EDB & PGPOOL Relationship and PGPOOL II 3.4 Benchmarking results on AWS

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- **Managing PGPOOL II development from EDB**

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 Manager (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)
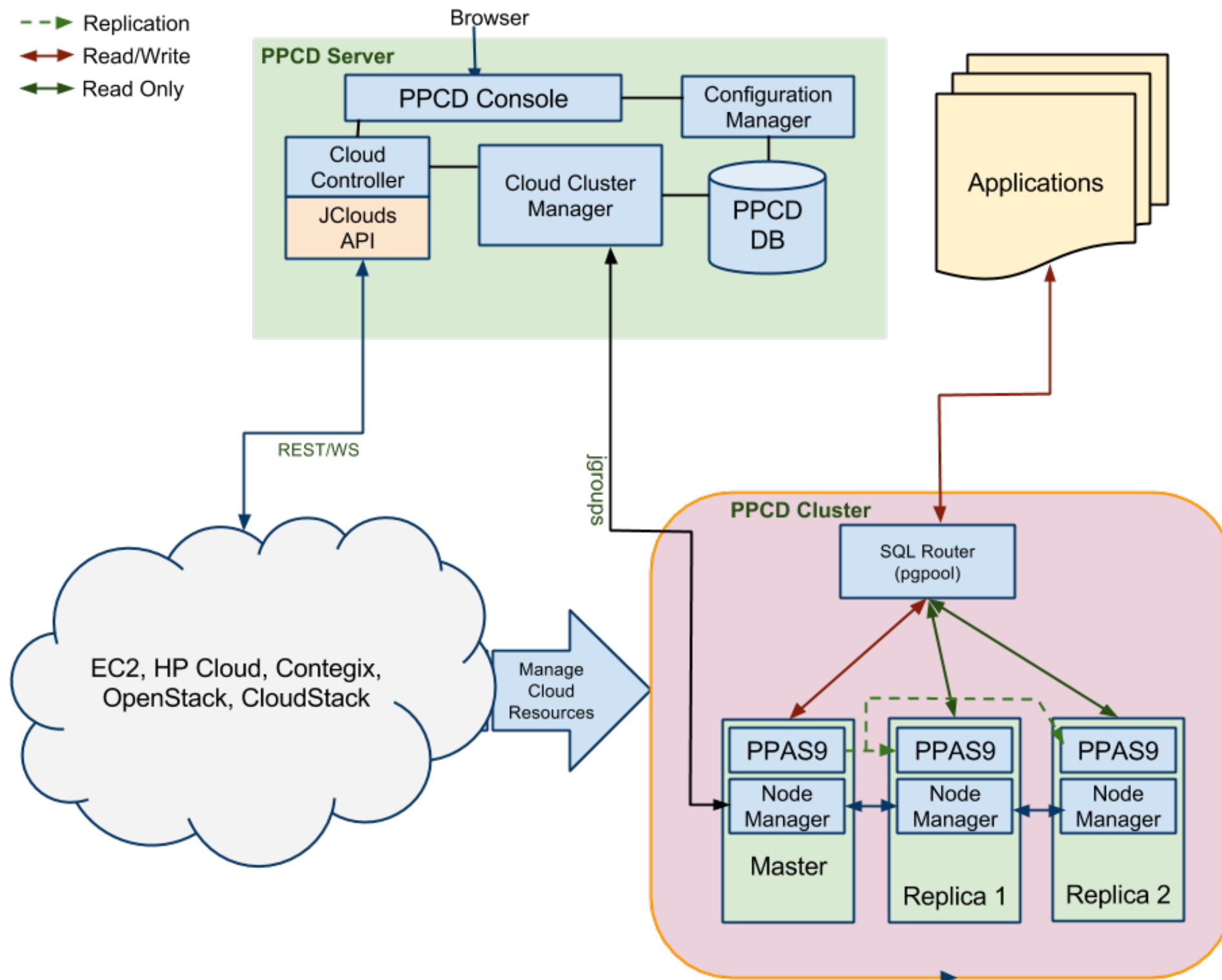
Connectors (.Net, JDBC, ODBC,OCL)

