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Revising OpenStack to operate the next generation of Cloud Computing platforms

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Academic and industry experts are now advo cating for going from large-centralized Cloud Computing infrastructures to smaller ones massively distributed at the edge of the network. Among the obstacles to the adoption of this model is the development of a convenient and powerful IaaS system capable of managing a significant number of remote data-centers in a unified way.

In this talk, we introduce the premises of such a system. The novelty of our work is that instead of developing a system from scratch, we revised the OpenStack solution in order to operate such an infrastructure in a distributed manner leveraging P2P mechanisms. After describing how we revised the Nova service by leveraging a distributed key/value store instead of the centralized SQL backend, we will present experiments that validated the correct behavior of our prototype, while having promising performance using several clusters composed of servers of the Grid'5000 testbed.

We believe that such a strategy is promising and paves the way to a first large-scale and WAN- wide IaaS manager.

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