

Building a Cloud Database with PostgreSQL Challenges & Innovations

Presented by EnterpriseDB Corporation
November 30, 2011

The EnterpriseDB Advantage

▶ Products and Tools

- Advanced database server software
- Deep Oracle compatibility
- Bundled development and management tools



▶ Technical Support and Services

- Around the clock support
- Expert consulting
- Remote management and monitoring



▶ Professional Training

- Learn PostgreSQL from the experts
- Web and on-site training
- Training for developers and DBAs



The Enterprise PostgreSQL Company

- ▶ The Enterprise PostgreSQL company
- ▶ Founded in 2004, first product GA in 2005
- ▶ 120+ employees
- ▶ 1,300+ customers across all market segments
- ▶ 60,000+ downloads / week of PostgreSQL and related products
- ▶ Enabling database consolidation using PostgreSQL and advanced Oracle compatibility
- ▶ Saving customers millions through the power of open source
- ▶ Strong financial backing:



redhat.



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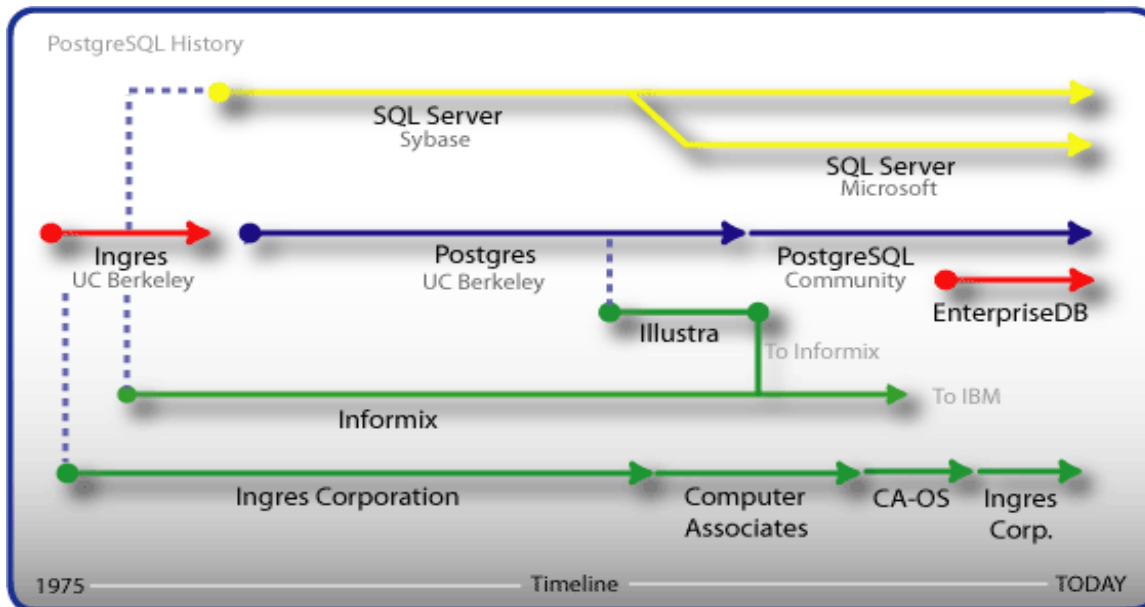


PostgreSQL the Database

► 25+ years

- of enterprise-class development
- of enterprise-class features

PostgreSQL



Fully ACID Compliant
MVCC
Point in Time Recovery (PITR)
Data and Index Partitioning
Bitmap Indexes
ANSI Constraints
Triggers & Stored Functions
Views & Data Types
Nested Transactions
Online Backup
Online Reorganization
Foreign Keys

PostgreSQL and the Community

- ▶ Independent & Thriving Development Community
- ▶ 6 core team members (2 employed by EnterpriseDB)
- ▶ 16 committers for v9.0 (3 employed by EnterpriseDB)
- ▶ 275 contributors for v9.0 (7 employed by EnterpriseDB)
- ▶ 9,000,000+ downloads / year
- ▶ EnterpriseDB's Bruce Momjian was one of the founders of the PostgreSQL Global Development Group
- ▶ Thousands of active deployments worldwide in public and private sector organizations of all sizes

