

**«Transition to diskless configuration for RO-16 & RO-14»**

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**WLCG WORKSHOP**

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# Motivation

**Intention of ADC/DDM to reduce the number of sites with small size local grid storage**

- *«Some sites have very limited storage / manpower*
- *«Operating a storage element is non-trivial »*

***See DDM Group: «Lightweight Sites», ATLAS Sites Jamboree, 2017, CERN Link***

# ROMANIA Sites

## The four sites in Romania:

Site	CPU	HS06	DPM (TBytes)
RO-14-ITIM	440	3,960	30
RO-16-UAIC	576	5,184	171
RO-07-NIPNE	2776	30,093	569
RO-02-NIPNE	752	7,285	213

- RO-16 and RO-14 support only evgen and MonteCarlo Jobs
- The Idea was to use the dpm storage of RO-07 (over the WAN) for both sites.

Pledge resources from Apr 2017

# New Pilot movers

## ■ **Pilot New SiteMover :**

- Easy and stable Setup
- The ATLAS-Pilot use the ddmendpoint (Rucio Storage Element) in order to set the source of data (read) and the destination of data (write)
- For each Panda Queue we have:
  - Accociated ddmendpoint (list of grid storage including access protocol)
  - Associated copytools (list of protocol for each activity: read,write, logs write)
  - (e.g. xrdcp, lcg-cp, rucio,...)

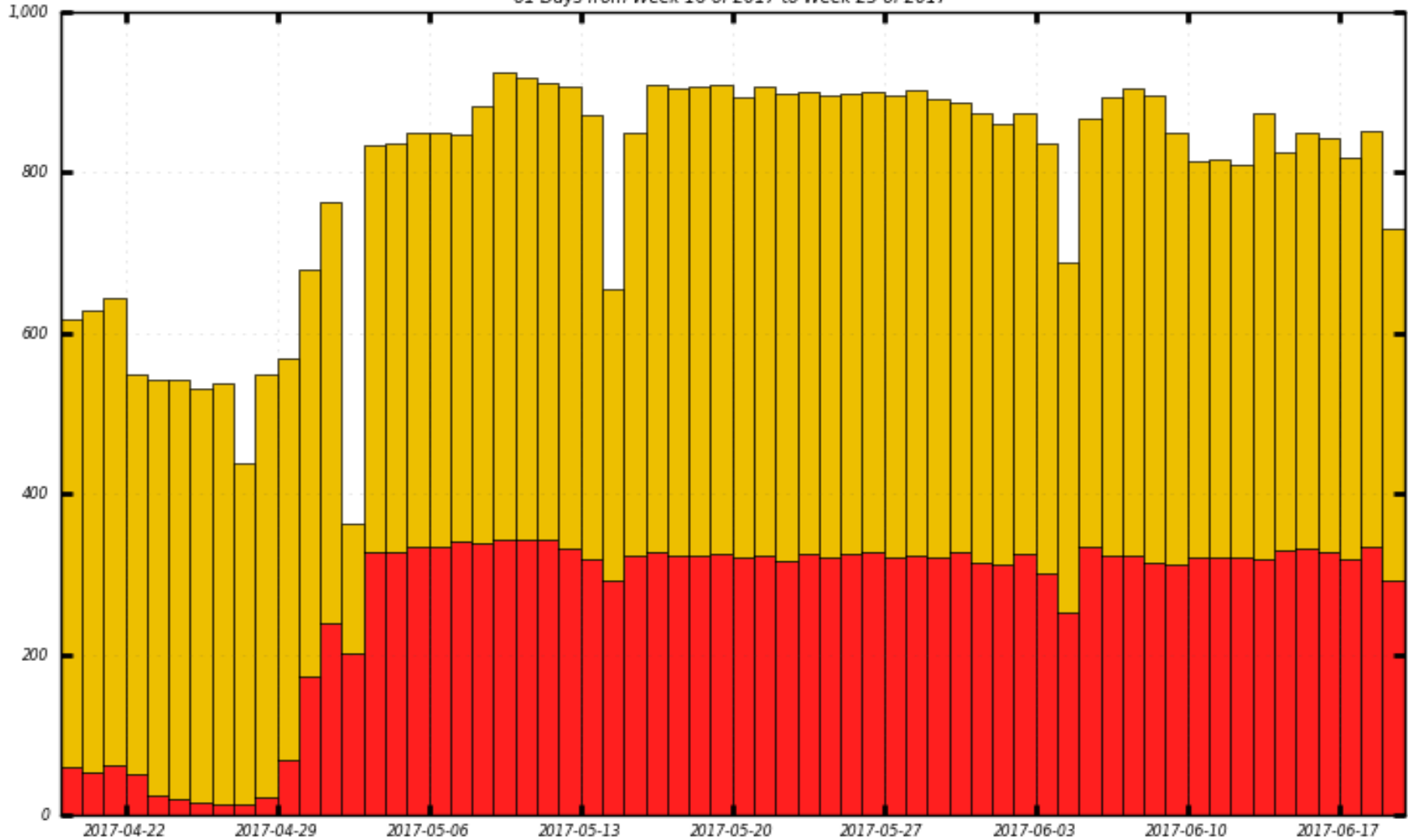
## ■ **All changes will take place in AGIS**

