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WEXAC workshop GUI tools and efficient WEXAC usage

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Head of HPC Section

July 25, 2023



Agenda:

- WEXAC Fast track: Wiki and useful links page.
- WEXAC real time monitor tool: RTM
- WEXAC Best Practices and our recommendations.
- WEXAC LSF Explorer, Grafana.
- WEXAC new tools: PAC, Jupyterhub, Rstudio, etc.
- WEXAC Private cloud options.
- WEXAC and Public cloud integration (AWS).



Ways to contact HPC people:

- Email: hpc@weizmann.ac.il
- Mailing list: wexac-news@weizmann.ac.il
- WhatsApp Channel:
<https://chat.whatsapp.com/05qVVCCcR8v9234vit28gc>
- Office location: De Picciotto A building, rooms 434-436



Shlomit Afgin
Biology HPC



Lior Amir
BioChemistry
HPC



Vadim Malkin
Head of HPC



Igor Chebotar
WAIC



Alexey Konvisher
Physics HPC



Yuval Mankali
DevOps



Tal Malach
CloudOps



Eli Biezuher
PM



Yaron Weitz
HPC Expert



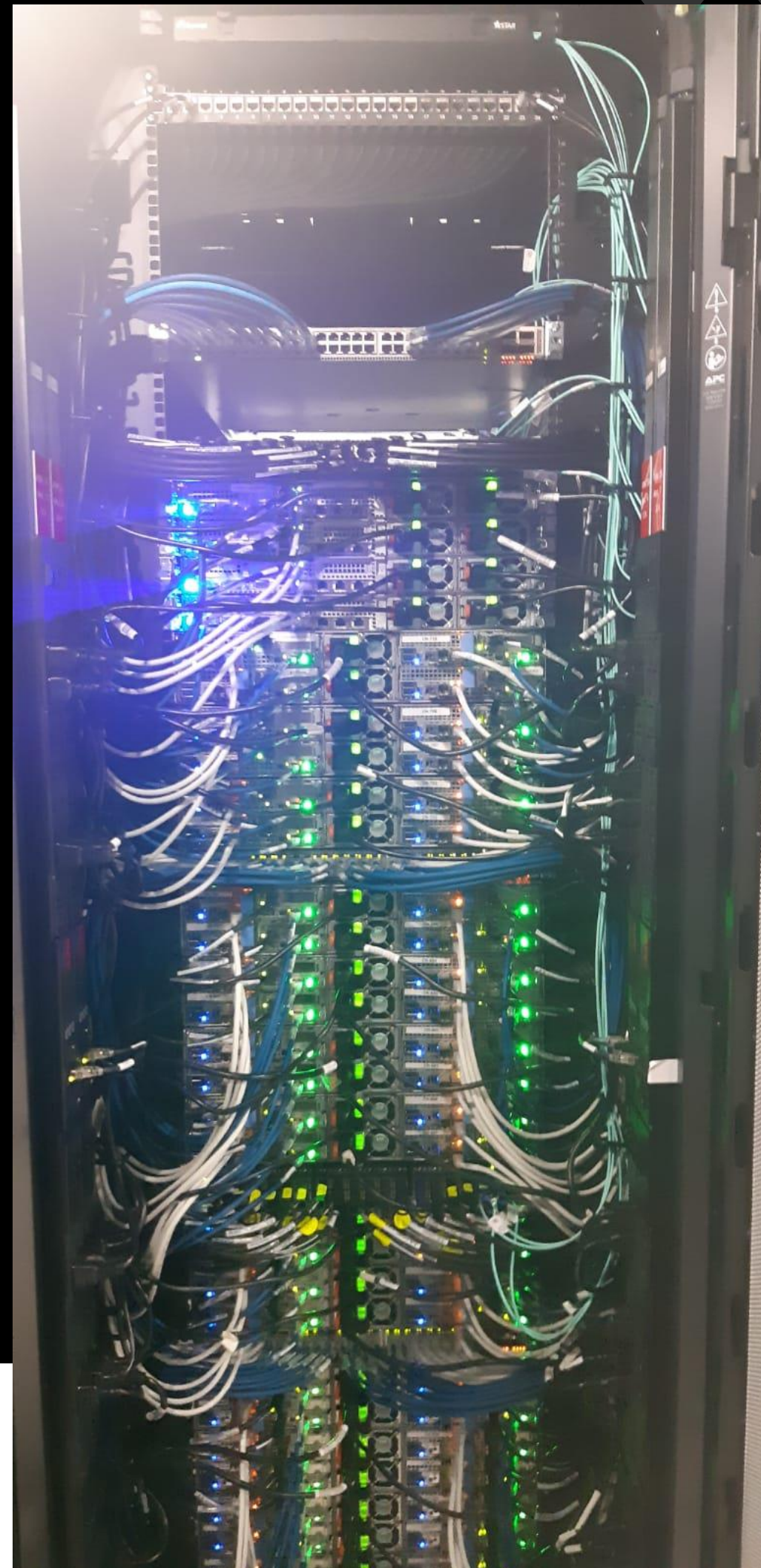
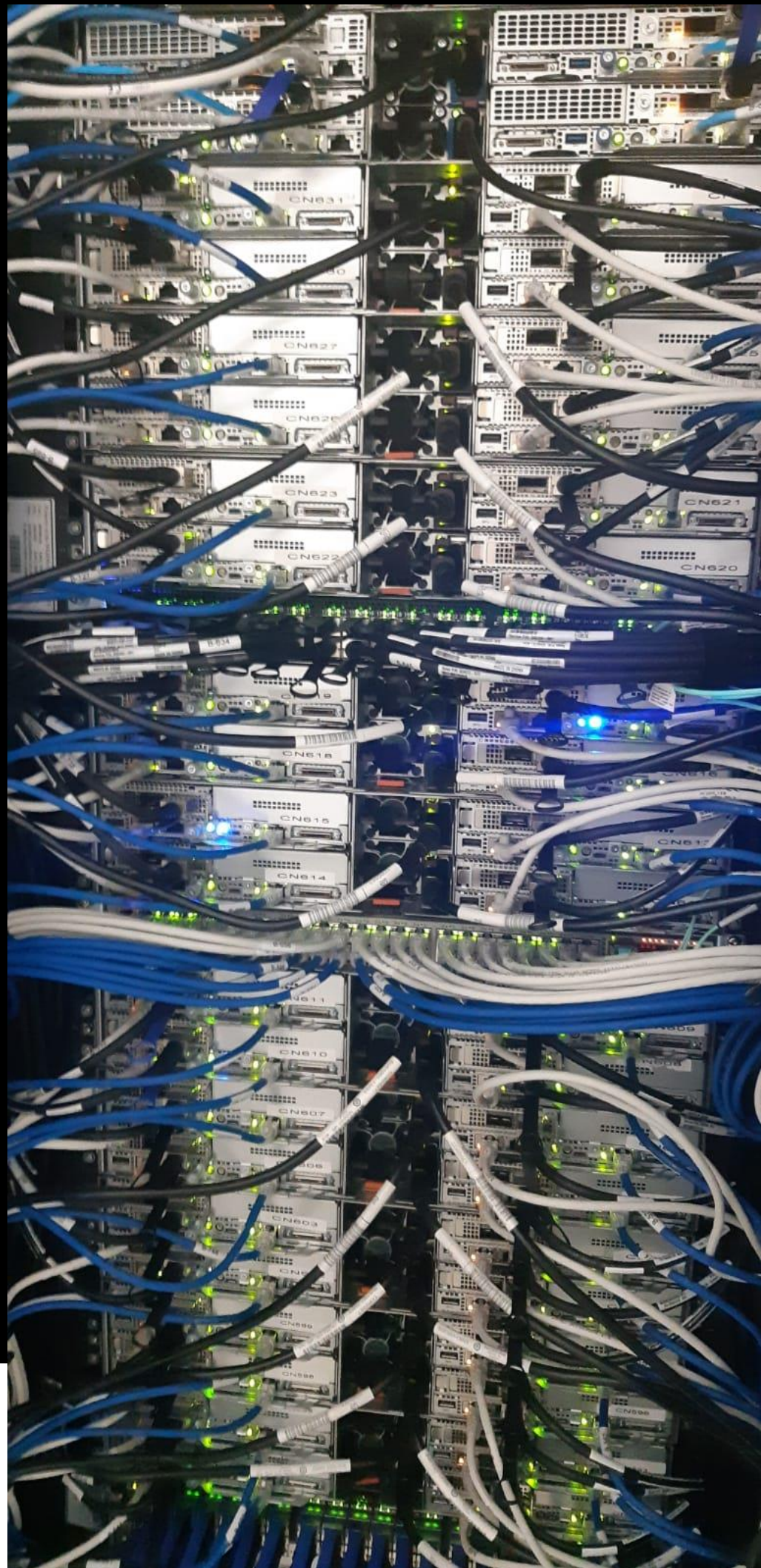
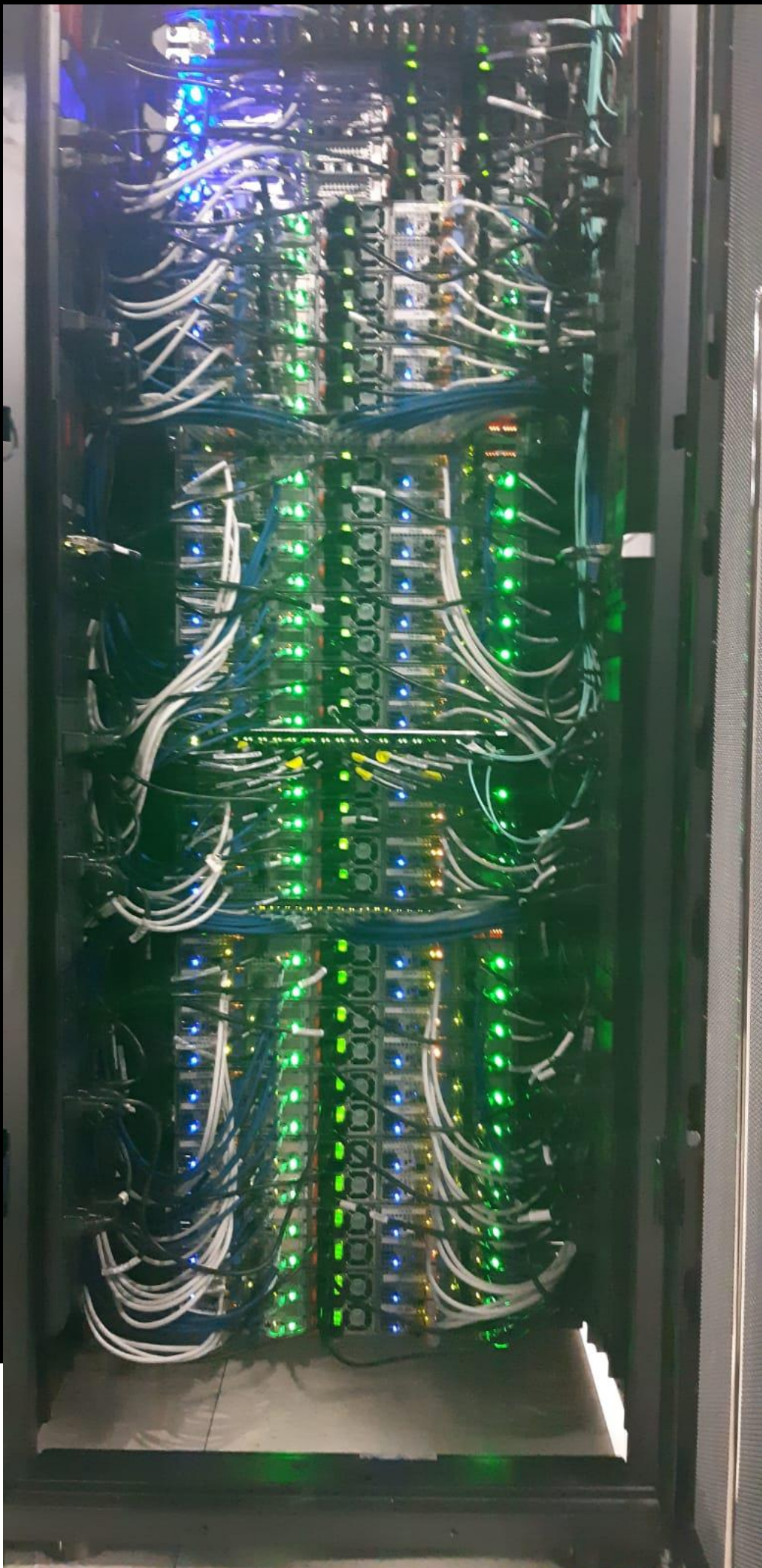
Jerry Mersel
Programmer



People behind WEXAC:

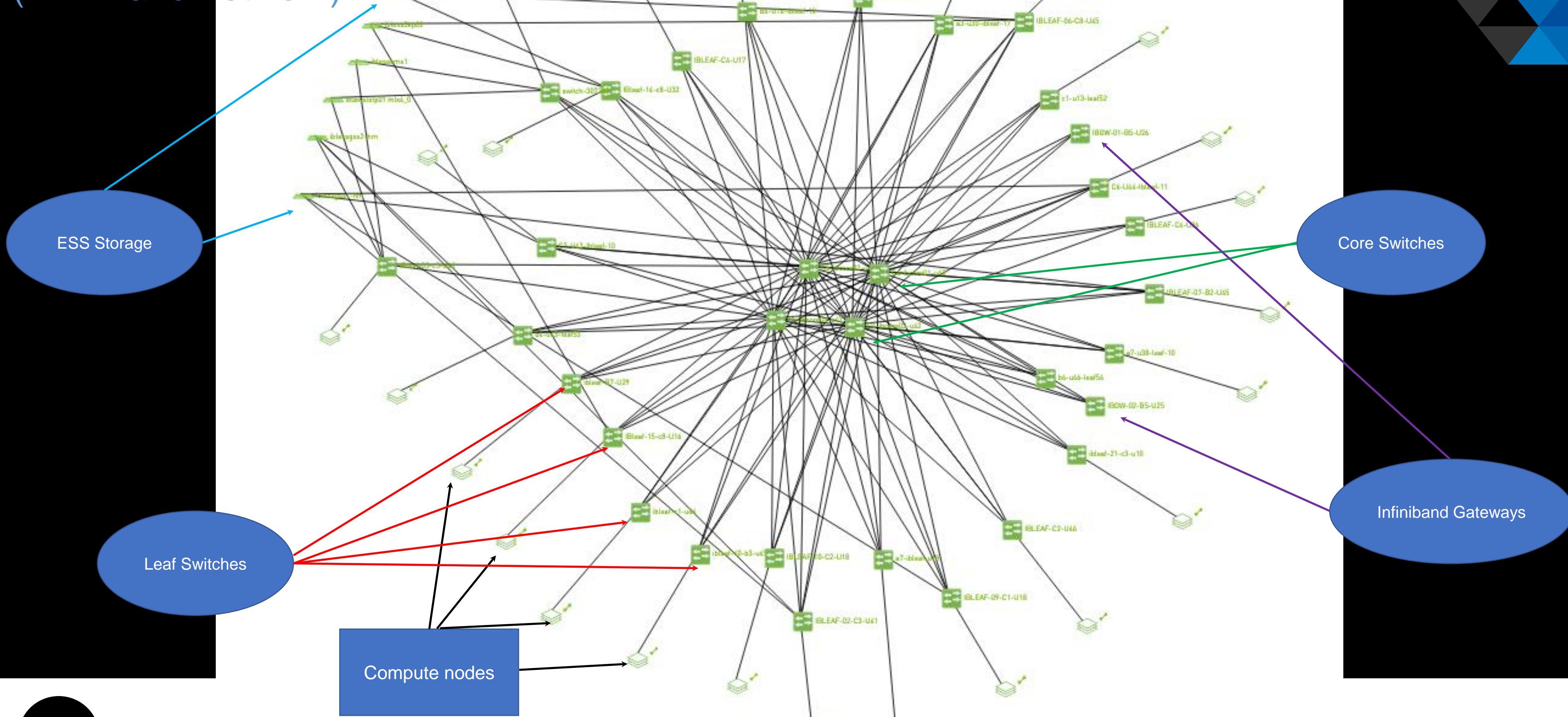


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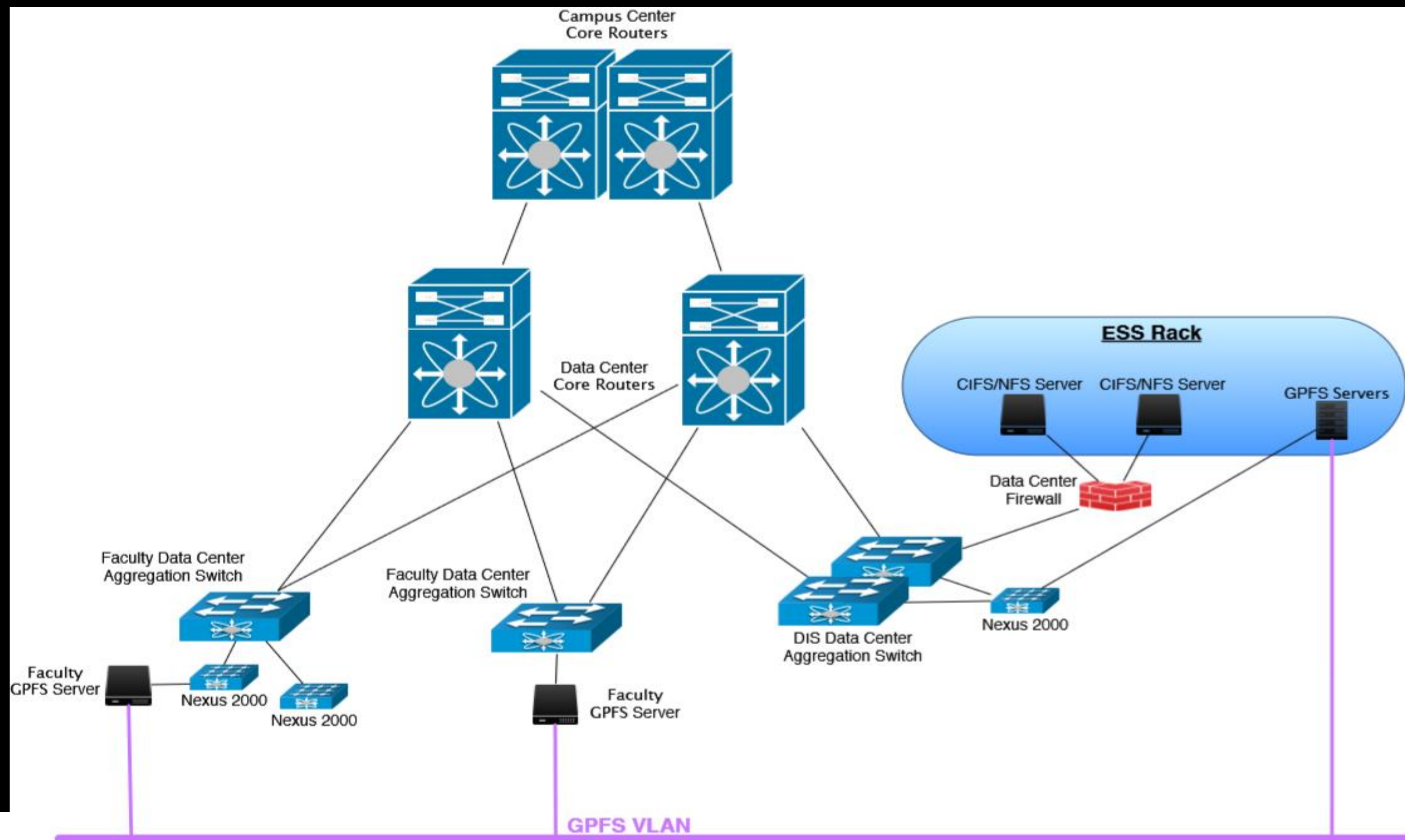




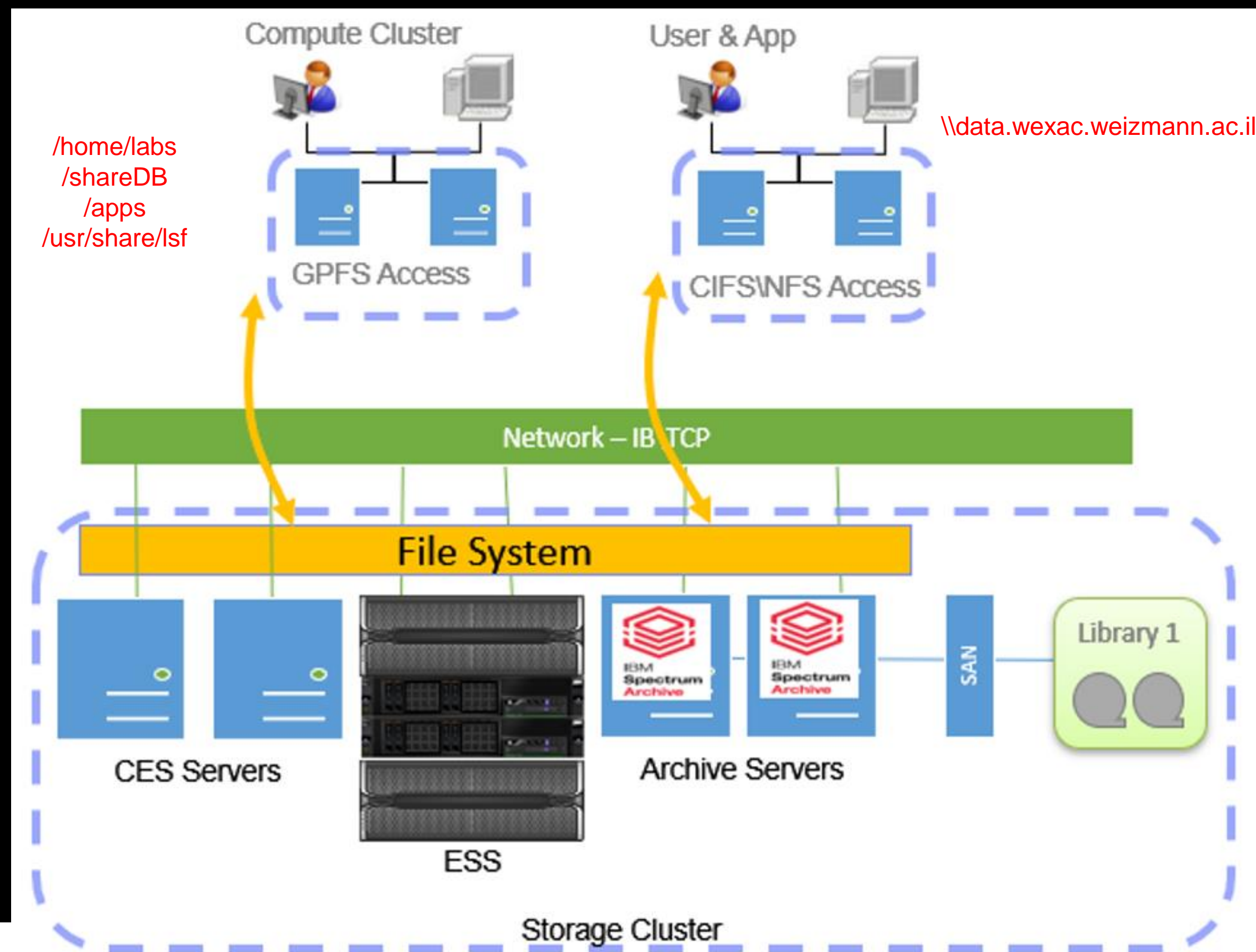
WEXAC structure
(InfiniBand network)



WEXAC structure (Ethernet network)



WEXAC structure (IBM storage):



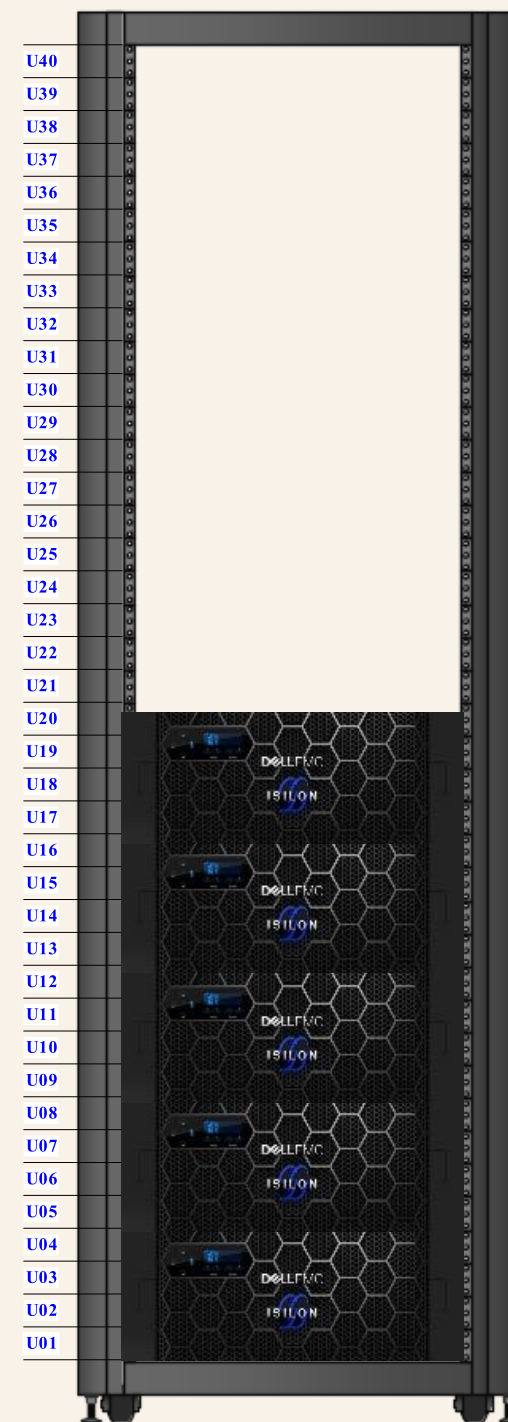
WEXAC structure (Isilon storage):

Single File System
With two storage pools:

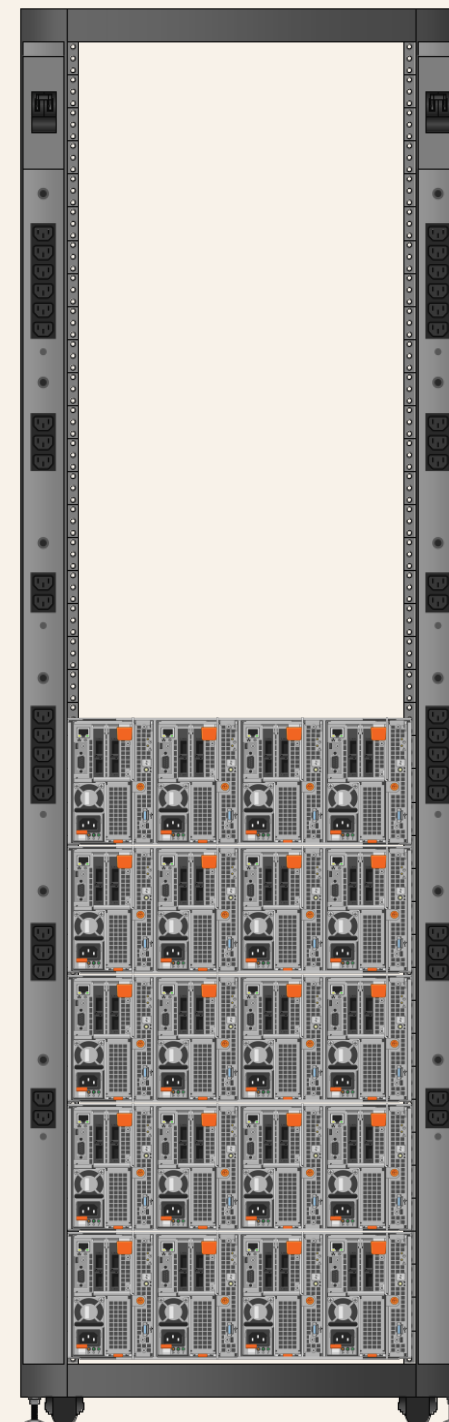
- 8 x F800
- 12 x A2000

Each pool will serve different use case :

