Real-Time IoT Device Monitoring with Kinesis Data Analytics

Abstract:

The Real-Time IoT Device Monitoring with Kinesis Data Analytics guidance automatically provisions the services necessary to collect, process, analyse and visualize IoT device connectivity and activity data in real-time. This project is designed to provide a framework for analysing and visualizing metrics, allowing you to focus on adding new metrics rather than managing the underlying infrastructure.

Existing System:

In IoT processing systems, developers use a simple loop-based decision-making jobs and this kind of procedures are not so potential in creating smart IoT devices.

Proposed System:

When AWS IoT ingests data from your connected devices, an AWS IoT rule sends the data to a Kinesis data delivery stream. The delivery stream archives the events in an Amazon S3 bucket and sends the data to a Kinesis Data Analytics application for processing.

The application sends the data to an AWS Lambda function that sends it in real-time to a DynamoDB table to be stored. The application also sends processed data to a second Kinesis data delivery stream which archives it in an Amazon S3 bucket.

The project also creates an Amazon Cognito user pool, an Amazon S3 bucket, an Amazon CloudFront distribution, and a real-time dashboard to securely read and display the account activity stored in the DynamoDB table.

Software Tools:

1. VS Code
2. Jupyter Notebook
3. Python3

4. AWS IoT Core
5. IoT Rules
6. AWS Kinesis Data Firehose
7. S3
8. Kinesis Data Analytics
9. DynamoDB
10. CloudFront
11. Cognito
12. AWS Lambda

Hardware Tools:

1. Laptop
2. Operating System – Windows
3. RAM – 16GB
4. ROM – 4GB
5. Fast Internet Connectivity