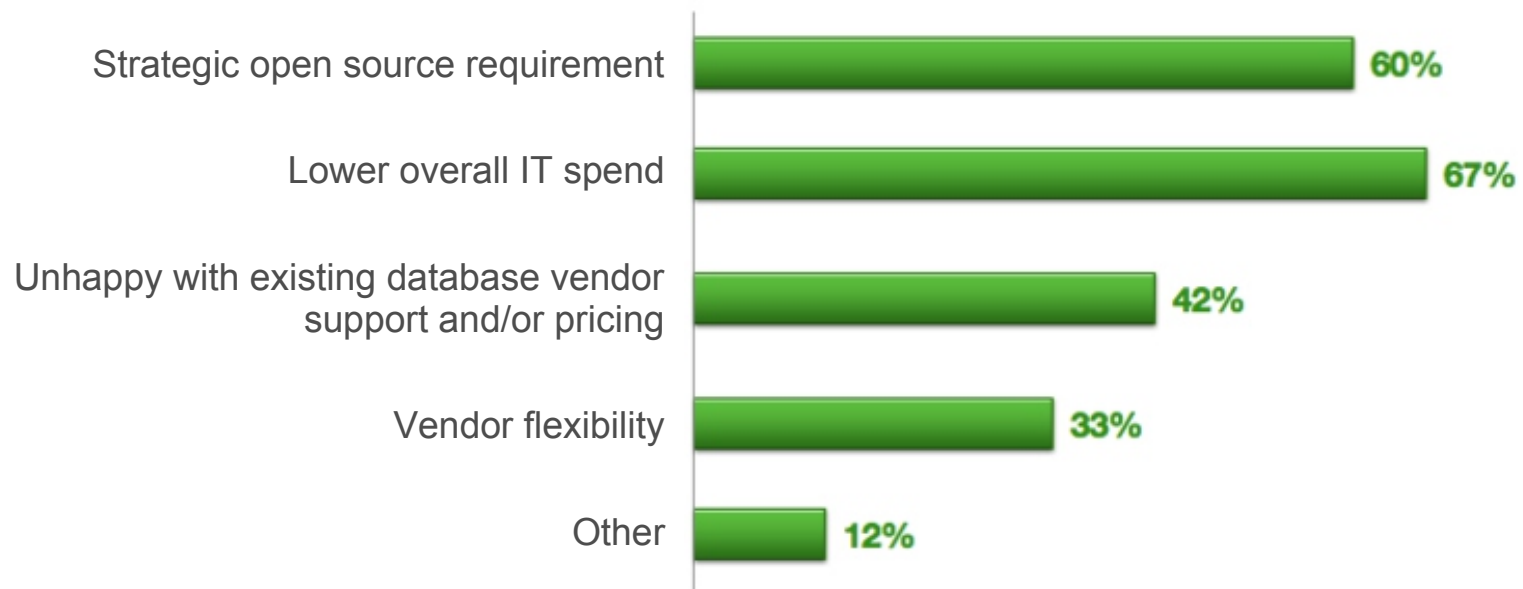
*EDB currently has over 2,500 total customers including 50 of the Fortune 500 and 98 of the Forbes Global 2000*





# Umfrage, warum haben Sie sich fuer EDB und Postgress entschieden?

Folgende Gruende gaben die Kunden anonymisiert an:



Note: this is a multiple choice question—response percentages may not add up to 100.

Research by  TechValidate™



Postgres & Postgres Plus  
Was wir technologisch anbieten  
können....

