The SuperMUC firewall permits only incoming SSH-connections. You can use port forwarding to establish a connection between the subversion server and SuperMUC, i.e., you may use one of the following procedures.

- You will be prompted for your SuperMUC password (or your ssh passphrase). If you are unlucky the port selected by you (e.g. 10022) is already used by someone else - in this case you will see an error message printed out in advance of the motd; you then need to change your port to a different value.
- You might need to delete the localhost entry from ~/.ssh/known_hosts if ssh complains about the host key.

Access to subversion (SVN) server

If you need to change ssh ports (see 1. above), you will probably also need to invoke "svn switch --relocate ..." on your SVN sandboxes because the port number will be encoded in the stored location.

Using SVN with a https svn server

To establish the port forwarding for the https port issue the following command to connect from your workstation you normally use to SSH to the SuperMUC:

```bash
ssh -l <LoginName> -R <arbitraryPortNumber>:<svnServer>:443 supermuc.lrz.de
```

Example:
```
ssh -l hk00xyz -R 10443:pmviewer.svn.sourceforge.net:443 supermuc.lrz.de
```

After successful login to SuperMUC you may then access your repository via ("module load subversion"):
```
svn <svnCommand> https://<remoteLoginName>@localhost:<ForwardedPortNumber>/<svnDirectoryPath>
```

Example:
```
svn list https://mySVNUser@localhost:10443/svncroot/pmviewer
svn co https://mySVNUser@localhost:10443/svncroot/pmviewer pmviewer
```

Using SVN+SSH repository access

To establish the port forwarding for the ssh port issue the following command to connect from your workstation you normally use to SSH to the system SuperMUC:
```
ssh -l <LoginName> -R <arbitraryPortNumber>:<machine-withSVNrepo.>:22 supermuc.lrz.de
```

Example:
```
ssh -l hk00xyz -R 10022:mySVNmachine.myhost.de:22 supermuc.lrz.de
```

Repository:
```
mySVNmachine.myhost.de:/my/svn/repo
```

After successful login to supermuc you have to set up a new protocol in your ~/.subversion/config file. Therefore you enter the following last line to the tunnel section in the config file:
```
[tunnels]
### Configure svn protocol tunnel schemes here. By default, only
### the 'ssh' scheme is defined. You can define other schemes to
### be used with 'svn+scheme://hostname/path' URLs. A scheme
### ...
myssh = ssh -p 10022
```

Now you may use the `svn+ssh` command as usual, with the exception that the newly defined `myssh` protocol is used instead of the standard `ssh` protocol:
```
svn <svnCommand> svn+myssh://<remoteLoginName>@localhost/<svnDirectoryPath>
```

Example:
```
svn list svn+myssh://mySVNUser@localhost/my/svn/repo
svn co svn+myssh://mySVNUser@localhost/my/svn/repo
```

GIT

No module load needed as system git is available.

Via git-protocol (port 9418)
```
local> ssh -l <SSH_userID> -R 12345:github.com:9418 skx.supermuc.lrz.de
skx> git clone git://localhost:12345/git
```

or via SSH (port 22), HTTP (port 80) or HTTPS (port 443; requires "git clone" option "-c http.sslVerify=false" to circumvent the SSL certificate issue of HTTPS (as the requested DNS is now "localhost")).

For instance, for LRZ GitLab:
local> ssh -l <SSH_userID> -R 12345:gitlab.lrz.de:443 skx.supermuc.lrz.de
skx> git clone -c http.sslVerify=false https://<userID_4_GitLab>@localhost:12345/<somepath>.git

Mercurial

local> ssh -l <SSH_userID> -R 12345:www.mercurial-scm.org:443 skx.supermuc.lrz.de
skx> module load mercurial
skx> hg clone --insecure https://localhost:12345/repo/hg/ mercurial-repo

"--insecure" is necessary to circumvent the SSL certificate issue of HTTPS (as the requested DNS is now "localhost")

Alternatives
via sshfs:

local> mkdir mnt
local> sshfs <SSH_userID>@skx.supermuc.lrz.de: mnt
local> cd mnt && git clone ... # or hg or svn or ...
local> cd &&fusermount -u mnt # do your work whatever it be