Proposition de recherche doctorale

Protocol design for objects in IoT

Mots clés :

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● Domaine scientifique principal: Sciences et technologies de l'information et de la communication

Résumé du projet de recherche (Langue 1)

Nowadays, it is a basic requirement to access the Internet from any device which makes us to live in the era of the Internet of Things (IoT). The Internet of Things (IoT) joins a huge number of physical objects that are identified, interconnected and accessible through the Internet. These objects include sensors and gateways where sensors measure the physical environment and send the data to a gateway. Afterwards, the gateway gathers the data from different sensors and sends it to a server. Whenever the users need sensor data, they connect to the server. For the communication between sensor devices and the Internet, protocol stack is required which should be efficient in bandwidth and energy. Also, the ability of working with limited hardware resources is needed. The absence of optimized protocols for sensors will lead to performance degradation in terms of bandwidth consumption and battery lifetime for wireless sensors. Data protocols for wireless sensor networks rely on energy optimization techniques. In IoT, the particular environment imposes other constraints. The amount of data transmitted is high. Also, objects are surrounded by a fairly large number of wireless technologies. This substantially affects the quality of transmission due to interference problems. Moreover, the number of nodes involved in the network can be heterogeneous. Transmission protocols must adapt to this heterogeneity. The major purposes of all protocols differ in terms of architectures and capabilities. Our goal is to propose protocols and design rules for objects networks in a dense environment with taking into account system requirements such as performance, QoS, interoperability, reliability and security.