Utilities (EDBLoader, EDBPlus, ECPGPlus)

* Roadmap

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About my **talk**

How EDB uses PGPOOL II

PPCD - pgpool-II in the cloud

PPCD/pgpool II…

- **PPCD allows the user to host an instance of PG and/or PPAS in the cloud.**

- **PGPOOL II runs on the master node**

- **Client apps connect to PGPOOL.**

- **Performs load balancing by sending the write queries to master and read queries across read replicas**

- **Performs connection pooling**

Other services

- **EDB offering support and services for pgpool II**

- **Some BIG companies using pgpool II**

  - **US Based Credit card company**
  - **Indian Government Organisations**
  - **Healthcare**
  - **Telecom**
  - **IT solution providers and consultancy services**

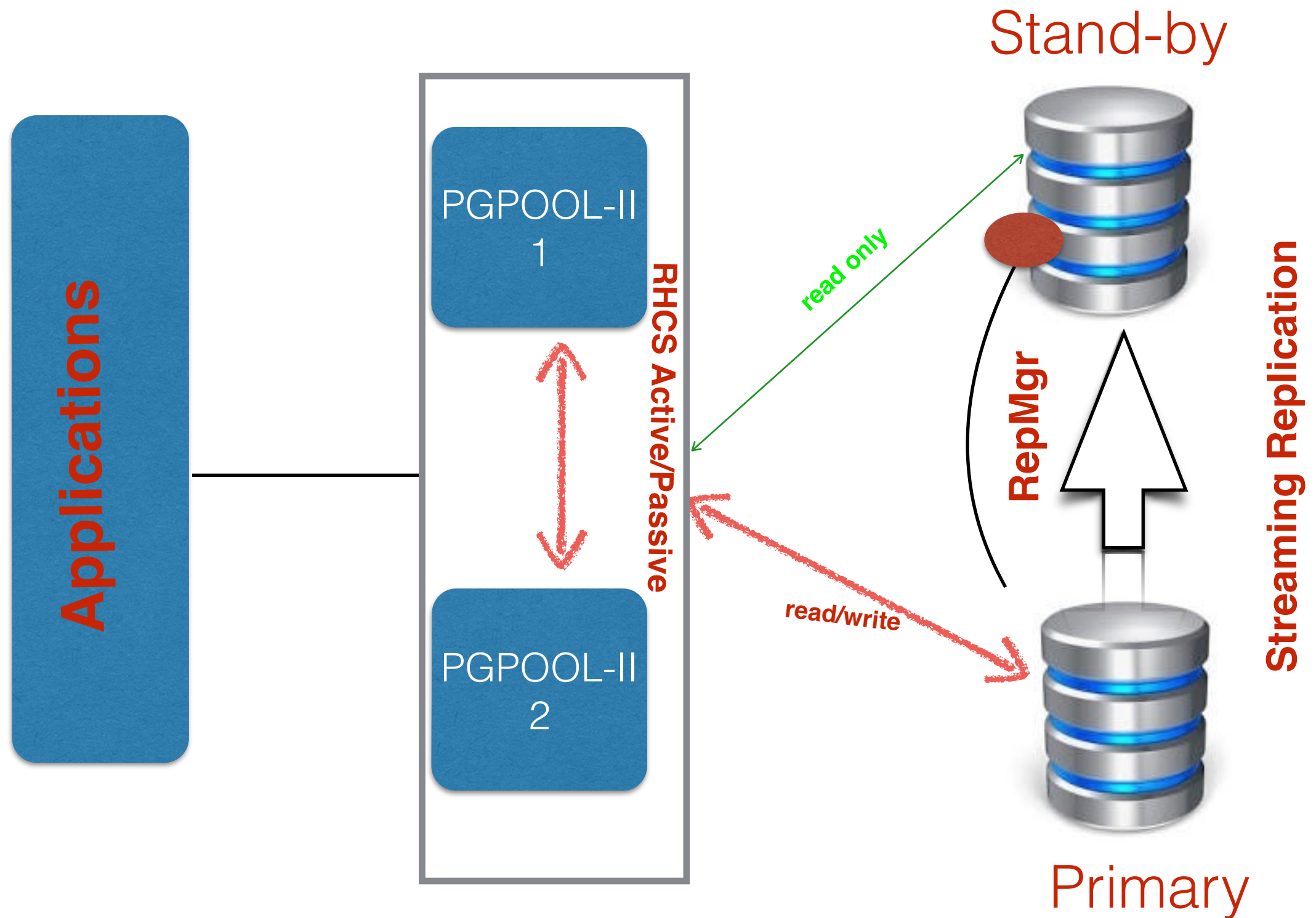 **and More….**

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Most commonly used features
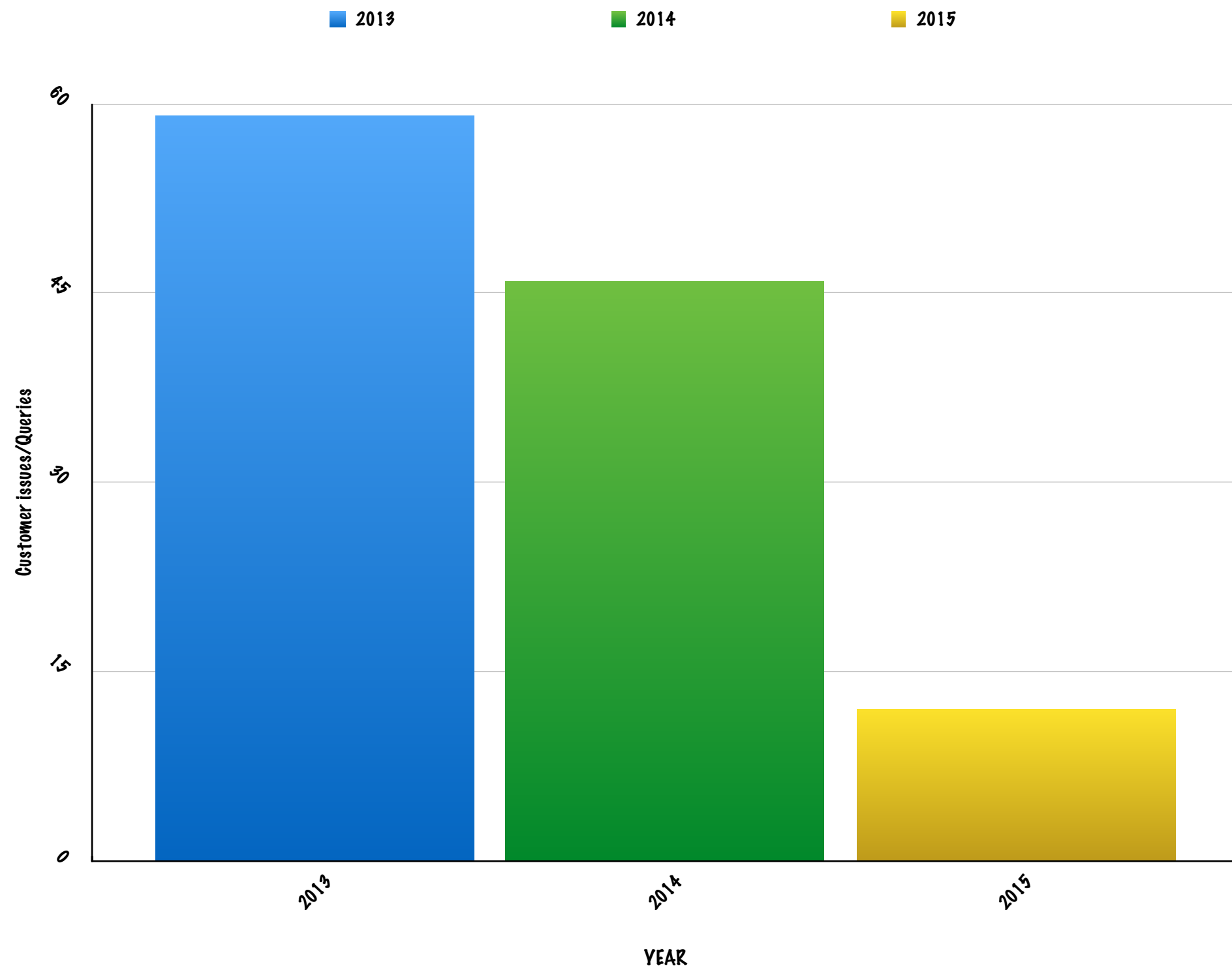
In order of priority…

