Wikiprint Book

Title: File Systems

Subject: DEEP - Public/User_Guide/Filesystems

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File Systems

Available file systems

On the DEEP-EST system, three different groups of file systems are available:

- the ?JSC GPFS file systems, provided via ?JUST and mounted on all JSC systems;
- the DEEP-EST (and SDV) parallel BeeGFS file systems, available on all the nodes of the DEEP-EST system;
- the file systems local to each node.

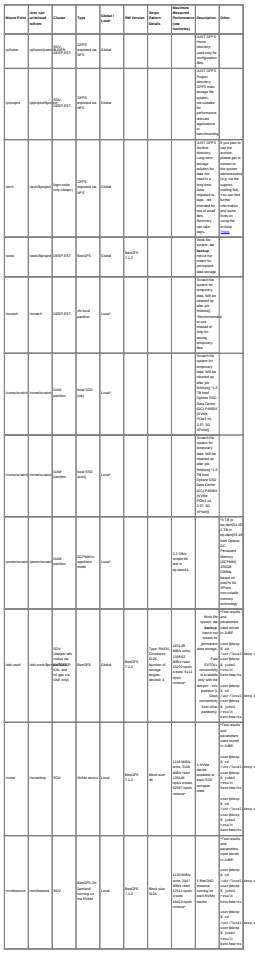
The users home folders are placed on the shared GPFS file systems. With the advent of the new user model at JSC (?JUMO), the shared file systems are structured as follows:

- $HOME: each JSC user has a folder under `/p/home/jusers/`, in which different home folders are available, one per system he/she has access to. These home folders have a low space quota and are reserved for configuration files, ssh keys, etc.
- $PROJECT: In JUMO, data and computational resources are assigned to projects: users can request access to a project and use the resources associated to it. As a consequence, each user can create folders within each of the projects he/she is part of (with either personal or permissions to share with other project members). For the DEEP project, the project folder is located under `/p/project/cdeep/`. Here is where the user should place data, and where the old files generated in the home folder before the JUMO transition can be found.

The DEEP-EST system doesn't mount the $SCRATCH file systems from GPFS, as it is expected to provide similar functionalities with its own parallel and local file systems.

The following table summarizes the characteristics of the file systems available in the DEEP-EST and DEEP-ER (SDV) systems. **Please beware that the `$project` (all lowercase) variable used in the table only represents any JuDoor project the user might have access to, and that it is not really exported on the system environment.** For a list of all projects a user belongs to, please refer to the user's ?JuDoor page. Alternatively, users can check the projects they are part of with the `jutil` application:

```
$ jutil user projects -o columns
```



Stripe Pattern Details

It is possible to query this information from the deep login node, for instance:

```
manzano@deep $ fhgfs-ctl --getentryinfo /work/manzano
Path: /manzano
Mount: /work
EntryID: 1D-53BA4FF8-3BD3
Metadata node: deep-fs02 [ID: 15315]
Stripe pattern details:
+ Type: RAID0
+ Chunksize: 512K
+ Number of storage targets: desired: 4

manzano@deep $ beegfs-ctl --getentryinfo /sdv-work/manzano
Path: /manzano
Mount: /sdv-work
EntryID: 0-565C499C-1
Metadata node: deeper-fs01 [ID: 1]
Stripe pattern details:
+ Type: RAID0
+ Chunksize: 512K
+ Number of storage targets: desired: 4
```

Or like this:

```
manzano@deep $ stat -f /work/manzano
 File: "/work/manzano"
   ID: 0        Namelen: 255     Type: fhgfs
Block size: 524288     Fundamental block size: 524288
Blocks: Total: 120178676  Free: 65045470   Available: 65045470
Inodes: Total: 0          Free: 0

manzano@deep $ stat -f /sdv-work/manzano
 File: "/sdv-work/manzano"
   ID: 0        Namelen: 255     Type: fhgfs
Block size: 524288     Fundamental block size: 524288
Blocks: Total: 120154793  Free: 110378947  Available: 110378947
Inodes: Total: 0          Free: 0
```

See ?http://www.beegfs.com/wiki/Striping for more information.

Additional infos

Detailed information on the **BeeGFS Configuration** can be found ?here.

Detailed information on the **BeeOND Configuration** can be found ?here.

Detailed information on the **Storage Configuration** can be found ?here.

Detailed information on the **Storage Performance** can be found ?here.

Notes

- dd test @dp-dam01 of the DCPMM in appdirect mode:

```
[root@dp-dam01 scratch]# dd if=/dev/zero of=./delme bs=4M count=1024 conv=sync
1024+0 records in
1024+0 records out
4294967296 bytes (4.3 GB) copied, 1.94668 s, 2.2 GB/s
```

- The /work file system which is available in the DEEP-EST prototype, is as well reachable from the nodes in the SDV (including KNLs and ml-gpu nodes) but through a slower connection of 1 Gb/s. The file system is therefore not suitable for benchmarking or I/O task intensive jobs from those nodes
- Performance tests (IOR and mdtest) reports are available in the BSCW under DEEP-ER → Work Packages (WPs) → WP4 → T4.5 - Performance measurement and evaluation of I/O software → Jülich DEEP Cluster → Benchmarking reports: ?https://bscw.zam.kfa-juelich.de/bscw/bscw.cgi/1382059
- Test results and parameters used are stored in JUBE:

```
user@deep $ cd /usr/local/deep-er/sdv-benchmarks/synthetic/ior
user@deep $ jube2 result benchmarks

user@deep $ cd /usr/local/deep-er/sdv-benchmarks/synthetic/mdtest
user@deep $ jube2 result benchmarks
```