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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	Quota	Access	Notes
JSC	GPFS	/p	100TB	Read/Write	Shared across all JSC systems
DEEP	BeeGFS	/p	100TB	Read/Write	Parallel file system
Local	Local	/	Varies	Read/Write	Node-specific
Local	Local	/tmp	1GB	Read/Write	Temporary storage
Local	Local	/var/tmp	1GB	Read/Write	Temporary storage
Local	Local	/dev/shm	1GB	Read/Write	Shared memory
Local	Local	/pmem/scratch	Varies	Read/Write	Local scratch space
Local	Local	/p/project	Varies	Read/Write	Project-specific storage
Local	Local	/p/home	Varies	Read/Write	Home directories
Local	Local	/p/scratch	Varies	Read/Write	Scratch space
Local	Local	/p/scratch2	Varies	Read/Write	Scratch space
Local	Local	/p/scratch3	Varies	Read/Write	Scratch space
Local	Local	/p/scratch4	Varies	Read/Write	Scratch space
Local	Local	/p/scratch5	Varies	Read/Write	Scratch space
Local	Local	/p/scratch6	Varies	Read/Write	Scratch space
Local	Local	/p/scratch7	Varies	Read/Write	Scratch space
Local	Local	/p/scratch8	Varies	Read/Write	Scratch space
Local	Local	/p/scratch9	Varies	Read/Write	Scratch space
Local	Local	/p/scratch10	Varies	Read/Write	Scratch space
Local	Local	/p/scratch11	Varies	Read/Write	Scratch space
Local	Local	/p/scratch12	Varies	Read/Write	Scratch space
Local	Local	/p/scratch13	Varies	Read/Write	Scratch space
Local	Local	/p/scratch14	Varies	Read/Write	Scratch space
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Local	Local	/p/scratch16	Varies	Read/Write	Scratch space
Local	Local	/p/scratch17	Varies	Read/Write	Scratch space
Local	Local	/p/scratch18	Varies	Read/Write	Scratch space
Local	Local	/p/scratch19	Varies	Read/Write	Scratch space
Local	Local	/p/scratch20	Varies	Read/Write	Scratch space
Local	Local	/p/scratch21	Varies	Read/Write	Scratch space
Local	Local	/p/scratch22	Varies	Read/Write	Scratch space
Local	Local	/p/scratch23	Varies	Read/Write	Scratch space
Local	Local	/p/scratch24	Varies	Read/Write	Scratch space
Local	Local	/p/scratch25	Varies	Read/Write	Scratch space
Local	Local	/p/scratch26	Varies	Read/Write	Scratch space
Local	Local	/p/scratch27	Varies	Read/Write	Scratch space
Local	Local	/p/scratch28	Varies	Read/Write	Scratch space
Local	Local	/p/scratch29	Varies	Read/Write	Scratch space
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Local	Local	/p/scratch95	Varies	Read/Write	Scratch space
Local	Local	/p/scratch96	Varies	Read/Write	Scratch space
Local	Local	/p/scratch97	Varies	Read/Write	Scratch space
Local	Local	/p/scratch98	Varies	Read/Write	Scratch space
Local	Local	/p/scratch99	Varies	Read/Write	Scratch space
Local	Local	/p/scratch100	Varies	Read/Write	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/...
```