How to use SSH

April 2021

1 Introduction

The practical classes require the use of Unix environment for some numerical simulations and analysis. Don't worry, you don't have to be very skillful at it. We would like you to complete the in-class practical exercise on the workstations prepared by the CIP-Pool of the physics faculty, so a connection to your workstation has to be set up beforehand. For this you need a computer account (send an email to sara.gabrielli@mpibpc.mpg.de as soon as possible if you don't have one!) and an SSH client (we advise you to use X2Go which proved to be stable enough in the previous semesters). Please, make sure to be able to connect to the workstation before the beginning of the first tutorial

2 How to use X2Go Client

- 1. Install X2Go Client from https://wiki.x2go.org/doku.php/doc:installation:x2goclient
- 2. Open X2Go Client and create a new session (Session \rightarrow New session).
- 3. Edit the setting as shown in figure 1 and click on OK:

Session name: CIP-Pool Host: your computer ID, pick one randomly between c200 and c220, see Figure 1 Login: your CIP-Pool account SSH port: 22 Enable "Use Proxy server for SSH connection" Proxy server host: login.physik.uni-goettingen.de Port: 22 Enable "Same login as on X2Go Server" and "Same password as on X2Go Server" Session type: Choose "XFCE"

- 4. Launch the session "CIP-Pool" and enter your password.
- 5. You should see something like figure 2. Open "Terminal Emulator" and proceed to the next step.

		🥖 Sessi	on preferences	- CIP-Poo	1	
	Session	Connection	Input/Output	Media	Shared folders	
Session nam	e: CIP-Pool					
(···	< change icon					
Path: /						
Server						
Host:	c201					
Login:	sgabrielli					
SSH port:	22					٢
C Kerberg	is 5 (GSSAPI) authentic	ation als to the serve	r			
Vise Pro	oxy server for SSH conn	ection				
Use Pro Proxy ser Type:	oxy server for SSH conn /er	ection	Same login a	as on X2G	o Server	
Use Pro Proxy ser Type: SSH	oxy server for SSH conn /er	ection	Same login a	as on X2G	o Server	
✓ Use Pro Proxy ser Type: ● SSH ● HTT	oxy server for SSH conr	ection	 Same login a Login: Same passw 	as on X2G	o Server X2Go Server	
Vuse Pro Proxy ser Type: SSH HTT Host:	xy server for SSH conr ver P ogin.physik.uni-goetting	ection en.de	 Same login a Login: Same passw RSA/DSA key: 	as on X2G	o Server X2Go Server	
VUse Pro Proxy ser Type: SSH HTT Host: Port:	xy server for SSH conr ver ogin.physik.uni-goetting 22	ection en.de	 Same login a Login: Same passw RSA/DSA key: SSH Agent of 	as on X2G rord as on or default S	o Server X2Go Server SSH key	
VUse Pro Proxy ser Type: SSH HOST: Port:	xy server for SSH conr ver 9 ogin.physik.uni-goetting 22	en.de	 Same login a Login: Same passw RSA/DSA key: SSH Agent o Kerberos 5 (as on X2G rord as on or default S GSSAPI) a	o Server X2Go Server SH key authentication	
VUse Pro Proxy ser Type: SSH HTT Host: Port:	xy server for SSH conn ver ogin.physik.uni-goetting 22	en.de	 Same login a Login: Same passw RSA/DSA key: SSH Agent o Kerberos 5 (as on X2G rord as on or default S GSSAPI) a	o Server X2Go Server SSH key authentication	
Vuse Pro Proxy ser Type: SSH Host: Port: Session type Run in 2	xy server for SSH conr ver ogin.physik.uni-goetting 22 (2GoKDrive (experimer	en.de	 Same login a Login: Same passw RSA/DSA key: SSH Agent o Kerberos 5 (as on X2G rord as on or default S GSSAPI) a	o Server X2Go Server SSH key authentication	

Figure 1: X2Go Client session setting



Figure 2: Workstation's desktop

3 Having fun with the Unix shell

Let's make a new directory called practical1 and put the necessary files for the first practical into it:

mkdir practical1

Change the current directory to the newly created directory: practical1.

cd practical1

Download and unzip the material:

```
wget https://www3.mpibpc.mpg.de/groups/de_groot/compbio2/p15/markov.tar.gz
tar xvzf markov.tar.gz
```

Take a look at what files are extracted:

ls -l

You should get something as shown in figure 3.

2	Terminal -						
File Edit View Terminal Tabs Help							
2021-04-12 14:38:51 http://www3.mpibpc.mpg.de/groups/de_groot/compbio2/p15/markov.tar.gz Resolving www3.mpibpc.mpg.de (www3.mpibpc.mpg.de) 134.76.24.122 Connecting to www3.mpibpc.mpg.de (www3.mpibpc.mpg.de) 134.76.24.122 :80 connected. HTTP request sent, awaiting response 200 OK Length: 773934 (756K) [application/x-gzip] Saving to: 'markov.tar.gz'							
markov.tar.gz 100%[===================================	79KKB/s in 0.02s						
2021-04-12 14:38:51 (30.1 MB/s) - 'markov.tar.gz' saved [773934/773934]							
<pre>FINISHED2021-04-12 14:38:51 Total wall clock time: 0.9s Downloaded: 1 files, 756K in 0.02s (30.1 MB/s) bash-5.0\$ tar xvzf markov.tar.gz ./clus1.csh ./clus2.csh ./clus2.csh ./cluster ./langevin ./langevin ./langevin.inp ./ld.pse ./libgfortran.so.3 ./markov ./trans bash-5.0\$ ls -l</pre>							
rwxr-xr-x 1 sgabrielli alien 391 Apr 22 2015 -rwxr-xr-x 1 sgabrielli alien 331 Apr 22 2015 -rwxr-xr-x 1 sgabrielli alien 331 Apr 22 2015 -rwxr-xr-x 1 sgabrielli alien 27132 Apr 22 2015 -rwxr-xr-x 1 sgabrielli alien 27132 Apr 22 2015 -rw-r-xr-x 1 sgabrielli alien 350 Apr 28 2015 -rw-rr 1 sgabrielli alien 5348258 Apr 24 2015 -rwxr-xr-x 1 sgabrielli alien 1214648 May 3 2018 -rwxr-xr-x 1 sgabrielli alien 17726 Apr 22 2015	clus1.csh clus2.csh clus3.csh cluster langevin langevin.inp ld.pse libgfortran.so.3 markov						
-rw-rr 1 sgabrielli alien 773934 Apr 25 2019 -rwxr-xr-x 1 sgabrielli alien 17558 Apr 22 2015 bash-5.0\$	markov.tar.gz trans						

Figure 3: Basic operations

You can also test the stability of the connection when having a graphical interface remotely:

xmgrace

Xmgrace is a 2D plotting tool that will come in handy during the tutorials. You can also try to open PyMOL, which is one of the molecular visualization system that we are going to use:

pymol

If you completed the instructions successfully, congratulations! You are ready to start! You are also encouraged to try out the first practical (https://www3.mpibpc.mpg.de/groups/de_groot/compbio2/p15/index.html) and don't hesitate to get in touch with me sara.gabrielli@mpibpc.mpg.de if anything is unclear to you!