- F800 for AI and HPC workloads
- A2000 as NL400 replacement for StorWIS service



Front View



Rear View

Standard File Sharing Services

12 X A2000 ~2,163TIBU

12 x A2000, 240TB, 64GB, 2X10GbE + 2X8G FC W/ OPTICS

[\\isi.storwis.weizmann.ac.il\\labs](https://isi.storwis.weizmann.ac.il/labs)

[\\isi.storwis.weizmann.ac.il\\users](https://isi.storwis.weizmann.ac.il/users)

HPC and DL/AI

8 X F800 ~302TIBU 5Y

8 x F800, 48TB, 256GB, 2x40GbE (QSFP+) F800

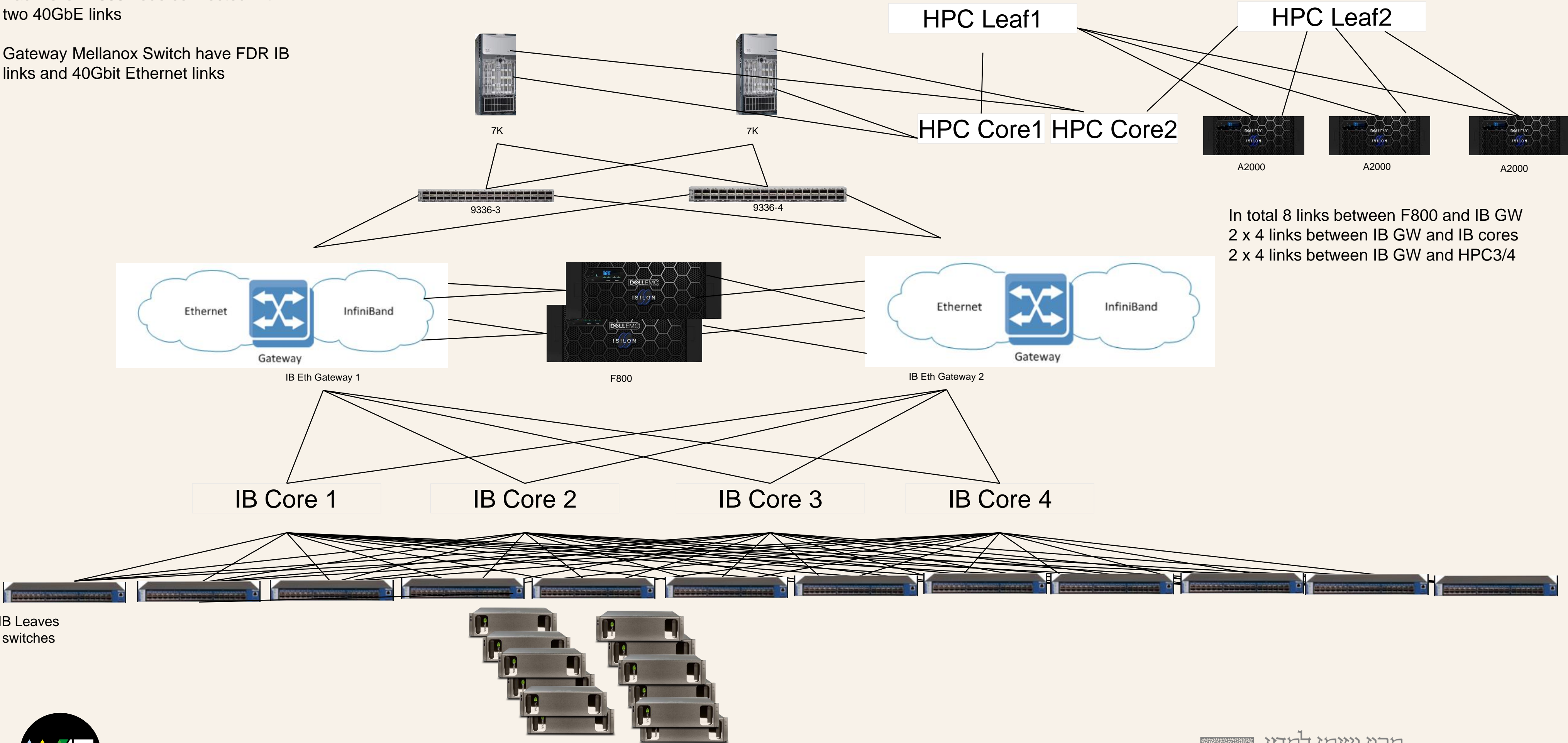
Backend Network

2 x 36 x Ports QDR Mellanox Switch

[\\isi.bigdata.weizmann.ac.il/projects](https://isi.bigdata.weizmann.ac.il/projects)

Each Isilon F800 node connected with two 40GbE links

Gateway Mellanox Switch have FDR IB links and 40Gbit Ethernet links



In total 8 links between F800 and IB GW
2 x 4 links between IB GW and IB cores
2 x 4 links between IB GW and HPC3/4

IB Leaves
switches

Nvidia DXG machines



WEXAC fast track

- Wiki - <https://hpcwiki.weizmann.ac.il/>
- Useful links - <https://appsrv.wexac.weizmann.ac.il/>



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🏠

Browse

🏠 HPC

General

📁 Login to Wexac

📁 Backup & Restore

📁 Mapping Wexac Folder

📁 Multiple Ternimals

📁 File Managment

LSF

📁 Basic Commands

📁 Parallel & Group job Submissi...

📁 GPU

📁 Container

📁 Concepts

📁 FAQs

Applications

📁 Modules

📁 Jupyter

📁 PyTorch

📁 Python / Conda

R Rstudio

📁 More Documents

👤 Contact Us

👥 Staff

📁 AI hub

🏠 / home / general / backup_restore

PAGE CONTENTS

> Archive

> Restore

> Backup directories/files from ...

> Computing charges

LAST EDITED BY

Administrator

07/06/2023

🔗

🖨️

Backup Restore

Archive

See <https://www.weizmann.ac.il/DIS/wexac-archive-facility>

if you need to archive a big folder. It is better to create tar files not bigger than 100G.

For creating the tar:

Change DIRECTORY_NAME to the directory you need to archive and *YOUR_LAB* to *your lab name*.

Change the directory to the path where the directory DIRECTORY_NAME, you want to archive exists and run:

```
tar czf - DIRECTORY_NAME | split --bytes=100G - /home/archive/labs/YOUR_LAB/DIRECTORY_NAME.tar.gz.
```

It will create tar files with the names DIRECTORY_NAME.tar.gz.aa, DIRECTORY_NAME.tar.gz.ab, ... each file will have size of 100GB.

To list the contact of the tar files, run:

```
cat /home/archive/labs/YOUR_LAB/DIRECTORY_NAME.tar.gz.* | tar tzf -
```

To extract the folder to the current directory, run:

```
cat /home/archive/labs/YOUR_LAB/DIRECTORY_NAME.tar.gz.* | tar xzvf -
```

Restore

If you lost your file/directory within the last 2 weeks, you can find your file in the snapshot.

▶ If your home directory in /home/labs/...

```
cd .snapshots
```

▶ if your home directory in /home/projects/...

```
cd .snapshot
```

Please note, you cannot see the snapshot directories with the command ls or ls -a.

Under snapshots, you will have directories whose names are dates.

Go to the date you need. Under that date, you will see the tree of your files.

Copy the files/directories to your home directory.



WEXAC Application Server

Software name	URLs
Rstudio Server	rstudio rstudio2
Jupyterhub	access compute access1 compute access2 access3 access4
RTM	IBM Spectrum LSF RTM
Platform Application Center	PAC
Access servers Monitoring	Monitoring
LSF Explorer	Explorer
Ganglia	Compute nodes Access servers
Wexac DOCS	Docs

Wexac Workshops

Oct 2020: [mp4](#) [timestamps](#) [pdf](#)
July 19, 2021: [mp4-beginners](#) [pdf-beginners](#)
July 26, 2021: [mp4-advanced](#) [pdf-advanced](#) [pdf-nvidia](#)
July 19, 2022: [presentation](#) [slides](#)

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WEXAC basic concepts

- Memory: 2 types
 - CPU memory defined by -R “rusage[mem=1024]” in case of 1GB required
 - GPU memory defined as a part of GPU resources -gpu num=1:gmem=1000 means 1GB GPU RAM
- Memory allocated as # of cores multiply requested memory
- Tasks: multiply all resources. -n 4 -R “rusage[mem=1024]” -gpu num=1 means 4 cores, 4 GB CPU RAM, 4 GPU



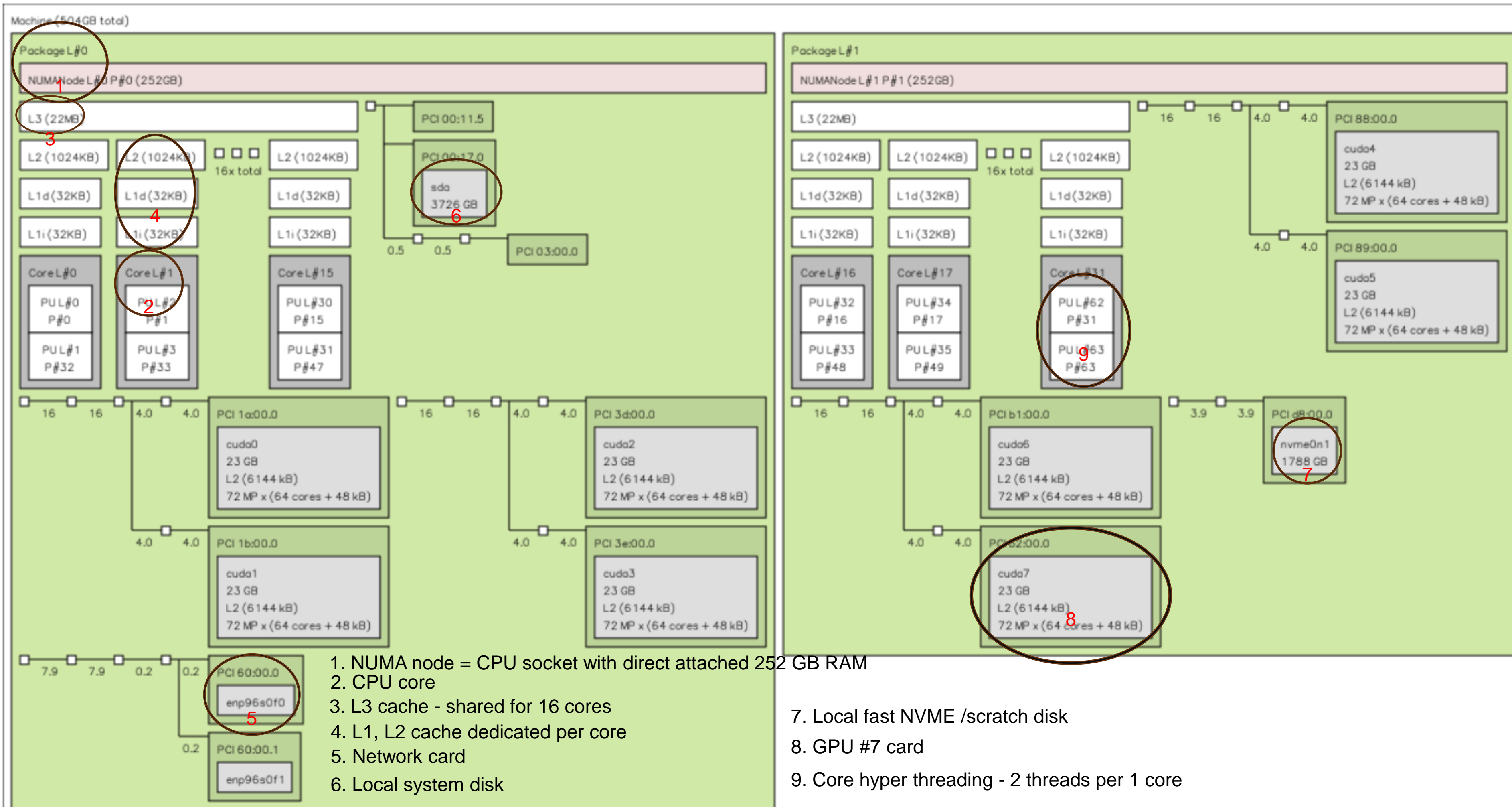
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WEXAC basic concepts



WEXAC basic concepts

- Affinity awareness: NUMA nodes, sockets, cores, threads resources are not multiplied all other resources
 - `bsub -n 2 -q gpu-short -gpu num=2:gmem=1000:aff=yes -R"span[hosts=1] rusage[mem=100]affinity[core(3,same=numa,exclusive=(numa,injob)):cpubind=numa:membind=localonly]" yourcode`
 - This bsub command means to start 2 independent tasks when both tasks locality will be on the same execution host and each task will use 2 GPU with strict affinity CPU - GPU. Each task will use 3 cores on same NUMA level using exclusively NUMA during job execution when CPU bind is on NUMA level as well and use only memory attached locally to specific NUMA
 - `bsub -q gpu-short -gpu num=4:gmem=1000:aff=yes -R"span[hosts=1] rusage[mem=100]affinity[core(6,same=numa,exclusive=(numa,injob)):cpubind=numa:membind=localonly]" yourcode`
 - In this case the same 4 GPU's and 6 CPU cores will act together in the same NUMA binding. Important for tightly coupled CPU/GPU workloads
- Bottom line: if you are using tasks with -n flag your code must be aware of it and spread independent tasks to different resources allocated by LSF. Otherwise, it will be just resources wasting.



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EXTERNAL MESSAGES:

MSG_ID	FROM	POST_TIME	MESSAGE	ATTACHMENT
0	vadimm	Jul 23 12:40	hgn07:gpus=3,1,5,7;	N

RESOURCE REQUIREMENT DETAILS:

Combined: select[(type = any) && (type == any)] order[-slots:-ngpus_physical]
rusage[mem=100.00] span[hosts=1] affinity[core(3,same=num
a,exclusive=(numa,injob))*1:cpubind=numa:membind=localonly
]

Effective: select[(((type = any) && (type == any))) && (ngpus>0)] order[-slot
s:-ngpus_physical] rusage[mem=100.00,ngpus_physical=2.00:g
mem=1000.00] span[hosts=1] affinity[core(3,same=numa,exclu
sive=(numa,injob))*1:cpubind=numa:membind=localonly]

AFFINITY:

HOST	CPU BINDING				MEMORY BINDING		
	TYPE	LEVEL	EXCL	IDS	POL	NUMA	SIZE
hgn07	core	numa	numa	/0/0/3 /0/0/4 /0/0/8	local	0	100.0MB
hgn07	core	numa	numa	/1/1/0 /1/1/1 /1/1/2	local	1	100.0MB

GPU REQUIREMENT DETAILS:

Combined: num=2:mode=shared:mps=no:j_exclusive=no:gmem=1000.00:gvendor=nvidia

Effective: num=2:mode=shared:mps=no:j_exclusive=no:gmem=1000.00:gvendor=nvidia



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EXTERNAL MESSAGES:

MSG_ID	FROM	POST_TIME	MESSAGE	ATTACHMENT
0	vadimm	Jul 23 12:55	hgn05:gpus=5,6,4,7;	N

RESOURCE REQUIREMENT DETAILS:

Combined: select[(type = any) && (type == any)] order[-slots:-ngpus_physical]
 rusage[mem=100.00] span[hosts=1] affinity[core(6,same=num
 a,exclusive=(numa,injob))*1:cpubind=numa:membind=localonly
]

Effective: select[(((type = any) && (type == any))) && (ngpus>0)] order[-slot
 s:-ngpus_physical] rusage[mem=100.00,ngpus_physical=4.00:g
 mem=1000.00] span[hosts=1] affinity[core(6,same=numa,exclu
 sive=(numa,injob))*1:cpubind=numa:membind=localonly]

AFFINITY:

HOST	CPU BINDING				MEMORY BINDING		
	TYPE	LEVEL	EXCL	IDS	POL	NUMA	SIZE
hgn05	core	numa	numa	/1/1/0 /1/1/1 /1/1/2 /1/1/3 /1/1/4 /1/1/8	local	1	100.0MB

GPU REQUIREMENT DETAILS:

Combined: num=4:mode=shared:mps=no:j_exclusive=no:gmem=1000.00:gvendor=nvidia

Effective: num=4:mode=shared:mps=no:j_exclusive=no:gmem=1000.00:gvendor=nvidia



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- Memory – overall job memory reservation calculated as # of cores * required memory. Example if you asked for 4 cores and 4 GB RAM – 16 GB RAM will be allocated for this job. So if only 4 GB RAM required for 4 cores jobs ask for 1GB RAM and 4 cores.
- `bsub -q new-short -n 4 -R "rusage[mem=1024]" yourscrip`

```
[vadimm@access4 ~]$ bsub -q new-short -n 4 -R "rusage[mem=1024]" sleep 999
Memory reservation is (MB): 1024
Memory Limit is (MB): 1024
```

```
Amount of tasks (-n X) reserved: 4
```

```
=== Your total amount of memory reservation for this job is (MB): 4096 ===
```

```
Job <875152> is submitted to queue <new-short>.
```

```
[vadimm@access4 ~]$ bsub -q new-short -n 4 -R "rusage[mem=4096]" sleep 999
Memory reservation is (MB): 4096
Memory Limit is (MB): 4096
```

```
Amount of tasks (-n X) reserved: 4
```

```
=== Your total amount of memory reservation for this job is (MB): 16384 ===
```

```
Job <875459> is submitted to queue <new-short>.
```



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- GPU – allocated as # of tasks * requested GPU. For instance if you ask for 4 tasks and 2 GPU system will try to assign 8 GPU for your task causing extreme pending time and resources wasting ! Please use cores instead for tasks.
- `bsub -q gpu-short -n 4 -gpu num=2:j_exclusive=yes -o ~/output-%J.out -e ~/error-%J.err`
`nvidia-smi[vadimm@access4 ~]$ bjobs -l 879732`

```
Job <879732>, User <vadimm>, Project <default>, User Group <testing-wx-grp-lsf>
, Status <DONE>, Queue <gpu-short>, Job Priority <50>, Com
mand <nvidia-smi>, Share group charged </vadimm>, Esub <me
m nonre group gpu>
Thu Jul 20 16:31:52: Submitted from host <access4>, CWD <$HOME>, Output File <o
utput-879732.out>, Error File <error-879732.err>, Re-runna
ble, 4 Task(s), Requested GPU <num=2:j_exclusive=yes>;
Thu Jul 20 16:31:53: Started 4 Task(s) on Host(s) <1*ibdgx005> <2*hgn01> <1*gac
cess06>, Allocated 4 Slot(s) on Host(s) <1*ibdgx005> <2*hg
n01> <1*gaccess06>, Execution Home </home/labs/testing/vad
imm>, Execution CWD </home/labs/testing/vadimm>;
Thu Jul 20 16:31:55: Done successfully. The CPU time used is 0.3 seconds.
HOST: ibdgx005; CPU_TIME: 0 seconds
```



Bad example – don't try at home!



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WEXAC basic concepts

EXTERNAL MESSAGES:

MSG_ID	FROM	POST_TIME	MESSAGE	ATTACHMENT
0	vadimm	Jul 20 16:31	gaccess06:gpus=2,1;hgn01:gpus=6,2,1	N

RESOURCE REQUIREMENT DETAILS:

Combined: select[(type = any) && (type == any)] order[-slots:-ngpus_physical]
affinity[core(1)*1]

Effective: select[((type = any) && (type == any)) && (ngpus>0)] order[-slots:-ngpus_physical] rusage[ngpus_physical=2.00:gmem=6248.00]
affinity[core(1)*1]

GPU REQUIREMENT DETAILS:

Combined: num=2:mode=shared:mps=no:j_exclusive=yes:gmem=6248.00:aff=no:gvendor=nvidia

Effective: num=2:mode=shared:mps=no:j_exclusive=yes:gmem=6248.00:aff=no:gvendor=nvidia



Bad example – don't try at home!

WEXAC basic concepts

Sender: LSF System <lsfadmin@weizmann.ac.il>
Subject: Job 879732: <nvidia-smi> in cluster <wexac> Done

Job <nvidia-smi> was submitted from host <access4> by user <vadimm> in cluster <wexac> at Thu Jul 20 16:31:52 2023
Job was executed on host(s) <1*ibdgx005>, in queue <gpu-short>, as user <vadimm> in cluster <wexac> at Thu Jul 20 16:31:53 2023

<2*han01>

<1*gaccess06>

</home/labs/testing/vadimm> was used as the home directory.

```
[vadimm@access4 ~]$ cat output-879732.out
Thu Jul 20 16:31:55 2023

+-----+
| NVIDIA-SMI 525.60.13      Driver Version: 525.60.13      CUDA Version: 12.0      |
+-----+-----+
| GPU  Name                Persistence-M| Bus-Id        Disp.A | Volatile Uncorr. ECC |
| Fan  Temp  Perf  Pwr:Usage/Cap|      Memory-Usage | GPU-Util  Compute M. |
|                                       |                    |    MIG M.     |
+-----+-----+
|  0   Tesla V100-SXM2...  On          | 00000000:0A:00.0 Off |             0        |
| N/A   35C    P0     42W / 300W |  75MiB / 32768MiB |      0%    Default   |
|                                       |                    | N/A           |
+-----+-----+
|  1   Tesla V100-SXM2...  On          | 00000000:86:00.0 Off |             0        |
| N/A   35C    P0     44W / 300W | 109MiB / 32768MiB |      0%    Default   |
|                                       |                    | N/A           |
+-----+-----+

+-----+
| Processes: |
| GPU   GI    CI          PID    Type    Process name                        GPU Memory |
|        ID    ID                                   |            Usage   |
+-----+-----+
| No running processes found |
+-----+
```

Bad example – don't try at home!



WEXAC basic concepts

- GPU – allocated as # of tasks * requested GPU. For instance, if you ask for 4 tasks and 2 GPU system will try to assign 8 GPU for your task causing extreme pending time and resources wasting ! Please use cores instead for tasks.
- `bsub -q gpu-short -gpu num=2:j_exclusive=yes -R affinity[core*4] -o ~/output-%J.out -e ~/error-%J.err nvidia-smi`

```
[vadimm@access4 ~]$ bjobs -l 880501

Job <880501>, User <vadimm>, Project <default>, User Group <testing-wx-grp-lsf>,
    Status <DONE>, Queue <gpu-short>, Job Priority <50>, Command <nvidia-smi>,
    Share group charged </vadimm>, Esub <mem nonre group gpu>
Thu Jul 20 16:47:10: Submitted from host <access4>, CWD <$HOME>, Output File <output-880501.out>,
    Error File <error-880501.err>, Re-runnable, Requested Resources <affinity[core*4]>,
    Requested GPU <num=2:j_exclusive=yes>;
Thu Jul 20 16:47:11: Started 1 Task(s) on Host(s) <hgn01>, Allocated 4 Slot(s)
    on Host(s) <4*hgn01>, Execution Home </home/labs/testing/vadimm>, Execution CWD </home/labs/testing/vadimm>;
Thu Jul 20 16:47:12: Done successfully. The CPU time used is 0.2 seconds.
HOST: hgn01; CPU_TIME: 0 seconds
```

Good example



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EXTERNAL MESSAGES:

MSG_ID	FROM	POST_TIME	MESSAGE	ATTACHMENT
0	vadimm	Jul 20 16:47	hgn01:gpus=0,1;	N

RESOURCE REQUIREMENT DETAILS:

Combined: select[(type = any) && (type == any)] order[-slots:-ngpus_physical]
affinity[core(1)*4]

Effective: select[((type = any) && (type == any))) && (ngpus>0)] order[-slot
s:-ngpus_physical] rusage[ngpus_physical=2.00:gmem=6248.00
] affinity[core(1)*4]

GPU REQUIREMENT DETAILS:

Combined: num=2:mode=shared:mps=no:j_exclusive=yes:gmem=6248.00:aff=no:gvendor
=nvidia

Effective: num=2:mode=shared:mps=no:j_exclusive=yes:gmem=6248.00:aff=no:gvendo
r=nvidia



Good example



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- GPU – allocated as # of tasks * requested GPU. For instance, if you ask for 4 tasks and 2 GPU system will try to assign 8 GPU for your task causing extreme pending time and resources wasting ! Please use cores instead for tasks.
- `bsub -q gpu-short -gpu num=2:gmem=1000:aff=yes -R affinity[core*4] -o ~/output-%J.out -e ~/error-%J.err nvidia-smi`

EXTERNAL MESSAGES:

MSG_ID	FROM	POST_TIME	MESSAGE	ATTACHMENT
0	vadimm	Jul 20 17:17	hgn05:gpus=1,2;	N

RESOURCE REQUIREMENT DETAILS:

Combined: `select[(type = any) && (type == any)] order[-slots:-ngpus_physical]
affinity[core(1)*4]`

Effective: `select[(((type = any) && (type == any))) && (ngpus>0)] order[-slot
s:-ngpus_physical] rusage[ngpus_physical=2.00:gmem=1000.00
] affinity[core(1)*4]`

GPU REQUIREMENT DETAILS:

Combined: `num=2:mode=shared:mps=no:j_exclusive=no:gmem=1000.00:gvendor=nvidia`

Effective: `num=2:mode=shared:mps=no:j_exclusive=no:gmem=1000.00:gvendor=nvidia`

Good example #2



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```
[vadimm@access4 ~]$ cat output-881819.out
```

```
Thu Jul 20 17:17:48 2023
```

+-----+									
NVIDIA-SMI		525.60.13		Driver Version: 525.60.13			CUDA Version: 12.0		
+-----+									
GPU	Name	Persistence-MI		Bus-Id	Disp.A	Volatile Uncorr. ECC			
Fan	Temp	Perf	Pwr:Usage/Cap	Memory-Usage		GPU-Util	Compute M.		
								MIG M.	
+-----+									
0	Quadro RTX 6000	On		00000000:15:00.0	Off		Off		
33%	26C	P8	13W / 260W	3949MiB / 24576MiB		0%	Default		
								N/A	
+-----+									
1	Quadro RTX 6000	On		00000000:39:00.0	Off		Off		
33%	25C	P8	15W / 260W	3917MiB / 24576MiB		0%	Default		
								N/A	
+-----+									

Processes:						
GPU	CI	CI	PID	Type	Process name	GPU Memory Usage
	ID	ID				
0	N/A	N/A	2515	C	python	164MiB
0	N/A	N/A	28899	C	python	164MiB
1	N/A	N/A	33083	C	python	164MiB
1	N/A	N/A	76287	C	python	164MiB

Good example #2



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- Other affinity job CPU only NUMA binding, memory relaxed to any available place:
 - `bsub -n 2 -R"span[hosts=1]
rusage[mem=100]affinity[core(3,same=numa,exclusive=(numa,injob)):cpubind=numa]"
yourcode`

RESOURCE REQUIREMENT DETAILS:

```
Combined: select[(type = any ) && (type == any)] order[-slots:-maxslots:-mem]  
          rusage[mem=100.00] span[hosts=1] affinity[core(3,same=numa  
          ,exclusive=(numa,injob))*1:cpubind=numa]  
Effective: select[((type = any ) && (type == any))] order[-slots:-maxslots:-me  
m] rusage[mem=100.00] span[hosts=1] affinity[core(3,same=n  
uma,exclusive=(numa,injob))*1:cpubind=numa]
```

AFFINITY:

CPU BINDING

HOST	TYPE	LEVEL	EXCL	IDS
cn110	core	numa	numa	/1/2/4 /1/2/5 /1/2/6
cn110	core	numa	numa	/1/3/16 /1/3/17 /1/3/18

MEMORY BINDING

POL	NUMA	SIZE
-	-	-
-	-	-



WEXAC basic concepts

- Other affinity job involving both CPU and GPU with only NUMA binding, memory aligned to task NUMA level:
 - `bsub -n 2 -q gpu-short -gpu num=2:gmem=1000:aff=yes -R"span[hosts=1] rusage[mem=100]affinity[core(3,same=numa):cpubind=numa:membind=localonly]"`

```
EXTERNAL MESSAGES:
MSG_ID FROM      POST_TIME    MESSAGE                                ATTACHMENT
0      vadimm     Jul 23 12:39    hgn13:gpus=2,3,5,6;                    N

