

STORAGE VOLUME CREATION METHOD AND APPARATUS, SERVER, AND STORAGE MEDIUM

TECHNICAL FIELD

5 Embodiments of the present application relate to data storage technologies, and for example, to a storage volume creation method and apparatus, a server and a storage medium.

BACKGROUND

10 Local storage refers to a storage manner of storing data on a storage device such as a local magnetic disk, a mobile hard disk, a USB flash disk and an optical disk. Compared with network storage, the local storage can provide more efficient input/output (IO) performance, and is simple to maintain and convenient to operate.

15 In an application scenario of the local storage, in order to improve the efficiency in using the storage, a storage pool is typically used for allocation of storage resources. As shown in FIG. 1, the storage pool is composed of at least one physical storage medium, and a storage volume is allocated, according to an operation of a user, from the storage pool, so that the user stores data. This storage architecture has a disadvantage that when the physical storage medium is damaged, the storage pool can hardly determine a damaged address and then will not allocate the storage volume normally, leading to a result that the entire storage pool become inaccessible once the physical storage medium is damaged.

20 Therefore, when the physical storage medium fails, the data storage method cannot operate normally and is poor in stability.

SUMMARY

25 Embodiments of the present application provide a storage volume creation method and apparatus, a server and a storage medium, so that when a physical storage medium fails, normal operation can be achieved, and the stability is kept.

An embodiment of the present application provides a storage volume creation method. The method includes: attribute information of a storage volume to be created and information of a federation storage pool used for creating the storage volume to be created is acquired; a target sub-storage pool is selected from a federation storage pool corresponding to the information of

CLAIMS

1. A storage volume creation method, comprising:

acquiring attribute information of a storage volume to be created and information of a federation storage pool used for creating the storage volume to be created;

5 selecting a target sub-storage pool from a federation storage pool corresponding to the information of the federation storage pool, wherein the federation storage pool comprises at least one sub-storage pool; and

10 creating, according to the attribute information of the storage volume to be created, a storage volume in the target sub-storage pool through a physical storage medium of the target sub-storage pool;

wherein before acquiring the attribute information of the storage volume to be created and the information of the federation storage pool used for creating the storage volume to be created, the method further comprises:

15 acquiring information of at least one federation storage pool to be created, information of at least one sub-storage pool in each federation storage pool, and information of a physical storage medium in each sub-storage pool;

creating at least one federation storage pool according to the information of the at least one federation storage pool;

20 creating, according to the information of the at least one sub-storage pool in the each federation storage pool, at least one sub-storage pool in a corresponding federation storage pool;

adding, according to the information of the physical storage medium corresponding to the each sub-storage pool, a corresponding physical storage medium to a corresponding sub-storage pool.

25 2. The method of claim 1, wherein selecting the target sub-storage pool from the federation storage pool corresponding to the information of the federation storage pool comprises:

acquiring an operation state of the at least one sub-storage pool in the federation storage pool;

selecting a sub-storage pool in a normal operation state as the target sub-storage pool;

wherein a physical storage medium in the sub-storage pool in the normal operation state is in an available state.

3. The method of claim 1, wherein selecting the target sub-storage pool from the federation storage pool corresponding to the information of the federation storage pool comprises:

5 acquiring an operation state of the at least one sub-storage pool in the federation storage pool;

 determining a sub-storage pool in a normal operation state according to the operation state of the at least one sub-storage pool;

10 scoring the sub-storage pool in the normal operation state according to the attribute information of the storage volume to be created and attribute information of the sub-storage pool in the normal operation state;

 taking a sub-storage pool with a score satisfying a preset requirement as the target sub-storage pool;

15 wherein a physical storage medium in the sub-storage pool in the normal operation state is in an available state;

 wherein the attribute information of the storage volume to be created comprises at least one of a space size applied for the storage volume to be created and a read-write bandwidth applied for the storage volume to be created, the attribute information of the sub-storage pool comprises at least one of a total space size, a total read-write bandwidth, a used space size and a used
20 read-write bandwidth of the sub-storage pool, and the read-write bandwidth comprises a number of read-write operations per second, iops, a number of transmitted bits per second, bps, or a bandwidth proportion of the physical storage medium occupied in each read-write scheduling period.

