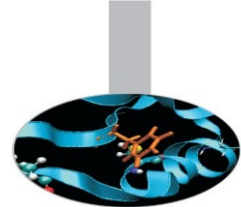


# 59th Ticket Meeting

HPC User Support @ CINECA  
December, 15th 2021

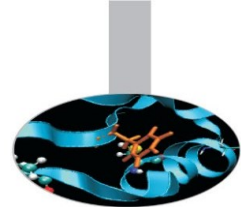
# Content

- Status of the clusters - main events affecting production [ Nov 20 – Dec 14 ]
- Examination of active tickets on HPC-US-SECOND queue
  - escalated to Intel support
  - escalated to NVIDIA support
  - other tickets
- Ticket statistics on queue [ Nov 18 – Dec 12 ]
  - HPC-US-FIRST
  - HPC-US-SECOND
- Module usage on Marconi-SKL



# Status of the clusters [Nov 20 – Dec 14]

## Main events affecting production



**Nov 22:** scheduled maintenance operations on Marconi100 on November 23

[https://www.hpc.cineca.it/center\\_news/reminder-scheduled-maintenance-marconi100-tomorrow-november-23rd](https://www.hpc.cineca.it/center_news/reminder-scheduled-maintenance-marconi100-tomorrow-november-23rd)

[https://www.hpc.cineca.it/center\\_news/marconi100-back-production-11](https://www.hpc.cineca.it/center_news/marconi100-back-production-11)

**Nov 22:** UserDB site offline due to technical operations

[https://www.hpc.cineca.it/center\\_news/userdb-portal-offline-technical-operations-today](https://www.hpc.cineca.it/center_news/userdb-portal-offline-technical-operations-today)

[https://www.hpc.cineca.it/center\\_news/update-userdb-portal-still-under-maintenance](https://www.hpc.cineca.it/center_news/update-userdb-portal-still-under-maintenance)

[https://www.hpc.cineca.it/center\\_news/userdb-portal-back-online](https://www.hpc.cineca.it/center_news/userdb-portal-back-online)

**Nov 29:** Hep Desk service satisfaction survey available until December 3

[https://www.hpc.cineca.it/center\\_news/reminder-2021-cineca-hpc-help-desk-service-satisfaction-survey](https://www.hpc.cineca.it/center_news/reminder-2021-cineca-hpc-help-desk-service-satisfaction-survey)

**Dec 6:** Hep Desk service closed on December 8

[https://www.hpc.cineca.it/center\\_news/help-desk-service-closed-december-8th](https://www.hpc.cineca.it/center_news/help-desk-service-closed-december-8th)

**Dec 7:** scheduled maintenance operations on Marconi on December 14

[https://www.hpc.cineca.it/center\\_news/scheduled-maintenance-marconi-next-tuesday-december-14th](https://www.hpc.cineca.it/center_news/scheduled-maintenance-marconi-next-tuesday-december-14th)

[https://www.hpc.cineca.it/center\\_news/marconi-back-production-45](https://www.hpc.cineca.it/center_news/marconi-back-production-45)

**Dec 10:** EUROFUSION Marconi-SKL: modification of limits for the debug partition

[https://www.hpc.cineca.it/center\\_news/eurofusion-marconi-skl-modification-limits-debug-partition-0](https://www.hpc.cineca.it/center_news/eurofusion-marconi-skl-modification-limits-debug-partition-0)

**Dec 13:** UserDB portal offline for technical operations

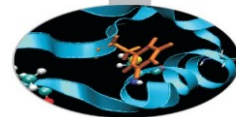
[https://www.hpc.cineca.it/center\\_news/userdb-portal-offline-technical-operations-afternoon](https://www.hpc.cineca.it/center_news/userdb-portal-offline-technical-operations-afternoon)

