

# NEWSLETTER



## Enhancing HPC with Serverless Computing: Lithops on MareNostrum5

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Researchers from BSC and URV published the paper "Enhancing HPC with Serverless Computing: Lithops in MareNostrum5." This work was presented at the Cloud-Edge Continuum (CEC'24) workshop, which took place in Charleroi (Belgium) on October 28, 2024.

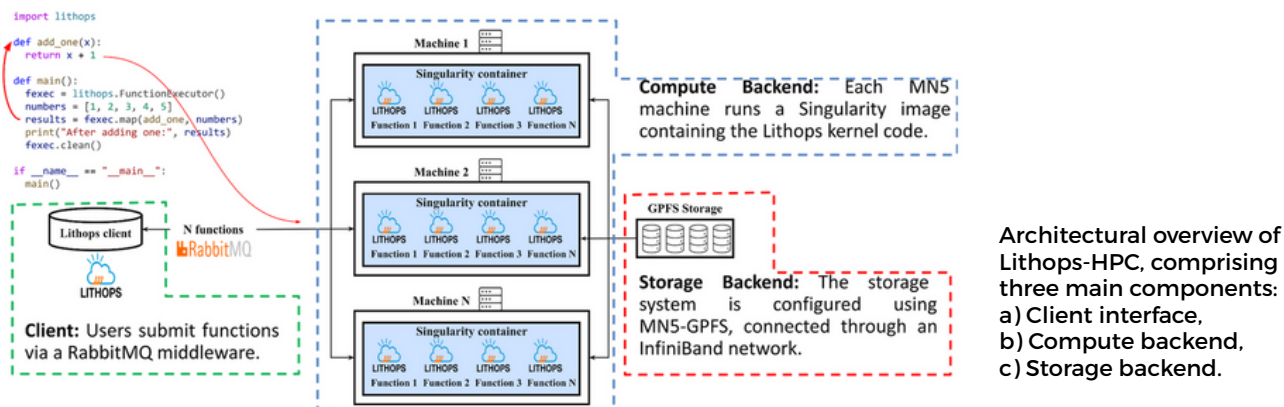
The workshop was organized and co-located with IEEE ICNP conference, held from October 28 to 31. CEC'24 received support from multiple consortia of leading academic and industrial organizations, with funding from the EU Commission.



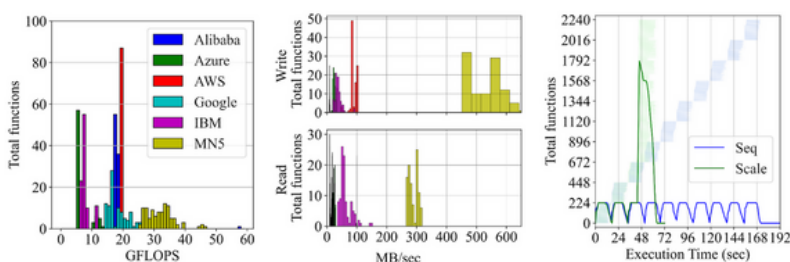
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This study presents a novel architecture for deploying Lithops within High-Performance Computing (HPC) environments, with a particular focus on the MareNostrum 5 supercomputer. By integrating the computational capabilities of MareNostrum 5 with the Function-as-a-Service (FaaS) paradigm, the proposed approach aims to improve performance, scalability, and resource efficiency while simplifying workload deployment. Benchmark evaluations demonstrate that Lithops-HPC achieves superior FLOPS performance and object storage bandwidth compared to commercial cloud platforms, while also optimizing CPU utilization, making it a compelling solution for HPC workloads.

## ARCHITECTURE



## EVALUATION



Lithops-HPC evaluation:  
 a) FLOPS performance: Lithops on MN5 outperforms cloud platforms, achieving up to 1.5x higher performance than AWS,  
 b) Object storage bandwidth: MN5 offers 5x faster write and 3x faster read speeds compared to AWS-S3,  
 c) Scalability: Lithops-HPC efficiently scales across multiple nodes.

FULL PAPER: DOI:10.1109/ICNP61940.2024.10858564 [🔗](#)

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