A Gateway based Fog Computing Architecture for Wireless Sensors and Actuator Networks

Wangbong Lee*, Kidong Nam*, Hak-Gyun Roh**, Sang-Ha Kim**

**Smart Network Computing Group, ETRI, Daejeon Korea*

***Department of Computer Engineering, Chungnam National University, Daejeon Korea*

leewb@etri.re.kr, kdnam@etri.re.kr, gyunroh@cclab.cnu.ac.kr, shkim@cnu.ac.kr

Abstract—**The technologies of Internet of Things have been wide used in many areas such as intelligent building, logistics, security, and health. One of the key elements of the Internet of Things is Wireless Sensors and Actuators Networks(WSANs). Fog computing, the new concept of the cloud at the edge of the network, is considered the appropriate platform for many Internet of Things services and applications. In this paper we present a gateway based fog computing architecture for WSANs and argue that the key requirements of this architecture. This architecture mainly consists of master nodes and slave nodes, and manages virtual gateway functions, flows, and resources.**

***Keyword*—Internet of Things, Fog Computing, Wireless Sensors and Actuators Networks, Gateways, Virtual Functions**

Wangbong Lee received the B.E. and M.E. degrees in Electronics Engineering from Soongsil University, Korea, in 1996 and 1998, respectively and received the M.S. degree in School of Computer Science from Carnegie Mellon University, Pittsburgh, USA in 2007. He is a senior engineer in Electronics and Telecommunications Research Institute (ETRI), Daejeon, Korea. His research interests are the areas of computer communication and networking, software architecture and testing. He is mainly interested in Internet traffic engineering, SDN/NFV, and Internet of Things and WSANs for diverse applications. In addition, the software reliability and the performance evaluation, testing are his interests.

Kidong Nam received his Ph. D. degree in the department of computer network engineering from Chungnam University, Korea, in 2011. From 1992, he is a principal researcher in Electronics and Telecommunications Research Institute (ETRI), Daejeon, Korea. Currently, he is a principal investigator of the ICT project in the network testing area. His research interests include next generation network architecture, network traffic engineering and ICT conformance testing.

Hak-Gyun Roh received the B.S. and M.S. degrees in Computer Science from the Korea Aerospace University, Korea, in 1995 and 2000 respectively. He is currently working toward a Ph.D. degree in Computer Engineering at Chungnam National University. He joined Korea Telecom R&D group from 1995 to 2014. While at Korea Telecom R&D, he participated in the development of various service and network management systems for wired/wireless networking infrastructure including Mobile Wimax/3G/WiFi, IP, ATM, IPTV, and so on. He also engaged in the research and development of several telco-driven service and strategies. His research interests are network architectures and protocols in wired/wireless networks, smart home/building/cities in IoT, network virtualization, and telco-driven smart network service and management.

Sang-Ha Kim received the B.S. degree from Seoul National University, Seoul, Korea, in 1980, and the M.S. in chemical physics and Ph.D. degrees in computer science from University of Houston, Houston, USA, in 1984 and 1989, respectively. From 1990 to 1991, he was with the Supercomputing Center, SERI, Korean Institute of Science and Technology (KIST) as a senior researcher. He joined Chungnam National University, Daejeon, Korea, as a professor in 1992. His current research interests include wireless networks, QoS, optical networks, and network analysis.