

Jožef Stefan Institute

SLING - Slovenian Supercomputing Network

Site Report for NDGF all Hands 2017

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but also

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prof. dr. Borut P. Kerševan, Uni Lj, IJS

Dejan Lesjak, IJS

Peter Kacin, Arnes

Matej Žerovnik, Arnes



SLING

a small national grid initiative



SLING

- SiGNET at Jožef Stefan Institute EGEE, since 2004
- Arnes and Jožef Stefan Institute EGI, since 2010
- full EGI membership, no EGI Edge
- 3 years of ELIXIR collaboration
- becoming a consortium:
PRACE, EUDAT
- Tasks: core services, integration, site support, user support etc.

SLING Consortium



Univerza v Ljubljani

Fakulteta za matematiko in fiziko

XENYA



Univerza v Mariboru



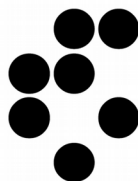
Univerza v Ljubljani

Fakulteta za gradbeništvo
in geodezijo

ARCOTUR



arnes



UNIVERZA V NOVI GORICI
SCIENTIA 1995 VINCES



ComTrade



Univerza v Ljubljani
Fakulteta za strojništvo



Univerza v Ljubljani
Medicinska fakulteta



CLARIN.SI



Bringing everyone in ...

Collaboration



CERN, Belle2, Pierre Auger ...



SLING

Current Centres

Arctur
Arnes
atos@ijs
CIPKeBiP
NSC@ijs
SIGNET@ijs
UNG
krn@ijs

ARSO
CI
FE

- 7 centres
- over 22.000 cores
- over 4PB storage
- over 6 million jobs/y
- HPC, GPGPU, VM

Arnes: demo, testing, common

- national VOs
(generic, domain)
ATLAS
- registered with EGI
- 2 locations
- Nordugrid ARC
- SLURM (no CreamCE)
- LHCOne, GÉANT

CLUSTER DATA SHEET

4500 cores altogether:

majority HPC-enabled

3 CUDA GPGPU units

~6T RAM

„New“ space

196 m², in-row cooling (18/77 racks)



SiGNET: HPC/Atlas at Jožef Stefan

- since 2004
- ATLAS, Belle2
- ARC, ~~gLite~~ with SLURM
- LHCone AT-NL-DK
GÉANT(both 10 Gbit/s)
- 3 x dCache servers:
132 GB mem, 10 Gb/s
2 x 60 x 6 TB
- 3 x cache NFS à 50 TB

CLUSTER DATA SHEET

- 5280 cores
- 64-core AMD Opteron
256 GB
1 TB disk
1 Gb/s
- ~~schrooted RTEs~~ →
Singularity HPC
over recent Gentoo

SiGNET: more

- additional dCache:
 - 2 servers à 400 TB
 - Belle: independent dCache 2 x 200 TB (mostly waiting for the move)
- services:
 - 1 squid for frontier + CVMFS
 - 1 production ARC-CE
 - 3 cache servers also data transfer servers for ARC
 - all supportin serfers in VMs (cream-CE, site bdii, apel, test ARC-CE)



LHCone and GÉANT

- LHCone: 30 Gbit/s (20 IJS)
- Géant: 40 Gbit/s

NSC@ijs: institute / common

- same VOs + IJS
- not registered with EGI
- under full load ...
- lots of spare room
- Nordugrid ARC
- SLURM
- LHCOne, GÉANT

CLUSTER DATA SHEET

1980 cores altogether:

