

Wikiprint Book

Title: File Systems

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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 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
```

Report Period	Project Name	Client	Type	Status / End	MS Services	Service Provider	Business Impact / Notes	Owner	Value
2023-01-01 to 2023-03-31	Project Alpha	ABC Corp	Software Development	Completed	MS Dynamics 365	ABC Corp	Successful implementation of MS Dynamics 365, improving operational efficiency.	John Doe	\$150,000
2023-04-01 to 2023-06-30	Project Beta	XYZ Inc	Cloud Migration	In Progress	MS Azure	XYZ Inc	Partial migration to MS Azure, facing some challenges with data transfer.	Jane Smith	\$200,000
2023-07-01 to 2023-09-30	Project Gamma	DEF Ltd	IT Support	Ongoing	MS Office 365	DEF Ltd	Regular maintenance and support for MS Office 365, ensuring uptime.	Mike Johnson	\$75,000
2023-10-01 to 2023-12-31	Project Delta	GHI Corp	Security Audit	Completed	MS Security	GHI Corp	Comprehensive security audit of MS systems, identifying vulnerabilities.	Sarah Lee	\$120,000
2024-01-01 to 2024-03-31	Project Epsilon	JKL Inc	Hardware Upgrade	Planned	MS Servers	JKL Inc	Planning for hardware upgrade of MS servers to improve performance.	David Kim	\$90,000
2024-04-01 to 2024-06-30	Project Zeta	MNO Corp	Software License	Pending	MS Software	MNO Corp	Reviewing software licenses for MS products, ensuring compliance.	Emily White	\$60,000
2024-07-01 to 2024-09-30	Project Eta	PQR Ltd	Cloud Storage	Completed	MS OneDrive	PQR Ltd	Successful migration of data to MS OneDrive, improving accessibility.	Chris Brown	\$80,000
2024-10-01 to 2024-12-31	Project Theta	STU Inc	IT Training	Ongoing	MS Training	STU Inc	Providing training for staff on MS products, enhancing productivity.	Alex Green	\$40,000
2025-01-01 to 2025-03-31	Project Iota	VWX Corp	Network Upgrade	Planned	MS Network	VWX Corp	Planning network upgrade for MS environment, aiming for faster speeds.	Olivia Black	\$110,000
2025-04-01 to 2025-06-30	Project Kappa	YZA Inc	Software Integration	In Progress	MS Integration	YZA Inc	Integrating MS systems with third-party applications, facing some delays.	Noah Grey	\$130,000
2025-07-01 to 2025-09-30	Project Lambda	BCD Ltd	IT Support	Ongoing	MS Support	BCD Ltd	Continued support for MS systems, ensuring smooth operation.	Aria Blue	\$65,000
2025-10-01 to 2025-12-31	Project Mu	EFG Corp	Security Patching	Completed	MS Security	EFG Corp	Applying security patches for MS products, maintaining security.	Liam Red	\$50,000
2026-01-01 to 2026-03-31	Project Nu	HIJ Inc	Hardware Refresh	Planned	MS Hardware	HIJ Inc	Planning hardware refresh for MS infrastructure, aiming for longevity.	Mia Yellow	\$100,000
2026-04-01 to 2026-06-30	Project Xi	KLM Corp	Software License	Pending	MS Software	KLM Corp	Reviewing software licenses for MS products, ensuring compliance.	Ben Green	\$70,000
2026-07-01 to 2026-09-30	Project Omicron	NOP Ltd	Cloud Storage	Completed	MS OneDrive	NOP Ltd	Successful migration of data to MS OneDrive, improving accessibility.	Chloe Blue	\$85,000
2026-10-01 to 2026-12-31	Project Pi	QRS Inc	IT Training	Ongoing	MS Training	QRS Inc	Providing training for staff on MS products, enhancing productivity.	Ethan Red	\$45,000
2027-01-01 to 2027-03-31	Project Rho	TUV Corp	Network Upgrade	Planned	MS Network	TUV Corp	Planning network upgrade for MS environment, aiming for faster speeds.	Ava Yellow	\$115,000
2027-04-01 to 2027-06-30	Project Sigma	WXY Inc	Software Integration	In Progress	MS Integration	WXY Inc	Integrating MS systems with third-party applications, facing some delays.	Lucas Green	\$135,000
2027-07-01 to 2027-09-30	Project Tau	ZAB Ltd	IT Support	Ongoing	MS Support	ZAB Ltd	Continued support for MS systems, ensuring smooth operation.	Sophia Blue	\$70,000
2027-10-01 to 2027-12-31	Project Upsilon	BCD Corp	Security Patching	Completed	MS Security	BCD Corp	Applying security patches for MS products, maintaining security.	Oliver Red	\$55,000
2028-01-01 to 2028-03-31	Project Phi	EFG Inc	Hardware Refresh	Planned	MS Hardware	EFG Inc	Planning hardware refresh for MS infrastructure, aiming for longevity.	Isabella Yellow	\$105,000
2028-04-01 to 2028-06-30	Project Chi	HIJ Corp	Software License	Pending	MS Software	HIJ Corp	Reviewing software licenses for MS products, ensuring compliance.	Leo Green	\$75,000
2028-07-01 to 2028-09-30	Project Psi	KLM Ltd	Cloud Storage	Completed	MS OneDrive	KLM Ltd	Successful migration of data to MS OneDrive, improving accessibility.	Mia Blue	\$90,000
2028-10-01 to 2028-12-31	Project Omega	NOP Inc	IT Training	Ongoing	MS Training	NOP Inc	Providing training for staff on MS products, enhancing productivity.	Noah Red	\$50,000

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
```