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## Patent Search

Invention Title	THE EDGE-CLOUD SYNERGY FOR IMPROVED DATA PROCESSING IN THE POWER GRID TRANSMITTING CONTROL
Publication Number	48/2023
Publication Date	01/12/2023
Publication Type	INA
Application Number	202341070767
Application Filing Date	17/10/2023
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	COMPUTER SCIENCE
Classification (IPC)	G06Q0010060000, G06F0009500000, G06Q0050060000, H04L0067100000, H04L0009080000

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**Abstract:**

Abstract The importance of fast data processing in controlling power grid transmissions is growing as smart grids develop. In this research, we explore the subtleties of collaborative computing framework at the Edge of the cloud, including the effects of latency on task allocation and data allocation. Using real-world data and computer models, we define critical parameters and give variation curves to determine the ideal and actual work allocation ratios. Our research shows that by working together at the edge and the cloud can cut down on system latency by up to 30% and increase the efficiency of job allocation by 25%. This research provides a thorough roadmap for integrating cloud computing into power grid control systems, with practical recommendations for improving data allocation practices.

**Complete Specification**

Description: The Edge-Cloud Synergy for Improved Data Processing In the Power Grid Transmitting Control

**Field and Background of the Invention**

Over the past decade, one of the most important developments in the energy business has been the digital transformation of power networks into smart grids. Servers, controllers, and network nodes in smart grids are constantly gathering and sharing information. Current estimates place daily data production from a single smart grid at 1.5 gigabytes. There has never been a greater need for efficient data processing, management, and security than there is now. Even if they're reliable, traditional data centres and cloud-based solutions can't keep up with the real-time processing needs of today's power grids. System latency, an essential feature of controlling power transmission in a grid, is one area where this lack of sufficiency is most noticeable. The latency of a system is its delay in processing an instruction or data. Low latency is essential for real-time monitoring and prompt decision-making in the context of power grid regulation. Delays in processing data might result in decreased productivity and even catastrophic failure. Recent research has demonstrated that the task allocation ratio, or the percentage of tasks assigned to different computing resources, and the total number of tasks can substantially impact system delay. Due to these variances, a more adaptable and dynamic method of data processing is required.

This paper delves into the idea of edge-cloud collaborative computing as a solution to the problems of system latency and work allocation. This method integrates edge and cloud computing to improve the performance and security of the data processing ecosystem. Edge computing decreases latency and bandwidth consumption by moving data processing closer to where it is generated. In contrast, data-intensive jobs are well-suited to cloud computing due to its limited processing resources. Data processing characteristics is essential for comprehending the dynamics of edge-cloud collaborative computing. This category includes measures of system delay, task allocation

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Page last updated on: 26/06/2019