

and a frequency of use of the mobile terminal differ depending on each owner, and the ratio of utilization of even the same mobile terminal by the owner greatly differs depending on each time zone. Preferably, these resources are effectively used, if possible. Patent Literature 1 discloses virtualization technology using mobile terminals.

CITATION LIST

PATENT LITERATURE

[0005] Patent Literature 1: Japanese Laid-open Patent Publication No. 2010-231759

SUMMARY OF INVENTION

TECHNICAL PROBLEM

[0006] However, the art disclosed in Patent Literature 1 has the following problems. Firstly, no consideration is given to security, which has a risk of information leakage from the mobile terminals. Secondly, being wireless communication, the communication of the mobile terminals is not sometimes stable as compared with wired communication, but no consideration is given to redundancy in such a case.

[0007] Therefore, ~~it is an object~~embodiments of the present invention seek to provide a secure virtual storage using mobile terminal devices.

SOLUTION TO PROBLEM

[0008] An information processing apparatus according to a first aspect of the present invention is an information processing apparatus communicably connected to a mobile terminal

device, the information processing apparatus including: an encrypting unit to encrypt storage target data; a transmitting unit to transmit the storage target data encrypted by the encrypting unit to the mobile terminal device; a receiving unit to receive the storage target data stored in the mobile terminal device; and a decrypting unit to decrypt the storage target data received by the receiving unit.

[0008a] A second aspect of the present invention provides a mobile terminal device communicably connected to an information processing apparatus, the mobile terminal device comprising:

a receiving unit to receive storage target data from the information processing apparatus;

an encrypting unit to encrypt the storage target data received by the receiving unit;

a recording unit to record the storage target data encrypted by the encrypting unit; and

a transmitting unit to transmit the storage target data recorded by the recording unit to the information processing apparatus, wherein

the storage target data transmitted by the transmitting unit is decrypted in the information processing apparatus.

[0008b] A third aspect of the present invention provides a control method of an information processing apparatus communicably connected to a mobile terminal device, the control method comprising:

an encrypting step of encrypting storage target

data;

a transmitting step of transmitting the storage target data encrypted by the encrypting step to the mobile terminal device;

a receiving step of receiving the storage target data stored in the mobile terminal device; and

a decrypting step of decrypting the storage target data received by the receiving step.

[0008c] A fourth aspect of the present invention provides a control method of a mobile terminal device communicably connected to an information processing apparatus, the control method comprising:

a receiving step of receiving storage target data from the information processing apparatus;

an encrypting step of encrypting the storage target data received by the receiving step;

a recording step of recording the storage target data encrypted by the encrypting step; and

a transmitting step of transmitting the storage target data recorded by the recording step to the information processing apparatus, wherein

the storage target data transmitted by the transmitting step is decrypted in the information processing apparatus.

[0008d] A fifth aspect of the present invention provides a program causing a computer which controls an information processing apparatus communicably connected to a mobile terminal device to execute:

an encrypting step of encrypting storage target data;

a transmitting step of transmitting the storage

target data encrypted by the encrypting step to the mobile terminal device;

a receiving step of receiving the storage target data stored in the mobile terminal device; and

a decrypting step of decrypting the storage target data received by the receiving step.

[0008e] A sixth aspect of the present invention provides a program causing a computer which controls a mobile terminal device communicably connected to an information processing apparatus to execute:

a receiving step of receiving storage target data from the information processing apparatus;

an encrypting step of encrypting the storage target data received by the receiving step;

a recording step of recording the storage target data encrypted by the encrypting step; and

a transmitting step of transmitting the storage target data recorded by the recording step to the information processing apparatus, wherein

the storage target data transmitted by the transmitting step is decrypted in the information processing apparatus.

ADVANTAGEOUS EFFECTS OF INVENTION

[0009] According to embodiments of the present invention, it is possible to provide a secure virtual storage using mobile terminal devices.

BRIEF DESCRIPTION OF DRAWINGS

[0010] [Fig. 1] Fig. 1 is a diagram illustrating the configuration of a data storage system.

[Fig. 2] Fig. 2 is a diagram illustrating a hardware configuration of a management server.

[Fig. 3] Fig. 3 is a flowchart illustrating a storage process in the data storage system.

[Fig. 4A] Fig. 4A is an explanatory chart of a division process and an encryption process.

[Fig. 4B] Fig. 4B is an explanatory chart of the division process and the encryption process.

[Fig. 4C] Fig. 4C is an explanatory chart of the division process and the encryption process.

[Fig. 5] Fig. 5 is an explanatory view of a redundancy process.

[Fig. 6] Fig. 6 is a flowchart illustrating the encryption process of numeric data.

claim 9, wherein:

the encrypting unit encrypts the storage target data by using an encryption function; and

the converting unit converts a result of a second arithmetic process being the second process for the storage target data encrypted, into a result of a first arithmetic process being the first process for the storage target data not encrypted, by using an inverse function of the encryption function.

[Claim 11] The information processing apparatus according to claim 9, wherein:

the encrypting unit encrypts the storage target data by adding data to the storage target data; and

the converting unit converts a result of a second search process being the second process for the ~~second data~~storage target data encrypted into a result of a first search process being the first process for the ~~first data~~storage target data not encrypted, based on an addition pattern of the data.

[Claim 12] A mobile terminal device communicably connected to an information processing apparatus, the mobile terminal device comprising:

a receiving unit to receive storage target data from the information processing apparatus;

an encrypting unit to encrypt the storage target data received by the receiving unit;

a recording unit to record the storage target data encrypted by the encrypting unit; and