USING VNC FOR PRE/POST-PROCESSING

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WHAT IS VNC?

- Virtual Network Computing (VNC) is a graphical desktop sharing system that can be used to remotely control another computer.
 On HPC, VNC is particularly useful as an alternative to X
- On HPC, VNC is particularly useful as an alternative to X forwarding to run graphically intensive applications, such as ParaView for post-processing OpenFOAM simulations.
- Furthermore, via VNC it is possible to access the clusters in a desktop environment, which makes file browsing and editing easier. For OpenFOAM users, accessing the clusters via VNC is handy for debugging, pre-processing and post-processing.



HOW TO SET UP VNC ON HPC (1)

Step 1: Start a VNC session

- Use PuTTY to login to the HPC.
- Execute the following command:

vncserver -geometry 1920x1080

The output looks like

New 'gligar0<x>.gligar.os:<y> (vsc4****)' desktop is gligar0<x>.gligar.os:<y>

or

New 'gligar0<x>.gligar.os:<zz> (vsc4****)' desktop is gligar0<x>.gligar.os:<zz>

Remember the <x> and <y>, or <x> and <zz>



HOW TO SET UP VNC ON HPC (2) Step 2: Configure an SSH tunnel

Launch PuTTY and load your previously saved HPC configuration by selecting the session name and clicking Load.







uration					
	Basic options for your PuTTY session				
	Specify the destination you want to connect to				
	Host Name (or IP address) Port				
	login.hpc.ugent.be 22				
e	Connection type: Raw Telnet Rlogin SSH Serial				
1	Load, save or delete a stored session Saved Sessions HPC				
	Default Settings Load				
	Helios LCT IR12SW3A (32c) LCT IR12SW3B (32c) muk Delete				
	Close window on exit Always Never Only on clean exit				
Help	Open Cancel				

HOW TO SET UP VNC ON HPC (2)

Step 2: Configure an SSH tunnel

The VNC server runs on a specific login node (i.e. the $\langle x \rangle$ in the previous step). Make sure you connect to this login node, by changing Host Name.









uration		
		Window Snip
	A	Basic options for your PuTTY session
		Specify the destination you want to connect to
		Host Name (or IP address) Port
		gligar02.ugent.be 22
e		Connection type: Raw Telnet Rlogin SSH Serial
		Load, save or delete a stored session
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		Default Settings Load
		Helios LCT IP12SW3A (32c) Save
		LCT IR12SW3B (32c)
		muk
		Close window on exit
		Always Never Only on clean exit
	-	
	Help	Open Cancel

HOW TO SET UP VNC ON HPC (2)

Step 2: Configure an SSH tunnel

Select Connection → SSH → **Tunnels**

Enter these values:

Source port:

590<y> or **59<zz>**

Destination:

localhost:590<y> or localhost:59<zz>

Click the **Add** button. Your tunnel will now appear in the list.





ategory:	_					
Logging	^	Optio	ns controlling SSH p	ort forwarding		
- I erminal		Port forwarding				
Boll		Local ports accept connections from other hosts				
Features		Remote port	s do the same (SSH	-2 only)		
-Window		Enwarded port		2 011,97		
Appearance		Folwarded pole	».	Remove		
- Behaviour		1.5915 loca	alhost 5915			
- Translation		20010 1000				
- Selection						
Colours		Add new forwarded port				
-Connection	-	Courses	5015			
Data	=	Source port	5915	Add		
Telnet		Destination	localhost5915			
		Qlassl	Demote	Dunamia		
⊟-SSH		Uccal	Remote	Opnamic		
Kex		Auto	© IPv4	© IPv6		
🖶 Auth						
- TTY						
Y11						
- Tunnels						
- Bugs						
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HOW TO SET UP VNC ON HPC (2) Step 2: Configure an SSH tunnel

Save the session (optionally, under a different name)

Click **Open** to start the SSH terminal. *The* tunnel will now be active as long as the terminal window stays running.







	 Basic options for your PuTTY session 					
		Specify the destination you want to connect to				
		Host Name (or IP address)	Port			
		gligar02.ugent.be	22			
		Connection type: Raw Telnet Rlogin SSH	Serial			
		Load, save or delete a stored session				
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HOW TO SET UP VNC ON HPC (2)

Step 2: Configure an SSH tunnel

On UNIX systems, connect to HPC via the terminal and use the '-L' option to create the SSH tunnel



ssh -X vsc4***@gligar0<x>.ugent.be -L 5915:localhost:5915







HOW TO SET UP VNC ON HPC (3)

Step 3: Start VNC client

Download and install VNC Viewer (<u>www.realvnc.com</u>)

When VNC Viewer starts, enter

VNC Server:

localhost:590<x> or localhost:59<zz>

Click **Connect**

When prompted for a password, use the password you set in the very first step. When prompted for empty or default panel, choose default.





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VNC® Vie	wer	VS
VNC Server:	localhost:5915	•
Encryption:	Let VNC Server choose	•
About	Options	Connect

REMARKS

- It is important to remember that VNC sessions are permanent. They survive network problems and (unintended) connection loss. This means that you can logout and go home without a problem. This also means that you don't have to start vncserver each time you want to use it. You can find the current available session in the log-file in the *.vnc* folder of your \$VSC_HOME directory.
- To stop the VNC-server, execute the following command

vncserver -kill gligar<x>.gligar.os:<y>

The size of the VNC window can be adjusted while the vncserver is running. To enable this, add a file named *config* in the *.vnc* folder with the following contents:

-randr 800x600,1920x1080,1920x1200,<other size>

To select a different window size, execute the following command in a terminal inside your VNC session

xrandr -s 1920x1200

To list all running vnc sessions, execute



vncserver -list

SOME ADDITIONAL TIPS/SETTINGS

- Open a terminal window: right click 'Open terminal here'. Edit \rightarrow Preferences \rightarrow Compatibility \rightarrow
 - Backspace key generates: ASCII DEL
- Open a file brower: right click 'Applications \rightarrow File manager'
- You can personalize your VNC Desktop with useful shortcuts etc.



OPENFOAM IN A VNC SESSION

- In VNC viewer, open a terminal and submit an interactive job using qsub -X -I -W x=FLAGS:ADVRES:openfoam.18 script.sh
- Load all necessary modules

module load OpenFOAM/4.1-intel-2017a source \$FOAM BASH export GALLIUM DRIVER=swr

- Make directory \$VSC SCRATCH NODE/\$USER.
- Copy the tutorial files from /apps/gent/tutorials/OpenFOAM/OF-VNCtutorial to \$VSC SCRATCH NODE/\$USER.
- Run it by executing ./Allrun
- Copy files to \$VSC DATA to post-process





PRE/POST-PROCESSING USING VNC

Run paraFoam Evaluate the mesh you created and plot streamlines











WHAT DID WE LEARN TODAY?



Virtual Network Computing (VNC) is a graphical desktop sharing system that can be used to remotely control another computer. Using VNC, the HPC clusters can be accessed in a desktop environment.



It is easy to setup a VNC session on HPC. VNC sessions are permanent, until you kill them.



Using VNC to run graphical applications (such as ParaView) is much faster than using the X Window system. This is a major benefit during pre-processing (e.g. to study the mesh you created with snappyHexMesh) and post-processing.



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