RAID

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AGENDA

- Introduction to topic
- Description from animation in ZyBooks (9.4.9)
- Hard-drive ratio for RAID 5
- RAID 10/5
- History
- What you can do with this information

TOPIC INTRODUCTION

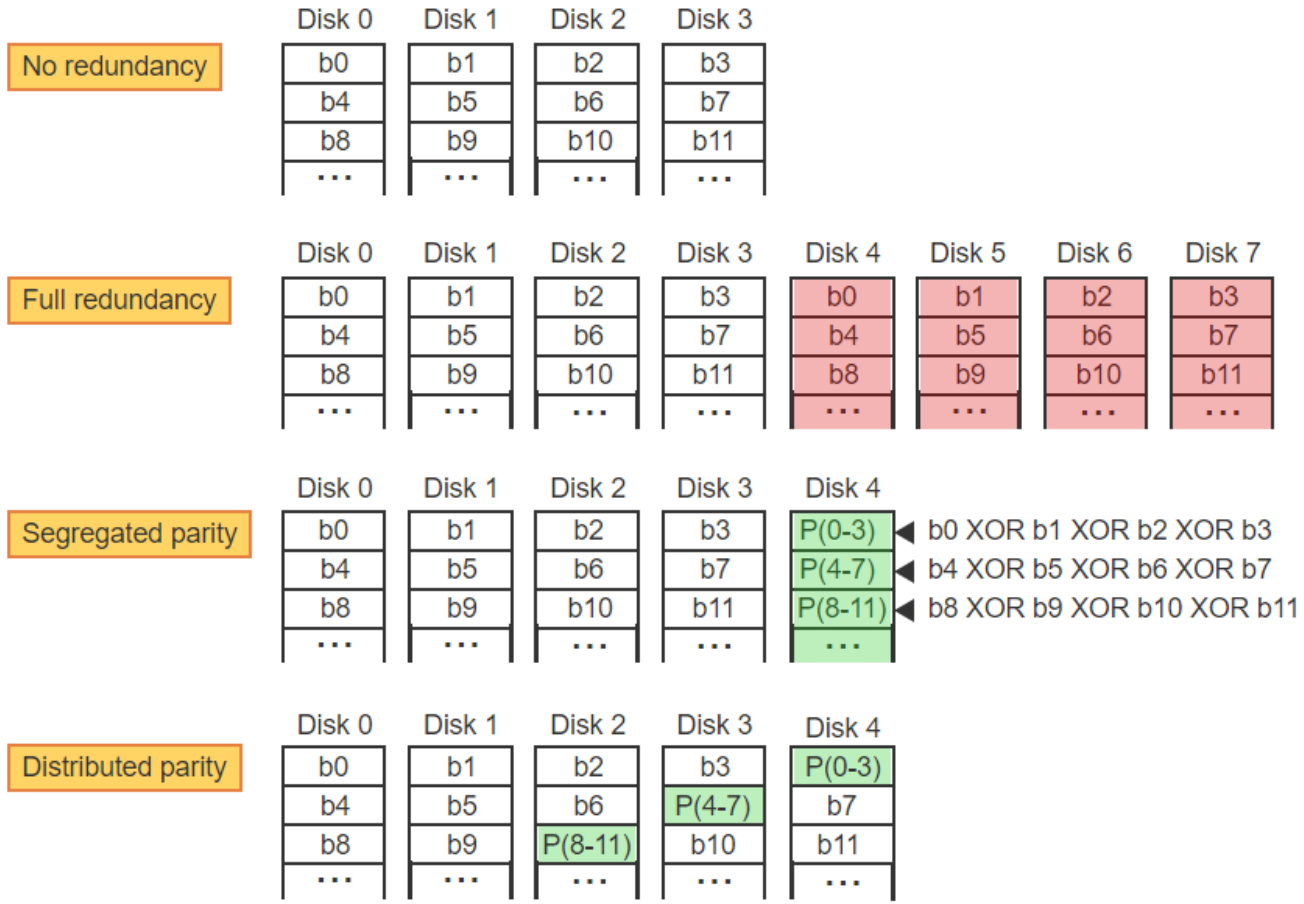
Redundant Array of Individial Disks is a data virtualization tool that can either speed or create a reliable storage. You would need a minimum of two drives to use either. For RAID 10, combination of both, you would need 4 drives! Other variations, RAID 3-6, have their own benefits of use with their weaknesses as well

TYPE OF RAIDS

1. Demonstrates RAID 0. The method used here is data striping and dispursing the data through multiple drives, creating 'one' fast drive

2. This row uses RAID 1. It cuts the drive capacity in half to store duplicates to have backups of the storage. This method is call mirroring

3.The last two rows of the animation demonstrate the other types of RAID. The description reads that these types use both methods above. These methods check for error-bits and compute/check parity bits primarily



MATH OVERVIEW OF RAID

RAID 3,5,6 is the example for the following questions from the ZyBooks.

