Grid’5000: A Production-grade Testbed for Experiment-driven Computer Science on HPC and Clouds

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Overall Goal

Design & provide a testbed that supports high-quality experimental science

- Large scale, complex experiments
- Trustworthy results
- Reproducible experiments

Key features

- Experiment on all layers: fully reconfigurable
- Software stack (root on bare metal)
- Network isolation (intrusive security-sensitive protocols)
- Experimental conditions (fault injection)
- Resources reservation (nodes, network, storage)
- REST API for XP control tools (Expo, XPFlow, Execo)
- Measurement and monitoring infrastructure
- Support for Big Data and Open Science
- Access high-end hardware networks
- High performance networks: Infiniband, Myrinet
- Accelerators (GPU, MIC)
- Dedicated 10 Gbps backbone (RENATER)

Ground-breaking experiments

- Snooze Autonomic Cloud Management System
  - Scalability evaluation on 538 nodes / 5 sites
- Testing of the Kadeploy3 provisioning system
  - 4000 virtual machines in a global VLAN
- Solving combinatorial optimization problems
  - Hybrid multi-core and GPU computing
- Calibration of the SMPI simulator models
  - Combining real and simulated executions

Software stack

- Distem: http://distem.gforge.inria.fr
- XPFlow: http://xpflow.gforge.inria.fr
- Execo: http://execo.gforge.inria.fr

Get a free account
http://www.grid5000.fr/open-access

1200 nodes (8000 cores) in 10 sites
500+ users per year since 2006