

### KeyValue

#### Blob Format

<keylen/4><valuelen/4><key><value>

#### Key Format

<rowlen/2><row><famlen/1><fam>  
<column><timestamp/8><type>

### Types

Put  
[DeleteRow]  
DeleteFamily  
DeleteColumn  
Delete

### StoreFile

SortedList<KeyValue>

Sort(row,family,type,column,ts)

RegionUniqueID = Creation Stamp

Represents Puts and Deletes that occurred over a Range of Time:

[ID, IDofNextOldestStoreFile)

### StoreFile KeyValue Comparator

Sort(row,type,fam,column,ts)

#### General Sorting Order

Row in ascending lexic.  
Family in ascending lexic.  
Type sorting described below  
Column in ascending lexic.  
Timestamp in descending numerical

#### Type Sorting

Puts are sorted before all Deletes  
DeleteFamily is first in Deletes

#### Delete Sorting

DeleteColumn/Delete are sorted by  
Column in ascending lexic.  
Timestamp is descending numerical

### Example StoreFile

(row,type,fam,col,ts,value)

(RowA, Put, Fam, ColA, 10, W)

(RowA, Put, Fam, ColA, 9, X)

(RowA, Put, Fam, ColA, 8, Y)

(RowA, Put, Fam, ColA, 7, Z)

(RowA, Put, Fam, ColB, 10, X)

(RowA, Put, Fam, ColB, 8, Y)

(RowA, DeleteFamily, Fam, \*, 6, \*)

(RowA, Delete, Fam, ColA, 5, X)

(RowA, DeleteCol, Fam, ColA, 4, X)

(RowA, Delete, Fam, ColB, 5, X)

(RowB, Put, Fam, ColA, 10, X)

(RowB, Put, Fam, ColA, 9, Y)

⋮

← Column Border

← Put/Del Border

← Row Border

### StoreFile Notes

Deletes (always scoped to a row and family) are stored at the end of that row.

The deletes in a particular StoreFile, as above, will never be relevant for the puts in that same StoreFile.

These deletes apply only to older StoreFiles.

We read them in after we've scanned everything in this StoreFile, for this row, and if we must go to the next StoreFile, then we read in the deletes and add them to our DeleteSet.