

第17部

Integrated Distributed Environment with Overlay Network

第 1 章 IDEON Annual Report 2012

IDEON (Integrated Distributed Environment with Overlay Network) is a working group that aims to create, test and live upon integrated distributed environments the whole WIDE Project struggles to realize, using mainly application-layer technologies. The activities in the group form a collection of individual researchers' works that roughly relate with one another, in the specific areas such as peer-to-peer communication, the Internet of things and other applications of the Internet.

第 2 章 Research on Peer-to-Peer Communication

An effort is ongoing to organize existing ideas and literatures around distributed hash tables (DHT).The technology appeared with the beginning of this century, and after more than 10 years, it is finally becoming a useful building block to create real distributed systems. This work will take form of a survey paper that introduces recent techniques to make DHT applicable in real applications, such as forward-looking of routing

tables, location-aware peer and path selections, grouping, and participation of nodes in private networks.

第 3 章 Research on the Internet of Things

As a part of the working group's activity, a member has been working on IoT (the Internet of Things). On IoT environment it is expected to have wide variety of devices and data from the devices. To handle such complex environment, XML is convenient tool. At the same time, IoT environments are expected to have strict constraints on bandwidth, CPU, and memory resources. Because XML tends to be a large data compared to its contents, IoT nodes need more efficient data exchange encoding with flexibility of XML.

EXI[26] is an efficient way to encode XML. However, communication use cases of EXI with regards to IoT constraints are not well studied. We have conducted series of a research[27] and standardization efforts ([28] and [29]) to enable EXI-based flexible communication among constrained IoT nodes and centralized cloud server.