Journal of Network and Systems Management - JNSM
Call for Papers
Blockchains and Distributed Ledgers in Network and Service Management

Summary

The increase in the number of mobile and stationary devices and their associated Quality-of-Service (QoS) requirements has been challenging the network infrastructure's evolution. Such increase entails an overload on the network setup and associated services to accommodate the QoS guarantees, demanding innovations in several areas and related technologies. Blockchain is one of these technologies. It belongs to the broader family of Distributed Ledger Technology (DLT) and has evolved very recently beyond the financial market, gaining wider public attention to other applications and many use cases.

While DLT refers in a broader sense to the set of technology used as a distributed and digital ledger, Blockchains are seen as a very specific type of DLT in which the participation in consensus, permissions for reading and writing are open, *i.e.,* permissionless. Therefore, BCs represent a completely decentralized type of DLT, in which no trust assumptions are made on any participant, whereas there are permissioned alternatives depending on the use case.

Notably, DLTs can be employed to facilitate maintaining a unique view among a group of geographically distributed but inter-connected nodes without central control. It is precisely this powerful characteristic to disintermediate trust in a central control that arouses interest in using DLTs in applications areas beyond FinTech, helping to build a transparent archive of transaction records, a policy/strategy to be applied jointly by several parties, or a configuration of multiple machines.

However, several trade-offs, partially even shortcomings, are being observed still depending on the networked applications utilizing BCs and DLs to provide an efficient decentralization. These include, for instance, the lack of scalability, data privacy, interoperability, standardization, and the lack of consensus toward any reference models or best practices that specify how DLs should be utilized in IoT. Furthermore, BC is based on a P2P network, where tens of thousands of nodes are directly connected, and the communication between nodes is done using a near real-time broadcasting protocol. Therefore, the monitoring, performance, and failure recovery of BC P2P networks require novel solutions in network and service management. In addition to research on using BC for network management, there is also a need for research on managing BC itself.

This special issue of JNSM will challenge researchers and experts to foster the investigations on the convergence of BCs and DLs and different components in a decentralized network infrastructure that drives cutting-edge innovations, especially

their service and management tasks in those differently organized distributions and their trust assumptions. Authors are invited to submit high-quality papers containing original work from either academia or industry reporting novel advances in (but not limited to) the following topics on BCs and DLs applied and deployed in Network and Service Management:

- BCs and Network Security;
- BCs and DLTs Security and Privacy for IoT Healthcare Systems;
- BCs and DLTs for Internet-of-Things (IoT);
- Novel development of Smart Contracts in the BC-IoT Ecosystem;
- Machine Learning Approaches for the Convergence of IoT and DLTs;
- DLT solutions for Edge Computing/networking in IoT Systems;
- Applications of DLTs and BCs in edge, fog, and cloud computing;
- BC and DLT Applications in 5G or 6G;
- BCs and DLTs for a Secure and Privacy-strong Internet-of-Vehicles;
- Cooperative Overlays based on BCs;
- Decentralized Domain Name Servers (dDNS) based on BCs;
- Network Governance, Resilience, and Configuration Hardening;
- BC P2P Network Monitoring on BC P2P Network;
- Message Broadcasting on BC P2P Network;
- BC Node Recovery from BC Network and System failure.

Please contact the Guest Editors if you are uncertain if your submission is in scope for this special issue.

Submission Schedule

We use an "open" submission schedule, which means that you can submit your paper at any time before we close the call (see below) and that we will start the review process right after receiving the submission.

- Call closes: November 30, 2021
- Revision notification: 2 months after submission
- Revised paper due: 1.5 months after the revision notification
- Final notification: 1 month after the revised paper notification
- Expected publication of the special issue: second quarter of 2022 (early accepted papers will be accessible online before the deadline)

Submission Format and Review Guidelines

Submitted manuscripts must be written in English and must not exceed 30 pages in Springer LNCS format. Your paper must describe original research not published or currently under review by other journals or conferences. Parallel submissions will not be accepted.

All submitted papers, if relevant to the theme and objectives of the special issue, will go through an external peer-review process. Submissions should (*i*) conform strictly to the Instructions for Authors available on the JNSM website (available as "Guide to Authors" at https://www.springer.com/journal/10922/submission-guidelines#contents)

and (*ii*) be submitted through the Editorial Management system available at http://www.editorialmanager.com/jons.

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