● RAID level 0 arrays are not particularly suitable for :
  • Applications which make sequential requests for small amount of data. These applications will spend most of their I/O time waiting for disks to spin, whether or not they use striped arrays as storage media.
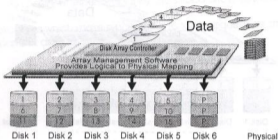 • Applications which make synchronous random requests for small amounts of data.

RAID Level 3 :
" Parallel Transfer Disks with Parity "
High Data Reliability & Highest Transfer Capacity

P : Parity

RAID Level 3 technology use a dedicated parity disk to store redundant information about the data on several data disks. RAID Level 3 is an excellent choice for applications which require single stream I/O with a high data transfer rate.

RAID Level 3 is optimal for applications in which large block of sequential data must be transferred quickly, these applications are usually of one of these types :

● They operate on large data objects such as graphical image processing, CAD/CAM files, and others.

● They are non-interactive applications that process large data sequentially.

They usually request a large amount of data (32KBytes or more) with each I/O request.

● RAID level 5 arrays have unique performance characteristics :
  · The data can be recalculated or regenerated, using parity,
    when any drive in the array fails.
  · When the failed drive is replaced, either automatically if the
    subsystem contained a hot spare drive, or by user intervention
    during a scheduled maintenance period, the system will be
    restored its full data redundancy configuration by rebuilding all
    of the data that had been stored on the failed drive onto the
    new drive. This is accomplished using parity information and
    data from the other data disks. Once the rebuild process is
    complete, all data is again protected from loss due to any
    failure of a single disk drive.

RAID Level 5 :
" Independent Access Array with Rotating Parity "
High Data Reliability & Transfer Capacity

Disk 1   Disk 2   Disk 3   Disk 4   Disk 5   Disk 6   Physical
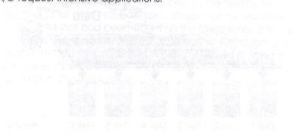
P : Parity
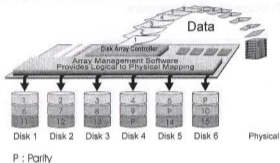
When RAID Level 5 technology is combined with cache memory to improve its write performance, the result can be used in any applications where general purpose disks would be suitable.

For read only or read mostly application I/O loads, RAID Level 5 performance should approximate that of a RAID Level 0 array. In fact, for a given user capacity, RAID Level 5 read performance should normally be slightly better because requests are spread across one more members than they would be in a RAID Level 0 array of equivalent usable capacity.

● A RAID level 5 array performs best in applications where data and I/O load characteristics match their capabilities.
   · Data whose enhanced availability is worth protecting, but for which the value of full disk mirroring is questionable.
   · High read request rates.
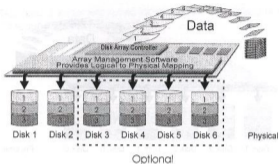   · Small percentage of writes in I/O load.

- The distinctive performance characteristics of RAID Level 3 :
  - RAID Level 3 provides excellent performance for data transfer-intensive applications.

  - RAID level 3 in not well suited for transaction processing or other I/O request-intensive applications.

RAID Level 1 : " Disk Mirroring " High Data reliability

RAID level 1 provides both very high data reliability and continued data availability in the event of a failure of an array member. When a RAID level 1 member disk fails, array management software simply directs all application requests to the surviving member.

RAID level 1 is suitable for data for which reliability requirements are extremely high, or for data to which high performance access is required, and for which the cost of storage is a secondary issue.