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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 ID	Document Title	Author	Date	File Format	File Size	File Type	File Location	File Status
000001	Document 1	John Doe	2023-01-01	PDF	1.2 MB	Document	Documents/000001.pdf	Active
000002	Document 2	Jane Smith	2023-02-01	PDF	2.5 MB	Document	Documents/000002.pdf	Active
000003	Document 3	John Doe	2023-03-01	PDF	1.5 MB	Document	Documents/000003.pdf	Active
000004	Document 4	Jane Smith	2023-04-01	PDF	2.0 MB	Document	Documents/000004.pdf	Active
000005	Document 5	John Doe	2023-05-01	PDF	1.8 MB	Document	Documents/000005.pdf	Active
000006	Document 6	Jane Smith	2023-06-01	PDF	2.2 MB	Document	Documents/000006.pdf	Active
000007	Document 7	John Doe	2023-07-01	PDF	1.6 MB	Document	Documents/000007.pdf	Active
000008	Document 8	Jane Smith	2023-08-01	PDF	2.1 MB	Document	Documents/000008.pdf	Active
000009	Document 9	John Doe	2023-09-01	PDF	1.9 MB	Document	Documents/000009.pdf	Active
000010	Document 10	Jane Smith	2023-10-01	PDF	2.3 MB	Document	Documents/000010.pdf	Active
000011	Document 11	John Doe	2023-11-01	PDF	1.7 MB	Document	Documents/000011.pdf	Active
000012	Document 12	Jane Smith	2023-12-01	PDF	2.4 MB	Document	Documents/000012.pdf	Active
000013	Document 13	John Doe	2024-01-01	PDF	1.8 MB	Document	Documents/000013.pdf	Active
000014	Document 14	Jane Smith	2024-02-01	PDF	2.1 MB	Document	Documents/000014.pdf	Active
000015	Document 15	John Doe	2024-03-01	PDF	1.9 MB	Document	Documents/000015.pdf	Active
000016	Document 16	Jane Smith	2024-04-01	PDF	2.2 MB	Document	Documents/000016.pdf	Active
000017	Document 17	John Doe	2024-05-01	PDF	1.7 MB	Document	Documents/000017.pdf	Active
000018	Document 18	Jane Smith	2024-06-01	PDF	2.3 MB	Document	Documents/000018.pdf	Active
000019	Document 19	John Doe	2024-07-01	PDF	1.8 MB	Document	Documents/000019.pdf	Active
000020	Document 20	Jane Smith	2024-08-01	PDF	2.1 MB	Document	Documents/000020.pdf	Active
000021	Document 21	John Doe	2024-09-01	PDF	1.9 MB	Document	Documents/000021.pdf	Active
000022	Document 22	Jane Smith	2024-10-01	PDF	2.2 MB	Document	Documents/000022.pdf	Active
000023	Document 23	John Doe	2024-11-01	PDF	1.7 MB	Document	Documents/000023.pdf	Active
000024	Document 24	Jane Smith	2024-12-01	PDF	2.3 MB	Document	Documents/000024.pdf	Active
000025	Document 25	John Doe	2025-01-01	PDF	1.8 MB	Document	Documents/000025.pdf	Active
000026	Document 26	Jane Smith	2025-02-01	PDF	2.1 MB	Document	Documents/000026.pdf	Active
000027	Document 27	John Doe	2025-03-01	PDF	1.9 MB	Document	Documents/000027.pdf	Active
000028	Document 28	Jane Smith	2025-04-01	PDF	2.2 MB	Document	Documents/000028.pdf	Active
000029	Document 29	John Doe	2025-05-01	PDF	1.7 MB	Document	Documents/000029.pdf	Active
000030	Document 30	Jane Smith	2025-06-01	PDF	2.3 MB	Document	Documents/000030.pdf	Active
000031	Document 31	John Doe	2025-07-01	PDF	1.8 MB	Document	Documents/000031.pdf	Active
000032	Document 32	Jane Smith	2025-08-01	PDF	2.1 MB	Document	Documents/000032.pdf	Active