# Postgres Plus Advanced Server Key Feature Development

from PostgreSQL core	EDB contributions to PostgreSQL core	from EDB Development
<ul style="list-style-type: none"> <li>Logical Decoding for Scalability</li> <li>JSONB Data Type</li> <li>JSONB Indexing</li> <li>Expanded JSON functions</li> <li>Delayed Application of Replication</li> <li>3x Faster GIN indexes</li> <li>Support for Linux Huge Pages</li> <li>64 bit LOBs up to 4TB in size</li> <li>Custom background workers</li> <li>Writable Foreign Data Wrappers</li> </ul>	<p style="text-align: center;"><b>v9.4</b></p> <ul style="list-style-type: none"> <li>pg_prewarm</li> <li>ALTER SYSTEM</li> <li>Concurrently updatable Materialized Views</li> <li>Mongo FDW &amp; MySQL FDW</li> </ul> <p style="text-align: center;"><b>v9.3</b></p> <ul style="list-style-type: none"> <li>Materialized Views</li> </ul>	<ul style="list-style-type: none"> <li>CPU &amp; I/O Resource Management</li> <li>SQL Aggregation with CUBE, ROLLUP and GROUPING SETS</li> <li>Comprehensive UTL_HTTP Package</li> <li>Hash Partitioned Tables</li> <li>Connect_By_Root Operator for hierarchical queries</li> <li>SQL/Protect Logging to DB Table</li> <li>EDB*Loader Improved Error handling</li> <li>Partition Read Improvements over 75x</li> <li>Support for 1000s of Partitions</li> <li>Partition write improvements over 400x</li> </ul>
<ul style="list-style-type: none"> <li>Cascaded streaming replication</li> <li>JSON support, Range Types</li> </ul>	<p style="text-align: center;"><b>v9.2</b></p> <ul style="list-style-type: none"> <li>MySQL Foreign Data Wrappers for SQL/MED</li> </ul>	<ul style="list-style-type: none"> <li>Table() function support for nested tables</li> <li>INSERT APPEND hint</li> <li>xDB Multi-master replication</li> </ul>
<ul style="list-style-type: none"> <li>Synchronous replication</li> <li>Serializable Snapshot Isolation</li> <li>In-memory (unlogged) tables</li> </ul>	<p style="text-align: center;"><b>v9.1</b></p> <ul style="list-style-type: none"> <li>Index-only scans (covering indexes)</li> <li>Linear read scalability to 64 cores</li> </ul>	<ul style="list-style-type: none"> <li>Expanded Object Type support</li> <li>Row Level Security</li> <li>Declarative Partitioning syntax</li> </ul>
<ul style="list-style-type: none"> <li>Writeable Common Table Expressions (WITH)</li> <li>Deferrable unique constraints and Exclusion constraints</li> <li>Streaming replication</li> <li>Windows 64 bit Support</li> <li>Hot standby</li> </ul>	<p style="text-align: center;"><b>v9.0</b></p> <ul style="list-style-type: none"> <li>No restore In-place version upgrades</li> </ul>	<ul style="list-style-type: none"> <li>VARRAY support</li> <li>SQL Profiler</li> <li>Index Advisor</li> <li>Parallel Bulk Data Load</li> </ul>

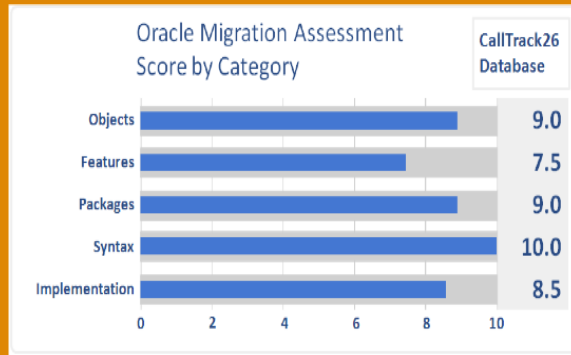
# Database Migration Assessment



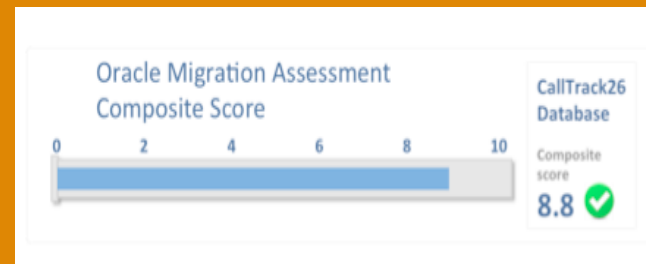
1. Analyze Oracle schema layout for supported features in PPAS

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2. Review features used in Oracle client application



