Trino performance tuning

Date published:
Date modified:

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Performance tuning for Trino Virtual Warehouse

This section provides guidance on performance tuning for Trino Virtual Warehouses, covering topics such as increasing preferred nodes for caching files, configuring resource management to address memory issues, and setting up spill memory properties for memory-intensive queries.

Increasing the number of preferred nodes for caching files

Query processing in Trino is distributed into different stages where tasks are processed by different nodes in the cluster. You can limit the number of hosts that are required to process these tasks with the fs.cache.preferred-hosts-count property.

If you are using the Hive or Iceberg connector and if the workload from these tables are high, then a high throughput is required, which can be achieved by increasing the value of the fs.cache.preferred-hosts-count connector property in the connector configuration details.

The value must be increased as concurrency increases. The default value of 2 may not be sufficient if you are running a high workload. For example, if you are running 40 nodes with a concurrency of 5, consider increasing the value of fs.cache.preferred-hosts-count to 20. You can increase this value up to a maximum limit of 40 (maximum worker nodes allowed for caching files).

Note that the value depends on the workload that you are trying to query through the connector and on the number of parallel queries that you expect to run simultaneously. Therefore, tune the parameter according to your workload needs.

Configuring resource management

If you are experiencing memory issues and notice queries failing, it is recommended that you increase the allocated query memory for the Trino Coordinator and Worker.

Procedure

1. Log in to the Cloudera Data Warehouse service as DWAdmin.
2. Go to the **Virtual Warehouses** tab, locate the Trino Virtual Warehouse and click ⋮ Details .

   The **Trino Virtual Warehouse Details** page is displayed.
3. Click the **Configurations** tab, select Trino Coordinator, and select trino-config-properties from the Configuration files drop-down menu.
4. Search for the following properties and modify the values as recommended:
   - query.max-memory — Maximum amount of user memory that can be used by a query across the entire cluster.

     Recommended value: query.max-memory-per-node * number of worker nodes. For example, for 40 nodes, the value is 2560 GB.
   - query.max-memory-per-node — Maximum amount of user memory that can be used by a query on a worker node.

     Recommended value: 64 GB
5. Click Apply Changes.

6. From the **Configuration** tab, click Trino Worker and then select trino-config-properties from the **Configuration files** drop-down menu.
7. Search for the same memory related properties that are specified in Step 4 and set the appropriate values.
8. Click Apply Changes.

Configuring spill memory

During memory intensive queries, if you notice issues related to the spill memory, you can configure certain properties to facilitate running of queries that require memory exceeding per query or per node limits.

Procedure

1. Log in to the Cloudera Data Warehouse service as DWAdmin.
2. Go to the **Virtual Warehouses** tab, locate the Trino Virtual Warehouse and click ⋮ Details .

   The **Trino Virtual Warehouse Details** page is displayed.
3. Click the **Configurations** tab, select Trino Worker, and select trino-config-properties from the Configuration files drop-down menu.
4. Click Add Custom Configuration and add the following properties along with the recommended values:
   - query-max-spill-per-node — Maximum spill space that can be used by a single query on a single worker node.

     Recommended value: 100 GB
   - max-spill-per-node — Maximum spill space that can be used by all queries on a single worker node.

     Recommended value: 275 GB

   Note: The spill space is shared with the Filesystem cache (fs-cache).
5. Click Apply Changes.