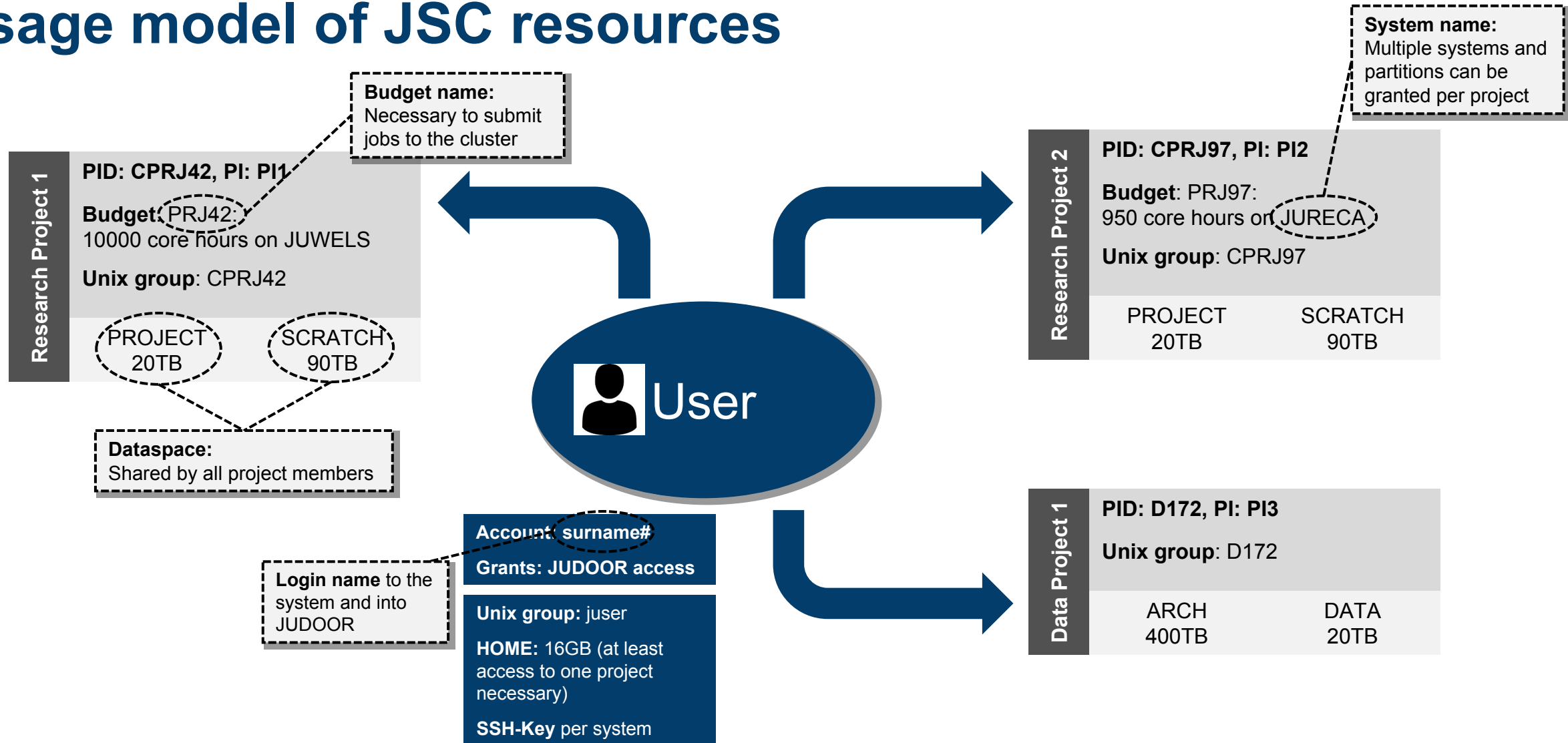


First Steps: User Portal and Job Monitoring

Webportals and Support-Tools @ JSC

20.11.2023 | Dr. Jolanta Zjupa

Usage model of JSC resources



Getting access to JSC resources

	Test project	Compute project	Data project
Apply	anytime	twice a year: mid Feb/Aug <i>next deadline:</i> 14 February 2024, 17:00 CET	anytime
Compute time	~ (5.-20.) 000 core-h	intensive \geq (5.-10.) Mcore-h	none
Duration	up to 4 months	1 year	1 year
Systems	JUWELS, JURECA, JUSUF, JUDAC	JUWELS, JURECA, JUSUF, JUDAC	JUDAC
Filesystems	PROJECT, SCRATCH	PROJECT, SCRATCH	ARCHIVE, FASTDATA, DATA

- <https://www.fz-juelich.de/en/ias/jsc/systems/supercomputers/call-for-applications-for-test-projects-with-jsc-supercomputing-and-support-resources>
- <https://www.fz-juelich.de/en/ias/jsc/systems/supercomputers/apply-for-computing-time>
- <https://www.fz-juelich.de/en/ias/jsc/systems/supercomputers/call-for-proposals>
- <https://www.fz-juelich.de/en/ias/jsc/services/data-services/data-projects>

3 Steps to access the HPC systems

Step 1: JuDoor account registration

JuDoor Login

Portal for managing accounts, projects and resources at JSC.



