JÜLICH
FORSCHUNGSZENTRUM

Pre-/Postprocessing and Remote Visualization

May 19, 2015

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Our Offering

- Special hard-/software infrastructure for
  - preprocessing, e.g. data conversion for simulation input data
  - postprocessing, e.g. data analysis with mathematical software of simulation output
  - remote data visualization

- Now: Visualization Cluster JUVIS
- Later: Partition of JURECA (Visualization Nodes)

JUVIS: Technical Data

- One login node (zam1164.zam.kfa-juelich.de, alias juvis.zam.kfa-juelich.de)
- 16 nodes for data processing and rendering:
  - 2 quad core 3.00 GHz Intel Xeon, 16 GB main memory
  - 8 nodes with Nvidia Quadro FX 4800 GPU
  - juvisn01.zam.kfa-juelich.de … juvisn16.zam.kfa-juelich.de
- 10 Gbit/s Myrinet internal network for MPI
- One fileserver with 7.5 TB raid system
- Connected to GPFS of JUST (mounted on /gpfs, e.g. /gpfs/homea, …)

- See http://www.fz-juelich.de/ias/jsc/EN/Expertise/Support/Visualization/ScientificVisualization/JUVIS/_node.html

JURECA Visualization-Nodes: Technical Data

- 12 Visualization-Nodes total: 10 soon, 2 later
- 2x Intel Xeon CPUs (Haswell), 2.5 GHz
- 12 cores/CPU, 24 cores/node, 2 way SMT/Hyper Threading, 48 logical cores
- 2 GPUs Nvidia Tesla K40 per node, 12 GB RAM on each card
- soon: 10 nodes with 512 GB RAM
- later: 2 nodes with 1024 GB RAM (when RAM modules are available)

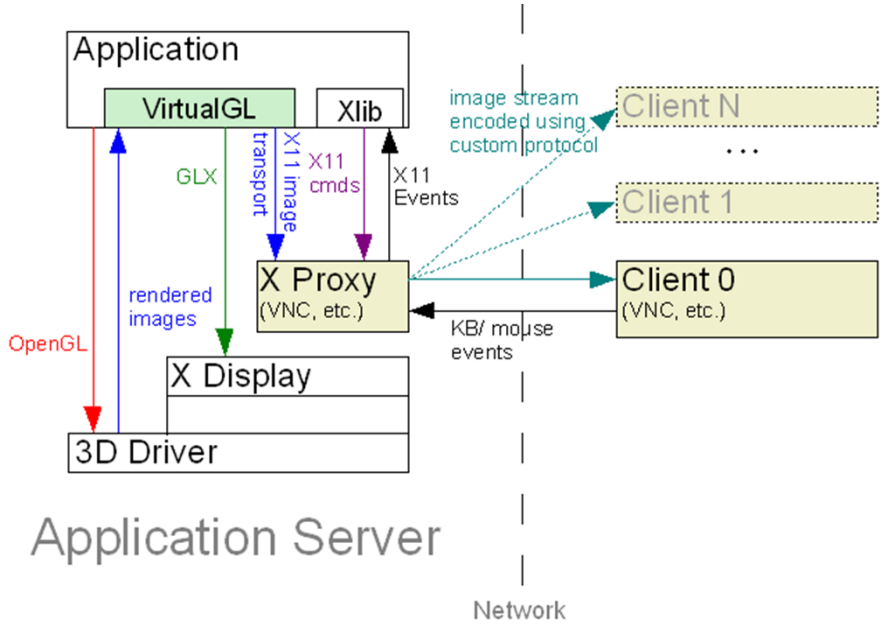
- connection to vis-nodes via login-nodes and ssh tunnels (for security reasons)

Installed Software on JUVIS (so far)

- ParaView
- Visit
- Interactive Data Language IDL
- PyMol Molecular Viewer
- Visual Molecular Dynamics VMD
- Vapor
- Octave (similar to Matlab)
- Libs for NetCDF (cdo, nco), HDF5
- GNU and Intel compiler