RESOURCE REQUIREMENT DETAILS:
Combined: select[(type = any ) && (type == any)] order[-slots:-ngpus_physical]
          rusage[mem=100.00] span[hosts=1] affinity[core(3,same=numa)*1:cpubind=numa:membind=localonly]
Effective: select[(((type = any ) && (type == any))) && (ngpus>0)] order[-slots:-ngpus_physical] rusage[mem=100.00,ngpus_physical=2.00:gmem=1000.00] span[hosts=1] affinity[core(3,same=numa)*1:cpubind=numa:membind=localonly]

AFFINITY:

CPU BINDING
-----
HOST  TYPE  LEVEL  EXCL  IDS
hgn13 core  numa   -    /0/0/17
      core  numa   -    /0/0/18
      core  numa   -    /0/0/19
hgn13 core  numa   -    /1/1/9
      core  numa   -    /1/1/10
      core  numa   -    /1/1/11

MEMORY BINDING
-----
POL  NUMA  SIZE
local 0   100.0MB
local 1   100.0MB

GPU REQUIREMENT DETAILS:
Combined: num=2:mode=shared:mps=no:j_exclusive=no:gmem=1000.00:gvendor=nvidia
Effective: num=2:mode=shared:mps=no:j_exclusive=no:gmem=1000.00:gvendor=nvidia
```



WEXAC basic concepts - summary

- LSF tasks multiply all other resources
- Affinity threads doesn't multiple all other resources
- Pickup of right job size in terms of CPU cores, CPU memory, GPU memory, GPU setup is crucial for effective jobs, pending time reduction and achieve high fair share score.

SHARE_INFO_FOR: new-short/								
USER/GROUP	SHARES	PRIORITY	STARTED	RESERVED	CPU_TIME	RUN_TIME	ADJUST	GPU_RUN_TIME
aihubadm	100	33.333	0	0	0.0	0	0.000	0
nirc	100	33.333	0	0	0.0	0	0.000	0
leep	100	33.333	0	0	0.0	0	0.000	0
tomertant	100	33.333	0	0	0.0	0	0.000	0
alexkon	100	33.331	0	0	1.2	0	0.000	0
gabril	100	33.330	0	0	1.3	0	0.000	0
vitalyg	100	33.324	0	0	4.6	0	0.000	0
golann	100	33.220	0	0	52.8	0	0.000	0
amy	100	32.390	0	0	449.4	0	0.000	0
eliranso	100	27.668	0	0	3159.0	0	0.000	0
vadimm	100	6.665	4	0	0.0	1	0.000	0
nathanl	100	2.281	10	0	23.8	3902	0.000	0
fabrizio	100	1.495	0	0	328540.8	0	0.000	0
nachumn	100	1.425	1	0	20135.1	21695	0.000	0
saarsh	100	1.414	10	0	56.6	13578	0.000	0
efratw	100	1.351	4	0	20688.3	19802	0.000	0
angolo	100	1.141	10	0	2597.9	19496	0.000	0
arielo	100	1.106	4	0	1914.7	27025	0.000	0
tamark	100	0.885	10	0	32.8	28780	0.000	0
adiwi	100	0.399	10	0	1597.2	78341	0.000	0
yufei	100	0.362	1	0	90156.7	91113	0.000	0

SHARE_INFO_FOR: gpu-short/								
USER/GROUP	SHARES	PRIORITY	STARTED	RESERVED	CPU_TIME	RUN_TIME	ADJUST	GPU_RUN_TIME
vadimm	1	0.953	0	0	0.9	0	0.000	17
alexkon	1	0.952	0	0	1.7	0	0.000	17
vitalyg	1	0.569	0	0	4198.2	0	0.000	0
nancyy	1	0.218	0	0	1525.6	0	0.000	1190
nathanl	1	0.055	6	0	12.9	3637	0.000	3637
angolo	1	0.036	0	0	3600.7	0	0.000	9384
sagima	1	0.016	8	0	6744.6	17459	0.000	17459
karbati	1	0.008	36	0	443903.3	43030	0.000	0
dijin18	1	0.006	40	0	594210.6	30814	0.000	0
gavriel	1	0.002	6	0	150993.3	1358807	0.000	0
saurabhm	1	0.002	1	0	19129.8	4639	0.000	176274
erezy	1	0.002	77	0	1330228.1	1196698	0.000	0
yuril	1	0.001	4	0	220667.3	219886	0.000	219905
sagyk	1	0.001	2	0	378272.8	262115	0.000	262363
joel	1	0.001	21	0	3757288.8	637295	0.000	0
ronsar	1	0.001	8	0	245799.0	466469	0.000	466469
dekely	1	0.000	12	0	244582.0	815497	0.000	815498
jonasm	1	0.000	9	0	923955.8	190838	0.000	1717542
guylu	1	0.000	468	0	1840099.9	78374	0.000	1622840
yaelami	1	0.000	157	0	112651.7	1148122	0.000	2005626
jonatham	1	0.000	187	0	8395377.0	8530559	0.000	8534280



Platform RTM

- Can be used to monitor and manage LSF jobs in real-time
- <https://rtm1.wexac.weizmann.ac.il/> – WEXAC's RTM



hpc@weizmann.ac.il

RTM Graphs <https://rtm1.wexac.weizmann.ac.il>

IBM Spectrum LSF RTM 10.2.0.12

GraphsClusterJobIQLicense

Dashboards

Disk Utilization

Job Info

By Host

By Host Group

By Project

By License Project

By Queue

By Array

By Application

By Group

Details

User/Group Info

Load Info

Host Info

Reports

Batch Queue Filters

ClusterAllUserAllQueue GroupAllQueuesDefault:30Refresh1 MinuteGoClear

SearchEnter a search termInclude Unused Queues

1 to 30 of 69 [123]Next

Actions	Queue Name	Priority	Status Reason	Avail Slots	Active Slots	Run Slots	Pend Slots	Suspend Slots	AVG Pend	MAX Pend	AVG Run	MAX Run
	gsia-cpu	240	Open:Active	2,912	2,041	2,041	4,578	0	2.5d	10d	1.1d	3.8
	yan	80	Open:Active	2,040	1,921	1,921	3,600	0	11.5h	11.5h	12.8h	2.7
	physics-short	79	Open:Active	2,596	1,685	1,685	2,520	0	11.4h	11.4h	8.6h	18.3
	new-short	38	Open:Active	19,564	1,315	1,315	14	0	9.3h	21.4h	1.6h	23.4
	new-medium	38	Open:Active	19,564	1,137	1,137	0	0	-	-	16.4h	2.9
	new-long	38	Open:Active	19,564	611	611	0	0	-	-	19.3h	6.9
	koren	50	Open:Active	1,120	512	512	0	0	-	-	4.1d	4.1
	gpu-long	84	Open:Active	3,892	246	246	36	0	10.6d	10.9d	2d	3.8
	gpu-short	84	Open:Active	3,892	156	156	66	0	52m	1.9h	52.4m	3.5
	waic-long	186	Open:Active	1,808	101	101	25	0	5.1d	108.5d	2.7h	5.3
	new-all.q	38	Open:Active	11,208	97	97	0	0	-	-	13.6h	2.9
	waic-short	189	Open:Active	1,808	53	53	7	0	1.1d	2.1d	1.7h	3.6
	molgen-q	300	Open:Active	680	52	18	396	34	22.7h	23.4h	1.3d	8.2
	fleishman-service	45	Open:Active	460	42	42	0	0	-	-	4.4h	8
	shlush	80	Open:Active	192	40	40	0	0	-	-	1.5d	6.2
	new-interactive	41	Open:Active	4,464	40	40	0	0	-	-	4.4h	21.5



RTM Graphs <https://rtm1.wexac.weizmann.ac.il>

IBM Spectrum

LSF RTM 10.2.0.12

Graphs

Cluster

JobIQ

License

Dashboards

Disk Utilization

Job Info

By Host

By Host Group

By Project

By License Project

By Queue

By Array

By Application

By Group

Details

User/Group Info

Load Info

Host Info

Reports

Batch Job Filters [Updated 4 Minutes and 39 Seconds Ago]

Cluster

All

User

All

UGroup

All

Status

RUNNING

Eff

60% - 90%

Go

Clear

Export

Queue

All

Host

All

HGroup

All

Jobs

Default:30

Except

N/A

JobID

Apps

All

Search

Enter a search term

Q

☐ Dynamic

1 to 30 of 68 [1 2 3]

Next >>

JobID	Job Name	User	Status	State Changes	CPU Usage	Core Eff	Start Time	End Time	Pend	Run Time	SSusp
308695[722]	rl_istm[722]	noamdo	RUNNING	8	8.95d	76.90%	07-10 15:38:28	-	20.7 Hrs	2.9 Days	6.1 Mins
384374	diamond blastx -q /h...	burak	RUNNING	4	87.91d	87.19%	07-11 23:40:49	-	5.1 Hrs	1.6 Days	0 Secs
118867	diamond blastx -q /h...	burak	RUNNING	11	37.54d	89.41%	07-12 06:00:02	-	17 Secs	1.3 Days	4 Mins
478405	module load Singular...	dinah	RUNNING	2	16.55h	71.57%	07-12 14:21:34	-	2.6 Mins	23.1 Hrs	0 Secs
478404	module load Singular...	dinah	RUNNING	2	16.55h	71.57%	07-12 14:21:34	-	2.6 Mins	23.1 Hrs	0 Secs
479339	module load Singular...	erezy	RUNNING	2	11.85h	89.10%	07-13 00:11:02	-	9.8 Hrs	13.3 Hrs	0 Secs
502419	/bin/bash	royu	RUNNING	2	1.97h	87.08%	07-13 11:13:47	-	1 Secs	2.3 Hrs	0 Secs
502976	robb_AbCorr	saurav	RUNNING	2	1.3h	83.82%	07-13 11:55:51	-	1 Secs	1.6 Hrs	0 Secs
502977	robb_AbCorr	saurav	RUNNING	2	1.31h	84.06%	07-13 11:55:51	-	1 Secs	1.6 Hrs	0 Secs
503060	robb_AbCorr	saurav	RUNNING	2	1.33h	85.90%	07-13 11:56:18	-	0 Secs	1.6 Hrs	0 Secs
503061	robb_AbCorr	saurav	RUNNING	2	1.35h	86.85%	07-13 11:56:19	-	1 Secs	1.6 Hrs	0 Secs
503062	robb_AbCorr	saurav	RUNNING	2	1.35h	86.86%	07-13 11:56:19	-	1 Secs	1.6 Hrs	0 Secs
503192	robb_AbCorr	saurav	RUNNING	2	1.33h	86.74%	07-13 11:57:05	-	1 Secs	1.5 Hrs	0 Secs
503233	robb_AbCorr	saurav	RUNNING	2	1.3h	85.00%	07-13 11:57:18	-	0 Secs	1.5 Hrs	0 Secs
503234	robb_AbCorr	saurav	RUNNING	2	1.3h	85.02%	07-13 11:57:19	-	1 Secs	1.5 Hrs	0 Secs
503235	robb_AbCorr	saurav	RUNNING	2	1.3h	85.04%	07-13 11:57:19	-	1 Secs	1.5 Hrs	0 Secs
503239	robb_AbCorr	saurav	RUNNING	2	1.3h	84.61%	07-13 11:57:21	-	1 Secs	1.5 Hrs	0 Secs
503241	robb_AbCorr	saurav	RUNNING	2	1.3h	84.65%	07-13 11:57:21	-	0 Secs	1.5 Hrs	0 Secs
503240	robb_AbCorr	saurav	RUNNING	2	1.3h	85.01%	07-13 11:57:21	-	0 Secs	1.5 Hrs	0 Secs
503244	robb_AbCorr	saurav	RUNNING	2	1.3h	85.01%	07-13 11:57:22	-	1 Secs	1.5 Hrs	0 Secs
503242	robb_AbCorr	saurav	RUNNING	2	1.3h	85.03%	07-13 11:57:22	-	1 Secs	1.5 Hrs	0 Secs
503243	robb_AbCorr	saurav	RUNNING	2	1.3h	85.12%	07-13 11:57:22	-	1 Secs	1.5 Hrs	0 Secs
503287	robb_AbCorr	saurav	RUNNING	2	1.26h	82.52%	07-13 11:57:37	-	0 Secs	1.5 Hrs	0 Secs
503289	robb_AbCorr	saurav	RUNNING	2	1.26h	82.39%	07-13 11:57:38	-	1 Secs	1.5 Hrs	0 Secs
503288	robb_AbCorr	saurav	RUNNING	2	1.26h	82.42%	07-13 11:57:38	-	1 Secs	1.5 Hrs	0 Secs
503291	robb_AbCorr	saurav	RUNNING	2	1.26h	82.44%	07-13 11:57:38	-	0 Secs	1.5 Hrs	0 Secs
503292	robb_AbCorr	saurav	RUNNING	2	1.26h	82.31%	07-13 11:57:39	-	0 Secs	1.5 Hrs	0 Secs
503295	robb_AbCorr	saurav	RUNNING	2	1.26h	82.29%	07-13 11:57:40	-	1 Secs	1.5 Hrs	0 Secs
503296	robb_AbCorr	saurav	RUNNING	2	1.26h	82.21%	07-13 11:57:40	-	0 Secs	1.5 Hrs	0 Secs
503301	robb_AbCorr	saurav	RUNNING	2	1.26h	82.30%	07-13 11:57:42	-	0 Secs	1.5 Hrs	0 Secs

1 to 30 of 68 [1 2 3]

Next >>

Warning Efficiency

Alarm Efficiency

Flapping

Dependencies

Invalid Dependencies

Exited

Exclusive

Interactive

Not Data

RTM – Real Time Monitoring

https://rtm1.wexac.weizmann.ac.il/

IBM Spectrum

LSF RTM 10.2.0.12

Console

Graphs

Reporting

Logs

Cluster

JobIQ

License

Syslog

Thold

?

Dashboards

Cluster

Host

Statistical

Alerts

Reasons

License Scheduler

Benchmark Jobs

Disk Utilization

Job Info

User/Group Info

Load Info

Host Info

Reports

Cluster Filter

Cluster: All Limit: 5 Records Refresh: 1 Minute Go Clear Save

Views: 6 of 6 selected Charts: 4 of 4 selected

Cluster Summary

Actions	Cluster	Cluster Status	Master Status	PAU	Collect Status	CPU %	Slot %	Effic %	Last Start	Last Reconfig	Tholds / Alerts
	wexac	Ok / Ok	Ok / Closed	P	Up	24.3%	31.1%	64.1%	07-03 14:28	07-04 09:50	0 / 0

Cluster Status

Cluster	Total Hosts	Total CPUs	Max Slots	Pend Jobs	Run Jobs	Susp Jobs	Jobs	Users
wexac	539	24,617	24,510	15,361	7,616	3	18035	1295
Totals	539	24,617	0	15,361	7,616	3	18,035	1,295

Master Status

Actions	Host Name	Cluster	Status	Type	RunQ 15sec	RunQ 1min	RunQ 15m	CPU %	Page Rate	I/O Rate	Cur Logins	Idle Time	Temp Avail	Mem Avail
	master1	wexac	Ok	Primary*	3.15	3.15	2.91	6.56%	0.00	165.01	1	30 min	16.8G	16.8G
	master2	wexac	Ok	Secondary	0.42	0.07	0.07	0.29%	0.00	149.56	0	1 day	17.8G	17.8G

Job Throughput Status

Cluster	Hourly Started	Hourly Done	Hourly Exit	Hourly Throughput	24Hr Started	24Hr Done	24Hr Exit	24Hr Throughput
wexac	362	636	132	768	88,984	83,915	17,510	101,425
Totals	362	636	132	768	88,984	83,915	17,510	101,425

Performance Monitoring (Perfmon) Status

Batch Daemon Metrics

Actions	Cluster	Metric	Current	Max	Min	Total
	wexac	Host information queries	225	797	145	14,309
	wexac	Job information queries	779	809	749	32,429
	wexac	Job submission requests	321	321	0	984
	wexac	Jobs accepted from remote cluster	0	0	0	0
	wexac	Jobs completed	195	237	12	1,561
Totals			1,520	2,164	906	49,283

Scheduler Daemon Metrics

Actions	Cluster	Metric	Current	Max	Min	Average
	wexac	Job buckets	98	99	93	96
	wexac	Matching host criteria	14	15	13	14
	wexac	Scheduling interval in second(s)	1	11	1	1

Usage Metrics

Actions	Cluster	Metric	Used	Free	Total
	wexac	MBD file descriptor usage	560	64,975	65,535

Utilization Metrics

Actions	Cluster	Metric	Current	Total
	wexac	Memory utilization	100.00%	100.00%
	wexac	Slot utilization	100.00%	100.00%

Benchmark Jobs Exceptions

Cluster	Benchmark Name	Job ID	Status	Status Reason
No Benchmark Jobs Exceptions Found				

Charts

General

LIM Status for All Clusters

Load OK	Load Busy	Load Locked	Load Other
531	0	0	7

Batch Status for All Clusters

Batch OK	Batch Closed	Batch Other
427	104	7

Grid Status for All Clusters

Down/Diminished Hosts	Busy/Closed Hosts	Idle/Closed Hosts	Low Resources Hosts	Busy Hosts	Idle w/ Jobs Hosts	Starved Hosts	Admin Down Hosts
20	7	31	7	25	318	47	4

Free Memory Slots Availability for All Clusters

Memory Size	Free Memory Slots
1G	16,616
2G	16,280
4G	14,410
8G	9,954
16G	5,581
32G	2,724
64G	1,276
128G	538
256G	157
512G	22
1T	1

RTM Queues status

IBM Spectrum

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Console

Graphs

Reporting

Logs

Cluster

JobIQ

License

Syslog

Thold

Batch Queue Filters

Cluster: All User: All Queue Group: All Queues: 100 Refresh: 1 Minute Go Clear

Search: Include Unused Queues

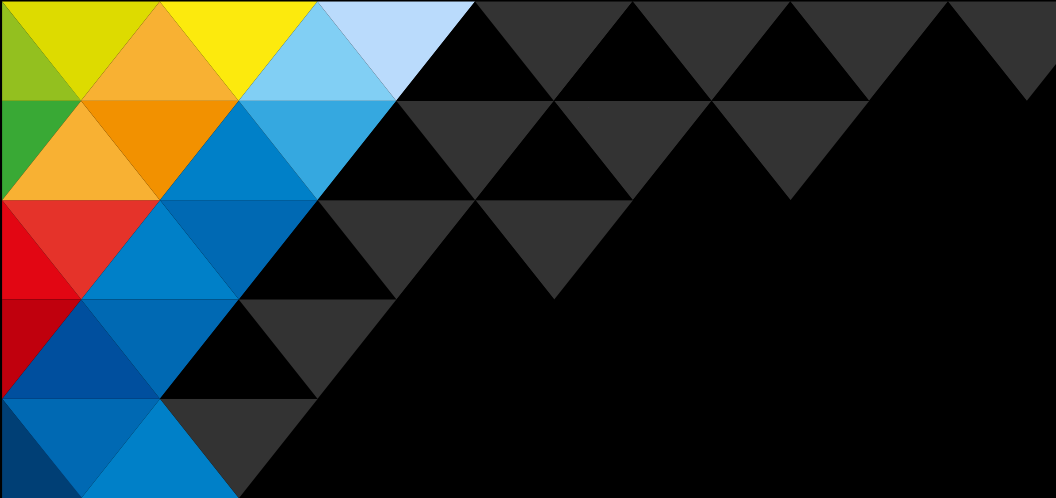
All 59 Queues

Actions	Queue Name	Priority	Status Reason	Avg Effic	Avail Slots	Active Slots	Run Slots	Pend Slots	Suspend Slots	AVG Pend	MAX Pend	AVG Run	MAX Run	Total CPU	Max Memory	Avg Memory
	gpu-long	84	Open:Active	104.19%	1,296	130	130	0	0	-	-	20.1h	1.1d	9809776	142.05G	48.88G
	kushnir	99	Open:Active	99.55%	2,080	1,792	1,792	0	0	-	-	1.2d	1.2d	183832949	1.36T	1.36T
	yan	80	Open:Active	98.91%	2,040	15	15	0	0	-	-	1.5d	2.1d	1957436	540.00M	510.40M
	new-long	38	Open:Active	95.51%	22,516	1,126	1,125	5	1	89d	89d	1.2d	6.7d	115800509	8.28G	275.23M
	bio-pipe	80	Open:Active	95.43%	804	276	236	0	0	-	-	3.1m	5.7m	3552	44.00M	38.44M
	new-medium	38	Open:Active	93.88%	22,516	1,705	1,688	1	17	89d	89d	17.6h	7.1d	104532693	27.86G	330.20M
	physics-medium	79	Open:Active	92.63%	2,648	105	105	0	0	-	-	22.1h	22.1h	7726596	626.00M	594.75M
	physics-long	79	Open:Active	80.36%	2,648	736	736	0	0	-	-	19h	2.4d	52116428	48.58G	763.36M
	new-all.q	38	Open:Active	64.06%	15,312	216	216	4,512	0	20.2h	20.2h	1.1d	5d	11340408	52.91G	7.80G
	gpu-shared	85	Open:Active	56.90%	160	84	84	10,620	0	5.7d	11.9d	1.1d	9.3d	4586722	22.04G	12.49G
	tirosh	70	Open:Active	53.52%	40	25	25	0	0	-	-	3.3d	7.5d	4443907	3.69G	3.19G
	fleishman-service	40	Open:Active	22.86%	836	33	33	0	0	-	-	4.2d	41.9d	1405718	1.36G	1.04G
	bio-gpu	140	Open:Active	19.53%	104	20	20	0	0	-	-	1.8d	2.9d	615320	14.23G	14.18G
	waic-long	186	Open:Active	11.79%	1,168	90	90	2	0	64.1d	64.1d	3.1h	11.3h	109937	83.82G	24.03G
	waic-risk	185	Open:Active	9.69%	1,168	10	10	0	0	-	-	22h	23.4h	76626	7.28G	4.94G
	waic-short	189	Open:Active	9.69%	1,168	15	15	0	0	-	-	57.4m	1.3h	4822	85.80G	85.21G
	bio	80	Open:Active	7.74%	804	31	31	0	0	-	-	6.6h	11.5h	96396	241.21G	126.24G
	new-short	38	Open:Active	4.92%	22,556	1,088	1,088	127	0	1.6d	3.5d	11.2h	7.2d	2475322	12.81G	10.73G
	shlush	80	Open:Active	2.11%	272	117	117	0	0	-	-	13.5d	250.8d	3279699	7.22G	712.81M
	sch-gpu	285	Open:Active	0.61%	96	1	1	0	0	-	-	12.1d	12.1d	6372	4.60G	4.60G
	merbl	70	Open:Active	0.20%	160	8	8	0	0	-	-	45.5d	76.7d	62285	53.54G	13.54G
	new-interactive	38	Open:Active	0.11%	824	4	4	0	0	-	-	2.7d	6.9d	881	2.67G	1.89G
	shalev	50	Open:Active	-	40	16	16	0	0	-	-	45s	45s	0	-	-



RTM - Bad job resource allocation example #1

Job Detail			
Show User Jobs			
General Information			
JobId:	47604	Status:	DONE
Jobname:	HLA-A01; 01_3.txt		
Project:	default	License Project:	-
Queue:	gpu-medium	Cluster Name:	wexac
User:		User Group:	
Charged SAAP:			
Submission Details			
Submit Time:	2021-05-18 11:34:13	Number of CPUs:	12
Submit Host:	access3		
Asked Hosts/Groups:	-	Runtime Estimate:	-
Combined ResReq:	select[(((type = any) && (ngpus>0)) && (type == any))] order[gpu_maxfactor] rusage[mem=2000.00:ngpus_physical=1.00] affinity[thread(1)*1]		
Submit Command:	pan-4.0/netMHCpan -a HLA-A01: 01 -l 8,9,10,11,12,13,14 -f 'HLA-A01; 01_3.txt' > ../netMHCpan_output/HLA-A01; 01_3.txt		
Submit Dir:	\$HOME/TCGA-Data driven approach/TCGA HLA-I/_4_netMHCpan/fasta2		
Resource Requirements:	rusage[mem=2000]		
Output File:	../parallel_output/HLA-A01;01_3.txt-%J.o		
Error File:	../parallel_output/HLA-A01;01_3.txt-%J.e		
Execution Environment			
Ex Host:	12*hgn02 (6*hgn02, 6*hgn11)		
Start Time:	2021-05-18 11:34:23		
Username:		UID String:	42234
User Home:		Working Dir:	h approach/TCGA HLA-I/_4_netMHCpan/fasta2
Max Processors:	12	Max Allocated Slots:	12
CPU Limit:		Run Time Limit:	12 Hours
Memory Limit:	1.953G	Swap Limit:	0.000M
Effective ResReq:	select[(((type = any) && (type == any))) && (ngpus>0)] order[gpu_maxfactor] rusage[mem=2000.00:ngpus_physical=1.00] affinity[thread(1)*1]		
Current/Last Status			
PGIDS:	64330		
PIDS:	46739, 46740, 46741, 64330, 64371, 64373, 64380		
Threads:	8		
Pend Time:	10 Seconds	PROV Time:	-
Effective Pending Time Limit:	-	Run Time:	4.47 Hours
PSUSP Time:	-	USUSP Time:	-
SSUSP Time:	-	SSUSP Time:	-
Unknown Time:	-		
Cumulative CPU:	4.46 Hours	System Time:	-
Cur Mem Used:	38.000M	Max Mem Used:	38.000M
Cur V.Memory Size:	0.000M	Max V.Memory Size:	0.000M
Exit Code:	0	End Time:	2021-05-18 16:02:23
		User Time:	4.46 Hours
		Job Efficiency:	8.31%



RTM - Bad job resource allocation example #1

- In the above example, we see job's detailed information. This can help us identify jobs that was submitted with wrong resource allocation.
- We can see that job was executed on a gpu queue while this program using only cpu power
- We can see that this job was submitted with 12 cores allocation while the job was really using only 1 core (look job efficiency parameter)
- We can see that 24GB of memory was requested for job, while only 38MB(!) was actually used
- Understanding the most optimal resource requirements for programs is very important for jobs and overall system usage efficiency.
- Our recommendation prior massive array or MPI job submission just run 1-2 jobs to understand the actual resources demands.



RTM - Bad job resource allocation example #2

JobID	Job Name	Queue	User	UGroup	JGroup	Status	State Changes	Mem Request	Mem Wasted ▾ 1×	Max Memory	CPU Usage	CPU Effic	Num Nodes	Num CPUs	Execution Host
950371	ciwd	ciwd	ciwd	ciwd	-	DONE	2	-	4611.72G	638.28G	4442.81d	99.65%	32	896	896*cn462

- In the above job details table, we can see a parallel mpi job that requested 896 CPU's per job and more than 5TB of RAM memory.
- While we can see that CPU efficiency of the job is very good, we can see that there are more than 4.6TB(!) of memory was completely wasted.
- Always check your jobs real resource usage in order to prevent such big resource waste.



RTM - Bad job resource allocation example #3

JobID	Job Name	Queue	User	UGroup	JGroup	Status	State Changes	Mem Request	Mem Wasted	Max Memory	CPU Usage	CPU Effic  1x	Num Nodes	Num CPUs	Execution Host
144643	module load matlab/R...	gpu-short	ozfrank	logon-wx-gro-lsf	-	DONE	2	-	4.79G	3.02G	3.97d	2481.48%	1	1	ibdgx001

- In the above job details table, we can see the opposite situation comparing to other examples.
- Here we can see a job that has over efficiency rate of 2481%
- What does it mean? It means that the requested resources for that job was significantly smaller than was really needed for that job.
- In this case, we see that CPU request for that job is only one single CPU, while the job was actually using almost 25 CPU's.
- This situation is bad too because user is taking more resources than was requested and it affect badly on the LSF scheduler performance and resource calculations.

WEXAC Best practices and recommendations

- Minimal Linux knowledge required
- Load only essential modules
- Don't mix different toolchains (for instance gcc/10.3.0 with gcc/8.3.0)
- If you must have multiple modules loaded – make sure they belong to same toolchain (example: foss/2021b)
- You should plan which 1 environment type you want to use out of below 3 options (**don't mix them!**) :
 - Conda
 - Modules
 - Containers

WEXAC Best practices and recommendations

- If you are using container – all your environment for current job should be inside the container !
- In case of modules usage – **don't** use conda !
- Conda users – **don't use** containers neither modules !
- Make sure you have clean enviroment and clean ~/.bashrc to avoid compatibility issues.
- Pipelines involves multiple environment types should be separated to different job types or including sterilization between different environment types switching like module purge or conda deactivate commands between different pipelines steps.

WEXAC Best practices and recommendations

