

# 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`

```
1 VSC > mmlsquota --block-size auto -j home_fs7XXXX home
```

```
2                               Block Limits                               |                               File Limits                               |
3 Filesystem type      blocks      quota      limit  in_doubt  grace | files      quota      limit in_doubt  grace
4 home      FILESET    32.99G    100G     100G     0         none | 289088 1000000 1000000 0         none
```

```
1 VSC > df -h $HOME
```

```
2 Filesystem      Size  Used Avail Use% Mounted on
3 home            100G  33G   68G  33% /home
```

```
4 VSC > df -i $HOME
```

```
5 Filesystem      Inodes  IUsed  IFree IUse% Mounted on
6 home            1000000 289092 710908 29% /home
```



- ▶ 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`

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

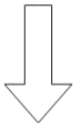
1 VSC > df -h $DATA
2 Filesystem      Size  Used Avail Use% Mounted on
3 data            9.8T  3.2T  6.7T  32% /gpfs/data
4 VSC > df -i $DATA
5 Filesystem      Inodes   IUsed   IFree IUse% Mounted on
6 data            2000000 1798835 201165   90% /gpfs/data
```



## ► Spectrum Scale Policies



nvme pool



sas pool

```
RULE ['initPlacement']  
  SET POOL 'nvme pool'
```

```
RULE 'MigrateData' MIGRATE FROM POOL 'nvme pool'  
  THRESHOLD(80,60)  
  WEIGHT(access_age_in_days*KB_ALLOCATED)  
  TO POOL 'sas pool'
```



- ▶ 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



- ▶ 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 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 continuous backup of user data to remote Machines
  - ▶ WIKI-link:rsync on remote machines



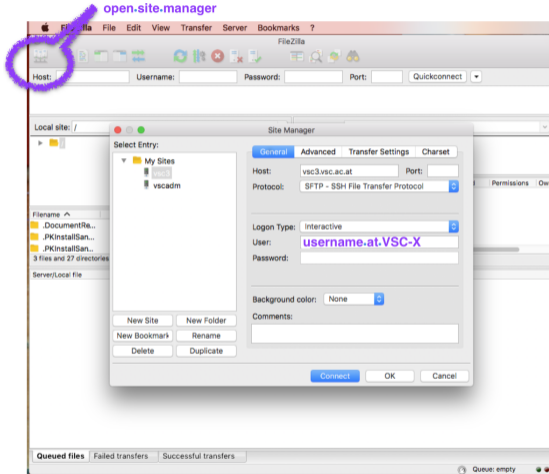
```
1 scp <source> <destination>  
2 scp <me>@vsc3.vsc.ac.at:~/<myfile.c> .  
3 scp myfile.c <me>@vsc4.vsc.ac.at:~/
```

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

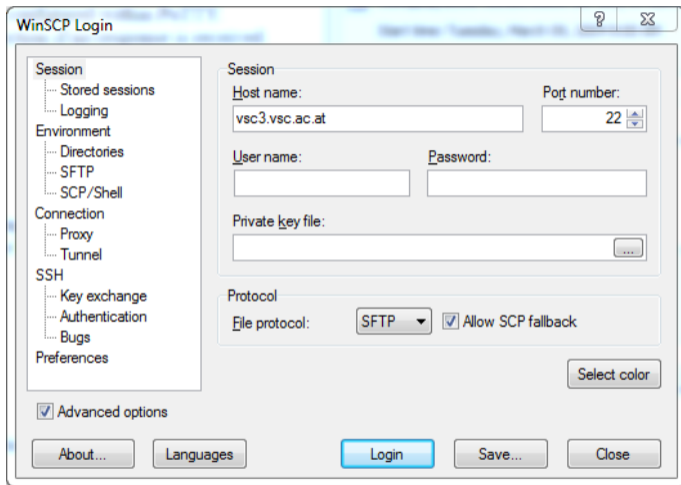




# Copy — alternative via FileZilla



# Copy — alternative via Winscp



The image shows the WinSCP Login dialog box. It has a title bar with a question mark and a close button. On the left is a tree view with categories: Session, Environment, Connection, SSH, and Preferences. The 'Session' category is expanded, showing sub-items: Stored sessions, Logging, Directories, SFTP, SCP/Shell, Key exchange, Authentication, Bugs, and Preferences. The main area contains the following fields and controls:

- Session** section:
  - Host name:** Text box containing "vsc3.vsc.ac.at"
  - Port number:** Spin box set to "22"
  - User name:** Text box
  - Password:** Text box
  - Private key file:** Text box with a browse button ("...")
- Protocol** section:
  - File protocol:** Dropdown menu set to "SFTP"
  - Allow SCP fallback
- Select color** button
- Advanced options
- Buttons at the bottom: About..., Languages, Login (highlighted in blue), Save..., Close



# Copy — alternative via Wincscp (via VMOS)

Advanced Site Settings

Environment

- Directories
- Recycle bin
- Encryption
- SFTP
- Shell

Connection

- Proxy
- Tunnel

SSH

- Key exchange
- Authentication
- Bugs

Note

Connect through SSH tunnel

Host to setup tunnel on

Host name:  Port number:

User name:  Password:

Tunnel options

Local tunnel port:

Tunnel authentication parameters

Private key file:

Color

OK Cancel Help