000033	Document 33	John Doe	2025-09-01	PDF	1.9 MB	Document	Documents/000033.pdf	Active
000034	Document 34	Jane Smith	2025-10-01	PDF	2.2 MB	Document	Documents/000034.pdf	Active
000035	Document 35	John Doe	2025-11-01	PDF	1.7 MB	Document	Documents/000035.pdf	Active
000036	Document 36	Jane Smith	2025-12-01	PDF	2.3 MB	Document	Documents/000036.pdf	Active
000037	Document 37	John Doe	2026-01-01	PDF	1.8 MB	Document	Documents/000037.pdf	Active
000038	Document 38	Jane Smith	2026-02-01	PDF	2.1 MB	Document	Documents/000038.pdf	Active
000039	Document 39	John Doe	2026-03-01	PDF	1.9 MB	Document	Documents/000039.pdf	Active
000040	Document 40	Jane Smith	2026-04-01	PDF	2.2 MB	Document	Documents/000040.pdf	Active
000041	Document 41	John Doe	2026-05-01	PDF	1.7 MB	Document	Documents/000041.pdf	Active
000042	Document 42	Jane Smith	2026-06-01	PDF	2.3 MB	Document	Documents/000042.pdf	Active
000043	Document 43	John Doe	2026-07-01	PDF	1.8 MB	Document	Documents/000043.pdf	Active
000044	Document 44	Jane Smith	2026-08-01	PDF	2.1 MB	Document	Documents/000044.pdf	Active
000045	Document 45	John Doe	2026-09-01	PDF	1.9 MB	Document	Documents/000045.pdf	Active
000046	Document 46	Jane Smith	2026-10-01	PDF	2.2 MB	Document	Documents/000046.pdf	Active
000047	Document 47	John Doe	2026-11-01	PDF	1.7 MB	Document	Documents/000047.pdf	Active
000048	Document 48	Jane Smith	2026-12-01	PDF	2.3 MB	Document	Documents/000048.pdf	Active
000049	Document 49	John Doe	2027-01-01	PDF	1.8 MB	Document	Documents/000049.pdf	Active
000050	Document 50	Jane Smith	2027-02-01	PDF	2.1 MB	Document	Documents/000050.pdf	Active
000051	Document 51	John Doe	2027-03-01	PDF	1.9 MB	Document	Documents/000051.pdf	Active
000052	Document 52	Jane Smith	2027-04-01	PDF	2.2 MB	Document	Documents/000052.pdf	Active
000053	Document 53	John Doe	2027-05-01	PDF	1.7 MB	Document	Documents/000053.pdf	Active
000054	Document 54	Jane Smith	2027-06-01	PDF	2.3 MB	Document	Documents/000054.pdf	Active
000055	Document 55	John Doe	2027-07-01	PDF	1.8 MB	Document	Documents/000055.pdf	Active
000056	Document 56	Jane Smith	2027-08-01	PDF	2.1 MB	Document	Documents/000056.pdf	Active
000057	Document 57	John Doe	2027-09-01	PDF	1.9 MB	Document	Documents/000057.pdf	Active
000058	Document 58	Jane Smith	2027-10-01	PDF	2.2 MB	Document	Documents/000058.pdf	Active
000059	Document 59	John Doe	2027-11-01	PDF	1.7 MB	Document	Documents/000059.pdf	Active
000060	Document 60	Jane Smith	2027-12-01	PDF	2.3 MB	Document	Documents/000060.pdf	Active
000061	Document 61	John Doe	2028-01-01	PDF	1.8 MB	Document	Documents/000061.pdf	Active
000062	Document 62	Jane Smith	2028-02-01	PDF	2.1 MB	Document	Documents/000062.pdf	Active
000063	Document 63	John Doe	2028-03-01	PDF	1.9 MB	Document	Documents/000063.pdf	Active
000064	Document 64	Jane Smith	2028-04-01	PDF	2.2 MB	Document	Documents/000064.pdf	Active
000065	Document 65	John Doe	2028-05-01	PDF	1.7 MB	Document	Documents/000065.pdf	Active
000066	Document 66	Jane Smith	2028-06-01	PDF	2.3 MB	Document	Documents/000066.pdf	Active
