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

http://www.grid5000.fr/

**Overall Goal**
Design & provide a testbed that supports high-quality experimental science
- Large scale, complex experiments
- Trustworthy results
- Reproducible experiments

**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

**Key features**
- Experiment on all layers : fully reconfigurable
  - Application
  - Programming Environment
  - Application Runtime
  - Operating System
  - Virtualization layers
  - Networking
- 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)

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

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

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

and several French universities