

TECHNO INTERNATIONAL BATANAGAR

Operating System

Term Paper

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Disk Formatting

is the process
of preparing
a data storage
device

In some cases, the
formatting
operation may also
create one or more
new file systems.

Parts of FORMATTING

- LOW LEVEL Formatting
- Partitioning
- HIGH LEVEL Formatting

LOW LEVEL FORMATTING

Typically this involved subdividing each track on the disk into one or more blocks which would contain the user data and associated control information.

LOW LEVEL FORMATTING

low-level formatting was
generally done by an
operating system
system utility.

PARTITIONING

Partitioning is the process of writing information into blocks of a storage device or medium that allows access by an operating system.

HIGH LEVEL FORMATTING

is the process of
setting up an empty file
system on a disk
partition

HIGH LEVEL FORMATTING

sometimes referred
to as *quick
formatting*

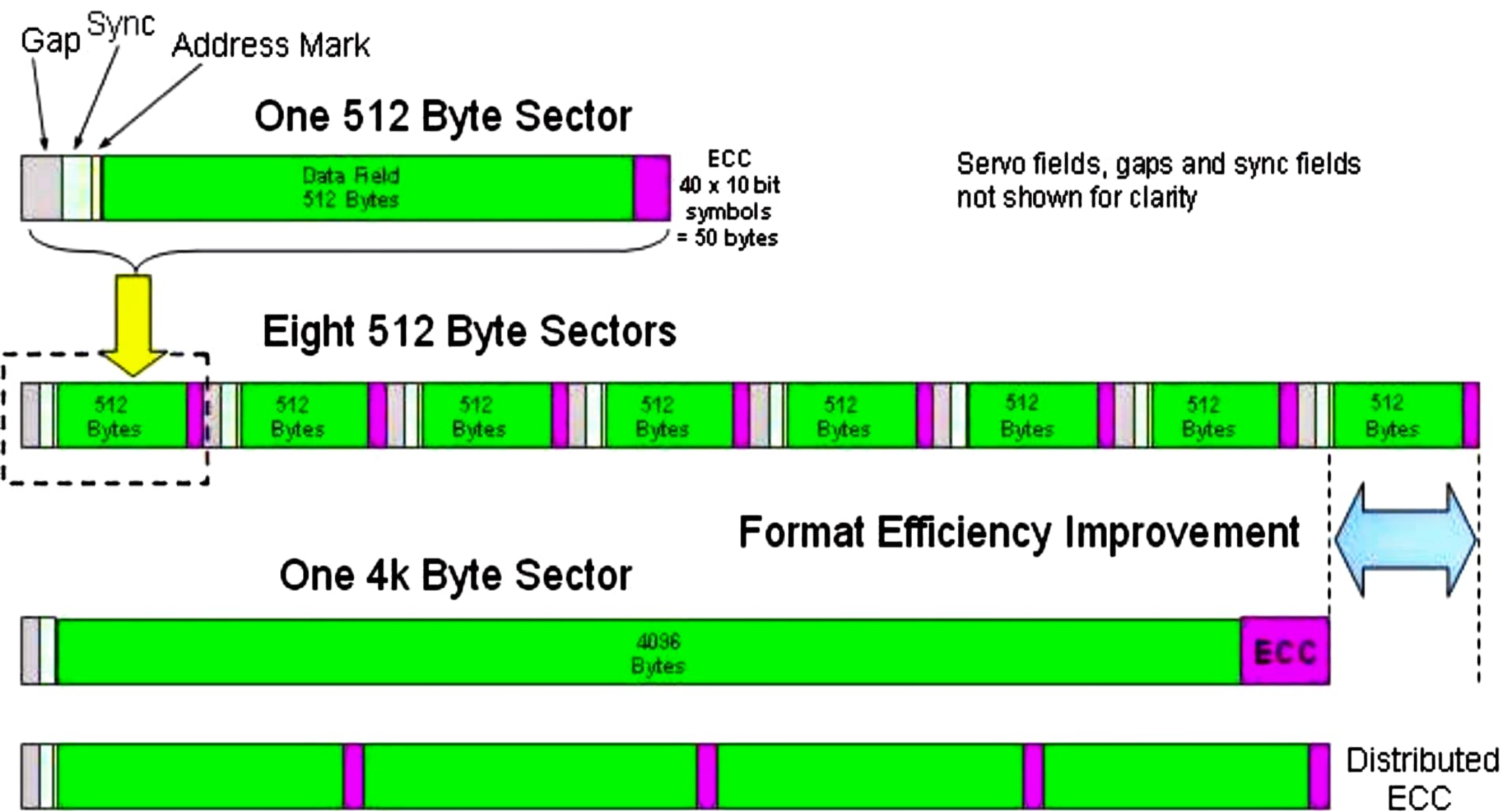
ADVANCED FORMAT

generic term pertaining
to any disk
sector format used to
store data on magnetic
disk that exceeds 512 to
528 bytes per sector,

Larger sectors use the storage surface area more efficiently for large files but less efficiently for smaller files, and

enable the integration
of stronger error
correction algorithms to
maintain data integrity
at higher storage
densities.

Advanced Format is
also considered a
milestone technology
in the history of HDD
storage



The structure of this sector layout was designed as follows:

- Gap section: The gap separates sectors.
- Sync section: The sync mark indicates the beginning of the sector and provides timing alignment.

The structure of this sector layout was designed as follows:

- Address Mark section: The address mark contains data to identify the sector's number and location. It also provides status information about the sector itself.

The structure of this sector layout was designed as follows:

- Data section: The data section contains all the user's data.

The structure of this sector layout was designed as follows:

- ECC section: The ECC section contains error correction codes that are used to repair and recover data that might be damaged during the reading or writing process.

Table 9.7 Typical 4K-Byte Sector Format



Operating System	Automatic 4K Sector/SSD Alignment
Windows XP	No
Windows Vista	Yes
Windows 7	Yes
OS X 10.4+	Yes
Linux Ubuntu 8.04+	Yes
SUSE Linux kernel 2.6.34+	Yes
Windows Home Server	No
Windows Home Server 2011	Yes
Server 2003	No
Server 2008+	Yes

- Although these OSs automatically create 4K aligned partitions, you can manually create aligned partitions for OSs that don't automatically create them, such as Windows XP. There's an easy way to do this is; before you install such an OS, use an OS that does create aligned partitions to first partition the drive, and then install the older OS into the already existing aligned partition.

- You can use at least two methods to check the alignment of a partition under Windows. One is to open a command prompt and enter the following command:
 - `wmic partition get Name, StartingOffset`
- The command result shows the starting offset of all the partitions on all the drives connected to the system. For example, here is the output after running the command on a system with two drives installed, each with a single primary partition:

• Name	StartingOffset
• Disk #0, Partition #0	32256
• Disk #1, Partition #0	1048576