

Tungsten Replicator Master Class

Basics: Tungsten Replicator – How we Move Your Data

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Topics

In this short course, we will

- Review the capabilities of Tungsten Replicator
- Take a look at the inner workings of the Replicator
- Review Topologies and Targets
- Explore Filtering and the Replicator Stages



The Replicator



Tungsten Replicator

- Core to Clustering but can also be used as a standalone Asynchronous Replicator
- Can extract/apply from/to all flavours of MySQL
 - Percona, MariaDB, Enterprise and Community
 - Amazon RDS / Aurora [Including Cross Region]
 - Google Cloud Services
 - Microsoft Azure
- Can replicate between different cloud environments, e.g. from Amazon RDS to Google Cloud
- Replicate to many heterogeneous targets
- Advanced filtering at all stages
- Advanced topologies such as Fan-In and Fan-Out



Supported Heterogeneous Targets

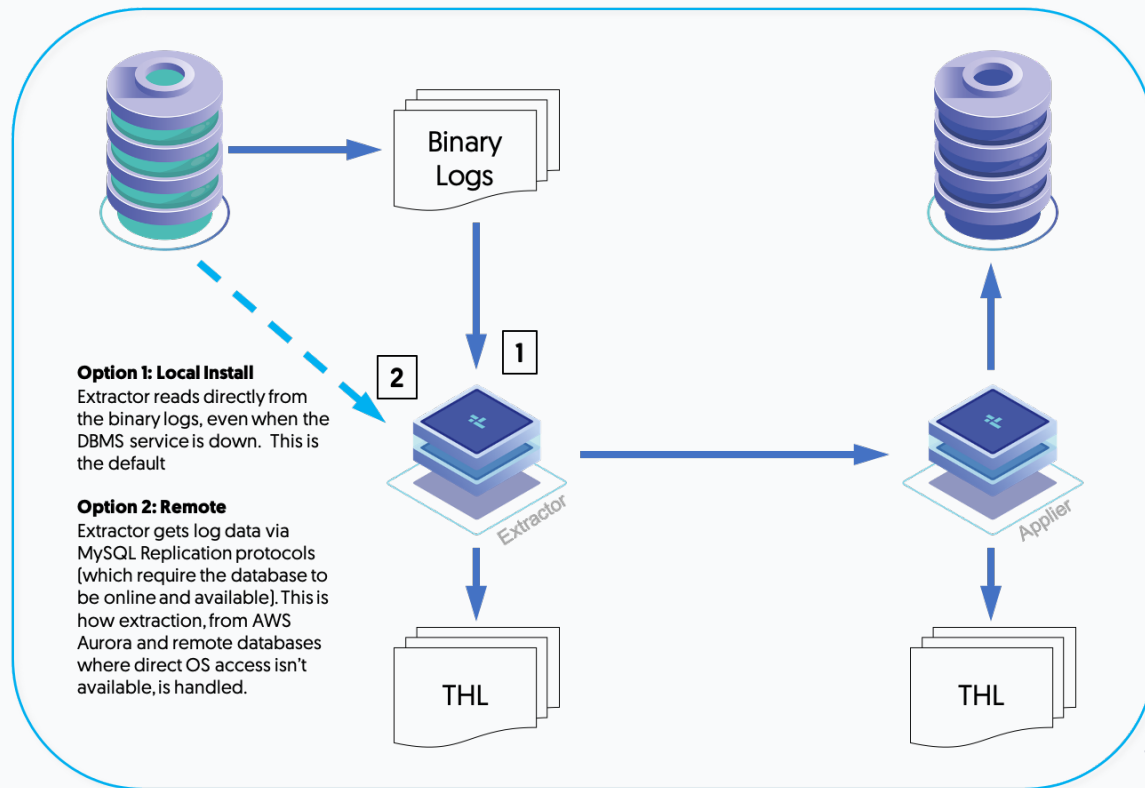
- JDBC Applier
 - PostgreSQL
 - Oracle
- Batch Applier
 - Amazon Redshift
 - HP Vertica
 - Hadoop
 - Clickhouse (Beta Applier)
- Native Applier
 - MongoDB (Incl. Atlas)
 - Kafka



