Performance Analyses of EGEE-like Grids in Asia and Latin America

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Outline

- Objectives
- The infrastructures
- Analysis approach
- Results
- Future plan and Conclusion

Objectives

- Evaluate the status of several EGEE-like infrastructures outside of Europe
  - The evaluation is made from the user prospective
    - Looking at how the infrastructures comply with users needs
  - Focus on measuring the overhead of submitting jobs to the e-infrastructures
- Compare the effort on Grid made in different regions
- Identify bottleneck and weakness in new gLite infrastructures
  - Provide feedback to site managers

EUAsiaGrid and EELA: similarities

- gLite oriented infrastructures
- Support for different type of scientific applications
- Established to enforce the scientific cooperation among EU and other continents
- Managed by a representative number of countries in the region
  - All the involved institutions come from the same area

Infrastructure status: EELA

Latin American sites

Organisation - CPUs - Storage

- UNLP (Argentina) - 10 - 570GB
- CEFET (Brazil) - 22 - 666GB
- UFCG (Brazil) - 5* - 22GB
- UFRJ (Brazil) - 199
- UTFSM (Chile) - 56 - 1204 GB
- UNIANDES (Colombia) - 108 - 379GB
- UNAM (Mexico) - 54 - 890GB
- ULA (Venezuela) - 24 - 1039GB

- (*) gateway to the oportunistic Grid (OurGrid)

European Sites

Organisation - CPUs - Storage

- IN2P3 (France) - 2149 - 10000GB
- INFN (Italy) - 10 - 5453GB
- IEETA (Portugal) - 12 - 90GB
- U.Porto (Portugal) - 78 - 926GB
- CESGA (Spain) - 78 - 131GB
- CETA-CIEMAT (Spain) - 112 - 16GB
- CIEMAT (Spain) - 228 - 1897GB
- UNICAN (Spain) - 151 - 5GB
- UPV (Spain) - 18 - 628GB

Information from BDII updated in February

Infrastructure status: EUAsiaGrid

Asian Sites

Organisation - CPUs - Storage

- ITB (Indonesia) - 1 - 15GB
- MIMOS (Malaysia) - 48 - 1246GB
- UM (Malaysia) - 16 - 134GB
- UPM (Malaysia) - 104 - 983
- AM (Philippine) - 2 - 30 GB
- ASTI (Philippine) - 48 - 10 GB
- ASGC (Taiwan) - 3969 - 1474GB
- HAII (Thailand) - 1 - 1028GB
- NECTEC (Thailand) - 1 - 1474GB
- IFI (Vietnam) - 4 - 733GB
- IOIT (Vietnam) - 4 - 733GB

European Sites

Organisation - CPUs - Storage

- CESNET (Czech Rep.) - 144 - 1749GB
- INFN (Italy) - 92 - 393GB

Information from BDII updated in February

Monitoring and Information tools

- Current *Monitoring tools* provide information for Site and VO Managers
  - The goal is to notify status availability, resources usage and job distribution
- Users cannot easily use the information to select the better resources in terms of quality
  - Empty queues can manage jobs with big delays
    - Often the user experience differs from what the information system claim

