



Serverless for IoT Data Processing



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Introduction to Serverless Computing



Definition

Serverless computing is a cloud-based execution model where the cloud provider dynamically manages the allocation of computing resources.



Benefits

Serverless computing reduces operational overheads, improves scalability, and enables developers to focus on business logic rather than infrastructure.



Serverless Architecture for IoT Data Processing

Overview

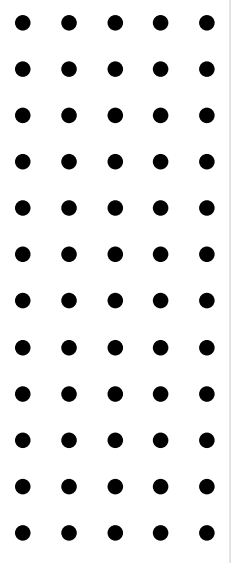
IoT data processing involves collecting, analyzing, and visualizing data from IoT devices.

Complementarity

Serverless computing complements IoT data processing by providing on-demand scalability, cost-effective computing, and a flexible architecture.

Key Components

The key components of a serverless IoT data processing system are event sources, serverless functions, data processing services, and IoT data storage.



Use Cases and Examples

IoT Security

Serverless computing can enhance IoT security by dynamically applying rules and policies to incoming data streams.

1

Real-Time Analytics

Serverless computing enables real-time analytics by processing data as it is generated by IoT devices.

2

3

Machine Learning

Serverless computing can be used for machine learning tasks such as anomaly detection, predictive maintenance, and image recognition.

Challenges and Considerations



Challenges

Challenges with serverless computing for IoT data processing include cold start issues, function duration limits, and vendor lock-in.



Mitigation Strategies

Mitigation strategies include optimizing function performance, breaking down monolithic architectures into microservices, and using multicloud and hybrid cloud models.

Implementation and Deployment

Steps for Implementation

The steps for implementing a serverless IoT data processing system include designing the architecture, selecting the cloud provider, writing the serverless functions, and monitoring the system performance.

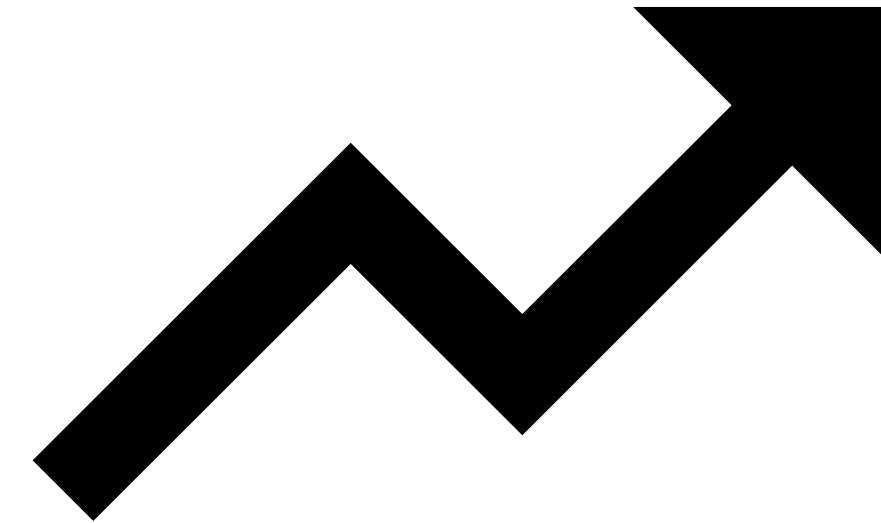
Considerations

Considerations for scalability, security, and reliability include using auto-scaling, encrypting data at rest and in transit, and adopting a backup and recovery plan.

Future Trends

Emerging Trends

Emerging trends include the integration with blockchain technology, the use of serverless computing for edge computing, and the expansion of the serverless architecture to include more complex applications.



Conclusion

Serverless computing is a powerful approach for IoT data processing that offers benefits in terms of scalability, cost-effectiveness, and flexibility. While it comes with some challenges, these can be mitigated with proper strategies and best practices.

THANK YOU!