

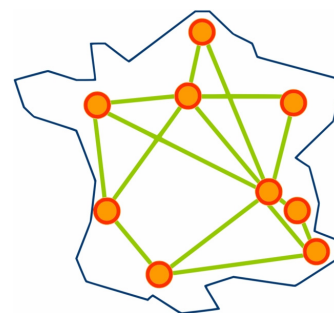
How an Experimental Grid is Used: the Grid5000 Case and its Impact on Energy Usage

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http://www.ens-lyon.fr/LIP/RESO/energy_grid

Site	# of res.	# of core	# of core / res.	length of res.	real work
Bordeaux	45775	650	55.50	5224.59 s.	47.80%
Grenoble	19211	72	4.06	4473.76 s.	16.07%
Lille	330694	250	4.81	1446.13 s.	36.44%
Lyon	33315	322	41.64	3246.15 s.	46.38%
Nancy	63435	574	22.46	19480.49 s.	56.41%
Orsay	26448	684	47.45	4322.54 s.	18.88%
Rennes	36433	714	54.85	7973.39 s.	49.87%
Sophia	35179	568	57.93	4890.28 s.	51.43%
Toulouse	20832	434	12.89	7420.07 s.	50.57%

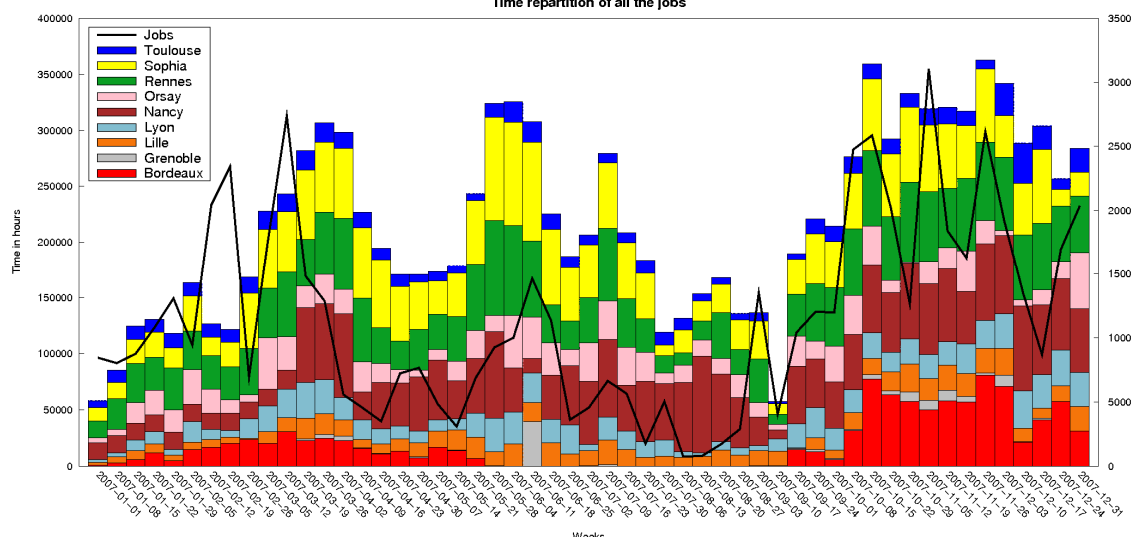


Analyzing Grid5000 usage

- Experimental grid
