Pre-/Postprocessing and Visualization Cluster JUVIS

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Pre-/Postprocessing and Visualization Cluster JUVIS

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

Some 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

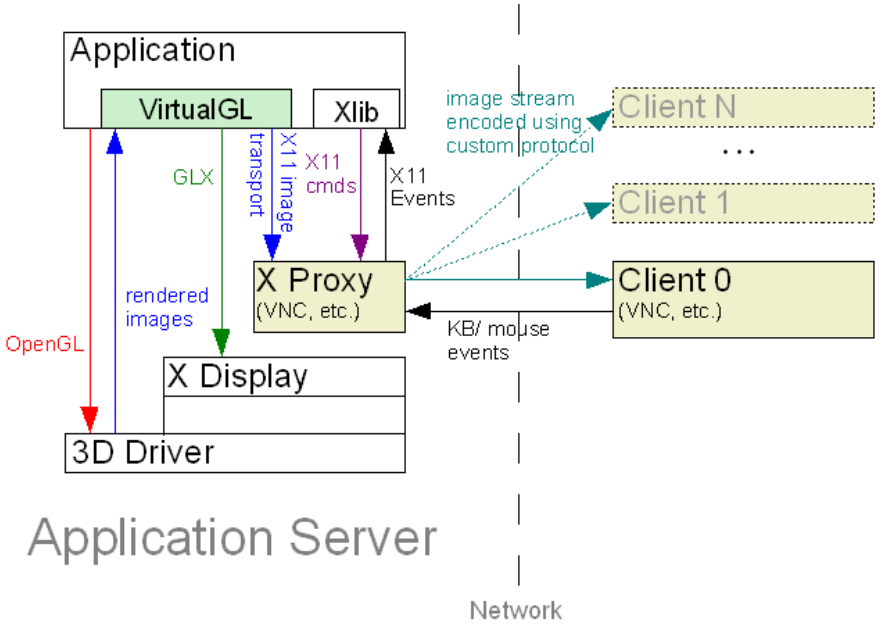
Installed Software (so far)

- ParaView
- Visit (new installation, has to be tested)
- Interactive Data Language IDL
- PyMol Molecular Viewer
- Visual Molecular Dynamics VMD
- Octave (similar to Matlab)
- Libs for NetCDF, HDF5

- More on demand …..