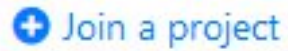
Login using JSC webservice account	Login with e-mail callback
<p>Username</p> <input type="text" value="luehrs2"/>	<p>Login mail address</p> <input type="text"/>
<p>Password</p> <input type="password" value="••••••••"/>	<p>A confirmation email to confirm your identity will be sent to this address.</p>
<p>Login Register Reset password</p>	<p>Send identification mail</p>

If you are stuck take a look at the [JuDoor Documentation](#).

<https://judoor.fz-juelich.de>

Step 2: Join a project

Two alternatives



in JUDOOR if you
know the project ID

Follow invitation link send
by PI or PA



<https://judoor.fz-juelich.de/projects/join/...>

PI/PA receives notification and grants
project resource specific access

If you are already a project member but don't see all
available project systems, you can use

Request access for resources

Projects

 CST Application Support		ccstao
 Institutskontingent JSC	Compute project	cjsc
 PROJEKT PARATEAM		cparateam
 Datenprojekt JSC	Data project	jsc
  Introduction to Supercomputing at JSC - Theory & Practice	PI/PA access	training2230
 Join a project		

A user can be part of multiple compute and data projects

JuDoor

PI/PA

- receives notification
- manages project members
- grants access to specific resources
- manages data inheritance (PI only)
- has access to all project info on LLview and Kontview

PM

- project specific permanent contact point at JSC
- either from a SDL or ATML

<https://www.fz-juelich.de/en/ias/jsc/services/user-support/project-mentoring>

Project training2230

Project title

Introduction to Supercomputing at JSC - Theory & Practice

Type

🏢 Computeproject

Principal Investigator

Ilya Zhukov

Project Admin

Dr. Jolanta Zjupa

Project Mentor

Ilya Zhukov

Start date

01.11.2022

End date

30.11.2022 ⌚

Community

Training

Address

Forschungszentrum Jülich GmbH
Wilhelm-Johnen-Straße
52428 Jülich
Germany

Group name

training2230

Active Budgets

Budget **cstao** ?

Data access is possible up to 3 month after the end of the project via JUDAC.

JuDoor

Each projects grants access to various systems and partitions.

Systems

Usage agreement link must be visited first before Manage SSH-Keys link appears

deep	Manage SSH-keys	Usage agreement confirmed on 21.02.2019
cprcdeep cjsc		
judac	Manage SSH-keys	Usage agreement confirmed on 03.12.2018
ccstao chpclub jscbenchmark cparateam cprcdeep prcoe03 cjsc jsc prcdeep hpclub software cstao		
jureca	Manage SSH-keys	Usage agreement confirmed on 03.12.2018
JURECA: ccstao jscbenchmark cjsc JURECA_BOOSTER: ccstao jscbenchmark cjsc JURECA_GPU: ccstao jscbenchmark cjsc JURECA_VIS: ccstao jscbenchmark cjsc		
juron	Manage SSH-keys	Usage agreement confirmed on 04.12.2018
chpclub		
juropa3exp	Manage SSH-keys	Usage agreement confirmed on 21.02.2019
chpclub cjsc		
juwels	Manage SSH-keys	Usage agreement confirmed on 06.12.2018
JUWELS: ccstao jscbenchmark prcoe03 JUWELS_GPUS: ccstao jscbenchmark		

Projects connected to this resource

Step 3: Upload your SSH-key

SSH keys on jureca

Here you can upload an SSH public key to the system. Information on how to create an SSH public key can be found [here](#).
It might take up to 15 minutes until the newly added SSH key is activated.

More details on from-clause handling and key generation

Upload SSH public keys

To use our systems your public key options have to include a `from=`-clause to restrict the usage of the key to your personal IP address range. Your current IP address is `134.94.52.69`. See [the documentation](#) for more information.

☐ Remove all other existing public keys.

Your current public IP

Your public key and options string

```
from="134.94.52.69" ssh-ed25519 AAAAC3N...
```

Paste the content of your `.pub`-file here or upload a file below.

Your public key file

Browse

Additional public key options

E.g. `from="134.94.52.69",...`

Can be a list of static IP, a static network range, a static hostname or a hostname suffix using `*` as a wildcard symbol

You can specify your `from=` clause and other public key options here

Start upload of SSH-Keys

Add additional keys...

Your SSH keys on jureca

sebi@zam495

SHA256:

MD5:

Options: `from="134.94.0.0/16"`



Further steps to get you going

Log in to JSC system of choice, over terminal:

```
ssh [-X] <username>@<system>.fz-juelich.de
```

alternatively you can use **JupyterLab**, favourite editor (upon set up of ssh connection), mount point (sshfs)

Talk tomorrow by
J.-H. Göbbert (JSC)

➤ This will bring you to \$HOME on <system> (there is a separate home on each JSC system)

Note: \$HOME has only 16GB and is *not* meant for production - go to: \$PROJECT or \$SCRATCH

Note: \$SCRATCH has **no backup** and files that have not been touched 90 days are **automatically deleted**

Further steps to get you going

Log in to JSC system of choice, over terminal:

```
ssh [-X] <username>@<system>.fz-juelich.de
```

➤ This will bring you to the **Log in node**:

- **shared resource**
- time spend on Log in node is *not* deducted from the budget
- number of parallel processes limited
- *not* meant for production but for setup, compilation and submission to:

➤ **Compute node**:

- **exclusive resource**, no node-sharing
- submit jobs using (PS)Slurm or get an interactive session
- all time a compute node is allocated for you is deducted from your budget **also if no computations are performed!**

Talk tomorrow by
C. Paschoulas (JSC)

Documentation & overview preinstalled software

JUWELS

Jülich Wizard for European Leadership Science



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Supercomputers

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[Related Organisations](#)

JURECA

JUSUF

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**Talk tomorrow by
R. Schöbel (JSC)**

Supercomputers: [https://www.fz-juelich.de/en/ias/jsc/systems/supercomputers\(/<system>\)](https://www.fz-juelich.de/en/ias/jsc/systems/supercomputers(/<system>))
Storage systems: [https://www.fz-juelich.de/en/ias/jsc/systems/storage-systems\(/<system>\)](https://www.fz-juelich.de/en/ias/jsc/systems/storage-systems(/<system>))

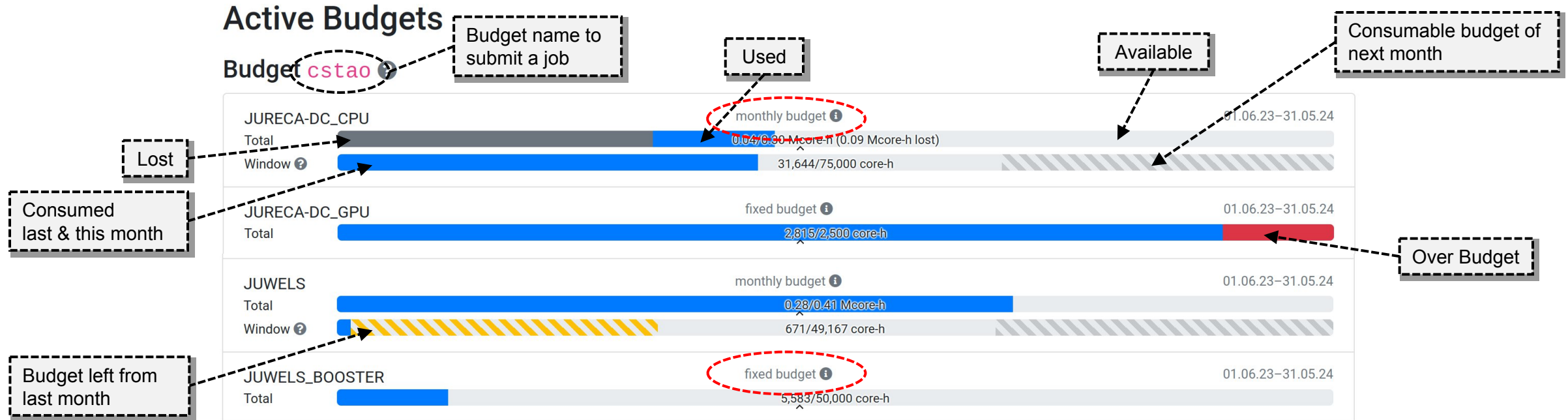
Quota calculation

$$\#nodes \times \#physical_cores_per_node \times runtime$$

- **#physical_cores_per_node:**
 - JUWELS or JUWELS_BOOSTER: 48
 - JURECA-DC or JUSUF: 128
- **runtime:** actual job runtime, not the provided walltime of the job
- There is no node-sharing on compute nodes
- The quota is fully placed on the day when the job ended
- The quota of a job is not taken into account in advance
- The base priority of a job based on the overall project quota and is updated on a daily basis

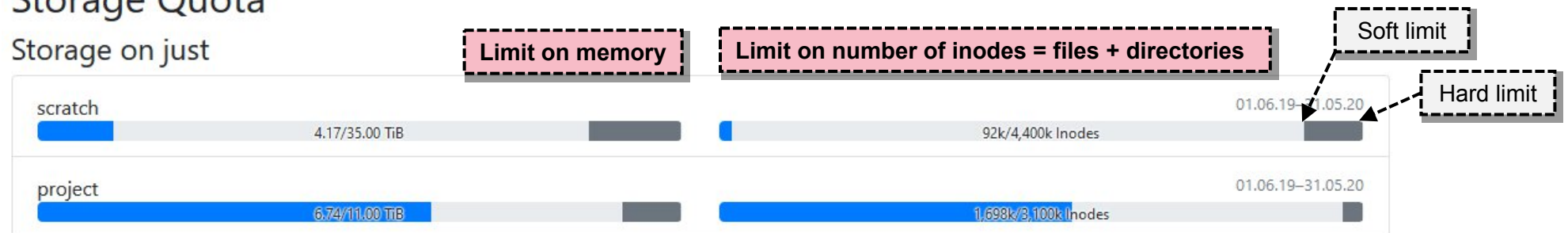
JuDoor quota status

Active Budgets



Storage Quota

Storage on just



Jutil tool & budget monitoring

- The budget can be monitored using the command line tool `jutil` in the terminal
- `jutil` can also be used to activate a specific budget by default for a running shell:

```
# See your projects  
jutil user projects
```

```
# See your compute allocation  
jutil user cpuquota
```

```
# See your disk quota  
jutil user dataquota
```

```
# Activate environment (and optionally default budget) for a given project  
# Sets $PROJECT and $SCRATCH  
jutil env activate -p <project> [-A <budget>]
```

