GOLCONDE

ce n'est pas un système de réplication

GOLCONDE

René Magritte, 1953

GOLCONDE

- ☐ NOT REPLICATION*

- ☐ DATA DISTRIBUTION SYSTEM

- ☐ ONE CANONICAL SOURCE

- ☐ ANY NUMBER OF TARGET RELATIONS

- ☐ QUEUE BASED

* UNLESS YOU START FROM A CLEAN SLATE

FEATURES

- [ ] LIGHT-WEIGHT DAEMON

- [ ] "AUTOSQL" AND CUSTOM HANDLERS

- [ ] TWO METHODS OF OPERATION

- [ ] REAL-TIME VISUALIZATION

WHY GOLCONDE?

- ☐ GOOD REPLICATION TOOLS EXIST

    - ☐ SLONY, LONGDISTE, BUCARDO, ETC

- ☐ NO "GOLDEN HAMMER"

- ☐ CURRENT TOOLS ARE RESOURCE INTENSIVE

    - ☐ LIVE ON THE DATABASE TIER

    - ☐ LIVE IN THE DATABASE

WHY GOLCONDE?

- [ ] NEEDED A SCALE OUT SOLUTION

- [ ] CROSS DATA-CENTER IMPLEMENTATIONS

- [ ] MESSAGE BROKERS ARE MORE EFFICIENT FOR QUEUES

- [ ] DATABASE HARDWARE IS EXPENSIVE ($$$)

- [ ] QUEUE AND CONSUMER GRADE HARDWARE ARE NOT

- [ ] NEED CUSTOMIZABLE WORKFLOW FOR DISPARATE RELATIONS

REQUIREMENTS

- ☐ STOMP SUPPORTING MESSAGE BROKER

- ☐ POSTGRESQL 8.3* OR HIGHER

- ☐ PYTHON 2.6

  - ☐ PYYAML

  - ☐ PSYCOPG2

  - ☐ STOMP.PY

HTTP://ACTIVEMQ.APACHE.ORG/

STOMP

- ☐ STREAMING TEXT ORIENTED MESSAGE PROTOCOL

- ☐ INTEROPERABLE WIRE FORMAT

- ☐ SUPPORTED BY MULTIPLE BROKERS

HTTP://STOMP.CODEHAUS.ORG/

AMQP

- ☐ ADVANCED MESSAGE QUEUING PROTOCOL

- ☐ OPEN STANDARD WIRE PROTOCOL

- ☐ EMERGING STANDARD SUPPORTED BY MULTIPLE BROKERS

HTTP://WWW.AMQP.ORG/

OpenAMQP

QPID

RedHat Enterprise MRG

HTTP://WWW.RABBITMQ.COM/

ARCHITECTURE

☐ START OF ACTION LIFECYCLE

☐ CLIENT-BASED: ENQUEUE FROM APPLICATION

☐ TRIGGER-BASED: ENQUEUE FROM POSTGRESQL

☐ MULTI-THREADED PYTHON DAEMON

LEXICON

- ☐ <u>DESTINATIONS</u> ARE THE CANONICAL RELATIONS
  - ☐ ARE ACTED UPON IN <u>CLIENT-BASED</u> WORKFLOWS
  - ☐ ENQUEUES DATA IN <u>TRIGGER-BASED</u> WORKFLOWS
- ☐ <u>TARGETS</u> ARE THE DISTRIBUTED RELATIONS

ARCHITECTURE

- ☐ DATA IS PASSED IN JSON ENCODED PACKETS

- ☐ COMMANDS:

    - ☐ ADD (INSERT)
    - ☐ DELETE
    - ☐ SET (UPSERT)
    - ☐ UPDATE

MESSAGE EXAMPLES

- ☐ {"ACTION": "ADD", "DATA": {"FRIEND_ID": 47, "USER_ID": 16, "STATUS_ID": 1}}

- ☐ {"ACTION": "DELETE", "RESTRICTION": {"FRIEND_ID": 11, "USER_ID": 126}}

- ☐ {"ACTION": "SET", "DATA": {"FRIEND_ID": 112, "USER_ID": 111, "TIMESTAMP": "WED APR 1 13:56:54 2009", "STATUS_ID": 1}}

