

CLAIMS

1. A method for improving destage performance to a RAID array, the method comprising:
 - periodically scanning a cache for first strides that are ready to be destaged to a RAID array;
 - while scanning the cache, identifying second strides that are not currently ready to be destaged to the RAID array, but will likely be ready to be destaged during a subsequent scan of the cache;
 - initiating preemptive staging of any missing data of the second strides from the RAID array into the cache in preparation for the subsequent scan; and
 - destaging, from the cache, the second strides from the cache to the RAID array upon occurrence of the subsequent scan.
2. The method of claim 1, further comprising maintaining a count for each data element of each stride stored in the cache, wherein the count is incremented each time the data element is written to and decremented each time the data element is scanned.
3. The method of claim 2, wherein each data element of the first strides has a count less than or equal to a first designated threshold.
4. The method of claim 3, wherein the first designated threshold is zero.
5. The method of claim 2, wherein each data element of the second strides has a count less than or equal to a second designated threshold.

6. The method of claim 2, wherein the data elements are tracks.

7. The method of claim 1, wherein initiating preemptive staging comprises initiating preemptive staging for a number of second strides up to a designated threshold.

8. A computer program product for improving destage performance to a RAID array, the computer program product comprising a non-transitory computer-readable storage medium having computer-usable program code embodied therein, the computer-usable program code configured to perform the following when executed by at least one processor:

periodically scan a cache for first strides that are ready to be destaged to a RAID array;

while scanning the cache, identify second strides that are not currently ready to be destaged to the RAID array, but will likely be ready to be destaged during a subsequent scan of the cache;

initiate preemptive staging of any missing data of the second strides from the RAID array into the cache in preparation for the subsequent scan; and

destage, from the cache, the second strides from the cache to the RAID array upon occurrence of the subsequent scan.

9. The computer program product of claim 8, wherein the computer-usable program code is further configured to maintain a count for each data element of each stride stored in the cache, wherein the count is incremented each time the data element is written to and decremented each time the data element is scanned.

10. The computer program product of claim 9, wherein each data element of the first strides has a count less than or equal to a first designated threshold.

11. The computer program product of claim 10, wherein the first designated threshold is zero.

12. The computer program product of claim 9, wherein each data element of the second strides has a count less than or equal to a second designated threshold.

13. The computer program product of claim 9, wherein the data elements are tracks.

14. The computer program product of claim 8, wherein initiating preemptive staging comprises initiating preemptive staging for a number of second strides up to a designated threshold.

15. A system for improving destage performance to a RAID array, the system comprising:

at least one processor;

at least one memory device operably coupled to the at least one processor and storing instructions for execution on the at least one processor, the instructions causing the at least one processor to:

periodically scan a cache for first strides that are ready to be destaged to a RAID array;

while scanning the cache, identify second strides that are not currently ready to be destaged to the RAID array, but will likely be ready to be destaged during a subsequent scan of the cache;

initiate preemptive staging of any missing data of the second strides from the RAID array into the cache in preparation for the subsequent scan; and

destage, from the cache, the second strides from the cache to the RAID array upon occurrence of the subsequent scan.

16. The system of claim 15, wherein the instructions further cause the at least one processor to maintain a count for each data element of each stride stored in the cache, wherein the count is incremented each time the data element is written to and decremented each time the data element is scanned.

17. The system of claim 16, wherein each data element of the first strides has a count less than or equal to a first designated threshold.

18. The system of claim 16, wherein each data element of the second strides has a count less than or equal to a second designated threshold.

19. The system of claim 16, wherein the data elements are tracks.

20. The system of claim 15, wherein initiating preemptive staging comprises initiating preemptive staging for a number of second strides up to a designated threshold.