```
[vadimm@access4 ~]$ ml
```

```
No modules loaded
```

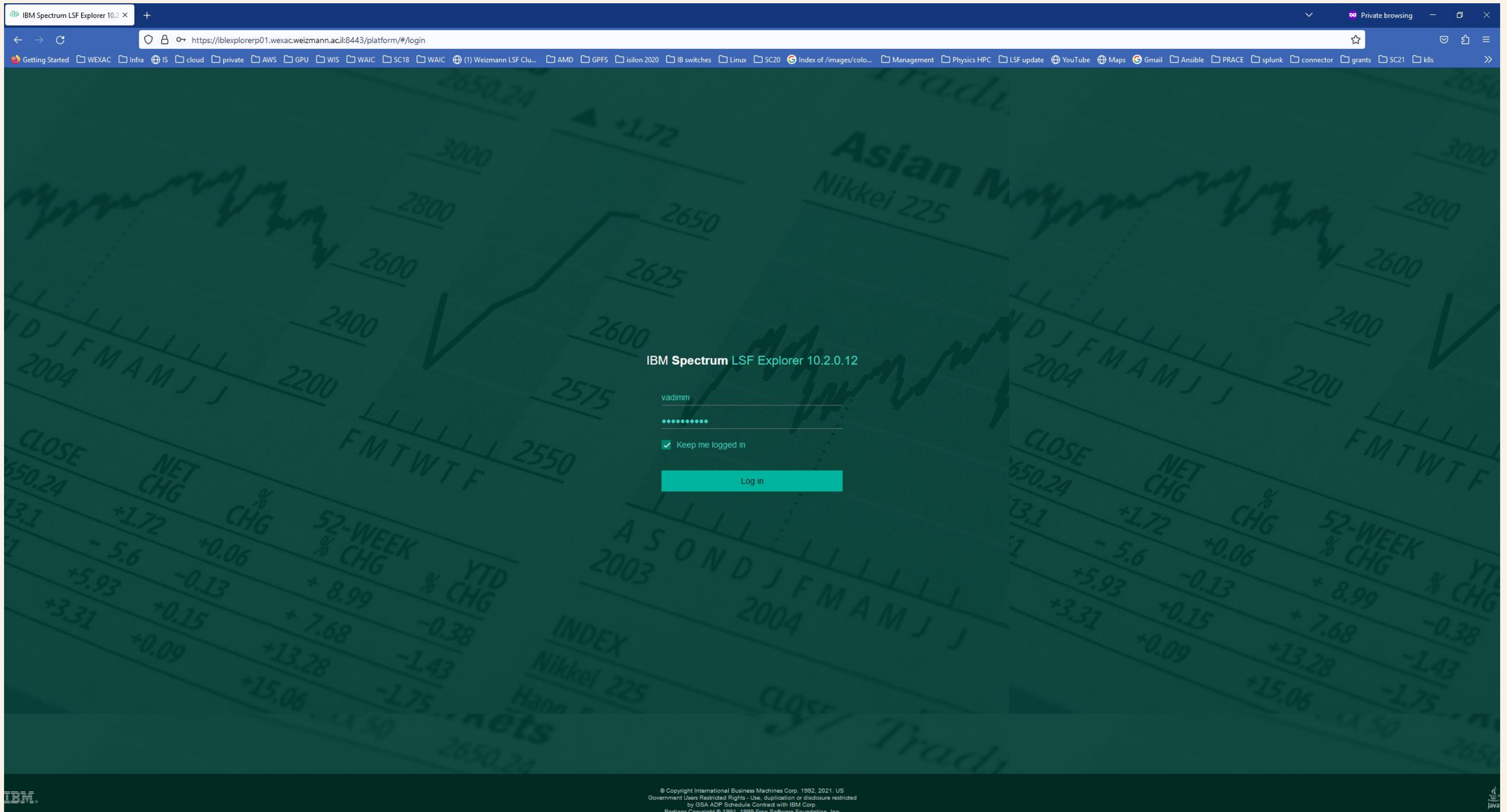
```
[vadimm@access4 ~]$ ml foss/2021b
```

