

IoT-Based Low-Cost Notification System For Technical Support Request

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Issues

- The classrooms are equipped with many technologies.
- Requests for tech support are on the rise.
- Calling for help by the instructors is interrupting and time-consuming.

Solution

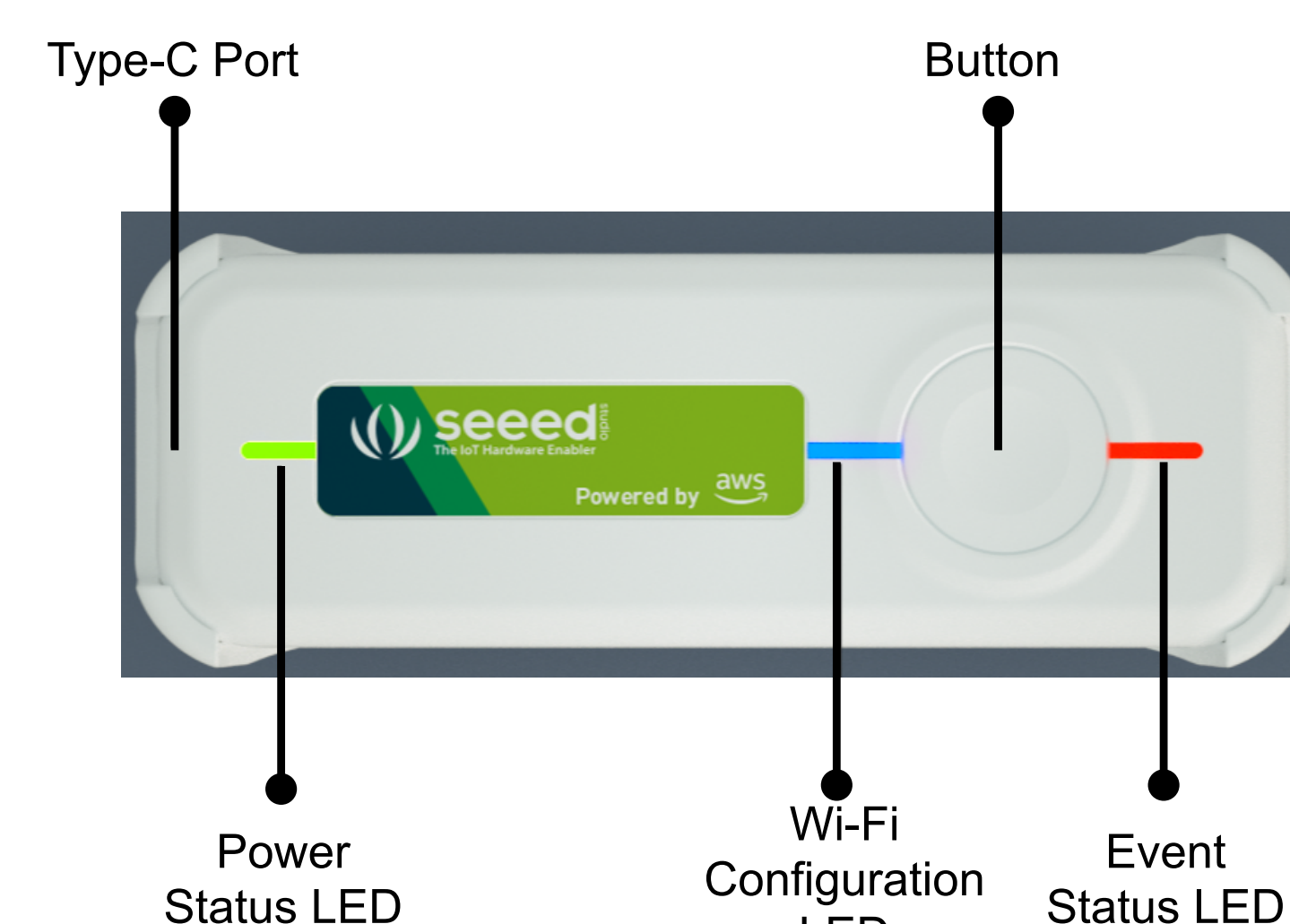


- We developed a notification system that allows the instructor to send a request to IT with just a simple click.
- Our system uses the existing Wi-Fi connection, an IoT button and serverless computing services provided by Amazon Web Services.
- Our system is simple, low-cost, secure, and reliable thanks to the pay-as-you-go policy and Amazon free tier services.