## Tickets escalated to Intel support



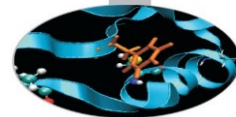
Ticket	Subject	Creation date	Last Updated by Intel	Comments
3932	Pointers to module arrays not working with SIMD <a href="mailto:nilsm@ipp.mpg.de">nilsm@ipp.mpg.de</a> serhiy.mochalskyy@ipp.mpg.de	18/09/2019 17:24:02	<b>31/07/2021 (Intel issue opened by CINECA)</b>	<p>Intel originally found a bug on the compiler front end and solved it. They provided us an archive with the sources, BUILD script and the outputs of the reproducer that did not showed the issue. The first bug had "hidden" a second bug on the vectorizer that was triggered by the definition of the macro "USE_ARR_IN_MODULE" in the reproducer. We reported this issue to Intel that confirmed the problem and opened a new bug:</p> <p><b>Intel bug report CMPLRIL0-33599</b></p> <p>Intel support has provided a resolution for the problem reported in the second bug:</p> <p>"" We cannot use simd for a loop that has F90 pointer assignment inside. For every iteration of the loop, it is updating the same dope vector for f4a. That means there is a loop carried dependency preventing vectorization. If it is vectorized with vecLen =2, for iteration 1 and 2, it is storing into the same location of the dope vector and the address code of f4a is picked up incorrectly.</p> <p>In order to generate the right code, it can run in a non-vector mode.</p> <p>However, attached is fixed.f90 which shows the right way to do it. We need to declare a structure of arrays to store the F90 pointers. In that way, every iteration is storing into different dope vectors.</p> <p>And, of course, the result from fixed.f90 is different because I used different computations in the loop.""</p> <p>We reported to Intel support users' feedback: "" Since I specifically made the f4a pointer private in my omp simd pragmas, it is very unexpected for them to still produce a loop carried dependency. Marking a variable as private is specifically defined as getting around it being a loop carried dependency. The struct of pointers, which fixes the problem, is exactly the kind of solution, the compiler should generate when encountering a pointer variable in a private clause. I hope this is the understanding of the Intel engineers as well, and they'll provide a fix in an upcoming release.""</p> <p><b>The bug fix will be merged into the compiler, it has been approved its release on Intel oneAPI 2022.0 release</b></p>

## Tickets escalated to NVIDIA support



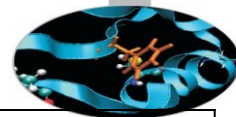
Ticket	Subject	Requestors	Created	Host	Supp. Level	Comments
18851	Problem with the nvidia compiler and -lnvc on m100	nilsm@ipp.mpg.de serhiy.mochalskyy@ipp.mpg.de	2021-06-23 11:00:02	M100	2nd NVIDIA	The user report a strange behaviour referring to CUDA devices detection when adding (or not) the «-lnvc» flag for the compilation of a test code available on the latest hpc-sdk compiler suite on Marconi100 cluster. We performed some investigations that show that with and without the flag -lnvc the same libraries are linked, the only difference is in the order of the linkage. We are in contact the nvidia support for discussion.
19978	OpenACC compiler problem with function intermediates	nilsm@ipp.mpg.de serhiy.mochalskyy@ipp.mpg.de	2021-08-24 17:14:02	M100	2nd NVIDIA	<p>The user provided a test code that is compiled using hpc-sdk/2021--binary module: "The compiler generates an intermediate, called get_arr1 , to store the result of the multiplication in line 26. This intermediate is copied to the device, as seen in the compiler output. Unfortunately, this intermediate needs to be private, as each thread needs its own copy. It is impossible to achieve that, as its name is not known, and it doesn't exist during compile time. Array b has the correct result as the result of the function call is saved in the variable c , so no intermediate is necessary. This problem emerges for all function calls to a device function that returns an array."</p> <p>The issue reported has been escalated to nvidia support for discussion.</p>

## Tickets escalated to NVIDIA support



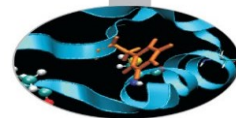
Ticket	Subject	Requestors	Created	Host	Supp. Level	Comments
19982	OpenACC compiler problem with writing back from the GPU	nilsm@ipp.mpg.de serhiy.mochalskyy@ipp.mpg.de	2021-08-24 17:44:02	M100	2nd NVIDIA	The user provided a test code that is compiled using hpc-sdk/2021--binary module; it do not generate expected results related to a copyout data clause. This problem seems related to the syntax used in the copyout data clause. To complete the analysis the issue has been reported to the nvidia support to ask for further clarifications.
20303	OpenACC compiler problem, unexpected implicit wait	nilsm@ipp.mpg.de serhiy.mochalskyy@ipp.mpg.de	2021-09-09 15:58:01	m100	2nd	This issue is still under investigation. We will also report it to nvidia if necessary as soon as preliminary checks will be completed.

