

ALIEN INTEGRATION WITH ARC CE

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NORDUGRID ARC

The **Advanced Resource Connector (ARC)** middleware integrates computing resources (usually, computing clusters managed by a batch system or standalone workstations) and storage facilities, making them available via a secure common Grid layer.

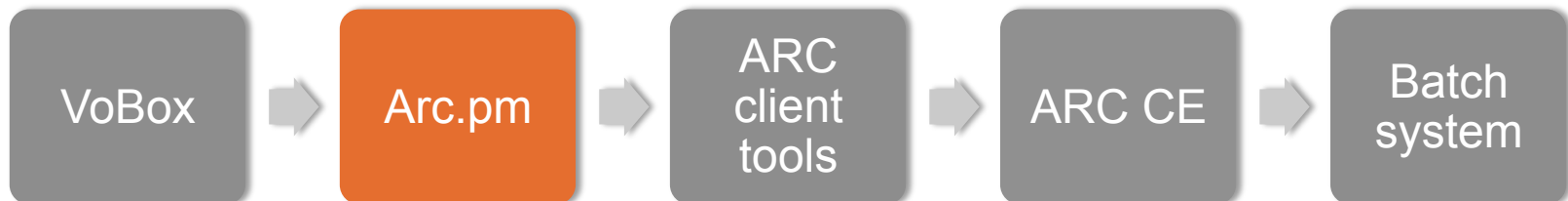
In a nutshell, ARC is:

- A general purpose, Open Source, lightweight, portable middleware solution
- A reliable production-quality and scalable implementation of fundamental Grid services
- Facilitator of cross-organisational distributed computing infrastructure solutions
- Strongly committed to open standards and interoperability
- In continuous use since 2002