PostgreSQL Momentum



Building a Cloud Database with PostgreSQL Challenges & Innovations

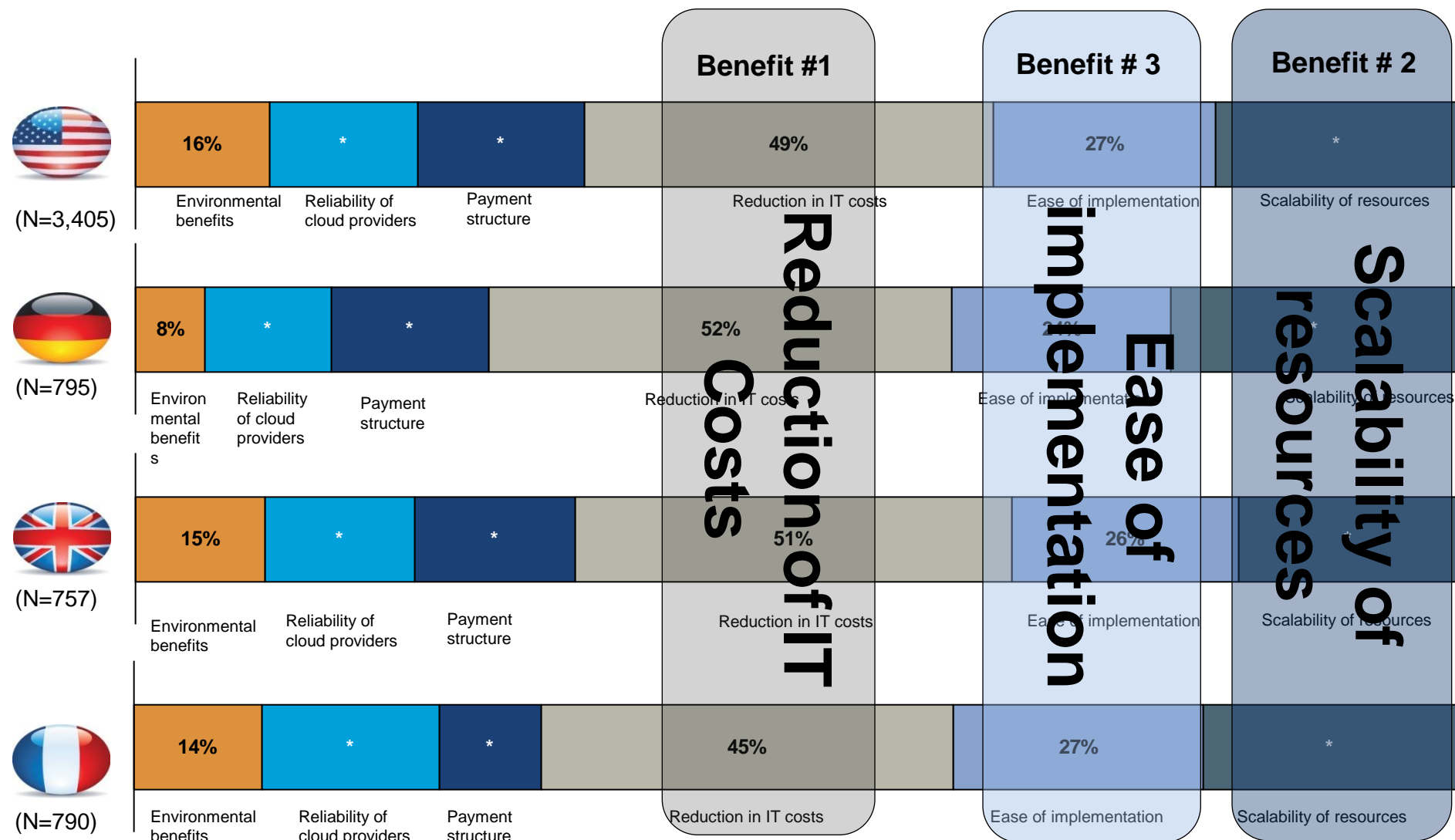
Postgres Plus[®] Cloud Server

The Cloud Platform Will Succeed

- ▶ Great Industry Adoption
- ▶ Solves many Problems
- ▶ Developer Support
- ▶ Saves Time
- ▶ Saves Money
- ▶ Creates Money
- ▶ CIO's love it
- ▶ Compatibility