- ☐ {"ACTION": "UPDATE", "RESTRICTION": {"FRIEND_ID": 5, "USER_ID": 41}, "DATA": {"TIMESTAMP": "WED APR 1 13:56:38 2009", "STATUS_ID": 3}}

AUTOSQL

- ☐ DEFAULT HANDLER TYPE FOR GOLCONDE
- ☐ EXAMINES PG_CATALOG DATA FOR SCHEMA
- ☐ CACHES SCHEMA
- ☐ GENERATES SQL
- ☐ REQUIRES SAME SCHEMA

CUSTOM HANDLERS
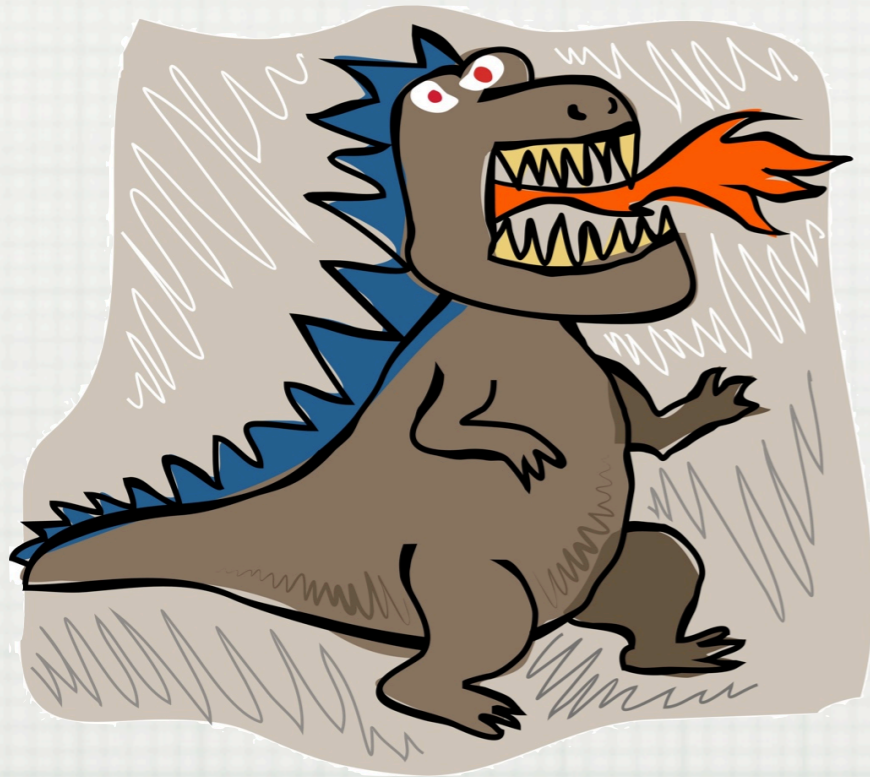
THAR BE DRAGONS

- ☐ ALLOWS FOR DIFFERENT SCHEMAS FOR THE SAME DATA

- ☐ EXAMPLE:

