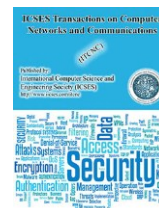




## Editorial

ICSES Transactions on Computer Networks and Communications  
(ITCNC)

Journal Homepage: [www.i-cses.com/itcnc](http://www.i-cses.com/itcnc)



# Innovative Networking Technovations

Ankur Dumka<sup>1\*</sup>

<sup>1</sup> School of Computer Science, University of Petroleum and Energy Studies, Dehradun, India

\* Corresponding Author: [mankurdumka2@gmail.com](mailto:mankurdumka2@gmail.com)✉

*ICSES transaction on computer networks and communications* (ITCNC) is a peer-reviewed open-access journal which aims for recent research and developments in field of computer networks and communications. The journal aims to publish innovative, advanced and interdisciplinary research in theoretical, experimental and practical aspects. The journal thrives to publish novel and innovative ideas in the field of networking and communications to give in-field researchers a platform to showcase their research works.

The present issue of the journal is focused on advanced information technology systems. Advanced information technology focuses on the latest and new technologies in the field of networking of the recent world where most of the research is going on and which are up to date as per the market demand and requirement. A number of advanced technologies has been the central theme of this journal which includes technologies like Networking, Internet of Things (IoT), Computational Intelligence, Big Data, Advanced Networking, and Cloud Computing & Data Centers. This journal intends to be a major forum for scientists, engineers and practitioners interested in the study, analysis, design, modeling and implementation, and solving of optimization problems in the aforementioned areas, both theoretically and in a broad range of application fields. The journal also aims to foster hybrid approaches within advanced networking technology areas.

One of the major innovation in the field of networking is Software Defined Network (SDN). SDN is an innovative and latest technology in the field of networking which changes the way of working in field of networking. SDN is changing the way we design and manage our networks. This technology is an integration of software with networks where networks can be managed by means of softwares using programming languages like Java and Python. SDN technology decouples the control plane with data plane of routers in order to manage the entire network through a single software application [1].

Control plane of all the routers of a network is managed by controllers. Thus we can say, SDN technology enable us to control, automate and manage entire network by abstraction of management and control plane of the individual devices of network to the controller.

Controllers are intelligent software or applications developed which are having the visibility of entire computer network which is also having the decision making authority [2]. The devices within the network are simply used for forwarding of packets based on controller's decision or instructions. The controllers are open source which can be managed by user created customized software on well-defined Application Programming Interface (APIs) known as Northbound APIs. North bound API are opened from controller which are used for pushing the configuration of devices of the network whereas southbound APIs are used for managing these configurations.

SDN uses openflow protocol in order to setup the communications between hardware and software devices. Openflow protocol is an open convention protocol that is used for setting communication between controllers and switches and thus contribute for forwarding tables of network switches and routers. Openflow uses Transmission Control Protocol (TCP) for interaction of switches within the network

The devices of the network can be configured from centralized management controller; thus this technology reduces the need for local management of these devices. SDN thus reduces the time to provision applications, configuration and deployment task from days to minutes. SDN uses predefined and customized scripts which provide solution to rapid changing networking configurations for users customized tasks [3, 4, 5].

SDN technology in association with Network Function Virtualization (NFV) provides an integrated approach of networking with cloud computing environment. Involvement of cloud technology with SDN can be used to manage the

entire network through a single software by means of cloud environment.

SDN technology can be used with IoT technologies which can be used for handling error detection, prevention of Distributed Denial of Service (DDoS) attacks and other intruders by providing security tools by means of development of APIs for the specifies applications [6]. There are many other usage of SDN in IoT technology. We had also developed an application for detection of default password in many IoT devices including IoT cameras, watches etc. The application developed can be used to separate black list from white list, where blacklist contain all the IoT appliances connected with the SDN controller which are having their default password whereas whitelist contain all the IoT appliances connected with SDN controller which reset their default password. Thus, giving a listing of all the devices which can be more prone for security attacks. SDN provides a reliable and efficient means of providing better quality of service and efficient traffic management for the networking devices. [7,8,9,10]

SDN technology can be associated with wireless sensor technology defined as Software Defined Wireless Sensor Network (SDWAN) and Software Defined Access (SDA). These are very new areas of research in the field of networks where different companies and research organization are working for providing efficient networking for wireless sensor networks.

With these words, I hereby put forward the present issue of the journal to you all with the motivation to come up with newer areas in the field of networking & communications.

With Regards



Dr. Ankur Dumka

28/3/2018

## REFERENCES

- [1] An Wang, Yang Guo, Fang Hao, T.V. Lakshman, and Songqing Chen, "Scotch: Elastically Scaling up SDN Control-Plane using vSwitch based Overlay," in Proc. *10th ACM International on Conference on emerging Networking Experiments and Technologies (CoNEXT '14)*, pp. 403-414, 2014. doi: 10.1145/2674005.2675002
- [2] N. Gude, T. Koponen, J. Pettit, B. Pfaff, M. Casado, N. McKeown, and S. Shenker, "NOX: towards an operating system for networks," *ACM SIGCOMM Computer Communication Review*, vol. 38, no. 3, pp. 105, Jul. 2008. doi:10.1145/1384609.1384625
- [3] N. McKeown, T. Anderson, H. Balakrishnan, G. Parulkar, L. Peterson, J. Rexford, S. Shenker, and J. Turner, "OpenFlow: enabling innovation in campus networks," *ACM SIGCOMM Computer Communication Review*, vol. 38, no. 2, pp. 69, Mar. 2008. doi: 10.1145/1355734.1355746
- [4] H. Aoki, J. Nagano, and N. Shinomiya, "Layered control plane for reducing information sharing in OpenFlow networks," in proc. *2015 IEEE International Conference on Communication Workshop (ICCW)*, Jun. 2015. doi: 10.1109/iccw.2015.7247207
- [5] R. Braga, E. Mota and A. Passito, "Lightweight DDoS flooding attack detection using NOX/OpenFlow," *IEEE Local Computer Network Conference*, Denver, CO, 2010, pp. 408-415. doi: 10.1109/LCN.2010.5735752
- [6] S. M. Mousavi and M. St-Hilaire, "Early detection of DDoS attacks against SDN controllers," *2015 International Conference on Computing, Networking and Communications (ICNC)*, Garden Grove, CA, 2015, pp. 77-81. doi: 10.1109/ICNC.2015.7069319
- [7] A. Dumka, H. L. Mandoria, V. Fore and K. Dumka, "Implementation of QoS algorithm in integrated services (IntServ) MPLS network," *2015 2nd International Conference on Computing for Sustainable Global Development (INDIACom)*, New Delhi, 2015, pp. 1048-1050.
- [8] R. Tomar, H. Kumar, A. Dumka and A. Anand, "Traffic management in MPLS network using GNS simulator using class for different services," *2015 2nd International Conference on Computing for Sustainable Global Development (INDIACom)*, New Delhi, 2015, pp. 1066-1068.
- [9] J. Tewari , A. Dumka, and G. Khan, "Sync Preempted Probability Algorithm in the Integrated Services (IntServ) MPLS Network," *International Journal of Science and Research (IJSR)*, vol. 3, no. 6, pp. 696-698, 2012.
- [10] B. Cui, Z. Yang, and W. Ding, "A load balancing algorithm supporting qos for traffic engineering in MPLS networks," in proc. *Fourth International Conference on Computer and Information Technology (CIT'04)*, 2004. doi: 10.1109/cit.2004.1357234