Focus on the perceived benefits/outcomes of cloud



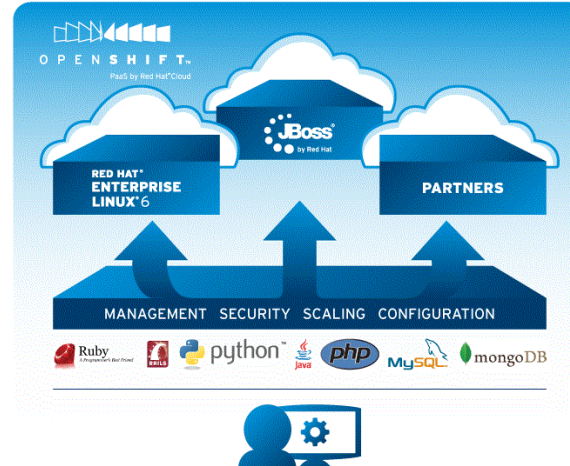
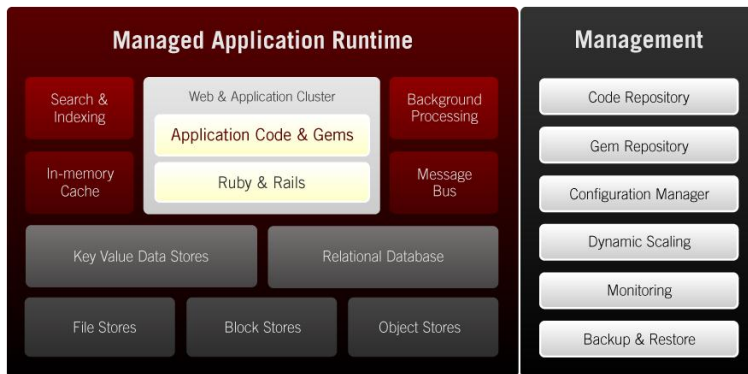
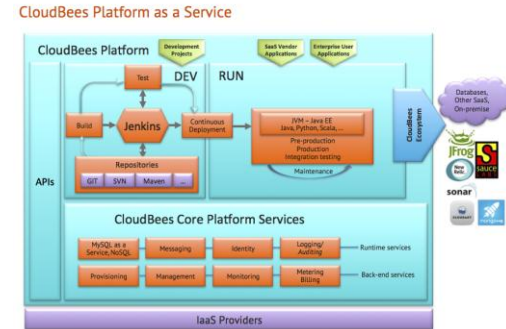
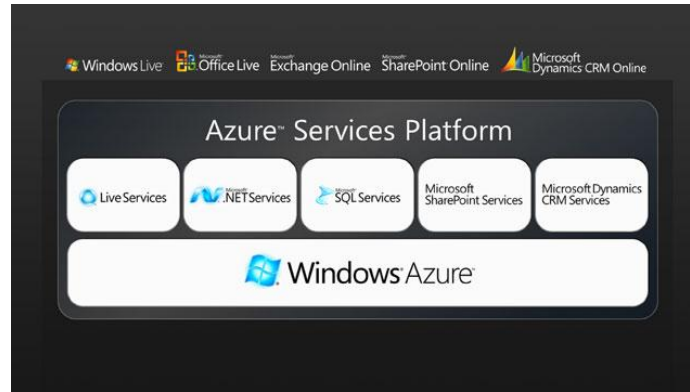
What do you perceive to be the main **benefits** of your organization adopting cloud computing? (*Please select up to TWO*).

Base: technology decision-makers

Source: Forrester's Strategic Oxygen Survey, Q1/Q2 2010

The Developer Still Needs a Database

- ▶ Engine Yard
- ▶ M\$ Azure
- ▶ CloudBees
- ▶ OpenShift
- ▶ Heroku
- ▶ AWS Market Place



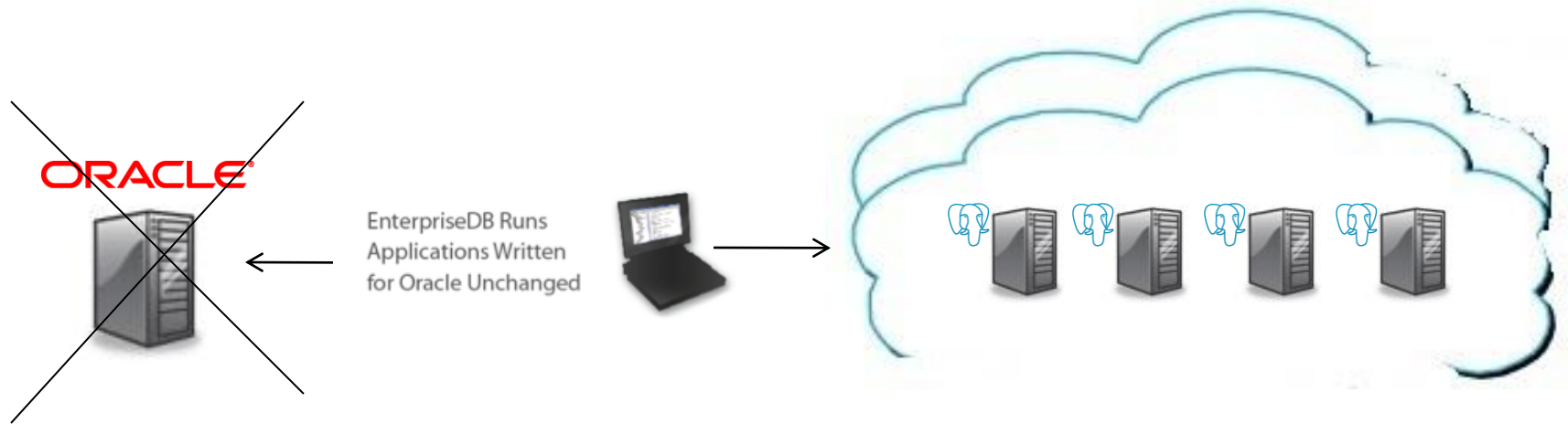
Postgres Plus Cloud Server

- ▶ Provides PostgreSQL or PPAS database as a service (DBaaS)
- ▶ Works in public, private, and as an easy-to-use in standard data centers
- ▶ Point and Click Simple setup and management
- ▶ Transparent node additions to increase scale
- ▶ Oracle Compatibility
- ▶ Clone Database
- ▶ Built-in load balancing, failover, and transparent node additions
- ▶ Online backup and point-in-time recovery
- ▶ Private Beta Now – GA December 2011



