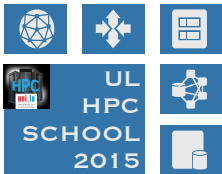


Extreme Computing Studio (XCS) Portal

Interactive & graphical sessions



Valentin Plugaru

UL HPC Management Team,
Parallel Computing and Optimization Group (PCOG),
University of Luxembourg (UL), Luxembourg

Summary

1 Graphical sessions on UL HPC

- Two connection methods
- X11 forwarding

2 The XCS Portal

- Overview
- Prerequisites
- Applications integrated in XCS
- A look at XCS



Summary

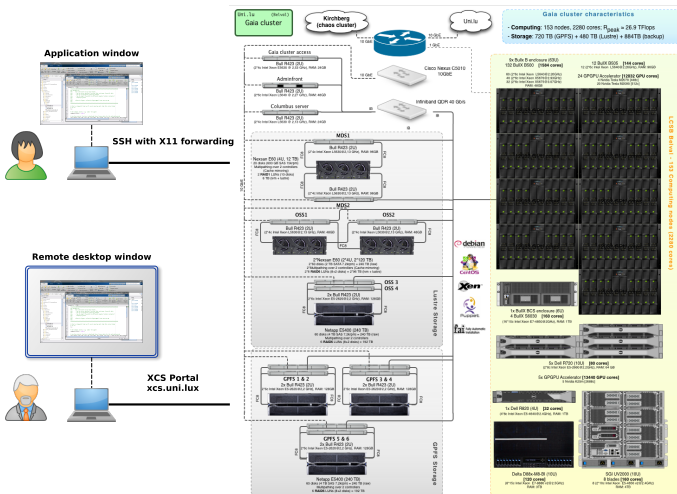
1 Graphical sessions on UL HPC

- Two connection methods
- X11 forwarding

2 The XCS Portal

- Overview
- Prerequisites
- Applications integrated in XCS
- A look at XCS

Using graphical interfaces on UL HPC





X11 forwarding

- On Windows
 - ↪ **Putty**: Category → Connection → SSH → X11 → Enable X11 forwarding (*check*)
 - ↪ **VcXsrv**: Windows X-server, to render locally the remote application

X11 forwarding

- On Windows
 - ↪ **Putty**: Category → Connection → SSH → X11 → Enable X11 forwarding (*check*)
 - ↪ **VcXsrv**: Windows X-server, to render locally the remote application
- On OS X
 - ↪ **ssh** (in Terminal): use `ssh -X ...`
 - ↪ **XQuartz**: X Window System libraries and applications, required on some OS X versions

X11 forwarding

- On Windows
 - ↪ **Putty**: Category → Connection → SSH → X11 → Enable X11 forwarding (*check*)
 - ↪ **VcXsrv**: Windows X-server, to render locally the remote application
- On OS X
 - ↪ **ssh** (in Terminal): use `ssh -X ...`
 - ↪ **XQuartz**: X Window System libraries and applications, required on some OS X versions
- On Linux
 - ↪ **ssh** (in a console): simply use `ssh -X ...`

X11 forwarding

- On Windows
 - ↪ **Putty**: Category → Connection → SSH → X11 → Enable X11 forwarding (*check*)
 - ↪ **VcXsrv**: Windows X-server, to render locally the remote application
- On OS X
 - ↪ **ssh** (in Terminal): use `ssh -X ...`
 - ↪ **XQuartz**: X Window System libraries and applications, required on some OS X versions
- On Linux
 - ↪ **ssh** (in a console): simply use `ssh -X ...`

Downsides

- Network connection interrupted → session crashes
- Rendering **slow** (no 3D acceleration) and **network intensive**



Summary

1 Graphical sessions on UL HPC

Two connection methods

X11 forwarding

2 The XCS Portal

Overview

Prerequisites

Applications integrated in XCS

A look at XCS



Overview

- Web portal dedicated for visualisation sessions: xcs.uni.lux
 - ↪ available from inside the UL network and externally through UL VPN
- Portal features:
 - ↪ (limited) **data management** capabilities (browse/upload/download)
 - ↪ **submission of visualisation sessions** for pre-configured applications
 - ↪ **accessing & suspending** visualisation sessions
 - ↪ **sharing sessions** with other users

