**Secured Data Transmission on Edge Computing Model in an Upstream Oil and Gas Industry**

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***Abstract*—**

The potential importance of data security in high-performance cloud computing in upstream oil and gas industries. This research paper discusses in detail a methodology and approaches used deeply to ensure secured data transmission protection of high-performance cloud computing in an upstream oil and gas industry by Minimizing Cyber Security Risks and threats.

Availability of high volumes of data in a high-performance upstream oil and gas industry on cloud-based system Vulnerability. This paper will discuss intensely the three levels of cloud computing; SaaS (Software as a Service), PaaS (Platform as a Service), and IaaS (Infrastructure as a Service) to come up with a framework that can minimize the cyber threats and risks of data transmissions in an upstream oil and gas industry.

***Keywords: (PaaS, SaaS, IaaS, cyber threats and risk, Vulnerability, Cloud Computing)***

# Introduction

In the past few years, cloud computing has gained much importance and attention with major and contemporary advancements. However, it increases the risk of security issues in many applications like medical monitoring, mission-critical tasks, and industrial control. These applications work mainly based on trustworthy data delivery, data privacy, and reliability [1].

Cloud Computing is a process of accessing various resources and services such as servers, network applications, and storage devices over the internet instead of buying these resources individually for organizations. It reduces the costs of individual peripherals and resources and facilitates their critical application, with the focus and vast availability of these resources. Cloud Computing provides better services with convenience for all IT clients at a reasonably low price [2].

With the rapid increase in the progress of information technologies, cloud computing has also been proposed and applied to the oil and gas industry [3].

The structure of oil and gas industries is usually segmented and organized according to their assets, or functionality. The upstream oil segment of an industry is referred to as the *petroleum industry* which includes the exploration and production of potential underground and underwater crude oil. it includes rig operations, relevant feasibility studies, machinery rental, and chemical supply. In addition, Oil exploration and production involve a large volume of data, high input and output performance, high reliability, and expansion of storage nodes. It involves various challenges; various new platforms such as workstations and distributed systems were adopted by the oil and gas industries. Nowadays, high-performance cloud computing, advanced visualization techniques, and Graphics Processing Unit (GPU) processing are being adopted by the upstream oil industry. The unlimited computing and storage capacities of cloud infrastructure provide ease of deployment, reduced costs, and management of a vast amount of data.

# Related works

To attained secured data transmission and integrity on cloud both client and server site data must be encrypted, and this process contains algorithm to use and the secret key [4]

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