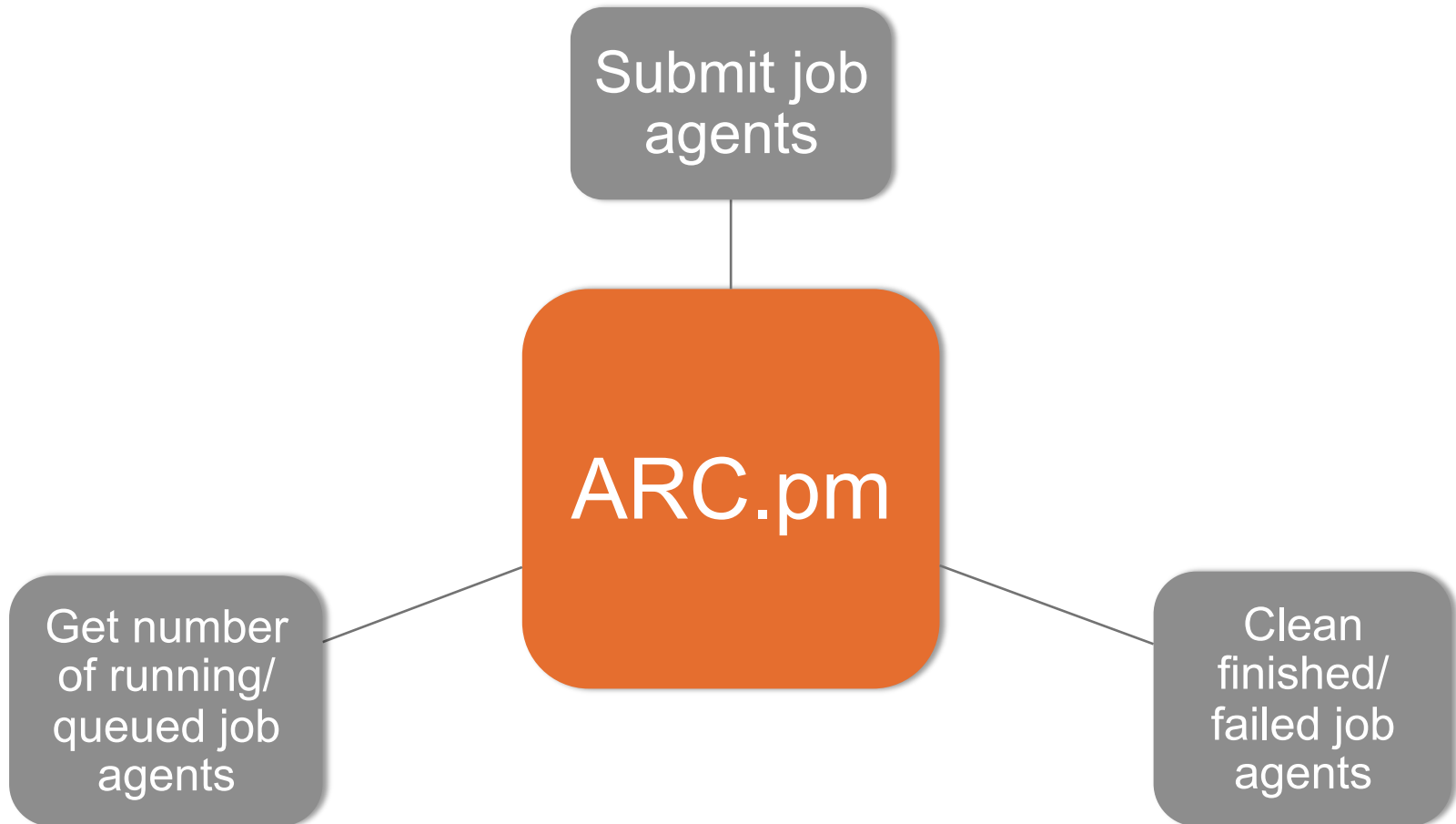
ALIEN/ARC INTERACTION ELEMENTS



A more detailed view of the chain:



ARC MODULE OPERATIONS



ALIEN JOBAGENT XRSL DESCRIPTION FOR ARC

```
&(jobName = "AliEn-arc-submit.19897")
```

```
(executable = /usr/bin/time)
```

```
(arguments = bash "arc-submit.19897.sh")
```

```
(inputFiles = ("arc-submit.19897.sh" "<ALICE_TMP>/agent.startup.  
19897") ( "proxy" "<X509_PROXY>" ))
```

```
(outputFiles = ( "std.err" "" ) ( "std.out" "" ) ( "gmlog" "" ) ("arc-  
submit.19897.sh" "" ) )
```

```
(environment = (ALIEN_JOBAGENT_ID 19897_982)
```

```
(ALIEN_CM_AS_LDAP_PROXY arc.bitp.kiev.ua:8084))
```

ALIEN JOBAGENT XRSL DESCRIPTION FOR ARC

&(jobName = "AliEn-arc-submit.19897")

(executable = /usr/bin/time)

(arguments = bash "arc-submit.19897.sh")

**(inputFiles = ("arc-submit.19897.sh" "<ALICE_TMP>/
agent.startup.19897"))**

**(outputFiles = ("std.err" "") ("std.out" "") ("gmlog" "") ("arc-
submit.19897.sh" ""))**

(memory="2048")

**(environment = (ALIEN_JOBAGENT_ID 19897_982)
(ALIEN_CM_AS_LDAP_PROXY arc.bitp.kiev.ua:8084))**

AGENT STARTUP SCRIPT

```
#!/bin/bash
```

```
export X509_USER_PROXY=`pwd`/proxy
```

```
/cvmfs/alice.cern.ch/bin/alienv setenv AliEn/v2-19-223 -  
c ALIEN_DEBUG='-d:Trace' /cvmfs/alice.cern.ch/  
x86_64-2.6-gnu-4.1.2/Packages/AliEn/v2-19-223/bin/  
alien RunAgent
```

IMPROVEMENTS FOR CE STATUS OPERATIONS

Status operations transferred from direct command line calls to BDII LDAP calls.

```
[alicesgm@lcgvo07 ~]$ time arcstat -a
```

```
real 5m27.589s
```

```
user 0m22.695s
```

```
sys 0m2.542s
```

```
[alicesgm@lcgvo07 ~]$ time ldapsearch -LLL -x -H ldap://site-  
bdii.gridpp.rl.ac.uk:2170 -b mds-vo-name=RAL-LCG2,o=grid -LLL  
"(GlueVoViewLocalId=alice)" GlueCEUniqueID GlueCEStateRunningJobs  
GlueCEStateWaitingJobs
```

```
real 0m0.043s
```

```
user 0m0.003s
```

```
sys 0m0.001s
```