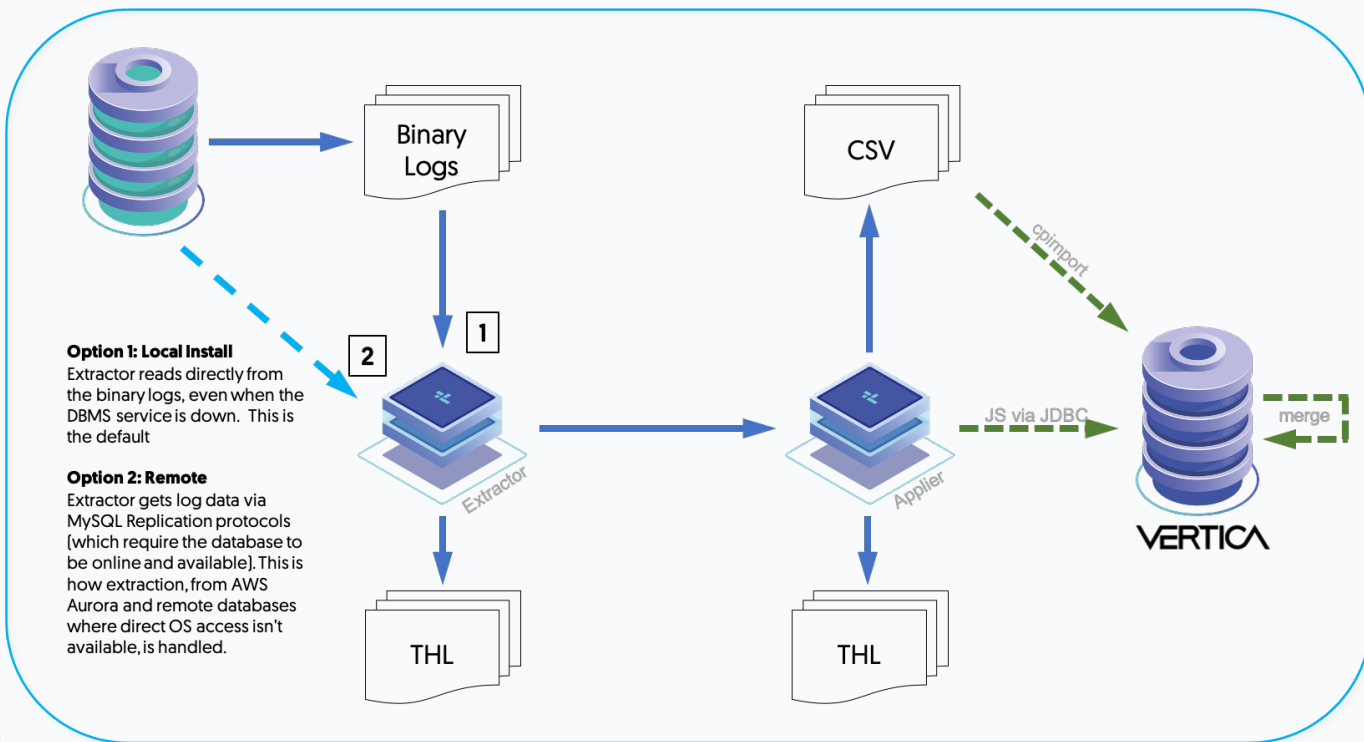
How it works...