- **Load Balancing (sql routing)**

- **Failover with streaming replication**

- **Connection Pooling**

- **Watchdog PGPOOL II HA**

Features not used

- **Parallel Query**

- **PGPOOL Replication**

A production customer scenario

Stand-by

Applications

PGPOOL-II 1

PGPOOL-II 2

RHCS Active/Passive

read only

read/write

RepMgr

Streaming Replication

Primary

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- **Overall it has gotten very stable and resilient in last few major releases.**

- Types of customer issues reported in last two years (most of these issues have been resolved)

  - **Handling SSL based authentication**
  - **Performance issues with extended query protocol (performance not as good as simple query protocol)**
  - **Issues with failover (not able to connect to stand-by immediately when failover happens)**
  - **Sequence functions don't work with pgpool**
  - **Performance issues with load balancing, the TPS is not very high**
  - **Configuration issues**
  - **Memory leaks (memory issues addressed by plugging in PG memory and exception management)**

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WISHLIST !!

- **Improve performance with extended query protocol**

- **Watchdog enhancements (making it more resilient and handle scenarios like split-brain, automatic failover)**

- **Being able to install individual features of pgpool…I am only interested in connection pooling…**

- **Enhancements with Failover functionality..seamless failover**

- **Support more platforms, HPUX, solaris, windows…**

- **GUI Installer and GUI monitoring tool**

- **Better documentation**

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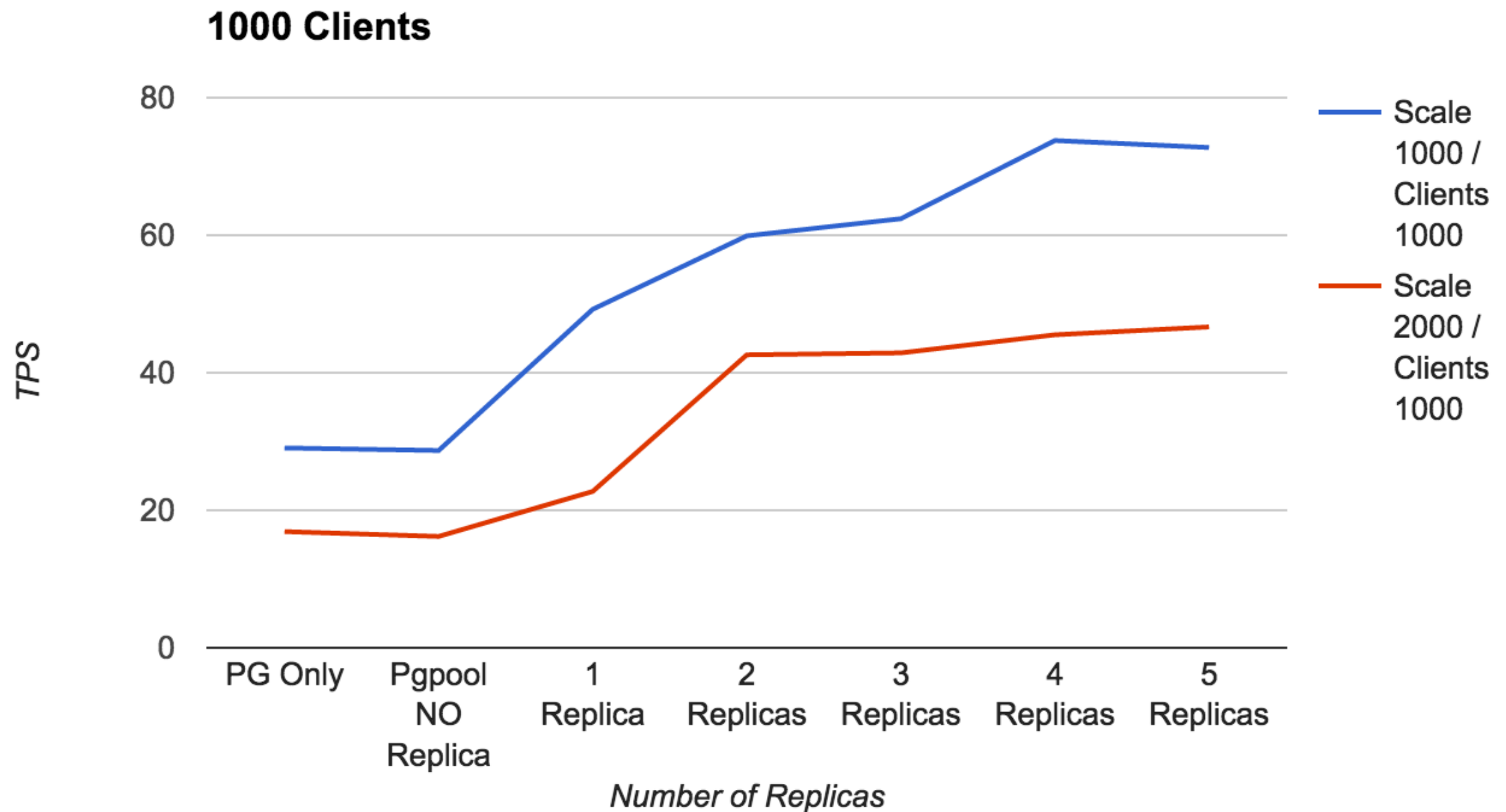# Benchmarking PGPOOL-II 3.4 on AWS - Environment

- PGPOOL-II version 3.4

- PG version 9.3.5

- Benchmarking tool pgbench

- Benchmarking done on AWS instances

- One pgpool-II instance with 5 read replicas

- Compared with PG running stand-alone

- PGPOOL-II configures with streaming replication, master/slave mode.