  - ☐ LEGACY SCHEMA VS NEW SCHEMA

  - ☐ DIFFERENT FOCUSED TARGET RELATIONS

- ☐ WARNING: NEED TO UNDERSTAND INTERNAL GOLCONDE FLOW

CLIENT-BASED FLOW

☐ CLIENT APPLICATION ENQUEUES

☐ GOLCONDE PERFORMS
TRANSACTION ON CANONICAL
DESTINATION RELATION

☐ SERIALLY DISTRIBUTES TO
TARGET QUEUES
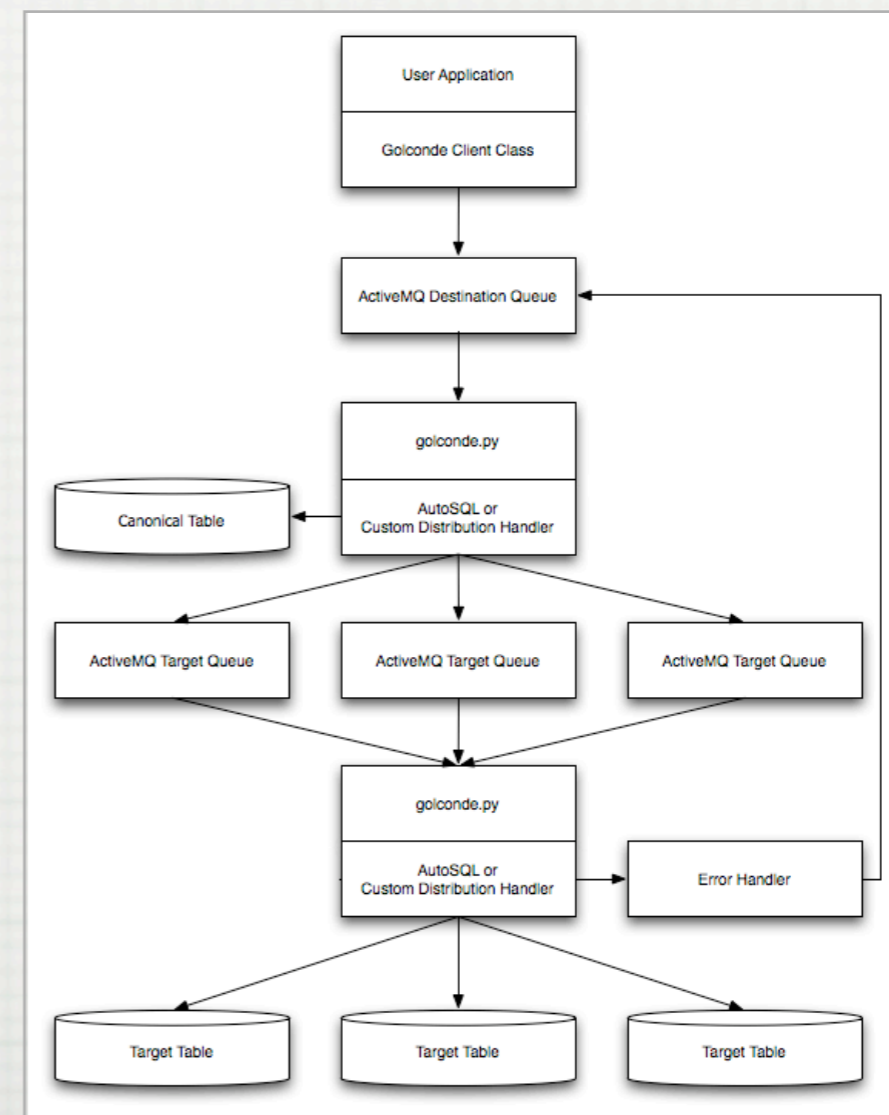
CLIENT-BASED FLOW
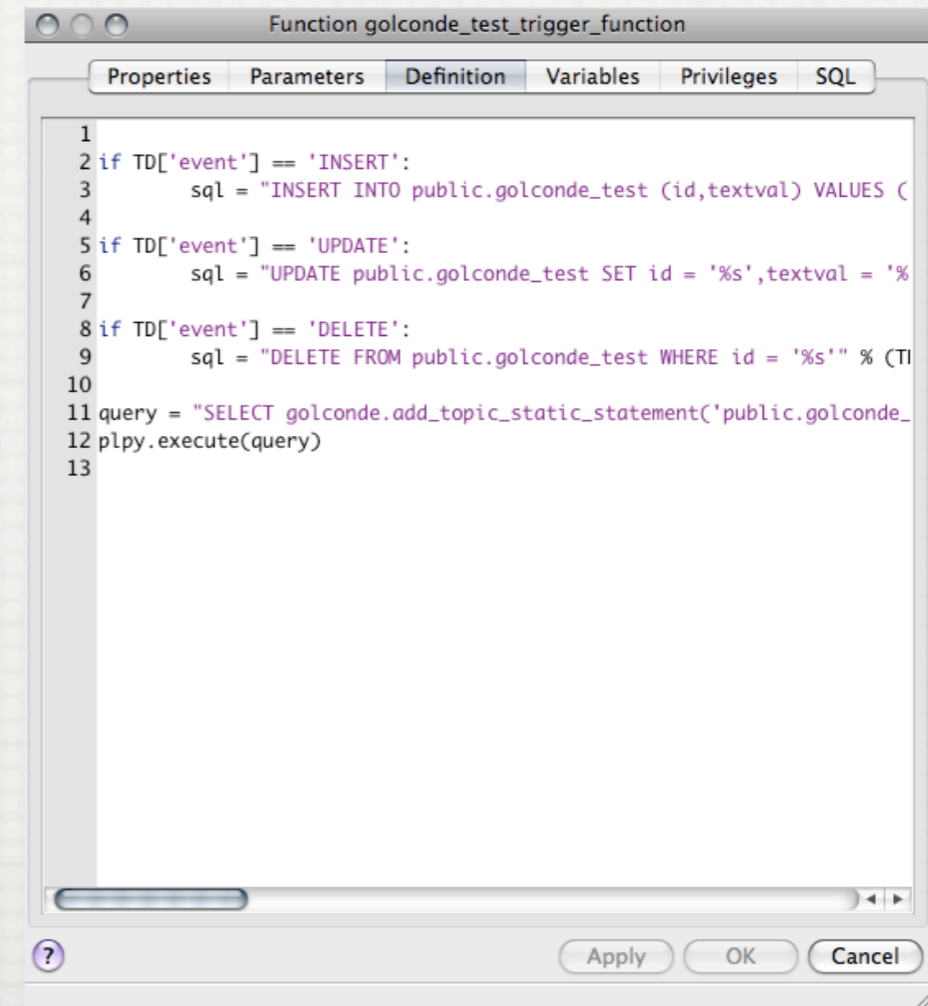
- TARGET HANDLER DEQUEUES