Button Overview



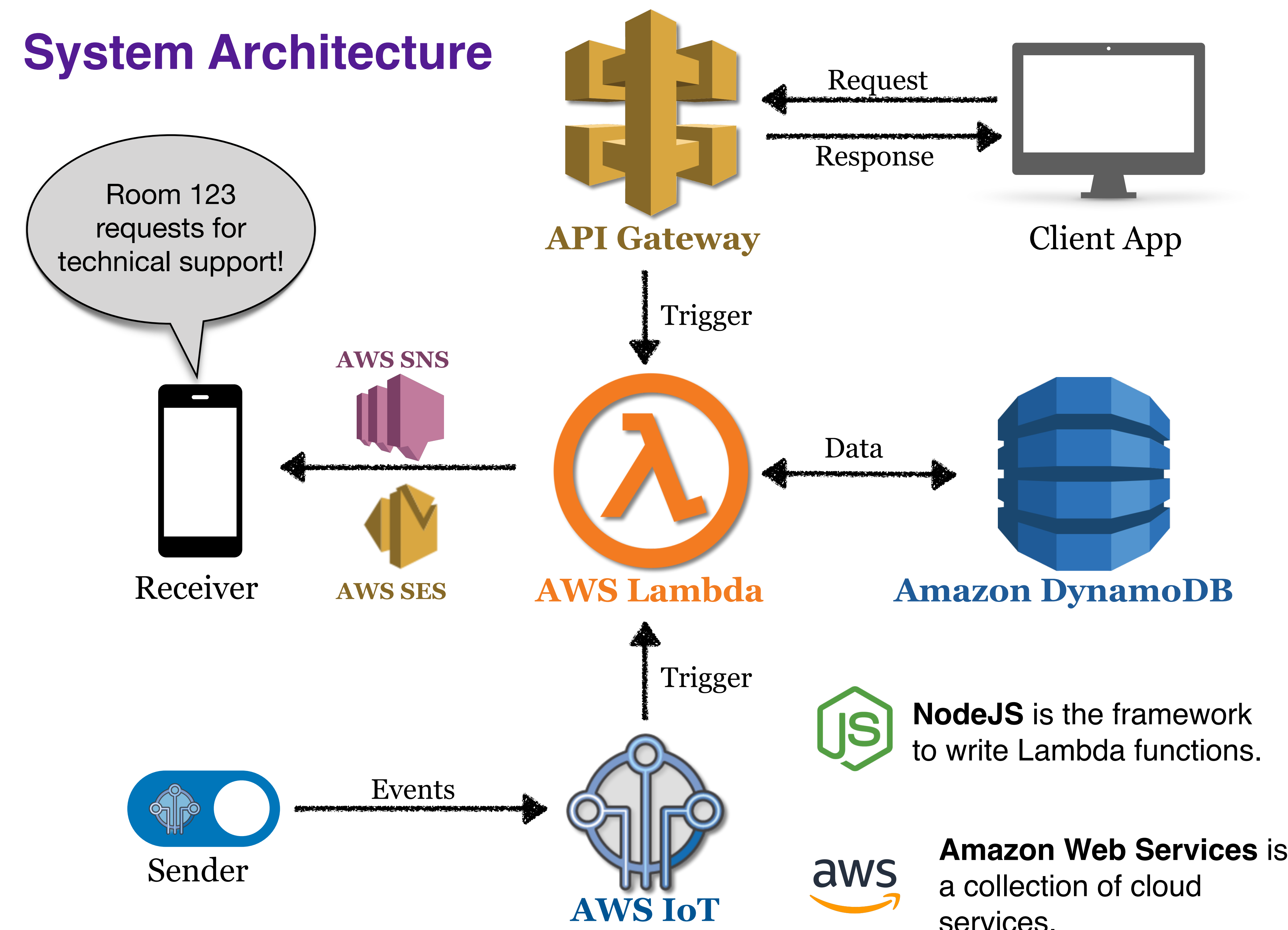
- Programmable
- Easy to configure
- Send request via Wi-Fi
- Rechargeable