- Keep the same Panda queues on diskless sites
- Change the ddm endpoint for stage-in and stage-out
- No complicate configuration (Only ATLASPRODUCTION spacetoken)
- DDM-OPS group are taking care the replication of precious data and decommissioning of the ddm-endpoint for ATLAS

# Running Jobs for RO-14 and RO-16



Slots of Running Jobs  
61 Days from Week 16 of 2017 to Week 25 of 2017



■ RO-16-UAIC

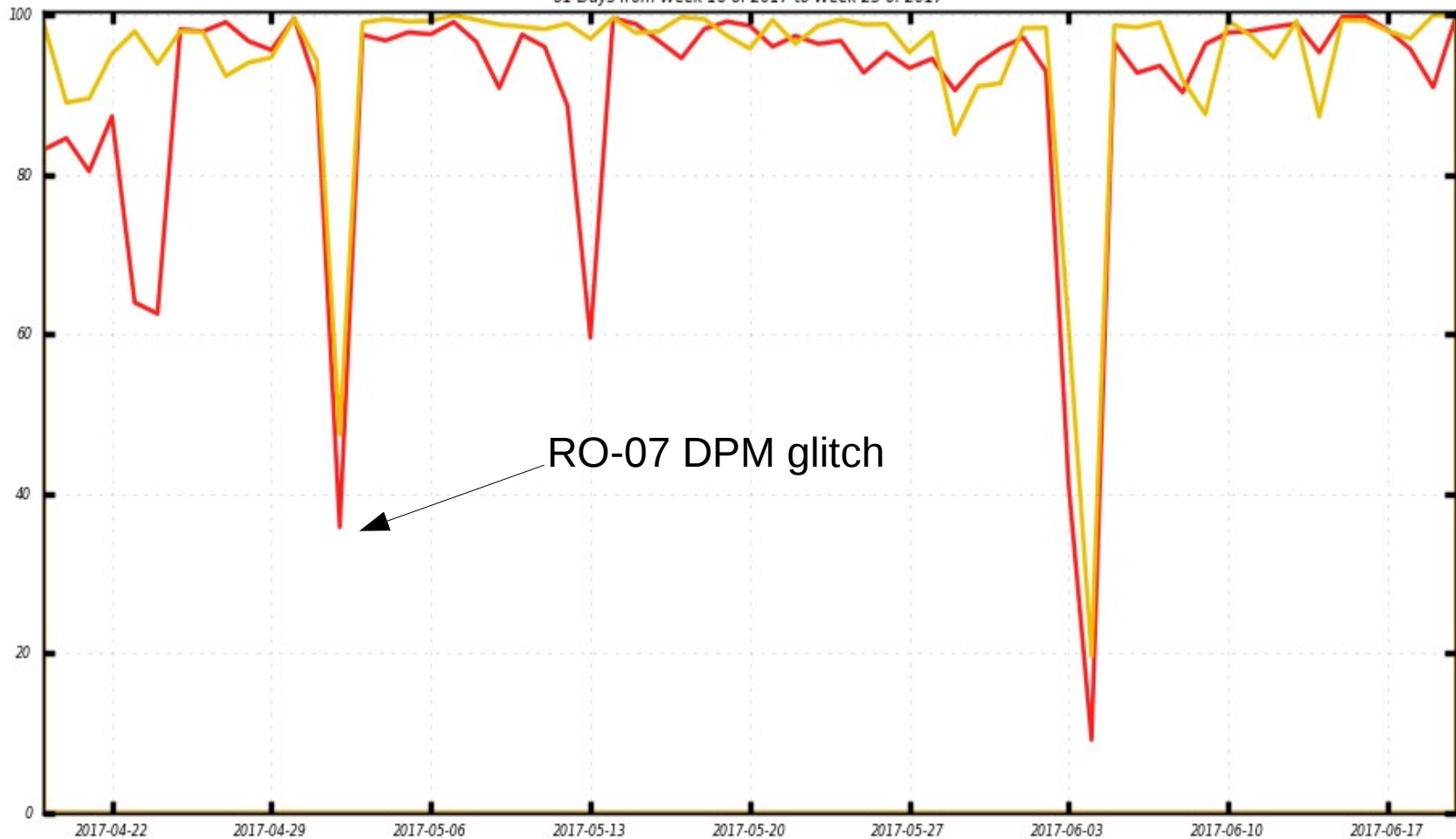
■ RO-14-ITIM

Maximum: 924.00 , Minimum: 362.00 , Average: 796.21 , Current: 729.00

# Job Efficiency



Efficiency over time based on success/all accomplished jobs  