Tungsten Replicator for JDBC Targets



Tungsten Replicator for Batch Targets



Tungsten Replicator Topologies



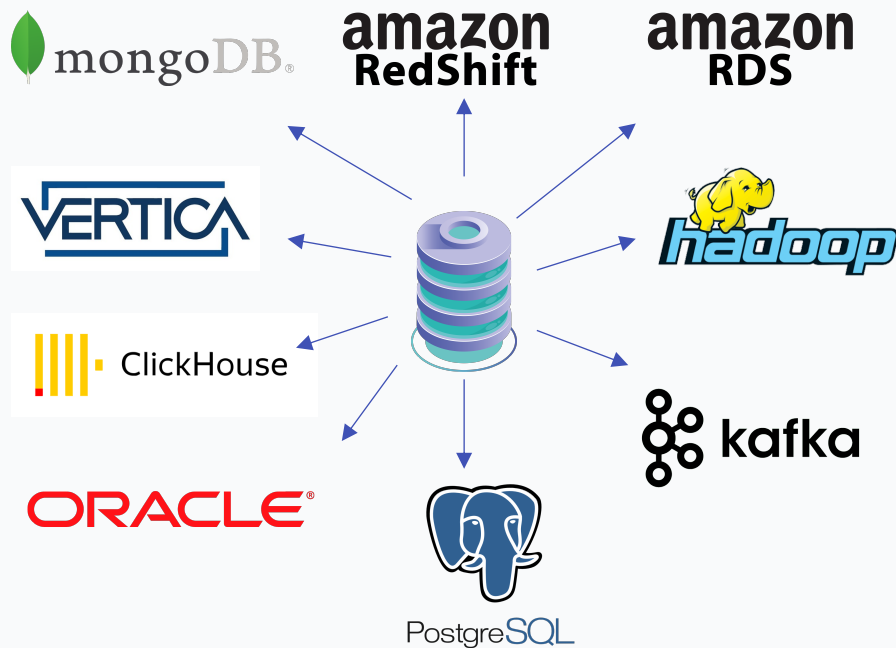
Topologies

- Primary/Replica
- Active/Active [MySQL <> MySQL Only]
- Using Amazon Aurora/RDS as either a source or a target
- Fan-in
- Fan-out
- Cluster-Extractor
- Replicate into a cluster



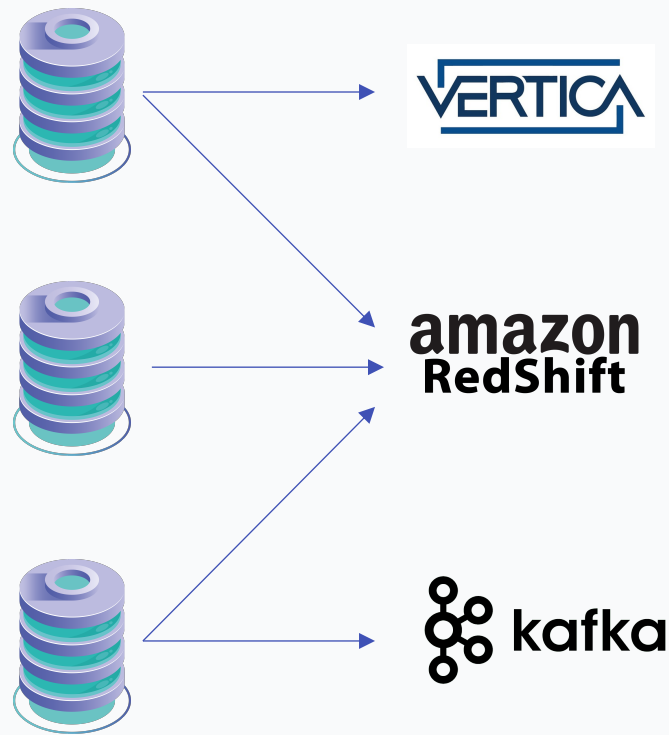
Fan Out

- Extract Once
- Apply to many
- Targets can be a mix of any support target
- Filtering can be used



Fan In

- Many Sources into a single target
- Write to single schema or multiple
- Target can be any of the supported targets
- Mix of fan in and fan out



Cluster-Extractor

- Connect Applier to an existing Tungsten Cluster
 - Take advantage of THL already created by the extractor within a Cluster
- Apply to any supported target
- Continues working even after a manual Switch or an automatic Failover of the Primary node
 - No Need to reconfigure the source cluster!
- Ideal for offloading reporting functions or complementing existing backup/recovery procedures



Replicate into a cluster

- Use replicator to setup replication into an existing Tungsten Cluster
- Extract from a single source
- Write in via Tungsten Proxy
- No need to reconfigure applier if Primary node fails within cluster



Filtering



Filtering

- Remove THL entries
 - For example, filter by schema/table name
 - Filter by data
 - Filter by type (statement, row, DDL, DML)
- Change Content
 - Remove a row or column
 - Change the contents of rows – for example string formats, or
 - Change the datatypes of rows – for example, an Int into Float, SET types into strings, or date types
 - Data Masking [Coming soon]
- Add Data
 - Introduce entirely new transactions
 - Insert new data
 - Duplicate data into other tables



