CENTRE ESPECÍFIC
D´EDUCACIÓ A DISTÀNCIA DE
LA COMUNITAT VALENCIANA

UNIT 8. BACKUPS

Activities. Solutions

Computer Systems
CFGS DAW

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2020/2021
Versión:1/25/2021.6:08
PM

Licencia

Nomenclatura

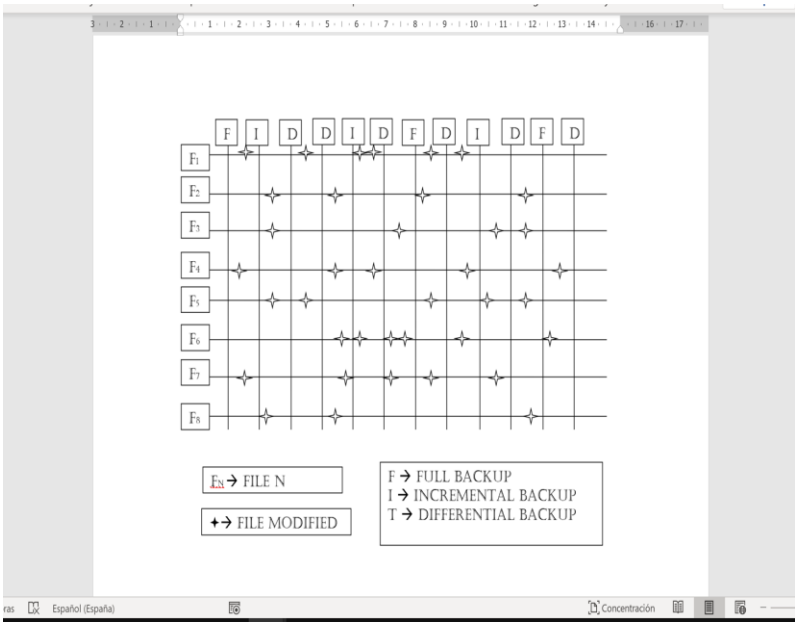
A lo largo de este tema se utilizarán distintos símbolos para distinguir elementos importantes dentro del contenido. Estos símbolos son:

Actividad opcional. Normalmente hace referencia a un contenido que se ha comentado en la documentación por encima o que no se ha hecho, pero es interesante que le alumno investigue y practique. Son tipos de actividades que no entran para examen

Atención. Hace referencia a un tipo de actividad donde los alumnos suelen cometer equivocaciones.

UD08. BACKUPS
Activities

(1) Given this scheduled backups, indicate which files are included in each one.



The schedules backups will work this way:

1. **Full Backup (F):** **All files** included.
2. **Incremental Backup (I):** the ones that changed since the previous backup (1), so: **F1, F4, F7.**
3. **Differential Backup (D):** the ones that changed since the last full backup (1), so: **F1, F2, F3, F4, F5, F7, F8.**

F6 is the only file that did not change since the last full backup.

4. **Differential Backup (D):** the ones that changed since the last full backup (1), so: **F1, F2, F3, F4, F5, F7, F8.**
5. **Incremental Backup (I):** the ones that changed since the previous backup (4), so: **F2, F4, F6, F7, F8.**
6. **Differential Backup (D):** the ones that changed since the last full backup (1), so: **F1, F2, F3, F4, F5, F6, F7, F8.**
7. **Full Backup (F):** **All files** included.
8. **Differential Backup (D):** the ones that changed since the last full backup (7), so: **F1, F2, F5, F7.**
9. **Incremental Backup (I):** the ones that changed since the previous backup (8), so: **F1, F4, F6.**
10. **Differential Backup (D):** the ones that changed since the last full backup (7), so: **F1, F2, F3, F4, F5, F6, F7.**
11. **Full Backup (F):** **All files** included.
12. **Differential Backup (D):** the ones that changed since the last full backup (11), so: **F4, F6.**

(2) Calculate the space available and the space used for protection for these scenarios:

- **JBOD: 2 disks of 1TiB and 1 disk of 3TiB.**
  - *Space available: 5 TiB. Space for protection: 0 TiB*
- **RAID 4: 3 disks of 1TiB each.**
  - *Raid 4 needs one complete disk for protection.*
  - *Space available: 2 TiB. Space for protection: 1 TiB in the same disk.*

