

HOW TO DEAL WITH THE NEW FILE SYSTEM SETUP AT SCINET

TechTalk

What changed?

For a user named <user> in a group named <group>

`/home/<user>` \longrightarrow `/home/<g>/<group>/<user>`
`/scratch/<user>` \longrightarrow `/scratch/<g>/<group>/<user>`

where <g> is the first letter of the group name.

Updated environment variables

`$HOME` = `/home/<g>/<group>/<user>`
`$SCRATCH` = `/scratch/<g>/<group>/<user>`

Why?

There were over 1000 entries in the root of scratch, which impacted the performance of the gpfs file system.

You should experience little trouble if you use:

- **relative** paths in scripts and applications;
- `~` or `$HOME` and `$SCRATCH` where you could not;
- no locally installed libraries and binaries.

Potential problems:

- Absolute paths in scripts.
- Tar files with absolute paths.
- Symbolic links to scratch
- Locally installed libraries

Solutions...

Problem: Absolute paths in scripts

In general, absolute paths are something to avoid.

Example

```
#!/bin/bash
#PBS -l nodes=2:ppn=8,walltime=1:00:00
#PBS -N test
cd /scratch/rzon/run
mpirun -np 16 /home/rzon/code/a.out
```

Fix

```
#!/bin/bash
#PBS -l nodes=2:ppn=8,walltime=1:00:00
#PBS -N test
cd $SCRATCH/run
mpirun -np 16 $HOME/code/a.out
# Even better setup:
# cd $PBS_O_WORKDIR
# mpirun -np 16 ./a.out
```

Problem: Tar files with absolute paths

Best not give absolute paths to `tar`, though `gnu tar` strips off /
Always check the content of a tarball before extracting it!

Problematic example (done before change)

```
$ tar czvf run.tgz $SCRATCH/run  
/scratch/rzon/run/  
/scratch/rzon/run/a.out  
...
```

Resolution

If `run` directory no longer in `/scratch`:

```
$ mkdir temp  
$ tar xzvf run.tgz -C temp  
$ mv temp/scratch/rzon/run $SCRATCH/run
```

If `run` in `/scratch` is to be overwritten:

```
$ tar zxvf run.tgz -C $SCRATCH/run  
--strip-components 3
```

Problem: Symbolic links to scratch

Problem

```
$ cd $HOME
$ ls -l
...
lrwxrwxrwx 1 rzon scinet 22 Nov 1 15:49
scratch -> /scratch/rzon
...
```

Solution

```
$ cd $HOME
$ rm scratch
$ ln -s $SCRATCH scratch
$ ls -l
...
lrwxrwxrwx 1 rzon scinet 22 Nov 9 15:49
scratch -> /scratch/s/scinet/rzon
...
```

There is nothing wrong with installing local libraries or applications but they sometimes hard-code absolute paths.

The solution is simply: rebuild the package.

Common case

```
$ ./configure --prefix=~ /local
$ make clean
$ make
$ make install
```

What did you encounter?

There's bound to be unexpected stuff...