

CLAIMS

What is claimed is:

1. A virtual machine quick recovery method, comprising:

forming a first host machine and a second host machine into a storage peer pair, such that read and write requests of a virtual machine of the first host machine are capable of being backed up in the second host machine;

starting, by a backup host machine, the virtual machine of the first host machine when the first host machine goes down or powers off;

receiving, by the virtual machine started in the backup host machine, read and write requests transmitted by a calling party, and judging whether full data from the second host machine is synchronized into the backup host machine; when the full data from the second host machine is not synchronized into the backup host machine, transmitting the read and write requests to the second host machine;

receiving, by the second host machine, the read and write requests, storing data to be written in the second host machine based on the write request, or acquiring specified data based on the read request and transmitting the specified data to the backup host machine;

transmitting, by the backup host machine, the specified data to the calling party.

2. The virtual machine quick recovery method according to claim 1, further comprising: when the full data from the second host machine is synchronized into the backup host machine, executing the read and write requests in the backup host machine, and backing up the read and write requests of the virtual machine of the backup host machine in the second host machine.

3. The virtual machine quick recovery method according to claim 1, further comprising:

receiving, by a guest operating system of the backup host machine, the read and write requests, and putting the read and write requests in a ring buffer;

acquiring, by a Qemu module of the backup host machine, the read and write requests from the ring buffer, and transmitting the read and write requests to a Sync Orig module in a host operating system of the backup host machine; the Sync Orig module transmitting the read and write requests to the second host machine;

receiving, by a Sync Term module of the second host machine, the read and write requests; storing the data to be written in the local disk of the second host machine based on the write request; or acquiring the specified data in the local disk of the second host machine based on the read request, and transmitting the specified data to the Sync Orig module of the backup host machine;

receiving, by a Sync Orig module of the backup host machine, the specified data, and transmitting the specified data to the Qemu module of the backup host machine;

transmitting, by the Qemu module of the backup host machine, the specified data, and transmitting the specified data to the guest operating system of the backup host machine.

4. The virtual machine quick recovery method according to claim 1, wherein the backing up the data of the virtual machine of the first host machine in the second host machine comprises:

receiving, by a guest operating system of the first host machine, the read and write requests, and putting the read and write requests in the ring buffer;

acquiring, by a Qemu module of the first host machine, the read and write requests from the ring buffer; acquiring, by the Qemu module, the specified data from a local disk of the first host machine based on the read request; or storing, by the Qemu module, the data to be written in the local disk of the first host machine based on the write request; and transmitting the write request to the Sync Orig module of the host operating system;

transmitting, by a Sync Orig module of a host operating system of the first host machine, the write request to the Sync Term module of the second host machine;

receiving, by a Sync Term module of the second host machine, the write request, and storing the data to be written corresponding to the write request in a local disk of the second host machine.

5. The virtual machine quick recovery method according to any one of claims 1-4, further comprising:

judging, by the second host machine, whether a current operating index reaches the preset condition;

if the current operating index reaches the preset condition, synchronizing the read and write requests of the virtual machine of the first host machine backed up in the second host machine, in the backup host machine;

judging whether there is unsynchronized data in the second host machine;

determining that the full data synchronization from the second host machine to the backup host machine is not finished if there is unsynchronized data in the second host machine;

determining that the full data synchronization from the second host machine to the backup host machine is finished, and transmitting the notification of the completion of synchronization to the backup host machine if there is no unsynchronized data.

6. A virtual machine quick recovery device, comprising:

a data backup unit, for forming a first host machine and a second host machine into a storage peer pair, such that read and write requests of a virtual machine of the first host machine are capable of being backed up in the second host machine;

a backup machine starting unit, for starting, by a backup host machine, the virtual machine of the first host machine when the first host machine goes down or powers off;

a request judging unit, for making the virtual machine started in the backup host machine receive read and write requests transmitted by a calling party, and judging

whether full data from the second host machine is synchronized into the backup host machine; when the full data from the second host machine is not synchronized into the backup host machine, transmitting the read and write requests to the second host machine;

a first processing unit, for making the second host machine receive the read and write requests, storing data to be written in the second host machine based on the write request, or acquiring specified data based on the read request and transmitting the specified data to the backup host machine;

a data transmitting unit, for making the backup host machine transmit the specified data to the calling party.

