

Computer Science Department

Dependable Cloud

CITI / software systems group



Daniel Porto

(Student)

1st year PhD student (previously at MPI-SWS), research on dependable systems and geo-replicated systems.

Advised by: Rodrigo Rodrigues.

Objectives

- Rethink the methods and principles we use to design and build cloud services, in order to better capture the reality of data center environments
- Improve the reliability and the dependability of critical applications that will inevitably be offloaded to the cloud
- Make the data center infrastructure more cost-effective.

Methodology

- Design the **Visigoth Model**: a new and practical fault model that enables the designers to develop dependable systems that tolerate the class of faults that occur in data center environments without pessimistic assumptions
- Conduct experiments on a data center to validate the assumptions we made in the Visigoth model
- Modify a version of the Paxos algorithm to make it tolerant to Visigoth faults and extend a popular replication library to adhere to the same fault model.

Expected Results

- Provide a system model that enables the developers to reason about the practical problems faced by the systems that are deployed in the cloud infrastructure
- Be able to reduce the replication factor when compared to more pessimistic approaches such as Byzantine fault tolerance.

Funding:

