Intermediate: Identifying and resolving issues with Tungsten Replicator and Tungsten Clustering
Topics

In this short course we will:

• Discuss tools used to identify issues
• How to examine issues in the logs
• Resolve common replication issues
• Resolve common clustering issues
• Get more information about replication lag

Course Prerequisite Learning

– Basics: Introduction to Tungsten Clustering OR Introduction to Tungsten Replication
– Optional: Basics: Simple Tungsten Cluster Deployments
– Visit the Continuent website or Tungsten University on YouTube to watch these recordings
  • Continuent website https://www.continuent.com/videos/
  • Tungsten University on YouTube https://www.youtube.com/channel/UCZ9iU-7nT1RLNnJvITFCsWA or http://tinyurl.com/TungstenUni
How Do We Check the Health of an Installation?
Tools

• repctl
  - status shows detailed status of replicator
  - qs gives a 2 line quick status (5.2+)
  - services show all of the replicator services known on this node
  - status -r s repeat status every s seconds
  - Status -name tasks shows status within the replicator pipeline

• /opt/continuent/tungsten/cluster-home/bin/check*
  - scripts used for basic monitoring of cluster, replication and backup status
  - can be used with nagios and zabbix

• Log files in /opt/continuent/services_logs/
  - log files from each component are symlinked here for easy access
  - These files are included in a diag used by Continuent Support

• cctrl
  - Used for Clustering
  - Complete picture and status of the Tungsten Cluster
### trepctl status

Processing status command...

<table>
<thead>
<tr>
<th>NAME</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>appliedLastEventId</td>
<td>mysql-bin.000003:0000000000000810;3239940</td>
</tr>
<tr>
<td>appliedLastSeqno</td>
<td>224</td>
</tr>
<tr>
<td>appliedLatency</td>
<td>1.034</td>
</tr>
<tr>
<td>autoRecoveryEnabled</td>
<td>false</td>
</tr>
<tr>
<td>latestEpochNumber</td>
<td>223</td>
</tr>
<tr>
<td>maximumStoredSeqNo</td>
<td>224</td>
</tr>
<tr>
<td>minimumStoredSeqNo</td>
<td>0</td>
</tr>
<tr>
<td>pipelineSource</td>
<td>thl://db1:2112/</td>
</tr>
<tr>
<td>role</td>
<td>slave</td>
</tr>
<tr>
<td>serviceName</td>
<td>east</td>
</tr>
<tr>
<td>state</td>
<td>ONLINE</td>
</tr>
</tbody>
</table>
Replicator states

• ONLINE

• OFFLINE: NORMAL
  – Replicator has been put into an OFFLINE state
  – no Replicator issues

• GOING-ONLINE: SYNCHRONIZING
  – Slave Replicator is trying to source, source is unavailable
  – Source Replicator is offline or perhaps there’s a connectivity/firewall issue between the Replicators

• OFFLINE: ERROR
  – Replicator has gone OFFLINE due to an error
  – trepctl status will show a description of the error
Cluster states

- ONLINE

- OFFLINE
  - Node will not accept connections through the connector for reads or writes.
  - When cluster policy is AUTOMATIC, an offline datasource will be recovered and brought back into the cluster.
  - If the cluster policy is MAINTENANCE, the datasource remains offline until explicitly brought back online.

- SHUNNED
  - Similar to OFFLINE
  - However, a SHUNNED datasource will NOT be automatically recovered into the cluster.
  - Nodes can manually SHUNNED, or can be SHUNNED due to an error
  - Typically used to perform maintenance on the underlying system.

- FAILED
  - A service has failed on the host, such as the MySQL server
  - After correcting the issue, the node can be bought into the cluster using the recover command
Demo
Diagnosing Replication Latency
Understanding Replicator Pipelines

Slave Replicator Pipeline

Stage
- Master replicator
- THL
  (Transactions + metadata)

Stage
- Parallel queue
- Extract
- Filter
- Apply
- Extract
- Filter
- Apply
- Extract
- Filter
- Apply

Stage
- Slave
  Extract
  Filter
  Apply
Primary Causes of Latency

1. Large Transaction
2. Schema Change

- Transactions must be applied in serially in sequence
- Newer transactions must wait for the large transaction to complete
- Schema change is a large transaction if target table must be rebuilt
trepcnt perf (version 5.2+)

- Displays performance statistics for each stage in the replicator
- Supports auto refresh option `-r s` where `s` is the number of seconds to refresh

<table>
<thead>
<tr>
<th>Stage</th>
<th>Segno</th>
<th>Latency</th>
<th>Events</th>
<th>Extraction</th>
<th>Filtering</th>
<th>Applying</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>remote-to-thl</td>
<td>3246</td>
<td>1.143s</td>
<td>42</td>
<td>37.831s</td>
<td>0.001s</td>
<td>0.403s</td>
<td>0.011s</td>
<td>38.246s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Avg time per Event</td>
<td>0.901s</td>
<td>0.000s</td>
<td>0.000s</td>
<td>0.10s</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>thl-to-q</td>
<td>3246</td>
<td>1.209s</td>
<td>1654</td>
<td>37.113s</td>
<td>0.005s</td>
<td>1.090s</td>
<td>0.098s</td>
<td>38.306s</td>
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<td></td>
<td></td>
<td>Avg time per Event</td>
<td>0.022s</td>
<td>0.000s</td>
<td>0.000s</td>
<td>0.023s</td>
</tr>
<tr>
<td>q-to-dbms</td>
<td>3235</td>
<td>3.746s</td>
<td>1644</td>
<td>22.226s</td>
<td>0.019s</td>
<td>15.242s</td>
<td>0.338s</td>
<td>37.825s</td>
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<td></td>
<td>Avg time per Event</td>
<td>0.014s</td>
<td>0.000s</td>
<td>0.000s</td>
<td>0.023s</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Filters in stage</td>
<td>mysqlsessions -&gt; pkey</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Statistics since last put online 38.418s ago

Avg time per Event | 0.901s    | 0.000s   | 0.000s| 0.911s |

Avg time per Event | 0.022s    | 0.000s   | 0.000s| 0.023s |

Avg time per Event | 0.014s    | 0.000s   | 0.000s| 0.023s |

Filters in stage | mysqlsessions -> pkey |
### trepctl status --name tasks (all versions)

<table>
<thead>
<tr>
<th>NAME</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>appliedLastEventId</td>
<td>mysql-bin.000005:0000000000001149:1930649</td>
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<tr>
<td>appliedLastSegno</td>
<td>239</td>
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<td>appliedLatency</td>
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<td>applyTime</td>
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<td>averageBlockSize</td>
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<td>cancelled</td>
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<td>currentBlockSize</td>
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</tr>
<tr>
<td>currentLastEventId</td>
<td>mysql-bin.000005:0000000000001149:1930649</td>
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<tr>
<td>currentLastFragno</td>
<td>0</td>
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<tr>
<td>currentLastSeqno</td>
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</tr>
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<td>eventCount</td>
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<td>stage</td>
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<td>timeInCurrentEvent</td>
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</table>
Next Steps

• If you are interested in knowing more about Tungsten Clustering or Tungsten Replicator, and would like to try it out for yourself, please contact our sales team who will be able to take you through the details and setup a POC – sales@continuent.com

• Read the documentation at http://docs.continuent.com/

• Subscribe to our Tungsten University YouTube channel! http://tinyurl.com/TungstenUni

• Visit the events calendar on our website for upcoming Webinars and Training Sessions https://www.continuent.com/events/
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