Special Issue on New Generation Cloud Computing

Software: Practice and Experience (Wiley Press)

Call for Papers

The cloud computing landscape is now rapidly changing to meet the challenges of emerging paradigms, such as Fog computing and the Internet-of-Things. These paradigms rely on services offered by the cloud but are demanding – need to scale for billions of heterogeneous devices and sensors while operating efficiently in real-time. Enormous volumes of data will be generated and the prediction for 2025 is over 180 trillion gigabytes from 80 billion end user devices and sensors.

In conventional cloud computing, all data is transmitted to data centers where it is processed and stored. The rate of expansion of data centers across the globe raises energy concerns and calls for innovative solutions to make data center computing sustainable. When billions of devices are connected, sending all data to the cloud is simply not pragmatic – creates network congestion and introduces latencies that affects the overall Quality-of-Service and Quality-of–Experience. This calls for computing outside cloud data centers using decentralized computing models along the cloud and edge of the network continuum.

New trends seen in cloud computing in the last couple of years include: computing at the edge of the network outside centralized data centers, using heterogeneous processors, such as hardware accelerators in the cloud for making applications execute faster, using lightweight deployment strategies, such as containers and unikernels, in transient environments, ecosystems built on containers that enable more abstraction, and novel applications finding new generation clouds to satisfy their requirements.

Definitions, architectures and approaches that are relevant to the current generation of clouds will evolve significantly to accommodate the emerging paradigms that rely on the cloud. Future clouds will therefore need to address new challenges related to scalability, management, reliability, sustainability, heterogeneity and security. Addressing these challenges naturally paves way for new cloud research, trends and directions.

This special issue welcomes research that affect all avenues of the [next generation cloud computing](#), but are not limited to:

- Infrastructure – hardware, middleware and software
- Architectures – emerging distributed and decentralized clouds using fog/edge, serverless computing, blockchain technologies and container technologies
- System – programming models, algorithms, virtualization technologies, hardware accelerators, and runtime systems
- Management – scheduling, resource scaling, deployment, monitoring, benchmarking, and metering
- Application – novel applications in machine and deep learning, mobile apps, IoT, smart cities, health care

Important Dates

Submission: May 15, 2019
Notification: August 15, 2019
Revision due: October 15, 2019
Notification of final acceptance: November 15, 2019
Notification of final revised paper: December 15, 2019

Submissions

This special issue seeks submission of articles to SPE that present novel, original and innovative ideas. The call is open to all contributions, including technically sound research that produced negative results. All submissions including invited papers undergo regular peer review. Prospective authors are encouraged to get in touch with the Corresponding Guest Editor.

Submission of "extended versions" of already published research (for example, conference papers) is not encouraged unless they contain a substantial amount of "new and original" ideas/contributions along with more than 50% brand "new" material. If you are submitting an extended version, you must include a cover document detailing (1) the "Summary of Differences" between the article submitted to SPE and the already presented/published paper, (2) a list of "new and original" ideas/contributions in the SPE article (identifying sections where they are proposed/presented), and (3) confirming the percentage of new material. Extended versions not adhering to these guidelines will not be reviewed.

While submitting an article to this issue, please select "SPE-SI-NewGenCloudComp" in the submission system.

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