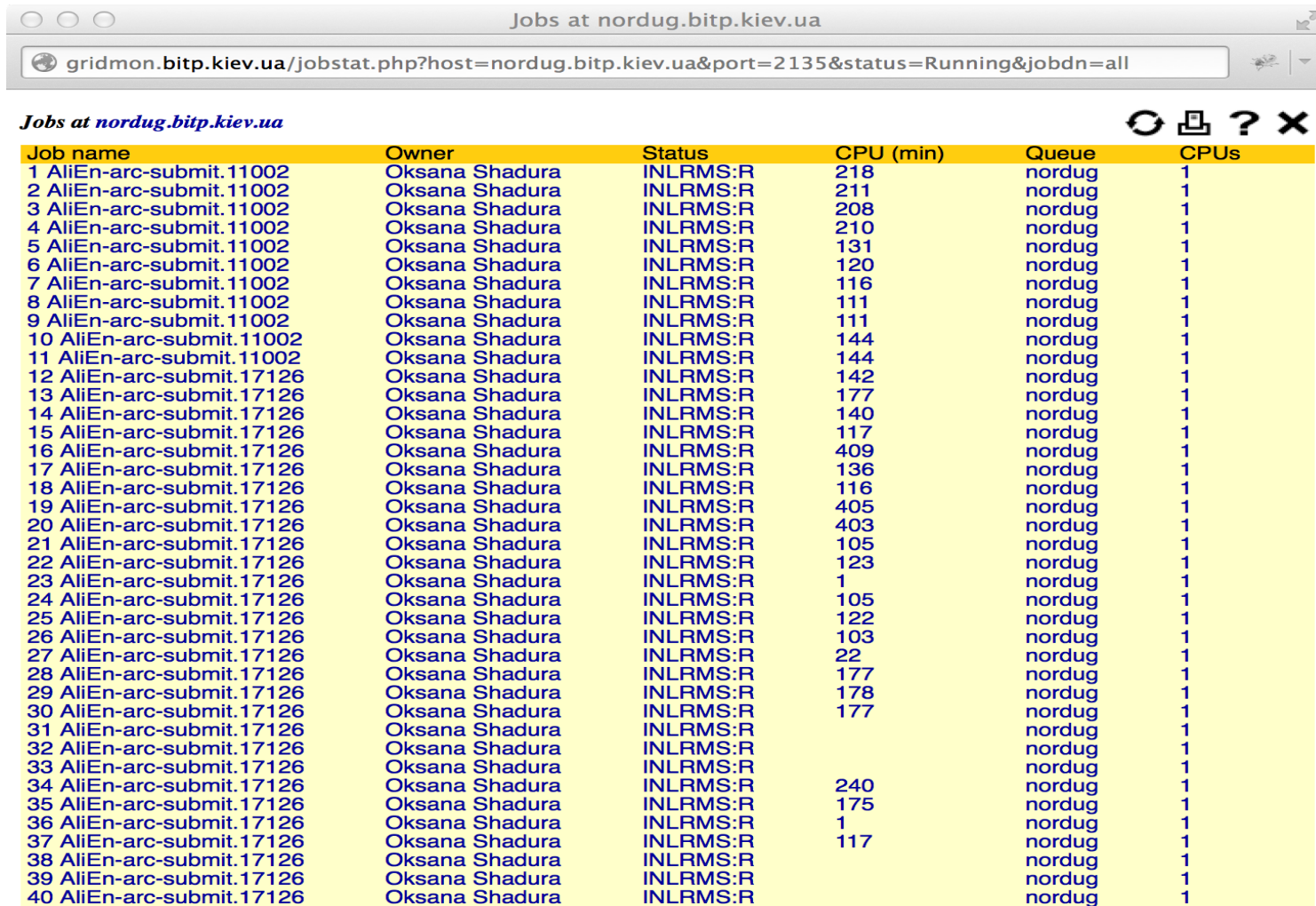

SELF HEALING MECHANISM

There was a report that sometimes ARC client tools stop jobs submission because of broken jobs file.

A “self-healing” mechanism has been introduced to VoBox ARC module, which uses:

- **db_verify** tool for BDB jobs file (for Nordugrid ARC 4)
- **xmllint** tool for XML jobs file in older Nordugrid ARC versions.