- Apples-to-Apples Comparison (Same optimal real-world PG configuration changes across standalone PG and pgpool-II nodes)
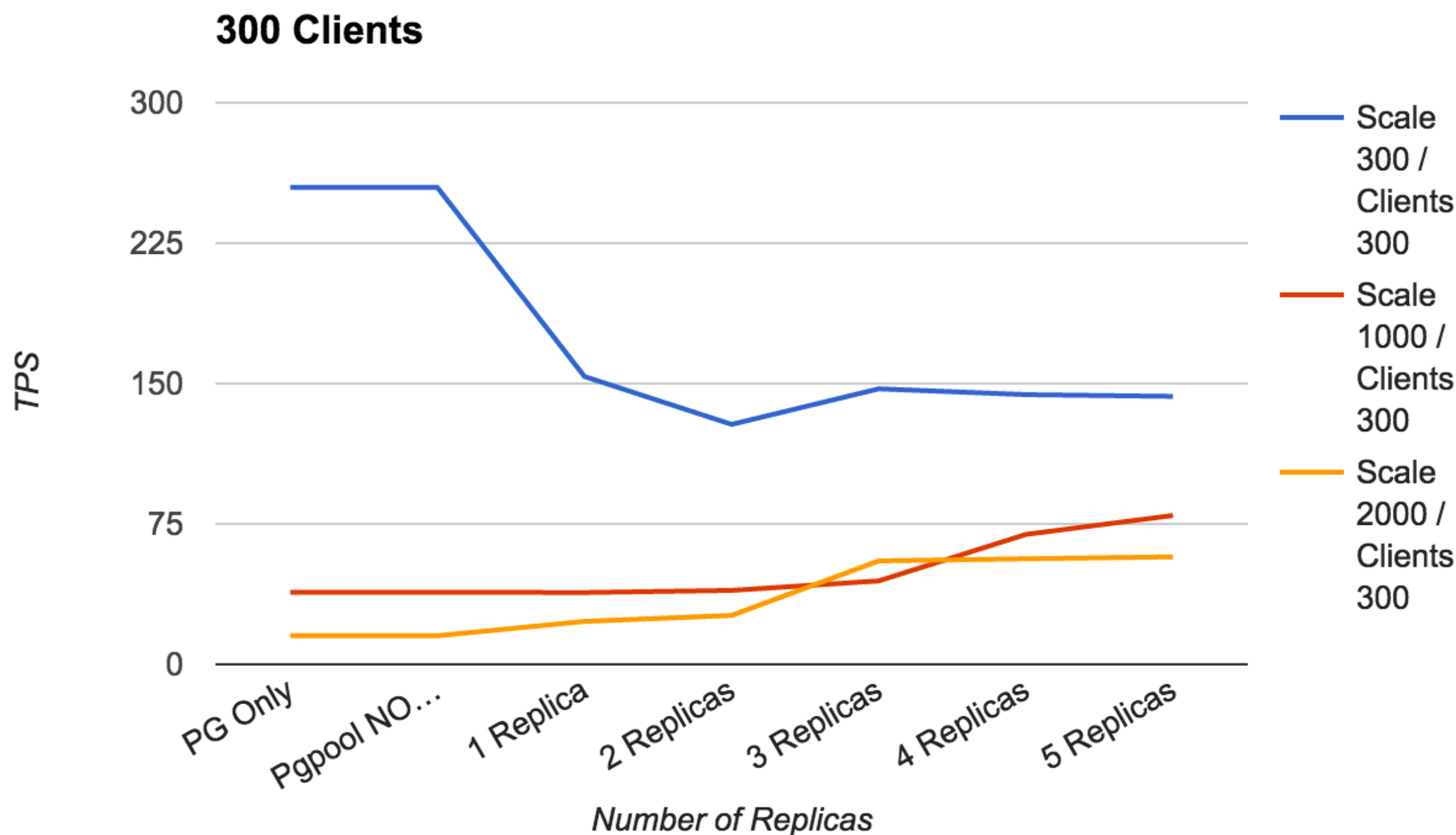
Benchmarking PGPOOL-II 3.4 on AWS - Conclusions

- Horizontal scalability when the database grows out of single server memory

- With big data, concurrent clients and 5 read replicas the TPS is 2/3 times then community PG

- After 4 read replica's the performance bar comes down with the given workload.

