

# An openstack-based implementation of a volunteer cloud

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## Abstract

© Springer International Publishing Switzerland 2016. Recent developments in Cloud computing technology provide capabilities for an extensible, reliable, effective and dynamic infrastructure to technology-enabled enterprises, in order to efficiently leverage (or even monetize) their on-premise equipment. Furthermore, the virtualization technologies powering the Cloud revolution expand their reach by the day, and are nowadays commonly available, nearly household, capabilities. In this light, the intersection between volunteering and Cloud computing may bring massive and ubiquitous compute power for IaaS users. For instance, scientists and researchers, as a category of very demanding users, may benefit from such an enlargement of the pool of resources to tap into for high complexity computational workloads and big data problems without concern for the setup and maintenance of the underlying infrastructure. We have investigated this concept in the past under the Cloud@Home project, aimed at implementing a desktop-powered Cloud. In this paper we propose a blueprint of a Cloud@Home implementation starting from OpenStack, a well-known platform for Cloud solutions, a de-facto standard with variety of features, high interoperability and Open Source support. The reference, layered architecture and the preliminary implementation of a Cloud@Home framework based on OpenStack are discussed in the paper.

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## Keywords

Cloud, Crowd computing, Software Defined Infrastructure, Volunteer computing