```
[vadimm@access4 ~]$ ml
```

Currently Loaded Modules:

- | | |
|------------------------------------|------------------------------------|
| 1) GCCcore/11.2.0 | 5) numactl/2.0.14-GCCcore-11.2.0 |
| 9) hwloc/2.5.0-GCCcore-11.2.0 | 13) PMIx/4.1.0-GCCcore-11.2.0 |
| 17) gomp/2021b | |
| 2) zlib/1.2.11-GCCcore-11.2.0 | 6) XZ/5.2.5-GCCcore-11.2.0 |
| 10) OpenSSL/1.1 | 14) OpenMPI/4.1.1-GCC-11.2.0 |
| 18) FFTW/3.3.10-gomp-2021b | |
| 3) binutils/2.37-GCCcore-11.2.0 | 7) libxml2/2.9.10-GCCcore-11.2.0 |
| 11) libevent/2.1.12-GCCcore-11.2.0 | 15) OpenBLAS/0.3.18-GCC-11.2.0 |
| 19) ScaLAPACK/2.1.0-gomp-2021b-fb | |
| 4) GCC/11.2.0 | 8) libpciaccess/0.16-GCCcore-11.2. |
| 0 12) UCX/1.11.2-GCCcore-11.2.0 | 16) FlexiBLAS/3.0.4-GCC-11.2.0 |
| 20) foss/2021b | |

WEXAC LSF explorer <https://iblexplorerp01.wexac.weizmann.ac.il:8443>



WEXAC LSF explorer <https://iblexplorerp01.wexac.weizmann.ac.il:8443>

WEXAC

Infra

IS

cloud

private

GPU

AWS 2023 project...

WIS

WAIC

SC18

WAIC

(1) Weizmann LSF...

AMD

GPFS

isilon 2020

IB switches

Linux

SC20

Management

Physics HPC

LSF update

Ansible

connector

grants

SC21

k8s

LSF tweaks

Other Bookmarks

IBM Spectrum LSF Explorer 10.2.0.12

Reports

vadimm

10:54:55 AM +0300

Dashboards > Cluster Overview

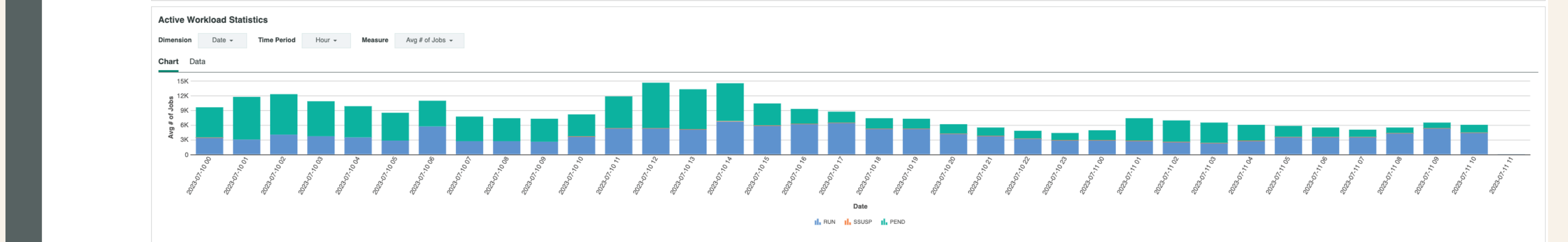
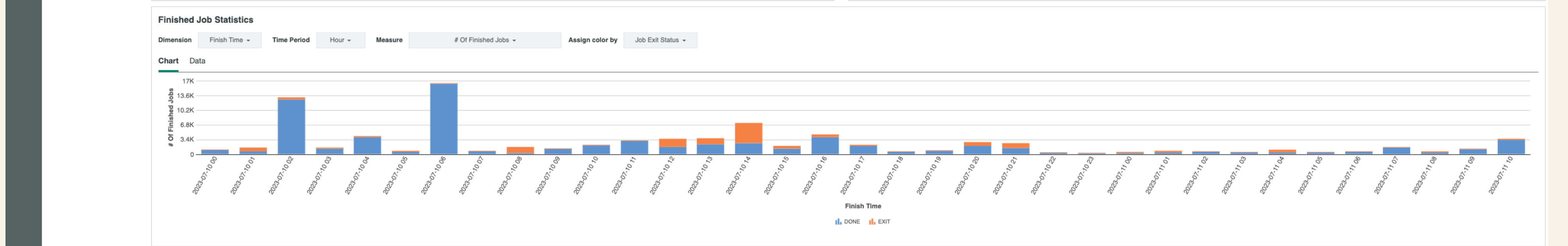
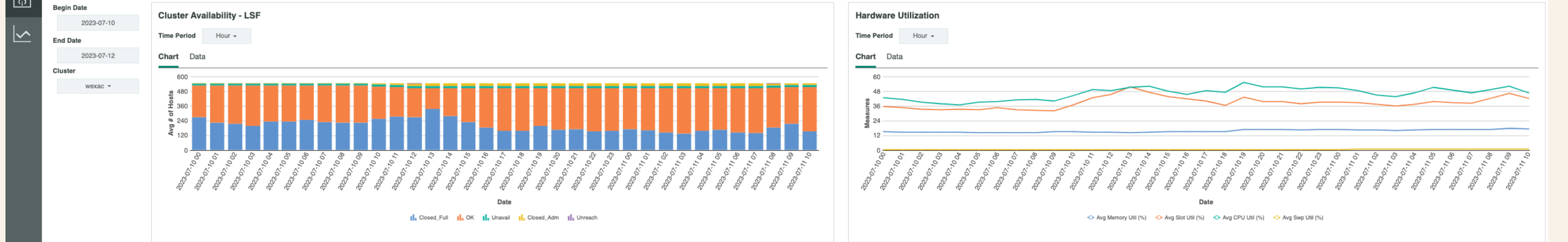
Cluster Overview

Using local browser time zone

Export As

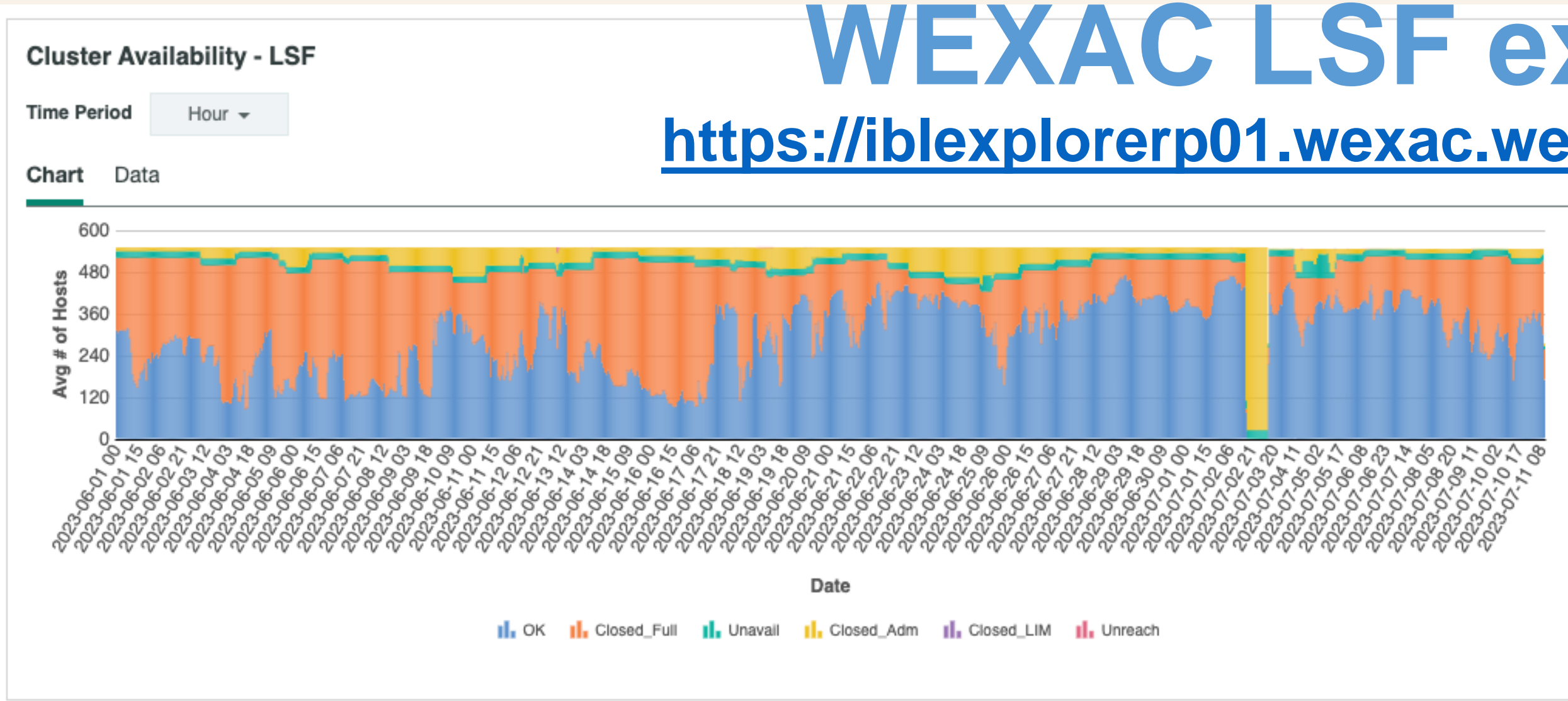
Copy As Link

Refresh Thumbnail

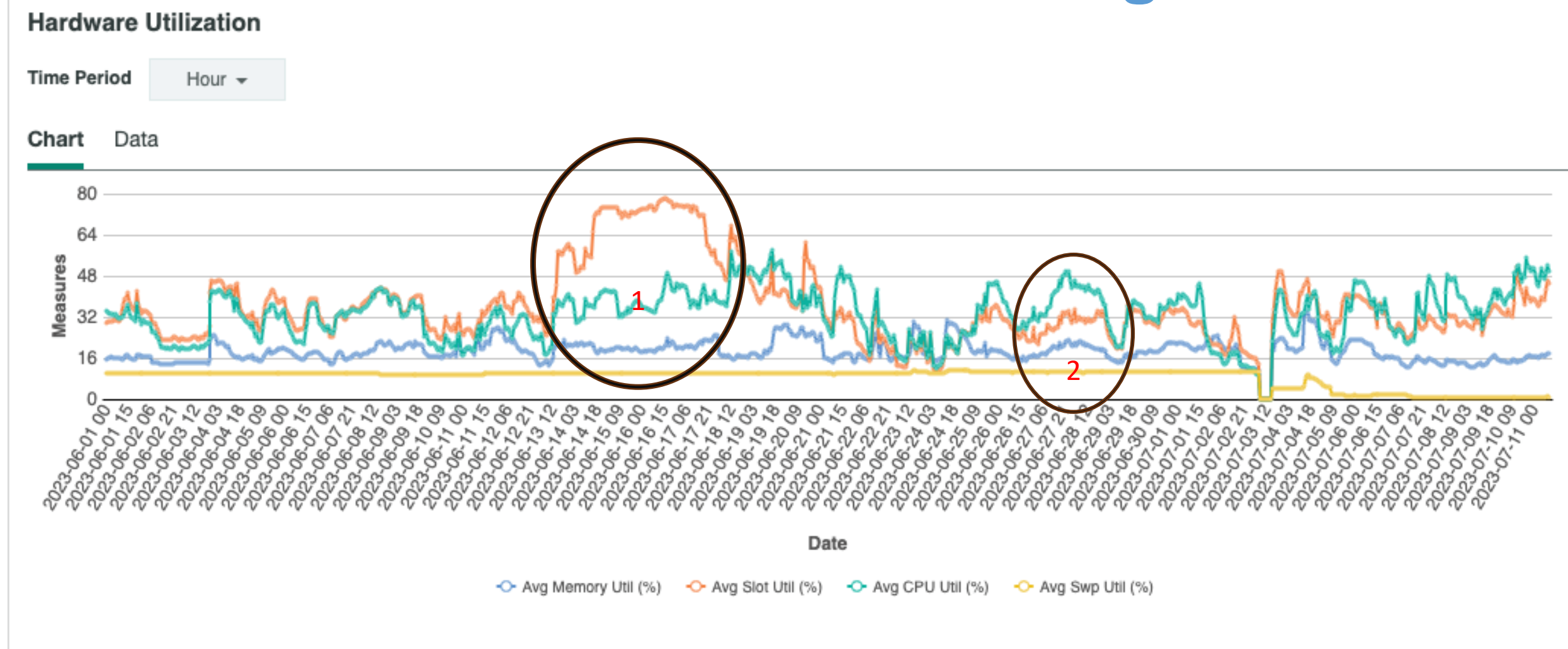


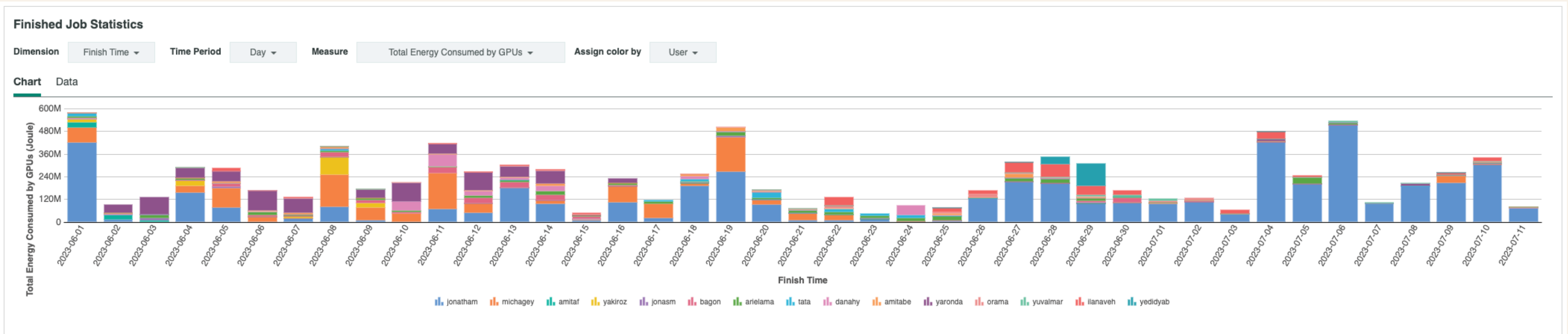
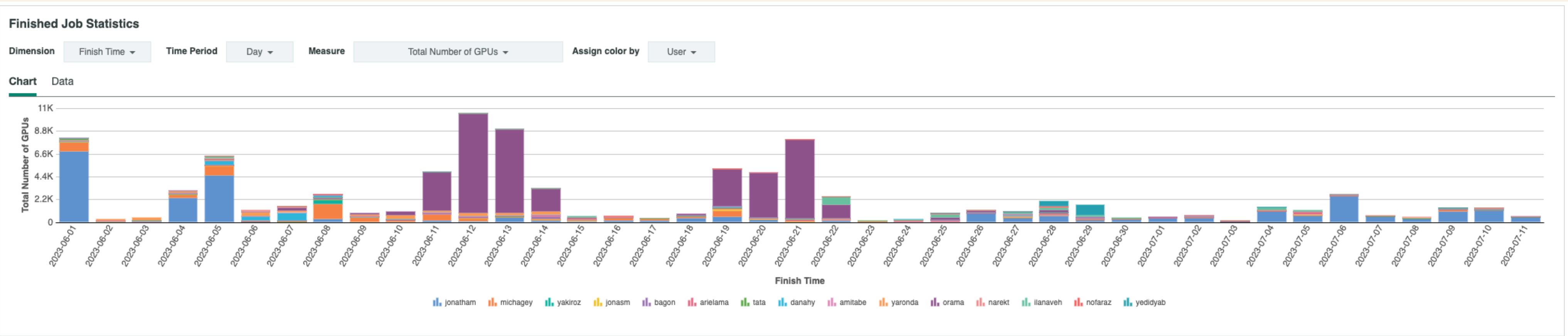
WEXAC LSF explorer

<https://iblexplorerp01.wexac.weizmann.ac.il:8443>



High delta between CPU util and Slot util – bad sign of efficiency problems



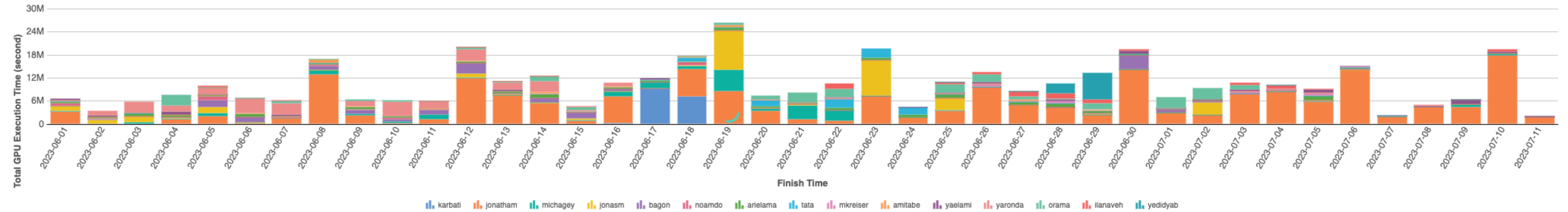


Looking for correlation between GPU allocation and energy consumption

Finished Job Statistics

Dimension Finish Time ▾ Time Period Day ▾ Measure Total GPU Execution Time ▾ Assign color by User ▾

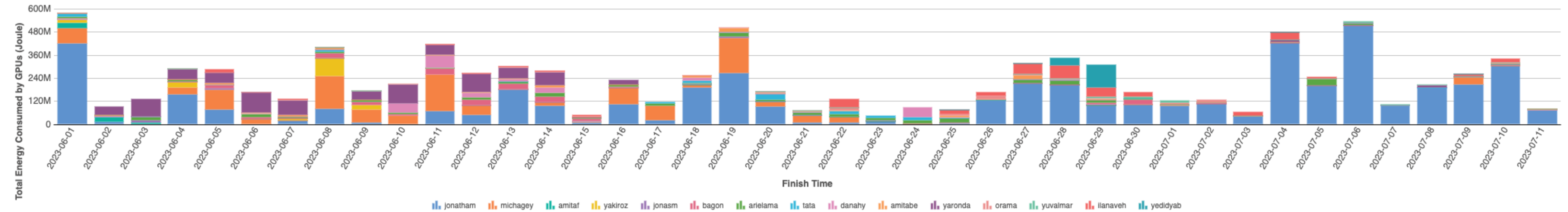
Chart Data



Finished Job Statistics

Dimension Finish Time ▾ Time Period Day ▾ Measure Total Energy Consumed by GPUs ▾ Assign color by User ▾

Chart Data



Workload Slots Charge

Dimension

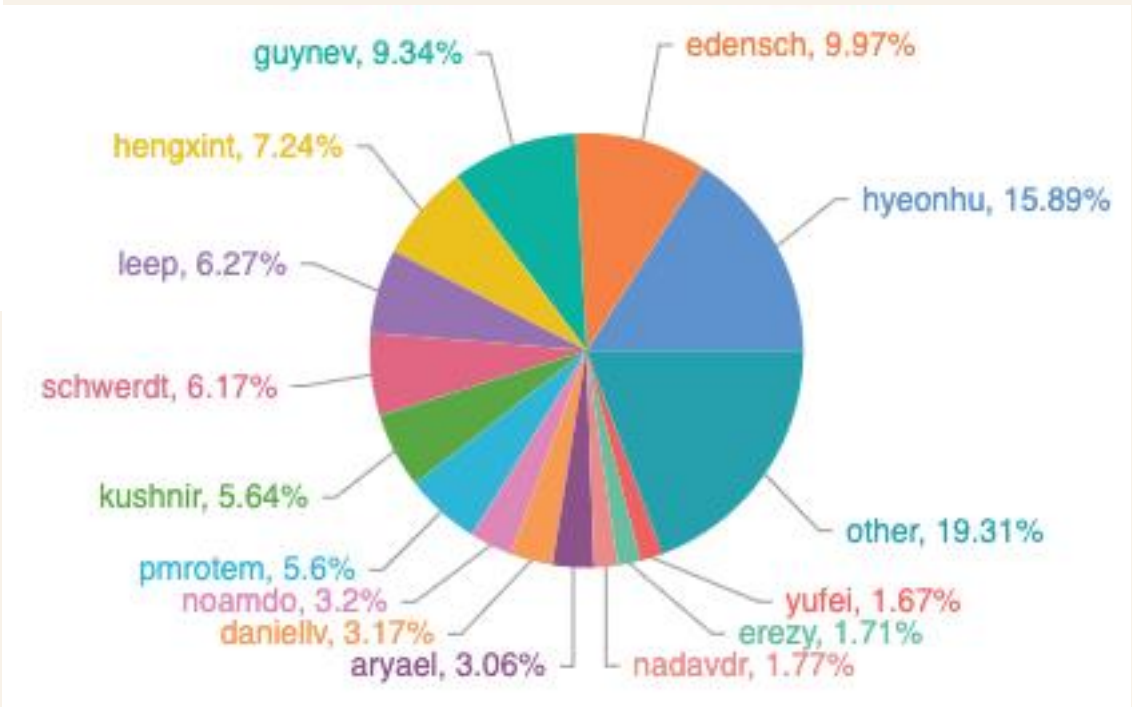
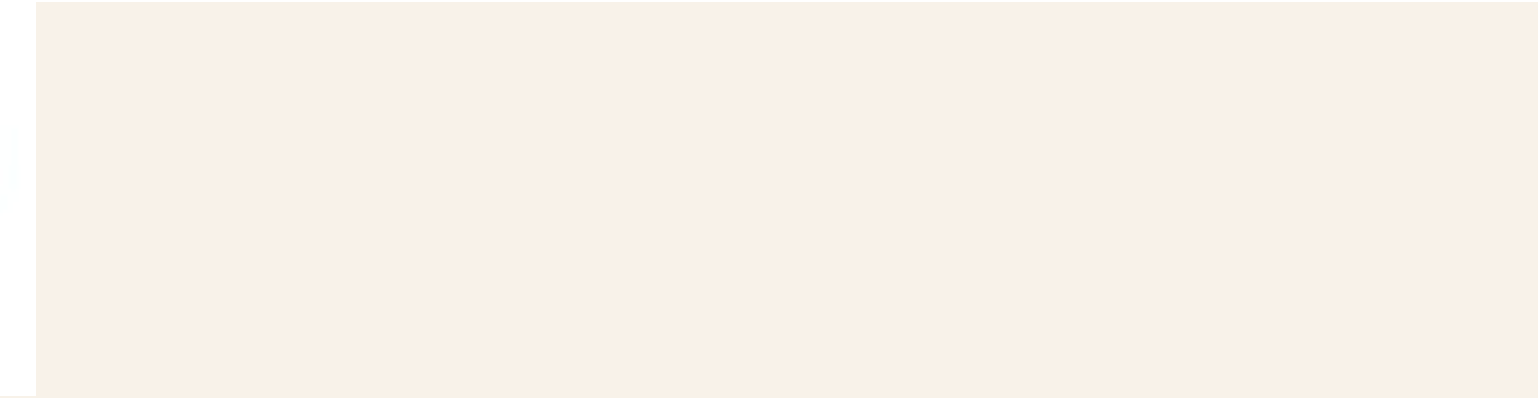
User

Begin Date

2023-06-01

End Date

2023-07-12



Workload Slots Charge Summary

Begin Date

2023-07-05

End Date

2023-07-12

Cluster

wexac

Project

All selected (9)

User

All selected (200)

User Group

All selected (78)

Dimension

User Group

User Group	Slot Duration (Hour)	Slot Charge
yan-wx-grp-lsf	484105.93	1771.83
kushnir-wx-grp-lsf	181055.05	662.66
schneidmann-wx-grp-lsf	174125.81	637.3
sorek-wx-grp-lsf	92222.65	337.53
elinav-wx-grp-lsf	61852.9	226.38

Showing 1 to 10 of 78 entries

Workload Slot Charge Distribution

Export As

Copy As Link

Refresh Thumbnail

Time Period

Day

Assign color by

User

Begin Date

2023-07-05

End Date

2023-07-12

Cluster

wexac

Project

default

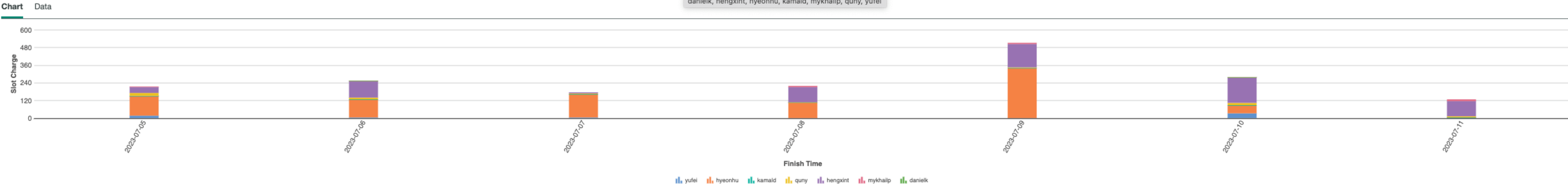
User

All selected (7)

User Group

yan-wx-grp-lsf

danielk, hengxint, hyeonhu, kamald, mykhailp, quny, yufei



LSF explorer dashboards

Workload Statistics

Begin Date

2023-07-12

End Date

2023-07-14

Cluster

wexac

User

All selected (122)

User Group

All selected (66)

Project

All selected (6)

Queue

All selected (38)

Application

All selected (4)

Job Status

All selected (3)

Active Workload Statistics

Dimension

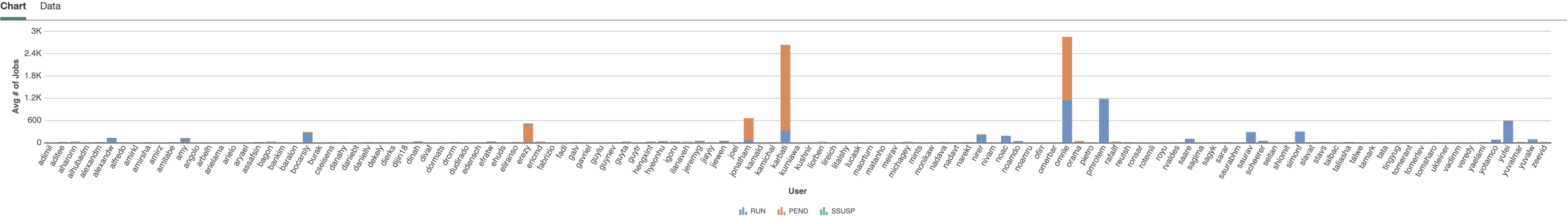
User

Time Period

Hour

Measure

Avg # of Jobs



Workload Statistics Summary

Dimension

2 selected

Measure

3 selected

User	Queue	Avg Memory Usage (KB)	Total CPU Time (s)	Avg # of Jobs
omrile	physics-medium	0	0	1707
karbati	gpu-short	0	0	1287
omrile	physics-medium	296173289.88	788404.86	1136
karbati	gpu-medium	0	0	702
yufei	new-long	8298690208.63	6876.83	686

Workload Accounting

Begin Date

2023-07-07

End Date

2023-07-14

Cluster

wexac

Project

All selected (7)

Queue

All selected (45)

User

All selected (185)

User Group

All selected (76)

Job Exit Status

All selected (2)

Job Run Time Rank

All selected (10)

Application

None selected

Finished Job Statistics

Dimension

Finish Time

Time Period

Hour

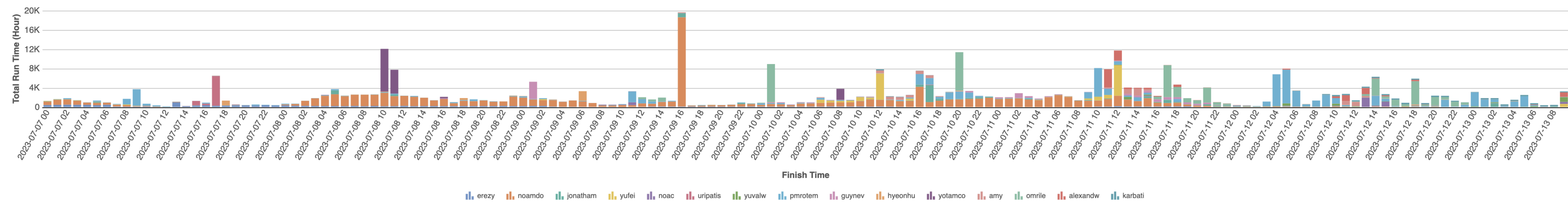
Measure

Total Run Time

Assign color by

User

ChartData



Job Run Time Rank

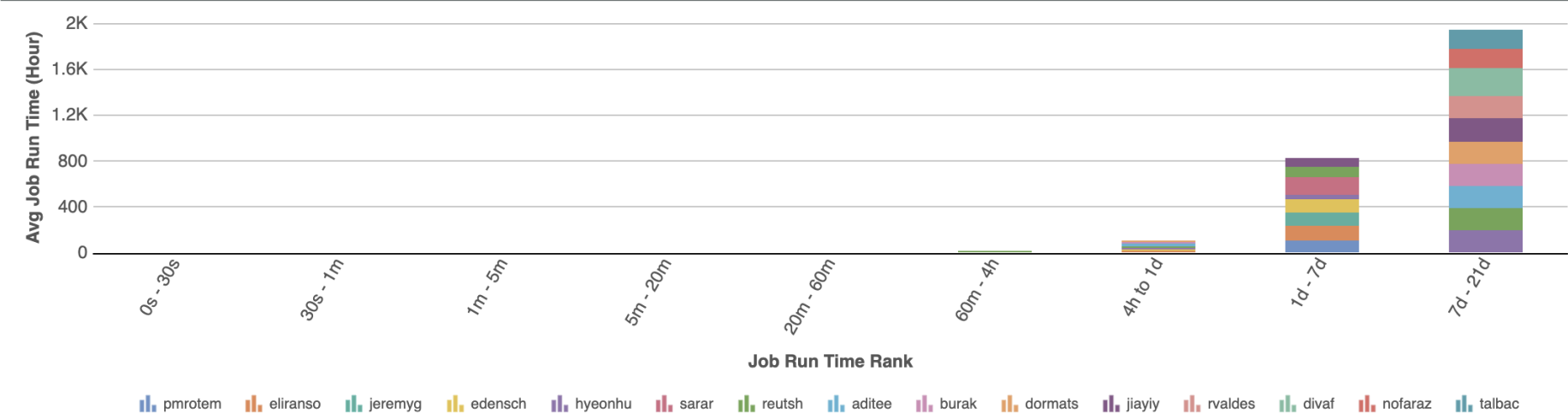
Measure

Avg Job Run Time

Assign color by

User

ChartData



Job Pend Time Rank

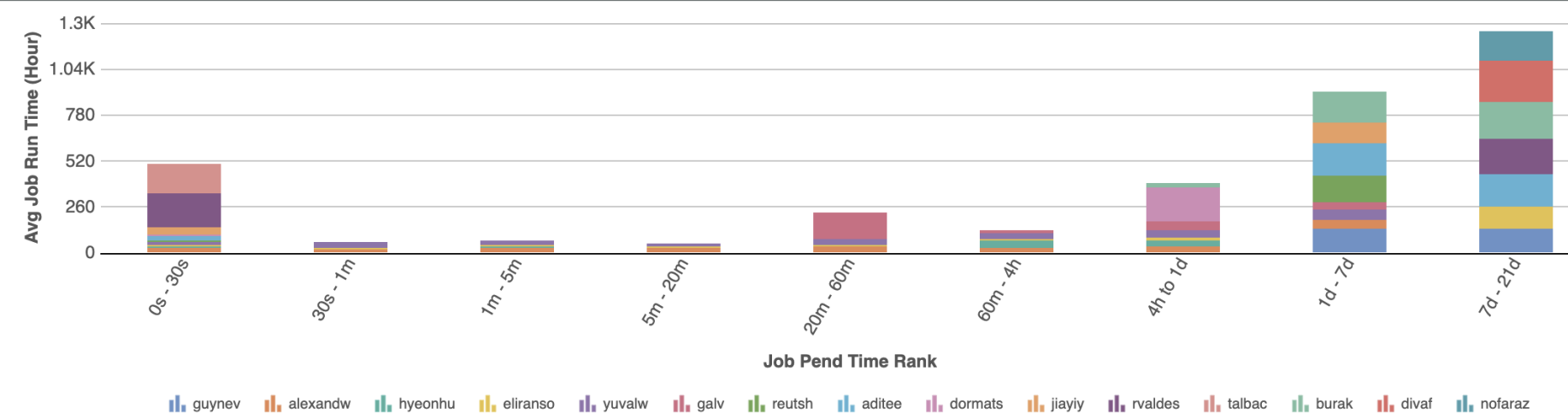
Measure

Avg Job Run Time

Assign color by

User

ChartData



Workload Summary

Dimension

2 selected

Measure

All selected (5)

Queue	User	# Of Finished Jobs	Total Run Time (Hour)	Total Pend Time (Hour)	Total CPU Time (Hour)	Total Slot Duration (Hour)
sorek-gpu	erezy	21267	13907.42	1096248.4	13365.43	13907.42
new-short	avnim	3918	11.62	169463.36	6.12	11.57
new-medium	noamdo	5292	55482.69	82309.41	185072.8	55482.69
sch-gpu	jonatham	827	550.76	44431.36	549.31	550.76

Workload Accounting

Begin Date

2023-07-01

End Date

2023-07-14

Cluster

wexac

Project

All selected (11)

Queue

All selected (47)

User

All selected (241)

User Group

All selected (84)

Job Exit Status

All selected (2)

Job Run Time Rank

All selected (10)

Application

None selected

Finished Job Statistics

Dimension

User Group

Time Period

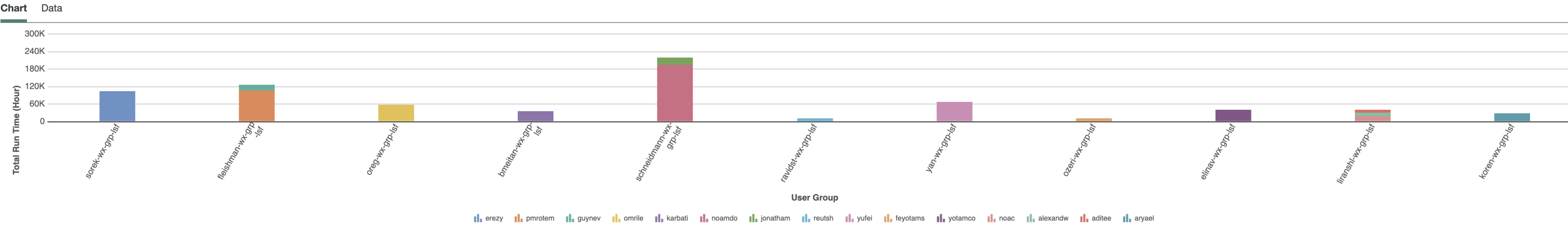
Day

Measure

Total Run Time

Assign color by

User



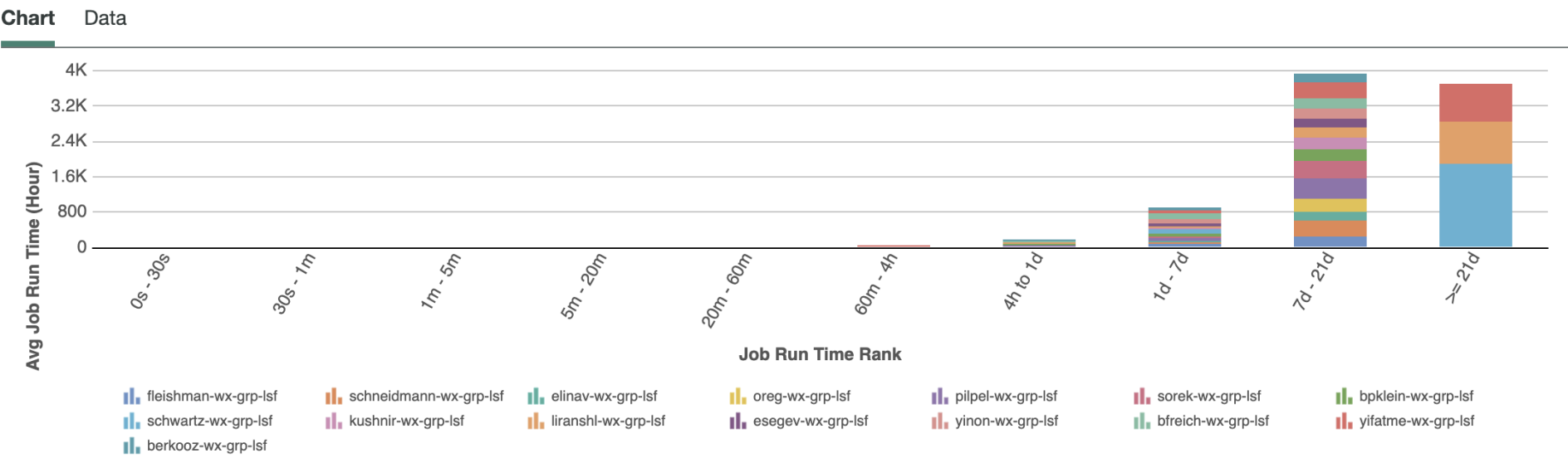
Job Run Time Rank

Measure

Avg Job Run Time

Assign color by

User Group



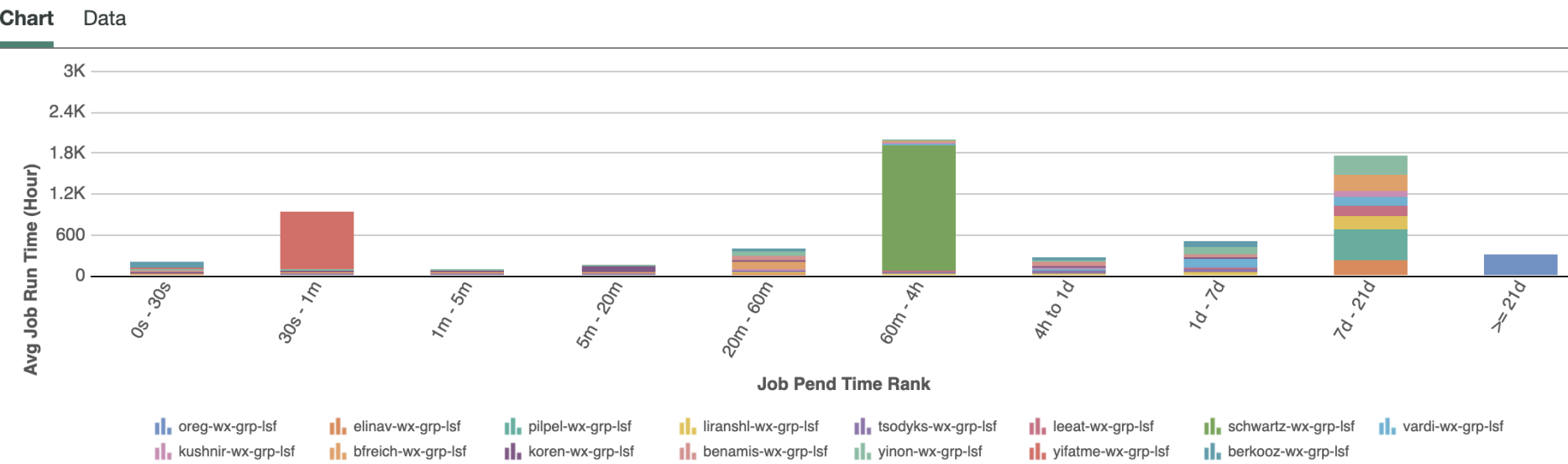
Job Pend Time Rank

Measure

Avg Job Run Time

Assign color by

User Group



Workload Summary

Dimension

2 selected

Measure

All selected (5)

Queue	User	# Of Finished Jobs	Total Run Time (Hour)	Total Pend Time (Hour)	Total CPU Time (Hour)	Total Slot Duration (Hour)
new-short	pmrotem	98322	40421.72	1543.46	39526.89	40421.72
new-short	saurav	27775	2956.14	4567.08	2932.59	2956.14
new-short	amy	26018	8988.89	19102.7	8681.15	8988.89

Begin Date

2023-07-01

End Date

2023-07-14

Cluster

wexac

Project

default

Queue

All selected (4)

User

All selected (6)

User Group

liranshl-wx-grp-lsf...

Job Exit Status

All selected (2)

Job Run Time Rank

All selected (10)

Application

None selected

Finished Job Statistics

Dimension

User

Time Period

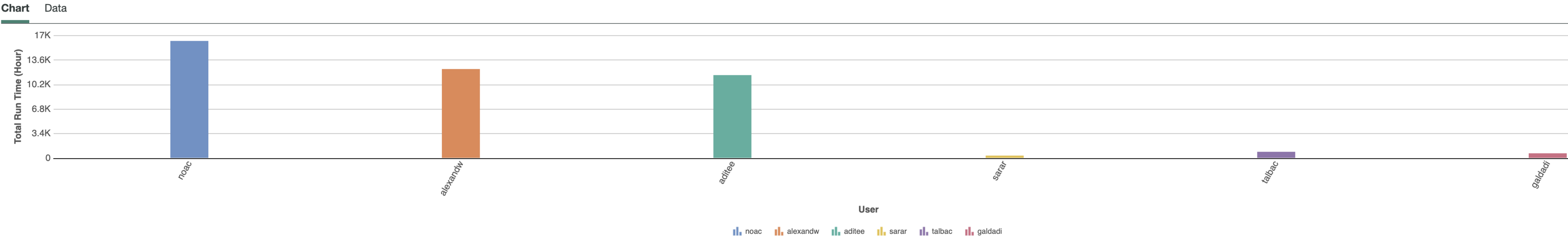
Day

Measure

Total Run Time

Assign color by

User



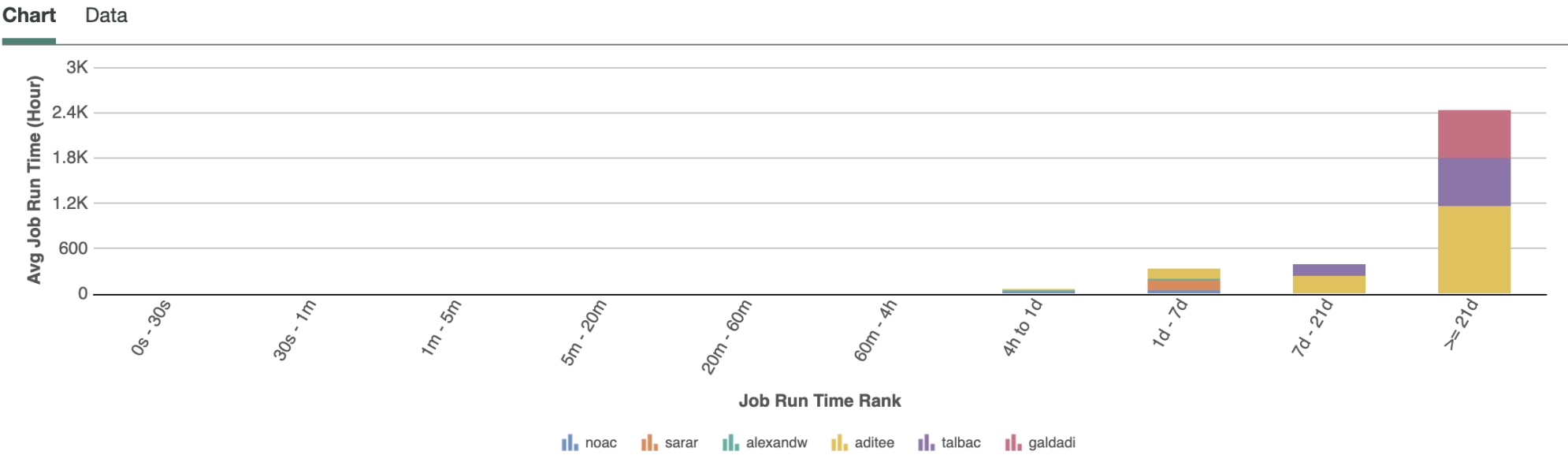
Job Run Time Rank

Measure

Avg Job Run Time

Assign color by

User



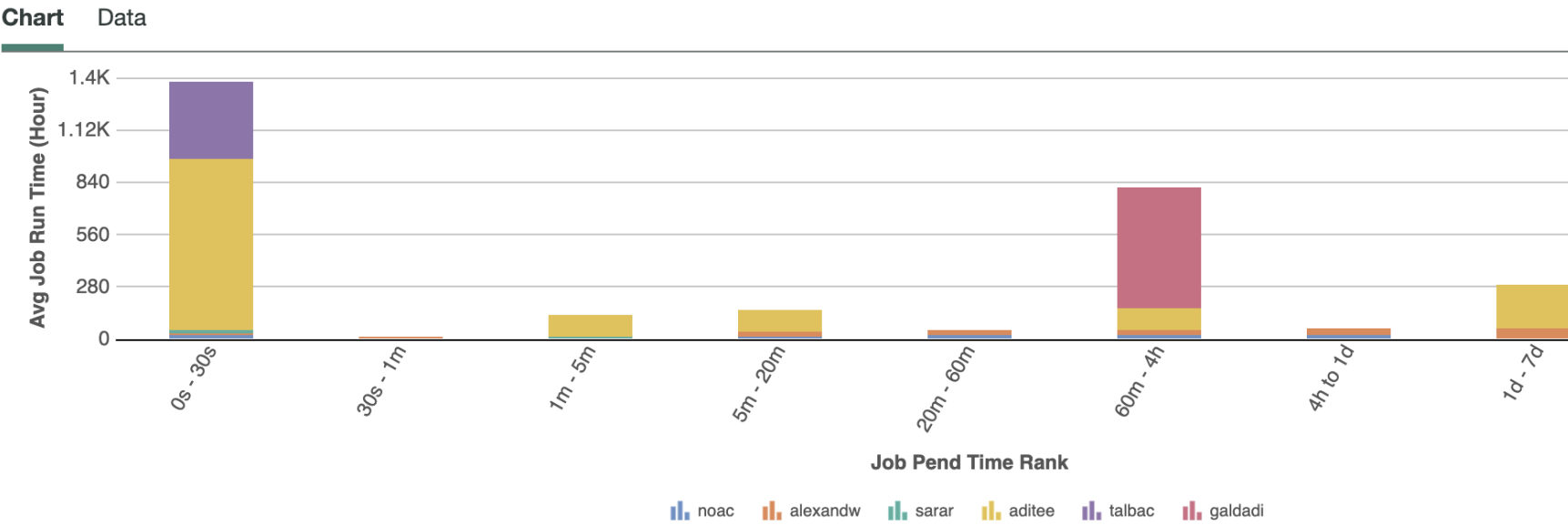
Job Pend Time Rank

Measure

Avg Job Run Time

Assign color by

User



Workload Summary

Dimension

2 selected

Measure

All selected (5)

Queue	User	# Of Finished Jobs	Total Run Time (Hour)	Total Pend Time (Hour)	Total CPU Time (Hour)	Total Slot Duration (Hour)
shlush	aditee	5	4614.33	0	109	4614.33
shlush	talbac	2	816.69	0	0.71	816.69
new-long	noac	7	234.08	0.03	4.87	4915.74
shlush	sarar	22	288.46	0.07	2.38	288.46

Begin Date

2023-07-08

End Date

2023-07-14

Cluster

wexac

User

All selected (14...)

User Group

All selected (58)...

Project

All selected (5)

Queue

All selected (42)...

Application

All selected (3)

Is Eligible Pending

None selected

Pending Reason Type

All selected (5)

Pending Reason

All selected (26)...

Detailed Pending Info

All selected (18)...

Pending Jobs Over Time

Time Period

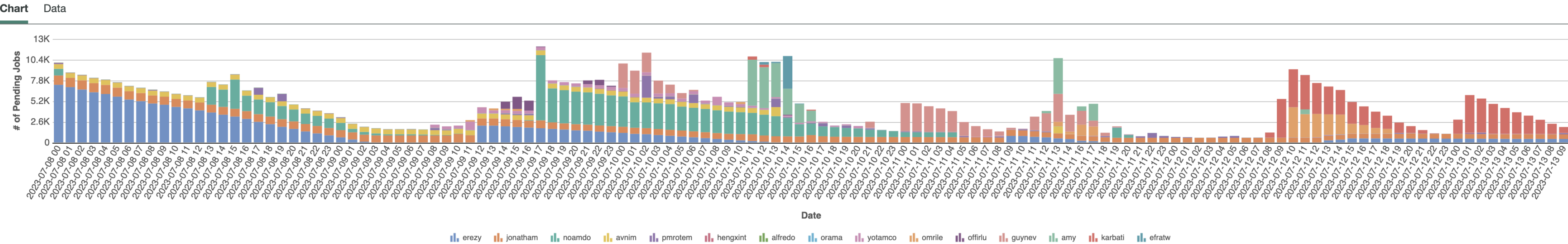
Hour

Assign color by

User

Measure

of Pending Jobs



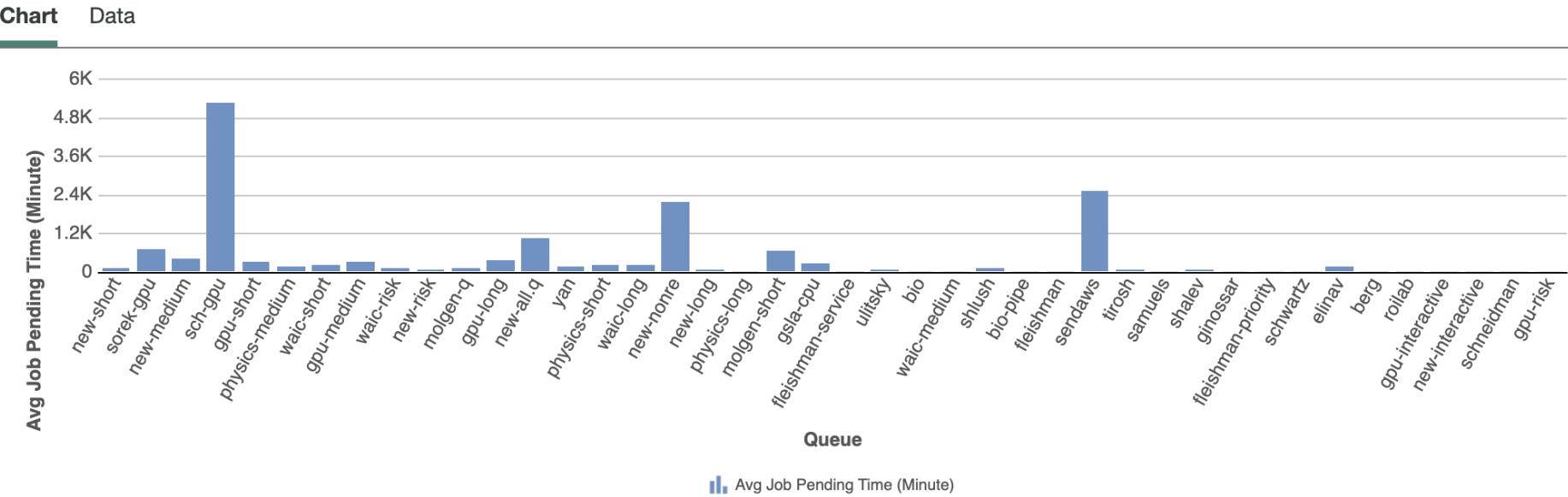
Pending Time Analysis

Dimension

Queue

Measure

Avg Job Pending Time



Top Pending Reasons

Dimension

4 selected

Measure

All selected (2)

Pending Reason	Queue	User	User Group	# of Pending Jobs	Total Job Pending Time (Minute)
Job's requirements for resource reservation not satisfied	sorek-gpu	erezy	sorek-wx-grp-lsf	10283	7288328.95
Resource limit defined on queue has been reached	new-medium	noamdo	schneidmann-wx-grp-lsf	9256	4412344.02
Job's requirements for resource reservation not satisfied	sch-gpu	jonatham	schneidmann-wx-grp-lsf	1072	4177721
Job has reached its requeue limit	new-short	avnim	efrats-wx-grp-lsf	595	2218800

Pending jobs troubleshooting

First, use `bjobs -l yourjobid` command

Then add `bjobs -l -p1 yourjobid` or `bjobs -l -p2 yourjobid` or `bjobs -l -p3 yourjobid`

