

Special Issue on  
**Softwarization and Caching for the Internet of Things**

# CALL FOR PAPERS

The developments of diverse IP-based devices (e.g., TVs, refrigerators, electronic locks, human body sensors, industrial sensors, and vehicles) which talk to each other to perform business logic constitute Internet of Things (IoT). These devices pose some necessities. First, flexible connectivity of heterogeneous IoT devices is required in homes, offices, institutes, and industries because they need connectivity with each other and also with the non-IoT world. The prevalent hardware-based solution for these IoT devices can use hierarchical arrangement of traditional switches where a number of Virtual Local Area Networks (VLANs) will manage device access. To handle the dense IoT devices for automation, a VLAN database along with technical management skills will be required. Instead of this hardware-based approach, Software-Defined Networking (SDN) can be used where a user sets a general routing and resource distribution plan, while the central software controller implements that plan on remote networking devices.

Second, in the presence of dense and diverse IoT devices, a number of functions shall be required which include prevailing network functions like intrusion detection and prevention, firewall, traffic engineering, and load balancing. A hardware-based solution for such settings will require proprietary high-end network devices. After sometime, if new requirements and innovations pop up, a next generation of more sophisticated and costly hardware will be required to replace the old devices. In contrast, softwarization in the form of SDN can bring hardware-independence by running these functions as software on any server machine and then updating them with a simple software upgrade.

Third, a large number of IoT devices generate and exchange enormous information which can replicate a lot. Sending or requesting redundant information in and out of the network burdens the network unnecessarily and affects network throughput. Real time operations in the IoT-world demand low latency, contextual information processing, and enhanced quality of service (QoS). This can be achieved if computing is performed inside the network, called edge computing (EC). Caching the contents at the network edge for local information processing or making them available for subsequent requests from the same domain seems a promising solution to these issues. SDN can also help in caching by performing traffic orchestration and in-network caching by keeping the global view of the network.

The proposed SI on softwarization and caching covers a number of aspects of IoT which include different software-based techniques that perform network control and management; virtual service provisioning with vendor neutrality; and edge caching with energy efficiency, delay-sensitivity, contextual information processing, and replicating data outputs.

Potential topics include but are not limited to the following:

- ▶ Softwarization for IoT
- ▶ Smart homes, smart health solution, Internet of Vehicles (IoV), and industry
- ▶ Routing, forwarding, congestion, load balancing, and QoS
- ▶ Security and testing
- ▶ Intrusion detection and prevention
- ▶ Domain name system
- ▶ Authentication, authorization, and accounting (AAA)
- ▶ NFV for Internet of Things
- ▶ Network monitoring, duty cycling
- ▶ Protocols and standards for SD-IoT, NFV-IoT, and SDN-NFV-IoT
- ▶ Testbed, deployment experiences, simulators, and open source implementations
- ▶ Caching and computing within IoT domain for the following
  - ▶ Novel edge caching mechanism for IoT
  - ▶ Consumer-centric applications and services
  - ▶ Smart mobility
  - ▶ Connected IoV
  - ▶ Emergency response
  - ▶ Content distribution and retrieval
  - ▶ Location-based services
  - ▶ Information processing and decision-making during surveillance (home, buildings, and sensitive areas)

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/wcmc/scit/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

**Lead Guest Editor**

Maaz Rehan, COMSATS Institute of Information Technology, Wah Cantt, Pakistan  
[maazrehan@ciitwah.edu.pk](mailto:maazrehan@ciitwah.edu.pk)

**Guest Editors**

Mubashir H. Rehmani, Waterford Institute of Technology, Waterford, Ireland  
[mshrehmani@gmail.com](mailto:mshrehmani@gmail.com)

Ghadah Aldabbagh, Massachusetts Institute of Technology (MIT), Cambridge, USA  
[ghadah@mit.edu](mailto:ghadah@mit.edu)

Ejaz Ahmed, University of Malaya, Kuala Lumpur, Malaysia  
[imejaz@gmail.com](mailto:imejaz@gmail.com)

Anis Laouiti, Telecom SudParis, Evry, France  
[anis.laouiti@telecom-sudparis.eu](mailto:anis.laouiti@telecom-sudparis.eu)

**Submission Deadline**

Friday, 6 July 2018

**Publication Date**

November 2018