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File Systems

Available file systems

On the DEEP 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 parallel BeeGFS file systems, available on all the nodes of the DEEP 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-SEA project (for example), the project folder is located under `/p/project/deepsea/`. 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 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. Additionally, files in `/dev/shm`, `/tmp` and `/var/tmp` older than 7 days will be removed regularly**

The following table summarizes the characteristics of the file systems available in the DEEP and (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
```

System	File System	Mount Point	Access	Quota	Notes
DEEP	BeeGFS	/p	Parallel	High	Shared across all nodes
DEEP	GPFS	/p/home/jusers	Parallel	Low	Home folders
DEEP	GPFS	/p/project	Parallel	High	Project folders
DEEP	GPFS	/p/scratch	Parallel	High	Scratch space
DEEP	GPFS	/p/mem/scratch	Parallel	High	Local scratch space
DEEP	GPFS	/p/scratch2	Parallel	High	Second scratch space
DEEP	GPFS	/p/scratch3	Parallel	High	Third scratch space
DEEP	GPFS	/p/scratch4	Parallel	High	Fourth scratch space
DEEP	GPFS	/p/scratch5	Parallel	High	Fifth scratch space
DEEP	GPFS	/p/scratch6	Parallel	High	Sixth scratch space
DEEP	GPFS	/p/scratch7	Parallel	High	Seventh scratch space
DEEP	GPFS	/p/scratch8	Parallel	High	Eighth scratch space
DEEP	GPFS	/p/scratch9	Parallel	High	Ninth scratch space
DEEP	GPFS	/p/scratch10	Parallel	High	Tenth scratch space
DEEP	GPFS	/p/scratch11	Parallel	High	Eleventh scratch space
DEEP	GPFS	/p/scratch12	Parallel	High	Twelfth scratch space
DEEP	GPFS	/p/scratch13	Parallel	High	Thirteenth scratch space
DEEP	GPFS	/p/scratch14	Parallel	High	Fourteenth scratch space
DEEP	GPFS	/p/scratch15	Parallel	High	Fifteenth scratch space
DEEP	GPFS	/p/scratch16	Parallel	High	Sixteenth scratch space
DEEP	GPFS	/p/scratch17	Parallel	High	Seventeenth scratch space
DEEP	GPFS	/p/scratch18	Parallel	High	Eighteenth scratch space
DEEP	GPFS	/p/scratch19	Parallel	High	Nineteenth scratch space
DEEP	GPFS	/p/scratch20	Parallel	High	Twentieth scratch space
DEEP	GPFS	/p/scratch21	Parallel	High	Twenty-first scratch space
DEEP	GPFS	/p/scratch22	Parallel	High	Twenty-second scratch space
DEEP	GPFS	/p/scratch23	Parallel	High	Twenty-third scratch space
DEEP	GPFS	/p/scratch24	Parallel	High	Twenty-fourth scratch space
DEEP	GPFS	/p/scratch25	Parallel	High	Twenty-fifth scratch space
DEEP	GPFS	/p/scratch26	Parallel	High	Twenty-sixth scratch space
DEEP	GPFS	/p/scratch27	Parallel	High	Twenty-seventh scratch space
DEEP	GPFS	/p/scratch28	Parallel	High	Twenty-eighth scratch space
DEEP	GPFS	/p/scratch29	Parallel	High	Twenty-ninth scratch space
DEEP	GPFS	/p/scratch30	Parallel	High	Thirtieth scratch space
DEEP	GPFS	/p/scratch31	Parallel	High	Thirty-first scratch space
DEEP	GPFS	/p/scratch32	Parallel	High	Thirty-second scratch space
DEEP	GPFS	/p/scratch33	Parallel	High	Thirty-third scratch space
DEEP	GPFS	/p/scratch34	Parallel	High	Thirty-fourth scratch space
DEEP	GPFS	/p/scratch35	Parallel	High	Thirty-fifth scratch space
DEEP	GPFS	/p/scratch36	Parallel	High	Thirty-sixth scratch space
DEEP	GPFS	/p/scratch37	Parallel	High	Thirty-seventh scratch space
DEEP	GPFS	/p/scratch38	Parallel	High	Thirty-eighth scratch space
DEEP	GPFS	/p/scratch39	Parallel	High	Thirty-ninth scratch space
DEEP	GPFS	/p/scratch40	Parallel	High	Fortieth scratch space
DEEP	GPFS	/p/scratch41	Parallel	High	Forty-first scratch space
DEEP	GPFS	/p/scratch42	Parallel	High	Forty-second scratch space
DEEP	GPFS	/p/scratch43	Parallel	High	Forty-third scratch space
DEEP	GPFS	/p/scratch44	Parallel	High	Forty-fourth scratch space
DEEP	GPFS	/p/scratch45	Parallel	High	Forty-fifth scratch space
