Apache OpenWhisk

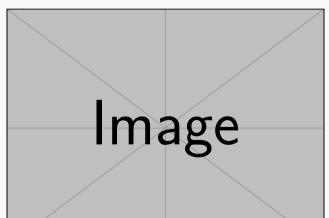
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Introduction

What is Apache OpenWhisk?

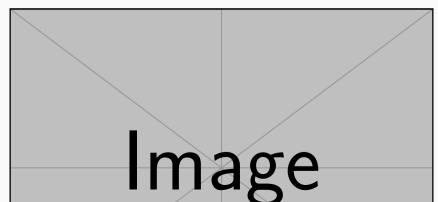
- Apache OpenWhisk is an open-source, event-driven serverless cloud platform.
- Key characteristics:
 - Handles function execution in response to events.
 - Simplifies deployment with scalable and cost-efficient operations.



Architecture

Overview of the Architecture

- Major components include:
 - Controller: Manages API requests and orchestration.
 - Invoker: Executes user-defined actions (functions).
 - Messaging System: Backbone for event communication (e.g., Kafka).
 - Metadata Storage: Uses CouchDB for storing triggers, rules, and states.



Key Features

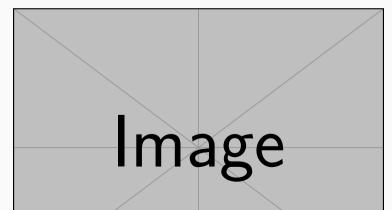
Notable Features of OpenWhisk

- Multi-language support: Python, Node.js, Go, Java, and more.
- Extensible with custom Docker containers.
- Integration with third-party services such as databases, APIs, and cloud tools.
- Built-in monitoring and debugging tools.

Use Cases

Practical Applications of OpenWhisk

- Real-time data processing for IoT devices.
- Image and video processing pipelines.
- Backend for chatbots and voice assistants.
- Automated DevOps workflows.



Conclusion

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- Apache OpenWhisk provides a robust platform for serverless computing.
- It simplifies handling event-driven workloads while ensuring cost efficiency.
- OpenWhisk's flexibility makes it ideal for a range of modern applications.

Thank You!

References

References

- Etas: predictive scheduling of functions on worker nodes of apache openwhisk platform (Banaei, Ali and Sharifi, Mohsen), 2022
- Evaluating apache openwhisk-faas, Quevedo (Sebastián and Merchán, Freddy and Rivadeneira, Rafael and Dominguez, Federico X), 2019
- Crypto currencies prices tracking microservices using apache OpenWhisk (Huy, Lam Phuoc and Saifullah, Saifullah and Sahillioglu, Marcel and Baun, Christian), 2021
- Open-source serverless architectures: an evaluation of apache openwhisk (Djemame, Karim and Parker, Matthew and Datsev, Daniel), 2020
- LEARNING APACHE OPENWHISK: developing open serverless solutions (Sciabarrà, Michele), 2019