Making Data Management Smarter with Data Movement in Fog Computing

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Abstract

Fog Computing paradigm has been initially introduced in the telco sector *"to provide compute, storage, and networking services between Cloud data centers and devices at the edge of the network"* [2]. One of the main objective is to change the way in which the data have been usually managed. In fact, the usual paradigm that implies data generated and stored on the core of the network while used at the edge, is not longer valid. Now, devices at the edge are prosumers (producers and consumers at the same time) and this is clear especially in applications where IoT-based approaches become dominant (e.g., Smart Cities).

This significant change in the reference scenario has impact also on the information systems engineering: data are always more frequently generated on the edge and moving them to the cloud to be processed could be not efficient or even impossible due to high latency or privacy/security issues. Thus, design, development, and execution of applications must take into account these constraints by also exploiting the Fog Computing seen as a continuum between the Cloud and the Edge of the network [3].

To deal with this issue, we need to investigate how the **Fog Computing paradigm can be coupled with the Service Oriented Computing** paradigm to provide models and techniques to support the **data movement** (i.e., information logistics) in heterogeneous environments which include both Cloud and Edge. This implies a specific understanding on how to support the compliance with the new regulations (e.g., GPDR [1]) which could hamper, if data are not properly protected, the data movement. The objective could be to enable a **Data as a Service**-based approach to the users (which could be a developer or even a final user) which hides the complexity of the data management when Fog environment is considered.

References

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