<https://apps.fz-juelich.de/jsc/hps/just/jutil.html>

complementary to providing the budget on a per job basis (using the `--account` or `-A` option in the batch script)

Project quota overview: KontView

Accessible from JuDoor:

Show extended statistics

Show extended statistics for PI/PAs

User view

PI/PA view

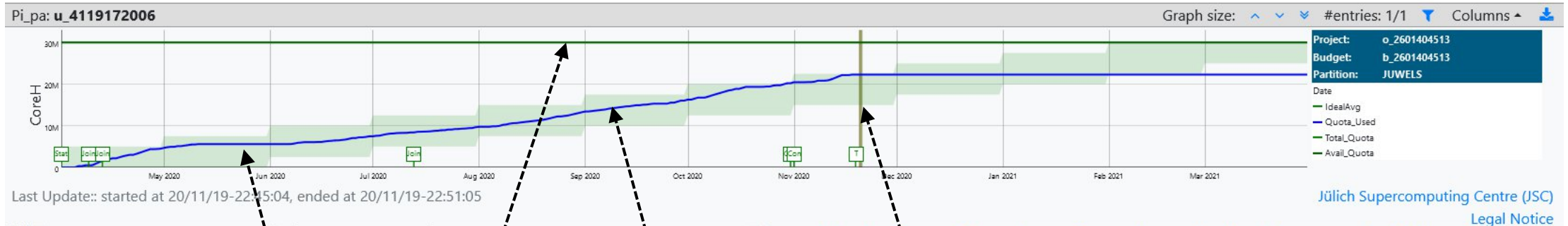


JSC KontView for **Juwels and Jureca** - PI/PA view



Compute Projects Data Projects

Class	Project	Budget	Partition	PI	Mentor	Kind	Status	Start	End	Elapsed %	Coreh used	% of avail.	% of requ.	Coreh ideal	% of ideal	Coreh avail.	Coreh awarded	Coreh requ.	Coreh bonus	Coreh lost	Coreh nocont
filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter
											Σ 22286298.00	Ø 74.29	Ø 74.29		Ø 116.37	Σ 30000000.00	Σ 30000000.00	Σ 30000000.00	Σ 0.00	Σ 0.00	Σ 218119.29
pra	o_2601404513	b_2601404513	JUWELS	u_4119172006	u_0325695197	m	A	01.04.20	31.03.21	63.84%	22286298	74.29%	74.29%	19150685	116.37%	30000000	30000000	30000000			218119.29



3-month window

total quota

used quota

now

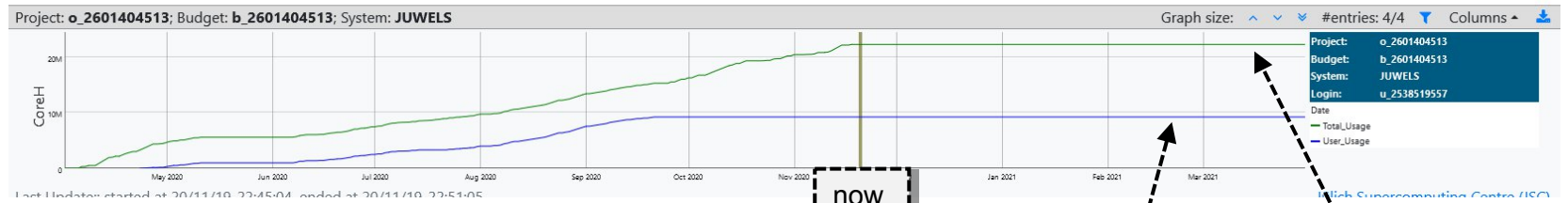
Project quota overview: KontView

PI/PA view:
display quota per user:


JSC KontView for **Juwels and Jureca** - Quota view

User Info Job Info

Name	Vorname	login	RCLS	project	budget	hostname	Coreh user	numjobs
filter	filter	filter	filter	filter	filter	filter	filter	filter
Σ 22286298.00								Σ 649.00
n_1164480197	v_1368957785	u_4119172006	pra	o_2601404513	b_2601404513	JUWELS	11182307	80
n_3761323631	v_4014760557	u_2538519557	pra	o_2601404513	b_2601404513	JUWELS	9241735	431
n_2841376739	v_3254141488	u_3494758383	pra	o_2601404513	b_2601404513	JUWELS	1677191	136
n_0025459174	v_1006594725	u_3131446118	pra	o_2601404513	b_2601404513	JUWELS	185065	2



Storage utilization:

