

# Curing Replication Deprivation with Tungsten for MySQL

Robert Hodges, CEO, Continuent  
Giuseppe Maxia, Director of QA  
Edward Archibald, CTO



# Tutorial Topics

- / **Introduction to Replication Deprivation**
- / **Parallel Replication**
- / **Multi-Master and Multi-Source Replication**
- / **Seamless failover using global transaction IDs**
- / **Replication to Other DBMS Types**
- / **Building and extending Tungsten**
- / **Tungsten Enterprise**



# About Continuent

/ **Continuent is the leading provider of data replication and clustering for open source relational databases**

/ **Our Products:**

- Tungsten Replicator - High-performance, MySQL replication
- Tungsten Enterprise - Commercial replication and data management solution for MySQL and PostgreSQL

/ **Our Services:**

- Consulting on Tungsten plus replication and clustering in general
- Subscriptions for commercial products



# About Us

## / **Robert Hodges - Continuent CEO**

- Designer of Tungsten, replication developer
- <http://scale-out-blog.blogspot.com>

## / **Edward Archibald - Continuent CTO**

- Designer of Tungsten cluster management, clustering developer
- Designer of ODBC standard, Sybase Rep Server

## / **Giuseppe Maxia - Continuent Director of QA**

- Author of MySQL Sandbox
- <http://datacharmer.org>



# More On Services

- / **Practical consulting by industry experts on any aspect of Tungsten or replication/clustering for open source databases**
- / **Hourly support contracts**
  - Advice, troubleshooting, bug fixes
- / **Projects**
  - Cluster design, roll-outs, upgrades, special replication problems
- / **Sponsored development**
  - Implementation of features large and small
- / **Offered for both open source and commercial product**