## Other active tickets on HPC-US-SECOND



Ticket	Subject	Requestors	Created	Host	Supp. Level	Comments
18205	paraview on M100	mattwi@fysik.dtu.dk	2021-05-28 11:46:01	M100	Int.	The user reported issues when running paraview version available as module through a RCM session. To fix this is required a recompilation of paraview (we will include, if possible, the installation of the nvidia plugin index required also by this user). The installation of paraview is underway but it is showing issues. Also, we are in contact with nvidia to clarify the terms of the license required to install/run nvidia plugin index on M100 cluster.
20015	Device to device MPI communication with OpenMP4.5	asahi.yuichi@jaea.go.jp	2021-08-26 08:08:03	M100	2nd	The user report errors when trying to compile his code. This first error refers to a XLC++ version of the code that could compile and run correctly before the major update of the cluster. We helped the user into the compilation of the code by including a missing linking flag. The user confirmed that he can go on with the work. The second error reported refer to the usage of hpc-sdk compiler suite for the compilation of the same code (FATAL ERROR: "data in use_device clause was not found on device 1: host:0x2140dbf02), this is still under investigation.
20676	QdstrmlImporter	huw.leggate@dcu.ie	2021-09-30 13:04:01	M100	2nd	The user reports that using nsys the QdstrmlImporter step fails for the qdstrm files. He tried also the execution of QdstrmlImporter from the command line obtaining the same result. He is attempting to use openmp offloading with the default gcc 8.4.0, that appears to have been built without offloading enabled, and he suspects that may be causing the crash.

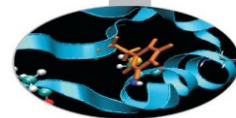
## Other active tickets on HPC-US-SECOND



Ticket	Subject	Requestors	Created	Host	Supp. Level	Comments
21940	gcc/10 on marconi?	nicola.varini@epfl.ch	2021-11-10 18:04:01	SKL	2nd	The user has requested the installation on Marconi cluster of netcdf-fortran and hdf5 libraries, that need to be compiled with gcc/10 and mpi.
22039	Diskspace on WORK area of Marconi	jdominguezpalacios@us.es	2021-11-15 13:58:02	SKL	1st	The user, collaborator of the FUA35_MEGAEDGE project, has requested a work area quota increase to a total of 120TB. The quota has been increased as requested, the PI of the project was informed of this operation. Before proceeding with the quota increase asked for a motivation that has been provided to the OC for approval.
22068	ottimizzazione job sottomesso	giovanni.digianatale@epfl.ch	2021-11-16 12:02:01	M100	2nd	The user is observing out of memory errors when running an ORB5 simulation, he is asking for 32 nodes for the run. The case he is running foresees 1600M particles, 32 nodes is on the edge.
22416	Compilation of PARALLAX	Andreas.Stegmeier@ipp.mpg.de	2021-11-29 17:00:01	SKL	2nd	The user requires to compile and run his Fortran code, PARALLAX, gnu/8 and an openmpi library that is compatible with gnu/8 on Marconi cluster. We have installed openmpi-4.1.1 compiled with gnu-8.3.0 (available as a module in the advanced profile). It is also required for this code the netcdf 4.x library (under installation together with dependencies needed by the library).



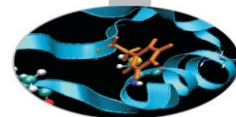
## Other inactive tickets on HPC-US-SECOND



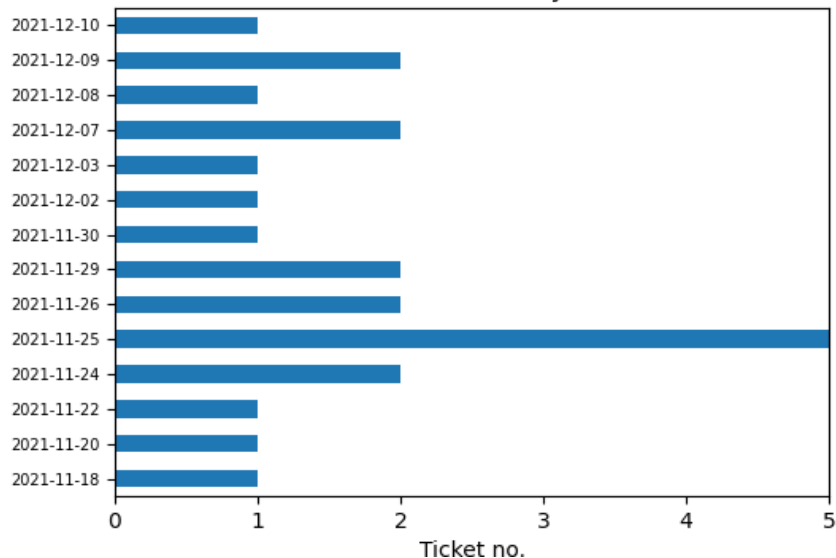
Ticket	Subject	Requestors	Created	Host	Supp. Level	Comments
20019	Segfault before code launch with srun	Patrick.TAMAIN@cea.fr	2021-08-26 09:28:03	SKL	2nd	The user is experiencing issues when trying to run his code. For the code compilation are used both modules available on the system and custom libraries available at the user personal areas. The error seems related to the petsc libraries (module) used for the compilation of the code. We provided a new installation of petsc library to check again for compatibility issues.
20832	GNU/8.4.0 Offloading support	huw.leggate@dcu.ie	30/09/2021 13:04:01	M100	2nd	The user reports that the default gnu version 8.4.0 on Marconi100 appears to have been compiled without offloading support and asks for the possibility to provide an 8.4 build with offloading enabled as this is the required version to build other libraries.
21294	Switching MPI compilers	huw.leggate@dcu.ie	2021-10-18 14:16:01	M100	2nd	The user asks for a way to use different underlying compilers in the same environment when using mpif90, specifically, to compile with the spectrum mpi mpif90 command using gfortran and also using nvfortran, without unloading sdk-hpc module. We have suggested the usage of the environment variable OMPI_FC so to override the default fortran compiler.
21950	-llapacke compilation error	markus.held@chalmers.se	2021-11-11 10:08:02	SKL	2nd	The user is experiencing a library linking error when compiling one code, in particular with lapack library (lapack/3.8.0--intel--pe-xe-2018--binary). As an alternative to solve the issues he has asked for the installation of lapack for gnu/8.3.0.

