Method working of GlusterFS

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GlusterFS is the clusterization system which is used by machines of the group to distribute and storage user's data. In this section is described how GlusterFS works. The description of how this software allocates the storage of the data is right only in the mode it is configured, because there are several configuration modes and their behaviour are different. This section can be useful for future tasks of management and recovery of **database** and **work** folders.

Contents

Broadly speaking

GlusterFS is a server-client paradigm. **ST0** and **ST1** machines are the servers and they store data coming from the clients, in this case, the clients will be **database** and **work** folders located in every user's home folder of smartveu.upc.edu servers.

ST0 and ST1 folders structure

Both machines have the same folders structure in **mnt** folder. These machines will be the data servers.

```
/ (root folder)
 |
 |
  --- mnt/
       |
       |--- database/
       |
        --- work/
             |
             |--- soft/
             |
              --- users/
                    |
                    |--- user_name1/
                    |
                    |--- user_name2/
                    |
                    |   ...
                    |
                     --- user_nameN/
```

How to data is stored and distributed

If you have next situation when you are connected to smartveu.upc.edu servers:

```
/ (root folder)
 |
 | ...
 |
 --- home/
      |
       --- user_name15/
              |
              |--- database/
              |
               --- work/
                    |
                    |--- folder1N1/
                    |       |
                    |       |----- file1.txt (size 5KB)
                    |        ----- file2.txt (size 1KB)
                    |
                     --- folder2N1/
                            |
                             --- folder2N2/
                                    |
                                     ----- file3.txt.txt (size 2KB)
```

Folders structure in **ST0** and **ST1** machines will be:

```
/ (root folder)
 |
 |
 --- mnt/
    (...)
      |
       --- work/
          (...)
            |
             --- users/
                 (...)
                   |
                    --- user_name15/
                              |--- folder1N1/
                              |
                               --- folder2N1/
                                      |
                                       --- folder2N2/
```

Notice that both machines will have the same folders. And the most probably, is that files (file1.txt, file2.txt and file3.txt) will be saved only in **ST0** or **ST1**. But sometimes, due to balancing tasks, files can be duplicated and we can find the same file in **ST0** and **ST1**.

```
ST0 machine                                      |   ST1 machine
                                                 |
/ (root folder)                                  |   / (root folder)
 | ...                                           |    | ...
 |                                               |    |
 --- mnt/                                        |     --- mnt/
  | ...                                          |      | ...
  |                                              |      |
   --- work/                                     |       --- work/
    | ...                                        |        | ...
    |                                            |        |
     --- users/                                  |         --- users/
      | ...                                      |          | ...
      |                                          |          |
       --- user_name15/                          |           --- user_name15/
        |                                        |            |
        |--- folder1N1/                          |            |--- folder1N1/
        | |----- file1.txt (size 5KB)            |            | |
        |  ----- file2.txt (size 0KB)            |            |  ----- file2.txt (size 1KB)
```

```
        |                                   |            |
         --- folder2N1/                     |             --- folder2N1/
          |                                 |              |
           --- folder2N2/                   |               --- folder2N2/
            |----- file3.txt.txt (size 2KB) |                |----- file3.txt.txt (size 2KB)
```

In this case, **file1.txt** is the best situation, it is only in one machine. **file2.txt** is in both machines, but one of them has size 0 KB, so this file is a consequence of balancing tasks and it isn't valid because is a corrupted file and the valid version is the one located in **ST1** machine. **file3.txt** is also in both machines, but in this case both files are valid version for work with them. Probably their creation/modification dates can be different, but the file will be the same, you can apply **diff** command and notice that two files are exactly equals.

Fixing troubles

Why all this explanantion? If ever, hopefully never happen, you have to face with a fail in which users can't access to their data from **work** folder located in smartveu.upc.edu server, you will need to copy data directly from **ST0** and **ST1** /mnt/work/users/ folder.

In this case you can use **rsync -av** command to make a backup. You must copy /mnt/work/users/ folder from **ST0** machine separately of the same folder of **ST1** machine.

To restore the backup, you can use **rsync -av --size-only=0.001KB** to avoid restore files with 0KB size.

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