PARTICIPATION ACTIVITY | 9.4.11: Space overhead of a RAID.

A RAID has 8 disks to hold data.

1) If a simple parity bit is provided for every 8 data bits then ____ additional disks are needed.
   - (•) 1
   - ( ) 2
   - ( ) 8

Correct

The ratio of data bits to parity bits is 8:1. Thus 8 data disks require only 1 additional disk.

2) If a simple parity bit is provided for every 4 data bits then ____ additional disks are needed.
   - ( ) 1
   - (•) 2
   - ( ) 8

Correct

The ratio of data bits to parity bits is 4:1. Thus every 4 data disks require 1 additional disk. 8 data disks require 2 additional disks.

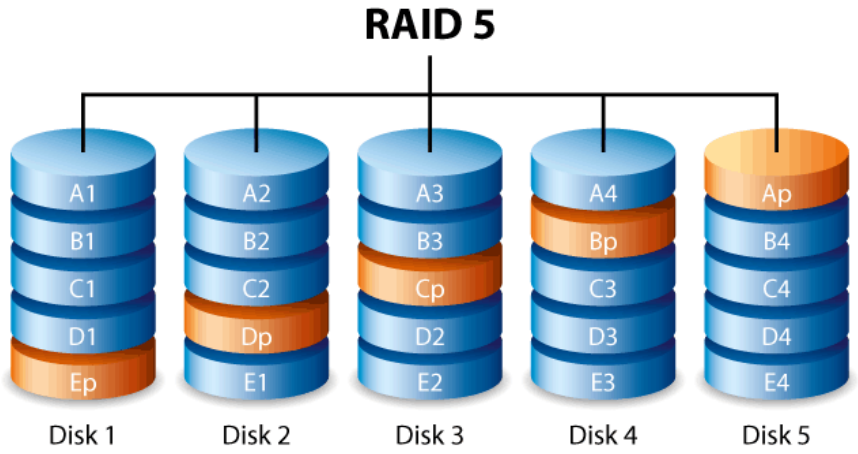
3) An ECC capable of automatically correct 1 bit error requires 3 parity bits for every 4 data bits. To provide this capability, ____ additional disks are needed.
   - ( ) 1
   - (•) 6
   - ( ) 8

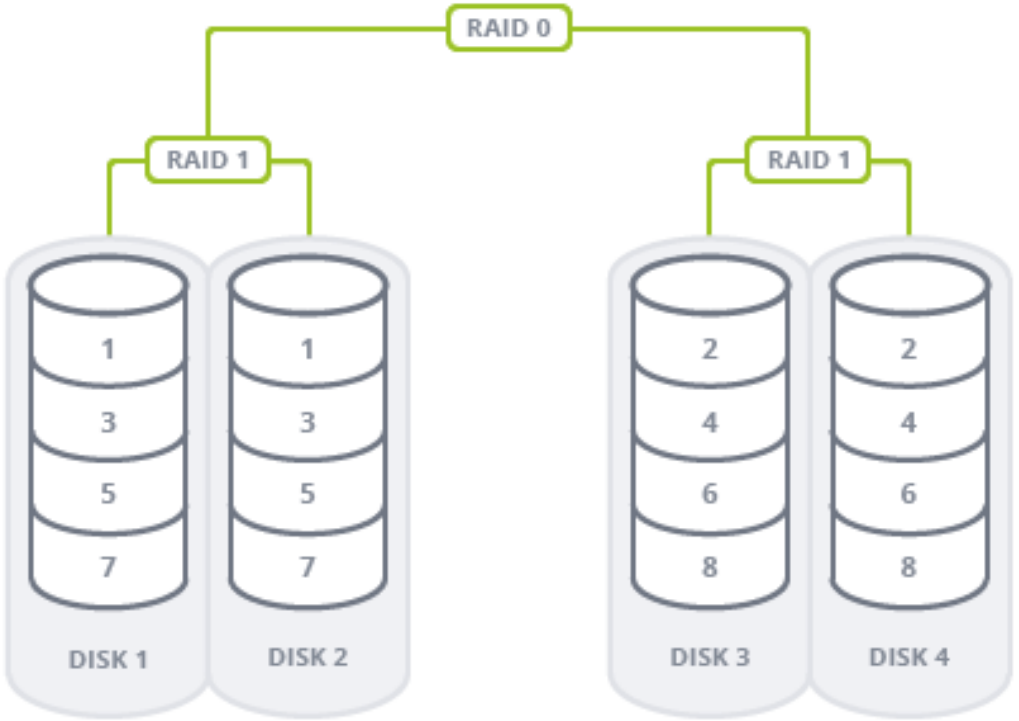
Correct

The ratio of data bits to parity bits is 4:3. Thus every 4 data disks require 3 additional disks. 8 data disks require 6 additional disks.