000067	Document 67	John Doe	2028-07-01	PDF	1.8 MB	Document	Documents/000067.pdf	Active
000068	Document 68	Jane Smith	2028-08-01	PDF	2.1 MB	Document	Documents/000068.pdf	Active
000069	Document 69	John Doe	2028-09-01	PDF	1.9 MB	Document	Documents/000069.pdf	Active
000070	Document 70	Jane Smith	2028-10-01	PDF	2.2 MB	Document	Documents/000070.pdf	Active
000071	Document 71	John Doe	2028-11-01	PDF	1.7 MB	Document	Documents/000071.pdf	Active
000072	Document 72	Jane Smith	2028-12-01	PDF	2.3 MB	Document	Documents/000072.pdf	Active
000073	Document 73	John Doe	2029-01-01	PDF	1.8 MB	Document	Documents/000073.pdf	Active
000074	Document 74	Jane Smith	2029-02-01	PDF	2.1 MB	Document	Documents/000074.pdf	Active
000075	Document 75	John Doe	2029-03-01	PDF	1.9 MB	Document	Documents/000075.pdf	Active
000076	Document 76	Jane Smith	2029-04-01	PDF	2.2 MB	Document	Documents/000076.pdf	Active
000077	Document 77	John Doe	2029-05-01	PDF	1.7 MB	Document	Documents/000077.pdf	Active
000078	Document 78	Jane Smith	2029-06-01	PDF	2.3 MB	Document	Documents/000078.pdf	Active
000079	Document 79	John Doe	2029-07-01	PDF	1.8 MB	Document	Documents/000079.pdf	Active
000080	Document 80	Jane Smith	2029-08-01	PDF	2.1 MB	Document	Documents/000080.pdf	Active
000081	Document 81	John Doe	2029-09-01	PDF	1.9 MB	Document	Documents/000081.pdf	Active
000082	Document 82	Jane Smith	2029-10-01	PDF	2.2 MB	Document	Documents/000082.pdf	Active
000083	Document 83	John Doe	2029-11-01	PDF	1.7 MB	Document	Documents/000083.pdf	Active
000084	Document 84	Jane Smith	2029-12-01	PDF	2.3 MB	Document	Documents/000084.pdf	Active
000085	Document 85	John Doe	2030-01-01	PDF	1.8 MB	Document	Documents/000085.pdf	Active
000086	Document 86	Jane Smith	2030-02-01	PDF	2.1 MB	Document	Documents/000086.pdf	Active
000087	Document 87	John Doe	2030-03-01	PDF	1.9 MB	Document	Documents/000087.pdf	Active
000088	Document 88	Jane Smith	2030-04-01	PDF	2.2 MB	Document	Documents/000088.pdf	Active
000089	Document 89	John Doe	2030-05-01	PDF	1.7 MB	Document	Documents/000089.pdf	Active
000090	Document 90	Jane Smith	2030-06-01	PDF	2.3 MB	Document	Documents/000090.pdf	Active
000091	Document 91	John Doe	2030-07-01	PDF	1.8 MB	Document	Documents/000091.pdf	Active
000092	Document 92	Jane Smith	2030-08-01	PDF	2.1 MB	Document	Documents/000092.pdf	Active
000093	Document 93	John Doe	2030-09-01	PDF	1.9 MB	Document	Documents/000093.pdf	Active
000094	Document 94	Jane Smith	2030-10-01	PDF	2.2 MB	Document	Documents/000094.pdf	Active
000095	Document 95	John Doe	2030-11-01	PDF	1.7 MB	Document	Documents/000095.pdf	Active
000096	Document 96	Jane Smith	2030-12-01	PDF	2.3 MB	Document	Documents/000096.pdf	Active
000097	Document 97	John Doe	2031-01-01	PDF	1.8 MB	Document	Documents/000097.pdf	Active
000098	Document 98	Jane Smith	2031-02-01	PDF	2.1 MB	Document	Documents/000098.pdf	Active
000099	Document 99	John Doe	2031-03-01	PDF	1.9 MB	Document	Documents/000099.pdf	Active
000100	Document 100	Jane Smith	2031-04-01	PDF	2.2 MB	Document	Documents/000100.pdf	Active

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
```