```
bjobs -l -p1 53690
```

```
[vadimm@ibdgxa01 ~]$ bjobs 53690
JOBID      USER    STAT  QUEUE      FROM_HOST   EXEC_HOST   JOB_NAME   SUBMIT_TIME
53690      amy     PEND  new-medium access          *_fcgrH_16 Jul 23 11:09
[vadimm@ibdgxa01 ~]$ bjobs -l 53690
-----
PENDING REASONS:
Job requirements for reserving resource (mem) not satisfied: 55 hosts;
```

```
Usage[mem=100000], specified hosts <public_hosts>,
PENDING REASONS:
Job's requirements for resource reservation not satisfied (Resource: mem): cn6
53, cn652, cn651, cn650, cn789, cn788, cn787, cn784, cn783
, cn782, cn781, cn780, cn779, cn778, cn773, cn770, cn110,
cn769, cn767, cn109, cn766, cn106, cn763, cn105, cn762, cn
102, cn100, cn759, cn758, cn757, cn754, cn753, cn751, cn74
9, cn748, cn747, cn746, cn745, cn743, cn742, cn741, cn098,
cn097, cn096, cn095, cn094, cn093, cn092, cn091, cn088, c
n087, cn710, cn086, cn084;
```

```
bjobs -l -p2 53690
```

```
Usage[mem=100000], specified hosts <public_hosts>,
PENDING REASONS:
Candidate host pending reasons (85 of 545 hosts):
Job's requirements for resource reservation not satisfied (Resource: mem): c
n653, cn652, cn651, cn650, cn789, cn788, cn787, cn784, cn7
83, cn782, cn781, cn780, cn779, cn778, cn773, cn770, cn110
, cn769, cn767, cn109, cn766, cn106, cn763, cn105, cn762,
cn102, cn100, cn759, cn758, cn757, cn754, cn753, cn751, cn
749, cn748, cn747, cn746, cn745, cn743, cn742, cn741, cn09
8, cn097, cn096, cn095, cn094, cn093, cn092, cn091, cn088,
cn087, cn086, cn084;
Job slot limit reached: cn752, cn108, cn750, cn765, cn709, cn107, cn262, cn7
64, cn774, cn055, cn744, cn772, cn771, cn104, cn739, cn099
, cn103, cn760, cn184, cn101, cn183, cn786, cn768, cn785,
cn090, cn089, cn756, cn755, cn710, cn180, cn085, cn775;
```

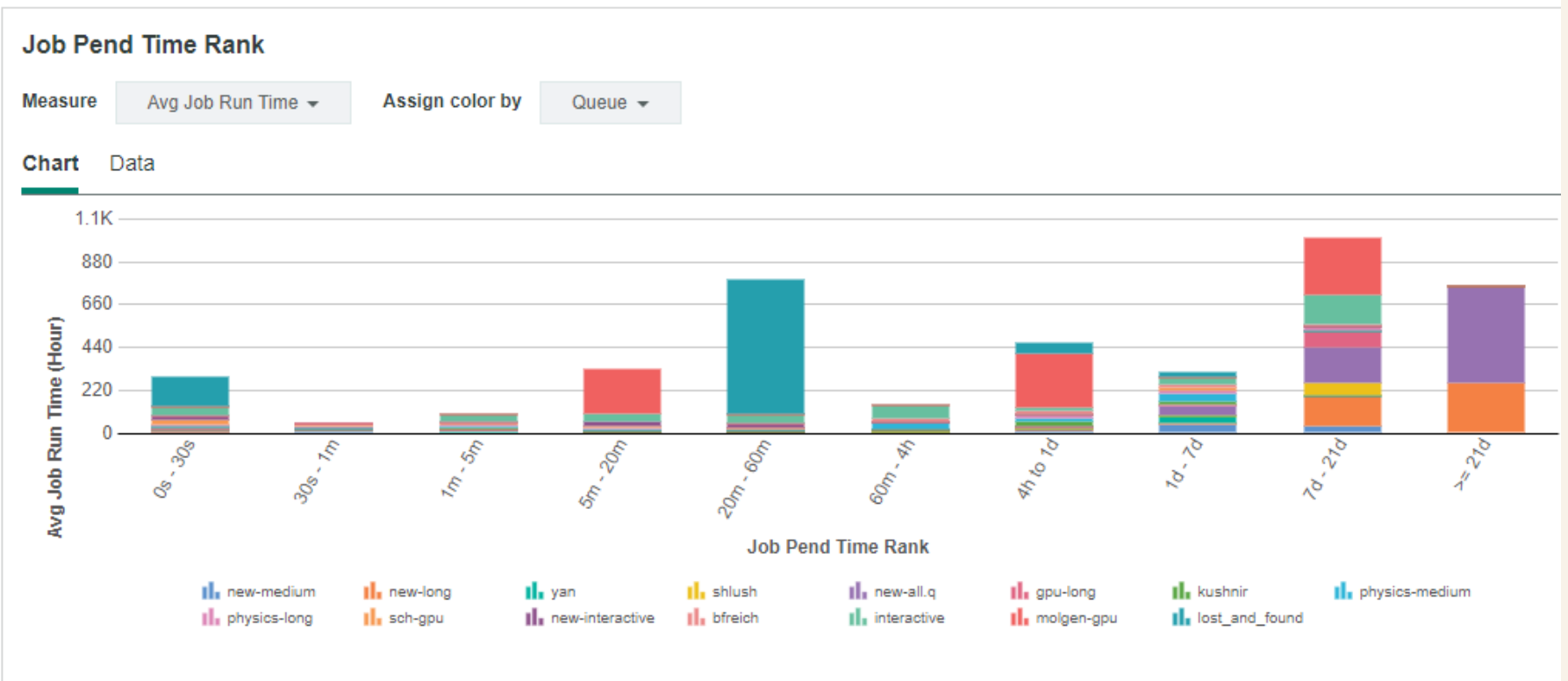
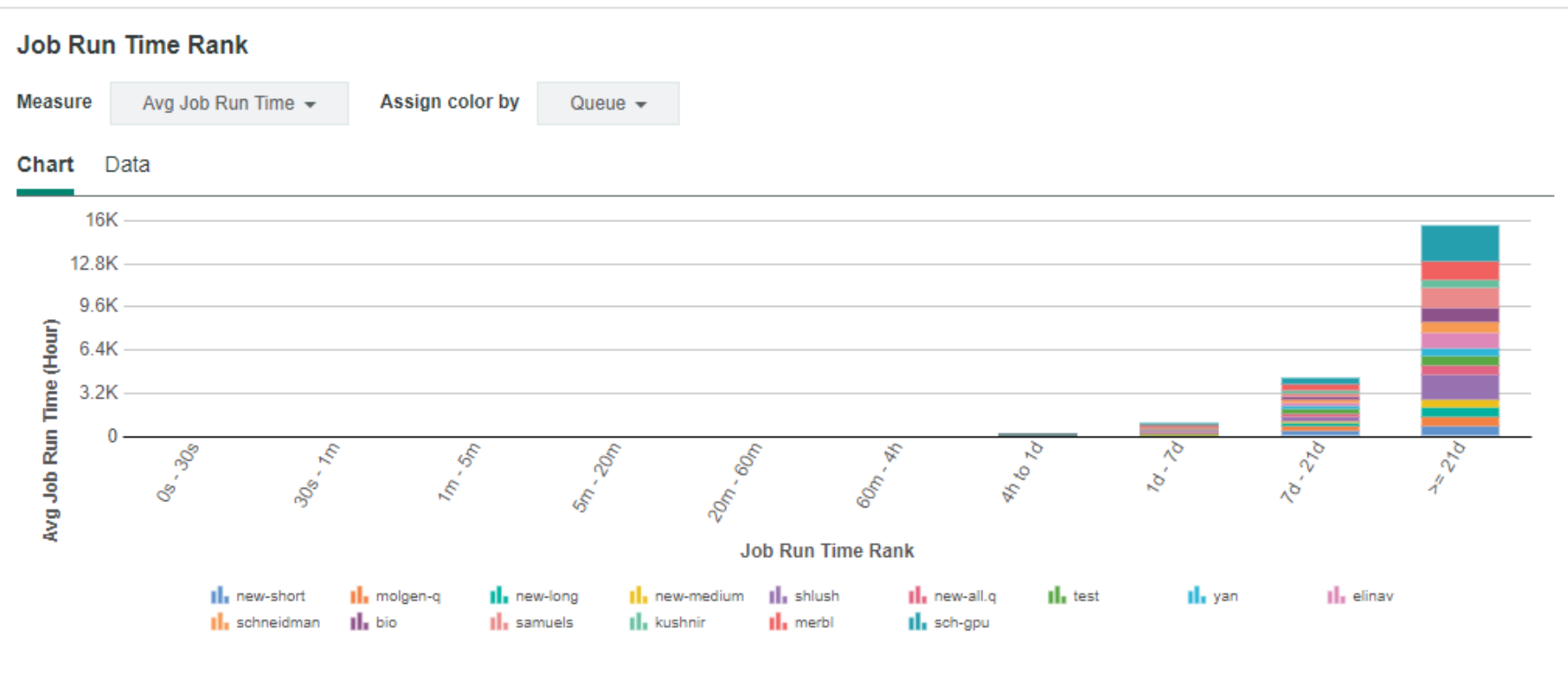
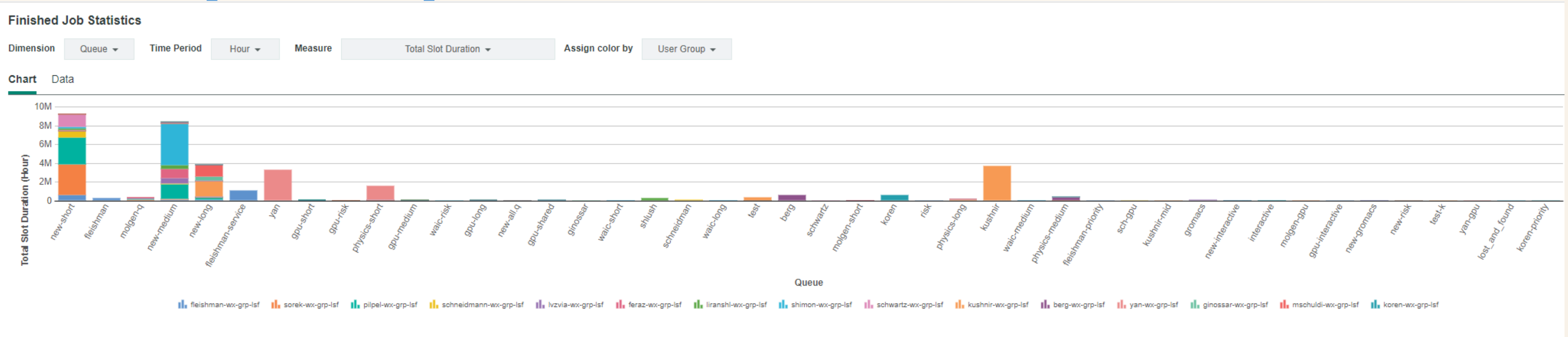
```
bjobs -l -p3 53690
```

```
Usage[mem=100000], specified hosts <public_hosts>,
PENDING REASONS:
Candidate host pending reasons (85 of 545 hosts):
Job's requirements for resource reservation not satisfied (Resource: mem): c
n653, cn652, cn651, cn650, cn789, cn788, cn787, cn784, cn7
83, cn782, cn781, cn780, cn779, cn778, cn773, cn770, cn110
, cn769, cn767, cn109, cn766, cn106, cn763, cn105, cn762,
cn102, cn100, cn759, cn758, cn757, cn754, cn753, cn751, cn
749, cn748, cn747, cn746, cn745, cn743, cn742, cn741, cn09
7, cn096, cn095, cn094, cn093, cn092, cn091, cn088, cn087,
cn086, cn084;
Job slot limit reached: cn775, cn752, cn108, cn750, cn765, cn709, cn107, cn2
62, cn764, cn774, cn055, cn744, cn772, cn771, cn104, cn739
, cn099, cn098, cn103, cn760, cn184, cn101, cn183, cn786,
cn768, cn090, cn089, cn785, cn756, cn710, cn755, cn085, cn
180;
Non-candidate host pending reasons (460 of 545 hosts):
Not specified in job submission: cn561, cn232, cn718, cn562, cn233, hgn30, c
n719, cn563, cn234, hgn31, cn564, cn235, hgn32, cn565, cn2
36, cn080, hgn33, cn566, cn237, cn081, hgn34, cn567, cn238
```

