What is claimed is:

1. A method for processing state update requests in a distributed data processing system including a plurality of processing nodes, the method including:

processing a plurality of sets of state update requests using two or more processing nodes of the plurality of processing nodes, each state update request of each set of state update requests being configured to cause a state update at a processing node of the plurality of processing nodes and being associated with a corresponding time interval of a plurality of time intervals, the plurality of sets of state update requests including a first set of state update requests associated with a first time interval of the plurality of time intervals and configured to cause state updates at a first set of processing nodes of the plurality of processing nodes, the processing including:

issuing each state update request of the first set of state update requests to the two or more processing nodes including maintaining a first time interval global count of issued state update requests for the first set of state update requests associated with the first time interval of the plurality of time intervals;

performing at least some of the state updates associated with the first set of state update requests for at least some of the two or more processing nodes of the first set of processing nodes including maintaining a first time interval local count of state updates performed for the first set of state update requests associated with the first time interval of the plurality of time intervals;

determining a first time interval global count of state update requests performed at the two or more processing nodes as a sum of the local counts of state updates performed for the first set of state update requests at the two or more processing nodes; and

updating a state consistency indicator to a value associated with the first time interval, indicating that state updates associated with all state update requests of the first set of state update requests associated with the first time interval have been performed in response to determining that the first time interval global count of state updates performed for the first set of state update requests equals the first time interval global count of issued state update requests for the first set of state update requests.

2. The method of claim 1 wherein the distributed data processing system includes a root node configured to maintain the global count of issued state update requests for the first set of state update requests and to maintain the global count of state updates performed for the first set of state update requests.

3. The method of claim 2 further comprising receiving at the root node, from each processing node of the first set of processing nodes, the local count of state update requests received by the processing node and the local count of state updates made by the processing node and combining the received local counts to determine the global count of issued state update requests and the global count of state updates.

4. The method of claim 2 further comprising issuing, from each processing node of the first set of processing nodes to the root node, a message including the local count of state update requests received by the processing node and a local count of state updates made by the processing node.

5. The method of claim 2 wherein the root node is configured to issue messages to the first set of processing nodes, the messages from the root node indicating start times and end times of time intervals of the plurality of time intervals.

6. The method of claim 5 wherein the messages issued by the root node further include the state consistency indicator.

7. The method of claim 5 wherein the messages issued by the root node further include an indication of a current, working time interval.

8. The method of any one of claims 1 through 7 wherein the updated state consistency indicator indicates that all state updates associated with the first time interval and any time intervals of the plurality of time intervals prior to the first time interval are stored at a first level of durability at the first set of processing nodes.

9. The method of any one of claims 1 through 8 wherein the first set of state update requests includes at least one state update request associated with a data processing task for processing data associated with a record generate a result.

10. The method of any one of claims 1 through 9 wherein the first set of state update requests includes at least one state update request associated with a result generated by a data processing task.

11. The method of any one of claims 1 through 10 wherein updating the state consistency indicator includes incrementing time interval counter.

12. The method of claim 1, wherein updating the state consistency indicator includes incrementing the state consistency indicator to a value representative of a time earlier than a current working time maintained by a working counter, and wherein the method further includes broadcasting a message containing at least the state consistency indicator and the working counter to the plurality of processing nodes to cause state update requests associated with time intervals equal to or earlier than the value of the state consistency indicator to be stored.

13. Software stored in a non-transitory form on a computer-readable medium, for processing state update requests in a distributed data processing system including a plurality of processing nodes, the software including instructions for causing a computing system perform all of the steps of any one of claims 1-12.

14. An apparatus for processing state update requests, the apparatus including:
a distributed data processing system including a plurality of processing nodes, each processing node including at least one processor; and

a communication medium connecting the plurality of processing nodes for sending and receiving information between processing nodes of the plurality of processing nodes;

wherein the distributed data processing system is configured to process a plurality of sets of state update requests using two or more processing nodes of the plurality of processing nodes, each state update request of each set of state update requests being configured to cause a state update at a processing node of the plurality of processing nodes and being associated with a corresponding time interval of a plurality of time intervals, the plurality of sets of state update requests including a first set of state update requests associated with a first time interval of the plurality of time intervals and configured to cause state updates at a first set of processing nodes of the plurality of processing nodes, the processing including:

issuing each state update request of the first set of state update requests to the two or more processing nodes including maintaining a first time interval global count of issued state update requests for the first set of state update requests associated with the first time interval of the plurality of time intervals;

performing at least some of the state updates associated with the first set of state update requests for at least some of the two or more processing nodes of the first set of processing nodes including maintaining a first time interval local count of state updates performed for the first set of state update requests associated with the first time interval of the plurality of time intervals;

determining a first time interval global count of state update requests performed at the two or more processing nodes as a sum of the local counts of state updates performed for the first set of state update requests at the two or more processing nodes; and

updating a state consistency indicator to a value associated with the first time interval, indicating that state updates associated with all state update requests of the first set of state update requests associated with the first time interval have been performed in response to determining that the first time interval global count of state updates performed for the first set of state update requests equals the first time interval global count of issued state update requests for the first set of state update requests.

15. A computing system for processing state update requests in a distributed data processing system including a plurality of processing nodes, the computing system including:

means for processing a plurality of sets of state update requests using two or more of the plurality of processing nodes, each state update request of each set of state update requests being configured to cause a state update at a processing node of the plurality of processing nodes and being associated with a corresponding time interval of a plurality of time intervals, the plurality of sets of state update requests including a first set of state update requests associated with a first time interval of the plurality of time intervals and configured to cause state updates at a first set of processing nodes of the plurality of processing nodes, the processing including:

issuing each state update request of the first set of state update requests to the two or more processing nodes including maintaining a first time interval global count of issued state update requests for the first set of state update requests associated with the first time interval of the plurality of time intervals;

performing at least some of the state updates associated with the first set of state update requests for at least some of the two or more processing nodes of the first set of processing nodes including maintaining a first time interval local count of state updates performed for the first set of state update requests associated with the first time interval of the plurality of time intervals;

determining a first time interval global count of state update requests performed at the two or more processing nodes as a sum of the local counts of state updates performed for the first set of state update requests at the two or more processing nodes; and

updating a state consistency indicator to indicate that state updates associated with all state update requests of the first set of state update requests associated with the first time interval have been performed in response to determining that the first time interval global count of state updates performed for the first set of state update requests equals the first time interval global count of issued state update requests for the first set of state update requests.

16. The apparatus of claim 14 or the computing system of claim 15, wherein the distributed data processing system includes a root node configured to maintain the global count of issued state update requests for the first set of state update requests and to maintain the global count of state updates performed for the first set of state update requests.

17. The apparatus or the computing system of claim 16, wherein the processing further comprises receiving at the root node, from each processing node of the first set of processing nodes, the local count of state update requests received by the processing node and the local count of state updates made by the processing node and combining the received local counts to determine the global count of issued state update requests and the global count of state updates.

18. The apparatus of claim 14 or the computing system of claim 15, wherein updating the state consistency indicator includes incrementing the state consistency indicator to a value representative of a time earlier than a current working time maintained by a working counter, and wherein the method further includes broadcasting a message containing at least the state consistency indicator and the working counter to the plurality of processing nodes to cause state update requests associated with time intervals equal to or earlier than the value of the state consistency indicator to be stored.