

Instructions to Connect Windows StarCCM+ Client to Ganymede

Purpose:

This allows us to give everyone on the team regardless of computer power the ability to run StarCCM via connecting to UTD's High Performance Computing cluster. This means that not only do you have access to run Star, you have access to massive computers design to run Star.

Refer to this folder for files mentioned.

<https://utdallas.app.box.com/folder/195205668168>

1. Install Software

MobaXTerm: SSH Client to interact with Ganymede

<https://mobaxterm.mobatek.net/download.html>

Putty: Generates Keys for Passwordless Connection

<https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>

MSI ('Windows Installer')

64-bit x86: [putty-64bit-0.78-installer.msi](#)

Follow the prompts when installing

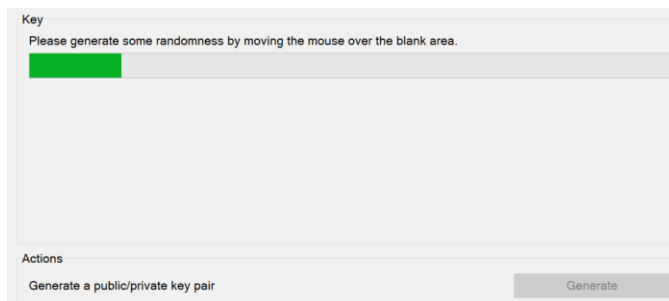
2. Create Public/Private Key Pairs with Putty

These keys allow StarCCM to connect to Ganymede without using a password.

In the folder you installed Putty to, you should see these.

LICENCE	10/28/2022 6:20 PM	File	2 KB
pageant.exe	10/28/2022 6:23 PM	Application	522 KB
plink.exe	10/28/2022 6:23 PM	Application	964 KB
pscp.exe	10/28/2022 6:23 PM	Application	965 KB
psftp.exe	10/28/2022 6:23 PM	Application	983 KB
putty.chm	10/28/2022 6:19 PM	Compiled HTML Hel...	347 KB
putty.exe	10/28/2022 6:23 PM	Application	1,263 KB
puttygen.exe	10/28/2022 6:23 PM	Application	599 KB
README.txt	10/28/2022 6:19 PM	Text Document	2 KB
website	10/28/2022 6:19 PM	Internet Shortcut	1 KB

First, click on “puttygen.exe”. Once it opens click generate and move your mouse around until the key is generated.



Then you should see this screen.

Key

Public key for pasting into OpenSSH authorized_keys file:
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQCrhq4tEKvtfYMwKHN9zR
+SV5CvCMQc0t2WPnVm59letVpIEv1kfAkHeUThWbzeKgS13zS1s2GGhH0Mn8zW60ntoHwx7kkk82EGp8Pb2qk
rd48LEx4k73c28mNFicPBRnJedHaLQIIYNibhIER2zwl/oOMjc6qc0jstqngHsidzTem
+DlmXU7gBeiP2gkJV74ECDBxgkTqTfI/Z229dFB/yz5mkc45P5yjuE9yvtPyuLY1uLfz/eDwL
+ZVKqNV2WJZZGa1u+wA/EQuXI

Key fingerprint: ssh-rsa 2048 SHA256:FlnwfzJ+vjHlg6OvvPxM8wYLEu0BOP//Sn/woaEI8Bs
Key comment: rsa-key-20230217
Key passphrase:
Confirm

Actions

Generate a public/private key pair
Load an existing private key file
Save the generated key

Generate
Load
Save public key
Save private key

Parameters

Type of key to generate:
☒ RSA
☐ DSA
☐ ECDSA
☐ EdDSA
☐ SSH-1 (RSA)

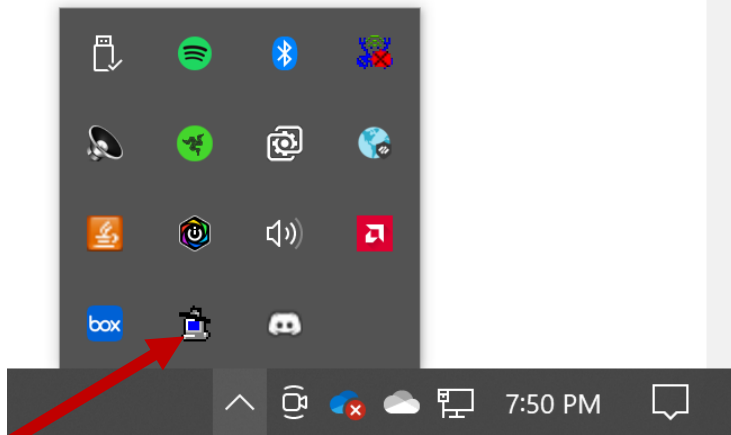
Number of bits in a generated key: 2048

The top text is your public key which you give to Ganymede to read. **Note until we all have our own Ganymede accounts you will paste this key in a document on Box next to your name**, so that I can use my Ganymede account to give you a node. If you already have a Ganymede account, copy this key for use later.