DEEP	GPFS	/p/scratch46	Parallel	High	Forty-sixth scratch space
DEEP	GPFS	/p/scratch47	Parallel	High	Forty-seventh scratch space
DEEP	GPFS	/p/scratch48	Parallel	High	Forty-eighth scratch space
DEEP	GPFS	/p/scratch49	Parallel	High	Forty-ninth scratch space
DEEP	GPFS	/p/scratch50	Parallel	High	Fiftieth scratch space
DEEP	GPFS	/p/scratch51	Parallel	High	Fifty-first scratch space
DEEP	GPFS	/p/scratch52	Parallel	High	Fifty-second scratch space
DEEP	GPFS	/p/scratch53	Parallel	High	Fifty-third scratch space
DEEP	GPFS	/p/scratch54	Parallel	High	Fifty-fourth scratch space
DEEP	GPFS	/p/scratch55	Parallel	High	Fifty-fifth scratch space
DEEP	GPFS	/p/scratch56	Parallel	High	Fifty-sixth scratch space
DEEP	GPFS	/p/scratch57	Parallel	High	Fifty-seventh scratch space
DEEP	GPFS	/p/scratch58	Parallel	High	Fifty-eighth scratch space
DEEP	GPFS	/p/scratch59	Parallel	High	Fifty-ninth scratch space
DEEP	GPFS	/p/scratch60	Parallel	High	Sixtieth scratch space
DEEP	GPFS	/p/scratch61	Parallel	High	Sixty-first scratch space
DEEP	GPFS	/p/scratch62	Parallel	High	Sixty-second scratch space
DEEP	GPFS	/p/scratch63	Parallel	High	Sixty-third scratch space
DEEP	GPFS	/p/scratch64	Parallel	High	Sixty-fourth scratch space
DEEP	GPFS	/p/scratch65	Parallel	High	Sixty-fifth scratch space
DEEP	GPFS	/p/scratch66	Parallel	High	Sixty-sixth scratch space
DEEP	GPFS	/p/scratch67	Parallel	High	Sixty-seventh scratch space
DEEP	GPFS	/p/scratch68	Parallel	High	Sixty-eighth scratch space
DEEP	GPFS	/p/scratch69	Parallel	High	Sixty-ninth scratch space
DEEP	GPFS	/p/scratch70	Parallel	High	Seventieth scratch space
DEEP	GPFS	/p/scratch71	Parallel	High	Seventy-first scratch space
DEEP	GPFS	/p/scratch72	Parallel	High	Seventy-second scratch space
DEEP	GPFS	/p/scratch73	Parallel	High	Seventy-third scratch space
DEEP	GPFS	/p/scratch74	Parallel	High	Seventy-fourth scratch space
DEEP	GPFS	/p/scratch75	Parallel	High	Seventy-fifth scratch space
DEEP	GPFS	/p/scratch76	Parallel	High	Seventy-sixth scratch space
DEEP	GPFS	/p/scratch77	Parallel	High	Seventy-seventh scratch space
DEEP	GPFS	/p/scratch78	Parallel	High	Seventy-eighth scratch space
DEEP	GPFS	/p/scratch79	Parallel	High	Seventy-ninth scratch space
DEEP	GPFS	/p/scratch80	Parallel	High	Eightieth scratch space
DEEP	GPFS	/p/scratch81	Parallel	High	Eighty-first scratch space
DEEP	GPFS	/p/scratch82	Parallel	High	Eighty-second scratch space
DEEP	GPFS	/p/scratch83	Parallel	High	Eighty-third scratch space
DEEP	GPFS	/p/scratch84	Parallel	High	Eighty-fourth scratch space
DEEP	GPFS	/p/scratch85	Parallel	High	Eighty-fifth scratch space
DEEP	GPFS	/p/scratch86	Parallel	High	Eighty-sixth scratch space
DEEP	GPFS	/p/scratch87	Parallel	High	Eighty-seventh scratch space
DEEP	GPFS	/p/scratch88	Parallel	High	Eighty-eighth scratch space
DEEP	GPFS	/p/scratch89	Parallel	High	Eighty-ninth scratch space
DEEP	GPFS	/p/scratch90	Parallel	High	Ninetieth scratch space
DEEP	GPFS	/p/scratch91	Parallel	High	Ninety-first scratch space
DEEP	GPFS	/p/scratch92	Parallel	High	Ninety-second scratch space
DEEP	GPFS	/p/scratch93	Parallel	High	Ninety-third scratch space
DEEP	GPFS	/p/scratch94	Parallel	High	Ninety-fourth scratch space
DEEP	GPFS	/p/scratch95	Parallel	High	Ninety-fifth scratch space
DEEP	GPFS	/p/scratch96	Parallel	High	Ninety-sixth scratch space
DEEP	GPFS	/p/scratch97	Parallel	High	Ninety-seventh scratch space
DEEP	GPFS	/p/scratch98	Parallel	High	Ninety-eighth scratch space
DEEP	GPFS	/p/scratch99	Parallel	High	Ninety-ninth scratch space
DEEP	GPFS	/p/scratch100	Parallel	High	Hundredth scratch space

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

For moving data between /p/* and /arch, please use JUDAC instead of performing these actions on the login node (deepv). This helps avoiding congestion on the Just connection:

```
ssh -l <username> judac
mv /p/... /arch/...
```