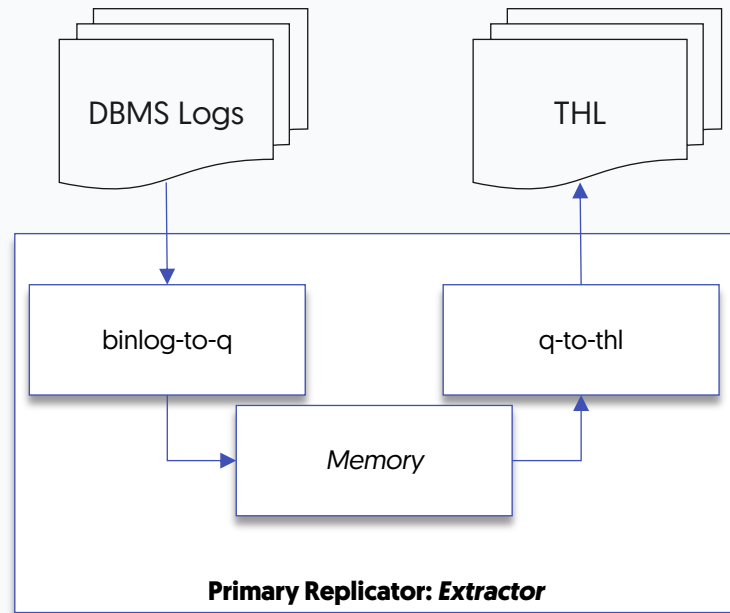
Replicator Stages



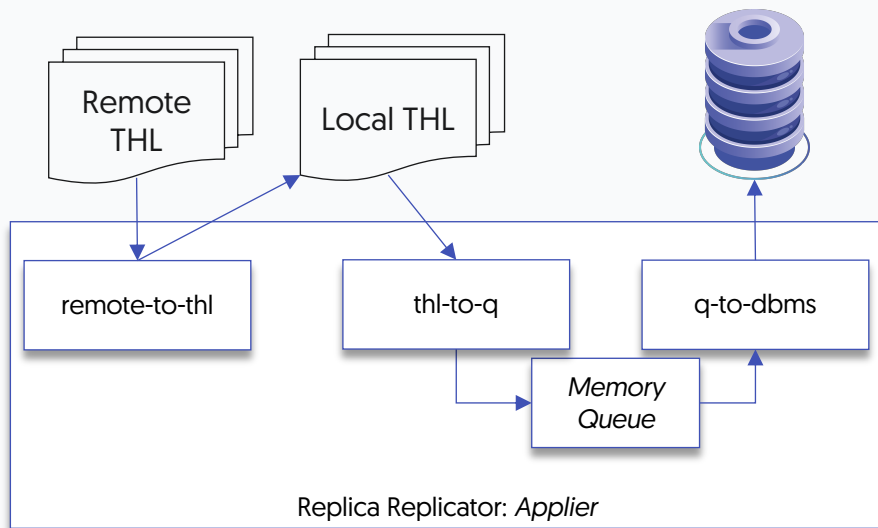
Tungsten Replicator Stages



- Each stage passes through:
 - Extract -> Filter -> Apply
- binlog-to-q
 - Handles extraction of transactions from binary log and places into in-memory queue
- q-to-thl
 - Takes transactions from in-memory queue and writes down to disk into thl log file



Tungsten Replicator Stages



- `remote-to-thl`
 - Streams thl log files across network socket, from configured extractor. Writes out THL to local disk..
- `thl-to-q`
 - Reads transactions from thl and places into in-memory queue
- `q-to-dbms`
 - Reads transactions from in-memory queue and writes out to target database



Summary

What we have learnt today

- How the Replicator Works
- Looked at possible topologies
- Discussed filtering
- Discussed the Replicator stages



Next Steps

In the next session we will

- Walk through the process of installing a simple replicator pipeline.
- Gain an understanding of the pre-requisites.
- Discuss various pre-installation decisions



THANK YOU FOR LISTENING

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