- PERFORMS TRANSACTION ON TARGET RELATIONS
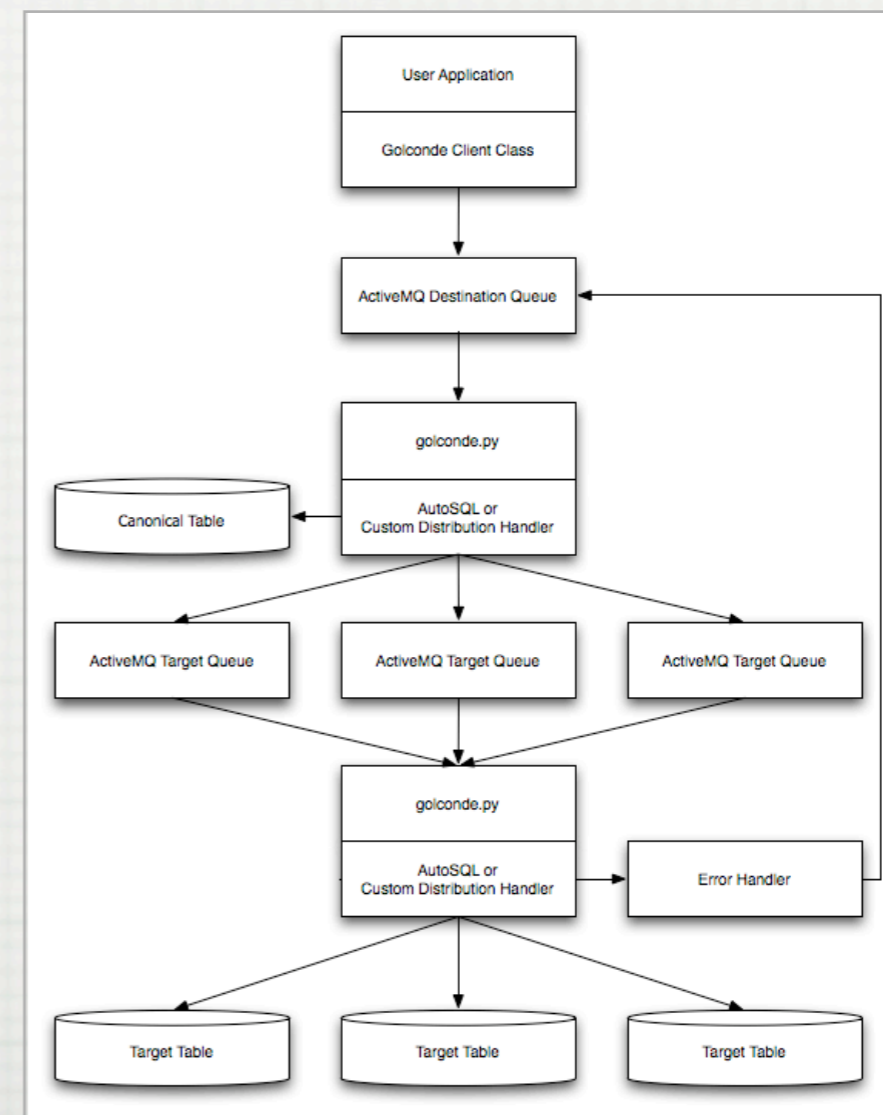
TRIGGER-BASED USAGE

- [ ] REQUIRES PL/PYTHON

- [ ] TRIGGER-UTIL.PY BUILDS AND INSTALLS TRIGGERS

- [ ] TRIGGER IS INSTALLED ON THE CANONICAL TABLE

- [ ] NO MODIFICATION OF CLIENT APPLICATION REQUIRED

TRIGGER-BASED FLOW

☐ FIRES AFTER INSERT/UPDATE/ DELETE

☐ ENQUEUES INTO TARGET QUEUES

☐ GOLCONDE PERFORMS TRANSACTIONS ON THE TARGET RELATIONS
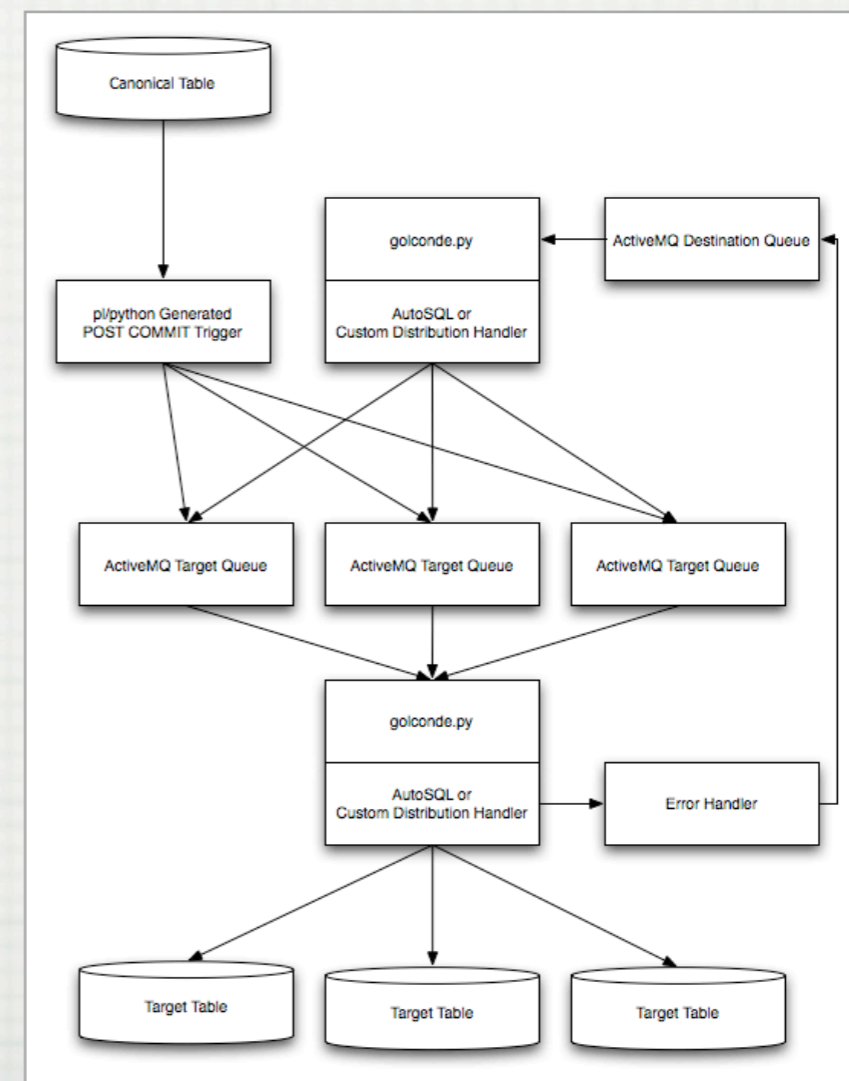
CONFIGURATION

☐ YAML BASED

☐ PARAMETERS FOR:

    ☐ LOGGING

    ☐ HTTP DAEMON FOR REALTIME MONITORING & VISUALIZATION

    ☐ DESTINATION / TARGET GROUPS

HTTP://WWW.YAML.ORG/

```yaml
%YAML 1.2
---
Locations:
  base: /Users/gmr/Source/golconde
  logs: logs
Logging:
 filename: log.txt
 format: "%(levelname) -10s %(asctime)s %(message)s"
 # Valid values: debug, info, warning, error, critical
 level: debug
HTTPServer:
  enabled: True
  listen: 127.0.0.1
  port: 8000
Destinations:
 Test1:
  stomp: localhost:61613
  queue: /queue/golconde.test1
  pgsql: host=localhost user=gmr dbname=gmr
