Abstract

In a cloud computing based sensor network, nodes transmit data to the cloud and then data is processed on the cloud. The central processing performed on the cloud consumes precious computing time due to vast amounts of data. In some scenarios, processing can have time constraints. If the data processing can be done using simple algorithms, edge nodes of the sensor network can be used to save transmission and computing time. A concept of fog computing has been introduced here that includes a layer of hierarchy in cloud computing architecture that processes the initial data and quickens the decision-making process. In this research, a fog computing concept is explored for fault localization in transmission lines and distribution networks. In transmission lines and overhead distribution network, the fault detection is very crucial and should take minimum time. When a long-range (LoRa) transceiver based fault indicator is realized for increased range, it presents various challenges to the existing architecture. As the number of data concentrator nodes reduce due to higher range of LoRa, the fault localization complexity increases. In this research, fault indicators are installed with GPS coordinates to reduce complexity for fault localization. Two fault indicators are paired to localize
the fault in the transmission lines. To find the location of the fault faster than the time-consuming process of the cloud computing, a new hierarchical layer of fog node is introduced in the system. This new architecture is compared with the earlier system, and the pros and cons are discussed in this research.

References

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LoRa based Architecture for Fault Localization in Transmission Lines


Index Terms

Computer Science Communications

Keywords