ALIEN JOBAGENTS IN ARC GRID MONITOR



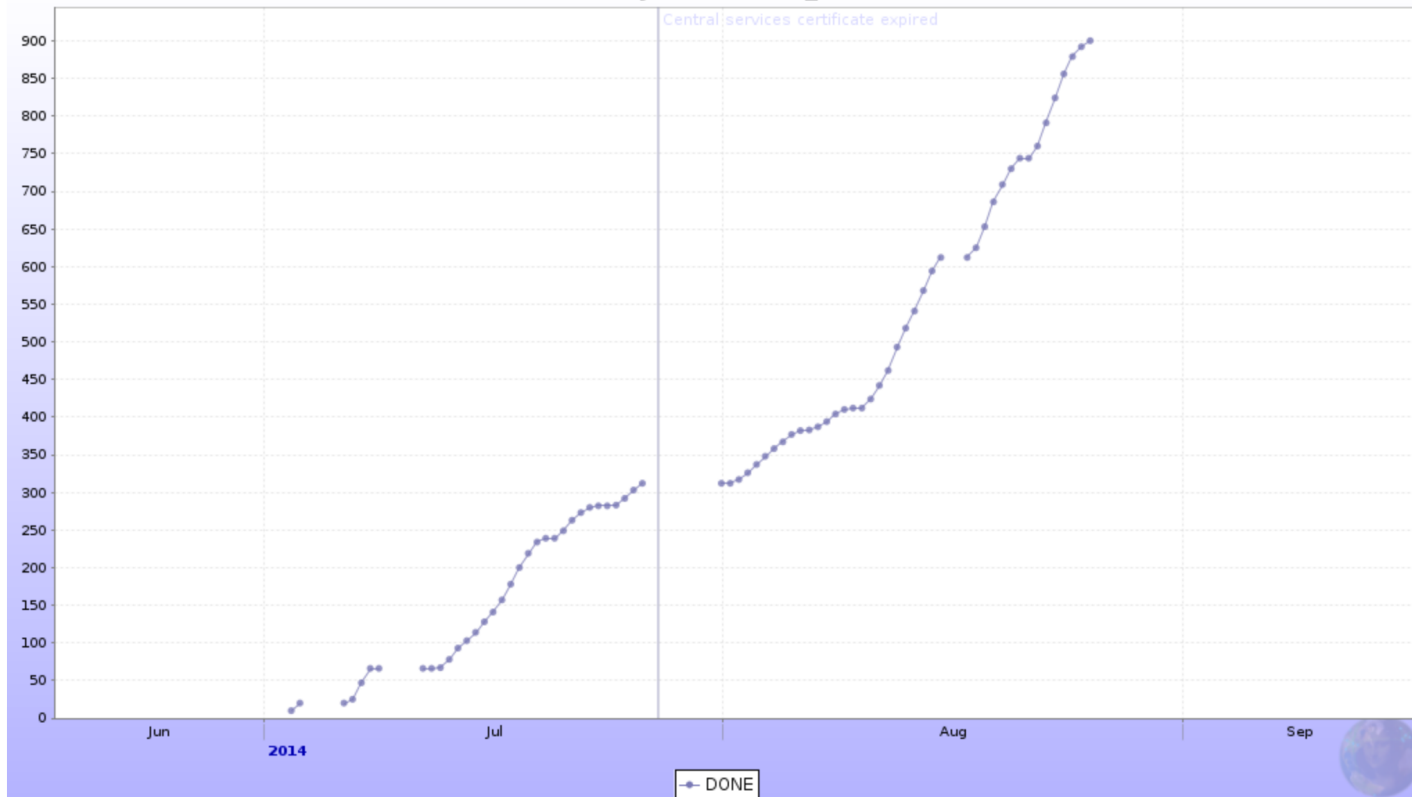
Job name	Owner	Status	CPU (min)	Queue	CPUs
1 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	218	nordug	1
2 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	211	nordug	1
3 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	208	nordug	1
4 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	210	nordug	1
5 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	131	nordug	1
6 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	120	nordug	1
7 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	116	nordug	1
8 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	111	nordug	1
9 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	111	nordug	1
10 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	144	nordug	1
11 AliEn-arc-submit.11002	Oksana Shadura	INLRMS:R	144	nordug	1
12 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	142	nordug	1
13 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	177	nordug	1
14 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	140	nordug	1
15 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	117	nordug	1
16 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	409	nordug	1
17 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	136	nordug	1
18 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	116	nordug	1
19 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	405	nordug	1
20 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	403	nordug	1
21 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	105	nordug	1
22 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	123	nordug	1
23 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	1	nordug	1
24 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	105	nordug	1
25 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	122	nordug	1
26 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	103	nordug	1
27 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	22	nordug	1
28 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	177	nordug	1
29 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	178	nordug	1
30 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	177	nordug	1
31 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R		nordug	1
32 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R		nordug	1
33 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R		nordug	1
34 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	240	nordug	1
35 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	175	nordug	1
36 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	1	nordug	1
37 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R	117	nordug	1
38 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R		nordug	1
39 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R		nordug	1
40 AliEn-arc-submit.17126	Oksana Shadura	INLRMS:R		nordug	1

