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

**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**

- OAR: [http://oar.imag.fr](http://oar.imag.fr)
- Distem: [http://distem.gforge.inria.fr](http://distem.gforge.inria.fr)
- Expo: [http://expo.imag.fr](http://expo.imag.fr)
- XPFlow: [http://xpflow.gforge.inria.fr](http://xpflow.gforge.inria.fr)
- Execo: [http://execo.gforge.inria.fr](http://execo.gforge.inria.fr)

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