

Why Should We Move to Serverless?

CSCI 460: Final Project Proposal
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Proposed Work

Nowadays, Serverless Computing is becoming a popular computing environment. It can hand-off server management and quickly scale to millions of requests in seconds, all without blowing an organization's budget. In this project, we will investigate questions like `What is serverless?`, `How does it work?`, `Why is Serverless better than traditional Server/VM/container?`, `Architectures of different Serverless platforms` from the existing literature [1,2,3,4]. We will also give an overview of Security, Scheduling, Process Management, and Memory Management in Serverless systems. We will also show the demo application deployed on the Serverless platform.

Timeline

As the main deliverable for this project is a technical report and a presentation, our timeline will be primarily focused around completing the final report and presentation. Our timeline is as follows:

Timeline	Deliverable
Sunday 11/6/2020	Complete the literature studies
Sunday 11/8/2020	Demo video of Serverless application
Sunday 11/8/2020	Rough Draft of Paper
Sunday 11/15/2020	Final Draft, Slides, Video Presentation

Division of Labor

All the members of the group will be responsible for studying the literature and finding knowledge and overall composition and editing of the final paper and presentation. Each member will show one demo video of a serverless application. All the members will be responsible for recording the final video presentation to be submitted for the project.

Reference

1. **Firecracker – Lightweight Virtualization for Serverless Computing**, Amazon AWS (NSDI20)
2. **Serverless Computing: Design, Implementation, and Performance**, Garrett McGrath, Paul R. Brenner, (ICDCSW 2017)
3. **The rise of serverless computing**, Castro, Paul and Ishakian, Vatche and Muthusamy, Vinod and Slominski, Aleksander (Commun. ACM, 2019)
4. **Serverless computing for container-based architectures**, Alfonso Pérez and Germán Moltó and Miguel Caballer and Amanda Calatrava (Future Generation Computer Systems, 2018)
5. **Serverless Computing: An Investigation of Factors Influencing Microservice Performance**, Wes Lloyd, Shruti Ramesh, Swetha Chinthalapati, Lan Ly, Shrideep Pallickara, (CLOUD 18)