

# Highlights of Silicon Valley 2015 PostgreSQL Conference

December 2, 2015, Dallas, Texas, USA

**John Scott**

Consultant, American Messaging, 2006-now

Founder, SetSpace, Inc, 1998-now

# Physical Location and Attendance

- South San Francisco Convention Center
- About 270 Attended from 12 Countries on Four Continents (?)
- Twenty Four Speakers, Including Three Core Members

# Big Organizers/Steering Commitee

- Adobe
- Amazon
- Heroku
- PGExperts
- Cloudflare
- Pandora

# Small Organizers/Steering Commitee

- Citus Database
- PostgreSQL Experts (Josh Berkus)
- EnterpriseDB (Bruce Momjian)
- 2cd Quadrant
- Neustar (HyperLogLog Algorithms)
- Twitch (Justin.tv)

## Companies Attending (not Speaking)

- Salesforce
- RedHat
- PlanetLabs
- Teradata (Jeff Davis)
- LinkedIn
- RackSpace

# Warmup Talk to KeyNote Talks

- Josh Berkus, PGExperts, Founder PGSV (Big Thanks)
- Josh Gave Warmup to Keynote on PGSV History
- PgSV Started in 2003 (?)
- Started in East Bay Warehouse
- Now Grown to Three Meetup Groups

## Three Key Note Speakers

- Umur Cubukcu, Citus Data (Super PG Sharding)
- Ivan Novick, Pivotal
- Jay Kreps, Confluent, Apache Kafka

# Citus Data and Green Plum Open Sourcing All PostgreSQL Extensions

- CitusDB 5.0
- Open Parallel/Insert Updates
- Adding Clusters Scales Linearly with Writes



# All Videos and Slides On Line!

[www.pgconfsv.com/videos](http://www.pgconfsv.com/videos) (<http://www.pgconfsv.com/videos>)

No Keynotes - WTF?

# Talks I Attended on Wednesday

- TripAdvisor - Travel
- Urban Airship - Real Time Analytics (Idempotent)
- Joyent - Automated Failover - Zero Data Loss
- Heap - High Volume Data Analytics
- EMC Deutschland - GeoLocation
- Amazon - PostgreSQL in RDS

# At The Heart Of A Giant: Postgres At TripAdvisor

- 350 Million Unique IP4 Addresses
- 2 Million HTTP Requests/min, Burt to 5Million
- 4 Data Centers, 160 Web Servers
- Server: 768Gig RAM, Many TB HD -> 256Gig Ram, Many TB SSD
- 10 people in tech ops, 1.5 in PG Ops, 5 People in Site Ops (all else)
- Agressively Switch Traffic via DNS
- Shared Buffer Issues in PG is Due to Faulty Clock Algorithm Falling Behind

Takeaway: Single PG Cluster Handles ALL Traffic

# Data of Future Past: Postgres as Distributed Online Processing Analytics Engine

- Urban Airship - "We Count Stuff" at Very High Rates
- Probabilistic Data Structures via HyperLogLog Algorithm in PostgreSQL (neustar)
- PostgreSQL Replaces a homegrown "datacube" app in HBASE
- New Dimension "datacube" requires writing code to add single dimension
- PostgreSQL solved pointing time snapshot
- HyperLogLog implies less heavy read structures
- Sharding with PLProxy (modeled after Skype)

Takeaway: Probabilistic Structures (HyperLog) Allow Quick Read Structures

# Automating PostgreSQL Failover for High Availability

- Joyent, Data Center COmpany
- "Mantiss" is a Blob Server Built on PostgreSQL 9.2 and ZFS
- Engineering Team had No Database Experience
- Guess What, Vacuum in 9.2 Chokes on 70K Tables
- Use Apache ZooKeeper to Coordinate Syncing
- Also Built on Joyent Data Center Infrastructure
- Just as I Was Falling Asleep - Very Cool PG Monitoring Tools in DTrace
- Code for DTrace on Github