Remote Rendering on JUVIS with VNC/VirtualGL

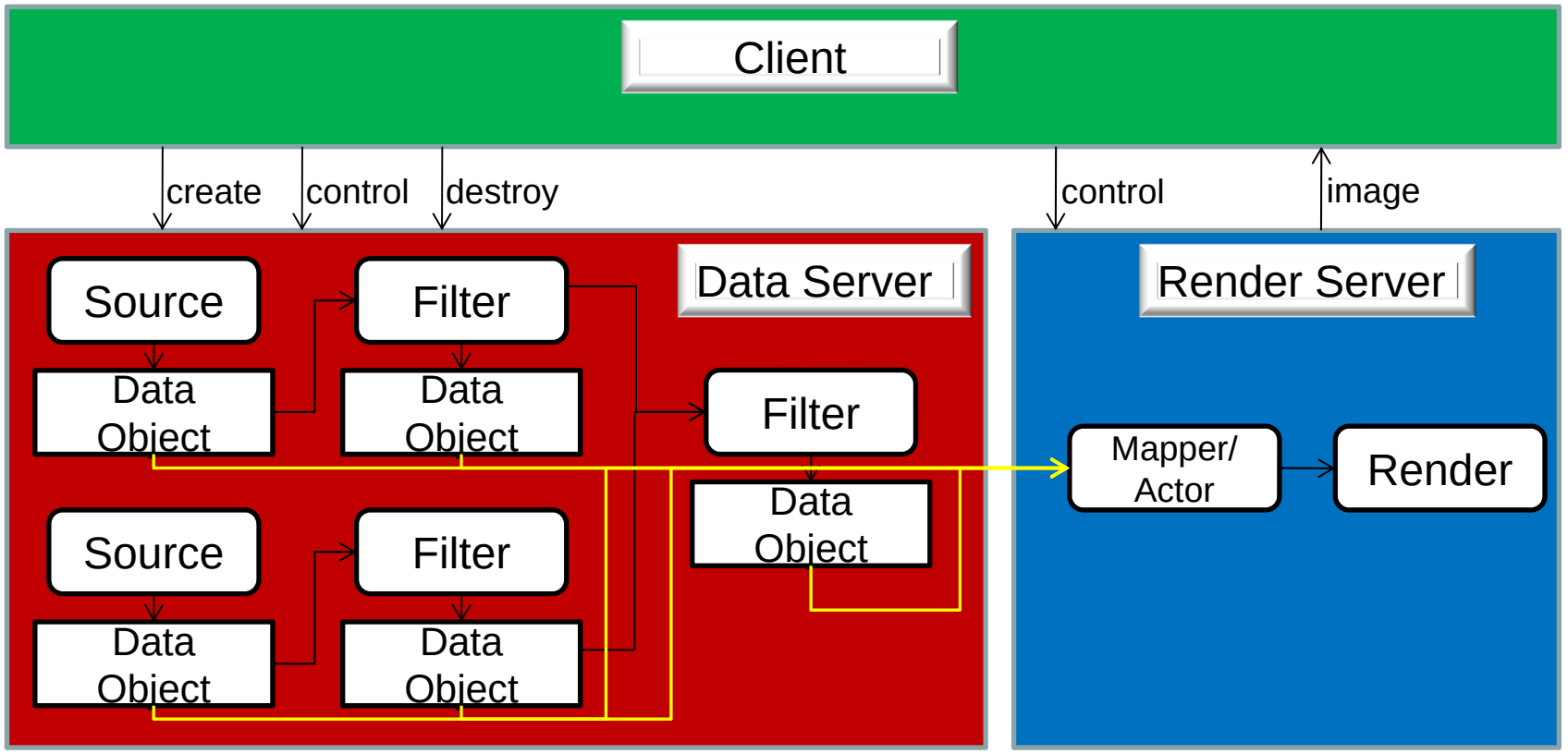
- Remote rendering with VNC (virtual network client) together with VirtualGL
- VNC/VirtualGL is a good solution for many common OpenGL applications, e.g. IDL, PyMol



Parallel ParaView

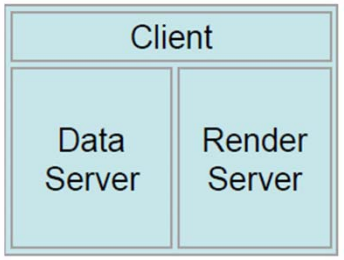
- ParaView has three main components:
  - Client
  - Data Server
  - Render Server

Server

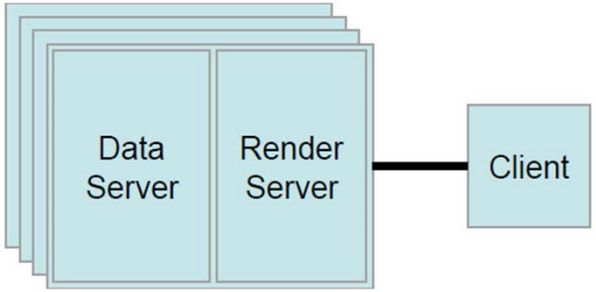


Parallel ParaView (continued)