# Ticket Statistics Nov 18 – Dec 12

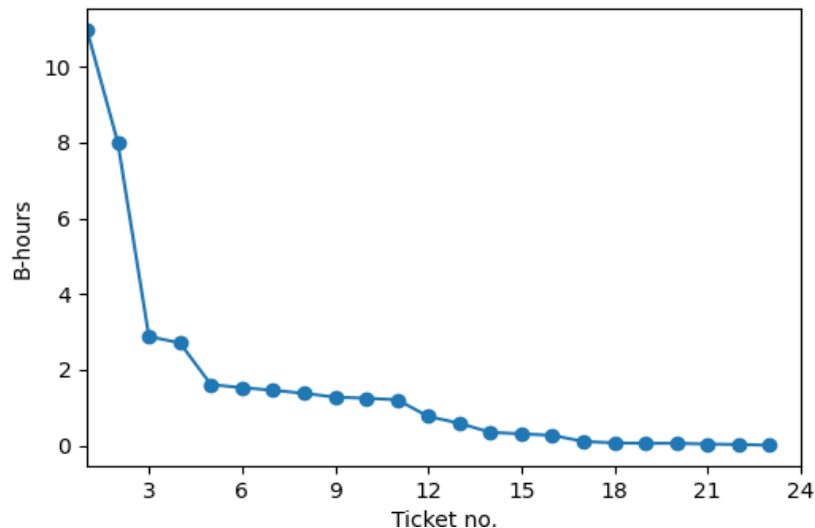
## *HPC-US-FIRST & HPC-US-SECOND*



Received tickets by date



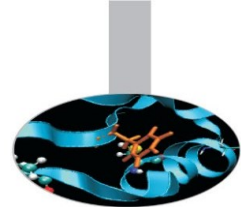
Business hours from ticket creation to initial address  
HPC US FIRST & HPC US SECOND



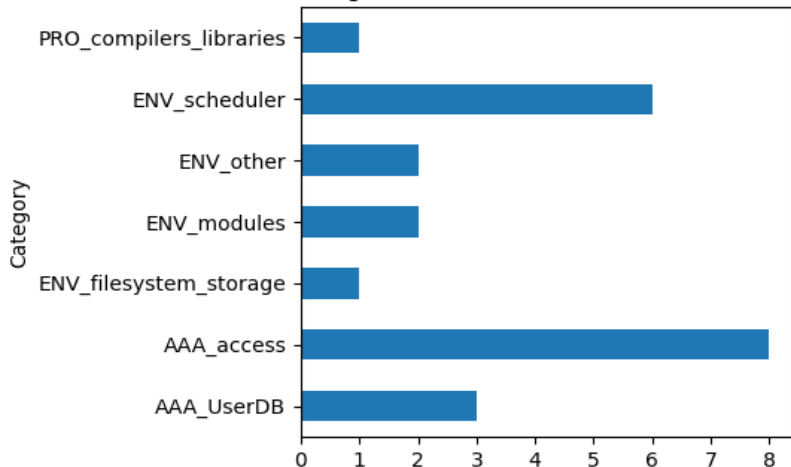
TOTAL → 23 tickets  
 - HPC-US-FIRST → 13  
 - escalated to HPC-US-SECOND → 10