Performance analysis approach

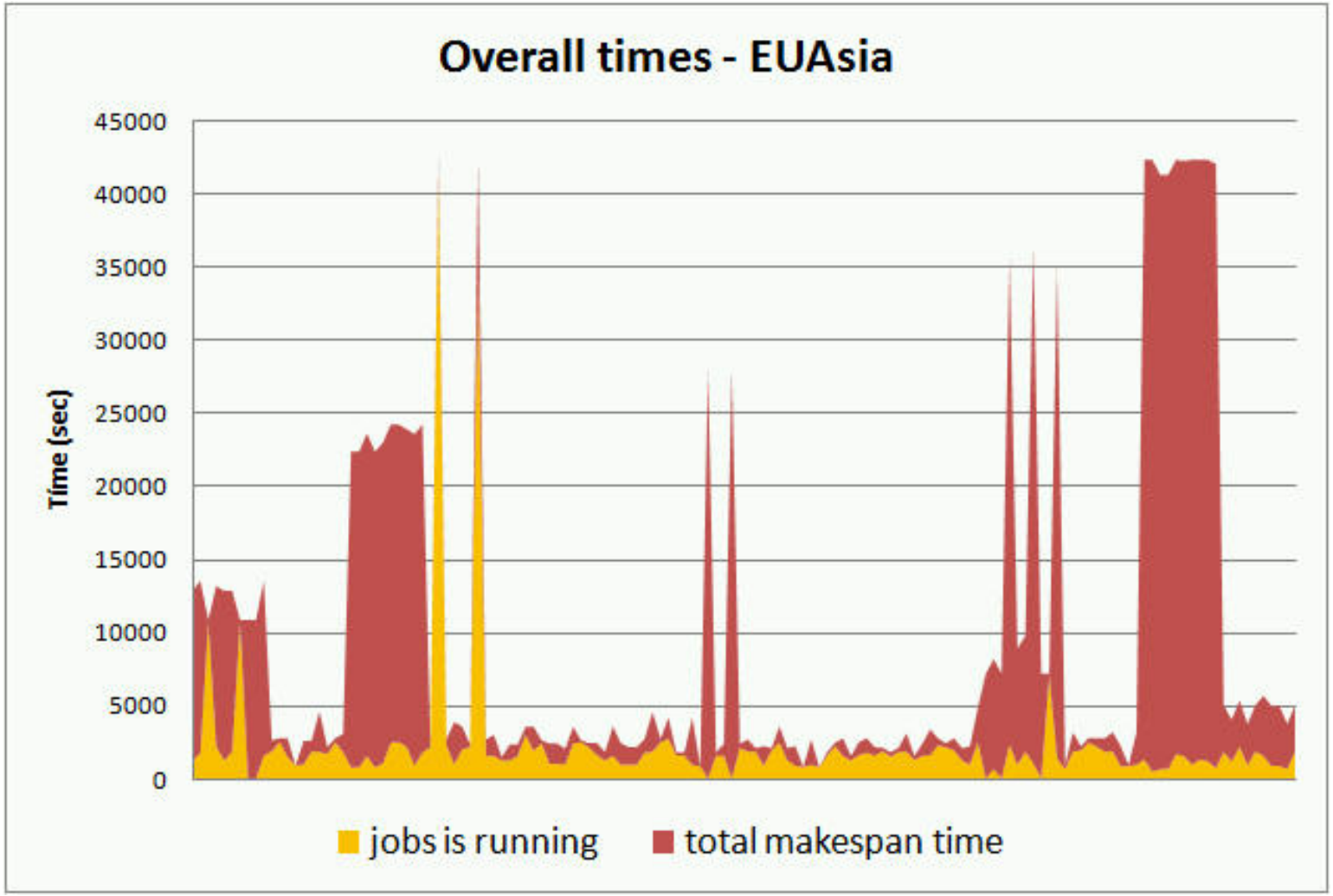
- Two representative jobs scheduled twice a day
  - Parametric and MPI
  - The execution time on the WNs not valuated
  - Jobs are submitted in two different period of time: one during the working hours and the other in the night (CET)
- Same tests are performed in both infrastructures
  - During the tests EU resources were excluded
- The goal is to evaluate the total waiting time for the user until the jobs is DONE.
  - The execution time depends from the resources quality and this is a static information available to the user

Test Jobs

- A parametric job
  - Allow to simulate a bunch of jobs landing together and, at the same time, evaluate the execution of each child
- An MPI job
  - Allow to evaluate the allocation of multiple resources
  - Require a better configuration of the site and so evaluate its management
- Both applications perform some basic operations in the WN
  - A small file transfer is performed