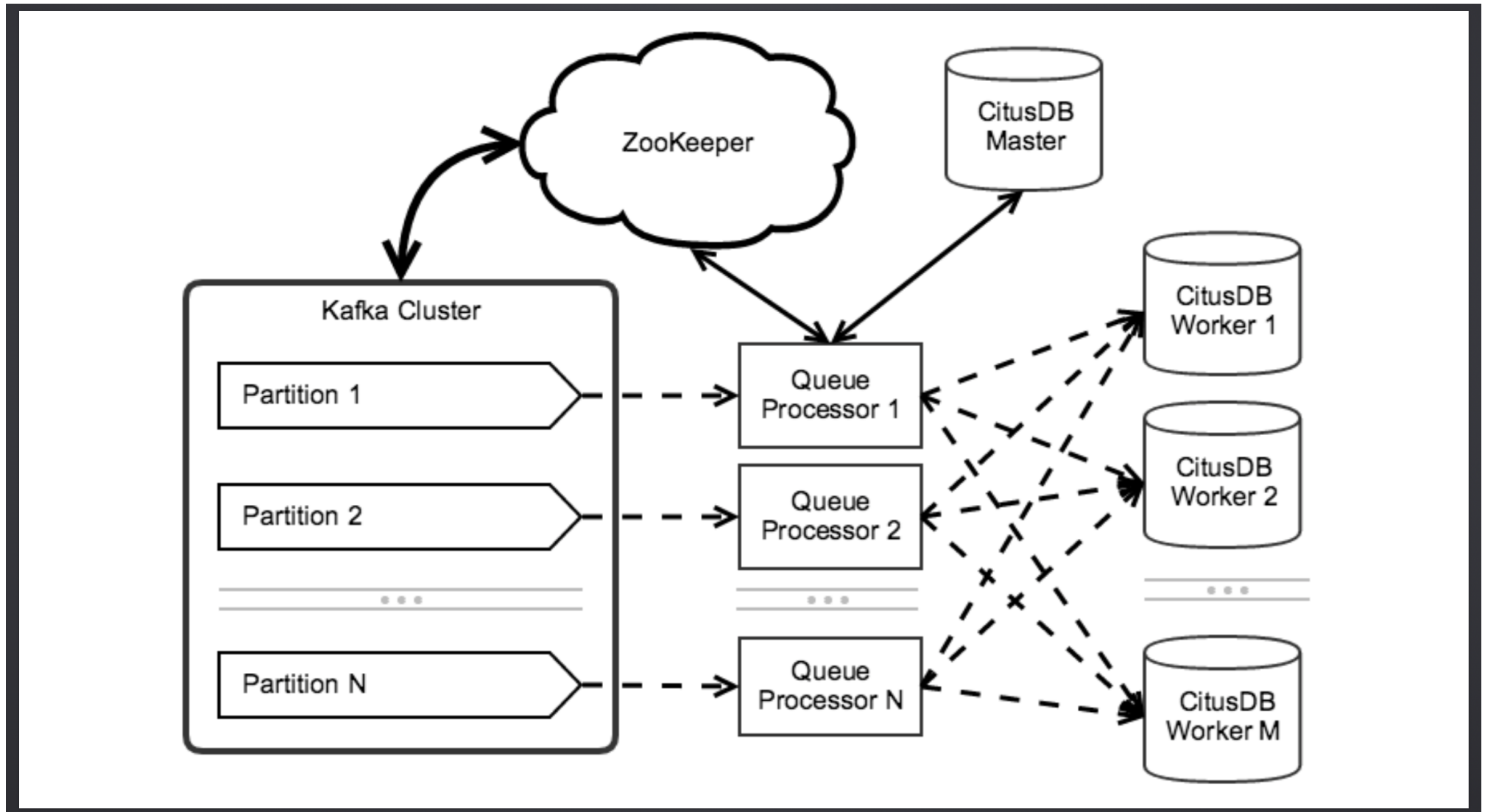
Takeway: DTrace Scripts are Amazing for Tracing Postgres

# Powering Heap With PostgreSQL And CitusDB

- Real Time Click Stream Analytics
- Biggest Customer is AirBNB
- 60 TB PostgreSQL Database
- 2 Billion User Ids across many Customer IDs
- Front Ended by Kafka "Transaction" Manager Capturing JSON Click Stream
- Custom CitusDB is PostgreSQL Database (becoming Open SOurce)
- Citus Rewrites Queries to Shard
- Customers Write Retroactive Search Applets

Takeaway: Kafta Frontend is Cool Idea, CitusDB Distributes Writes

# Heap Kafka/PostgreSQL Overview



# Amazon RDS for PostgreSQL - What's New and Lessons Learned

- Grant McAlister - Developer of RDS, Attended Dallas PGOpen
- DB Max Size from 3TB to 6TB
- Increased to 3 IOPS/GB
- Encrypted Drives at Rest (at Storage Layer with Your Own Key)
- Sharable Snapshots (say between Dev and Production) via `pg_upgrade`
- Added detailed autovacuum logging - `rds_force_autovacuum_logging`
- `pgstattuple` in all database - shows vacuum stats
- new tables to OS metrics - think "top" in tables
- New data migration service - Oracle to PostgreSQL
- Burstable IOPs with Carry Forward Credits

Takeaway: Amazon Loves PostgreSQL



# Big Ideas

- Forward Facing Inbound Transaction Manager Feeds PG
- Idempotent Playback of Events
- Sharding (Citus Data was Everywhere)
- Amazon Making Huge Commitment to PostgreSQL
- Can PostgreSQL Replace Hadoop (CitusDB)?

# Talks I Wish I Had Attended

# Thank you

December 2, 2015, Dallas, Texas, USA

**John Scott**

Consultant, American Messaging, 2006-now

Founder, SetSpace, Inc, 1998-now

[jmscott@setspace.com](mailto:jmscott@setspace.com) (mailto:jmscott@setspace.com)

[john.scott@americanmessaging.net](mailto:john.scott@americanmessaging.net) (mailto:john.scott@americanmessaging.net)

