**Notes on Global Snapshot protocol**

* Notes
  + For CSMA time sync, one message suffices to sync time, assuming same clock speeds & no clock drift.
  + Additional messages help calculate relative speed / drift.
* Assumptions:
  + On remote node, execution of snapshot is (a) same for all remote nodes and (b) is deterministic in time. This avoids issues wrt when taken vs. when sent.
  + At most one snapshot request is pending at a time.
  + Only fault is link error.
  + Using CSMA with time sync features.
  + All nodes running at same clock speed, and clock skew is small for small time spans. This means the CSMA message received time diff is accurate.
* Messages:
  + Base
    - Broadcast RequestSnapshot.
  + Remote
    - Unicast CurrentState
* Base
  + Variables
    - SnapshotId. Integer, initially 0. Unique id.
    - SnapshotPending: bool, initially false
  + On demand or periodically, with SnapshotTime as argument
    - If SnapshotPending is true: return
    - If SnapshotTime is not greater than CurrentTime + delta (to allow time for replies): return
    - Increment SnapshotId
    - Broadcast RequestSnapshot message; contains SnapshotTime & SnapshotId
    - Set SnapshotPending = true
  + On receipt of CurrentState message
    - If message.SnapshotId <> SnapshotId: return
    - Save message.SnapshotId & message.State
    - Set SnapshotPending = false
* Remote
  + Variables
    - BaseAddress: int: initially -1
    - InitialTime: (long, long)
    - LastTime: (long, long)
    - SnapshotTime: long
  + On receipt of any broadcast message
    - If first message [BaseAddress < 0]
      * Set BaseAddress = message.Src address
      * Set InitialTime(BaseTime, RemoteTime) = (msg.SenderEventTimeStamp, currTime)
    - Set LastTime(BaseTime, RemoteTime) = (msg.SenderEventTimeStamp, currTime)
    - If RequestSnapshot message:
      * Set skew =
        + Skew = 1 iff Base and Remote clocks running at same rate
        + Skew > 0 iff Remote clock is faster than Base clock
        + Skew < 0 iff Base clock is faster than Remote clock
      * Set SnapshotTime =