What is data consistency checking?

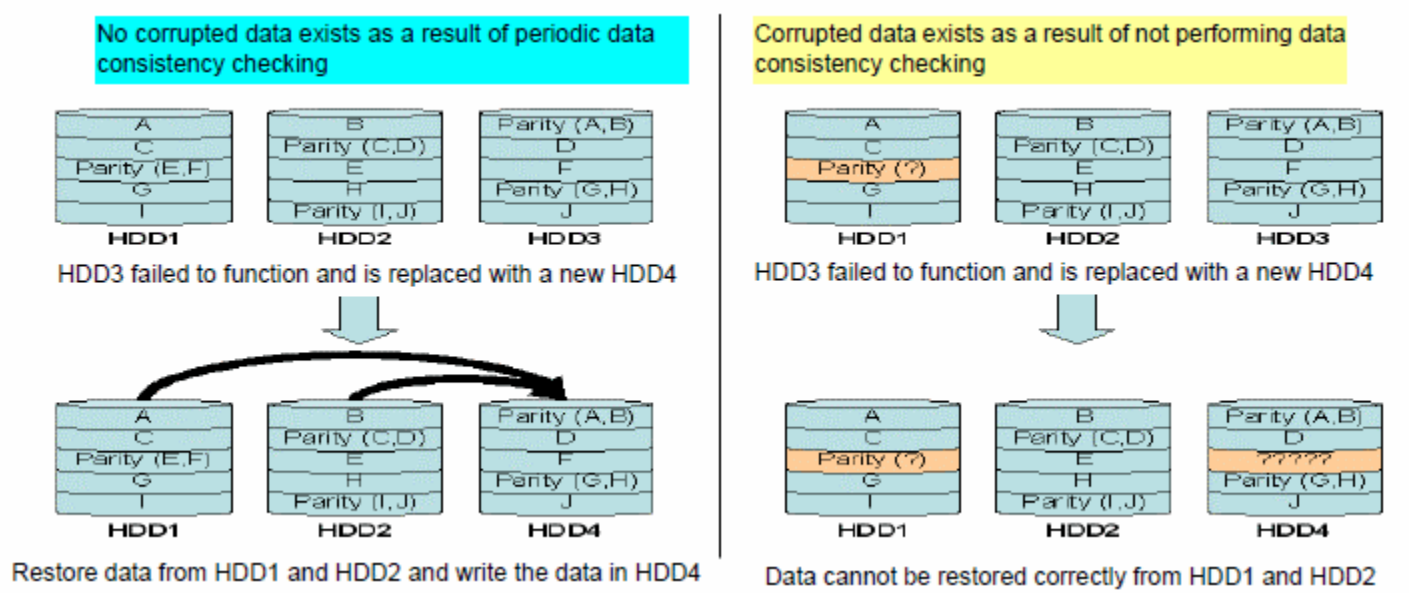
Data consistency checking refers to the checking of consistency of the data and parity that are distributed to multiple HDD units in a redundant RAID structure. In RAID1, both HDD units in a mirroring structure are compared (when data mismatch is detected, data consistency can be restored by overwriting the data of the predetermined HDD in the other HDD). In RAID5, the parity is calculated from the data and the parity is compared with the parity that has been stored (if the parities do not match, data consistency can be restored by regenerating the parities). The following effects can be expected by checking the consistency periodically.

---

(1) Preventing an error occurring at data restoration

Correct read errors of all the areas by periodically checking the consistency. Data cannot be restored when errors occur in multiple HDD units. Therefore, it is important to prevent read errors from occurring in the area when a degenerated state occurs.

Example: An error occurred in one HDD in the configuration of RAID5 HDD x 3 units



(2) Checking the areas that do not contain any data

Consistency is checked for all the areas of the HDD units that configure RAID. The function performs read checking for the areas that do not contain data to check if the areas are normal. In this way, HDD abnormality can be detected at an early stage.

(3) Adjusting the mechanical condition of HDD

The checking of all the HDD areas requires the moderate moving of the magnetic heads of the HDD units. Periodic moving of the internal mechanical components is very important for the HDD that is mainly composed of mechanical components.