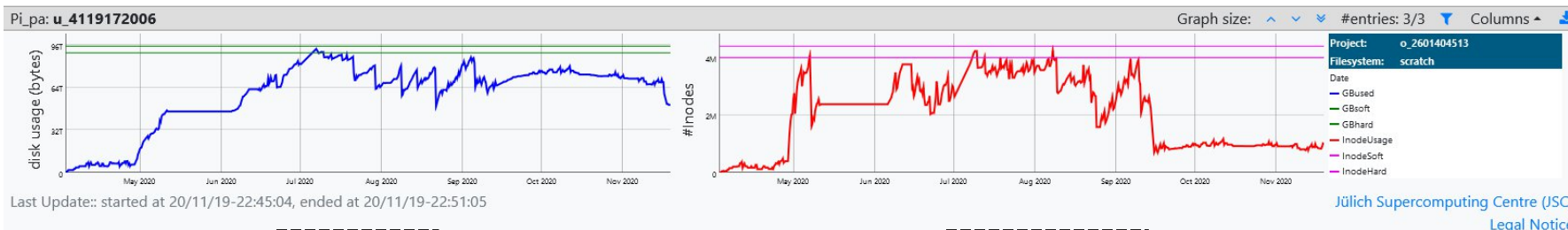


JSC KontView for **Juwels and Jureca** - PI/PA view

Compute Projects

Data Projects

project	group	storage	filesystem	P_Leiter	Start	Ende	GBused	%ofSoft	GBsoft	GBsoftPerHard	GBhard	InodeUsage	InodeUsagePerSoft	InodeSoft	InodeUsagePerHard	InodeHard
filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter	filter
Σ 160998.00							Σ 82.49	Σ 209819.00	Σ 75.71	Σ 226705.00	Σ 1037230.00	Σ 9.52	Σ 7100000.00	Σ 8.65	Σ 7810000.00	
o_1070008056	o_1070008056	data	largedata	n_1164480197	01.07.2020	30.06.2021	93880	91.68%	102400	83.35%	112640	2396	2.40%	100000	2.18%	110000
o_2601404513	o_2601404513	scratch	scratch	n_1164480197	01.04.2020	31.03.2021	51947	56.37%	92160	53.40%	97280	1000158	25.00%	4000000	22.73%	4400000
o_2601404513	o_2601404513	project	project	n_1164480197	01.04.2020	31.03.2021	15171	99.42%	15259	90.39%	16785	34676	1.16%	3000000	1.05%	3300000



Service status

- Cluster Systems

 JUWELS Booster	Next Maintenance at 3. Mai 2022, 08:00:00
 JURECA Booster	Next Maintenance at 3. Mai 2022, 08:00:00
 JUSUF HPC	Next Maintenance at 3. Mai 2022, 08:00:00
 HDF-ML	Next Maintenance at 3. Mai 2022, 08:00:00
 QLM	Next Maintenance at 3. Mai 2022, 08:00:00

- File Systems

 \$HOME	Next Maintenance at 3. Mai 2022, 08:00:00
 \$SCRATCH	Next Maintenance at 3. Mai 2022, 08:00:00
 \$CSCRATCH	Next Maintenance at 3. Mai 2022, 08:00:00
 \$FASTDATA	Next Maintenance at 3. Mai 2022, 08:00:00

- Services

 JuDoor	
 Backup	Next Maintenance at 3. Mai 2022, 08:00:00
 HDF Cloud	Next Maintenance at 3. Mai 2022, 08:00:00
 Cloud Object Storage	Next Maintenance at 3. Mai 2022, 08:00:00

- Support

 SC Support

 JUWELS Cluster	Next Maintenance at 3. Mai 2022, 08:00:00
 JURECA DC	Next Maintenance at 3. Mai 2022, 08:00:00
 JUDAC	Next Maintenance at 3. Mai 2022, 08:00:00
 JUZE1	Next Maintenance at 3. Mai 2022, 08:00:00

 \$PROJECT	Next Maintenance at 3. Mai 2022, 08:00:00
 \$ARCHIVE	Next Maintenance at 3. Mai 2022, 08:00:00
 \$DATA	Next Maintenance at 3. Mai 2022, 08:00:00

 Jupyter-JSC	Next Maintenance at 3. Mai 2022, 08:00:00
 UNICORE	Next Maintenance at 3. Mai 2022, 08:00:00
 JUSUF CLOUD	Next Maintenance at 3. Mai 2022, 08:00:00
 JUSTCOM	Next Maintenance at 3. Mai 2022, 08:00:00

JUWELS

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Status

→ [the JSC Service Status Page](https://status.jsc.fz-juelich.de/) for system status information:

System messages JUWELS Cluster

System messages JUWELS Booster

<https://status.jsc.fz-juelich.de/>

Read the MOTD

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Service status

JUWELS Cluster

The Cluster partition of the JUWELS Supercomputer [↗](#)



JUWELS Cluster is currently degraded

Degraded base services

Unavailable login nodes

- juwelsvis01.fz-juelich.de

 \$CSCRATCH [↗](#)

Current state

Issues in cell 03

28. Feb. 2022, 14:20:00 - unknown

Today, on Monday 2022-02-28, at 14:20, a series of hardware failures resulted in a malfunction in the power and cooling systems of cell 03 in JUWELS Cluster. As a result the InfiniBand network suffered instabilities that affected other cells, and some jobs failed. The cell is now disconnected from the fabric and the system is stable.

We apologize for the inconvenience.

History

New software stage

10. Feb. 2022, 12:00:00 - 7. März 2022, 20:14:16


The default software stage has been changed to Stages/2022. If you wish to continue using the previous default stack please load Stages/2020 before any other module. Note that this stage will be deprecated.