3. Supported features and recommended fixes



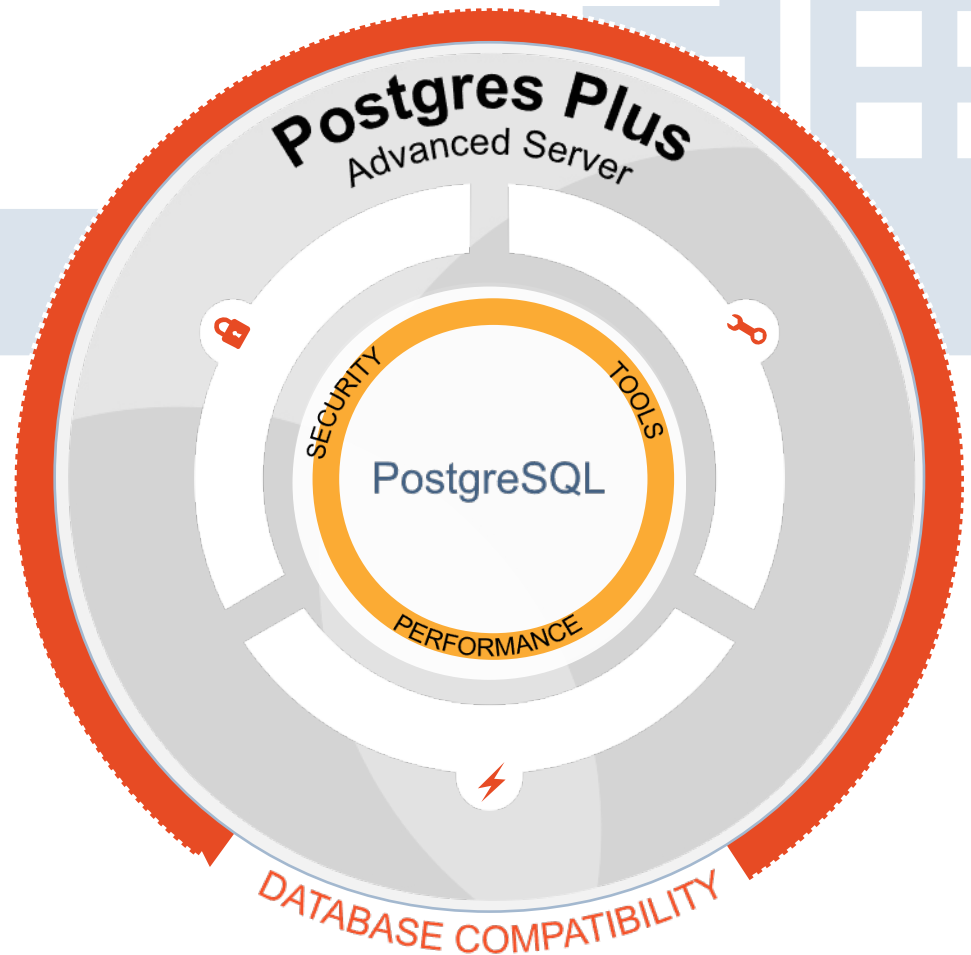
4. Overall composite score and migration plan with workarounds and time estimates

# POSTGRES PLUS

## ADVANCED SERVER

### Database Compatibility for Oracle®

- Faster, easier migrations
- PL/SQL, OCI support
- Oracle SQL extensions
- User defined objects
- Function packages
- Database links
- Oracle-like tools:  
*EDB\*Loader, EDB\*Plus,  
EDB\*Wrap*



# Postgres Plus Advanced Server Security

- Object level privileges assigned to roles and users
- Row Level Security (Virtual Private Database)
- EAL2 Certification (augmented with ALC\_FLR.2), NIPRNet, SIPRNet, JWICS
- Stored procedure obfuscation
- Protection against SQL injection attacks
- Kerberos and LDAP authentication
- SQL USAGE privilege and VIEW Security Barriers
- SSL communication
- Data Level Encryption (AES, 3DES, etc.)
- Ability to utilize 3rd party Key Stores in a full PKI Infrastructure
- Foundation for full compliance with the strictest of security standards (PCI Data Security Standard)

