Storage Infrastructure VSC

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$HOME Filesystem

- IBM Spectrum Scale Filesystem
- Used for software and job scripts
- All NVMe storage
- Quotas:
  - 100 GB (strict)
  - 10^6 inodes
- Accessible with the **$HOME** environment variable
  - /home/fs70XXX/username

```
VSC > mmlsquota --block-size auto -j home_fs7XXXX home
                        Block Limits                                    |     File Limits
Filesystem type         blocks      quota      limit   in_doubt    grace |    files   quota    limit in_doubt    grace
home       FILESET      32.99G       100G       100G          0     none |   289088 1000000  1000000        0     none
```

```
VSC > df -h $HOME
Filesystem      Size  Used Avail Use% Mounted on
home            100G   33G   68G  33% /home
VSC > df -i $HOME
Filesystem      Inodes  IUsed  IFree IUse% Mounted on
home           1000000 289092 710908   29% /home
```

$DATA Filesystem

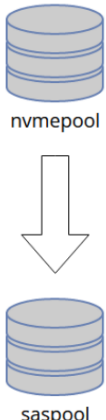
- IBM Spectrum Scale Filesystem
- Can be used for most kind of I/O
- Tiered Storage
- Quotas:
  - 10 TB (can be extended on request)
  - 10^6 inodes
- Accessible with the **$DATA** environment variable
  - /gpfs/data/fs70XXX/username

```
VSC > mmlsquota --block-size auto -j data_fs7XXXX data
                        Block Limits                                    |     File Limits
Filesystem type         blocks      quota      limit   in_doubt    grace |    files   quota    limit in_doubt    grace
data       FILESET      3.105T     9.766T     9.766T     3.137G     none |  1798839 2000000  2000000      311     none
```

```
VSC > df -h $DATA
Filesystem      Size  Used Avail Use% Mounted on
data            9.8T  3.2T  6.7T  32% /gpfs/data
VSC > df -i $DATA
Filesystem      Inodes   IUsed   IFree IUse% Mounted on
data           2000000 1798835 201165   90% /gpfs/data
```

$DATA Tiering

- Spectrum Scale Policies




```
RULE ['initPlacement']
  SET POOL 'nvmepool'

RULE 'MigrateData' MIGRATE FROM POOL 'nvmepool'
  THRESHOLD(80,60)
  WEIGHT(access_age_in_days*KB_ALLOCATED)
  TO POOL 'saspool'
```

Local Filesystem

- Should be used for local I/O
- 480 GB local SSD (VSC-4)
- 2 TB local NVMe (VSC-5)
- Accessible on the compute nodes
  - /local
- Data gets deleted after the job
  - Write Results to `$DATA` to make data persistent

TMP Filesystem

- Can be used for heavy local I/O
- Up to half of the nodes memory
  - **Data resides in the shared memory (RAM) of the node**
- Accessible on the compute nodes
  - /tmp
- Data gets deleted after the job
  - Move results to `$DATA` to make data persistent

Backup Policy

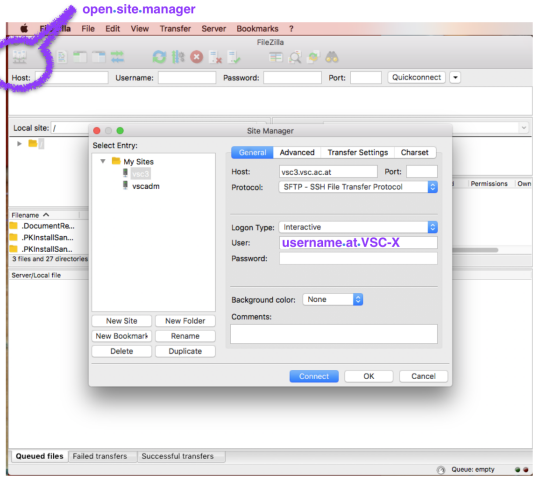
- Backup of user files is **solely the responsibility of each user**
- Backups are used for **disaster recovery only**
- Backups are performed on best effort basis
- Backed up filesystems:
  - `$HOME`
  - `$DATA`
- Project manager can exclude $DATA filesystem from backup
  - service.vsc.ac.at
- Setup continous backup of user data to remote Machines
  - WIKI-link:rsync on remote machines

Copy and Sync

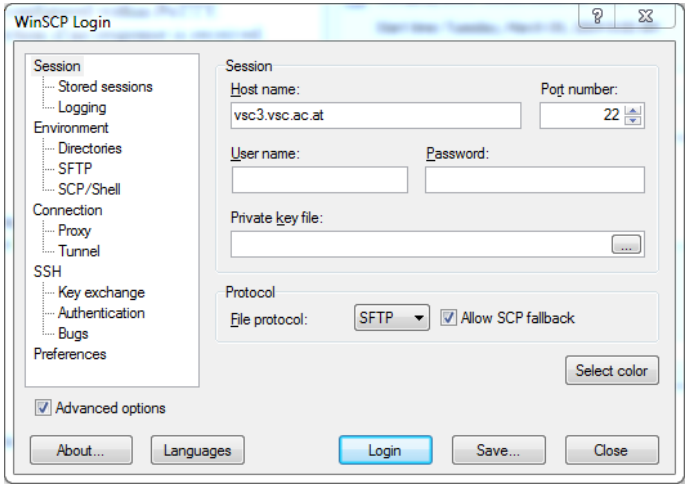
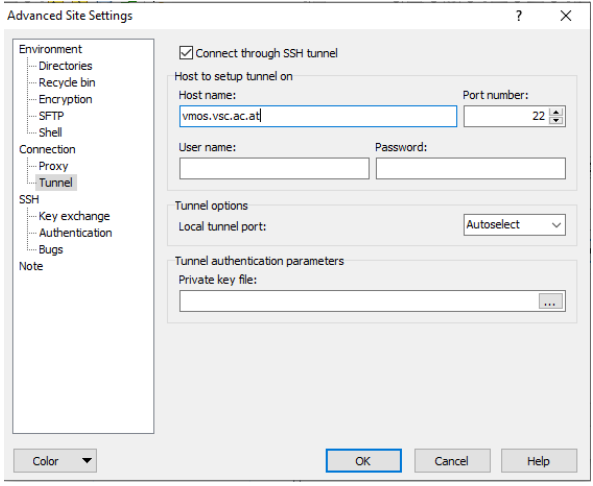
```
scp <source> <destination>
scp <me>@vsc3.vsc.ac.at:~/<myfile.c> .
scp myfile.c <me>@vsc4.vsc.ac.at:~/
```

```
rsync [OPTIONs] <source> <destination>
maybe useful: -av, --exclude=/daten/temp/...
```

Copy — alternative via FileZilla



Copy — alternative via Winscp



Copy — alternative via Winscp (via VMOS)