

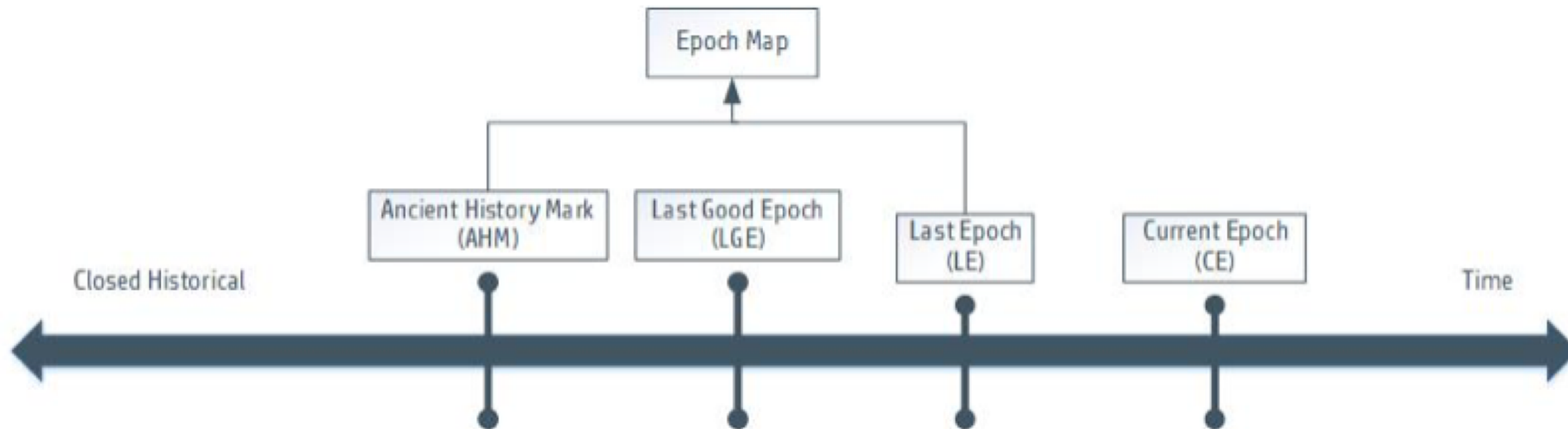
Vertica concept

# ROS vs WOS

- ROS (Read-Optimized Store): in hard disk
- WOS (Write-Optimized Store): in-memory
- [Tuple Mover](#)
  - Moveout: from WOS to ROS, create ROS containers
  - Mergeout: Merge ROS containers
    - ❖ Mergeout Precedence
      1. RECOMPUTE\_LIMITS: projection create or change
      2. MERGEOUT: Consolidate new containers.
      3. DVMERGEOUT: Consolidate data marked for deletion, or *delete vectors*.
      4. PURGE: Purge aged-out (AHM epoch) delete vectors from containers.
- Useful hint
  - AUTO
  - DIRECT
  - TRICKLE

# Epoch

- An epoch is 64-bit number that represents a logical time stamp for the data in Vertica.



# Logical schema

- Objects

- Schema

- ❖ Multiple schema

- ❖ Search paths

- Table

- View

- [Referential Integrity](#)

# Projection

- Command: \dj, export\_objects, get\_projections
- Vertica physically stores table data in **projections**, which are collections of table columns.
- Compression: Compress and encode data to reduce storage space.
- Segmentation: Facilitate distribution across the database cluster.
- High availability

# Projection type

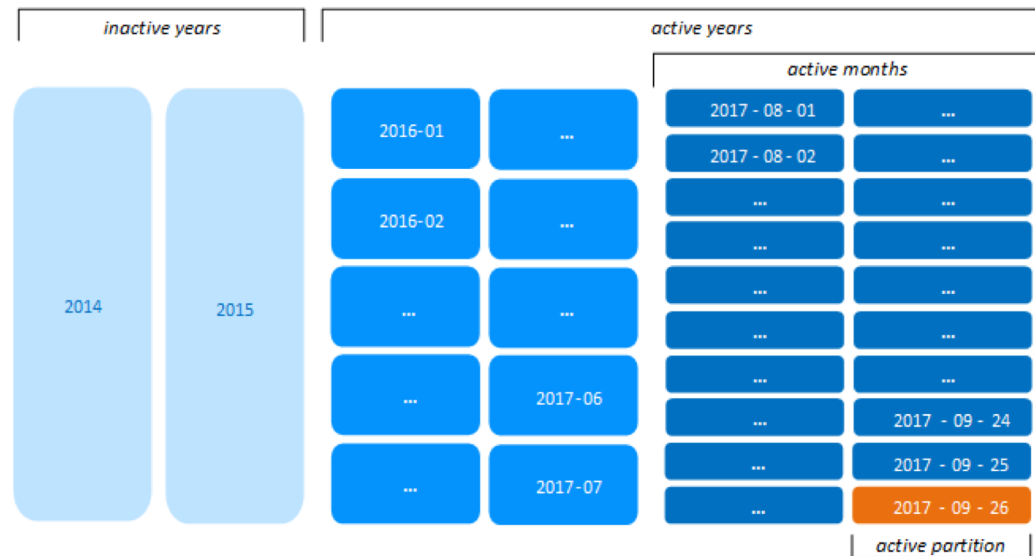
- Superprojections
  - Vertica requires at least one superprojection that contains all columns.
  - [Auto-Projections](#)
- Query-Specific Projections
- Aggregate Projections
  - [Projection that contains expression](#)
  - [Live aggregate projection](#): SUM, MAX, MIN, COUNT
  - [Top-K projection](#): window partition

# Projection segmentation

- Segmented projections (Buddy Projections)
  - [K-Safe](#)
  - built-in [hash](#) function
  - Spread workload across multiple nodes
  - Allows each node to be optimized for different query workloads
- Unsegmented projections (Replication)
- [Document](#)

# Partition

- Alter partition: REORGANIZE, partition\_table, partition\_projection
- Maximum of 50 partitions per projection
- Partition Group
  - Hierarchical partitioning
  - CALENDAR HIERARCHY DAY
- Partitioning & Segmentation





# Partition management

- Drop partition: split partition group
- Archive partition
  1. MOVE\_PARTITIONS\_TO\_TABLE
  2. Backup and drop staging table
- Swap partitions: SWAP\_PARTITIONS\_BETWEEN\_TABLES
- View partition value: v\_monitor.PARTITIONS
- View partition keys: DUMP\_PARTITION\_KEYS, DUMP\_TABLE\_PARTITION\_KEYS, DUMP\_PROJECTION\_PARTITION\_KEYS

# Monitor in SMS

- <https://wiki.jarvis.trendmicro.com/x/u6wGCQ>
- <https://wiki.jarvis.trendmicro.com/x/bZdBCQ>
- <https://www.vertica.com/kb/Best-Practices-for-Monitoring-Vertica/Content/BestPractices/BestPracticesforMonitoringVertica.htm>