Open “Public Keys for Ganymede” file in box and open in the online version. Paste your key in the manner shown. The file will save automatically if you open the file online through box.

Next you will click the save private key button locally on your computer. **Note keep this somewhere safe but reachable. You will not give anyone else access to key ever.**

Now open “pageantexe”. This will appear in your system tray at the bottom right of your screen.



Right click, Add key, then navigate to where you stored your private in the last step. You will repeat opening pageant and adding this key every time you need to connect to Ganymede from Star.

- In the same folder that you installed Putty to, open putty.exe.
- In the hostname text field enter: ganymede.utallas.edu
- Then click open
- A message will pop up warning about some important information that we will ignore, so just click accept.
- A terminal window will open and prompt you for your netid
- You should be logged into Ganymede now

3. Configure StarCCM

In Star click Tools – Options – Environment, then change to look like this

Generic Remote Process Launch Command	PutTY	▼	...
Enable Node Auto-Expansion	<input type="checkbox"/>		
Server Remote Process Launch Command	ssh	▼	...

4. Connecting to Ganymede

Click File – Connect to Server. Change the bottom half to match this picture.

Connect to Server

Host: compute-2-6-17 Port: 47827 Scan

File:

Type: Simulation

Rendering: Local Host: localhost Port: 47927 Scan

Secure Shell Tunnel Options

☒ Connect Through SSH Tunnel

Secure Shell Tunnel Host: ganymede.utdallas.edu

Secure Shell Tunnel Host Username: hxb210012

Secure Shell: PuTTY

Secure Shell Options: -ssh -batch -agent

OK Cancel Help

Until you have your own account you will need to message me for access to a compute node.

The name I give you will be the one you place in the Host spot. You will keep the username as my NetId for now.

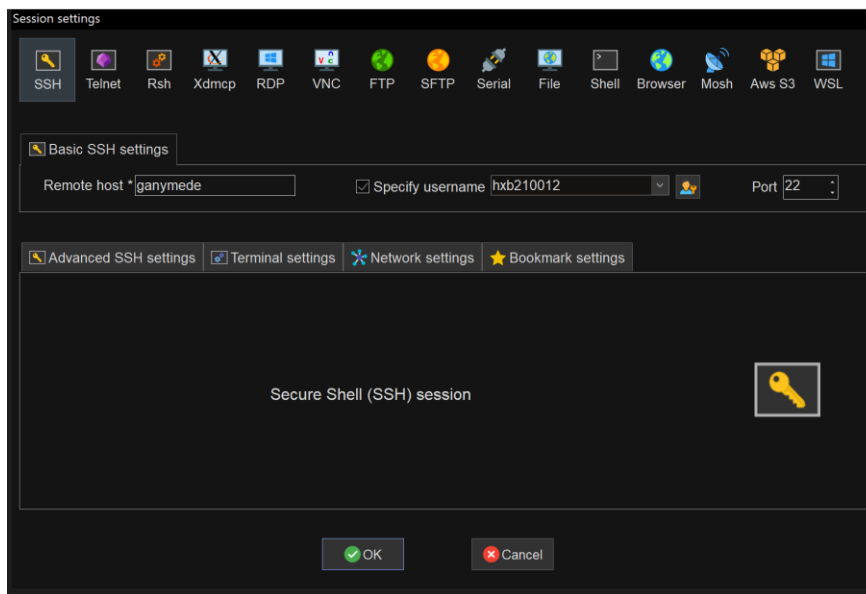
(If you have your own account)

Every time you connect, you will place the name of the compute node allocated to you in the Host prompt as shown. The only other spot you will change is the Host Username to your NetId.

The rest of these instructions are used only if you have a Ganymede account.