RAID 10/5

Both RAID 10 and 5 are used for servers. Business databases can use either and typically decide to use RAID 5 as it's a cheaper alternative. Being very similar to 10, you can use fewer drives to operate with speed and reliability.



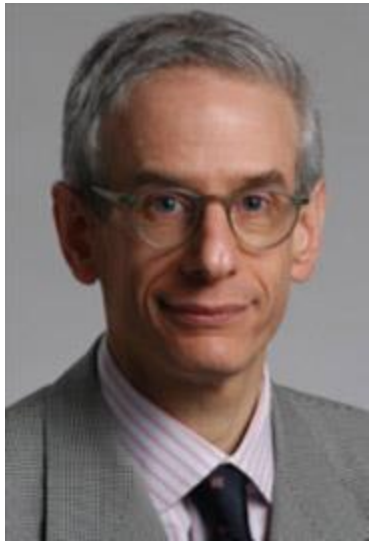


HISTORY

RAID has been around for almost 35 years now. It was created in response of expensive hard-drives. RAID was created in 1987

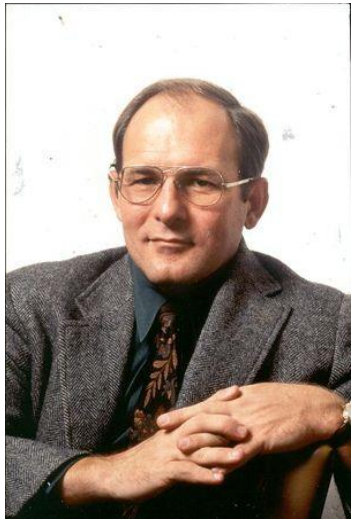
We still see its use today either from consumers or companies to create databases.

Randy Katz



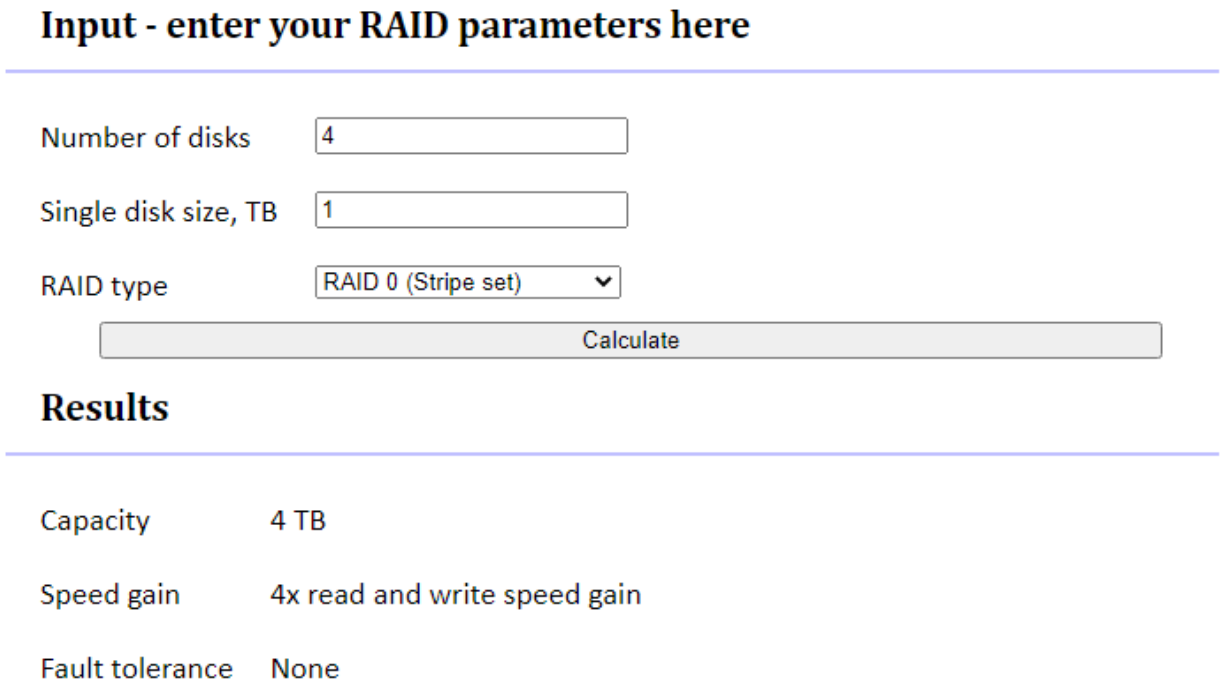
Garth Gibson

Dave Patterson



FOR YOU HARD-DRIVE POWER-USERS

- http://www.raid-calculator.com/
- Calculate what would be optimal for your system.
- To configure your RAID system, you would have to go to your BIO/UEFI settings on your motherboard. Or on Windows, you can set it up in the OS.
- Most systems support RAID 1,0,10



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