7. The virtual machine quick recovery device according to claim 6, further comprising a second processing unit, for executing the read and write requests in the backup host machine, and backing up the read and write requests of the virtual machine of the backup host machine in the second host machine when the full data from the second host machine is synchronized into the backup host machine.

8. The virtual machine quick recovery device according to claim 6, further comprising:

a guest operating system of the backup host machine, for receiving the read and write requests, and putting the read and write requests in a ring buffer;

a Qemu module of the backup host machine, for acquiring the read and write requests from the ring buffer, and transmitting the read and write requests to a Sync Orig module in the host operating system; the Sync Orig module transmitting the read and write requests to the second host machine;

a Sync Term module of the second host machine, for receiving the read and write requests; storing the data to be written in the local disk of the second host machine based on the write request; or acquiring the specified data in the local disk of the second host machine based on the read request, and transmitting the specified

data to the Sync Orig module of the backup host machine;

a Sync Orig module of the backup host machine, for receiving the specified data, and transmitting the specified data to the Qemu module of the backup host machine;

a Qemu module of the backup host machine, for transmitting the specified data to the guest operating system of the backup host machine.

9. The virtual machine quick recovery device according to claim 6, wherein the data backup unit comprises:

a guest operating system of the first host machine, for receiving the read and write requests, and putting the read and write requests in a ring buffer;

a Qemu module of the first host machine, for acquiring the read and write requests from the ring buffer; acquiring, by the Qemu module, the specified data from the local disk of the first host machine based on the read request; or storing, by the Qemu module, the data to be written in the local disk of the first host machine based on the write request; and transmitting the write request to the Sync Orig module of the host operating system;

a Sync Orig module of the host operating system, for transmitting the write request to the Sync Term module of the second host machine;

a Sync Term module of the second host machine, for receiving the write request, and storing the data to be written corresponding to the write request in the local disk of the second host machine.

10. The virtual machine quick recovery device according to any one of claims 6-9, wherein the request judging unit comprises:

a first judging subunit, for making the second host machine judge whether a current operating index reaches the preset condition;

a first synchronization subunit, for synchronizing the read and write requests of the virtual machine of the first host machine backed up in the second host machine, in the backup host machine if the current operating index reaches the preset condition;

a second judging subunit, for judging whether there is unsynchronized data in the second host machine;

a first determining subunit, for determining that the full data synchronization from the second host machine to the backup host machine is not finished if there is unsynchronized data;

a second determining subunit, for determining that the full data synchronization from the second host machine to the backup host machine is finished, and transmitting the notification of the completion of synchronization to the backup host machine if there is no unsynchronized data.

11. A virtual machine quick recovery system, comprising a first host machine, a second host machine and a backup host machine; the first host machine, the second host machine and the third host machine are provided with processors respectively, the processor executing the following steps:

forming a first host machine and a second host machine into a storage peer pair, such that read and write requests of a virtual machine of the first host machine are capable of being backed up in the second host machine;

starting, by a backup host machine, the virtual machine of the first host machine when the first host machine goes down or powers off;

receiving, by the virtual machine started in the backup host machine, read and write requests transmitted by a calling party, and judging whether full data from the second host machine is synchronized into the backup host machine; when the full data from the second host machine is not synchronized into the backup host machine, transmitting the read and write requests to the second host machine;

receiving, by the second host machine, the read and write requests, storing data to be written in the second host machine based on the write request, or acquiring specified data based on the read request and transmitting the specified data to the backup host machine;

transmitting, by the backup host machine, the specified data to the calling party.