61 Days from Week 16 of 2017 to Week 25 of 2017



■ RO-16-UAIC (94.13)

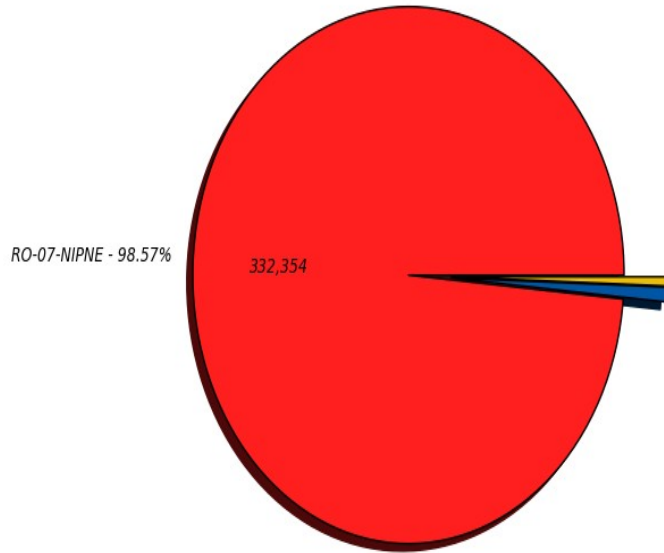
■ RO-14-ITIM (90.43)

Total: 190.97 , Average Rate: 0.00 /s

# Stage-in data and files from RO-07-DPM



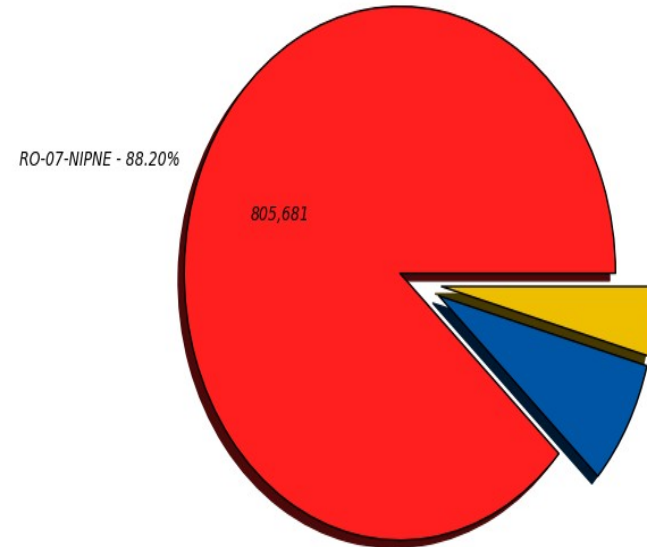
NBytes Processed in GBs (Pie Graph) (Sum: 337,164)



RO-07-NIPNE - 98.57% (332,354) RO-16-UAIC - 0.88% (2,972) RO-14-ITIM - 0.55% (1,838)



NFiles Processed (Pie Graph) (Sum: 913,521)



RO-07-NIPNE - 88.20% (805,681) RO-16-UAIC - 7.58% (69,280) RO-14-ITIM - 4.22% (38,560)