- Analyze grid usage
- Measure energy consumption

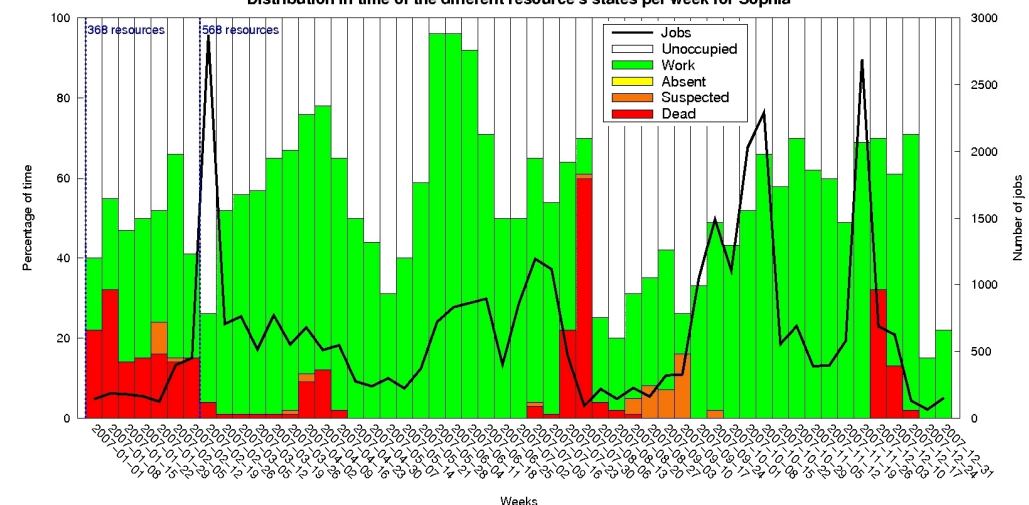
Grid view

Time repartition of all the jobs



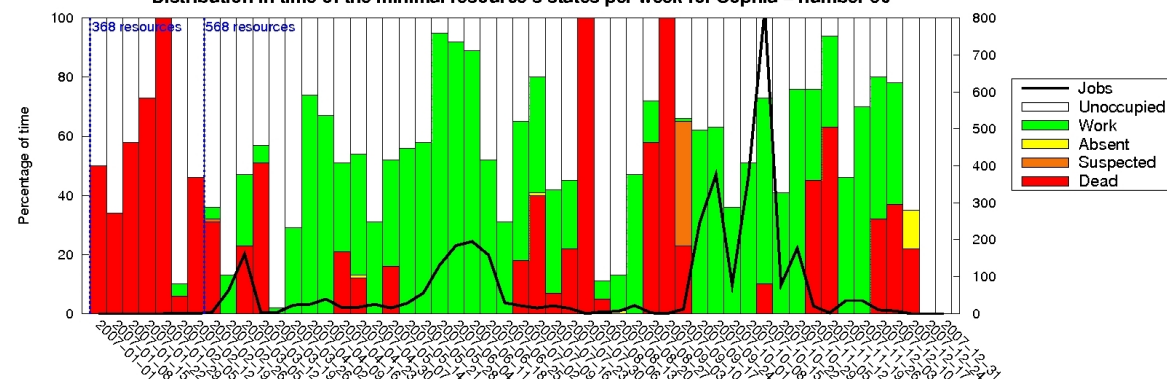
Cluster view

Distribution in time of the different resource's states per week for Sophia

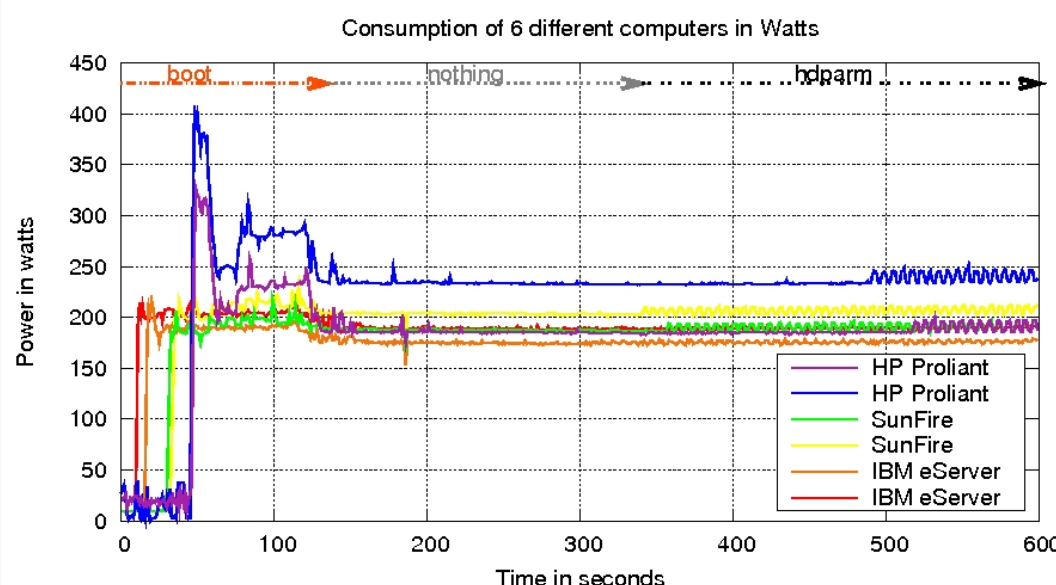
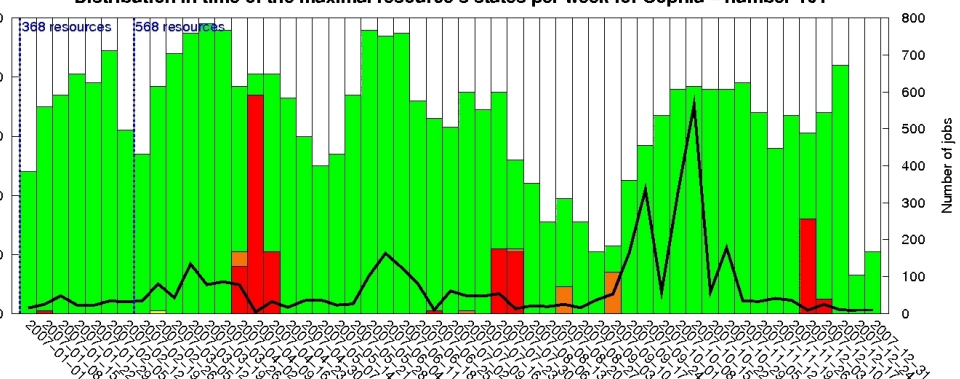


Node view

Distribution in time of the minimal resource's states per week for Sophia - number 96



Distribution in time of the maximal resource's states per week for Sophia - number 161



Towards energy-aware Grid

- Propose an On/Off model to make energy savings in grid context
- Validate our model by using grid traces
- Enhance our model with virtualization and DVS techniques