Conclusion and Future Work

- We present a notification system for the instructor to send request for technical help via a press of a button instead of an interruptive call.
- We plan to deploy our system into several classrooms at TCU to test its capability in the real world.
- We wish to analyze several characteristics of the system such as availability, reliability, etc. during deployment.

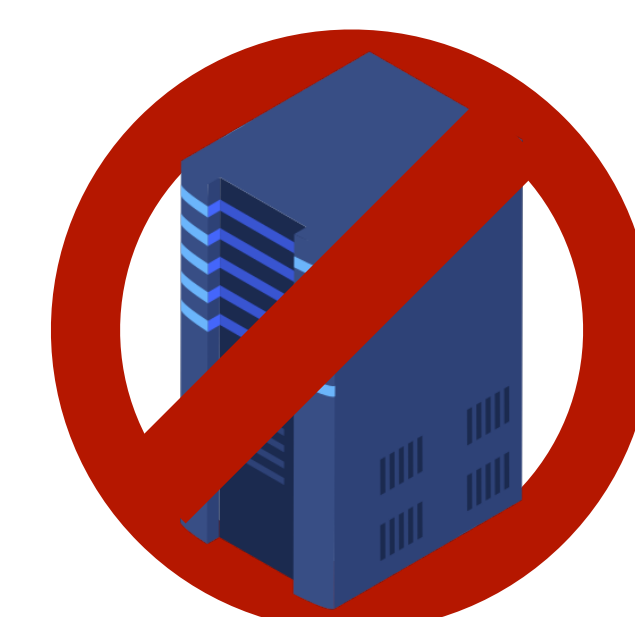
System Architecture



The Flow

- A click on the button will send an event stream to AWS IoT, which then triggers the Lambda function.
- The click event consists of the button click type, serial number and other miscellaneous information
- The Lambda function processes the logic.
 - It uses the serial number to retrieve the request device's information.
 - It queries the matching receiver from the information and triggers AWS SNS and AWS SES.
- SNS and SES will send notifications to the receiver's phone number and email.

