Fast, cheap, good …. CHECK!

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Introduction

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Introduction

- **PostgreSQL has many options for replication.**
- **They are all reasonably fast.**
- **They are all cheap (how cheap is free?)**
- **They are all good (for something)**

- **So what's missing?**

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Introduction

**You need to tell us
what is missing!**

Use case Disaster Recovery

- **Disasters happen, are you prepared?**

Credit: http://www.flickr.com/photos/noaaphotolib/

Use case Disaster Recovery

- **Backup and Recovery**

Credit: http://www.flickr.com/photos/kylemacdonald/

Credit: http://www.flickr.com/photos/mirjana/

So how did we get here?

- **How did we get to using replication for backup and recovery?**

- **Backup strategies evolved to offer ever faster recovery, to the point of instant failover to a standby.**

- **Most backup strategies focus on "don't lose a single committed transaction!"**

- **Is that all that's required?**

What if the error is the user?

- You wanted clones?

Credit: http://www.flickr.com/photos/evelynishere/

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What if the error is the user?

- But what good are perfect copies of the wrong data?

Credit: http://www.flickr.com/photos/rogdavies/

Desired features for Backup

- **Synchronous replication**

- **Delayed replication and PITR**

- **Taking other forms of backup from a replica.**

More about PITR

- **Rolling forward can be dangerous!**

Credit: http://www.flickr.com/photos/edgoodwin/

Desired features for Backup

- **Synchronous replication**

- **Delayed replication and PITR**

- **Taking other forms of backup from a replica**

- **Tools to analyze the replication stream**

- **Ability to stop PITR at the identified point in time**

Use case Scaling

Credit: http://www.flickr.com/photos/noaaphotolib/

Scaling by offloading

- **Move some of the heavy load to a replica**

Credit: http://www.flickr.com/photos/bobolink/

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Offload Reporting

- Take a careful look! That guy is WRITING!

Credit: http://www.flickr.com/photos/wwworks/

Offload special functionality

- **Pre-aggregating data**

- **Maintaining expensive indexing (full text search)**

- **Using new PostgreSQL features**

Desired features for Offloading

- **Selective replication (by table, by row, by column)**

- **Replica side triggers**

- **Replica side additional indexes**

- **Replica side additional tables**

- **Replica side additional columns**

- **Cross version**

Use case Road Warriors

Credit: http://www.flickr.com/photos/thekog/

What is a Road Warrior?

- The sales representative, that needs to be able to work offline and synchronize with the central office later.

- The system will download central data (products, price lists, etc.) and upload the sales orders when connected.

Features for the Road Warrior

- **Prolonged offline times**

- **Multiple origins**

- **Merge replication**

- **Selective replication**

- **Cross version and architecture**

Use case Consolidation

Credit: http://www.flickr.com/photos/stevenm_61/

What is Consolidation?

- **A user has ultiple legacy systems that have eventually conflicting database requirements.**

- **Combine the data of all systems into one database to do cross application analysis and reporting.**

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Features for Consolidation

- **Cross version and architecture**

- **Selective replication**

- **Renaming of objects during replication**

- **Marshalling of data**

Use case Migration

Credit: http://www.flickr.com/photos/audreyjm529/

What is Migration?

- **Moving data to new hardware/OS**

- **Upgrading to a new DB version**

- **Time consuming schema adjustments**

Features for Migration

- **Cross version and architecture**

- **Online installation, initial copy and then catch up without system downtime**

- **Switching master/slave (consider a connection pool)**

- **Marshalling of data**

Use case Untrusted Destination

Credit:http://www.flickr.com/photos/humphreyking/

What is an Untrusted Destination ?

- A replication target that should not have all the data

- A replication target that if tampered with could affect your production systems

- A replication target that cannot establish access from the outside

Features for Untrusted Destination

- **Selective replication**

- **Push only data transfer**

- **Zero impact if target becomes unavailable**

Questions and Answers

- ?!?