# Who Has Replication Deprivation?

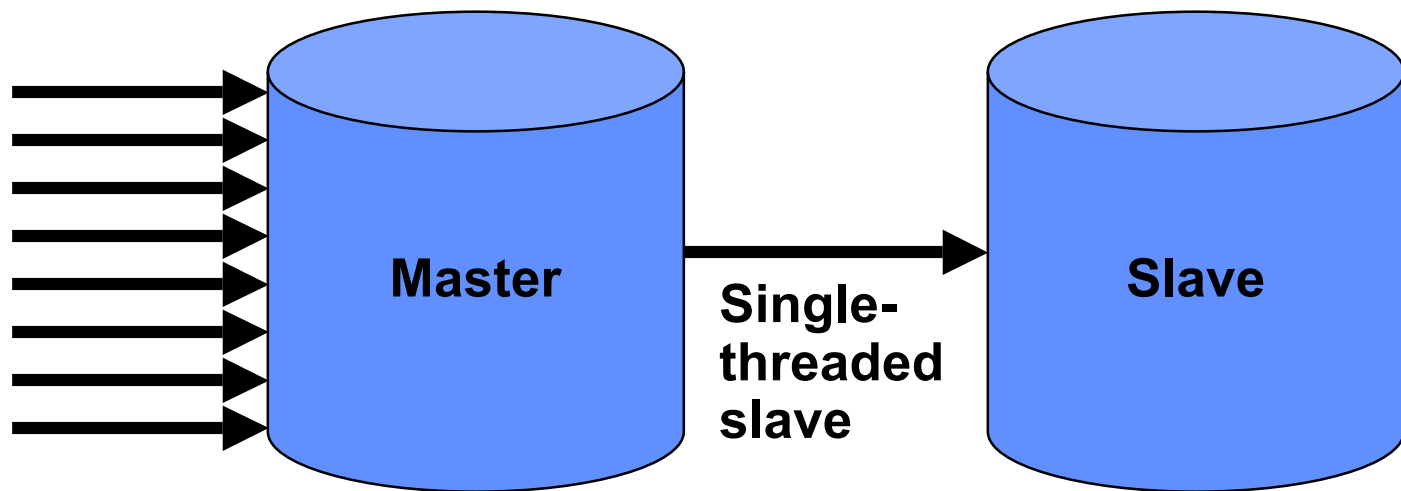


© Continuent 2011

**continuent**  
Open. Always Available.

# Large Social Networking Site

- / Goal: Update on master; unload reads to slaves
- / Symptom: Severe slave lag



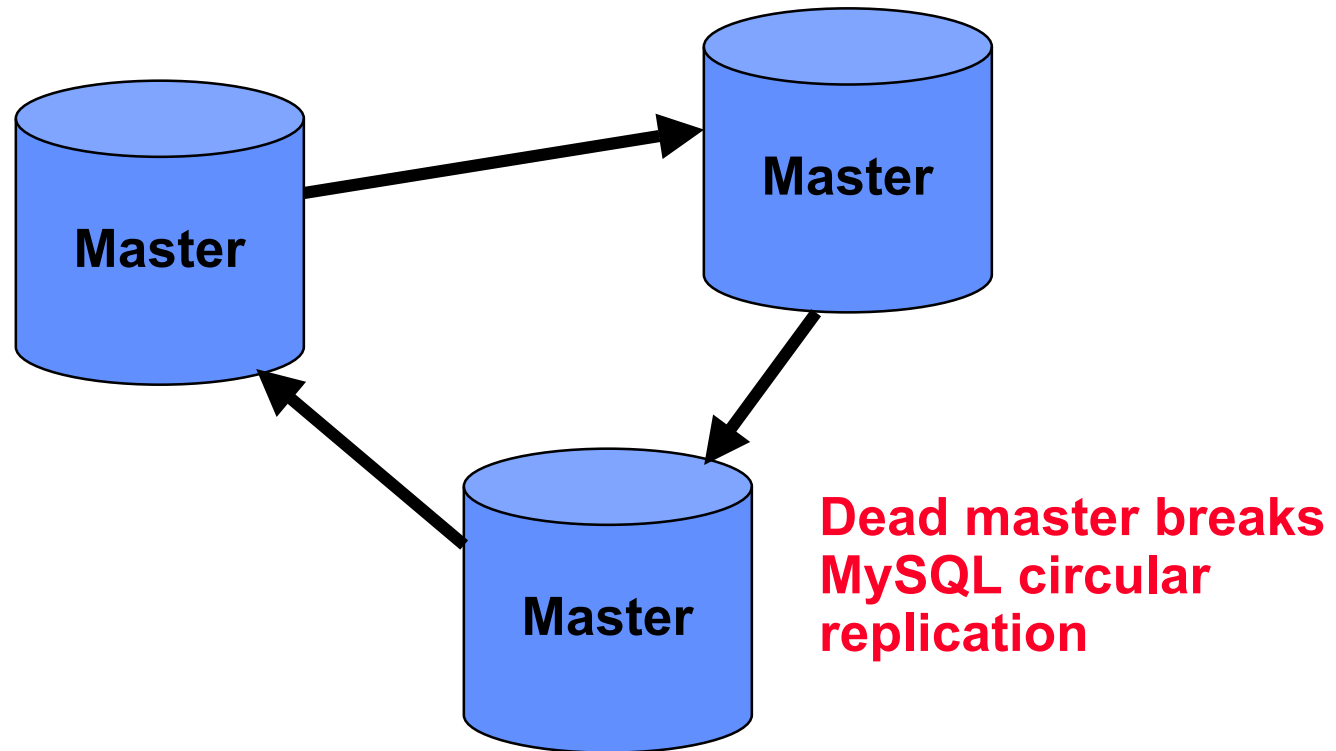
Multi-threaded  
application updates on  
multi-core system with  
fast storage