12. The virtual machine quick recovery system according to claim 11, further comprising: when the full data from the second host machine is synchronized into the backup host machine, executing the read and write requests in the backup host machine, and backing up the read and write requests of the virtual machine of the backup host machine in the second host machine.

13. The virtual machine quick recovery system according to claim 11, further comprising:

receiving, by the guest operating system of the backup host machine, the read and write requests, and putting the read and write requests in a ring buffer;

acquiring, by a Qemu module of the backup host machine, the read and write requests from the ring buffer, and transmitting the read and write requests to a Sync Orig module in the host operating system; the Sync Orig module transmitting the read and write requests to the second host machine;

receiving, by a Sync Term module of the second host machine, the read and write requests; storing the data to be written in the local disk of the second host machine based on the write request; or acquiring the specified data in the local disk of the second host machine based on the read request, and transmitting the specified data to the Sync Orig module of the backup host machine;

receiving, by a Sync Orig module of the backup host machine, the specified data, and transmitting the specified data to the Qemu module of the backup host machine;

transmitting, by the Qemu module of the backup host machine, the specified data, and transmitting the specified data to the guest operating system of the backup host machine.

14. The virtual machine quick recovery system according to claim 11, wherein the backing up the data of the virtual machine of the first host machine in the second host machine comprises:

receiving, by a guest operating system of the first host machine, the read and write requests, and putting the read and write requests in the ring buffer;

acquiring, by a Qemu module of the first host machine, the read and write requests from the ring buffer; acquiring, by the Qemu module, the specified data from a local disk of the first host machine based on the read request; or storing, by the Qemu module, the data to be written in the local disk of the first host machine based on the write request; and transmitting the write request to the Sync Orig module of the host operating system;

transmitting, by a Sync Orig module of a host operating system of the first host machine, the write request to the Sync Term module of the second host machine;

receiving, by a Sync Term module of the second host machine, the write request, and storing the data to be written corresponding to the write request in the local disk of the second host machine.

15. The virtual machine quick recovery system according to any one of claims 11-14, further comprising:

judging, by the second host machine, whether a current operating index reaches the preset condition;

if the current operating index reaches the preset condition, synchronizing the read and write requests of the virtual machine of the first host machine backed up in the second host machine, in the backup host machine;

judging whether there is unsynchronized data in the second host machine;

determining that the full data synchronization from the second host machine to the backup host machine is not finished if there is unsynchronized data in the second host machine;

determining that the full data synchronization from the second host machine to the backup host machine is finished, and transmitting the notification of the completion of synchronization to the backup host machine if there is no

unsynchronized data.

16. The virtual machine quick recovery system according to claim 11, wherein the first host machine, the second host machine and the backup host machine further comprise user interaction devices connected with the processors;

the user interaction device on the first host machine and the second host machine is used for receiving a first backup storage instruction and a second backup storage instruction input by the user, forming the first host machine and the second host machine into the storage peer pair based on the first backup storage instruction and the second backup storage instruction; the first backup storage instruction and the second backup storage instruction comprise the same peer pair ID;

the user interaction device in the backup host machine is used for receiving a virtual machine startup instruction input from the user, such that the virtual machine of the first host machine is started in the backup host machine when the first host machine goes down or powers off; the virtual machine startup instruction comprising the peer pair ID.

17. The virtual machine quick recovery system according to claim 11, wherein the backup host machine further comprises a network interface connected with the processor, the network interface for receiving read and write requests transmitted from the calling party, and transmitting the specified data to the calling party.

18. The virtual machine quick recovery system according to claim 11, wherein the storage of the first host machine is provided with a database for storing data corresponding to the read and write requests of the virtual machine of the first host machine;

the storage of the second host machine is provided with a database for storing data corresponding to the read and write requests of the virtual machine of the first host machine, and storing data corresponding to the read and write requests of the virtual machine of the first host machine started in the backup host machine;

the storage of the backup host machine is provided with a database for storing data corresponding to the read and write requests of the virtual machine of the first host machine, and storing data corresponding to the read and write requests of the virtual machine of the first host machine started in the backup host machine.