Apache HBase Region Splitting

* HBase Tables are divided horizontally by row key range into “Regions.” A region contains all rows in the table between the region’s start key and end key. All rows in the table that sort between the region’s start key and end key are stored in the same region. Regions are non-overlapping.When a table is first created, HBase, by default, will allocate only one region for the table. Initially, all requests will go to a single region server, regardless of the number of region servers.This is the primary reason why initial phases of loading data into an empty table cannot utilize the whole capacity of the cluster.

Pre-splitting

pre-splitting, you can create a table with many regions by supplying the split points at the table creation time. Since pre-splitting will ensure that the initial load is more evenly distributed throughout the cluster.We can use the RegionSplitter utility to calculating the split points for the table. RegionSplitter creates the split points, by using a pluggable SplitAlgorithm. HexStringSplit and UniformSplit are two predefined algorithms.

HexStringSplit

HexStringSplit is a predefined algorithm.The format of a HexStringSplit region boundary is the ASCII representation of an MD5 checksum, or any other uniformly distributed hexadecimal value. Row are hex-encoded long values in the range "00000000" => "FFFFFFFF" and are left-padded with zeros to keep the same order lexicographically as if they were binary.where -c 10, specifies the requested number of regions as 10, and -f specifies the column families you want in the table, separated by “:”. The tool will create a table named “test\_table” with 10 regions:hbase org.apache.hadoop.hbase.util.RegionSplitter test\_table HexStringSplit -c 10 -f f1

Limitation for pre-splitting

pre-splitting also has a risk of creating regions, that do not truly distribute the load evenly because of data skew, or in the presence of very hot or large rows. If the initial set of region split points is chosen poorly, you may end up with heterogeneous load distribution, which will in turn limit your clusters performance