Move Oracle Applications to the Cloud

- ▶ Move existing Oracle applications to use a much less expensive Oracle-compatible database in the Cloud
- ▶ Reuse existing Oracle development skills and create new applications that target Postgres Plus Cloud Server



Postgres Plus Cloud Server – Features & Benefits Overview

| Feature | Benefit |
|--|---|
| PostgreSQL database | Enterprise-class database features & performance; fully Postgres compatible |
| Transparent/elastic node addition | Add capacity and redundancy online with no business interruption |
| Automatic load balancing | Increases read performance across multiple nodes |
| Automatic failover | Built-in high-availability in case of primary database failure |
| Fail-back | Easily revert back to original primary once it comes back online |
| Web-based interface | Point-and-click management from start to finish from all popular web browsers |
| Status management/monitoring | View global status & performance of complete cloud deployment |
| Online backup and point-in-time recovery | Full protection of data in the cloud; protects against data mishaps |
| Clone database | Easily create developer 'sandboxes' |
| Support for public, private cloud as well as in-house data center installs | Run anywhere and anyway that is desired |
| Oracle compatibility | Allows cost-effective and easy way to move Oracle applications to the Cloud |

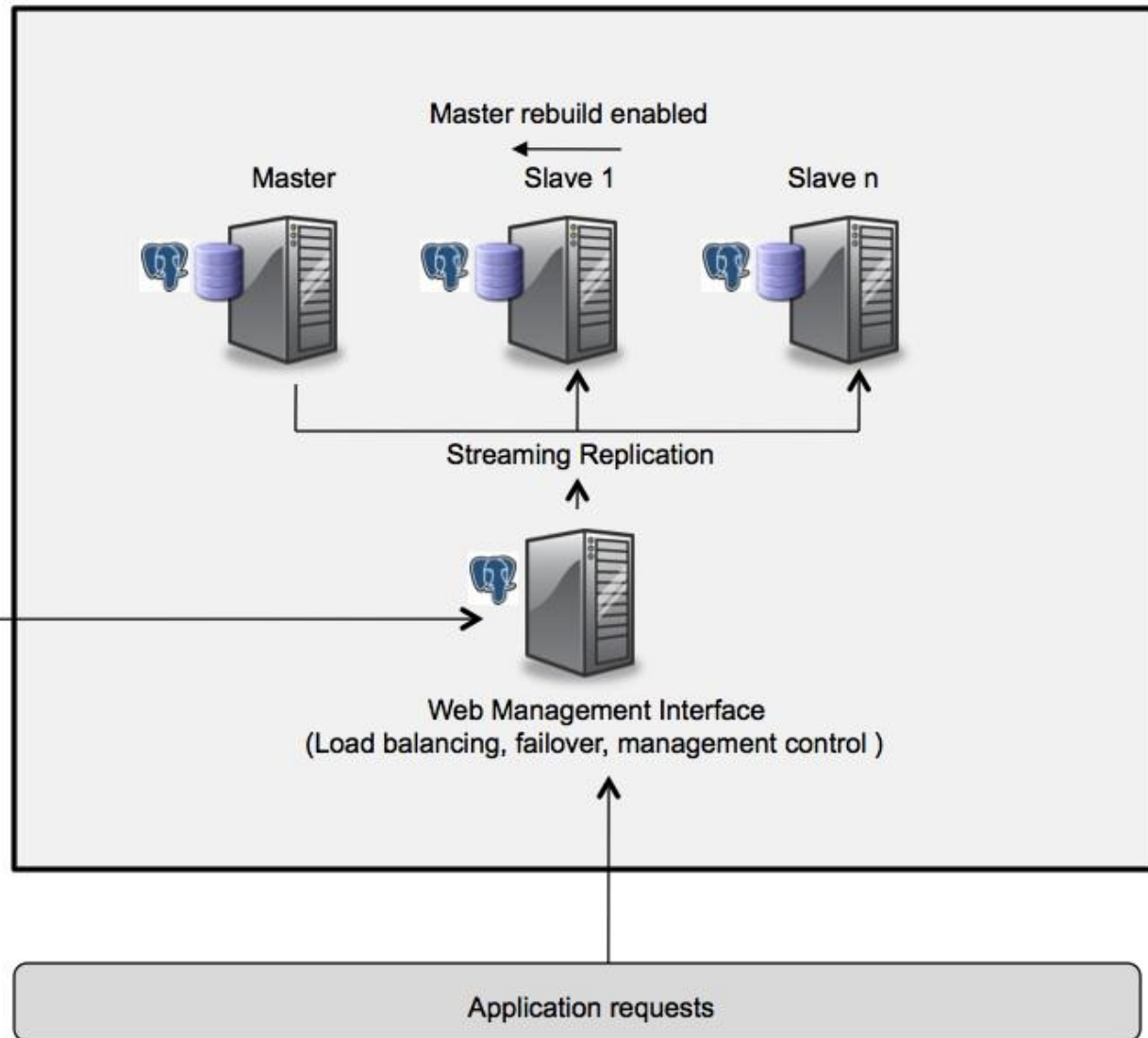


Architecture Overview