Slave is blocked by  
I/O bound queries



# Multi-Site Order Processing

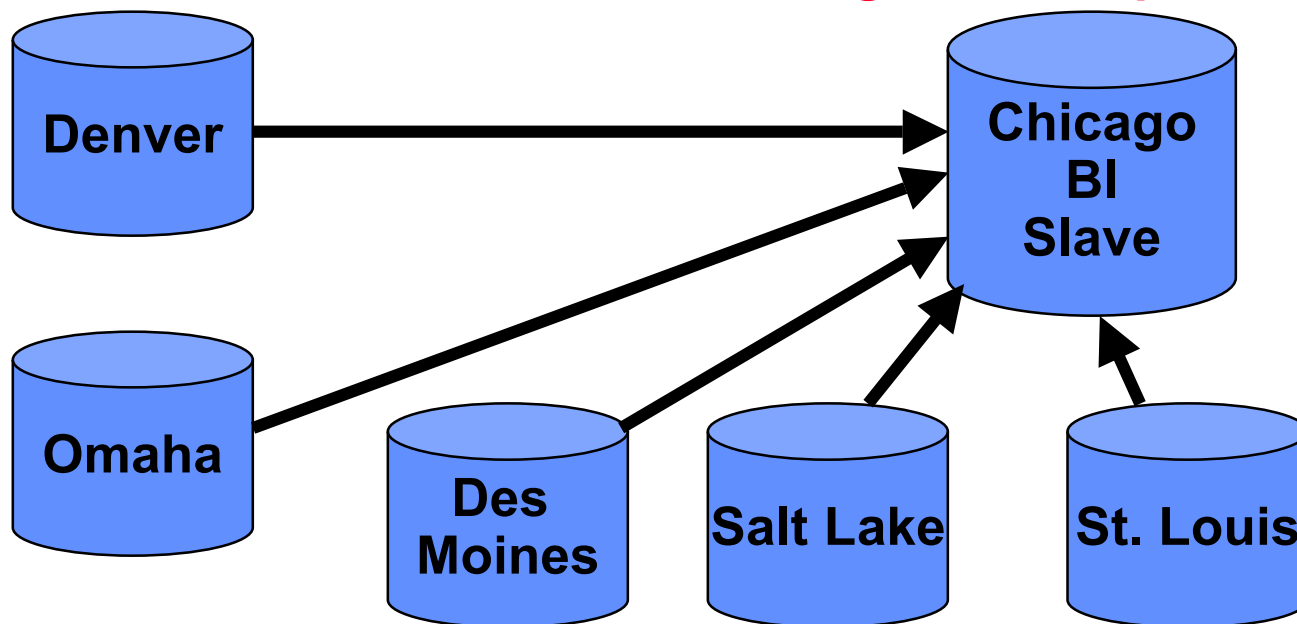
- / **Goal:** Process transactions on any available site
- / **Symptom:** Unable to add or remove DBMS servers without stopping all applications and/or losing data



# Furniture Store Inventory Management

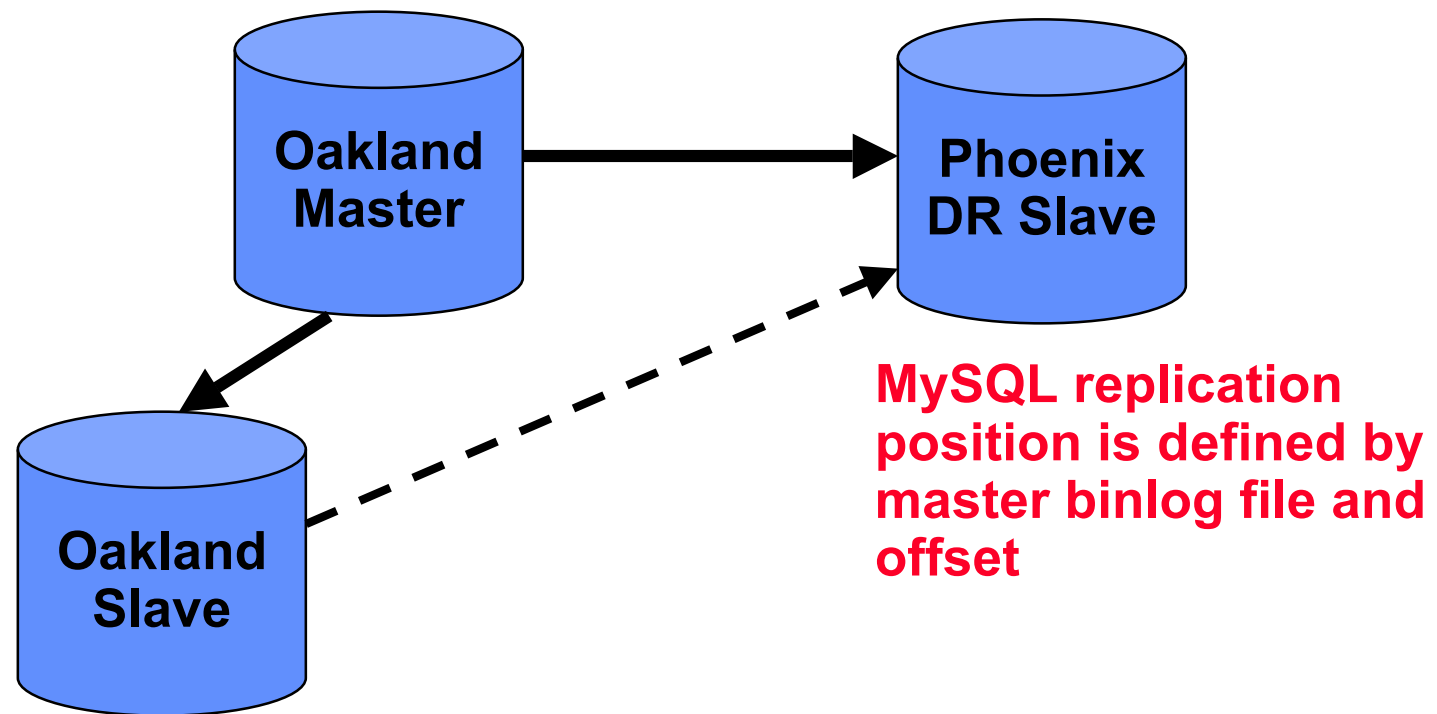
- / **Goal:** Pull inventory changes into centralized reporting server in real time
- / **Symptom:** Cannot replicate from multiple masters into one slave