```
hgn04, cn381, cn208, cn053, hgn05, cn382, cn209, hgn06, c
n383, hgn08, hgn07, cn384, cn056;
Load information unavailable: cn082, ibdgx001, cn273, cn279, cn432, cn761, c
n601, cn602, cn457, ops, cn463, cn162, iblpacp02, cn668, c
n044, cn054;
Closed by LSF administrator: cn078, dgxws01, dgxws02, hgn44, hgn45, hgn47, c
n433, cn451, cn456, iblpacp01, cn182, cn186;
```


LSF Explorer - Workload insights and statistics

<https://iblexplorerp01.wexac.weizmann.ac.il:8443>



Workload Summary

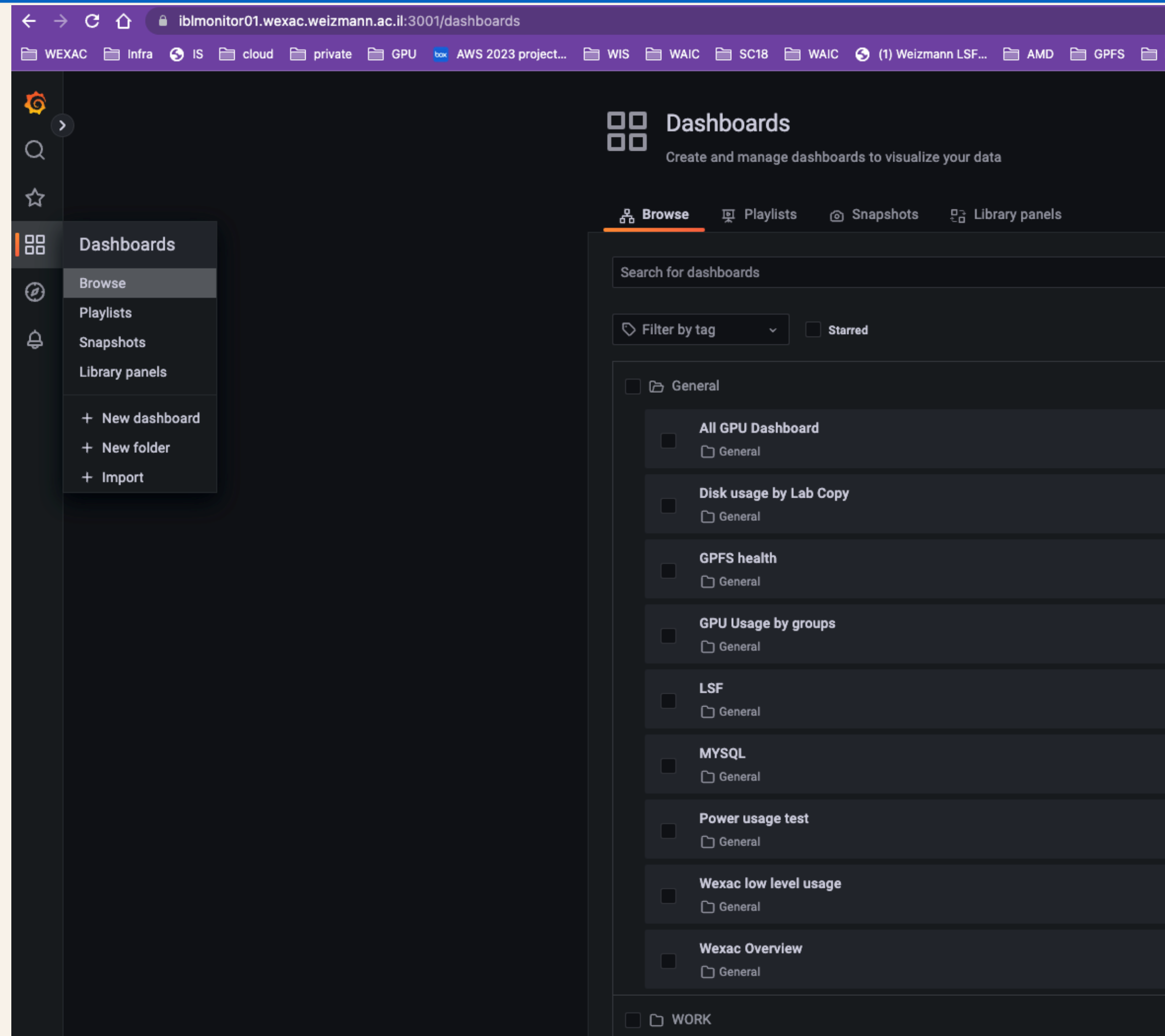
Dimension: 3 selected Measure: All selected (5)

Cluster	Job Exit Status	Queue	# Of Finished Jobs	Total Run Time (Hour)	Total Pend Time (Hour)	Total CPU Time (Hour)	Total Slot Duration (Hour)
wexac	DONE	new-short	7179959	6028167.79	9950204.71	6672012.58	6805774.79
wexac	EXIT	new-medium	369879	4419716.36	956286.6	4076385.39	5207028.15
wexac	DONE	new-medium	600220	3591698.74	2564619.29	3598863.01	3762813.01



WEXAC Grafana

<https://iblmonitor01.wexac.weizmann.ac.il:3001>



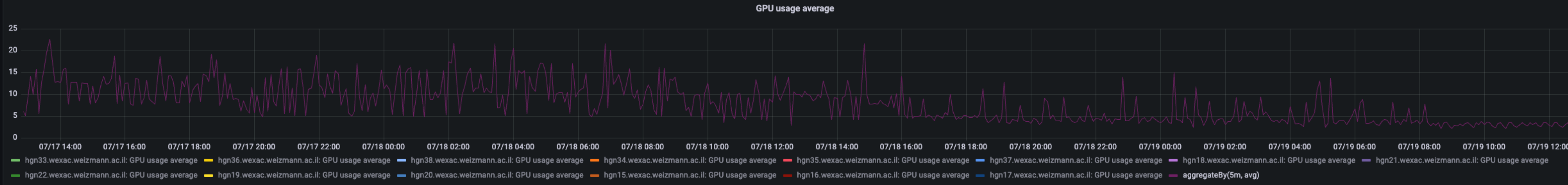
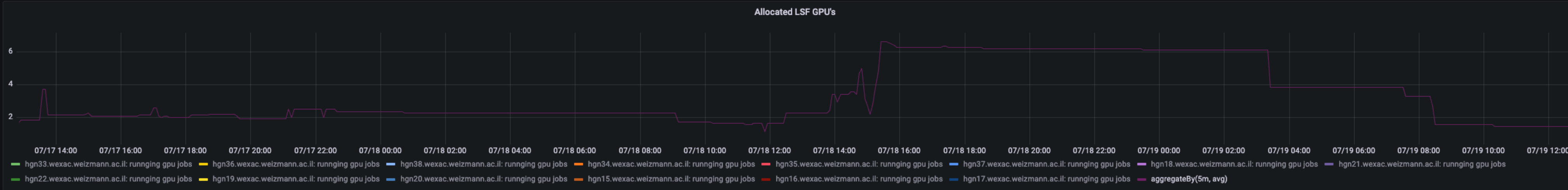
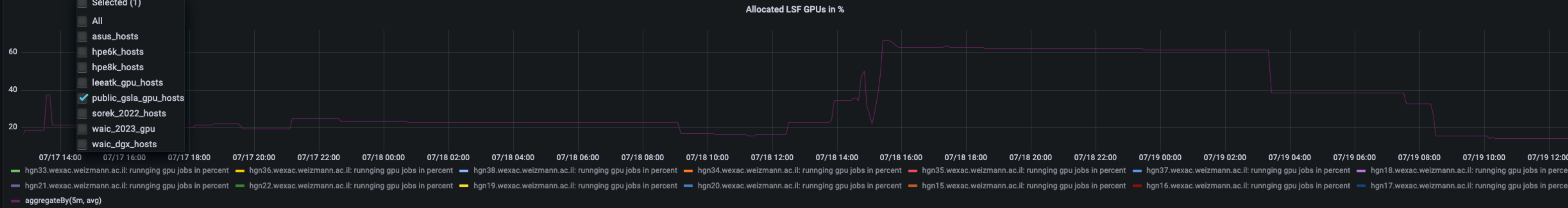


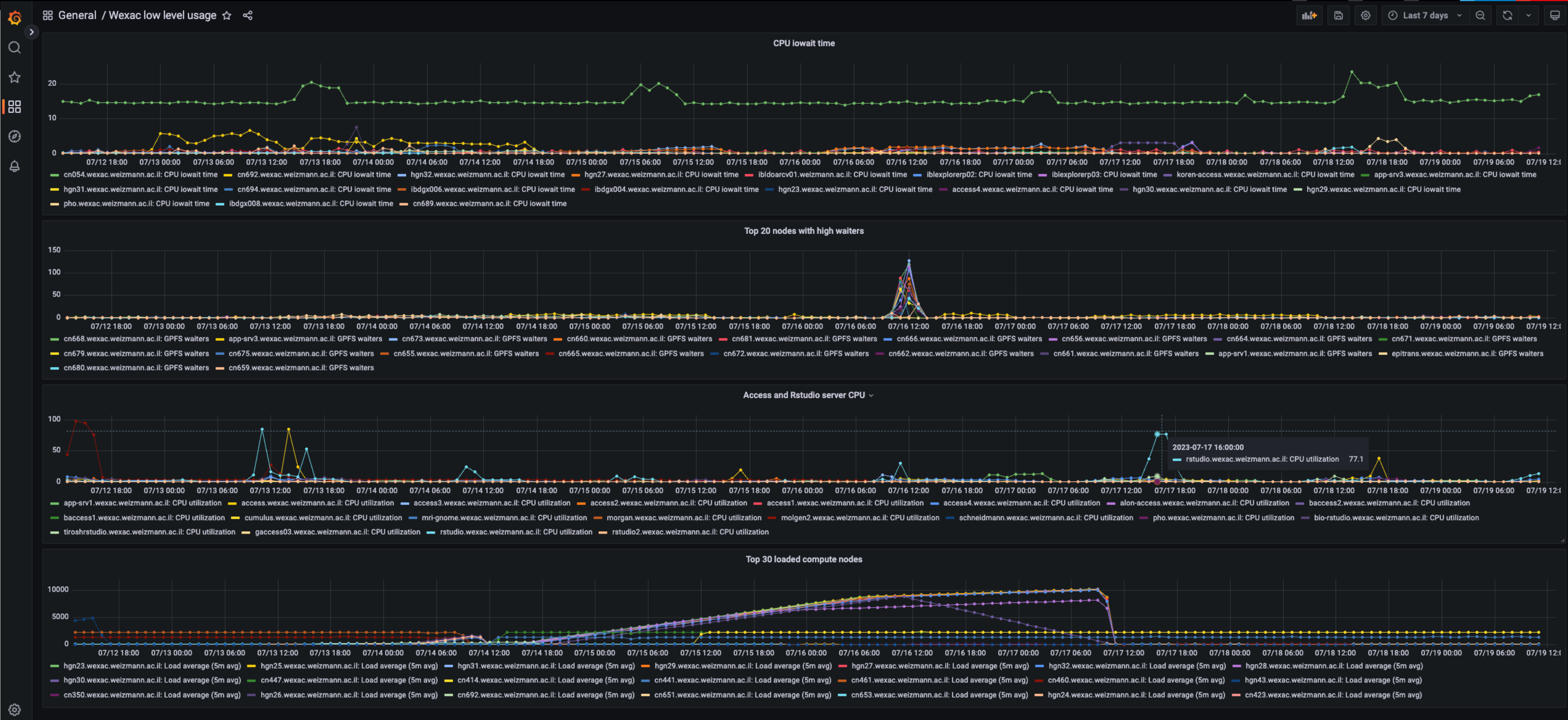
General / GPU Usage by groups

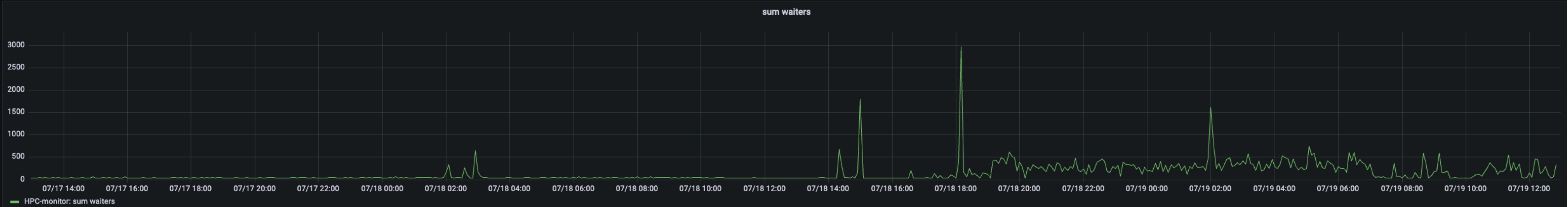
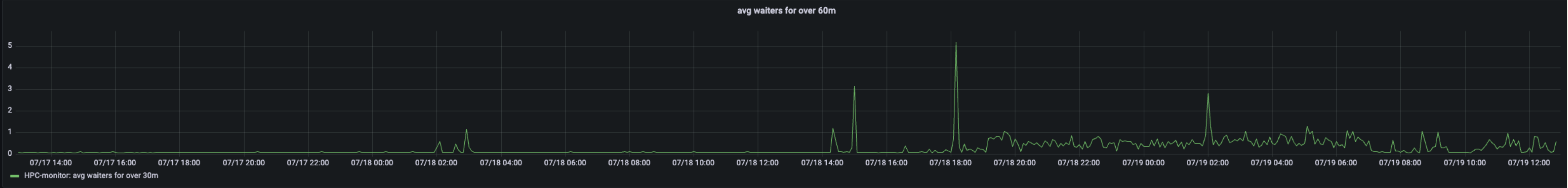
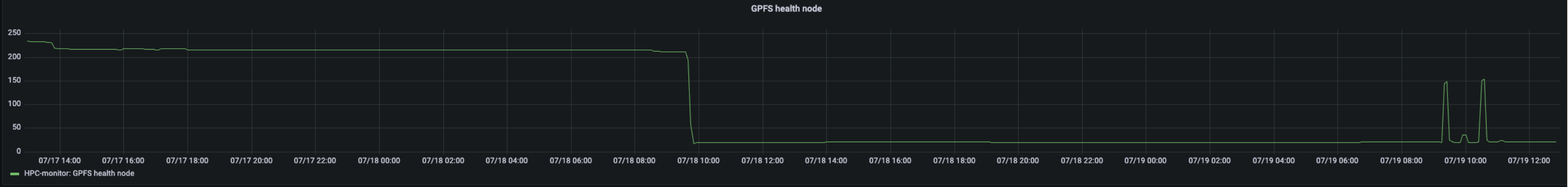
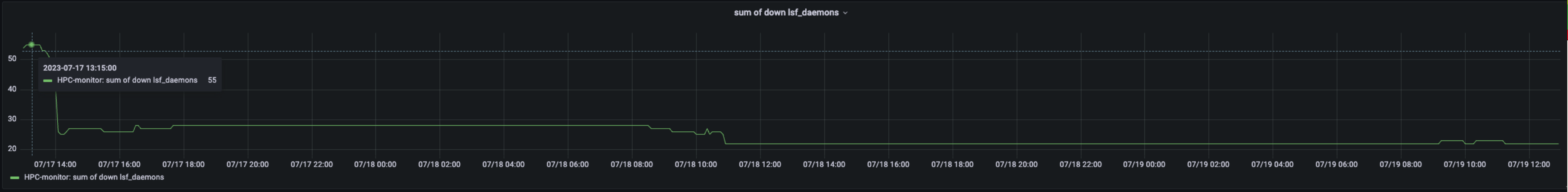
waic_host_group

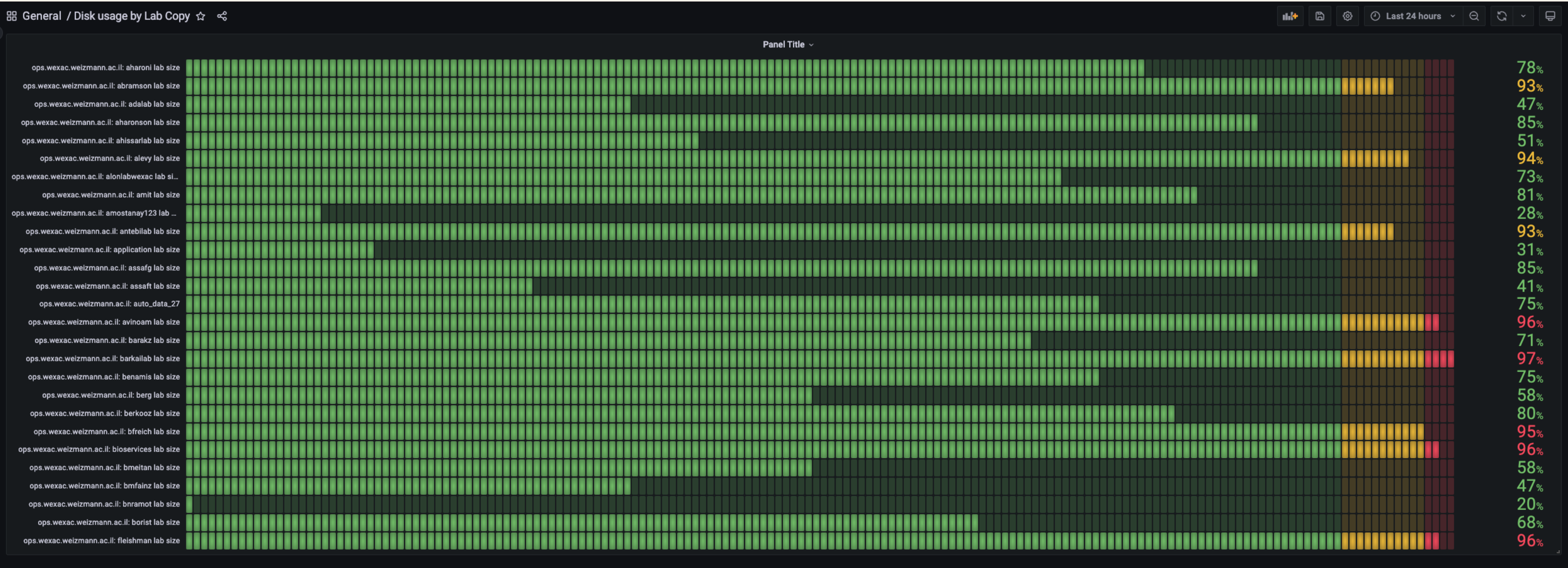
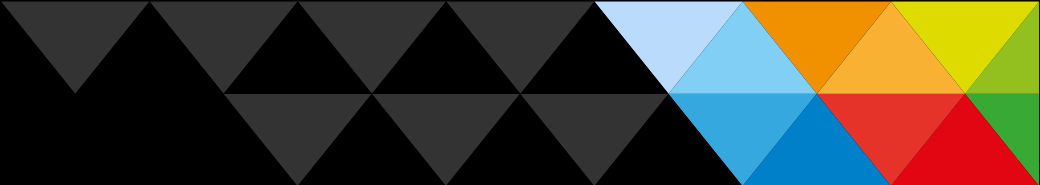
Enter variable value

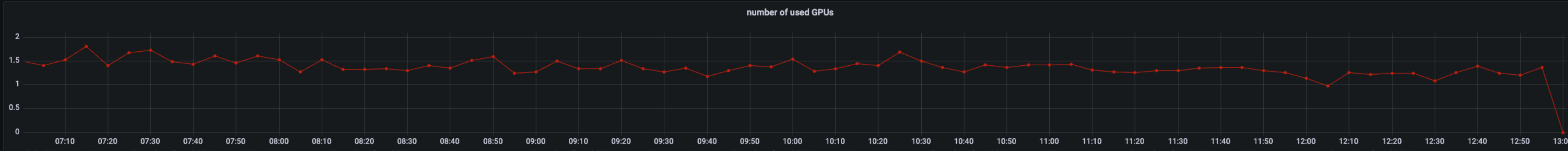
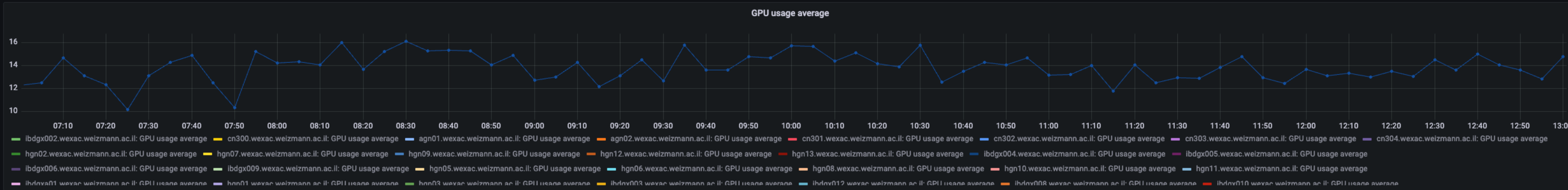
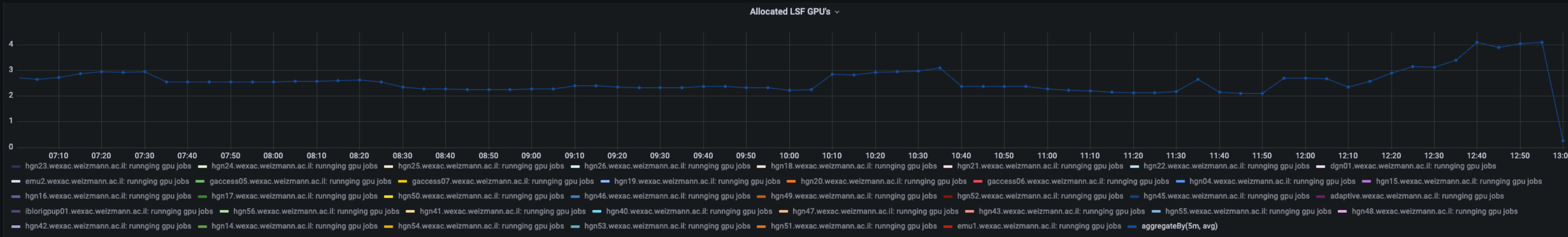
- Selected (1)
- All
- asus_hosts
- hpe6k_hosts
- hpe8k_hosts
- leeatk_gpu_hosts
- public_gsla_gpu_hosts
- sorek_2022_hosts
- waic_2023_gpu
- waic_dgx_hosts





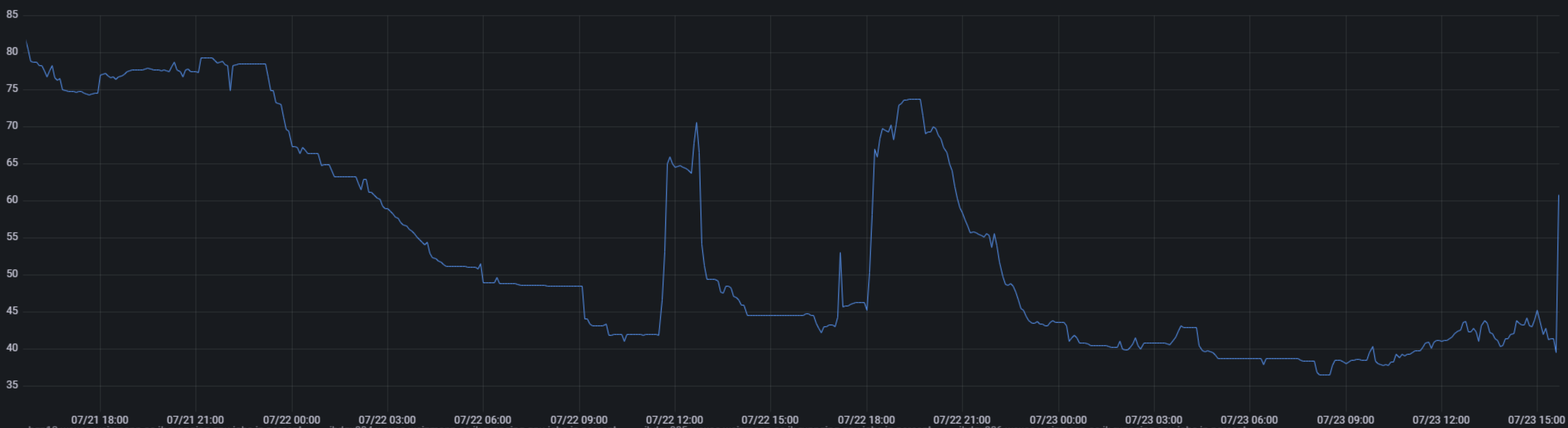






GPUServer All ▾

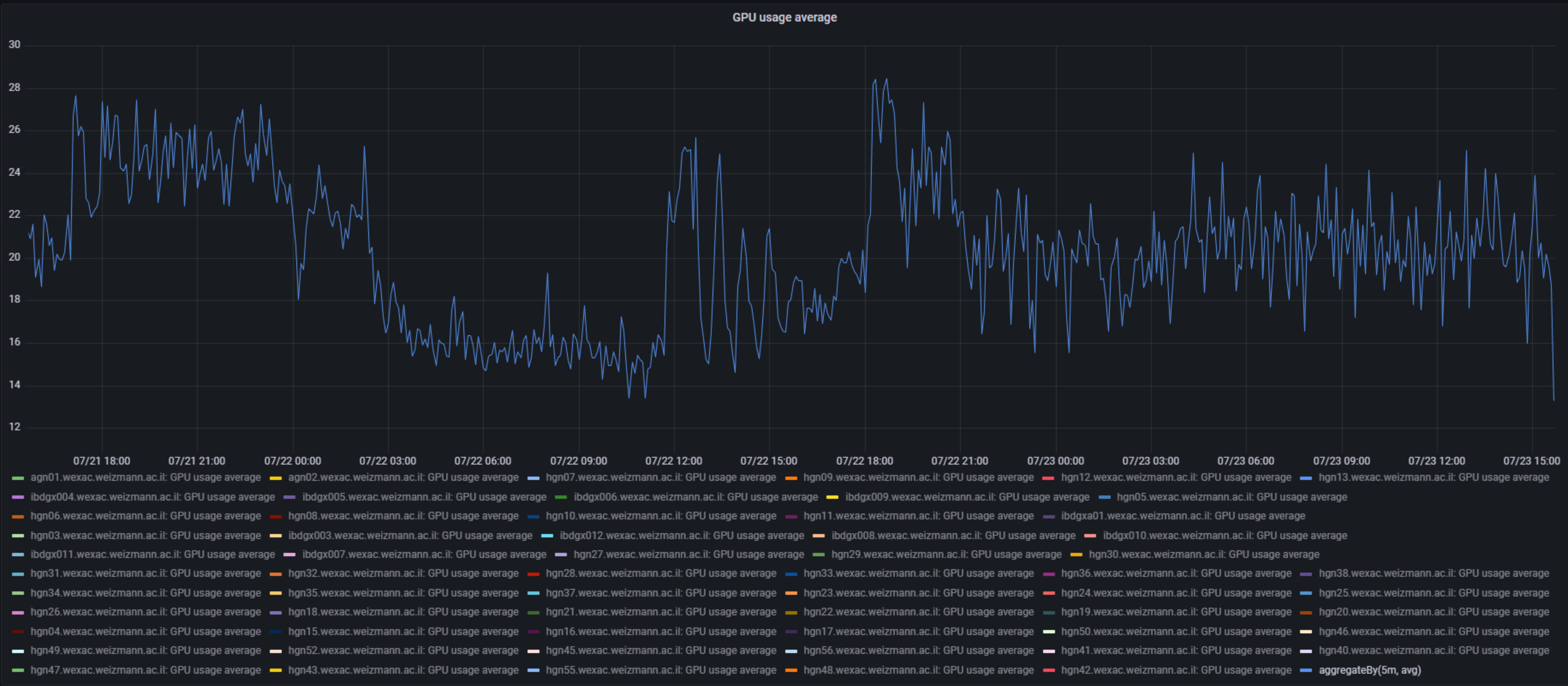
Allocated LSF GPUs in %

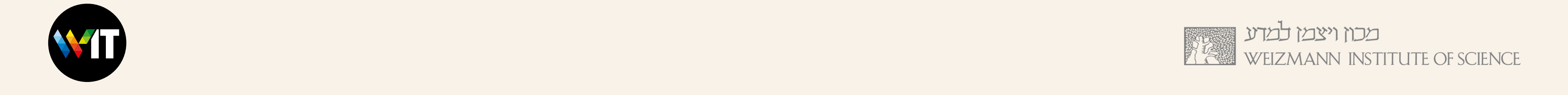
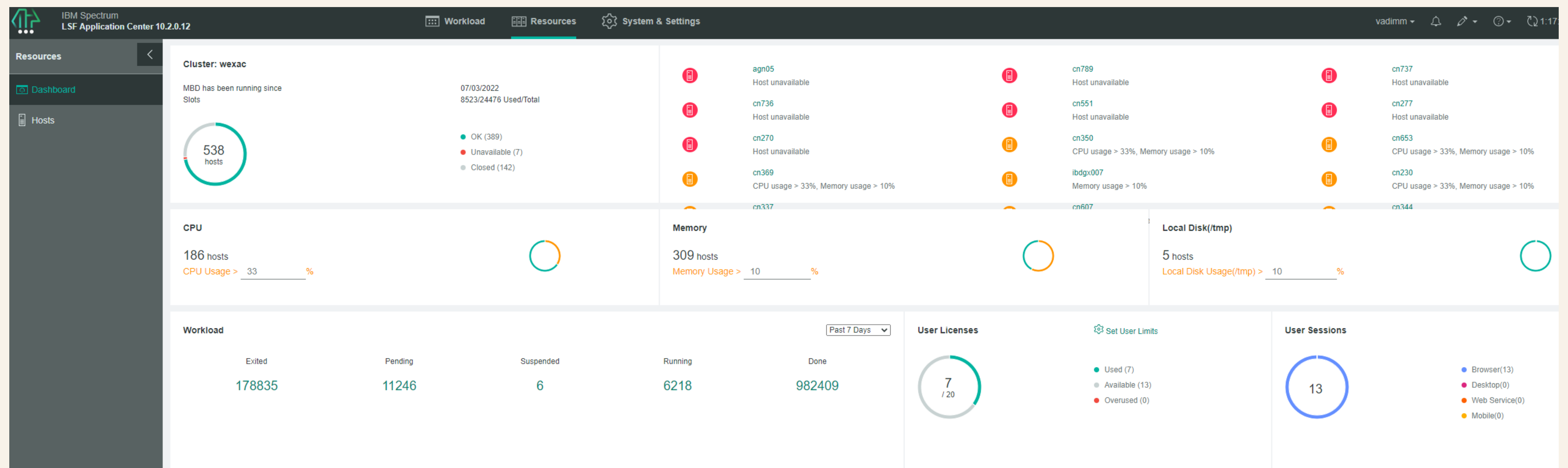


- hgn13.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgx004.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgx005.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgx006.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgx009.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn05.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn06.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn08.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn10.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn11.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgha01.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn03.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgh003.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgh012.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgh008.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgh010.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgh011.wexac.weizmann.ac.il: runnging gpu jobs in percent
- ibdgh007.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn27.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn29.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn30.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn31.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn32.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn28.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn33.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn36.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn38.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn34.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn35.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn37.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn23.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn24.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn25.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn26.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn18.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn21.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn22.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn19.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn20.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn04.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn15.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn16.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn17.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn50.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn46.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn49.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn52.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn45.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn56.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn41.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn40.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn47.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn43.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn55.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn48.wexac.weizmann.ac.il: runnging gpu jobs in percent
- hgn42.wexac.weizmann.ac.il: runnging gpu jobs in percent
- aggregateBy(5m, avg)



GPUServer All ▾





LSF PAC - Platform Application Center

<https://iblpacp01.wexac.weizmann.ac.il:8443/>

The screenshot displays the LSF PAC web interface. The browser address bar shows the URL <https://iblpacp01.wexac.weizmann.ac.il:8443/platform/#/framework/workload/iconview/iconview>. The top navigation bar includes links for Getting Started, WEXAC, Infra, IS, cloud, private, AWS, GPU, WIS, WAIC, SC18, WAIC, (1) Weizmann LSF Clu..., AMD, GPFS, isilon 2020, IB switches, Linux, SC20, and Index. The main header shows the IBM Spectrum LSF Application Center 10.2.0.12 logo and navigation tabs for Workload, Resources, and System & Settings. The left sidebar contains a 'Workload' section with a 'New Workload' button and a list of options: Workload, By Queue, By Group, Data, Definitions, and VNC Consoles. The main content area is titled 'All Submissions' and includes a 'Folders(1)' section with a 'DeepLearning' folder containing 0 files. Below this is an 'Applications(4)' section with four application cards: 'default' (Standard job submission form), 'Jupyter_Notebook', 'MATLAB', and 'Rstudio-Singularity' (Opens private rstudio server from Singularity container).

IBM Spectrum
LSF Application Center 10.2.0.12

Workload Resources System & Settings

Workload

+ New Workload

Workload

By Queue

By Group

Data

Definitions

VNC Consoles

All Submissions Applications

Folders(1)

DeepLearning

0 files

Applications(4)

default
Standard job submission form

Jupyter_Notebook

MATLAB

Rstudio-Singularity
Opens private rstudio server from Singularity container



LSF PAC - Platform Application Center

<https://iblpacp01.wexac.weizmann.ac.il:8443/>

Submission Form: default

1. Basic Job Options * 2. Advanced 3. Data 4. Notification 5. Review

Command to run * Browse...

Browse...

/shareDB/wexac_workshop/WEXAC_FOR_BEGINNERS/Bowtie/Bowtie

Job Directory

Favorites

New Folder Delete Search

<input type="checkbox"/>	Name	Size	Type	Date modified
<input type="checkbox"/>	Exp1	4096B	Directory	2021-07-13 09:...
<input type="checkbox"/>	H_sapiens_build36_1	4096B	Directory	2021-07-13 09:...
<input type="checkbox"/>	berg_hosts	274B	File	2021-07-13 09:...
<input type="checkbox"/>	bowtie	4096B	Directory	2021-07-13 09:...
<input type="checkbox"/>	jobs	131072B	Directory	2021-11-17 10:1..
<input type="checkbox"/>	outest	23B	File	2021-07-13 09:...
<input type="checkbox"/>	output	4096B	Directory	2021-12-09 16:...
<input type="checkbox"/>	bowtie_time...	2000B	File	2021-07-13 09:...

File of Types: All

OK Cancel



1. Basic Job Options *		2. Advanced		3. Data		4. Notification		5. Review	
Number of processors ?		2		Memory ?		4096		MB	
				Allocate processors on single host ?		<input checked="" type="checkbox"/>			
Resource Requirement string ?				Submit to this Queue		new-short			
				Additional Parameters ?					
Requirements				--Walltime for your job					
Hour ?		1		Minutes ?		00			
Additional Job Options				This job is rerunnable		No			
Application profile name		<Use Default>		Project		July25			
Reservation ID		<Use Default>		Login Shell		<Use Default>			

Submission Form: default



1. Basic Job Options *
2. Advanced
3. Data
4. Notification
5. Review

Input file



Drag here or browse to upload local file



Add Server File

Delete

Move to... ▾

Open with.. ▾



File Name



Type

Size

Actions



/shareDB/wexac_workshop/WEXAC_FOR_BEGINNERS/Bowtie/Bowtie/Exp1

Server

4096B



Output file

Enter the file path

Browse...

Error file

Enter the file path

Browse...



Submission Form: default

1. Basic Job Options *

2. Advanced

3. Data

4. Notification

5. Review

Specify when you want to be notified about your workload.

☒ **Notify me:**

- ☒ When workload starts
- ☒ When workload ends
- ☒ If workload exits
- ☒ If workload is suspended

Notify via:

☐ Browser

☒ Email

☐ Desktop Client

☐ Mobile



Memory reservation is (MB): 4096Memory Limit is (MB): 4096 Amount of tasks (-n X) reserved: 2 === Your total amount of memory reservation for this job is (MB): 8192 === Job <561894> is submitted to queue <new-short>.

Basic Job Options

Command to run * : /shareDB/wexac_workshop/WEXAC_FOR_BEGINNERS/Bowtie/Bowtie//benchm_bowtie.sh Job Name : bowtie July25

Advanced

Number of processors :	2	Memory :	4096 MB
Allocate processors on single host :	Yes	Submit to this Queue:	new-short
Minutes :	00	Hour :	1
Project :	July25	This job is rerunnable:	No

Data

Input file: /shareDB/wexac_workshop/WEXAC_FOR_BEGINNERS/Bowtie/Bowtie/Exp1

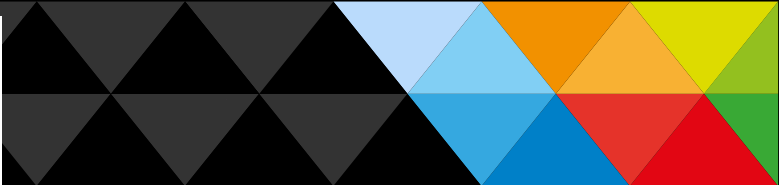
Notification

- ☒ Notify me:
- ☒ When workload starts
 - ☒ When workload ends
 - ☒ If workload exits
 - ☒ If workload is suspended

Notify via:

☐ Browser

☒ Email





Workload

+ New Workload

Workload

By Queue

By Group

Data

Definitions

VNC Consoles

+ Add Custom Page

Queue Summary > new-short

Workload By Queue:

new-short

+ New

Control

View Output

Delete Directories

Ended = Past Hour

<input type="checkbox"/> ID	Name	State	Application	Submitted				
<input type="checkbox"/> 562125	c2p1	Running	-	2023-07-16 09:41:32				
<input type="checkbox"/> 562116	/shareDB/wexac_work	Exited	-	2023-07-16 09:40:49				
<input type="checkbox"/> 562117	/shareDB/wexac_work	Exited	-	2023-07-16 09:40:49				
<input type="checkbox"/> 562118	/shareDB/wexac_work	Exited	-	2023-07-16 09:40:49				
<input type="checkbox"/> 562119	/shareDB/wexac_work	Exited	-	2023-07-16 09:40:49	2023-07-16 09:40:50	2023-07-16 09:40:56	vadimm	
<input type="checkbox"/> 562120	/shareDB/wexac_work	Exited	-	2023-07-16 09:40:49	2023-07-16 09:40:50	2023-07-16 09:40:56	vadimm	
<input type="checkbox"/> 562121	/shareDB/wexac_work	Exited	-	2023-07-16 09:40:49	2023-07-16 09:40:50	2023-07-16 09:40:56	vadimm	
<input type="checkbox"/> 562124	/shareDB/wexac_work	Exited	-	2023-07-16 09:40:49	2023-07-16 09:40:50	2023-07-16 09:40:50	vadimm	
<input type="checkbox"/> 562122	/shareDB/wexac_work	Exited	-	2023-07-16 09:40:49	2023-07-16 09:40:50	2023-07-16 09:40:51	vadimm	
<input type="checkbox"/> 562123	/shareDB/wexac_work	Exited	-	2023-07-16 09:40:49	2023-07-16 09:40:50	2023-07-16 09:40:51	vadimm	



Notifications



3 minutes ago

Job < bowtie July25 > ended.

3 minutes ago

Job < bowtie July25 > started.

3 minutes ago

Job < bowtie July25 > ended.

3 minutes ago

Job < bowtie July25 > started.

Show All Notifications



Batch Job Filters for User 'vadimm' [Updated 4 Minutes and 24 Seconds Ago] [JobIQ Dashboard]

User

vadimm

Cluster

wexac

Queue

All

Project

All

Status

DONE

Jobs

30

Go

Clear

Export

History

1 Hour

Effic

All

ShowOnly

N/A

MemSize

N/A

RunTime

N/A

☒ Dynamic

☐ Cluster TZ

JobID

Search

Enter a search term

Q

ResReq

Enter an LSF select statement

Q

Search ResReq by

Host

1 to 30 of 58 [1 2]

JobID	Job Name	Queue	User	UGroup	App	Status	Exec Host	SubHost	Lic	Idle Job	Long RJob	Pend Dpnd	Mem Use	State Changes	Mem Res	Mem Wasted	Max Mem	Max GPU Mem	CPU Usage	Core Eff	Num Nodes	Num CPUs
561593	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn603	cn395						2	4.00G	879.00M	3.14G	-	6.52m	97.25%	1	1
561592	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn603	cn395						2	4.00G	879.00M	3.14G	-	6.44m	97.29%	1	1
561590	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn603	cn395						2	4.00G	878.00M	3.14G	-	6.38m	97.14%	1	1
561594	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn603	cn395						2	4.00G	879.00M	3.14G	-	6.37m	97.21%	1	1
561591	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn603	cn395						2	4.00G	879.00M	3.14G	-	6.33m	97.20%	1	1
561584	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn591	cn395						2	4.00G	878.00M	3.14G	-	6.2m	97.60%	1	1
561583	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn591	cn395						2	4.00G	879.00M	3.14G	-	6.2m	97.56%	1	1
561578	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn591	cn395						2	4.00G	877.00M	3.14G	-	6.15m	97.38%	1	1
561579	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn591	cn395						2	4.00G	879.00M	3.14G	-	6.13m	97.55%	1	1
561582	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn591	cn395						2	4.00G	879.00M	3.14G	-	6.05m	97.60%	1	1
561585	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn591	cn395						2	4.00G	879.00M	3.14G	-	6.04m	97.76%	1	1
561581	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn591	cn395						2	4.00G	877.00M	3.14G	-	6.03m	97.57%	1	1
561580	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn591	cn395						2	4.00G	879.00M	3.14G	-	6.01m	97.75%	1	1
561576	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn588	cn395						2	4.00G	879.00M	3.14G	-	5.43m	96.97%	1	1
561575	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn588	cn395						2	4.00G	877.00M	3.14G	-	5.4m	96.75%	1	1
561577	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn588	cn395						2	4.00G	878.00M	3.14G	-	5.41m	96.84%	1	1
561595	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn709	cn395						2	4.00G	879.00M	3.14G	-	5.41m	96.90%	1	1
561574	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn588	cn395						2	4.00G	879.00M	3.14G	-	5.25m	96.95%	1	1
561573	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn588	cn395						2	4.00G	879.00M	3.14G	-	5.23m	96.85%	1	1
561550	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn362	cn395						2	4.00G	879.00M	3.14G	-	5.07m	96.28%	1	1
561596	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn709	cn395						2	4.00G	878.00M	3.14G	-	5.06m	96.66%	1	1
561599	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn709	cn395						2	4.00G	879.00M	3.14G	-	5.04m	96.91%	1	1
561598	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn709	cn395						2	4.00G	879.00M	3.14G	-	4.99m	96.96%	1	1
561600	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn709	cn395						2	4.00G	879.00M	3.14G	-	4.99m	96.92%	1	1
561597	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn709	cn395						2	4.00G	879.00M	3.14G	-	4.99m	96.89%	1	1
561562	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn186	cn395						2	4.00G	886.00M	3.13G	-	4.86m	96.47%	1	1
561561	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn186	cn395						2	4.00G	886.00M	3.13G	-	4.82m	96.43%	1	1
561560	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn186	cn395						2	4.00G	886.00M	3.13G	-	4.8m	95.97%	1	1
561564	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn186	cn395						2	4.00G	887.00M	3.13G	-	4.8m	96.63%	1	1
561563	/shareDB/wexac_works...	new-short	vadimm	testing-wx-grp-lsf	-	DONE	cn186	cn395						2	4.00G	886.00M	3.13G	-	4.79m	96.51%	1	1

1 to 30 of 58 [1 2]

General Information				
Job ID	561592		Status	DONE
Job Name	/shareDB/wexac_workshop/Bowtie/bowtie/bowtie2-2.0.5_x86/bowtie2 -x /shareDB/wexac_workshop/Bowtie/H_sapiens_build36_1/b			
Project	default	License Project	-	
Queue	new-short	Cluster Name	wexac	
User	vadimm	User Group	testing-wx-grp-lsf	
Charged SAAP	/vadimm			
Mail User			Job Priority	50
Submission Details				
Submit Time	2023-07-16 09:17:06		Number of CPUs	1
Submit Host	cn395			
Asked Hosts/Groups	-	Runtime Estimate	-	
Combined ResReq	select[(type = any) && (type == any)] order[-slots:-maxslots:-mem] rusage[mem=4096.00] affinity[thread(1)*1]			
Submit Command	/shareDB/wexac_workshop/Bowtie/bowtie/bowtie2-2.0.5_x86/bowtie2 -x /shareDB/wexac_workshop/Bowtie/H_sapiens_build36_1/build36.1 --end-to-end --sensitive -U /shareDB/wexac_workshop/Bowtie/Exp1/Inputbr -S /shareDB/wexac_workshop/Bowtie/Exp1/Outputbr 1-outbr.sam			
Submit Directory	/shareDB/wexac_workshop/Bowtie			
Resource Requirements	rusage[mem=4096]			
Output File	/shareDB/wexac_workshop/Bowtie/jobs/out.%J			
Error File	/shareDB/wexac_workshop/Bowtie/jobs/err.%J			
Execution Environment				
Exec Host	cn603			
Start Time	2023-07-16 09:17:07			
Username	vadimm	UID String	25003	
User Home	/home/labs/testing/vadimm	Working Dir	/shareDB/wexac_workshop/Bowtie	
Max Processors	1	Max Allocated Slots	1	
CPU Limit	-	Run Time Limit	1 Days	
Memory Limit	4.000G	Swap Limit	-	
Effective ResReq	select[(((type = any) && (type == any))) order[-slots:-maxslots:-mem] rusage[mem=4096.00] affinity[thread(1)*1]			
Current/Last Status				
PGIDS	10755			
PIDS	10755, 10783, 10796, 10803			
Threads	5			
Pend Time	1 Seconds	PROV Time	-	Run Time 6.62 Minutes
Effective Pending Time Limit	-			
PSUSP Time	-	USUSP Time	-	SSUSP Time -
Unknown Time	-			
Cumulative CPU	6.44 Minutes	System Time	-	User Time 6.43 Minutes
Cur Memory Used	3.142G	Max Memory Used	3.142G	Job Efficiency 97.29%
Cur V.Memory Size	-	Max V.Memory Size	-	
Exit Code	0	End Time	2023-07-16 09:23:44	





Memory reservation is (MB): 3080Memory Limit is (MB): 3080 Amount of tasks (-n X) reserved: 2 === Your total amount of memory reservation for this job is (MB): 6160 === Job <562127> is submitted to queue <new-short>.

Form Name: test

1. Basic Job Options *
2. Advanced
3. Data
4. Notification
5. Review

Basic Job Options

Command to run * :

/shareDB/wexac_workshop/WEXAC_FOR_BEGINNERS/Bowtie/Bowtie/benchmark_bowtie5

Job Name :

Bowtie July 25 - test2

Advanced

Number of processors :

2

Memory :

3080 MB

Allocate processors on single host :

Yes

Submit to this Queue:

new-short

Minutes :

30

Hour :

0

Project :

bowtie5

This job is rerunnable:

No

Notification

- ☒ Notify me:
- ☒ When workload starts

☒ When workload ends

☒ If workload exits

☒ If workload is suspended

Notify via:

- ☐ Browser
- ☒ Email



Workload

+ New Workload

Workload

By Queue

By Group

Data

Definitions

VNC Consoles

+ Add Custom Page

Queue Summary > new-short

Workload By Queue: new-short

+ New

Control

View Output

Delete Directories

Search

Filter

User = vadimm

Ended = Past Hour

State = Running

ID	Name	State		Application	Submitted	Start Time	Ended		User	
562176	/shareDB/wexac_work	Running		-	2023-07-16 09:50:41	2023-07-16 09:50:42	-		vadimm	
562177	/shareDB/wexac_work	Running		-	2023-07-16 09:50:41	2023-07-16 09:50:42	-		vadimm	
562128	/shareDB/wexac_work	Running		-	2023-07-16 09:50:38	2023-07-16 09:50:39	-		vadimm	
562129	/shareDB/wexac_work	Running		-	2023-07-16 09:50:38	2023-07-16 09:50:39	-		vadimm	
562130	/shareDB/wexac_work	Running		-	2023-07-16 09:50:38	2023-07-16 09:50:39	-		vadimm	
562131	/shareDB/wexac_work	Running		-	2023-07-16 09:50:38	2023-07-16 09:50:39	-		vadimm	
562132	/shareDB/wexac_work	Running		-	2023-07-16 09:50:38	2023-07-16 09:50:39	-		vadimm	
562133	/shareDB/wexac_work	Running		-	2023-07-16 09:50:38	2023-07-16 09:50:39	-		vadimm	
562134	/shareDB/wexac_work	Running		-	2023-07-16 09:50:38	2023-07-16 09:50:39	-		vadimm	
562135	/shareDB/wexac_work	Running		-	2023-07-16 09:50:38	2023-07-16 09:50:39	-		vadimm	



Queue Summary > new-short

Workload By Queue:

new-short

New

Control

View Output

Delete Directories

User = vadimm

Ended = Past Hour

State = Running

<input type="checkbox"/>	ID	Name	State	<div><div></div><div>1</div><div></div></div>	Application	Submitted
<input type="checkbox"/>	562176	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562177	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562128	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562129	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562130	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562131	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562132	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562133	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562134	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562135	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562136	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562137	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562138	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562139	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562140	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562141	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562142	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562143	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562144	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562145	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562146	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562147	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562148	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562149	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562150	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50
<input type="checkbox"/>	562151	/shareDB/wexac_work	<div></div> Running	-		2023-07-16 09:50

<<

<

Page 1 of 2

>

>>

50

Job

/shareDB/wexac_workshop/Bo...

Actions

Summary

Data

Basic Information

Job ID:

562134

Job Name:

/shareDB/wexac_workshop/Bowtie...

Description:

-

Queue:

new-short

View Fairshare Information

Project:

default

Application:

-

Submitted by:

vadimm

Job Status:

Running

Pending Reason:

-

Job Progress:

2023-07-16 09:50:39

2023-07-16 09:53:30

#?

Advanced Information

Submission Details

Job Command:

/shareDB/wexac_workshop/Bowtie...

Submission Host:

cn625

Current Working Dir:

/shareDB/wexac_workshop/Bowtie

Requested Hosts:

Slots Requested:

1

Estimated Run Time:

-

Input Files:

-

Output Files:

/shareDB/wexac_workshop/Bowtie...

Job Notification:

Disabled

Status and Tracking

External Status:

-

Local ID:

562134

Local Cluster:

wexac

Job Forwarding:

None

Execution Hosts:

cn395

Job Priority:

50

Exit Code:

-

Mem/SWAP Usage:

-

CPU Efficiency:

94.70%

Container:

-

Slots Used:

1

Number of threads:

-



LSF PAC - Platform Application Center

<https://iblpacp01.wexac.weizmann.ac.il:8443/>