# Ticket statistics Nov 18 – Dec 12

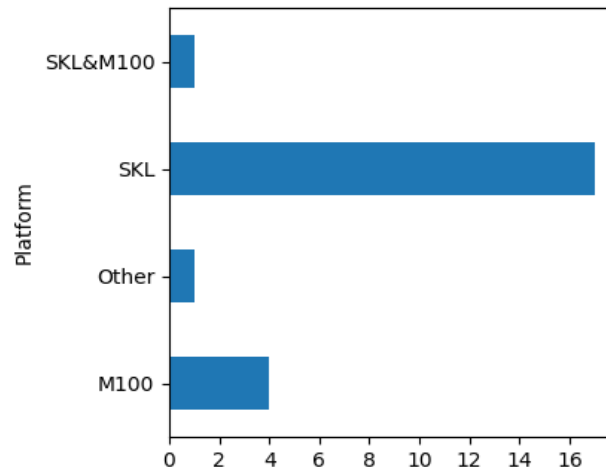
## *HPC-US-FIRST & HPC-US-SECOND*



Ticket categories on HPC-US-FIRST & HPC-US-SECOND

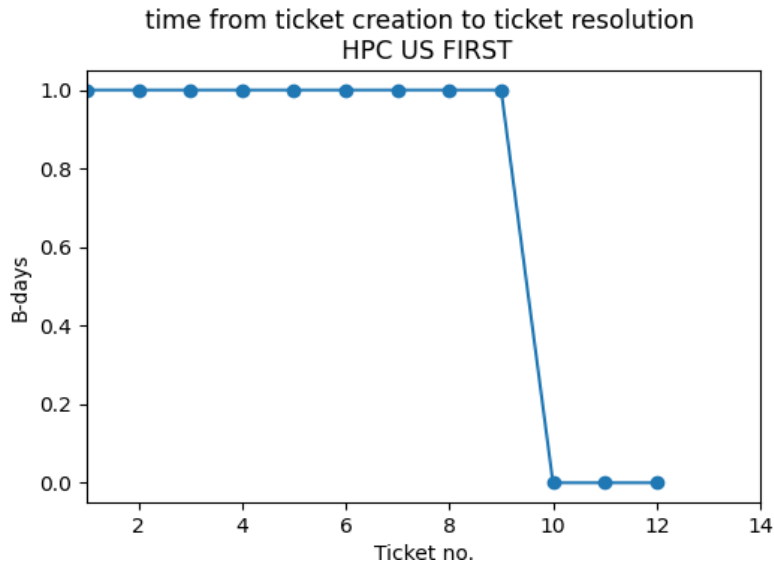
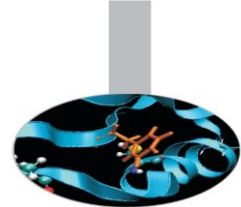