**MySQL permits only a single master per slave**



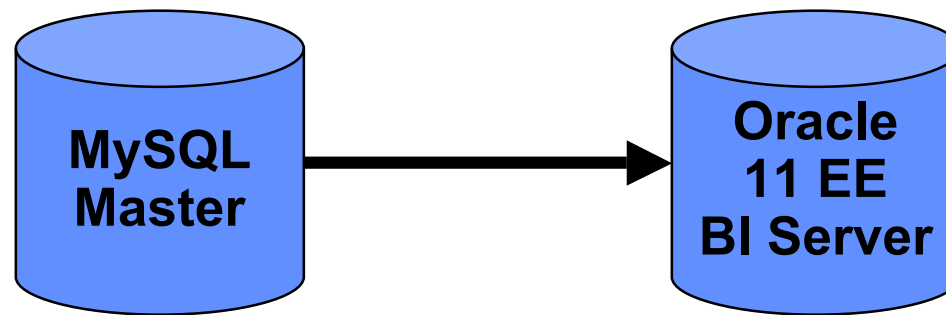
# Web-Based Contract Management

- / **Goal:** Build disaster recover site for browser-based contract management application
- / **Symptom:** Failover to local slave breaks replication to remote site



# Online Call Center Reporting

- / **Goal:** Load call session data into Oracle to generate reports
- / **Symptom:** No way to load in real time from MySQL



