

Wikiprint Book

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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 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 `deepv` login node exposes the same file systems as the compute nodes, but it lacks a local scratch file system. Since `/tmp` is very limited in size on `deepv` please use `$SCRATCH` instead (pointing to the project folder) or use e.g. the `/pmem/scratch` on the `dp-dam` partition `$LOCALSCRATCH` on any other compute node when performing SW installation activities. **A quota has been introduced for `/tmp` on `deepv` to avoid clogging of this filesystem on the login node which will lead to several issues.**

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
```

Document Title	Author	Year	Category	Notes	Accession Number	Location	Remarks
1. The Constitution of the United States	James Madison	1787	Legal	Original document	1787.001	Library of Congress	Original document
2. The Declaration of Independence	Thomas Jefferson	1776	Historical	Original document	1776.002	Library of Congress	Original document
3. The Bill of Rights	James Madison	1791	Legal	Original document	1791.003	Library of Congress	Original document
4. The Emancipation Proclamation	Abraham Lincoln	1863	Historical	Original document	1863.004	Library of Congress	Original document
5. The Gettysburg Address	Abraham Lincoln	1863	Historical	Original document	1863.005	Library of Congress	Original document
6. The Lincoln-Douglas Debates	Abraham Lincoln	1858	Historical	Original document	1858.006	Library of Congress	Original document
7. The Dred Scott Decision	Chief Justice Roger Taney	1857	Legal	Original document	1857.007	Library of Congress	Original document
8. The Reconstruction Act	Congress	1867	Legal	Original document	1867.008	Library of Congress	Original document
9. The Freedmen's Bureau Act	Congress	1865	Legal	Original document	1865.009	Library of Congress	Original document
10. The Civil Rights Act	Congress	1866	Legal	Original document	1866.010	Library of Congress	Original document
11. The Reconstruction Amendments	Congress	1865-1870	Legal	Original documents	1865-1870.011	Library of Congress	Original documents
12. The Reconstruction of the South	Various authors	1865-1877	Historical	Various documents	1865-1877.012	Library of Congress	Various documents
13. The Reconstruction of the South	Various authors	1865-1877	Historical	Various documents	1865-1877.013	Library of Congress	Various documents
14. The Reconstruction of the South	Various authors	1865-1877	Historical	Various documents	1865-1877.014	Library of Congress	Various documents
15. The Reconstruction of the South	Various authors	1865-1877	Historical	Various documents	1865-1877.015	Library of Congress	Various documents
16. The Reconstruction of the South	Various authors	1865-1877	Historical	Various documents	1865-1877.016	Library of Congress	Various documents
17. The Reconstruction of the South	Various authors	1865-1877	Historical	Various documents	1865-1877.017	Library of Congress	Various documents
18. The Reconstruction of the South	Various authors	1865-1877	Historical	Various documents	1865-1877.018	Library of Congress	Various documents
19. The Reconstruction of the South	Various authors	1865-1877	Historical	Various documents	1865-1877.019	Library of Congress	Various documents
20. The Reconstruction of the South	Various authors	1865-1877	Historical	Various documents	1865-1877.020	Library of Congress	Various documents

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](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
```