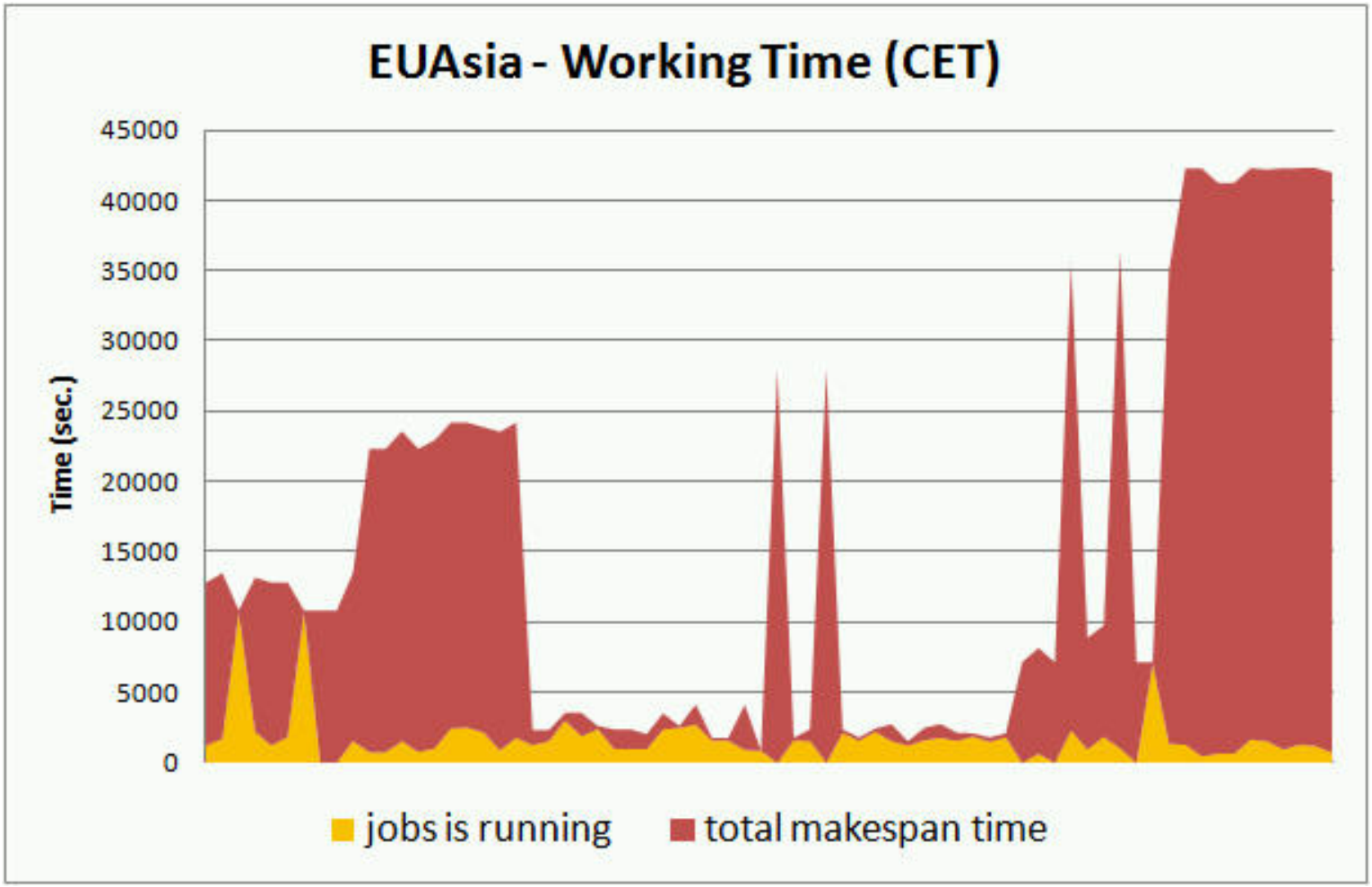
Overall results - EUAsia

- Results from 140 (not parallel) jobs



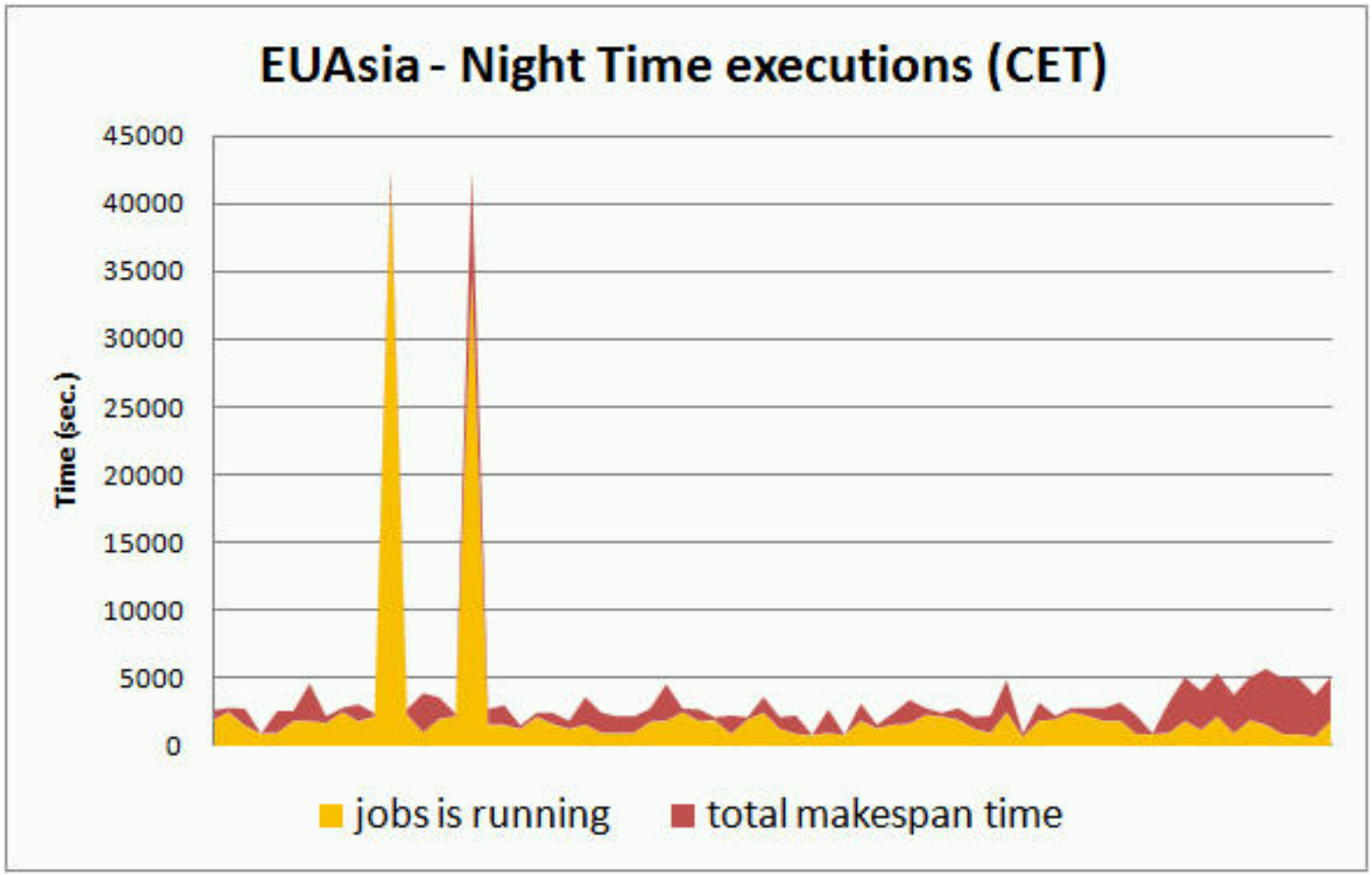
Working Time (CET) - EUAsia

- 70 submitted during the working time in Asia