Overview

- Web portal dedicated for visualisation sessions: xcs.uni.lux
 - ↪ available from inside the UL network and externally through UL VPN
- Portal features:
 - ↪ (limited) **data management** capabilities (browse/upload/download)
 - ↪ **submission of visualisation sessions** for pre-configured applications
 - ↪ **accessing & suspending** visualisation sessions
 - ↪ **sharing sessions** with other users

Advantages

- Network connection interrupted → session survives
- Rendering on GPU nodes – **fast** (with 3D acceleration)
- Fluid on slow networks (intelligent compression)



Prerequisites

- 1 UL HPC account, you need your **password** to login on xcs.uni.lux
- 2 your account to be in the XCS group (for now, added on request)
- 3 **TurboVNC**: Virtual Network Computing application tuned for maximum performance and compression with 3D applications
- 4 to use a specific application through XCS, its profile needs to be defined by the HPC team



Current applications integrated in XCS

- MATLAB

- ↪ High-level technical computing language and interactive environment for algorithm development, data visualization, data analysis, and numerical computation.

- RStudio

- ↪ IDE for R, a programming language for statistical computing and graphics.



Current applications integrated in XCS

- SAS (Statistical Analysis System)
 - Advanced analytics, business intelligence, data management, and predictive analytics software.
- STATA
 - Complete, integrated statistical software package for data analysis, data management, and graphics.



Current applications integrated in XCS

- ABAQUS

- Finite Element Analysis software for modeling, visualization and best-in-class implicit and explicit dynamics FEA.



Current applications integrated in XCS

- VMD

- ↪ Molecular visualization program for displaying, animating, and analyzing large biomolecular systems using 3-D graphics and built-in scripting.

- ParaView

- ↪ Data analysis and visualization application.

Current applications integrated in XCS

- **MATLAB**

- ↪ High-level technical computing language and interactive environment for algorithm development, data visualization, data analysis, and numerical computation.

- **RStudio**

- ↪ IDE for R, a programming language for statistical computing and graphics.

- **SAS (Statistical Analysis System)**

- ↪ Advanced analytics, business intelligence, data management, and predictive analytics software.

- **STATA**

- ↪ Complete, integrated statistical software package for data analysis, data management, and graphics.

- **ABAQUS**

- ↪ Finite Element Analysis software for modeling, visualization and best-in-class implicit and explicit dynamics FEA.

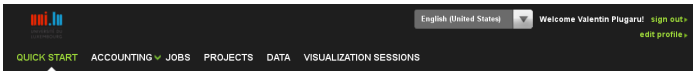
- **VMD**


- ↪ Molecular visualization program for displaying, animating, and analyzing large biomolecular systems using 3-D graphics and built-in scripting.

- **ParaView**

- ↪ Data analysis and visualization application.

XCS Intro page




English (United States) ▼
Welcome Valentin Plugaru! [sign out](#) [edit profile](#)

[QUICK START](#)
[ACCOUNTING ▼](#)
[JOBS](#)
[PROJECTS](#)
[DATA](#)
[VISUALIZATION SESSIONS](#)

Applications shortcuts

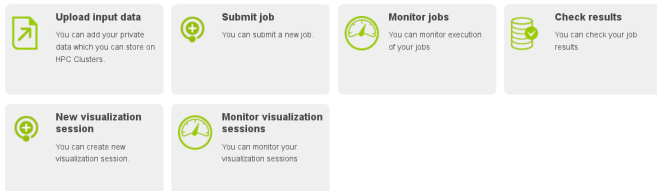















MATLAB ABAQUS VMD RStudio STATA



 <p>Upload input data You can add your private data which you can store on HPC Clusters.</p>	 <p>Submit job You can submit a new job.</p>	 <p>Monitor jobs You can monitor execution of your jobs</p>	 <p>Check results You can check your job results</p>
 <p>New visualization session You can create new visualization session.</p>	 <p>Monitor visualization sessions You can monitor your visualization sessions</p>		








