VM5k and DVMS on Grid'5000

Deploying and Managing Thousands of Virtual Machines on Hundreds of Nodes Distributed Geographically

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Context

Cloud computing has become very popular.

- Ever-increasing demand $\Rightarrow$ ever-increasing infrastructure size.
- PB: scalability, reliability, energy but also security, juridiction and network overhead.
- Decentralise the production of computing ressources (Discovery project, http://beyondtheclouds.github.io/)

Scientific question

Discovery: leverage the concept of micro/nano datacenters [Greenberg2009] geographically spread. $\Rightarrow$ nodes can be far from each other.

- And we want to maximise cooperation between close nodes/micro DCs.
- Example: The DVMS case.

Grid'5000 as a testbed

- renater interconnected network
- various hardware
- KaVLAN
- experimentfull stack control
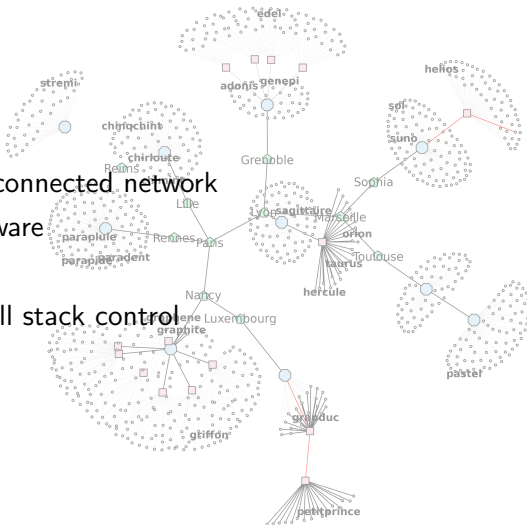
Experimental Workflow

1. reserve many nodes on different sites, with a global-KaVLAN
2. deploy thousands of Virtual Machines
3. initiate stress process on them
4. install DVMS
5. use vivaldi to compute hosts distances
6. generate random stress on the virtual machiens
7. collect results

Automatic time slot selection

Virtual Machines deployment

Stress initialization

DVMS

Live visualization

Results Analysis

Conclusion

* publi Europar * github repository