

CLAIMS

1. A computer program product comprising a computer readable storage medium having program code embodied therewith, the program code executable by at least one processor of a computer system having a plurality of storage controllers having a cache and storage controlled by a storage controller, to perform operations, the operations comprising:
 - destaging data from a cache to storage including:
 - determining available processing capacities of each of a plurality of storage controllers; and
 - assigning to a storage controller of the plurality of storage controllers, as a function of available processing capacities of each of the plurality of storage controllers, a write sort task of write sorting a write list of data units to be destaged to storage.
2. The computer program product of claim 1 wherein the determining available processing capacities of each of the plurality of storage controllers includes polling each of the plurality of storage controllers to request the available processing capacities of each of the polled plurality of storage controllers.
3. The computer program product of claim 1 or claim 2 wherein write sort task assigning to a storage controller of the plurality of storage controllers includes load balancing loads of the plurality of storage controllers.
4. The computer program product of any preceding claim wherein the write list to be write sorted by the write sort task is an initiator write list for generating a sequence of write commands to be issued to a target storage controller for destaging data units of the initiator write list to storage controlled by the target storage controller.
5. The computer program product of claim 4 wherein the write sort task includes write sorting entries of the initiator write list as a function of a storage location identified by each entry, in a monotonic sequence order of storage location identifications of the initiator write list entries.
6. The computer program product of claim 5 wherein the write sort task includes setting a sort/no-sort indicator to be transmitted to a target storage controller in association with a write command of the sequence of commands, to indicate to the target storage controller that determination of an insertion point for a write data unit of a write command in a target write list of write data units of the target storage controller may be bypassed at the target storage controller as a function of the sort/no-sort indicator.
7. The computer program product of claim 5 wherein the write sorting entries of the initiator write list as a function of a storage location identified by each entry, includes a logarithmic time search of initiator write list entries to arrange the initiator write list entries in the monotonic sequence order of storage location identifications.

8. The computer program product of claim 5 wherein the write sorting entries of the initiator write list as a function of a storage location identified by each entry, includes a sequential search of initiator write list entries to arrange the initiator write list entries in the monotonic sequence order of storage location identifications.
9. The computer program product of claim 5 wherein the write list to be write sorted by the write sort task is a target write list for generating a sequence of destaging operations for destaging data units of the target write list to storage controlled by the target storage controller and wherein the assigned write sort task includes at least one of a logarithmic time search and a limited time search of the target write list to determine a target write list insertion point which maintains a monotonic sequence order after an entry is inserted into the target write list.
10. A method, comprising:
 - destaging data from a cache to storage including:
 - determining available processing capacities of each of a plurality of storage controllers; and
 - assigning to a storage controller of the plurality of storage controllers, as a function of available processing capacities of each of the plurality of storage controllers, a write sort task of write sorting a write list of data units to be destaged to storage.
11. The method of claim 10 wherein the determining available processing capacities of each of the plurality of storage controllers includes polling each of the plurality of storage controllers to request the available processing capacities of each of the polled plurality of storage controllers.
12. The method of claim 10 or claim 11 wherein write sort task assigning to a storage controller of the plurality of storage controllers includes load balancing loads of the plurality of storage controllers.
13. The method of any of claims 10 to 12 wherein the write list to be write sorted by the write sort task is an initiator write list for generating a sequence of write commands to be issued to a target storage controller for destaging data units of the initiator write list to storage controlled by the target storage controller.
14. The method of claim 13 wherein the write sort task includes write sorting entries of the initiator write list as a function of a storage location identified by each entry, in a monotonic sequence order of storage location identifications of the initiator write list entries.
15. The method of claim 14 wherein the write sort task includes setting a sort/no-sort indicator to be transmitted to a target storage controller in association with a write command of the sequence of commands, to indicate to the target storage controller that a determination of an insertion point for a write data unit of a write

command in a target write list of write data units of the target storage controller may be bypassed at the target storage controller as a function of the sort/no-sort indicator.

16. The method of claim 14 wherein the write sorting entries of the initiator write list as a function of a storage location identified by each entry, includes a logarithmic time search of initiator write list entries to arrange the initiator write list entries in the monotonic sequence order of storage location identifications.

17. The method of claim 14 wherein the write sorting entries of the initiator write list as a function of a storage location identified by each entry, includes a sequential search of initiator write list entries to arrange the initiator write list entries in the monotonic sequence order of storage location identifications.

18. The method of claim 14 wherein the write list to be write sorted by the write sort task is a target write list for generating a sequence of destaging operations for destaging data units of the target write list to storage controlled by the target storage controller and wherein the assigned write sort task includes at least one of a logarithmic time search and a limited time search of the target write list to determine a target write list insertion point which maintains a monotonic sequence order after an entry is inserted into the target write list.

19. A system, comprising:
a host configured to issue input/output (I/O) requests;
a processing unit configured to issue write commands in response to an I/O request;
storage having storage locations;
a plurality of storage controllers configured to control storage including a target storage controller having a memory for a target write list of entries of write data units, the target storage controller configured to control storage in response to write commands;
wherein at least one of the host, processing unit and target storage controller has a cache having a write list of write data units, at least one processor and at least one computer program product, the computer program product comprising a computer readable storage medium having program code embodied therewith, the program code executable by at least one processor of the system to perform operations, the operations comprising:
destaging data from a cache to storage including:
determining available processing capacities of each of the plurality of storage controllers; and
assigning to a storage controller of the plurality of storage controllers, as a function of available processing capacities of each of the plurality of storage controllers, a write sort task of write sorting a write list of data units to be destaged to storage.

20. The system of claim 19 wherein the determining available processing capacities of each of the plurality of storage controllers includes polling each of the plurality of storage controllers to request the available processing capacities of each of the polled plurality of storage controllers.

21. The system of claim 19 or claim 20 wherein write sort task assigning to a storage controller of the plurality of storage controllers includes load balancing loads of the plurality of storage controllers.

22. The system of any of claims 19 to 21 wherein the write list to be write sorted by the write sort task is an initiator write list for generating a sequence of write commands to be issued to a target storage controller for destaging data units of the initiator write list to storage controlled by the target storage controller.

23. The system of claim 22 wherein the write sort task includes write sorting entries of the initiator write list as a function of a storage location identified by each entry, in a monotonic sequence order of storage location identifications of the initiator write list entries.

24. The system of claim 23 wherein the write sort task includes setting a sort/no-sort indicator to be transmitted to a target storage controller in association with a write command of the sequence of commands, to indicate to the target storage controller that determination of an insertion point for a write data unit of a write command in a target write list of write data units of the target storage controller may be bypassed at the target storage controller as a function of the sort/no-sort indicator.

25. The system of claim 23 wherein the write sorting entries of the initiator write list as a function of a storage location identified by each entry, includes at least one of a logarithmic time search of initiator write list entries to arrange the initiator write list entries in the monotonic sequence order of storage location identifications, and a sequential search of initiator write list entries to arrange the initiator write list entries in the monotonic sequence order of storage location identifications, wherein the write list to be write sorted by the write sort task is a target write list for generating a sequence of destaging operations for destaging data units of the target write list to storage controlled by the target storage controller and wherein the assigned write sort task includes at least one of a logarithmic time search and a limited time search of the target write list to determine a target write list insertion point which maintains a monotonic sequence order after an entry is inserted into the target write list.