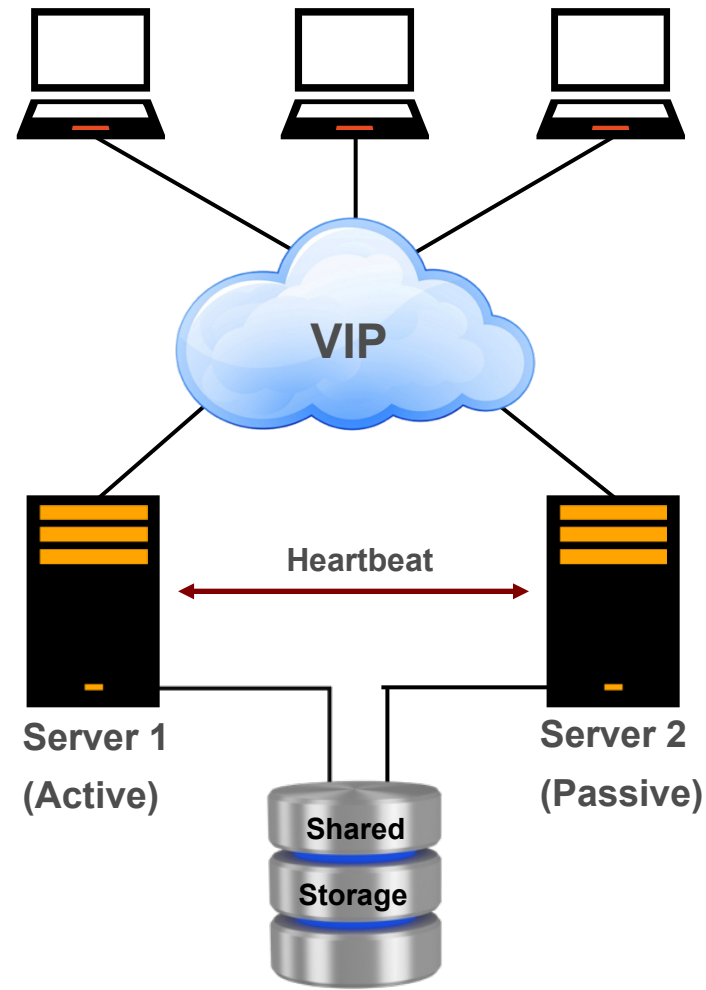
**“By default, PostgreSQL is probably the most security-aware database available ...”**

***--Database Hacker's Handbook***

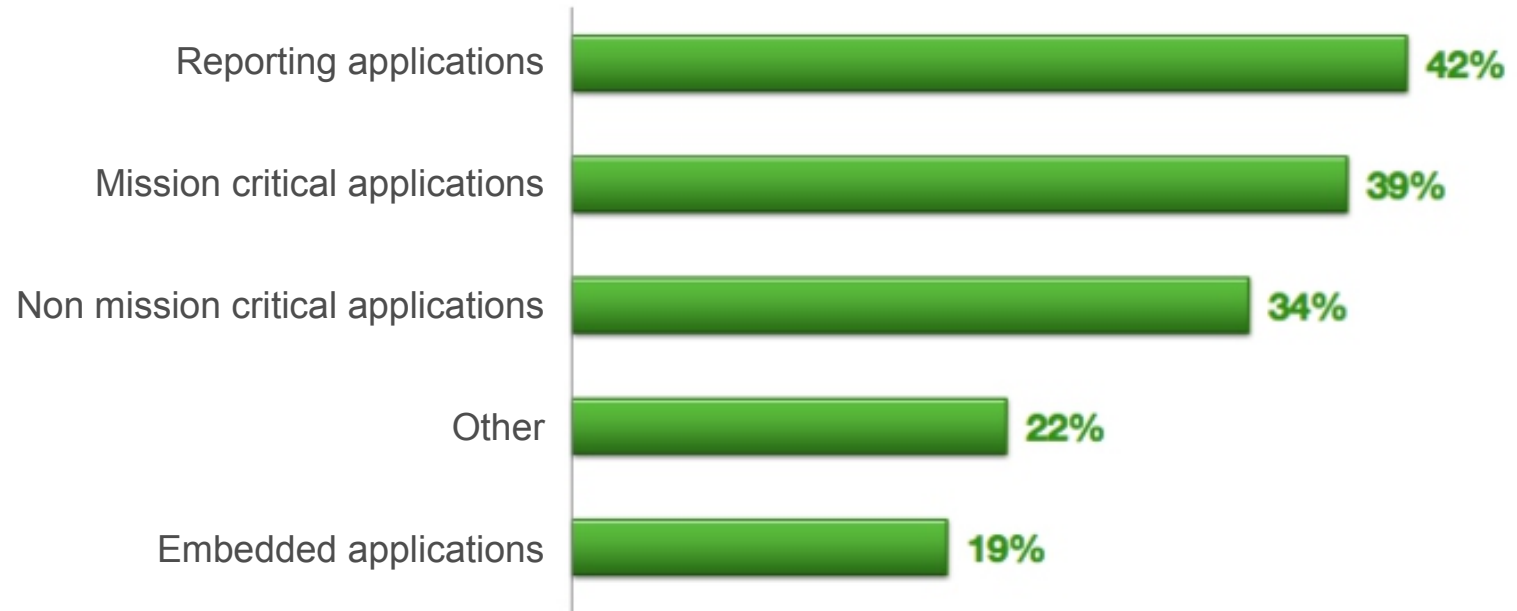
# High Availability Options

- Active/Passive clustering
- Near real-time replication
- Solutions for standby databases (similar to Oracle® Data Guard)
- Online operations:
  - Index creation
  - Online backup
  - Table maintenance

99.999%  
Availability



# Applications auf Postgres



Note: this is a multiple choice question—response percentages may not add up to 100.

