DEVELOPMENT OF METHODS OF IDENTIFICATION OF IoT DEVICES

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Annotation - There are various identification methods that cannot used by many devices of the Internet of Things for a number of objective reasons. In this case, a very important property is the fixed ratio an identifier with the actual device of the Internet of Things (physical address), as well as versatility in the application of the identifier in various industries.

In the DOA architecture, the resolution system is two-tier. The first the resolution level is the global register (GHR, from the English Global Handle Registry); the second level is a set of local registries (LHR, from the English Local Handle Registry) or local services (LHS, from the English.Local Handle Service). For permission identifier in this subsystem, first there is an appeal to the global registry GHR, which reports information about the local LHR, which contains necessary information about the digital object. Schematically this process is shown in Figure 1.
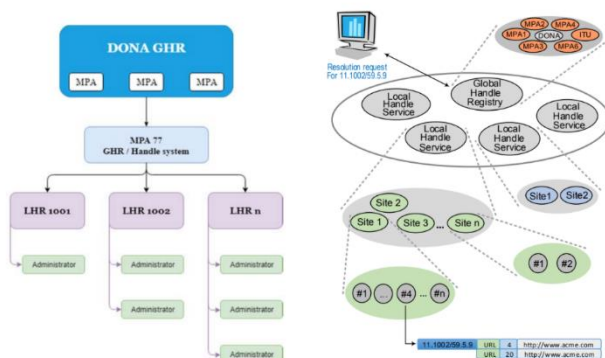

Figure 1 - Structure of the Handle system

The DOA identifier structure itself also follows a two-level system. The first part is called the prefix; the second part is a suffix. The prefix allows to establish information about the local register of the LHR digital object. This the correspondence of the prefix and information about the administrator is stored in the global the GHR registry. The suffix already uniquely identifies a specific object, and this information linking the suffix to a specific object is stored in local LHR registry.

The interaction of elements within DOA involves communication between distributed LHR servers located in different countries. But distribution leads to an increase in network latency, the value of which can unacceptable for services and applications requiring ultra-small delays in 5G / IMT-2020 communication networks. Thus, one of the characteristics of the system resolution, critical for identifying the Internet of Things, is the average time serving one request.

To minimize network latency, it is proposed to split the resolution system, by introducing intermediate level registers between GHR and distributed LHR – Middle Handle Register, MHR. Each MHR can be tied to a specific geographic region on the world map, taking into account density and quantity devices located there, as well as the density of the manufacturers (i.e. the density LHR). LHR communicates with the nearest MHR instead of the remote GHR, which reduces the distance of data transmission over communication channels and, as a result, reduces network delay.
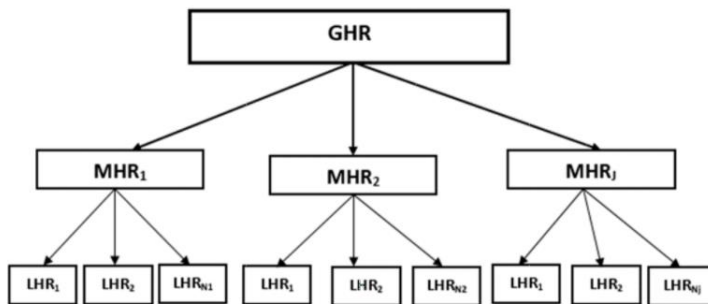

Figure 2 - The main components of DOA with an intermediate level of interaction

A method for identifying devices and applications of the Internet of Things has been developed in heterogeneous communication networks based on the architecture of digital objects, which allows identification of IOT devices and applications on a global scale. Methods for integrating DOA identifiers into Internet devices are considered things that support various technologies for wireless data transmission and presents the structure of metadata that can be used in the architecture digital objects for IoT devices to validate originality combined with traditional identifiers.

Used literature:
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3. Berners-Lee, T., Fielding, R., Masinter, L. RFC 3986. Uniform Resource Identifier (URL): Generic Syntax. URL: https://www.ietf.org/rfc/rfc3986.txt