## What is Compaction in Cassandra?

Compaction in Cassandra is the process of merging and compacting SSTables (sorted string tables) to optimize storage and improve read performance. It works by combining multiple SSTables into a single new SSTable, eliminating redundant or obsolete data and improving data locality.

## When Compaction Starts?

Compaction starts automatically based on certain triggers and configurable settings. The two main types of compaction in Cassandra are:

- Size Tiered Compaction (STC)
- Leveled Compaction (LCS)

## For Size Tiered Compaction:

Compaction starts when the ratio of the total size of SSTables to the maximum configured size threshold exceeds a predefined threshold.

By default, this threshold is set to 50%. Once the threshold is crossed, compaction is triggered to merge smaller SSTables into larger ones.

## For Leveled Compaction:

Compaction is triggered based on the number of SSTables present in each level of the compaction strategy.

When the number of SSTables in a certain level exceeds a defined threshold, compaction is initiated to compact and merge SSTables within that level.

**Note:** In addition to these triggers, compaction can also be manually triggered using **nodetool** commands or through configuration changes.