all HPC-enabled

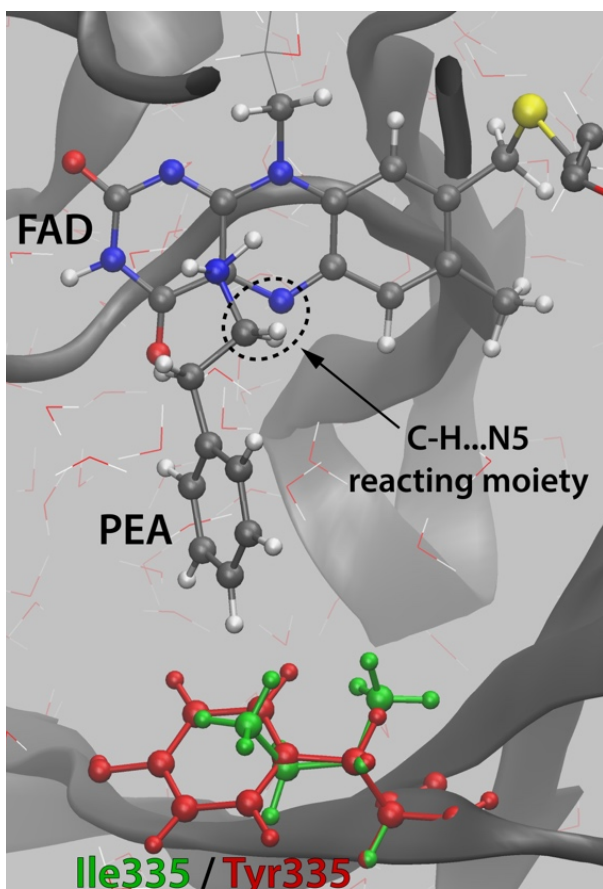
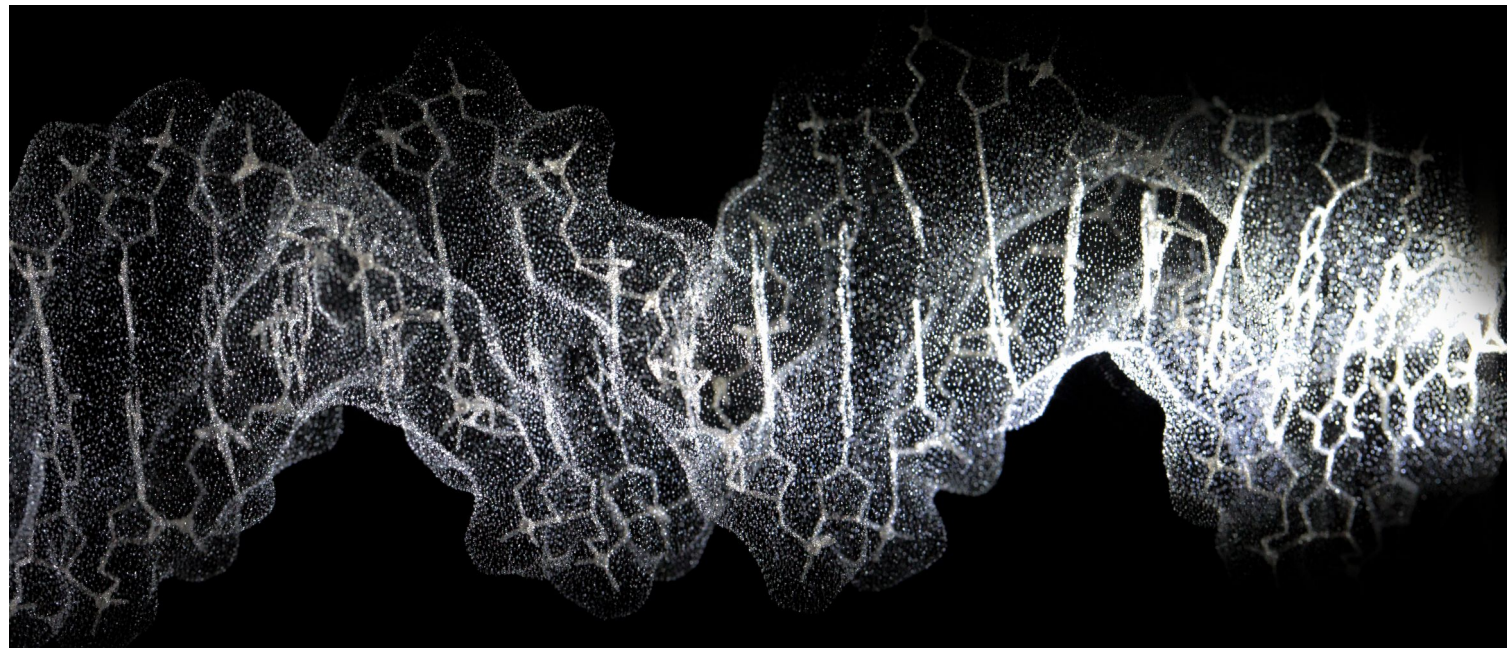
16 CUDA GPGPU units