Night Time (CET) - EUAsia

- 70 submitted during the night time in Asia

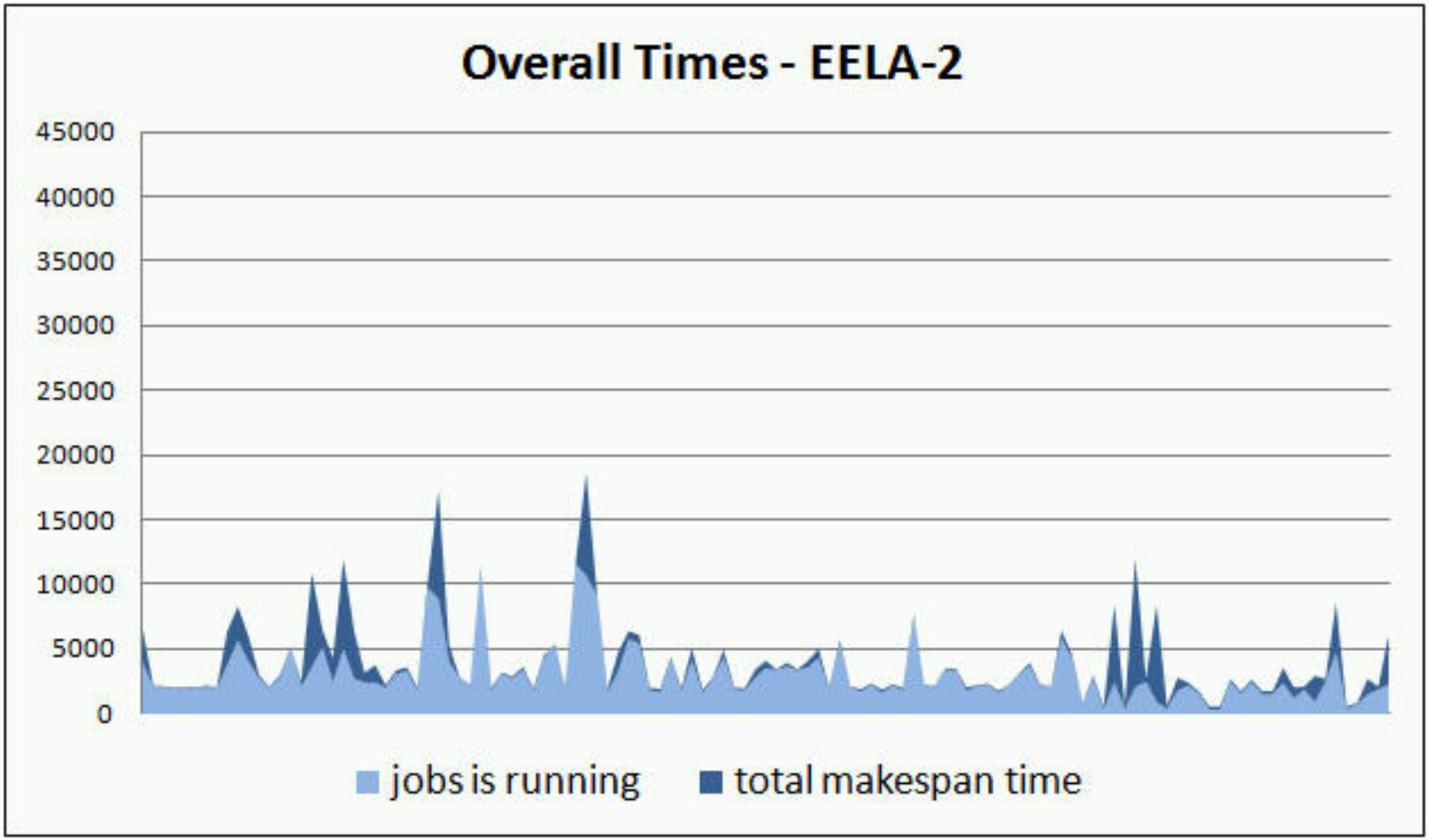


Tests performed on EELA-2

- Due to unpredictable problems, the test-jobs in EELA-2 were not submitted at the same period (week) as EUAsia:
  - Connectivity problem with the main core services in Latin America (optical cable broken)
  - Earthquake in Chile
- New tests need to be scheduled