**MySQL replication  
only works between  
MySQL instances**



# 5 Minute Intro to Tungsten



© Continuent 2011

**continuent**  
Open. Always Available.

# What Is Tungsten Replicator?

**Tungsten Replicator is a fast, open-source replication engine for MySQL**

**GPL V2 license**

**Written in Java**

**Designed for speed and flexibility**

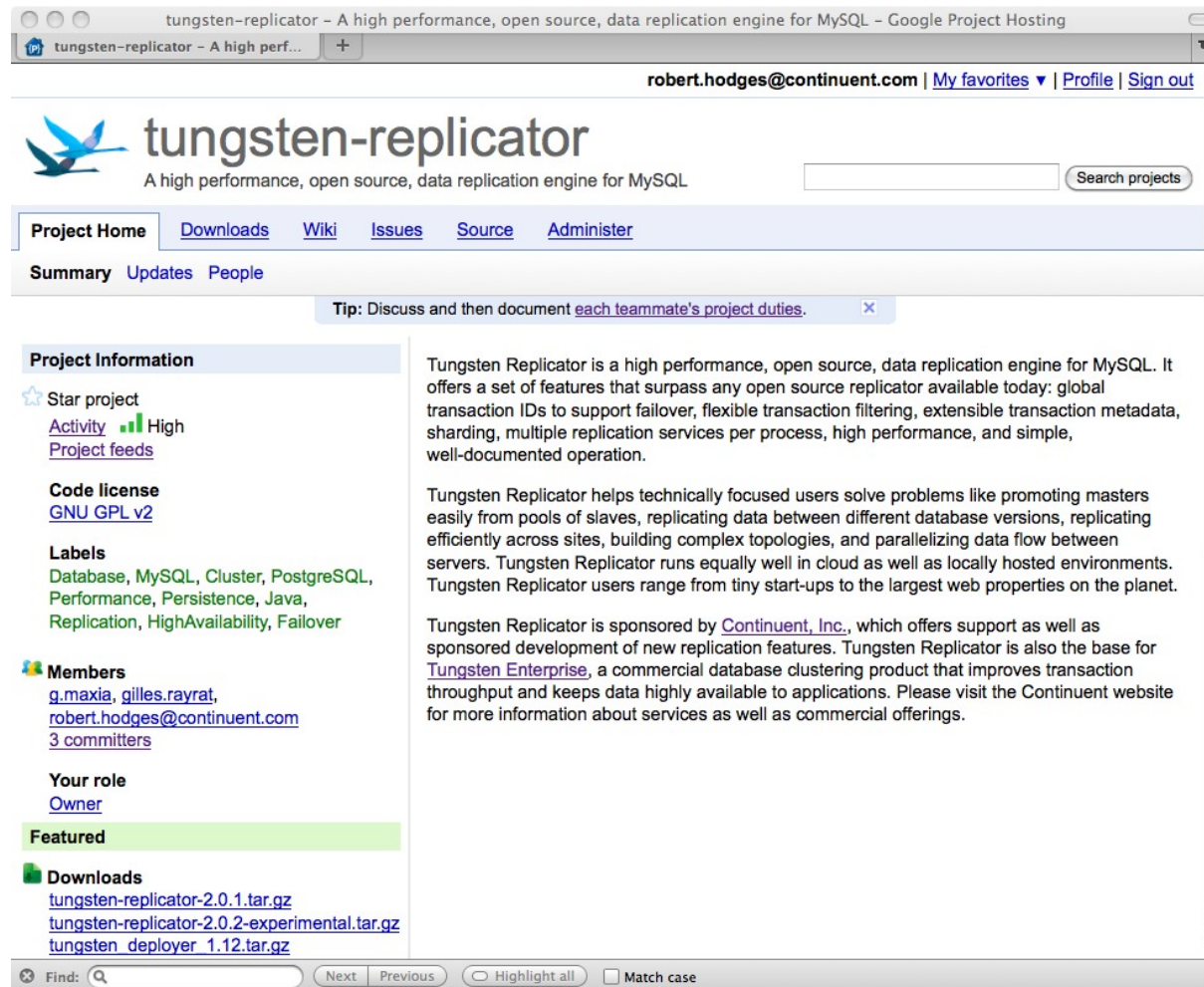


# Tungsten Replicator Features

- / **Global transaction IDs**
- / **Transaction filters**
- / **Replicate from MySQL to PostgreSQL & Oracle**
- / **Time-delay replication**
- / **Backup and restore integration**
- / **Cross-version replication: 5.5 -> 5.1 -> 5.0 -> 4.1**
- / **Row and statement replication**
- / **Automatic consistency checks**
- / **Auto-provisioning**
- / **Multi-master replication**
- / **Parallel replication**



# Home Sweet Home



The screenshot shows the Tungsten Replicator project page on Google Project Hosting. The browser window has a single tab titled "tungsten-replicator - A high performance, open source, data replication engine for MySQL - Google Project Hosting". The page header includes the email "robert.hodges@continuent.com" and links for "My favorites", "Profile", and "Sign out". The main heading is "tungsten-replicator" with the subtitle "A high performance, open source, data replication engine for MySQL". A search bar is present with the text "Search projects". Below the header is a navigation bar with links: "Project Home", "Downloads", "Wiki", "Issues", "Source", and "Administer". Under "Project Home", there are links for "Summary", "Updates", and "People". A tip box states: "Tip: Discuss and then document [each teammate's project duties](#)." The left sidebar contains sections: "Project Information" with links for "Star project", "Activity" (High), and "Project feeds"; "Code license" with a link to "GNU GPL v2"; "Labels" with tags for "Database, MySQL, Cluster, PostgreSQL, Performance, Persistence, Java, Replication, HighAvailability, Failover"; "Members" with links for "g.maxia", "gilles.rayrat", "robert.hodges@continuent.com", and "3 committers"; "Your role" with a link to "Owner"; and "Featured" with a link to "Downloads". The main content area describes Tungsten Replicator as a high performance, open source, data replication engine for MySQL, listing features like global transaction IDs, flexible transaction filtering, extensible transaction metadata, sharding, and multiple replication services. It also mentions that Tungsten Replicator is sponsored by Continuent, Inc. and is the base for Tungsten Enterprise. The footer of the page includes a search bar with "Find:" and "Next", "Previous", "Highlight all", and "Match case" options.