Job monitoring & reports: LLview

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JUWELS is a multi-petaflop modular supercomputer operated by Jülich

Supercomputers

JUWELS

- User Documentation
- Configuration
- FAQ
- Known Issues
- Job Reporting**
- Modules overview
- Related Organisations

JURECA

JUSUF

- Apply for test access
- Apply for computing time
- Calls for proposals

<https://llview.fz-juelich.de/<system>>

Home / Services / User Support / JSC Software & Tools / LLview

LLview

Access to Job reports for JSC systems

- JUWELS
- JUWELS Booster
- JURECA-DC
- JUSUF
- DEEP

Useful Links

- Job reporting full documentation

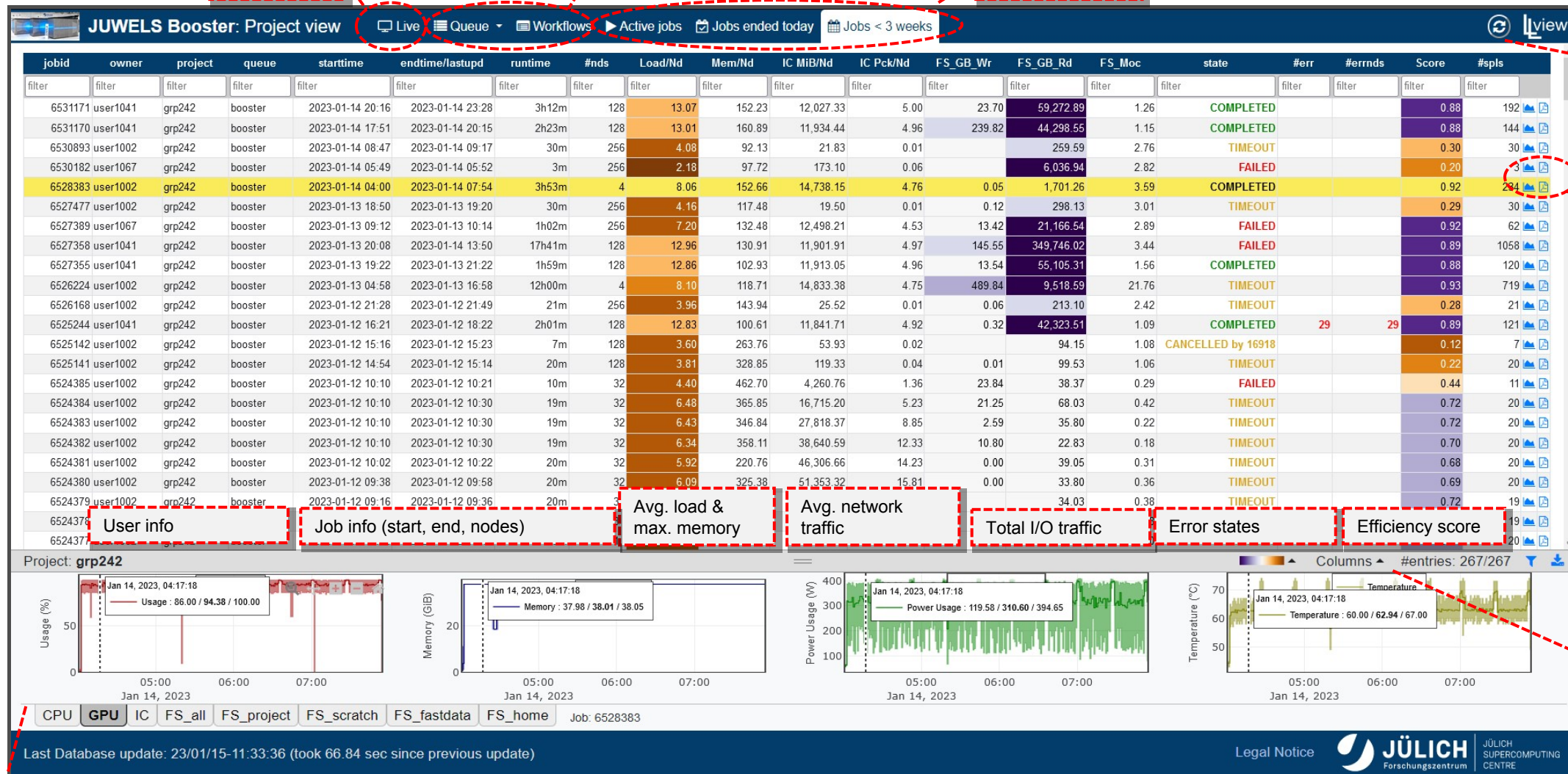
LLview

Logindata: JuDoor username & password

Live View

Scheduler overview

Job overviews



Auto-Reload

Job report
(interactive
HTML view, or
PDF download)

Job specific metric history for CPU, GPU, ...