Tests performed on EELA-2

Preliminary results (no parallel jobs)

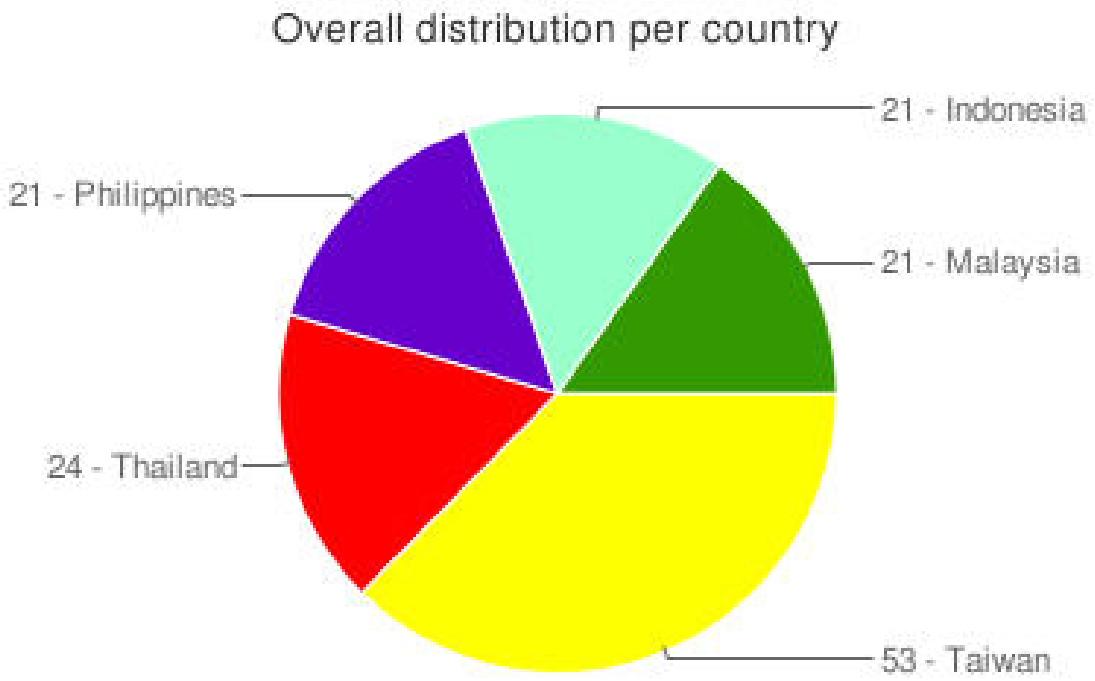


Discovered problems / lessons learned

- Problems with MPI jobs in both infrastructures
  - MPI jobs were not running during the test period
  - Few queues fully configured with MPI on EUAsiaGrid and not working during the tests
    - Tickets were created
  - EELA-2 sites are switching to MPICH2 support
- WMS configuration problems
- The delay to update the status on the LB is excessive in some situations
- Resources overload on EUAsiaGrid

Discovered problems / lessons learned

- No many CEs used in EELA-2
  - Jobs sent only to 3 different CEs (Brazil, Chile and Colombia)
- Jobs' distribution in EU-Asia:



Conclusions and Future plan

Conclusions

- Many issues were raised during the tests
- Reliability and availability need to be improved
- EUAsiaGrid resources should be increased to support new communities

Activities for the future:

- Redo the tests in both infrastructures
- Test the MPI support
- Compare the tests with the resources status

Thanks for your attention!