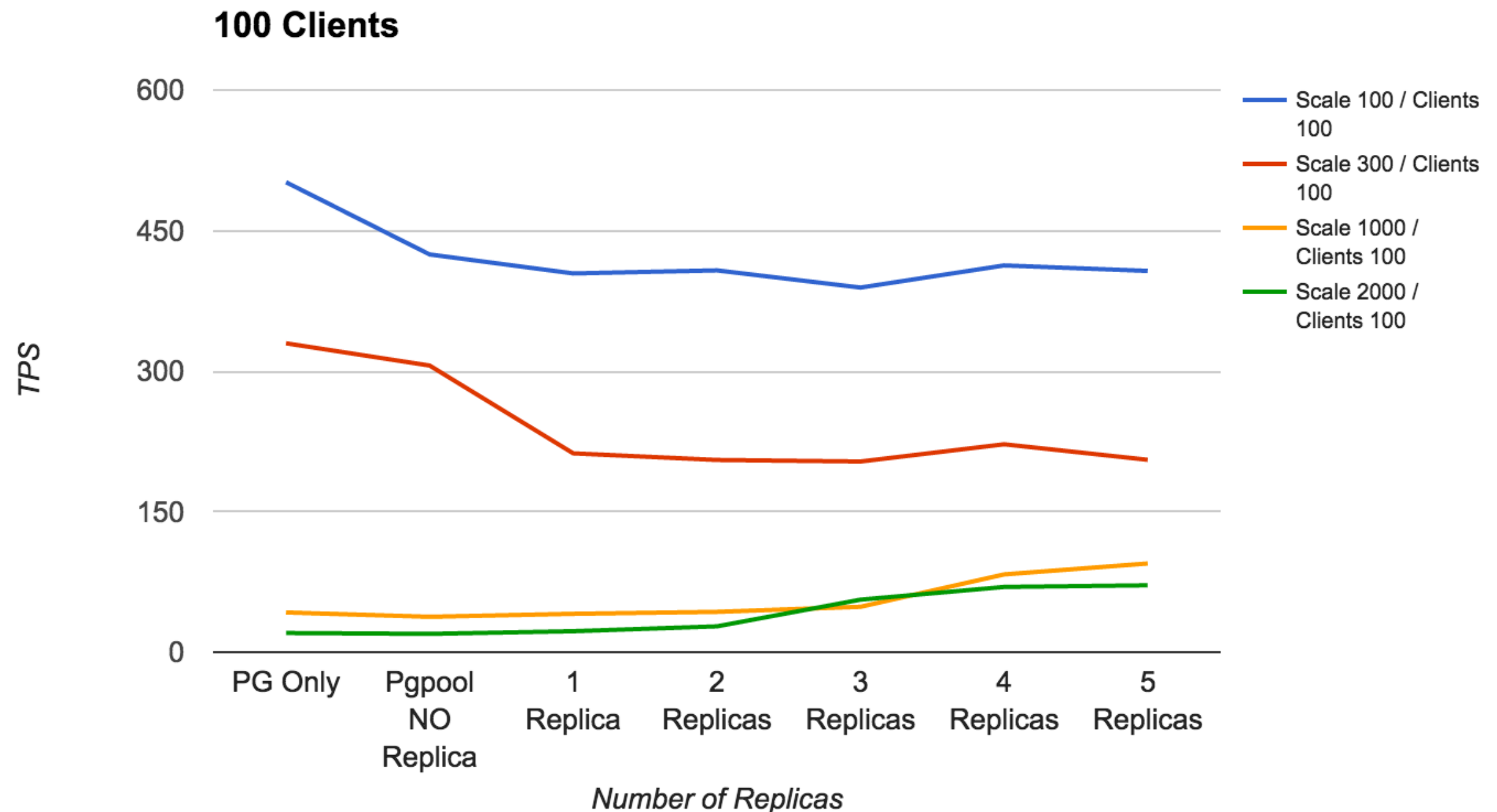- Bad Performance with extended query protocol

Benchmarking PGPOOL-II 3.4 on AWS - Actual Results

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Benchmarking PGPOOL-II 3.4 on AWS - Actual Results

PGPOOL II Future

- Very Bright

- More remaining to be done for performance and failover management. Need to invest in tooling.

- Will become the middleware product of choice for Load Balancing, Failover and HA for PG.

- Need more funding and volunteers