Serverless Computing



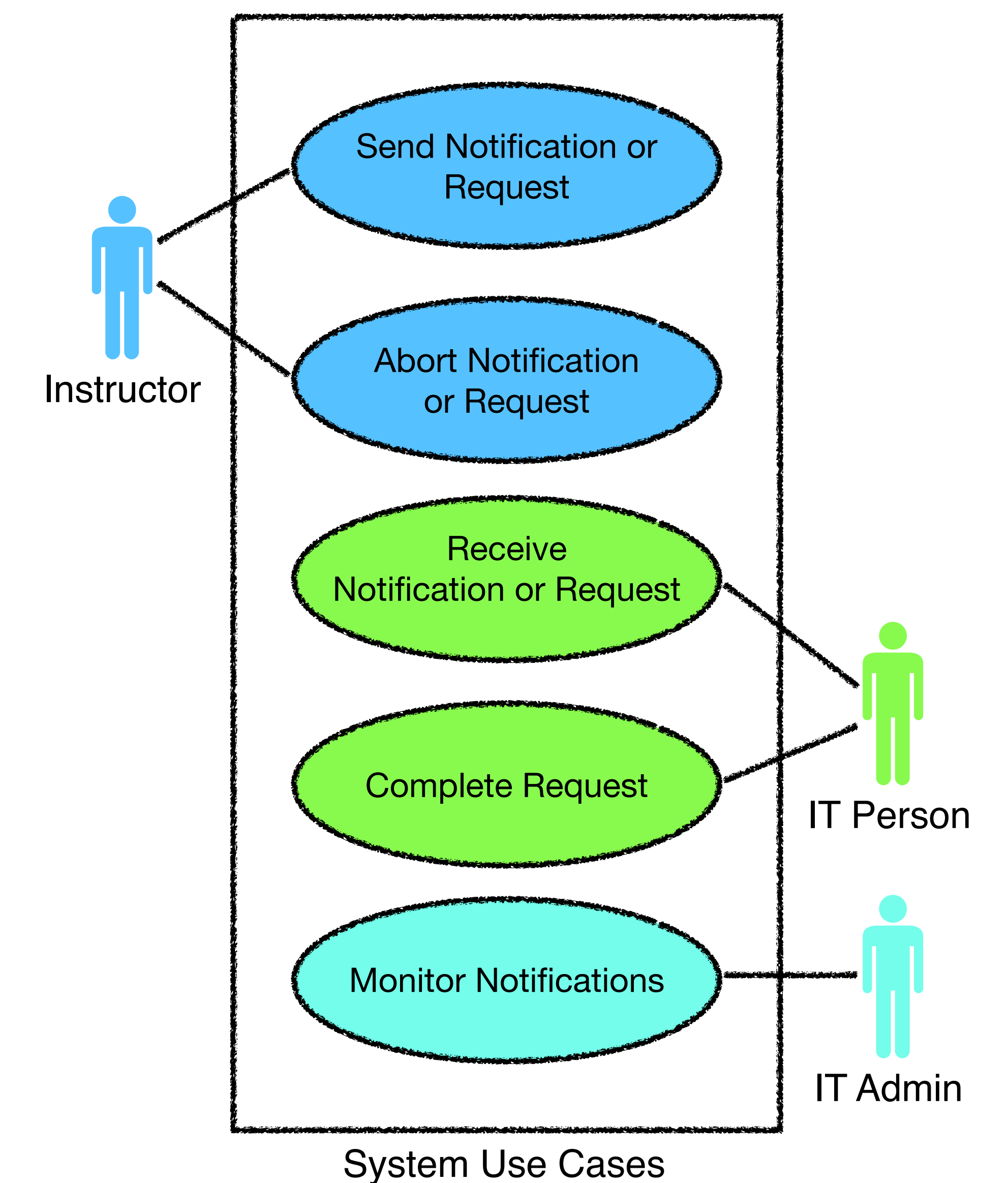
- Serverless computing is a feature on the cloud where the application logic is split into functions and executed in an event-driven manner.
- For example, the Lambda function only "wakes up" and gets executed when there is an event sent from its triggering component(s), in this case the API Gateway and AWS IoT services.
- Event-driven applications play an important role in numerous domains from business to entertainment as they allow developers to sidestep hosting a server.

Click Types and Use Cases

The IoT button comes with 3 click types: single, double and long press, each of which is assigned with a distinct functionality.

- Single** press: send a technical support request to the IT department (Send Notification); IT person will be alerted (Receive Notification).
- Double** press: cancel/abort the request (Abort Notification).
- Long** press: signify the completion of a technical issue (Complete Request).

Further, the IT administrators can utilize the API Gateway to monitor notification records on a client application.



Constraints

Class-time: 2PM - 4PM		
3PM	3PM	5PM
Instructor ✓	Student ✗	Instructor ✗

The purpose is to prevent the button from being pressed by the wrong people and/or at the wrong time.

- The button press is only legitimate during class time periods.
- Only the instructor can send the request. A confirmation text message is sent to the instructor's phone when the button is pressed during class-time.

Acknowledgements

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References

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