Classification of tickets by platform  
HPC-US-FIRST & HPC-US-SECOND

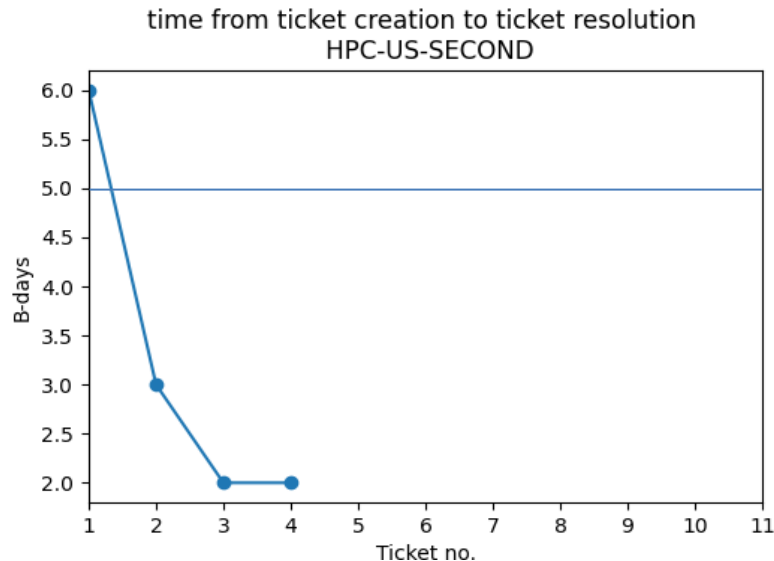


# Ticket statistics Nov 18 – Dec 12

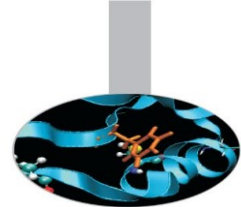
## *HPC-US-FIRST & HPC-US-SECOND*



**12 / 13** resolved tickets



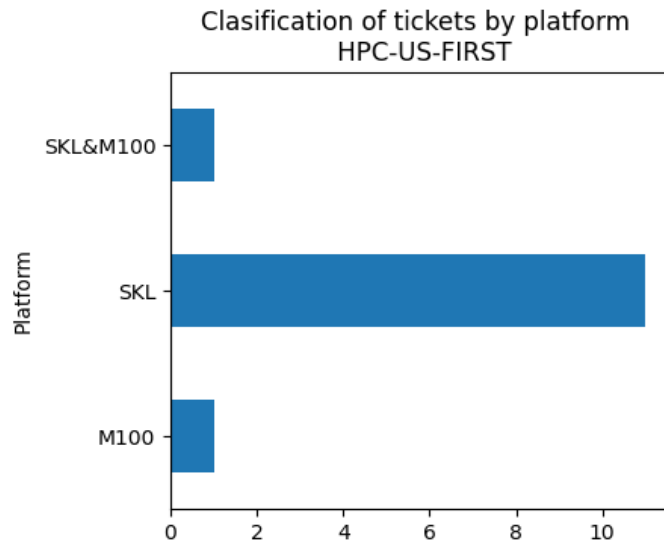
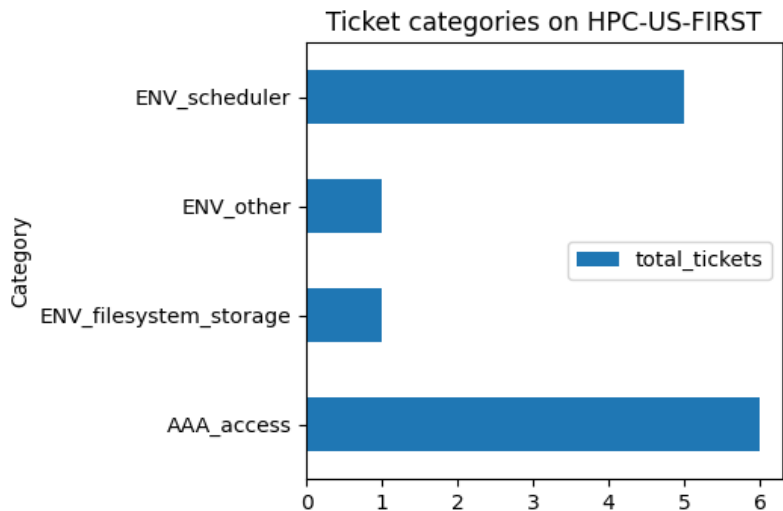
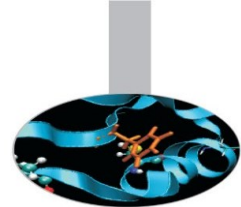
**4 / 10** resolved tickets



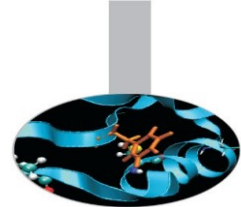
Ticket SECOND	Days	Creation time	Requestor	Subject	Notes
22340	6	25/11/2021 14:18:02	mike.machielsen @epfl.ch	certificate expired?	The user report an error stating that the certificate issuer's certificate has expired when trying to clone a git repository on Marconi ( <a href="https://c4science.ch/source/futils.git">https://c4science.ch/source/futils.git</a> ).

