

Notice: 2.2 TB or larger capacity storage products

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Storage Products Division
Semiconductor & Storage Products Company
Toshiba Corporation

The storage capacity of HDDs continues to increase every year. In 2012, Toshiba started shipments of large capacity HDDs of 3 TB or higher.

Although the adoption of large capacity HDDs can increase the usability of a system, users need to be aware that when HDDs with a capacity of 2.2TB or larger are installed, some systems do not recognize the full capacity size of the drive if there is a system mismatch.

If this occurs, please contact the system builder, the operating system (OS) maker, in which HDD is installed.

An example of this phenomenon is explained below for your reference.

Such a phenomenon originated in the address table expression method of the system. In PCs after the 1980s, the logic block address (LBA) has been expressed by 32-bit length. Since one sector indicated by an LBA has a storage capacity of 512B (byte), the total storage capacity which can be treated by LBA of 32-bit length is calculated as follows.

$$512\text{B} \times 2^{32} = 512\text{B} \times 4,294,967,296 \approx 2.2\text{TB} \text{ (terabyte} = 1,000,000,000,000 \text{ bytes)}$$

This means a system which has a LBA of 32-bit length can only treat up to about 2.2 TB.

Additionally the information on a startup drive is described in the head sector (MBR: master boot record) of each partition. In order to express the position of a head sector and the number of sectors of a partition by 32 bits in the conventional MBR system, the storage capacity, that is used as a start-up drive is also set to about 2.2 TB.

The above phenomena in which a PC system cannot handle 2.2 TB or more capacity of an HDD are no different by the HDD manufacturing company or the manufacturing date. The situation is the same for an SSD that is used like an HDD by a system.

To solve this problem, the following information is required.

In order to use it as a data drive, the OS needs an adoption so it can use the Long LBA system which expresses a logic block address by 64 bits, and a GUID partition table (GPT) is required.

Furthermore, in order to use it as a startup drive, a unified extensible firmware interface (UEFI) and the HDD driver which can use 2.2 TB or larger capacity are required.

Since these are mainly dependent on the OS version, for details, please ask for the above information from the system maker or the operating system (OS) maker, where the HDD is installed.