Energy-Delay-Balanced Load Dispatching in Cloud-Assisted Edge Computing of Smart City

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Abstract

As smart city develops, Cloud Assisted Mobile Edge computing (CAME) framework is popular because it has the advantage of low delay and cost. But the computing capacity of mobile users is constrained in energy consumption, especially how to overcome the tradeoff between system latency and energy. In this article, an energy-delay-balanced load dispatching algorithm is suggested by exploiting the Karush-Kuhn-Tucker (KKT) conditions. Its exponential complexity is circumvented by taking the advantage of the linear property of constraints, rather than directly figuring out the KKT conditions. Compared to the fair ratio algorithm and the greedy algorithm, our suggested one is proved to provide better performance by simulation, which can decrease the delay by 35% and 49% respectively on the basis of the same energy consumption. The results indicate that the designed algorithm provides desirable tradeoff between system latency and energy.

Full Text

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