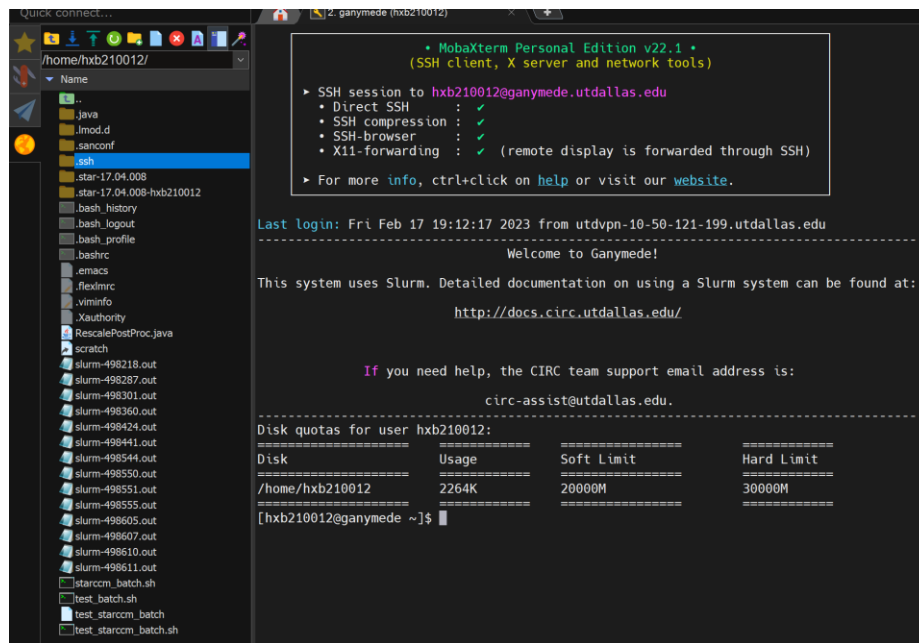
5. Ganymede access through MobaXTerm

Open MobaXTerm, click Session in the top left corner then change to this but with your own NetId and click Ok.



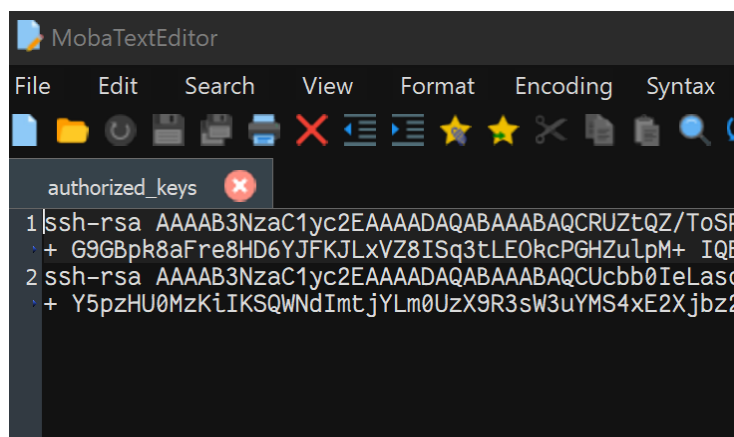
This will now open up a terminal where you enter your password. **Note your password will be hidden while typing, just hit enter when done.** For future use you will just double click the Ganymede session on the left panel.

6. Adding your public key



Your screen will look like this. Click on the .ssh folder and then open the authorized_keys file in MobaTextEditor (*should be default option*).

Copy your whole public key from early into this file on a new line as shown. (*Picture is cut off but the whole key will be copied*)



Save the file by pressing Ctrl+s, and then clicking autosave when the prompt opens.

7. Running a job

Refer to the “Documentation for Starccm” document on box for more details. I will give the easiest copy and paste setup method here though.

Download the batch script file from the box folder.

a)

In the panel on the left of MobaXTerm, double click on scratch. You place your .sim files and batch scripts here.

b)

Open the batch script.

```
1#!/bin/bash
2
3#SBATCH --partition=smallmem
4#SBATCH --nodes=2
5#SBATCH --ntasks=16
6#SBATCH --time=08:00:00
7#SBATCH --mail-type=ALL
8#SBATCH --mail-user=hxb210012
9#SBATCH --output=/home/hxb210012/scratch/testsim.output
10
11NCPUs=16
12
13echo -e "This job allocated $NCPUs cpu(s)\nJob is allocated on node(s): $SLURM_JOB_NODELIST" > /home/hxb210012/scratch/batchlogtest.txt
14
15export CDLMD_LICENSE_FILE=1999@ganymede.utdallas.edu
16cd /petastore/ganymede/home/Software/List-Of-Software/STAR-CCM+/17.04.008
17STAR-CCM+-17.04.008/star/bin/starccm+ -batch step -np $NCPUs /home/hxb210012/scratch/MasterSimulationv1.sim -tokenonly -licpath 1999@10.169.40.22 -proxy ganymede -collab --batchsystem slurm -noexit
18
```