Launching a graphical session



English (United States)
Welcome Valentin Plugaru!
[sign out](#)
[edit profile](#)

[QUICK START](#)
[ACCOUNTING](#)
[JOBS](#)
[PROJECTS](#)
[DATA](#)
[VISUALIZATION SESSIONS](#)

Available applications

 Abaqus
 MATLAB
 ParaView
 RStudio
 SAS
 STATA
 VMD

Select base settings

Available projects

XCS

The name of your job (optional)

Fill in the job submission form

Version

0.98.1102-R-3.0.2-ictce-5.3.0

Number of cores

2

Walltime in hhh:mm:ss format, e.g.
2:00:00 for 2 hours job


1:0:0

Save parameters as default

☐ Save input parameters as default for this project

Cancel
Submit

Checking job status



[English \(United States\)](#)

Welcome Valentin Plugaru! [sign out](#)
[edit profile](#)

[QUICK START](#)
[ACCOUNTING](#)
[JOBS](#)
[PROJECTS](#)
[DATA](#)
[VISUALIZATION SESSIONS](#)


List of visualization sessions

[Filter applied \(adjust\)](#)
[Owner: vplugaru](#)
[Adjust columns](#)

Showing 1 .. 20 of 86 (20 rows per page)
 << < 1 2 3 4 5 > >>

ID	Name	Application	Owner	Status	Created	Updated	Start date	
3404860	Job150622122028	VMD	vplugaru	Active	2015-06-22 12:20:28	2015-06-22 12:41:50	2015-06-22 12:20:59	
3275288	Job150520074631	STATA	vplugaru	Done	2015-05-20 07:46:32	2015-05-20 07:46:31	2015-05-20 07:46:39	
3274401	StataTest	STATA	vplugaru	Done	2015-05-18 14:23:50	2015-05-18 14:23:53	2015-05-18 14:24:05	
3270930	Job150513150758	MATLAB	vplugaru	Done	2015-05-13 15:07:59	2015-05-13 15:07:58	2015-05-13 15:08:21	
3198477	stata13test	STATA	vplugaru	Done	2015-03-25 16:35:21	2015-03-25 16:35:22	2015-03-25 18:11:13	
3198166	stata13test	STATA	vplugaru	Done	2015-03-25 09:13:13	2015-03-25 09:13:14	2015-03-25 12:14:36	
3196739	Job150324151600	STATA	vplugaru	Done	2015-03-24 15:16:01	2015-03-24 15:16:01	2015-03-24 18:51:45	
3196738	Job150324151437	STATA	vplugaru	Terminated	2015-03-24 15:14:38	2015-03-24 15:15:45	N/A	

Connecting to a running session



English (United States)
Welcome Valentin Plugaru! [sign out](#)
[edit profile](#)

[QUICK START](#)
[ACCOUNTING](#)
[JOBS](#)
[PROJECTS](#)
[DATA](#)
[VISUALIZATION SESSIONS](#)

List of visualization sessions

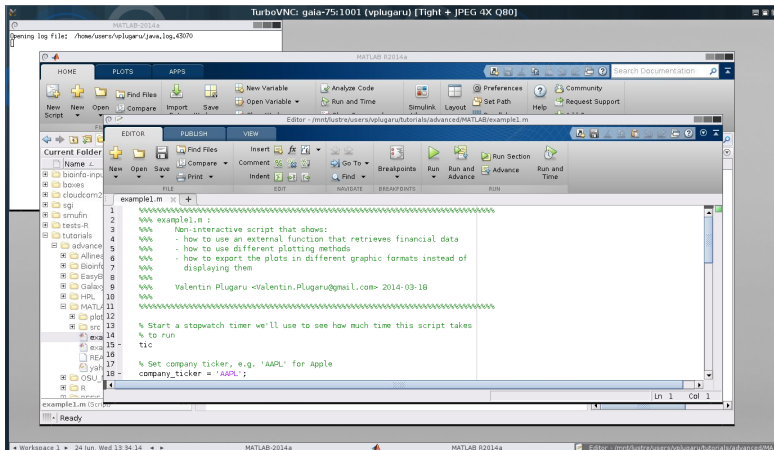
[Filter applied \(adjust\)](#)
Owner: vplugaru
Adjust columns

