CLAIMS

1. A method for improving destage performance to a RAID array, the method comprising:

storing, within a RAID array, a plurality of strides, wherein each stride comprises a set of data elements distributed across multiple storage drives of the RAID array;

maintaining a count for each data element of each stride of the plurality;

periodically identifying first strides in the cache that are ready to be destaged to the RAID array, wherein identifying the first strides comprises identifying strides where each data element of the strides has a count less than or equal to a first designated threshold;

while scanning the cache, identifying second strides of the plurality 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, wherein identifying the second strides comprises identifying strides where each data element of the strides has a count less than or equal to a second designated threshold that is different than the first designated threshold;

initiating, from the RAID array into the cache, preemptive staging of any missing data elements of the second strides needed to calculate parity values for the second strides; 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, wherein each count is incremented each time its corresponding data element is written to.

3. The method of claim 2, wherein each count is decremented each time its corresponding data element is scanned.

4. The method of claim 1, wherein the first designated threshold is zero.

5. The method of claim 1, wherein each count includes four bits.

6. The method of claim 1, 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:

store, within a RAID array, a plurality of strides, wherein each stride comprises a set of data elements distributed across multiple storage drives of the RAID array;

maintain a count for each data element of each stride of the plurality;

periodically identify first strides in the cache that are ready to be destaged to the RAID array, wherein identifying the first strides comprises identifying strides where each data element of the strides has a count less than or equal to a first designated threshold;

while scanning the cache, identify second strides of the plurality 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, wherein identifying the second strides comprises identifying strides where each data element of the strides has a count less than or equal to a second designated threshold that is different than the first designated threshold;

initiate, from the RAID array into the cache, preemptive staging of any missing data elements of the second strides needed to calculate parity values for the second strides; 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 each count is incremented each time the data element is written to.

10. The computer program product of claim 8, wherein each count is decremented each time its corresponding data element is scanned.

11. The computer program product of claim 8, wherein the first designated threshold is zero.

12. The computer program product of claim 8, wherein each count includes four bits.

13. The computer program product of claim 8, 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:

store, within a RAID array, a plurality of strides, wherein each stride comprises a set of data elements distributed across multiple storage drives of the RAID array;

maintain a count for each data element of each stride of the plurality;

periodically identify first strides in the cache that are ready to be destaged to the RAID array, wherein identifying the first strides comprises identifying strides where each data element of the strides has a count less than or equal to a first designated threshold;

while scanning the cache, identify second strides of the plurality 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, wherein identifying the second strides comprises identifying strides where each data element of the strides has a count less than or equal to a second designated threshold that is different than the first designated threshold;

initiate, from the RAID array into the cache, preemptive staging of any missing data elements of the second strides needed to calculate parity values for the second strides; 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 each 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 15, wherein each count is decremented each time its corresponding data element is scanned.

18. The system of claim 15, wherein the first designated threshold is zero.

19. The system of claim 15, 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.