Remote Rendering on JUVIS with VNC/VirtualGL

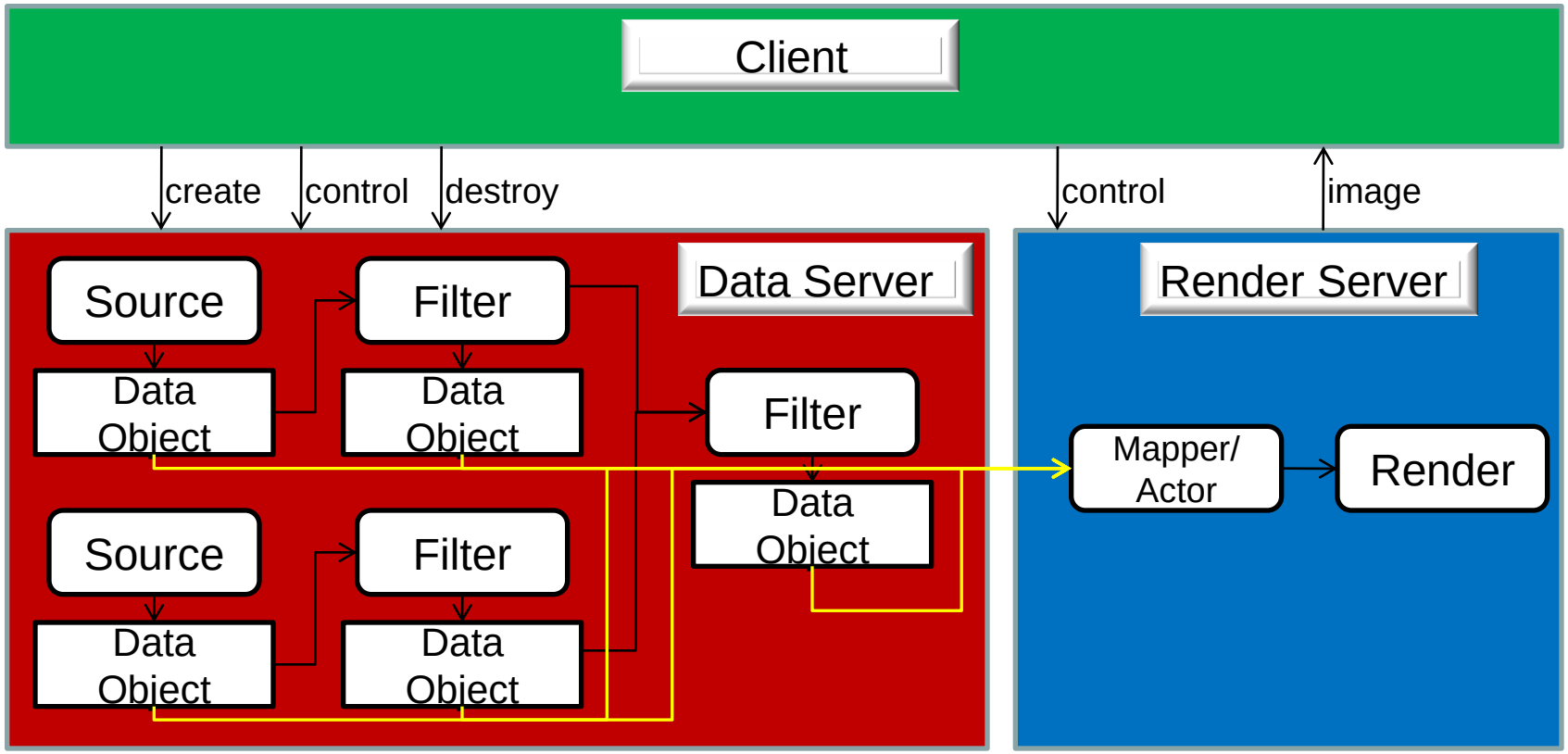
- Remote rendering with VNC (virtual network client) together with VirtualGL
- VNC/VirtualGL is a good solution for many common OpenGL applications, e.g. IDL, PyMol



Parallel ParaView

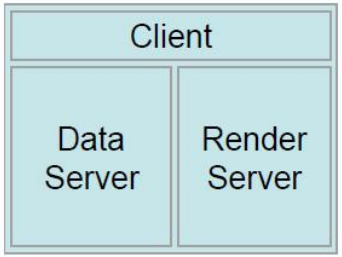
- ParaView has three main components:
  - Client
  - Data Server
  - Render Server

Server



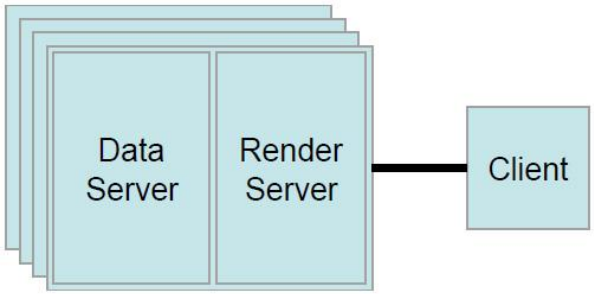
Parallel ParaView (continued)

- 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:

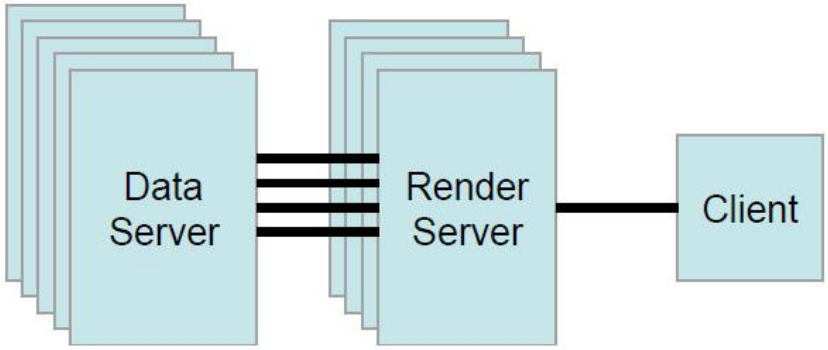
       mpiexec –n <num_processes> pvserver



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