MCAMO: multi constraint aware multi-objective resource scheduling optimization technique for cloud infrastructure services

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Received: 1 March 2020 / Accepted: 22 May 2020
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Abstract
In cloud computing infrastructure-based services, resource scheduling is still an open issue. Normally resource scheduling involves multi-objective fulfillment but often developed as single-objective problems and solutions are proposed. For dealing with multi-objective problems, optimization techniques come in aid to develop various techniques as cloud resource scheduling is a soft computing problem. The ultimate aim of cloud resource scheduling is to reduce the billing cost of users and to increase the revenue of cloud service providers. In this paper, the MCAMO technique is proposed for cloud resource scheduling especially dealing with infrastructure-based cloud services. This method deals with multi-objective by applying multi constraints while resource scheduling in infrastructure cloud services. The proposed method is novel as it deals with the constraints of the submitted jobs along with fulfilling the objectives of the cloud service client. For a powerful arrangement, the fitness value worth takes a base worth value and the improved determination of the asset resources relies upon the MCAMO calculation. The performance of the MCAMO technique is assessed by comparing through few existing multi-objective constraints applied VM machines scheduling techniques using the CloudSim simulator. The comparison proves that the proposed MCAMO technique provides optimized resource scheduling than other methods.

Keywords Multi-objective scheduling · Resource constraints · Infrastructure services · Optimization · Cloud services

1 Introduction
Cloud Computing has turned out to be a standout amongst the most requesting points in scholarly research and IT enterprises since (Lu and Zeng 2014). As of late, cloud computing turns into a progressive worldview reasonable to change the method for giving heterogeneous administrations and computational assets to clients in a pay per usage model (Buyya et al. 2009; Fu et al. 2016; Xia et al. 2015; Fu et al. 2015; Ren et al. 2015; Mohammed et al. 2020; Liu et al. 2013). It is another worldview that offers the software product, database, infrastructure, equipment, security as well as storage as administrations through the network. In cloud services condition, registering virtual appliance substances are virtualized, powerfully designed and driven by monetary scale (Chen et al. 2012). Cloud specialist organizations, for example, Amazon EC2 and IBM, can offer adaptable and versatile IT foundations to clients. With cloud computing, clients can scale up to enormous limits in a moment without paying for programming licenses and put resources into a new foundation. These qualities draw in an expanding number of people and partnerships to lease cloud administration.