# Ticket statistics Nov 18 – Dec 12

## *HPC-US-FIRST*



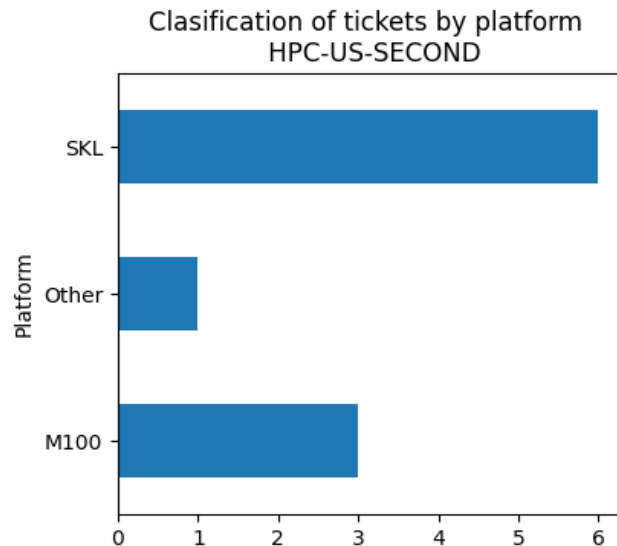
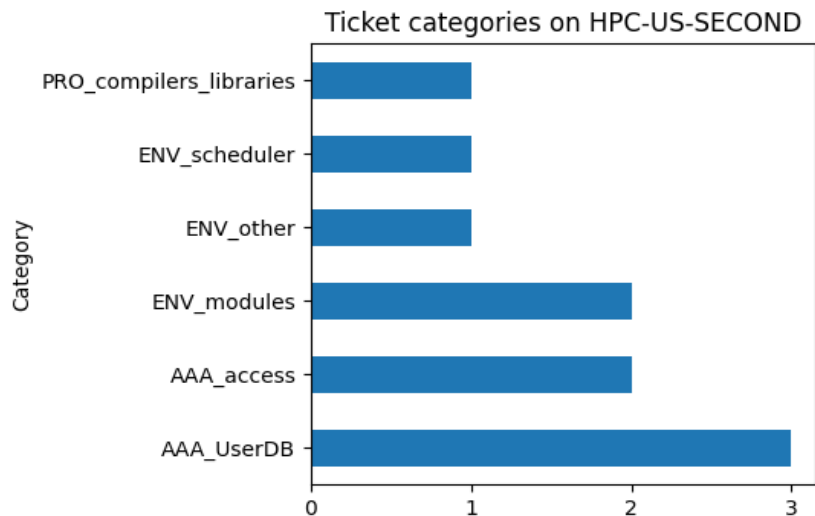
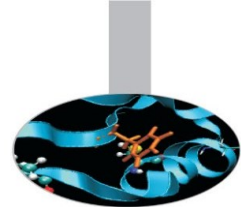
# Ticket statistics Nov 18 – Dec 12 *HPC-US-FIRST*



HPC-US-FIRST			By status			By platform		
			open	resolved		M100	SKL	SKL&M100
Problem	AAA_access			1		1		
	ENV_filesystem_storage			1			1	
	ENV_other			1			1	
	ENV_scheduler		1	4			5	
Service Request	AAA_access			5			4	1
total	13		1	12		1	11	1

# Ticket statistics Nov 18 – Dec 12

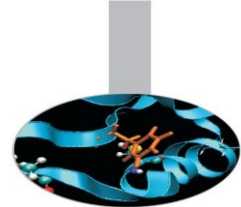
## *HPC-US-SECOND*





# Ticket statistics Nov 18 – Dec 12

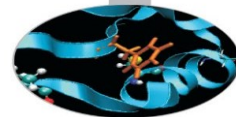
## HPC-US-SECOND



HPC-US-SECOND		By status		By platform		
		open	resolved	M100	SKL	Other
Information	AAA_UserDB		1		1	
	AAA_access	1			1	
Problem	AAA_UserDB	1	1		2	
	ENV_modules	1			1	
	ENV_other		1	1		
	ENV_scheduler	1		1		
	PRO_compilers_libraries	1			1	
Service Request	AAA_access		1			1
	ENV_modules	1		1		
total	10	6	4	3	6	1

# Module usage on Marconi-SKL

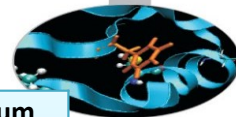
November 2021



category	modulename	partition	qos	module_load_count	elapsed_timelimit_sum
application	openfoam	skl_fua_prod	normal	2	0
	qe	skl_fua_prod	normal	2	1,06
	starccm+	skl_fua_dbg	normal	8	2,94
		skl_fua_prod	normal	454	276,92
	vasp	skl_fua_prod	normal	1754	452,08
compiler	gnu	bdw_all_serial	normal	8	1,58
		skl_fua_dbg	normal	24	12,22
		skl_fua_prod	normal	375	197,9
	intel	skl_fua_dbg	normal	256	15,09
		skl_fua_prod	normal	91	44,58
	intelmpi	skl_fua_dbg	normal	256	15,09
		skl_fua_prod	normal	91	44,58
	openmpi	skl_fua_dbg	normal	3	1,09
		skl_fua_prod	normal	357	180,31
	python	bdw_all_serial	normal	108	88,41
		skl_fua_dbg	normal	16	11,48
			normal	406	194,68
		skl_fua_prod	skl_qos_fuabprod	36	25,23
			skl_qos_fualprod	3	3