LLview version 2.0
Dec. 2022

Job reports

receive link to job report per email:

```
#!/bin/bash -x
```

```
#SBATCH --mail-type=BEGIN,END,FAIL
```

```
#SBATCH --mail-user=<email>
```

Job Runtime: 22h40m → 94.42% of Wall: 1d00h00m
Job Start Time: 2021-11-20 23:58:33
Job Last Timestamp: 2021-11-21 22:38:12 (Running)
Current Time: 2021-11-21 22:38:12
Job Endtime (Est.): 2021-11-21 23:58:51

Queue: booster
Job Size, #Nodes: 1 #Data Points: 1147
Job Size, #GPUs: 4 #Data Points: 901

Job Performance Metrics

	min.	avg.	max.	
Load (CPU-Nodes):	1.88	4.02	4.24	
Memory (CPU-Nodes):	20532.40	26328.19	26384.40	MiB
Interconnect Traffic (in):	0.00	12.73	7887.81	MiB/s
Interconnect Traffic (out):	0.00	0.08	29.35	MiB/s
Interconnect Packets (in):	0	306	2328	pck/s
Interconnect Packets (out):	1	76	3658	pck/s

Job I/O Statistics

	Total Data Write	Total Data Read	max. Data Rate/Node Write	max. Data Rate/Node Read	max. Open-Close Rate/Node
\$HOME:	0.00 MiB	0.00 MiB	0.00 MiB/s	0.00 MiB/s	0.00 op./s
\$PROJECT:	0.00 MiB	0.00 MiB	0.00 MiB/s	0.00 MiB/s	0.00 op./s
\$SCRATCH:	0.00 MiB	0.00 MiB	0.00 MiB/s	0.00 MiB/s	0.00 op./s
\$FASTDATA:	0.00 MiB	0.00 MiB	0.00 MiB/s	0.00 MiB/s	0.00 op./s

Job GPU Statistics

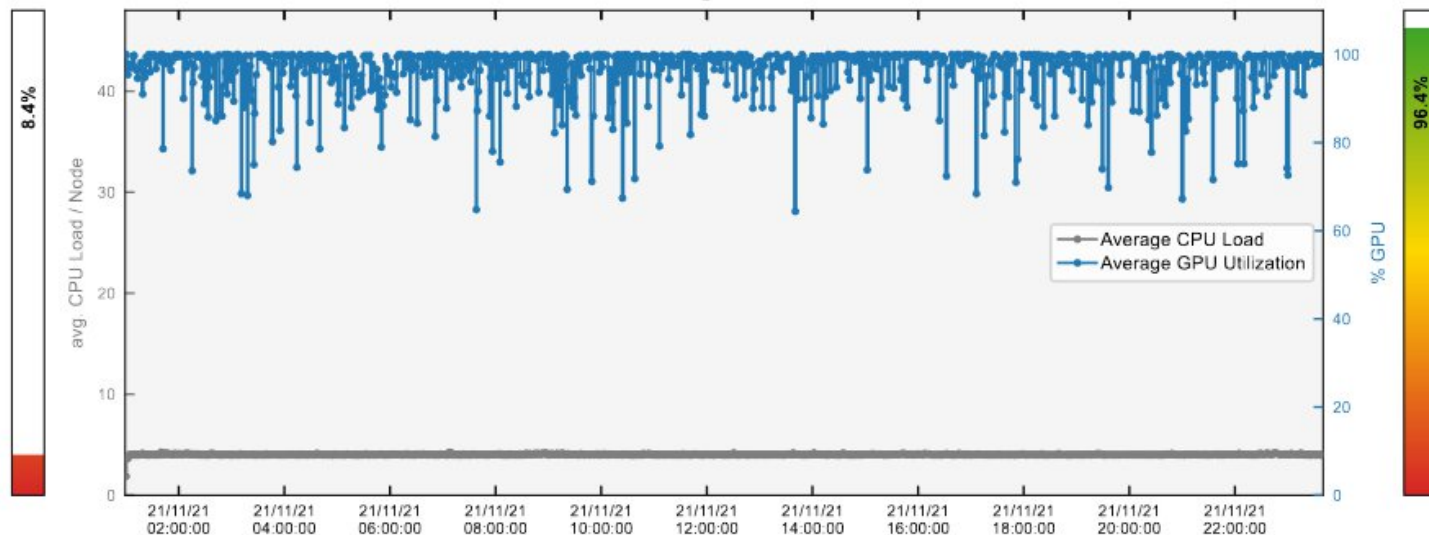
avg. GPU Usage: **96.40** % avg. Mem. Usage Rate: **13.52** % avg. GPU Temp.: **69.03** °C avg. GPU Power: **310.22** W
max. Clk Stream/Mem: **1410/1215** MHz max. Mem. Usage: **1738.50** MiB max. GPU Temp.: **75.00** °C max. GPU Power: **343.43** W

This job will use approximately 1 nodes × 48 cores × 24.000 hours = 1152.00 core-h for the specified walltime (up to now: 1087.68)

Average CPU Usage

Job-Usage Overview

Average GPU Usage



Job reports – further job stats

Node list

1 jwc07n106 Interconnect group: 88	2 jwc07n107 Interconnect group: 88	3 jwc07n108 Interconnect group: 88	4 jwc07n109 Interconnect group: 88	5 jwc07n110 Interconnect group: 88	6 jwc07n111 Interconnect group: 88	7 jwc07n112 Interconnect group: 88	8 jwc07n113 Interconnect group: 88
9 jwc07n114 Interconnect group: 88		10 jwc07n115 Interconnect group: 88					

