Tetsuya Yokotani, Kanazawa Institute of Technology

Title

Overview of ICN for industrial IoT services and future issues

Abstract

Initially, the Information Centric Network (ICN) has been discussed for content delivery due to its simplified mechanisms. However, it is a promising candidate for industrial IoT services due to its simplicity, despite severe conditions on latency, jitter, and loss. This talk provides an overview of mechanisms in ICN and the reasons why ICN is applied to IoT services, focusing on industrial fields.

ICN transfers information with independence in IP addresses. It provides name-based transfer of information. Therefore, it invokes the simplified mechanisms without address translation by the Domain Name System. ICN also contributes to reducing traffic volume through networked temporary storage, thereby mitigating duplicate information transfer. Recently, ICN has been applied to IoT services that require information with a small size across multiple devices, thanks to its simplified mechanisms. Particularly, ICN is a promising method in control communication for industrial fields, e.g., factories and industrial plants. Research and international standards, including authors' activities for this purpose, have been activated. This paper outlines the features of ICN and explores the possibility of its application in next-generation network infrastructure. Then, it surveys research for control communication using ICN and identifies future issues. Finally, this paper concludes that ICN is a reasonable solution to deploy IoT services focusing on industry fields.

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Photo

Biography

Tetsuya Yokotani received B.S., M.S., and Ph.D. degrees in information science from the Tokyo University of Science in 1985, 1987, and 1997, respectively. He joined the Mitsubishi Electric Corporation in 1987. Since then, he has researched high-speed data communication, optical access systems, home network and performance evaluation technologies of these networks mainly in the Information Technology R&D Center. Moreover, he has promoted international standardization of these related areas, e.g., ITU-T SG15 and some focus groups, ISO/IEC JTC1/SC6, FSAN and IEEE802. In 2015, he moved to the Kanazawa Institute of Technology as a professor in College of Engineering. Since then, he has engaged research and education on networks for various IoT services and has proposed standardization in these related areas, e.g., ISO/IEC JTC1/SC41, ITU-T SG20 and related focus groups. Currently, he is an advisory board member in the technical committee on Communication Quality and Reliability in IEEE ComSoc. In IEICE, he has experienced a chair of technical committee on the Communication System CS) and a chair of the Hokuriku branch. Currently, he is a distinguished lecture in IEICE. He is a fellow member of IEICE.