COA ASSIGNMENT – 14

180010011

1ans) Cylinder Head Sector (CHS) was the previous method of repairing hard disks. Although CHS no longer maintains physical contact with the original features of the disk, CHHS is still used by many utilities.

Some of the following words are used.
Tracks: The concentric rings
Each track is divided into multiple sectors.
Cylinder: The hard disk has one or more plates with reading and writing heads on each side of the plate. The vertical part of the ring around all the plates and sides is called the cylinder.
Can solve CHS coordinate (at least 8 GB) zones.

CHS means:
C: Cylinder, the correct range is 0 to 1023 cylinders.
H: Head (synonymous with side), the correct range is 0 to 254 heads (previously 0-15).
S: Sector the correct range is between Zone 1 and 63.

Indeed, The proposed correct limits do not reflect physical realities. No hard disk with 128 platters (0-255 heads). These maximum values were once used by the BIOS to fix the hard disk. Hard disk controller converts values internally to real properties. Today, CHS addresses are used primarily by distributed utilities. Thus, the value of C and H starts from 0. S Value 1. The first hard disk area CHS address is 0/0/1. So each zone is 512 bytes. Using 512-byte sectors, the maximum hard disk size using CHH address is 7,844 gigabytes (1024 * 255 * 63 * 512 is 8,422,686,720 bytes).

LBA – Logical Block Addressing-

For compatibility reasons, hard disks larger than 7,844 gigabytes still require CHS address support to at least boot. Modern BIOS can be converted to a logical block address (LBA) format using the Intel 13H constraint extension. With the LBA, a hard disk is called a large device that starts with existing blocks. Thus the LBA block corresponds to the area where the CHS address is used.

2ans) The standard RAID levels comprise a basic set of Redundant Array of
Independent Disks configurations that employ the techniques of striping, mirroring, or parity to create large reliable data stores from multiple general-purpose computer hard disk drives (HDDs). The most common types are:

RAID 0 (stripping)
RAID 1 (mirroring)
RAID 5 (distributed parity)
RAID 6 (dual parity)

RAID 0 (stripping)
In a RAID 0 system data are split up into blocks that get written across all the drives in the array. By using multiple disks (at least 2) at the same time, this offers superior I/O performance. This performance can be enhanced further by using multiple controllers, ideally one controller per disk.

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RAID 1 (mirroring)

Data are stored twice by writing them to both the data drive (or set of data drives) and a mirror drive (or set of drives). If a drive fails, the controller uses either the data drive or the mirror drive for data recovery and continuous operation. You need at least 2 drives for a RAID 1 array.
RAID-1 is ideal for mission critical storage, for instance for accounting systems. It is also suitable for small servers in which only two data drives will be used.

RAID 5 (distributed parity)

RAID 5 is the most common secure RAID level. It requires at least 3 drives but can work with up to 16. Data blocks are striped across the drives and on one drive a parity checksum of all the block data is written. The parity data are not written to a fixed drive, they are spread across all drives, as the drawing below shows. Using the parity data, the computer can recalculate the data of one of the other data blocks, should those data no longer be available. That means a RAID 5 array can withstand a single drive failure without losing data or access to data. Although RAID 5 can be achieved in software, a hardware controller is recommended. Often extra cache memory is used on these controllers to improve the write performance.
RAID 5 is a good all-round system that combines efficient storage with excellent security and decent performance. It is ideal for file and application servers that have a limited number of data drives.

RAID 6 (dual parity)

RAID 6 is like RAID 5, but the parity data are written to two drives. That means it requires at least 4 drives and can withstand 2 drives dying simultaneously. The chances that two drives break down at exactly the same moment are of course very small. However, if a drive in a RAID 5 systems dies and is replaced by a new drive, it takes hours or even more than a day to rebuild the swapped drive. If another drive dies during that time, you still lose all of your data. With RAID 6, the RAID array will even survive that second failure.
RAID 6 is a good all-round system that combines efficient storage with excellent security and decent performance. It is preferable over RAID 5 in file and application servers that use many large drives for data storage