



# A Survey on Provisioning and Scheduling Algorithms for Scientific Workflows in Cloud Computing

Alaa Abdalqahar Jihad<sup>1,a)</sup>, Sufyan T. Faraj Al-Janabi<sup>2,b)</sup>, Esam Taha Yassen<sup>1,c)</sup>

<sup>1</sup>Computer Center, University of Anbar, Ramadi, Iraq

<sup>2</sup>College of CS and IT University of Anbar, Ramadi, Iraq

<sup>a)</sup>it.alaa.heety@uoanbar.edu.iq

<sup>b)</sup>sufyan.aljanabi@uoanbar.edu.iq

<sup>c)</sup>co.esamtaha@uoanbar.edu.iq

**Abstract.** In the last decade, a scientific workflow has become the dominant trend to enable specialists to accelerate scientific developments in various areas. The scientific workflow requires high computing, therefore, cloud computing is exploited, as it provides the computing required for scientific workflow with a good cost. The frequent use of scientific workflows by researchers in cloud computing stimulates the need to find mechanisms to manage scientific workflow, providing resources, and scheduling in a way that achieves fairness for all users and meets the required Quality of Service (QoS). In a cloud computing environment, scheduling scientific workflows is an NP-hard problem. A lot of work has been done to resolve the decision problem of scheduling workflows, provision of resources, or both. In this survey, many papers related to scientific workflow algorithms of provisioning and scheduling in a cloud computing system are reviewed. We investigate and classify numerous related articles in the field. The objectives of each study, the application domains, and tools that were used are highlighted.

**Keywords:** scientific workflows; cloud computing; scheduling; resource provisioning; optimization.

## INTRODUCTION

A workflow is a collecting of computational tasks and a model that can be repeated builds associated tasks [1]. Indeed, workflows can be defined as directed acyclic graphs (DAGs), these graphs contain the tasks that are denoted

Search 'Delete Page'

Export PDF

Edit PDF

Create PDF

Adobe PDF Pack

Convert files to PDF and easily combine them with other file types with a paid subscription

Select File to Convert to PDF

Select File

Convert, edit and e-sign PDF forms & agreements

Free 7-Day Trial