Job Finalization Report

Job State: **FAILED**

Job Return Code: **11**

Job Signal Number: **0**

Timings (Accounting):

Start Time **2021-11-20 11:25:20**
End Time **2021-11-21 10:25:44**
Wall Time **24.00**
Runtime **23.00 hours**

Step RCs:

Step: batch	RC: 11	Sig.-Nr: 0
Step: 0	RC: 0	Sig.-Nr: 9

Node System Error Report

Msgs **1**

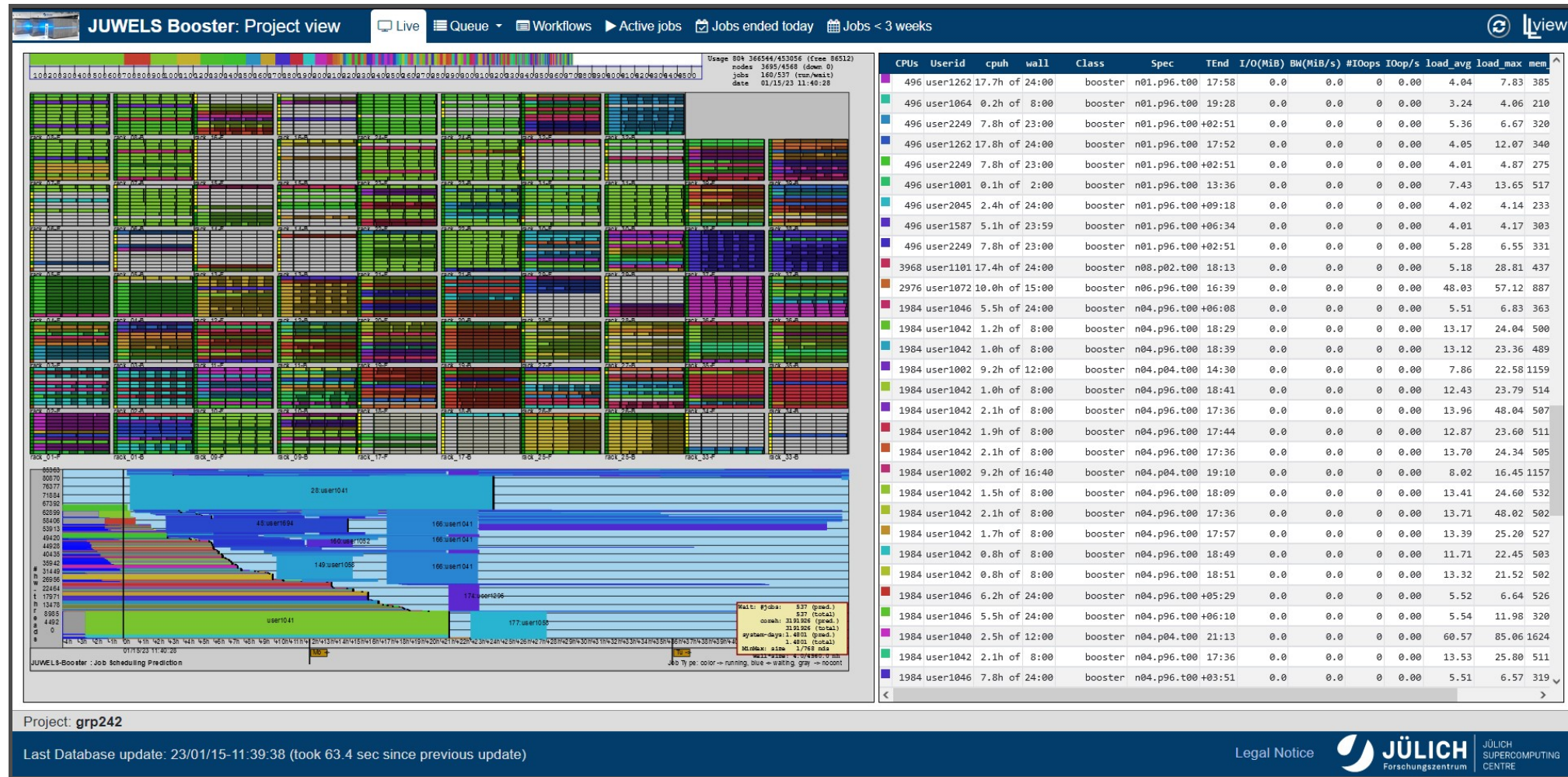
Nodes **1**

Error Messages:

```
2021-11-21T10:25:08+0100 jwc07n112.juwels kernel: ramses3d invoked oom-killer: gfp_mask=0x6280ca(GFP_HIGHUSER_MOVABLE! __GFP_ZERO), order=0, oom_score_adj=0
```

Scheduler overview

- Current usage of system:
 - clickable
 - update 1min
- Mapping of jobs to nodes
- Prediction of system usage using JuFo



JuFo: Simulator for Job Schedulers on HPC Systems, C.Karbach, T.Bauer, JSC

HELP

Contact SC support at sc@fz-juelich.de or your Mentor if you need any help.

- Which **system** did you use? What is your **user ID**?
- If there was an error, what is the **error message**?
- Is the error **reproducible**?
- If related to a job, what was the **job ID**?
- Which **module environment** did you use?