Research by  TechValidate™





Why?

# Was unser Mitbewerber tut...:-)

A photograph of a modern, multi-story parking garage with a sign that reads "ORACLE PARKING". The sign has "ORACLE" in red and "PARKING" in black with a white outline. Two speech bubbles are overlaid on the image. The first is white with a red border and contains the text "\$1,000,000 TO PARK MY CAR???!". The second is red with a white border and contains the text "WE HAD TO CHARGE YOU FOR EVERY SPOT SINCE YOU COULD HAVE PARKED ANYWHERE." The building has a concrete facade and several levels of parking spaces. A blue barrier is visible in the foreground on the right.

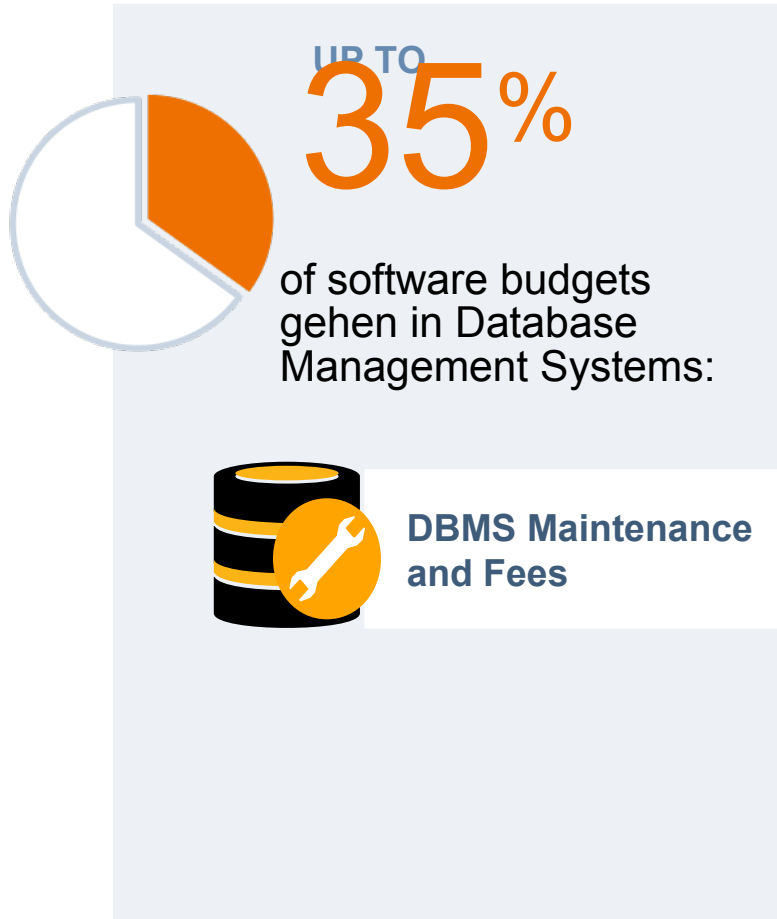
**ORACLE PARKING**

**\$1,000,000  
TO PARK MY  
CAR???!**

**WE HAD TO CHARGE  
YOU FOR EVERY SPOT  
SINCE YOU COULD  
HAVE PARKED  
ANYWHERE.**

© House of Brick Technologies

# Strategisches IT Budget Problem



EDB reduziert DBMS bis zu  
80% und Sie koennen mehr in  
innovative

## Technologien investieren

**BIG  
DATA**

**CLOUD  
COMPUTING**

# EDB Lizenzierung: Simple & Easy

Business Terms	ORACLE	PostgreSQL	EDB PostgreSQL Plus
License fee (CAPEX)	per CORE	NONE	NONE
Maintenance/Support fee (OPEX)	per CORE	per Core	Per Core
Re-pricing penalty for maintenance reduction	YES	NO	NO
Retroactive penalty for maintenance re-start	YES	NO	NO
Virtualization hard partition restrictions	YES	NO	NO