- **RAID 10: 3 disks of 1TiB each.**
  - *It is not possible to configure RAID10 with 3 disks. One more is needed.*
- **RAID 1: 3 disks of 2TiB each.** *Two possibilities:*
  - *Just two disks will be used: Space available: 1 TiB in one disk. Space for protection: 1 TiB in the other disk.*
  - *The third disk could be also used for protection: Space available: 1 TiB in one disk. Space for protection: 2 TiB.*
- **RAID 01: 4 disks of 2TiB each.**
  - *Two sets of two disks each configured in RAID 0 each set.*
  - *One Raid 0 is mirrored in the other Raid 0, i.e. RAID 1.*
  - *Space available: 4 TiB. Space for protection: 4 TiB.*
- **RAID 5: 5 disks of 2TiB each.**
  - *The error detection system is distributed along the 5 disks. Therefore, 1/5 space is used for protection.*
  - *Space available: 8 TiB. Space for protection: 2 TiB distributed along the 5 disk.*

You can verify some of your results here: https://www.servethehome.com/raid-calculator/

(3) What is the difference between JBOD and RAID 0? *Take a look at this article.*

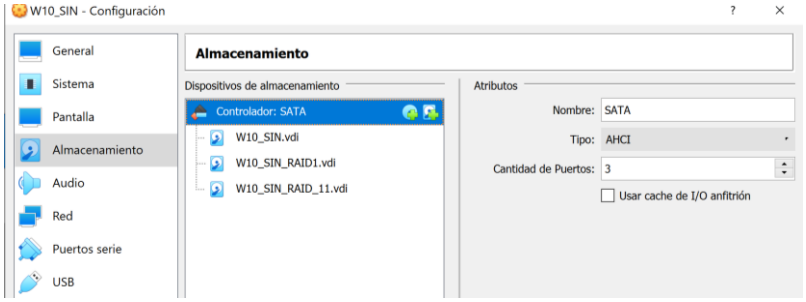
https://www.trentonsystems.com/blog/jbod-vs-raid-what-are-the-differences

(4) Configure a RAID 1 in the Windows 10 virtual machine installed in Unit 6.

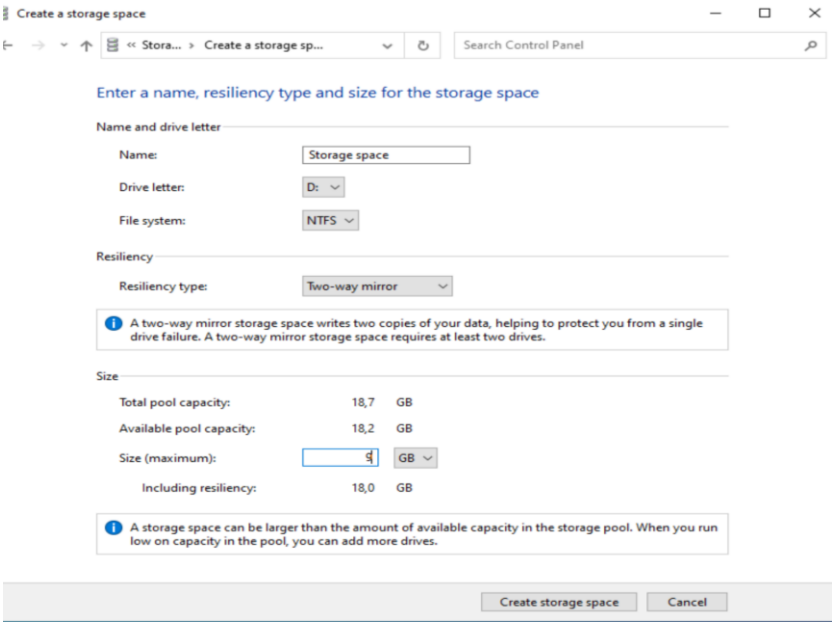
- For this task you should add a new virtual hard disk to your machine as seen in Unit 6.
- Check this link to help you with this exercise.

https://www.tomshardware.com/news/how-to-set-up-raid-windows-10,36783.html

1. For RAID1 you will need at least 2 disks, so add two disks to your virtual Windows 10. For example, 10Gb each.



2. Search “Manage storage spaces”
    a. Create new pool storage and select both drives.
    b. Select two-way mirror.



3. Test:
    a. Create a text file with content and save it in the new drive.
    b. Shut down Windows 10.
    c. Delete one of the two drives in Virtual Box and add a new one.
    d. Start Windows 10.
    e. Open *Manage storage spaces.* You will see a warning.
    f. Now we must replace the “broken” drive with the new one by clicking *Change Settings.*
    g. Now *Add drives* to add the new one.
    h. The “mirroring” process starts.
    i. Finally, just remove the “broken” drive. Wait for the “ready to remove” text to appear.
    j. Verify that the data created is still stored.

(5) Find the commands used to configure a RAID system in Ubuntu (Linux).

- The tool used is: **mdadm** (multiple device administrator)
- Other commands to complete the process:
    - **lsblk**: shows information about the storage devices
    - **fdisk**: to create partitions.
    - **mkfs.ext4**: to format the drive.
    - And change permissions.