CLAIMS

1. A computer-implemented method comprising:

storing, by a storage system, first blockchain data generated by a blockchain network in a first data log file stored in a first storage device in a multi-tier storage subsystem of the storage system that comprises a plurality of tiers of storage devices, wherein the first blockchain data are blockchain block data, and wherein the blockchain block data comprise at least one block in a blockchain and a hash value of a previous block in the blockchain;

generating, by the storage system, first index data indicating a first physical storage location of the first data log file stored in the first storage device;

storing, by the storage system, the first index data into a first index log file;

storing, by the storage system, second blockchain data generated by the blockchain network in a second data log file stored in a second storage device in the multi-tier storage subsystem of the storage system, wherein the second blockchain data are blockchain state data, and wherein the blockchain state data comprise a world state of the blockchain network;

generating, by the storage system, second index data indicating a second physical storage location of the second data log file stored in the second storage device;

storing, by the storage system, the second index data into a second index log file;

determining, by the storage system and from the first index log file, first information of the first data log file;

determining, by the storage system, that the first data log file needs a first rewritten placement based on the first information of the first data log file stored in the first storage device,

wherein determining that the first data log file needs the first rewritten placement based on the first information of the first data log file stored in the first storage device comprises:

determining, by the storage system, a first type of the first blockchain data in the first data log file; and

in response to determining the first type of the first blockchain data in the first data log file to be the blockchain block data, determining, by the storage system, the first rewritten placement to be one or more of tiering, compressing, erasure coding, or verification;

performing, by the storage system, the first rewritten placement on the first blockchain data in the first data log file;

determining, by the storage system and from the second index log file, second information of the second data log file;

determining, by the storage system, that the second data log file needs a second rewritten placement based on the second information of the second data log file stored in the second storage device, wherein determining that the second data log file needs the second rewritten placement based on the second information of the first data log file stored in the second storage device comprises:

determining, by the storage system, a second type of the second blockchain data in the second data log file; and

in response to determining the second type of the second blockchain data in the second data log file to be the blockchain state data, determining, by the storage system, that the second rewritten placement comprises state snapshot; and

performing, by the storage system, the second rewritten placement on the second blockchain data in the second data log file.

2. The computer-implemented method of claim 1, wherein the first data log file is an append-only file storing the blockchain block data by appending the blockchain block data according to a chronological order of the blockchain block data generated by the blockchain network.

3. The computer-implemented method of claim 1, wherein storing the first blockchain data generated by the blockchain network in the first data log file stored in the first storage device comprises:

determining the first type of the first blockchain data; and

appending the first blockchain data in the first data log file stored in the first storage device according to the first type of the first blockchain data.

4. The computer-implemented method of claim 1, wherein performing, by the storage system, the first rewritten placement on the first blockchain data in the first data log file comprises:

determining, by the storage system, a source storage location of the first data log file;

reading, by the storage system, the first data log file from the source storage location;

rewriting, by the storage system, the first data log file to a destination storage location; and

generating, by the storage system, a destination index log file that indicates the destination storage location corresponding to the first data log file.

5. The computer-implemented method of claim 1, wherein the first information of the first data log file in the first storage device comprises one or more of:

an activeness, a size, a garbage ratio, or a fragmentation level of the first data log file.

6. The computer-implemented method of claim 1, wherein performing, by the storage system, the second rewritten placement on the second blockchain data in the second data log file comprises: performing, by the storage system, the state snapshot on the second blockchain data in the second data log file.

7. The computer-implemented method of claim 4, wherein the destination index log file comprises an indicator of the first data log file stored in the source storage location.

8. An apparatus for data processing, the apparatus comprising a plurality of modules for performing the computer-implemented method of any one of claims 1 to 7.

9. A system for data processing, comprising:

one or more processors; and

one or more computer-readable memories coupled to the one or more processors and having instructions stored thereon that are executable by the one or more processors to perform the computer-implemented method of any one of claims 1 to 7.