**1.7% of the total processed data from RO-07-DPM (over 377TB)**



**11.7% of the total processed files on RO-14 and RO16 (over 913K files)**

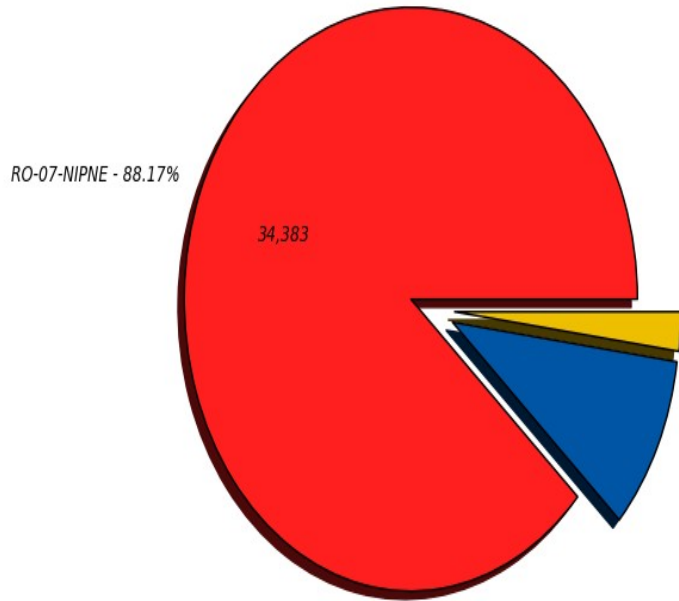
# Stage-out data and files to RO-07-DPM



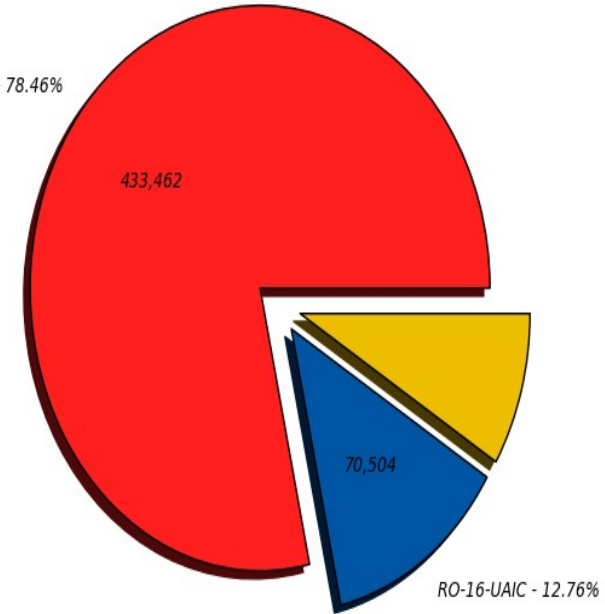
NBytes Produced in GBs (Pie Graph) (Sum: 38,997)



NFiles Produced (Pie Graph) (Sum: 552,487)



RO-07-NIPNE - 78.46%



RO-07-NIPNE - 88.17% (34,384) RO-16-UAIC - 9.66% (3,769) RO-14-ITIM - 2.17% (845.00)

RO-07-NIPNE - 78.46% (433,462) RO-16-UAIC - 12.76% (70,504) RO-14-ITIM - 8.78% (48,521)

