

UBIVERTEX - Letter of Intention

Institute/Company

Name: *INRIA Lille Nord Europe*

Country: *France*

Activity domain: *Research center*

Number of employees: ☐ <50 ☒ <250 ☐ > 500

Name of the department/research team: *Dolphin*

Scientific contact

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Challenge descriptions:

One of the emerging interests of the Dolphin research group concerns combinatorial optimization for cloud computing. Two main research topics are being addressed: (i) multi-objective optimization for energy-aware scheduling in cloud infrastructures, (ii) optimization of cloud overlays for computing intensive parallel applications. In this context, the Ubivertex testbed will allow us to address the following key challenges:

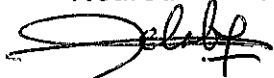
- Design of new meta-heuristic approaches for energy and performance-aware scheduling of high-performance applications in large-scale distributed systems (typically data centers, grids and clouds).*
- Design of new multi-objective meta-heuristics for static and dynamic arbitration for resource allocation in a federation of clouds. Such challenge requires the definition of new multi-criteria mathematical models including resource-centric criteria (usage, availability, security, etc.) and user-centric ones (QoS, cost, fairness, etc.).*
- Investigate how a distributed cloud architecture/topology should be configured to perform efficiently computing intensive applications.*

In addition, other challenges could be addressed by other research groups from INRIA Lille Nord Europe. For instance, the ADAM team is interested in the definition of new approaches for the migration of software applications to cloud infrastructures.

Type of commitment (internship, Phd grant, engineering staff):
2 Ph.D students

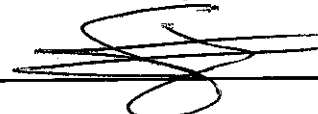
Number of persons involved in these challenges: *6*

Signature of
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Date: *09/09/2014*

Date: *09/09/2011*