CLAIMS

What is claimed is:

1. A method for improving reliability of a storage system, wherein the storage system comprises a first control device and a second control device, and the method comprises:

receiving, by a target controller, a write request, wherein the write request comprises to-be-written data, and the target controller belongs to the first control device;

writing, by the target controller, the to-be-written data into a memory of the target controller; and

writing, by the target controller, the to-be-written data into a memory of each of a plurality of mirror controllers of the target controller, wherein at least one mirror controller belongs to the first control device, and at least one mirror controller belongs to the second control device.

2. The method according to claim 1, wherein the first control device and the second control device are connected to a storage device, and the method further comprises:

when the first control device is faulty, accessing the storage device by using the second control device.

3. The method according to claim 1 or 2, wherein the target controller and the plurality of mirror controllers of the target controller form a backup controller group, the backup controller group comprises N controllers, N is an integer greater than or equal to 3, and

the method further comprises:

when M controllers in the backup controller group are faulty and the M controllers comprise the target controller, selecting, by a primary controller, a controller from the plurality of mirror controllers of the target controller as a new target controller, wherein the new target controller is configured to receive the write request, and the primary controller is a controller, selected from controllers in the first control device and the second control device, that is configured to manage another controller; and

establishing, by the primary controller, M new mirror controllers for the new target controller, and mirroring data in a memory of the new target controller to the M new mirror controllers, wherein M is an integer greater than or equal to 1 and less than N.

4. The method according to claim 1 or 2, wherein the target controller and the plurality of

mirror controllers of the target controller form a backup controller group, the backup controller group comprises N controllers, N is an integer greater than or equal to 3, and

the method further comprises:

when M controllers in the backup controller group are faulty and the M controllers do not comprise the target controller, establishing, by a primary controller, M new mirror controllers for the target controller, and mirroring data in the memory of the target controller to the M new mirror controllers, wherein the primary controller is a controller, selected from controllers in the first control device and the second control device, that is configured to manage another controller, and M is an integer greater than or equal to 1 and less than N.

5. The method according to claim 3 or 4, wherein N is equal to 3.

6. The method according to claim 1 or 2, wherein when the first control device is faulty, one mirror controller that is of the target controller and that is in the second control device is used as a new target controller, a mirror controller is established for the new target controller, and data in a memory of the new target controller is mirrored to a memory of the new mirror controller.

7. A storage control system, wherein the storage control system comprises a first control device and a second control device, the first control device comprises a target controller, and the target controller comprises:

a receiving module, configured to receive a write request, wherein the write request comprises to-be-written data; and

a processing module, configured to write the to-be-written data into a memory of the target controller, wherein

the processing module is further configured to write the to-be-written data into a memory of each of a plurality of mirror controllers of the target controller, wherein at least one mirror controller belongs to the first control device, and at least one mirror controller belongs to the second control device.

8. The storage control system according to claim 7, wherein the target controller and the plurality of mirror controllers of the target controller form a backup controller group, the backup controller group comprises N controllers, N is an integer greater than or equal to 3, the storage control system comprises a primary controller, the primary controller is a controller, selected from controllers in the first control device and the second control device, that is configured to manage another controller, and the primary controller comprises:

a troubleshooting module, configured to: when M controllers in the backup controller group are faulty and the M controllers comprise the target controller, select a controller from the plurality of mirror controllers of the target controller as a new target controller, wherein the new target controller is configured to receive the write request; and

a mirroring module, configured to establish M new mirror controllers for the new target controller, and mirror data in a memory of the new target controller to the M new mirror controllers, wherein M is an integer greater than or equal to 1 and less than N.

9. The storage control system according to claim 7, wherein the target controller and the plurality of mirror controllers of the target controller form a backup controller group, the backup controller group comprises N controllers, N is an integer greater than or equal to 3, the storage control system further comprises a primary controller, the primary controller is a controller, selected from controllers in the first control device and the second control device, that is configured to manage another controller, and the primary controller comprises:

a troubleshooting module, configured to: when M controllers in the backup controller group are faulty and the M controllers do not comprise the target controller, establish M new mirror controllers for the target controller; and

a mirroring module, configured to mirror data in the memory of the target controller to the M new mirror controllers, wherein M is an integer greater than or equal to 1 and less than N.

10. The storage control system according to claim 8 or 9, wherein N is equal to 3.

11. The storage control system according to claim 7, wherein when the first control device is faulty, one mirror controller that is of the target controller and that is in the second control device is used as a new target controller, a mirror controller is established for the new target controller, and data in a memory of the new target controller is mirrored to a memory of the new mirror controller.

12. A storage control system, wherein the storage control system comprises a first control device and a second control device, the first control device comprises a target controller, the target controller comprises a processor and a memory, and the processor executes a computer instruction stored in the memory to enable the target controller to perform the method according to any one of claims 1 to 6.

13. The storage control system according to claim 12, wherein the storage control system comprises a primary controller, the primary controller is a controller, selected from controllers in

the first control device and the second control device, that is configured to manage another controller, the primary controller comprises a processor and a memory, and the processor executes a computer instruction stored in the memory to enable the primary controller to perform the method according to any one of claims 1 to 6.

14. A computer storage medium, wherein the computer storage medium stores a computer program, and when the computer program is executed by a processor, the method according to any one of claims 1 to 6 is implemented.

15. A computer program, wherein the computer program comprises a computer instruction, and when the computer instruction is executed by a computer, the computer is enabled to perform the method according to any one of claims 1 to 6.