  # If you exclude the schema, it will default to public
  target: friendships
  function_name: AutoSQL
  Targets:
   target1:
    stomp: localhost:61613
    queue: /queue/golconde.test1.target1
    pgsql: host=localhost user=gmr dbname=destination
    # Schema.Relation format
    target: public.friendships
    function_name: AutoSQL
   target2:
    stomp: localhost:61613
    queue: /queue/golconde.test1.target2
    pgsql: host=localhost user=gmr dbname=destination_two
    target: public.friendships
    function_name: AutoSQL
```

STATISTICS & VISUALIZATION

☐ BUILT-IN HTTP SERVER

☐ STATS REQUESTS RETURNS JSON

   ☐ USE WITH STAPLR, NAGIOS, ETC

☐ INTERNAL REAL-TIME VISUALIZATION

DEMONSTRATION

CURRENT STATUS

☐ 0.5 BETA RELEASE - 03/02

☐ 0.6 BETA COMING SOON

    ☐ ADDS REAL-TIME STATS SERVER

    ☐ BUG FIXES

ROADMAP

☐ TWO-PHASE COMMIT LIKE BEHAVIOR

   ☐ ALL TRANSACTIONS MUST COMMIT OR ROLLBACK

   ☐ ROLLBACK IS DEFINED BY ROLLBACK DATA PACKETS IN AUTOSQL OR HANDLERS

☐ ADDITIONAL QUEUE SERVERS AND PROTOCOLS

☐ "NATIVE" CLIENT CLASSES IN PHP, PYTHON

QUESTIONS?

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