# Module usage on Marconi-SKL

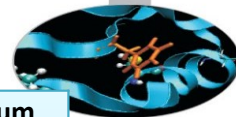
November 2021



category	modulename	partition	qos	module_load_count	elapsed_timelimit_sum
tool	anaconda	bdw_all_serial	normal	100	82,26
		skl_fua_dbg	normal	9	8,19
		skl_fua_prod	normal	206	73,5
			skl_qos_fuabprod	4	0,09
	cmake	bdw_all_serial	normal	27	19,05
		skl_fua_dbg	normal	76	26,79
		skl_fua_prod	normal	68	30,69
			skl_qos_fuabprod	4	0,09
			skl_qos_fualprod	201	37,92
	cubegui	skl_fua_prod	normal	341	281,52
	ffmpeg	bdw_all_serial	normal	7	1,57
		skl_fua_dbg	normal	18	9,81
		skl_fua_prod	normal	18	17,6
	idl	bdw_all_serial	normal	44	36,58
		skl_fua_dbg	normal	5	3,5
		skl_fua_prod	normal	27	16,72
			skl_qos_fualprod	3	3
	scalasca	skl_fua_prod	normal	341	281,52
	scorep	skl_fua_prod	normal	341	281,52
	vtune	skl_fua_dbg	normal	89	26,52
		skl_fua_prod	normal	144	39,27

# Module usage on Marconi-SKL

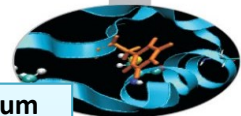
November 2021



category	modulename	partition	qos	module_load_count	elapsed_timelimit_sum
library	blas	bdw_all_serial	normal	46	38,23
		skl_fua_dbg	normal	270	37,13
		skl_fua_prod	normal	1733	593,41
			skl_qos_fuabprod	11	8,23
			skl_qos_fualowprio	3	1,99
	boost	skl_fua_prod	normal	2	0
	cubelib	skl_fua_prod	normal	341	281,52
	fftw	bdw_all_serial	normal	30	20,82
		skl_fua_dbg	normal	460	112,4
		skl_fua_prod	normal	1856	1236,3
			skl_qos_fuabprod	101	86,7
			skl_qos_fualowprio	3	1,99
			skl_qos_fualprod	248	62,2
		bdw_all_serial	normal	43	7,97
	hdf5	skl_fua_dbg	normal	165	72,22
		skl_fua_prod	normal	1971	1235,26
			skl_qos_fuabprod	81	62,31
			skl_qos_fualowprio	3	0,63
			skl_qos_fualprod	229	56,89

# Module usage on Marconi-SKL

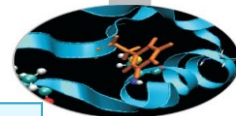
November 2021



category	modulename	partition	qos	module_load_count	elapsed_timelimit_sum
library	lapack	bdw_all_serial	normal	54	40,81
		skl_fua_dbg	normal	288	46,94
		skl_fua_prod	normal	1254	207,13
			skl_qos_fuabprod	11	8,23
			skl_qos_fualowprio	3	1,99
	mkl	skl_fua_dbg	normal	256	15,09
		skl_fua_prod	normal	90	44,02
	nag	bdw_all_serial	normal	10	9,99
		skl_fua_dbg	normal	3	1,33
	netcdf	bdw_all_serial	normal	45	10,21
		skl_fua_dbg	normal	93	43,79
		skl_fua_prod	normal	1056	673,61
			skl_qos_fuabprod	40	25,33
			skl_qos_fualowprio	3	0,63
			skl_qos_fualprod	25	15,97
	netcdf-cxx4	bdw_all_serial	normal	8	2,47
		skl_fua_dbg	normal	36	18,55
		skl_fua_prod	normal	117	79,55
			skl_qos_fualprod	25	15,97

# Module usage on Marconi-SKL

November 2021



category	modulename	partition	qos	module_load_count	elapsed_timelimit_sum
library	netcdf	bdw_all_serial	normal	37	7,63
		skl_fua_dbg	normal	54	23,91
		skl_fua_prod	normal	939	594,06
			skl_qos_fuabprod	40	25,33
			skl_qos_fualowprio	3	0,63
	parmetis	skl_fua_dbg	normal	22	4,91
		skl_fua_prod	normal	12	6,91
	petsc	bdw_all_serial	normal	2	1,33
		skl_fua_dbg	normal	55	17,02
		skl_fua_prod	normal	883	416,02
			skl_qos_fuabprod	30	23,83
			skl_qos_fualprod	3	3
	popt	skl_fua_prod	normal	27	6,74
	qt	skl_fua_prod	normal	341	281,52
	scalapack	bdw_all_serial	normal	44	36,58
		skl_fua_dbg	normal	3	1,33
		skl_fua_prod	normal	1268	429,32
			skl_qos_fuabprod	11	8,23
			skl_qos_fualowprio	3	1,99
	scipy	skl_fua_prod	normal	8	6,78
	slepc	skl_fua_dbg	normal	2	2,01
		skl_fua_prod	normal	200	76,69
			skl_qos_fualprod	3	3
	xerces-c	skl_fua_prod	normal	3	0,81