# EDB Subscription Options

(per socket or virtual cores)

	Postgres Plus STANDARD Edition	Postgres Plus ENTERPRISE Edition
<b>24x7 Premium Global Maintenance &amp; Support</b>	4	4
<b>Database (license included in annual subscription)</b>	PostgreSQL	Postgres Plus Advanced Server
<b>Database Compatibility (Oracle)</b>		4
<b>Enhanced Security</b> (Row level security, Auditing, Server-side code protection)		4
<b>Enterprise Performance</b> (Scalable partitioning, Declarative partitioning, Query optimizer hints, Infinite Cache)		4

# Oracle vs. EDB TCO Comparison on x86

	Oracle Enterprise Edition	EDB Postgres Plus Advanced Server
<b>License Fee Per Core</b>	(2 sockets/8 cores) (x86 processor)	(2 sockets/8 cores) (x86 processor)
Database	\$47,500	included in subscription
Partitioning	\$11,500	Included
Data Guard	\$11,500	Included
Diagnostics	\$5,000	Included
Total License Fee per Core	\$75,500	included in subscription
<b>Total License Fee per Server (CapEx) (0.5 core factor)</b>	<b>\$302,000</b>	<b>\$0</b>
Annual support/subscription cost per core	22% of License Fee	\$6,900 per socket
<b>Annual Support/Maintenance per Server (OpEx)</b>	<b>\$66,440</b>	<b>\$13,800</b>
<b>Total 3 Year License and Support Cost</b>	<b>\$501,320</b>	<b>\$41,400</b>

**No CAPEX**

• Annual OPEX reduction **79%**

• 3 YR TCO cost savings **92%**

# Summary: EDB+HP Provides Best of Both Worlds

## PostgreSQL

- Fast development cycles
- Thousands of developers
- Advanced features
- No vendor lock-in
- Low cost



## Enterprise Requirements

- 24/7 support
- Services and training
- Enterprise-class features & tools
- Indemnification
- Product road-map
- Responsiveness, dependability & control

*EDB Enables Postgres Innovation AND Enterprise Reliability*



# Diskussion





# Database Compatibility for Oracle includes:

## SQL extension support

Decode, NVL, Substr, NVL2

Date/time functions: add\_months, extract, next\_day

## PL/SQL support

REF Cursors, Implicit and explicit cursors

Looping, variable declarations, conditional statements

Collections: Associative Arrays, Varrays, Nested tables

Bulk binding

Named parameters

User Defined Exceptions

Explicit Transaction Control

- within a stored procedure

## Tools

EDB\*Plus – SQL\*Plus look-a-like

EDB\*Loader – SQL\*Loader equivalent

EDB\*Wrap – similar to the PL/SQL wrapper

## • Features

•Packages

•Stored procedures

•Functions

•Triggers

•Hints

•Database Links

•Hierarchical Queries

•Synonyms – Public and Private

•Sequences

•Rownum

•Object types

•Create type ... as object

•Create type ... as table

•Create type ... as varray

•Constructor and collection methods

•Users/Roles

•Dynamic SQL

# Database Compatibility (cont.)

## Data Types

Integer, number, char, double precision, float, varchar2, blob, clob, xmltype, rowid

## Oracle-like Data Dictionary

ALL\_, DBA\_, USER\_ views

Most commonly accessed views

## Diagnostics - DRITA

System and session waits

- Not exposed in PostgreSQL
- Part of Advanced Server

Statspack-like reporting

Support for Functions:

REGEXP\_INSTR

REGEXP\_COUNT

REGEXP\_SUBSTR

Custom constructor methods for Objects

Oracle compatible Materialized Views

## Package Support for:

- DBMS\_ALERT
- DBMS\_CRYPTO
- DBMS\_JOB
- DBMS\_LOB
- DBMS\_LOCK.sleep
- DBMS\_MVIEW
- DBMS\_OUTPUT
- DBMS\_PIPE
- DBMS\_PROFILER
- DBMS\_RANDOM
- DBMS\_RLS
- DBMS\_SCHEDULER
- DBMS\_SQL
- DBMS\_UTILITY

## Package Support for:

- UTL\_HTTP for web server communications
- UTL\_URL
- UTL\_TCP
- UTL\_FILE
- UTL\_MAIL
- UTL\_SMTP
- UTL\_ENCODE

THANK YOU

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grazie  
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kam ouen  
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