Database provisioning request

Size, # of nodes for scale/failover



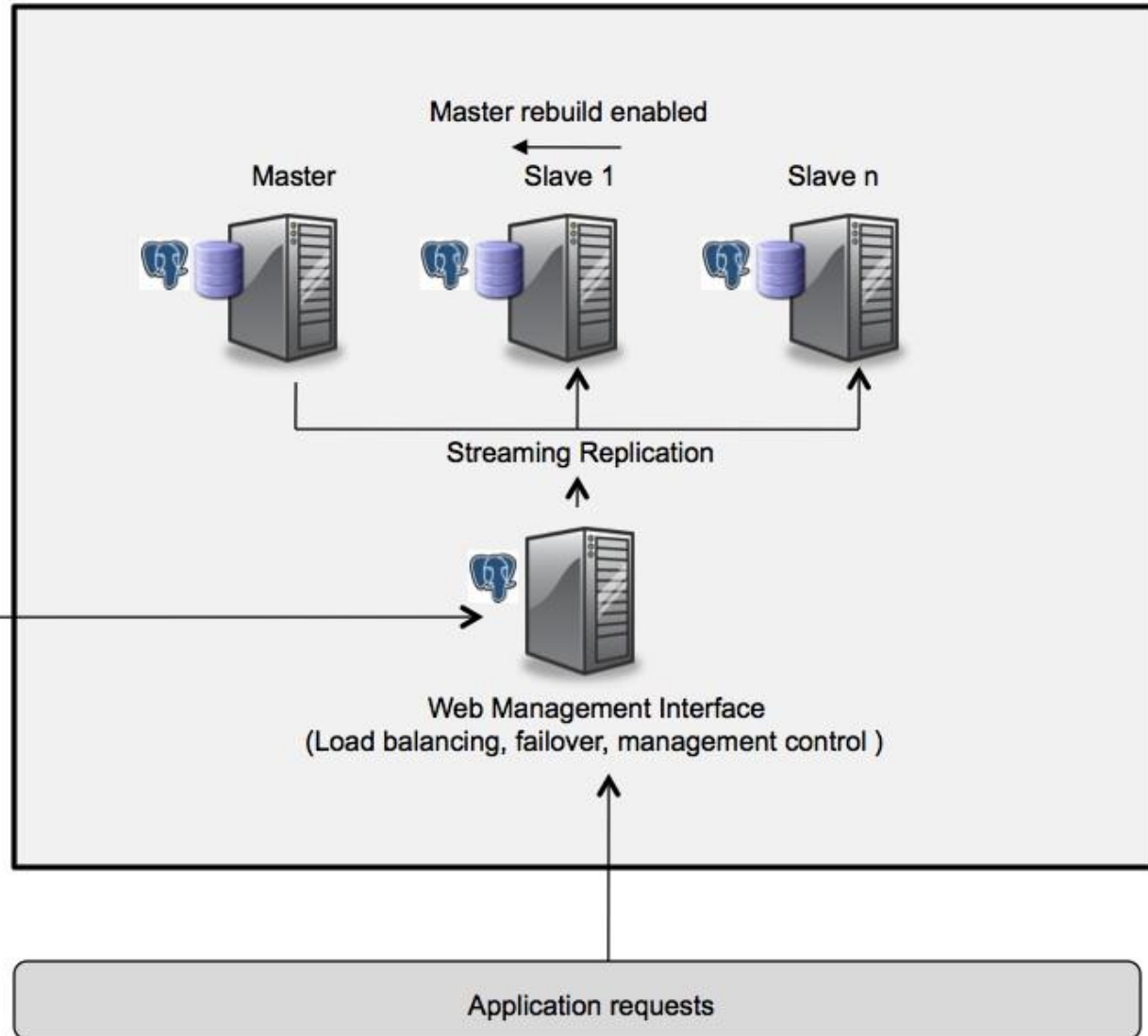
Architecture Overview



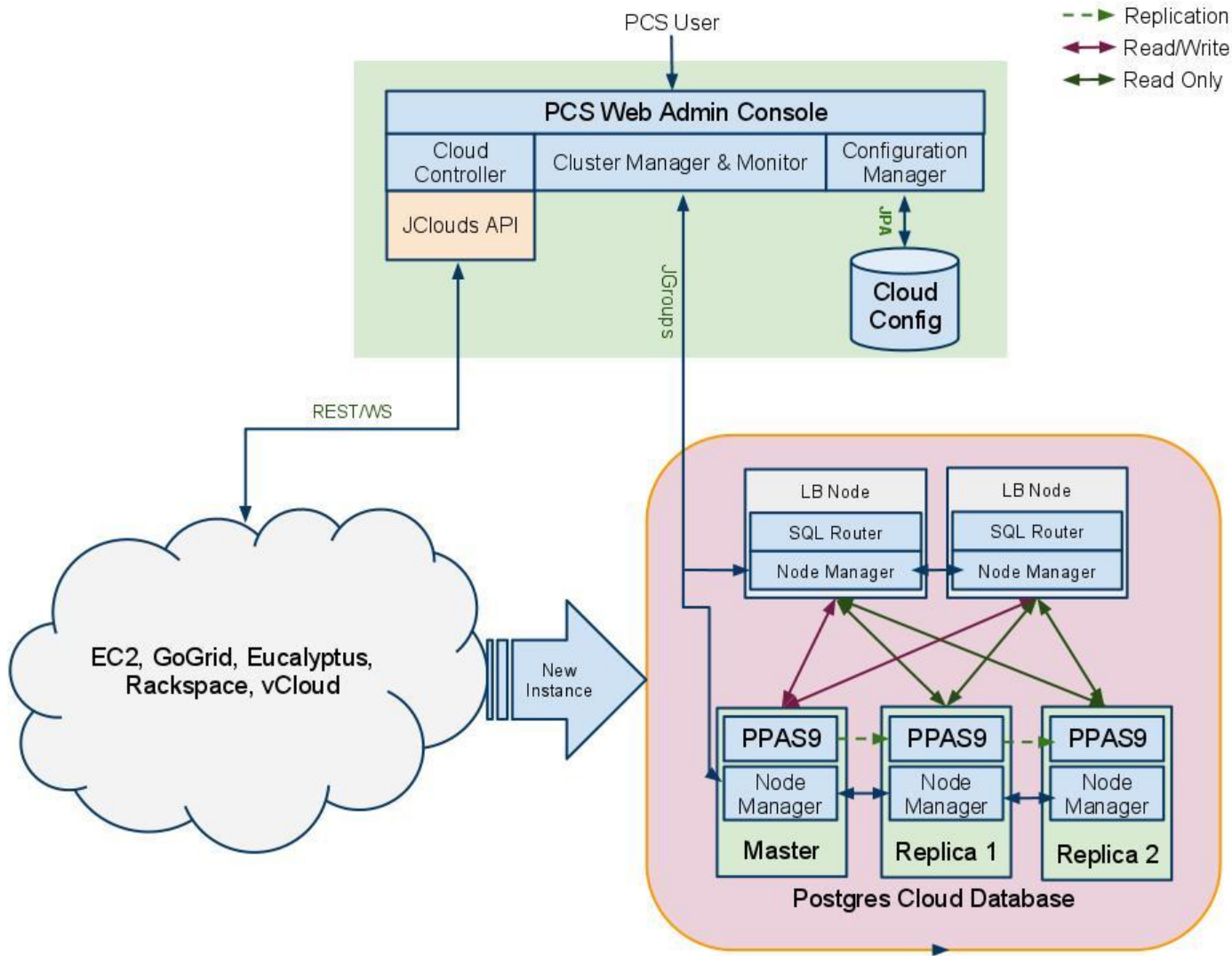
Web-based Interface

Database provisioning request

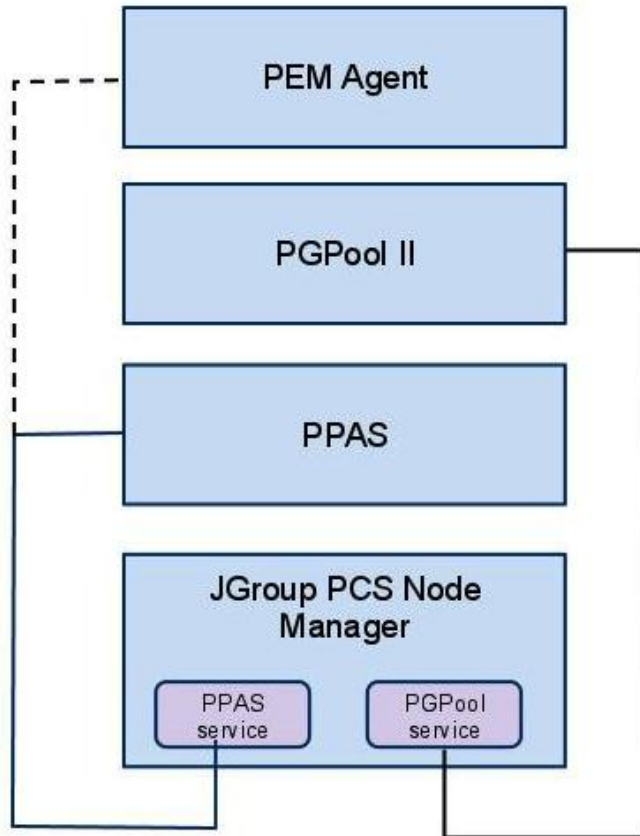
Size, # of nodes for scale/failover



Architecture Detail

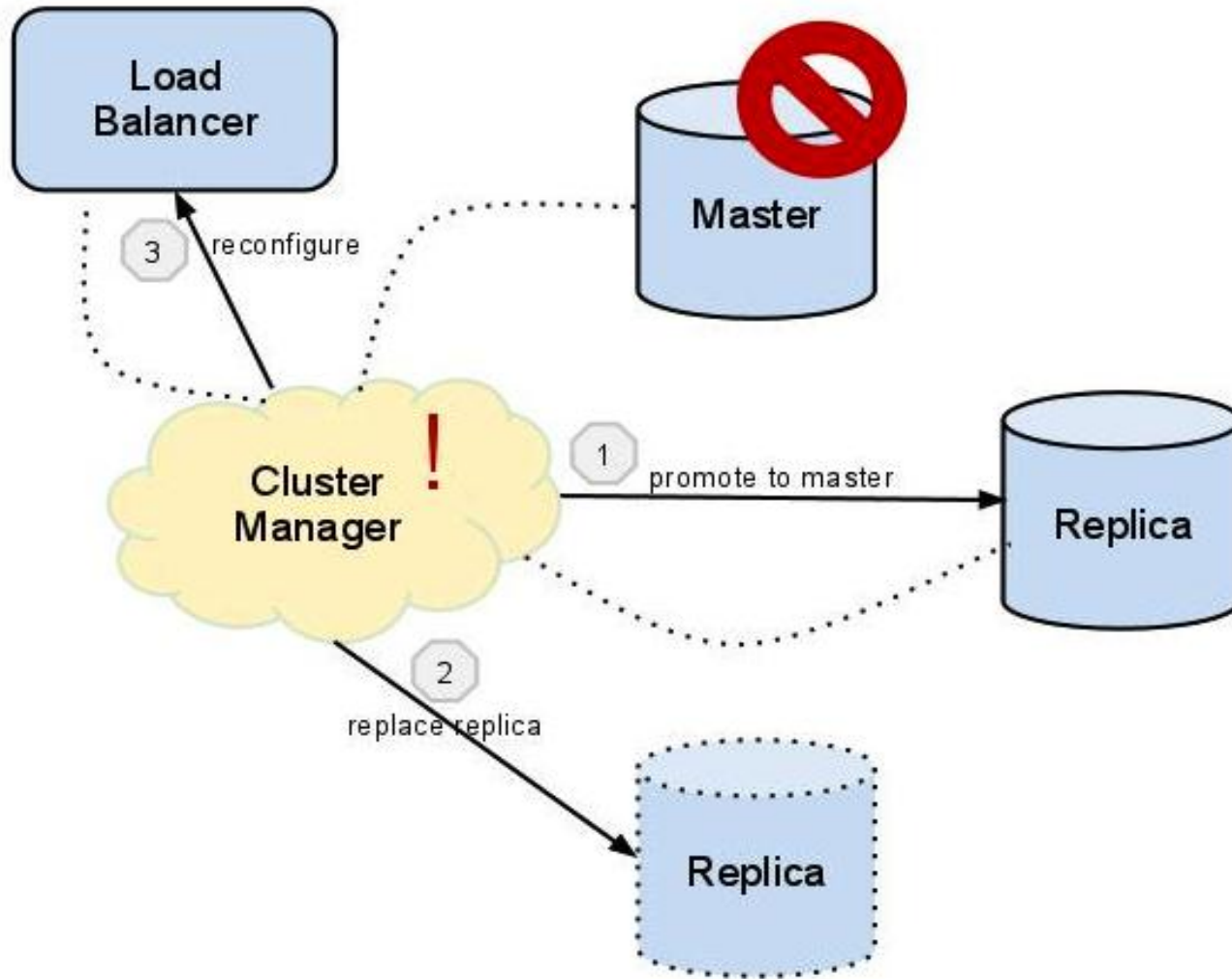


Cluster Node Manager Detail

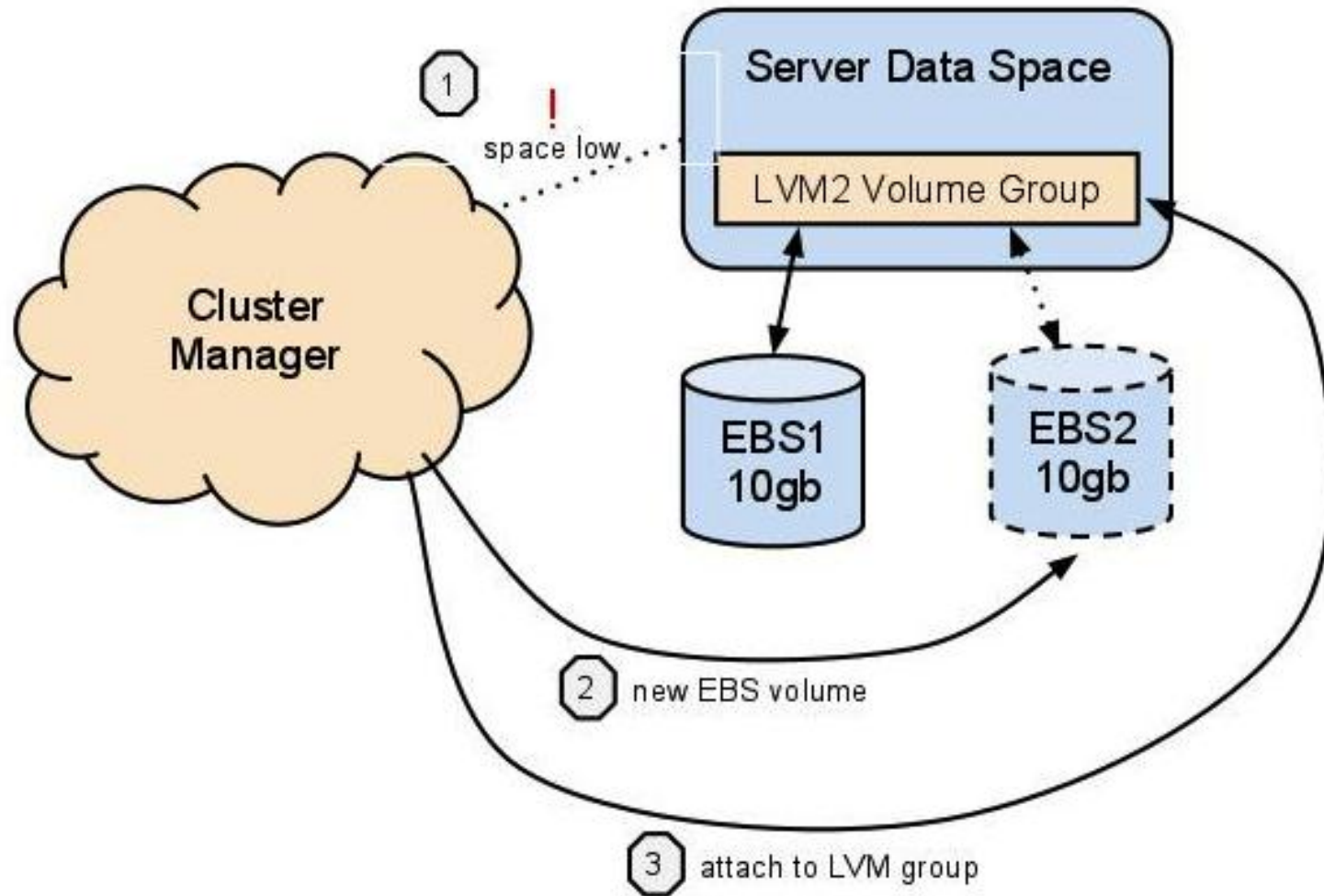


- Failure Detection
- Metrics reporting
 - (CPU, Data Space, Ops/s, others)
- Server control
 - (Start, Stop, Restart, Reload)
- Push Configuration Updates

Use Case: Master Node Failover



Use Case: Scale Up Data Space



Console – Scale Up Example