- ParaView can be started in non parallel (standalone) mode:
  - All three components in one single process
    - *command: paraview*



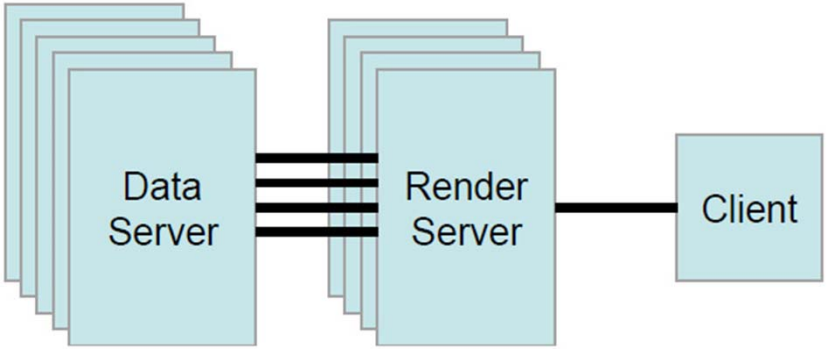
- ParaView can be started in two parallel modes:
  1. Local client and parallel server (data server and render server in one process) → **used on JUVIS!**
     - command on local client: *paraview*
     - command on remote cluster:
       mpiexec –x –n <num_processes> pvserver



Parallel Paraview (continued)

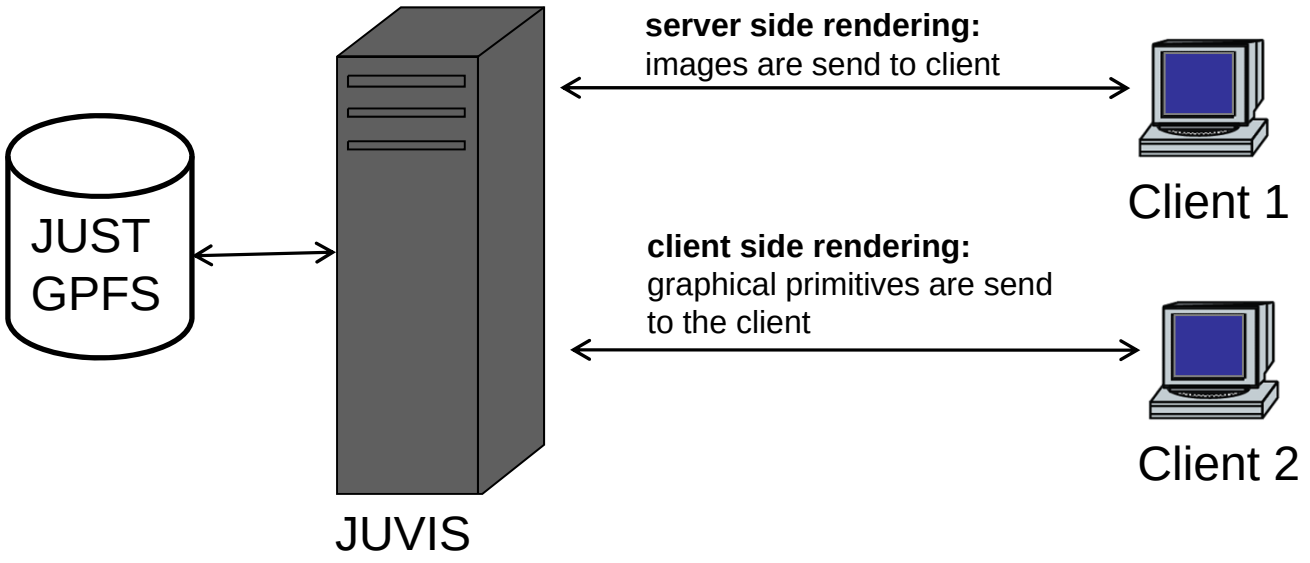
2. Local client and parallel data and render server (data server and render server may run on different machines)
   - command on local client: *paraview*
   - command on data processing server:
     mpiexec –n <num_dataserver> pvdataserver –m=machines.pvx
   - command on render server:
     mpiexec –n <num_renderserver> pvrenderserver –m=machines.pvx

   (num_dataserver >= num_renderserver)



Remote Rendering Modes

- Parallel ParaView server (data and render server) on JUVIS, ParaView client on local workstation
- **Server side rendering** and **client side rendering** possible