ALIMONITOR FOR BITP_ARC SITE

Interval selection: 3 months or « 2014-06-16 09:00 - 2014-09-15 15:00 »

Annotations

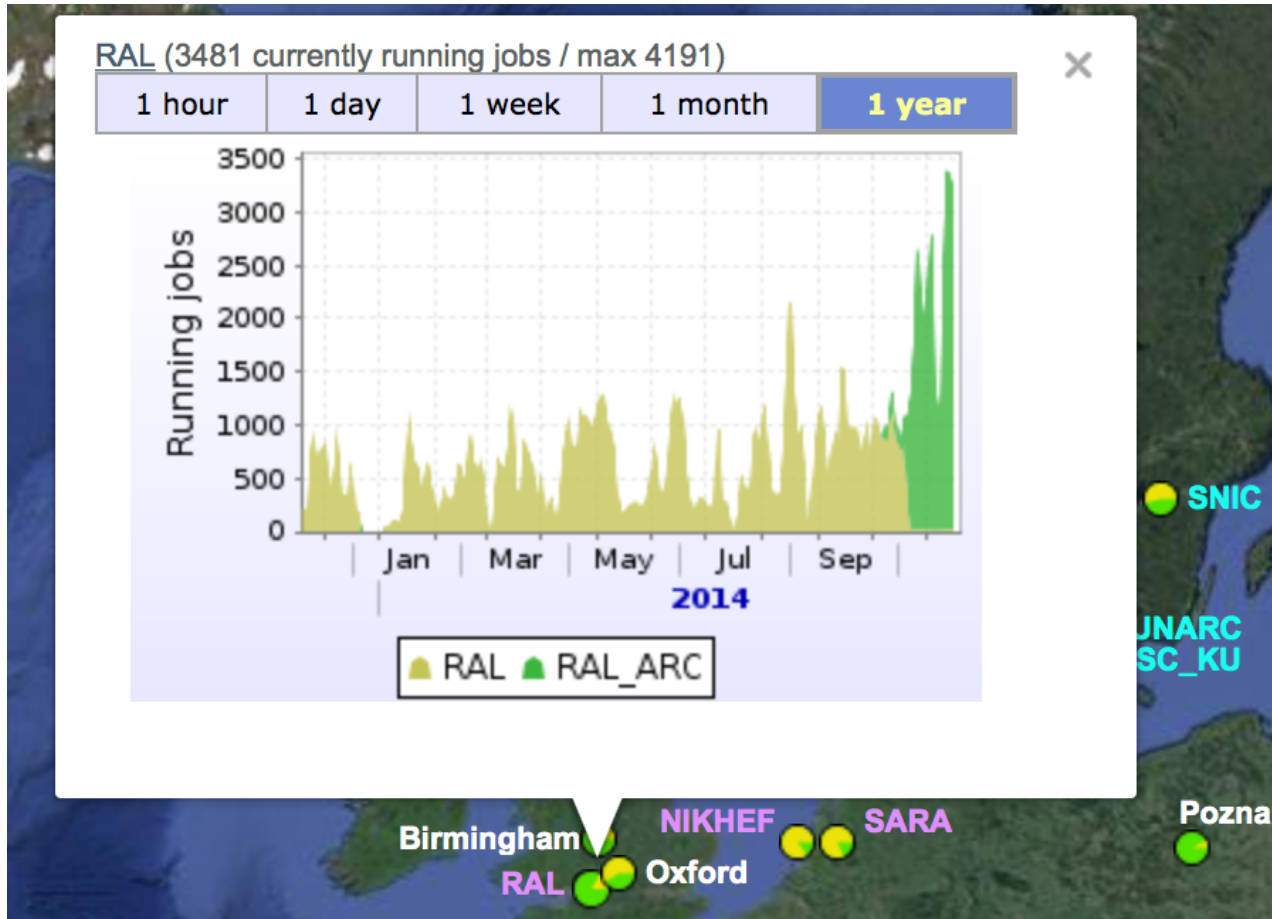
Done jobs in BITP_ARC



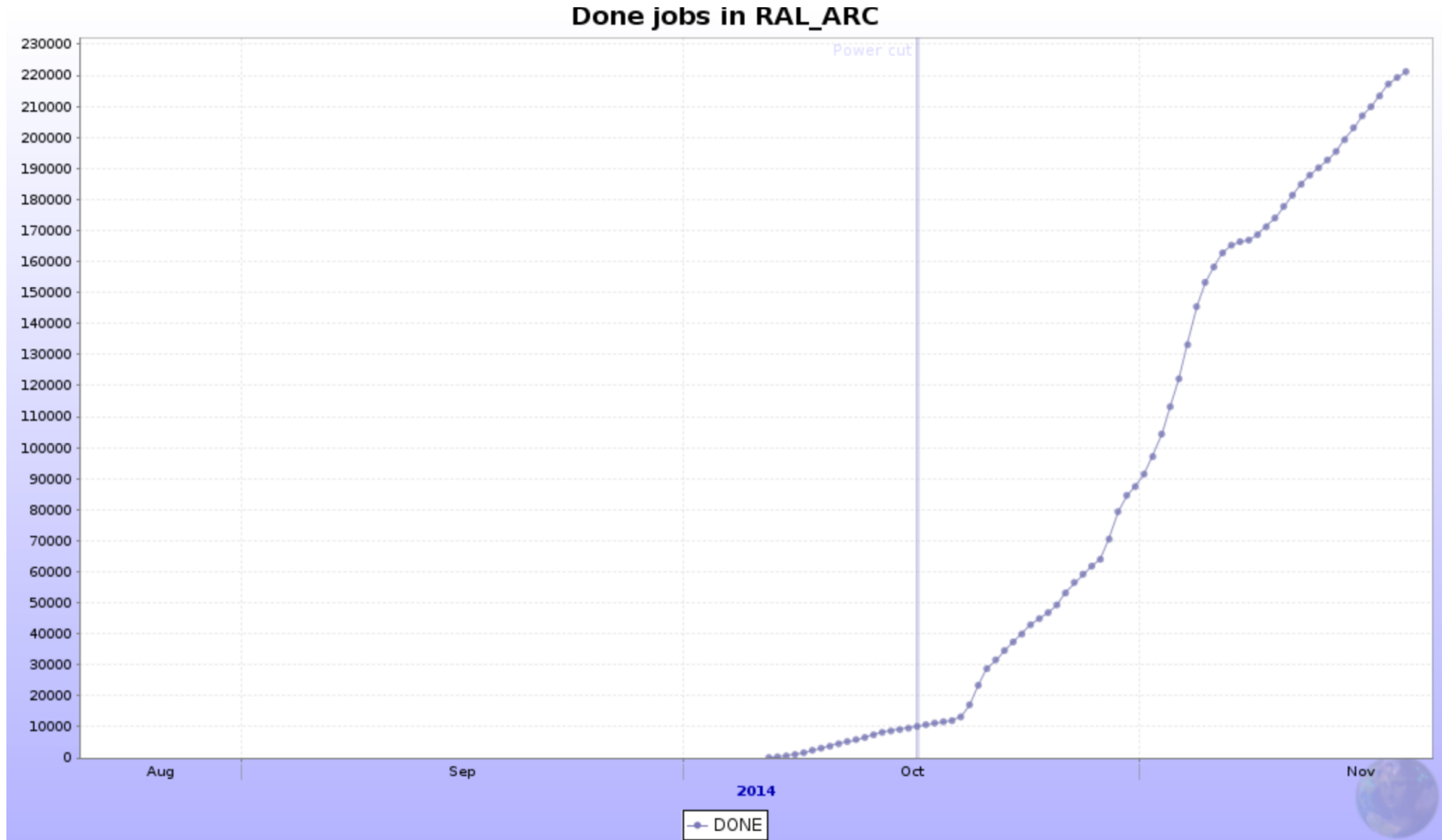
Statistics

Done jobs in BITP_ARC				
Series	Last value	Min	Avg	Max
1. DONE	900	10	374.2	900
Total	900		374.2	

RAL_ARC TIER1 SITE



RAL_ARC TIER1 SITE



CONCLUSIONS & FUTURE WORK

- **AliEn module for Nordugrid ARC updated according to current requirements and it is able to work out-of-the box**
- **Nagios SAM tests for ARC have to be finished to run adequate monitoring**
- **Maybe other ARC-based sites will be willing to join our infrastructure**