- ▶ Automatic provisioning of PostgreSQL and Postgres Plus Advanced Server High Availability Setups in Public and Private Clouds.

The screenshot displays the EnterpriseDB console interface. At the top, the logo 'EnterpriseDB® The Enterprise PostgreSQL Company' is visible, along with a 'logout' button. The main navigation bar includes 'Dashboard', 'Servers', 'Parameters', 'Backups', and 'User'. Below this, a table lists server instances with columns for NAME, PENDING, DATA SPACE %, CPU %, NETWORK, CLUSTER, and SERVER. Two instances, KTP and KTP2, are shown with their respective resource usage and status indicators. A 'Scale Up' dialog box is overlaid on the table, showing 'Step 1' and 'Step 2' tabs. The 'Add Replicas' section has a dropdown set to '3', and the 'Add Memory' section has a dropdown set to '5'. A 'Next' button is located at the bottom right of the dialog. On the left side of the console, there are several icons representing database operations and monitoring.

| NAME | PENDING | DATA SPACE % | CPU % | NETWORK | CLUSTER | SERVER |
|------|---------|--------------|-------|---------|---------|--------|
| KTP | | 11% | 6% | ✓ | ✓ | ✓ |
| KTP2 | | 12% | | ✓ | ✓ | ✓ |

| ID | TIME | MESSAGE |
|--------|------------------|-----------------------------------|
| 175918 | Mon Oct 10 15:47 | Creation of cluster |
| 175916 | Mon Oct 10 15:46 | Postgres Plus Ser |
| 175915 | Mon Oct 10 15:46 | Node 107.22.2.200 |
| 175877 | Mon Oct 10 15:43 | Creation of cluster KTP2 started. |

Q&A

Thank You