Showing 1 .. 20 of 86 (20 rows per page)
<< < 1 2 3 4 5 > >>

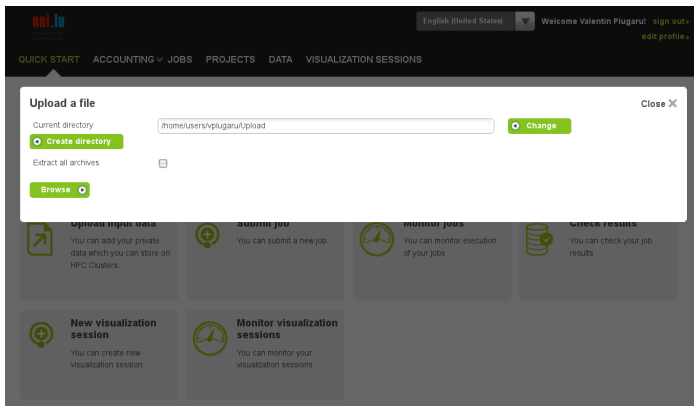
ID	Name	Application	Owner	Status	Created	Updated	Start date	
3404860	Job150622122028	VMD	vplugaru	Active	2015-06-22 12:20:28	2015-06-22 15:07:59	2015-06-22 15:08:21	⚙
3275288	Job150520074631	STATA	vplugaru	Done	2015-05-20 07:46:32	2015-06-22 15:08:21	2015-06-22 15:08:21	⚙
3274401	StataTest	STATA	vplugaru	Done	2015-05-18 14:23:50	2015-06-22 15:08:21	2015-06-22 15:08:21	⚙
3270930	Job150513150758	MATLAB	vplugaru	Done	2015-05-13 15:07:59	2015-06-22 15:08:21	2015-06-22 15:08:21	⚙
3198477	stata13test	STATA	vplugaru	Done	2015-03-25 16:35:21	2015-03-25 16:35:22	2015-03-25 18:11:13	⚙
3198166	stata13test	STATA	vplugaru	Done	2015-03-25 09:13:13	2015-03-25 09:13:14	2015-03-25 12:14:36	⚙
3196739	Job150324151600	STATA	vplugaru	Done	2015-03-24 15:16:01	2015-03-24 15:16:01	2015-03-24 18:51:45	⚙
3196738	Job150324151437	STATA	vplugaru	Terminated	2015-03-24 15:14:38	2015-03-24 15:15:45	N/A	⚙

Open in new window
View in TurboVNC viewer
Resubmit
Kill session
Share
View details

An active remote desktop session



Uploading data



The screenshot shows the 'Upload a file' dialog box in the XCS Portal. The dialog has a title bar with 'Upload a file' and a 'Close X' button. Inside, there is a 'Current directory' field showing '/home/users/vplugaru/Upload' and a 'Change' button. Below this is a 'Create directory' button with a plus icon. There is also a checkbox for 'Extract all archives' which is currently unchecked. At the bottom of the dialog is a 'Browse' button with a magnifying glass icon. The background of the portal is visible, showing a navigation bar with 'QUICK START', 'ACCOUNTING', 'JOBS', 'PROJECTS', 'DATA', and 'VISUALIZATION SESSIONS'. Below the navigation bar, there are several cards for 'Upload input data', 'Submit job', 'Monitor jobs', 'Check results', 'New visualization session', and 'Monitor visualization sessions'.

Questions?

Valentin Plugaru

Mail: valentin.plugin@uni.lu

Office E-005

Campus Kirchberg

6, rue Coudenhove-Kalergi

L-1359 Luxembourg



- 1 Graphical sessions on UL HPC
 - Two connection methods
 - X11 forwarding

- 2 The XCS Portal
 - Overview
 - Prerequisites
 - Applications integrated in XCS
 - A look at XCS