How to get an Account on JUVIS

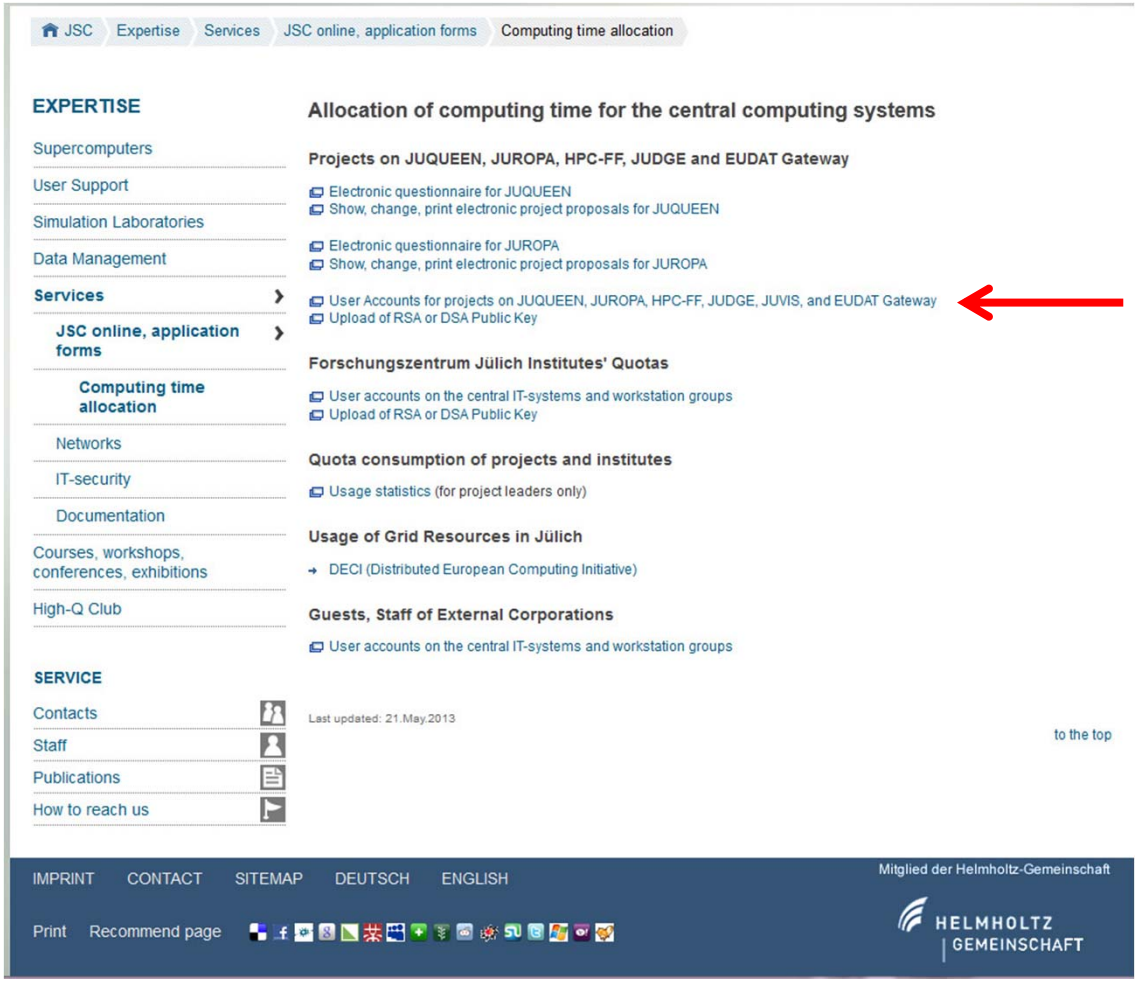
Internet:

Enter
www.fzj.de/jsc

and click on

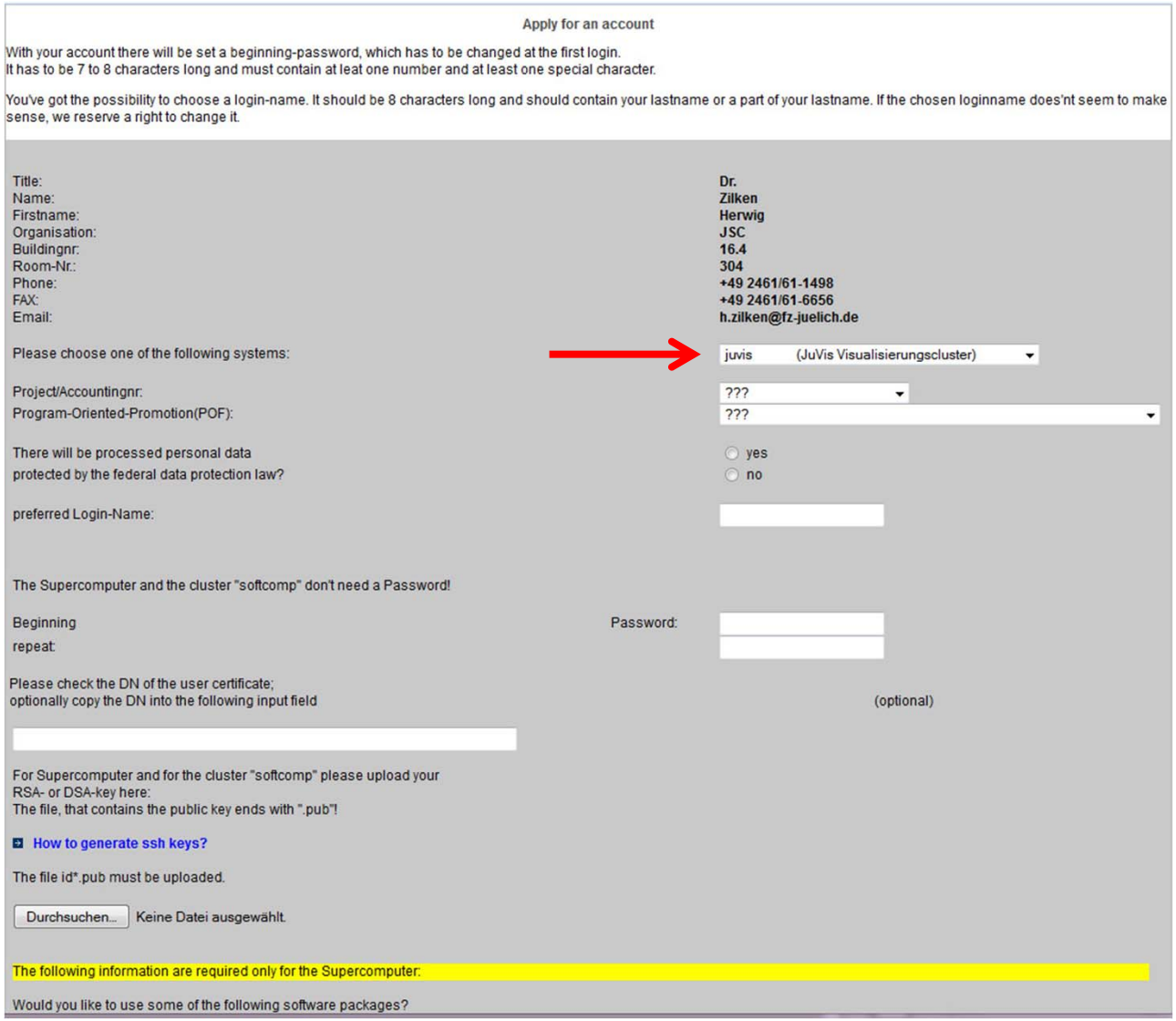
“JSC online, application forms” and on “Computing time allocation”

there, select the correct link for user accounts



How to get an Account on JUVIS

Later, when you apply for an account, select JUVIS as system



Apply for an account

With your account there will be set a beginning-password, which has to be changed at the first login.
It has to be 7 to 8 characters long and must contain at leat one number and at least one special character.

You've got the possibility to choose a login-name. It should be 8 characters long and should contain your lastname or a part of your lastname. If the chosen loginname does'nt seem to make sense, we reserve a right to change it.

Title: Dr.
Name: Zilken
Firstname: Herwig
Organisation: JSC
Buildingnr: 16.4
Room-Nr.: 304
Phone: +49 2461/61-1498
FAX: +49 2461/61-6656
Email: h.zilken@fz-juelich.de

Please choose one of the following systems: juvis (JuVis Visualisierungscluster)

Project/Accountingnr: ???
Program-Oriented-Promotion(POF): ???

There will be processed personal data protected by the federal data protection law? yes no

preferred Login-Name:

The Supercomputer and the cluster "softcomp" don't need a Password!

Beginning repeat: Password:

Please check the DN of the user certificate;
optionally copy the DN into the following input field (optional)

For Supercomputer and for the cluster "softcomp" please upload your RSA- or DSA-key here:
The file, that contains the public key ends with ".pub"!

How to generate ssh keys?

The file id*.pub must be uploaded.

Durchsuchen... Keine Datei ausgewählt.

The following information are required only for the Supercomputer:

Would you like to use some of the following software packages?