Nvidia K40

~1T RAM

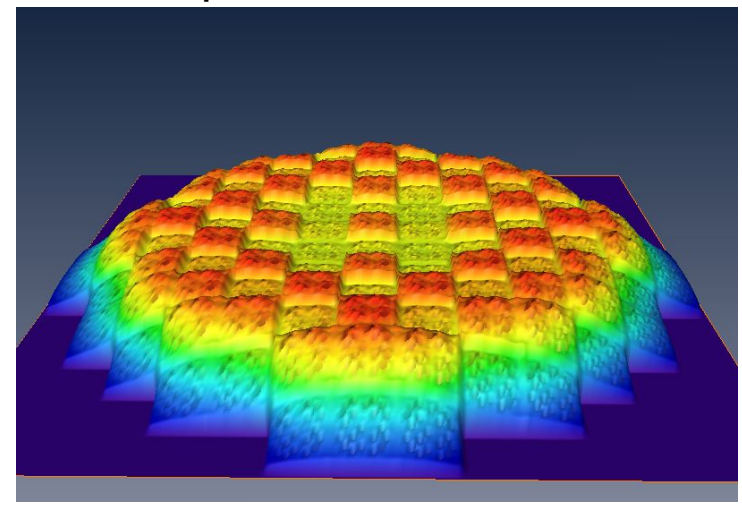
Other

progeria



Enzyme Activation

Reactor process simulations



Supported Users 2015

- high energy physics
- computer science
- astrophysics
- computational chemistry
- mathematics
- bioinformatics, genetics
- material science
- language technologies
- multimedia



Supported Users 2017

- Machine Learning, Deep Learning and MonteCarlo over many fields, **often on GPGU**
- computer science (with above)
- genetics (Java → R), bioinformatics,
- computational chemistry (also GPGPU)
- high energy physics ,astrophysics
- mathematics, language technologies
- material science, ~~multimedia~~



Main Differences

- University Curriculum (CS) involvement
- Critical usage (genetics)
- More complex software deployments
- Ministry interest and support



Modus Operandi @ SLING

- ARC Client used extensively
scripts + ARC Runner etc
- Many single users with
complicated setups: GPGU etc
- Some groups with critical
tasks: medical, research,
industrial



Technical Plans / Wishes

- Joint national Puppet
- RTEs+Singularity
national CVMS (also user RW pools)
- Joint Monitoring
Icinga + Grafana
- Advanced Web Job Status Tool
GridMonitor++
- ARC Client improvements



RTEs + Singularity

portable images & HW support,
repositories, Docker compatibility,
GPGU integration ...

More in the following days



Joint Monitoring Web Status

- Currently separate similar solutions – and no access for users
- A national (or wider) solution wanted
- Web Status tool for user on a similar level + more info!!



Web Job Status Tool

- RTE/Singularity info
(in InfoSys too)
- HW Details, specifically
RAM and GPGPU consumption
- Queue Length
and Scheduling Info
- Stats for User's Jobs

ARC CE Wishlist

- GPGPU info
in accounting and InfoSys
- ARC CE load balancing + HA
~ failover mode
- testing environment / setup



Questions?

Andrej Filipčič, IJS, UNG

Borut Paul Kerševan, IJS, FMF

Barbara Krašovec, IJS

Dejan Lesjak, IJS

Janez Srakar, IJS

Jan Jona Javoršek, IJS

Matej Žerovnik, Arnes

Peter Kacin, Arnes

Arc Client Improvements

- More bug fixes and error docs... **(THANKS!)**
- Python/ACT
- a Wish List:
 - Stand-Alone, Docker/Singularity
 - GPGU/CPU type selectors
 - MacOS client (old and sad)
(workaround done)