(Refer to this for node sizes if you want more or less resources)

<https://docs.circ.utdallas.edu/user-guide/systems/ganymede.html>

Important:

- “-Partition” is the type of node you want to allocate. I recommend “smallmem” as they are normally available. “normal” nodes have not been working lately, so use those with caution.
 - Nodes=set to number of nodes you want

- Typically keep this number low unless you really need the power as you might have to wait in a queue.
- Smallmem nodes have 8 cores, 24gb of memory each.
- ntasks=set to the total number of cores you are asking for.
 - Ex. 8 cores * 2 nodes = 16 ntasks
 - Place this same number for NCPUs
- Replace everyone you see my NetId with yours
 - Change the .sim file name as well
- If you need access for more than 8 hours you can change the time variable as well.
- Keep everything else the same

If you want to change the type or number of nodes, type “sinfo” into the terminal to see which nodes are currently available. (idle means available)

```
[hxb210012@ganymede ~]$ sinfo
PARTITION AVAIL  TIMELIMIT  NODES  STATE NODELIST
debug      up       2:00:00    2   idle compute-7-6-[0-1]
normal*    up  4-00:00:00    1 drain* compute-7-6-34
normal*    up  4-00:00:00   45 down*  compute-1-8-[0-1,3-19],compute-7-2-[20-23]
normal*    up  4-00:00:00   64 alloc  compute-1-8-2,compute-7-2-[20-23]
smallmem   up  4-00:00:00    4 down*  compute-1-1-[0,14,16,23]
smallmem   up  4-00:00:00    1 alloc  compute-1-1-1
smallmem   up  4-00:00:00   21 idle   compute-1-1-[2-13,15,17-22,24]
96n        up  4-00:00:00    2 down*  compute-2-6-[1,4]
96n        up  4-00:00:00    6 idle   compute-2-6-[0,2-3,5-7]
128s       up  4-00:00:00    7 alloc  compute-2-6-[16-17,19-23]
128s       up  4-00:00:00    1 down   compute-2-6-18
256h       up  4-00:00:00    1 alloc  compute-2-6-10
```

Once you change the setup. Type this to queue the job. You should have access right of way.

```
~]$ sbatch scratch/starccm-job-script.sh
```

Check your allocation by typing:

```
[hxb210012@ganymede ~]$ squeue -u $USER
```

JOBID	PARTITION	NAME	USER	ST	TIME	NODES	NODELIST(REASON)
516326	smallmem	starccm-	hxb21001	R	0:19	2	compute-1-1-[2-3]

The hostname that you type into StarCCM is under nodelist. If you have multiple nodes, use the first number in the brackets.

For example, the host name in Star will be, *compute-1-1-2*.

Wait a few moments before trying to connect assuming your job has already started running.

Alternative methods to connect

Steps:

Red indicates must change before running

Make sure you keep you sim files in /scratch

1. Login to Ganymede
2. `srun -N num_nodes -np num_cores -p partition --pty /bin/bash`
3. `cd /petastore/ganymede/home/SoftWare/List-Of-Software/START-CCM/17.04.008/STAR-CCM+17.04.008/star/bin`
4. `./starccm+ -batch run -np num_cores /home/netid/scratch/filename.sim -licpath 1999@10.169.40.22 -proxy ganymede -collab -noexit --batchsystem slurm`
5. Wait until you see a message similar to starting proxy on Ganymede
6. Type the name of the compute node into the connect to server section on ganymede

Steps new sim:

Red indicates must change before running

Make sure you keep you sim files in /scratch

1. Login to Ganymede
2. `srun -N num_nodes -np num_cores -p partition --pty /bin/bash`
3. `cd /petastore/ganymede/home/SoftWare/List-Of-Software/START-CCM/17.04.008/STAR-CCM+17.04.008/star/bin`

4. `./starccm+ -server -np num_cores -new /home/netid/scratch/filename.sim -licpath
1999@10.169.40.22 -proxy ganymede -collab -noexit -batchsystem slurm`

5. Wait until you see a message similar to starting proxy on Ganymede

Type the name of the compute node into the connect to server section on Ganymede