25 4. The method of claim 3, wherein scoring the sub-storage pool in the normal operation state according to the attribute information of the storage volume to be created and the attribute information of the sub-storage pool comprises:

 subtracting the used space size from the total space size of the sub-storage pool in the normal operation state to obtain a remaining space size of the sub-storage pool in the normal operation state;

30 subtracting the used read-write bandwidth from the total read-write bandwidth of the sub-storage pool in the normal operation state to obtain a remaining read-write bandwidth of the

sub-storage pool in the normal operation state; and

performing a weighted summation on a ratio of the application space size to the remaining space size and a ratio of the application read-write bandwidth to the remaining read-write bandwidth to obtain a score of the sub-storage pool in the normal operation state.

5 5. The method of claim 1, wherein the information of the at least one sub-storage pool comprises: a name of the sub-storage pool, a combination of the physical storage medium in the sub-storage pool, a back-end storage, a file system type, and information of the physical storage medium in the sub-storage pool.

10 6. The method of claim 1, after adding, according to the information of the physical storage medium corresponding to the each sub-storage pool, the corresponding physical storage medium to the corresponding sub-storage pool, the method further comprises at least one of:

calling a capacity expansion interface of a federation storage pool layer where the at least one federation storage pool is located, and adding a new federation storage pool;

15 calling the capacity expansion interface of the federation storage pool layer where the at least one federation storage pool is located, and adding a new sub-storage pool in the federation storage pool;

calling a capacity expansion interface of the sub-storage pool, and increasing a space size of the sub-storage pool; and

20 calling the capacity expansion interface of the storage volume, and increasing a space size of the storage volume.

7. The method of claim 1, wherein after creating, according to the attribute information of the storage volume to be created, the storage volume in the target sub-storage pool through the physical storage medium of the target sub-storage pool, the method further comprises:

25 acquiring a file system type and a mount point required for the storage volume to be created;

formatting the storage volume into a file system corresponding to the file system type; and

mounting the storage volume to the mounting point.

8. The method of any one of claims 1 to 7, wherein after creating, according to the attribute information of the storage volume to be created, the storage volume in the target sub-storage

pool through the physical storage medium of the target sub-storage pool, the method further comprises:

acquiring information of the storage volume from request information that use of the storage volume is finished;

5 determining, according to the information of the storage volume, a sub-storage pool to which the storage volume belongs; and

deleting the storage volume in the sub-storage pool to which the storage volume belongs.

9. A storage volume creation apparatus, comprising:

10 an acquisition module, configured to acquire attribute information of a storage volume to be created and information of a federation storage pool used for creating the storage volume to be created;

a selection module, configured to select a target sub-storage pool from a federation storage pool corresponding to the information of the federation storage pool, wherein the federation storage pool comprises at least one sub-storage pool; and

15 a creation module, configured to create, according to the attribute information of the storage volume to be created, a storage volume in the target sub-storage pool through a physical storage medium of the target sub-storage pool;

20 wherein the acquisition module is further configured to creating at least one federation storage pool according to the information of at least one federation storage pool; creating, according to the information of the at least one sub-storage pool in each federation storage pool, at least one sub-storage pool in a corresponding federation storage pool; adding, according to the information of the physical storage medium corresponding to each sub-storage pool, a corresponding physical storage medium to a corresponding sub-storage pool.

10. A server, comprising:

25 at least one processor; and

a memory, configured to store at least one program,

wherein the at least one program, when executed by the at least one processor, cause the at least one processor to implement the storage volume creation method of any one of claims 1 to 8.

11. A computer-readable storage medium, storing a computer program, wherein the program, when executed by a processor, implements the storage volume creation method of any one of claims 1 to 8.