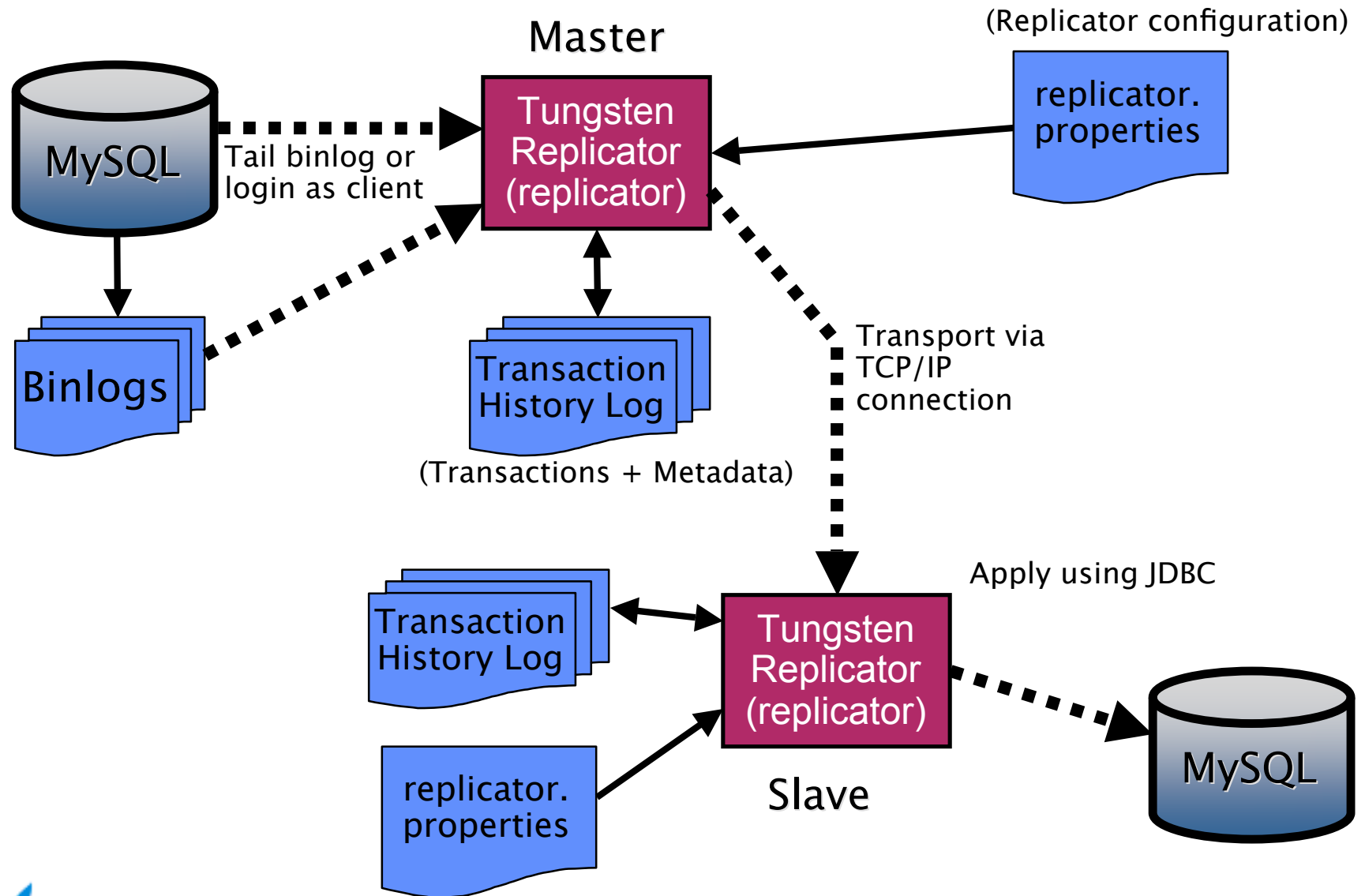
<http://code.google.com/p/tungsten-replicator>



© Continuent 2011

continuent  
Open. Always Available.

# Tungsten Replicator Architecture



# Installation

```
tar -xvzf tungsten-replicator-2.0.1.tar.gz  
cd tungsten-replicator  
./configure  
./configure-service -C --role=master mysvc  
./replicator start  
./trepctl status
```



# Operations

**replicator** -- Replicator process, start only once

**trepctl** -- Tungsten Replicator Control, admin client

**thl** -- View Transaction History Log

Replicator error log is located in tungsten-replicator/log/trepsvc.log