```
[vadimm@access output]$ ls -la
total 20930720
drwxrwxrwx 2 root root 8192 Jul 16 09:17 .
drwxrwxrwx 7 root root 16384 Jun 13 11:29 ..
-rw-r--r-- 1 vadimm testing-wx-grp 759274937 Jul 16 09:23 Exp1-outbe.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759495212 Jul 16 09:23 Exp1-outbf.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759293416 Jul 16 09:23 Exp1-outbg.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759344489 Jul 16 09:23 Exp1-outbh.sam
-rw-r--r-- 1 vadimm testing-wx-grp 760894038 Jul 16 09:23 Exp1-outbi.sam
-rw-r--r-- 1 vadimm testing-wx-grp 760653451 Jul 16 09:23 Exp1-outbj.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759836464 Jul 16 09:23 Exp1-outbk.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759183533 Jul 16 09:21 Exp1-outbl.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759169655 Jul 16 09:21 Exp1-outbm.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759138626 Jul 16 09:21 Exp1-outbn.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759582466 Jul 16 09:22 Exp1-outbo.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759170838 Jul 16 09:23 Exp1-outbp.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759237494 Jul 16 09:23 Exp1-outbq.sam
-rw-r--r-- 1 vadimm testing-wx-grp 760350597 Jul 16 09:23 Exp1-outbr.sam
-rw-r--r-- 1 vadimm testing-wx-grp 761008311 Jul 16 09:23 Exp1-outbs.sam
-rw-r--r-- 1 vadimm testing-wx-grp 760287262 Jul 16 09:23 Exp1-outbt.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759705155 Jul 16 09:22 Exp1-outbu.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759567102 Jul 16 09:22 Exp1-outbv.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759252744 Jul 16 09:22 Exp1-outbw.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759232941 Jul 16 09:22 Exp1-outbx.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759656301 Jul 16 09:22 Exp1-outby.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759269421 Jul 16 09:22 Exp1-outbz.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759701559 Jul 16 09:21 Exp1-outca.sam
-rw-r--r-- 1 vadimm testing-wx-grp 761172986 Jul 16 09:21 Exp1-outcb.sam
-rw-r--r-- 1 vadimm testing-wx-grp 760700650 Jul 16 09:21 Exp1-outcc.sam
-rw-r--r-- 1 vadimm testing-wx-grp 759748746 Jul 16 09:21 Exp1-outcd.sam
-rw-r--r-- 1 vadimm testing-wx-grp 186778087 Jul 16 09:18 Exp1-outce.sam
```



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WEXAC Infra IS cloud private GPU AWS 2023 project... WIS WAIC SC18 WAIC (1) Weizmann LSF... AMD GPFS isilon 2020 IB switches Linux SC20 Management Physics

IBM Spectrum
LSF Application Center 10.2.0.12

Workload Resources System & Settings

Workload

+ New Workload

Workload

By Queue

By Group

Data

Definitions

VNC Consoles

All Submissions Applications

Folders(1)

DeepLearning

0 files

Applications(6)

WEXAC HPC

default
Standard job submission form

jupyter

2 Jupyter_Lab

jupyter

Jupyter_Notebook

MATLAB

Rstudio-Singularity
Opens private rstudio server from Singularity container



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📁 WEXAC 📁 Infra 🌐 IS 📁 cloud 📁 private 📁 GPU 📁 AWS 2023 project... 📁 WIS 📁 WAIC 📁 SC18 📁 WAIC » 📁 Other Bookmarks

Submission Form: Jupyter_Lab

↩ 📄

1. Application Parameters

2. Cluster Parameters

3. Notification

4. Review

Job Name

Jupyter-Lab

Other Options ⓘ

~

Close

Back

Next

Submit



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📁 WEXAC 📁 Infra 🔄 IS 📁 cloud 📁 private 📁 GPU 📁 AWS 2023 project... 📁 WIS 📁 WAIC 📁 SC18 📁 WAIC » 📁 Other Bookmark

Submission Form: Jupyter_Lab

↩ 📄

1. Application Parameters 2. Cluster Parameters 3. Notification 4. Review

Requirements

Number of processors ? 1

Submit to this Queue 2

Requirements

Hour ?

--Define your resource allocation

Memory ? MB

Allocate processors on single host ? ☒

Additional Parameters ? 3

--Define your job walltime

Minutes ?

Close Back Next Submit



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📁 WEXAC 📁 Infra 🔄 IS 📁 cloud 📁 private 📁 GPU 📁 AWS 2023 project... 📁 WIS 📁 WAIC 📁 SC18 📁 WAIC » 📁 Other Bookmarks

Submission Form: Jupyter_Lab

1. Application Parameters 2. Cluster Parameters **3. Notification** 4. Review

Specify when you want to be notified about your workload.

1 ☒ **Notify me:**

- ☒ When workload starts
- ☒ When workload ends
- ☒ If workload exits
- ☒ If workload is suspended

Notify via:

☐ Browser **2** ☒ Email ☐ Desktop Client ☐ Mobile

Close Back Next Submit



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📁 WEXAC 📁 Infra 🔄 IS 📁 cloud 📁 private 📁 GPU 📁 AWS 2023 project... 📁 WIS 📁 WAIC 📁 SC18 📁 WAIC » | 📁 Other Bookmarks

Submission Form: Jupyter_Lab

1. Application Parameters 2. Cluster Parameters 3. Notification 4. Review

Application Parameters

Job Name : Jupyter-Lab Other Options : ~

Cluster Parameters

Number of processors :	1	Memory :	5000 MB
	1	Allocate processors on single host :	Yes
Submit to this Queue:	gpu-short	Additional Parameters :	-R 'affinity[thread*10]' -gpu num=1:gmem=10000
	2	Minutes :	30
Hour :	2		

Notification

Close Back Next Submit



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Submission Form: Jupyter_Lab



Please note that memory reservation is per task (-n X)Memory reservation is (MB): 5000 Amount of tasks (-n X) reserved: 1 === Your total amount of memory reservation for this job is (MB): 5000 === Job <671710> is submitted to queue <gpu-short>.

1. Application Parameters

2. Cluster Parameters

3. Notification

4. Review

Application Parameters

Job Name : Jupyter-Lab

Other Options : ~

Cluster Parameters

Number of processors : 1

Memory : 5000 MB

Allocate processors on single host : Yes

Submit to this Queue: gpu-short

Additional Parameters : -R 'affinity[thread*10]' -gpu num=1:gmem=10000

Hour : 2

Minutes : 30

Notification

Close

Back


Next

Submit




LSF PAC - Interactive Jupyter Lab


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Workload




Resources



System & Settings

vadimm  3    1:33:31 PM +0300 | 

Workload

 New Workload

Workload

By Queue


By Group

Data

Definitions

VNC Consoles

Workload


 New


Control

View Output





Search

Delete Directories




 User = vadimm State = Running Ended = Past Hour

<input type="checkbox"/>	ID	Type	Name	State	Application	Submitted	Start Time	Ended	User
<input type="checkbox"/>	671380	Job	Jupyter-Lab	Running	Jupyter_Lat	2023-07-17	2023-07-17	-	vadimm
<input type="checkbox"/>	671382	Job	Jupyter-Lab	Running	Jupyter_Lat	2023-07-17	2023-07-17	-	vadimm
<input type="checkbox"/>	671710	Job	Jupyter-Lab	Running	Jupyter_Lat	2023-07-17	2023-07-17	-	vadimm

  Page 1 of 1   50

Viewing 1 - 3 of 3



LSF PAC - Interactive Jupyter Lab

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The screenshot displays the Jupyter Lab interface. The top browser bar shows the URL `hgn10.wexac.weizmann.ac.il:40811`. The left sidebar contains a file browser with a search bar and a list of files. The main area shows a code editor with a Python 3 kernel. The terminal and console tabs are also visible.

Name	Last Modified
ssh-test.p...	4 months ago
SUMMARY	6 years ago
SW_DVD9...	7 years ago
t	8 years ago
tables.csv	5 years ago
test_useC...	4 years ago
test.bsub	4 years ago
test.out	a year ago
test.py	5 years ago
test.sbatch	4 years ago
test.sh	3 years ago
test1.R	4 years ago
testhgn01	9 months ago
testhgn01....	9 months ago
trust-polic...	3 years ago
uc4.bsub	4 years ago
Untitled.ip...	7 years ago
Untitled1.i...	an hour ago

```
[1]: import os;
```



LSF PAC - Interactive Rstudio



<https://iblpacp01.wexac.weizmann.ac.il:8443/>

The screenshot displays the LSF PAC Interactive Rstudio interface. The top navigation bar includes the IBM Spectrum LSF Application Center 10.2.0.12 logo, tabs for Workload, Resources, and System & Settings, and a user profile dropdown for vadimm. The left sidebar contains navigation options: New Workload, Workload (with sub-options By Queue and By Group), Data, Definitions, and VNC Consoles. The main content area is titled 'All Submissions' and features a search bar. Under 'Folders(1)', there is a 'DeepLearning' folder with 0 files. Under 'Applications(6)', there are six application cards: 'default' (Standard job submission form), 'Jupyter_Lab', 'Jupyter_Notebook', 'MATLAB', '1Rstudio-Singularity' (highlighted with an orange circle and a tooltip that reads 'Opens private rstudio server from Singularity container'), and 'test' (Standard job submission form default). The '1Rstudio-Singularity' card also includes a tooltip that reads 'Opens private rstudio server from Singularity container'.




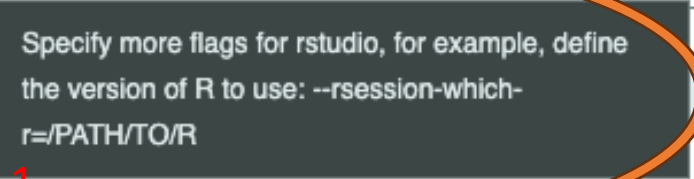
LSF PAC - Interactive Rstudio





<https://iblpacp01.wexac.weizmann.ac.il:8443/>

Submission Form: Rstudio-Singularity  

1. Application Parameters 2. Cluster Parameters 3. Notification 4. Review

Job Name:

Other Options  



LSF PAC - Interactive Rstudio

<https://iblpacp01.wexac.weizmann.ac.il:8443/>

Submission Form: Rstudio-Singularity



1. Application Parameters

2. Cluster Parameters

3. Notification

4. Review

Requirements

Number of
processors ?

4

1

Submit to this
Queue

new-short

2

Requirements

Hour ?

3

--Define your resource allocation

Memory ?

10000

MB

3

Allocate processors
on single host ?



Additional
Parameters ?

--Define your job walltime

Minutes ?



Close

Back

Next

Submit



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LSF PAC - Interactive Rstudio

<https://iblpacp01.wexac.weizmann.ac.il:8443/>

Submission Form: Rstudio-Singularity

1. Application Parameters 2. Cluster Parameters **3. Notification** 4. Review

Specify when you want to be notified about your workload.

☒ **Notify me:**

- ☒ When workload starts
- ☒ When workload ends
- 2** ☒ If workload exits
- ☒ If workload is suspended

Notify via:

☐ Browser **1** ☒ Email ☐ Desktop Client ☐ Mobile

Close Back Next Submit



מכון ויצמן למדע

WEIZMANN INSTITUTE OF SCIENCE

LSF PAC - Interactive Rstudio

<https://iblpacp01.wexac.weizmann.ac.il:8443/>

Submission Form: Rstudio-Singularity



1. Application Parameters 2. Cluster Parameters 3. Notification **4. Review**

Application Parameters



Job Name : Rstudio-On-Demand

Cluster Parameters



Number of processors :	4	Memory :	10000 MB
		Allocate processors on single host :	Yes
Submit to this Queue:	new-short	Hour :	3

Notification



- ☒ Notify me:
- ☒ When workload starts
 - ☒ When workload ends
 - ☒ If workload exits
 - ☒ If workload is suspended

Notifv via:



Close

Back

Next

Submit




מכון ויצמן למדע

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LSF PAC - Interactive Rstudio

<https://iblpacp01.wexac.weizmann.ac.il:8443/>

 IBM Spectrum
LSF Application Center 10.2.0.12

WorkloadResourcesSystem & Settingsvadimm54:51:22 PM +0300

Workload

New Workload

Workload

By Queue

By Group

Data

Definitions

VNC Consoles

Workload

NewControlView OutputDelete DirectoriesSearch

User = vadimmState = RunningEnded = Past Hour

ID	Type	Name	State	Application	Submitted	Start Time	Ended	User
<input type="checkbox"/> 686413	Job	Rstudio-On-De	Running	Rstudio-Singul	2023-07-17 16:	2023-07-17 16:	-	vadimm

JobPage 1 of 150

Viewing 1 - 1 of 1



Example of Rstudio application

This will open the RSTUDIO login page. Use your username and TEMPORARY PASSWORD received in the rstudio.log file.

Sign in to RStudio

Username:

Password:

☐ Stay signed in when browser closes

Sign In

To open rstudio.log file you can press the JOBID and then choose the rstudio.log file and press OPEN:

Job

Rstudio-On-Demand (454021) [Actions](#)

Summary **Data**

Directory: Remote Job Directory(access4)

Location: /home/labs/testing/igorc/.pac/igorc
/Rstudio-On-Demand_1656406124778ujllG

Tail | Open | Search

Download

More Actions

Open with applications

<input type="checkbox"/>	File Name	File Size
<input checked="" type="checkbox"/>	rstudio.log	1 KB
<input type="checkbox"/>	output.igorc.txt	3 KB
<input type="checkbox"/>	bsub.Rstudio-On-Demand	3 KB

Page 1 of 1

Example of Rstudio application - Summary

- Visit the LSF PAC web interface: <https://iblpacp01.wexac.weizmann.ac.il:8443/>
- Login with your wexac username and password.
- On the RESOURCE TAB you may overview cluster statistics such as amount of available and closed nodes.
- In order to run an interactive job, navigate to WORKLOAD tab.
- On the NEW WORKLOAD page, you can execute available applications.
- On the WORKLOAD page you may overview details of your jobs.



WEXAC Jupyterhub

<https://access2.wexac.weizmann.ac.il:8000/hub/login>

The screenshot displays the WEXAC Jupyterhub interface. The top navigation bar includes a menu with items like WEXAC, Infra, IS, cloud, private, GPU, AWS 2023 project..., WIS, WAIC, SC18, (1) Weizmann LSF..., AMD, GPFS, isilon 2020, and IB sv. Below this is a standard menu with File, Edit, View, Run, Kernel, Tabs, Settings, and Help.

On the left, a file browser shows a directory listing with columns for Name and Last Modified. The files listed include various folders and files such as 20151225131541, 20151225132022, 20151225133309, 2016, 2016-MAK, ACLtest, ADA, AIX_5_64, analytics9.1.4_deploy_dbschema, analytics9.1.4_node_lsf_linux64, analytics9.1.4_vertica_binaries, aws, aws-lambda, backup4, bash, bin, cellprofiler, centos, Class2D, cloud, cloud_exp, cloud_test, ctv, and data.

On the right, a 'Launcher' tab is active, showing options to create a new environment. The 'Notebook' section features a 'Python 3' icon. The 'Console' section also features a 'Python 3' icon. The 'Other' section includes icons for 'Terminal', 'Text File', 'Markdown File', and 'Show Contextual Help'.





WEXAC Private cloud

Current situation:

WEXAC members have private access nodes.

WEXAC members have private compute nodes.

WEXAC members use only their own private hosts in private queues.

WEXAC guests and members use both public and private resources.

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Problems with current situation:

A lot of guest's jobs preempted due to high priority members starting in the middle of guest's jobs.

Significant overhead in management and maintenance of >20 private access servers.

Silos of compute power: >20 different hardware configurations use different WEXAC members queues.

Couldn't tackle the low cluster utilization due to straight connection between private queues and specific HW configuration.

No overprovisioning option

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Current hosts groups Design

Multiple heterogeneous hosts groups

Tirosh_hosts = tirosh queues

Schwartz_hosts = schwartz queues

Bio_hosts = bio queues

Kushnir_hosts = kushnir queues

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GSLA Queue Conceptual Design

Single homogeneous host group

Single GSLA hosts group
Will serve Schwartz, bio, Tirosh
and kushnir queues

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The goals:

Replace private compute servers with GS LA hardware pool.

Reduce amount of cluster queues.

Reduce preemption percentage of WEXAC guests and members.

Introduce overprovisioning option.

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How we plan to achieve these goals (Phase I):

In phase 1 we'll introduce shared GSLA hardware pool.

2 new GSLA queues deployment replacing existing member queues.

Low priority GSLA queue will be deployed for member risk and all public users. Deploy policy of low slot guarantee per user. 2 no-preemption duration GSLA risk queues: gsla-risk-short and gsla-risk-long, 4 hours and 7 days respectfully, based on fair share policy.

High priority GSLA queue for members only will be deployed. 30% oversubscription of selected GSLA resources.

Each group will have his own maximum slot allocation in shared GSLA pool



Phase I benefits:

Reduce public workloads preemption percentage.

Increase hardware utilization by unification of cluster hardware.

Old members servers' hardware refresh.

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Example of HPC available resources

	Resource type	Billing type	Minimum allocation	Price (NIS) Given 5 years lifecycle
1	Interactive CPU physical server 52 cores, 256 GB RAM	Reserved	1 day	17.71
2	CPU cores – single CPU core 2 GHz frequency *, 4GB RAM	Reserved	1 day	0.34
3	GPU cards – single A40, 12 cores, 80 GB RAM	Reserved	1 day	16.05
4	Interactive GPU server	Reserved	1 day	160.47

* We commit to 2 GHz frequency, but CPU might belong to different generations



Storage available resources and costs

	Resource type	Billing type	Minimum allocation	Monthly price Given 5 years lifecycle
1	GPFS storage	Actual usage	1 month*	60 NIS per 1TB**
2	StorWIS	Actual usage	1 month	10 NIS per 1TB**
3	Archive	Actual usage	1 month	15 NIS per 1TB

* 1 month equal system price divide by 60 months

** Backup charged separately

WEXAC and AWS cloud integration

aws Services ▾ Resource Groups ▾

☒ New EC2 Experience
Tell us what you think

EC2 Dashboard *New*

Events *New*

Tags

Reports

Limits

▼ **INSTANCES**

Instances

Instance Types

Launch Templates *New*

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts *New*

Scheduled Instances

Capacity Reservations

▼ **IMAGES**

AMIs

Bundle Tasks

▼ **ELASTIC BLOCK STORE**

Volumes

Snapshots

Lifecycle Manager

▼ **NETWORK & SECURITY**

Security Groups *New*

Elastic IPs *New*

Welcome to the new EC2 console!
We're redesigning the EC2 console to make it easier to use and improve performance. We'll release new screens periodically. We encourage you to try them and let us know where we can improve the console and the new console, use the New EC2 Experience toggle.

EC2

Resources

You are using the following Amazon EC2 resources in the Europe (Ireland) Region:

Running instances	964+	Elastic IPs	0	Dedicated Hosts	0
Snapshots	3	Volumes	995	Load balancers	0
Key pairs	1	Security groups	3	Placement groups	0

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Launch instance ▾

Note: Your instances will launch in the Europe (Ireland) Region

Scheduled events

Europe (Ireland)

Service health

Region: Europe (Ireland) Status: ✔ This service is operating normally

Availability Zone status

Zone	Status
eu-west-1a (euw1-az2)	✔ Availability Zone is operating normally
eu-west-1b (euw1-az3)	✔ Availability Zone is operating normally



The AWS HPC Platform

The HPC (High Performance Computing) section's objective is to speed up your scientific work and make it more efficient. This includes making AWS (Amazon Web Services) resources easy for you to utilize for HPC workloads.

To that end, we have established a AWS service platform facilitating easy onboarding of scientists to the WIS network-integrated AWS resources.

Service benefits include:

- Easy registration through Internal Services
- Billing via internal WIS systems
- The ability to specify a monthly budget, to control AWS resources assigned to your account
- DevOps services deployment of your scientific solutions on the cloud

The AWS HPC Platform

AWS provides the most elastic and scalable cloud infrastructure for execution of your HPC applications. With virtually unlimited capacity, researchers and HPC system owners can innovate without being burdened by the limitations of on-premises HPC infrastructure.

- The platform delivers an integrated suite of services providing everything required to quickly and easily build and manage HPC clusters on the cloud.
- These workloads span traditional HPC applications, such as genomics, computational chemistry and weather prediction, as well as such emerging applications as machine learning/deep learning.
- Flexible configuration and practically unlimited scalability allow you to grow or scale back your infrastructure as per workload requirements, rather than the other way around.
- Additionally, WEXAC integration allows you to easily migrate data back and forth between WEXAC and AWS infrastructures.

WEXAC Web Resources

<https://hpcwiki.weizmann.ac.il/>

<https://appsrv.wexac.weizmann.ac.il/>

<https://www.weizmann.ac.il/hpc>

https://www.weizmann.ac.il/DIS/sites/DIS/files/uploads/it/wexac_training_session.pdf

<https://insightiq.weizmann.ac.il>

https://wiki.weizmann.ac.il/ai_wiki/index.php/WAIC_cluster

<https://iblmonitor01.wexac.weizmann.ac.il:3001/d/kjsnPAF4k/gpu-usage-by-groups?orgId=2>

Join the WEXAC WhatsApp group!

<https://chat.whatsapp.com/05qVVCCcR8v9234vit28gc>

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Questions ?



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July 2023 WEXAC workshop

Thank you