**11.8% of the total produced data to RO-07-DPM (over 39TB)**



**21.5 % of the total produced files on RO-14 and RO16 (over 512K files)**



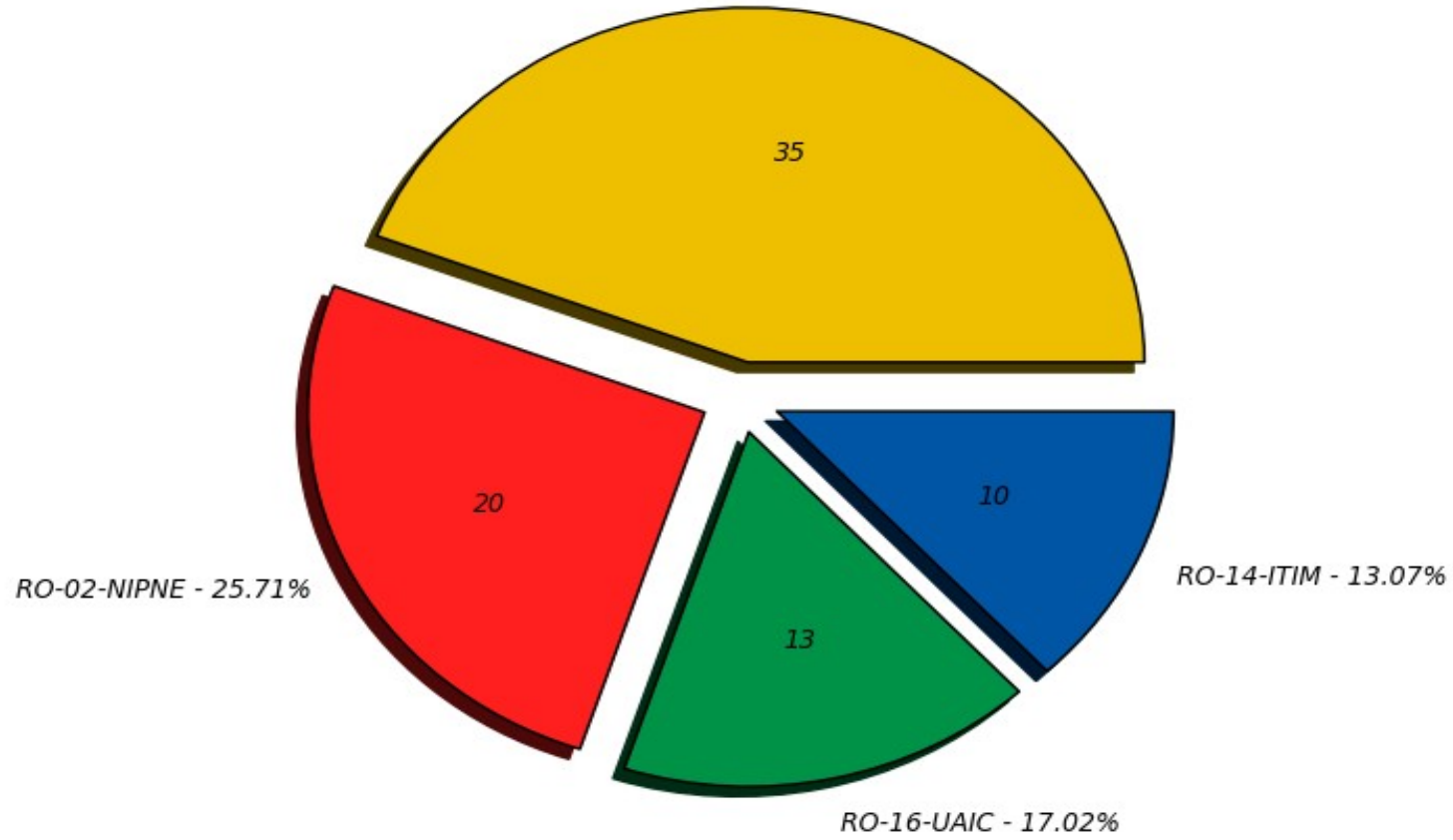
# MC simulations activity on RO sites

from 19 Apr to 19 June



NEvents Processed in MEvents (Million Events) (Sum: 81.00)

RO-07-NIPNE - 44.20%



■ RO-07-NIPNE - 44.20% (36.00)

■ RO-02-NIPNE - 25.71% (21.00)

■ RO-16-UAIC - 17.02% (14.00)

■ RO-14-ITIM - 13.07% (11.00)

**88% of the total wallclock time correspond to MC Simulation for the four sites**

# Conclusion

- RO-04 and RO-16 diskless configuration is functional and stable
- The amount of processed data from RO-16 and RO-16 with respect to the total processed data (RO-07 + RO-16) is very small ~ (1TB)
  - ➔ We will not expect network issues between RO-07 and RO-16 because of diskless configuration, current network traffic is too low
- The remote transactions (due to RO-14 and RO-16) on RO-07's DPM are order of 21.5%
  - ➔ We should follow this utilization in the case that we would like to increase the current CPU capacity (local and/or remote) on those sites.
- The contribution of RO-14 and RO-16 correspond up to 30% MC simulation activity amongst the four 4 sites in Romania.
- The solution can be improved with the use of ARC-CE
  - ➔ Cache capabilities and control the concurrent number of data transfer connections