VALIDATING ABSOFT'S LORAWAN DRIVE TESTING SOLUTION: LORASQ

ABsoft is an emerging company that has developed the LoRaSQ solution, a complete bundle of hardware and software enabling easy and low-cost assessment of LoRaWAN coverage, conditions and QoS (quality of service). For this project, ABsoft validated their end-to-end solution on CENGN's real-world deployment architecture.

ABsoft specializes in the design and development of IoT solutions with a strong focus on simplifying the way tomorrow's IoT consumers will be deploying and interfacing their connected devices. ABsoft is comprised of experts in the field of streamlining the complexity of technology manufacturing and interfacing. Their services lie in the areas of research, engineering, solutions, and consulting, but their prized product is the LoRaSQ, a suite of connectivity survey tools. ABsoft has already tested the LoRaSQ running in AWS but decided to leverage CENGN's infrastructure to deploy their LoRaSQ solution in an external real-world production-based environment.

THE CHALLENGE

Before a LoRaWAN provider offers their services to the end user, they must test the performance and coverage of their network to ensure sufficient connectivity and QoS. Network planners need a dependable and seamless tool to quickly measure and assess potential network capabilities. The problem with most LoRaWAN survey tools on the market is they are only on one device, analytics aren't reported in real-time, and data-viewing abilities are cluttered and disorganized.

THE SOLUTION

The LoRaSQ combines hardware and software with ABsoft's ease of use engineering philosophy. This allows network planners to painlessly identify the performance of their new and existing LoRaWANs. The solution begins with the easy to hold field explorer, which has no physical interface, just an on and off button. The user controls the field explorer with the iOS application that provides real-time data analytics on factors like uplinks, gateways, and downlinks. All survey results from the iOS app are then sent directly to cloud storage for further analysis by any individual with login credentials. Users can then obtain further data analysis through the advanced analytics tool, including traditional or customized reporting, maps and live data, as well as documentation and case study access. All data is stored by the fully-integrated LoRaSQ Managed Cloud Service.

THE PROJECT

The project objective was to test and validate the end-to-end solution of the LoRaSQ from server deployment to survey analysis. The LoRaSQ Managed Cloud Service was deployed in the CENGN Cloud while the LoRaWAN network server stack ran in AWS. This validated that CENGN Cloud and ABsoft's servers could operate independently while communicating using MQTT protocol.

1. The LoRaWAN network server stack in AWS processed the uplink data from the LoRa field explorers, which was forwarded through the ABsoft LoRaWAN gateway.

2. The LoRaWAN gateway and antenna, which was in New Brunswick, communicated with the field explorers and forwarded the data packets to and from the network server stack in AWS.

3. Users surveyed the LoRaWAN coverage in New Brunswick, bringing with them the field explorers which were configured and controlled through iOS Client on their mobile phones. During the project, the surveyors viewed real-time LoRaWAN performance data while this information was simultaneously being sent to the CENGN cloud via a cellular network.

4. The LoRaSQ Managed Cloud Service, deployed in CENGN's Cloud, configured all field explorers to the LoRaWAN and stored the resulting survey data.

LoRaSQ Components	
Hardware Components	**Software Components**
Field Explorer	iOS Client (Android coming soon) Advanced Analytics Reporting Tool LoRaSQ Managed Cloud Service

CENGN MEMBERS

Bell · Cisco · EXFO · Huawei · Invest Ottawa | Investir Ottawa · Juniper Networks · Mitel Powering connections · Nokia · ribbon · Rogers · Telus · WIND AN INTEL COMPANY

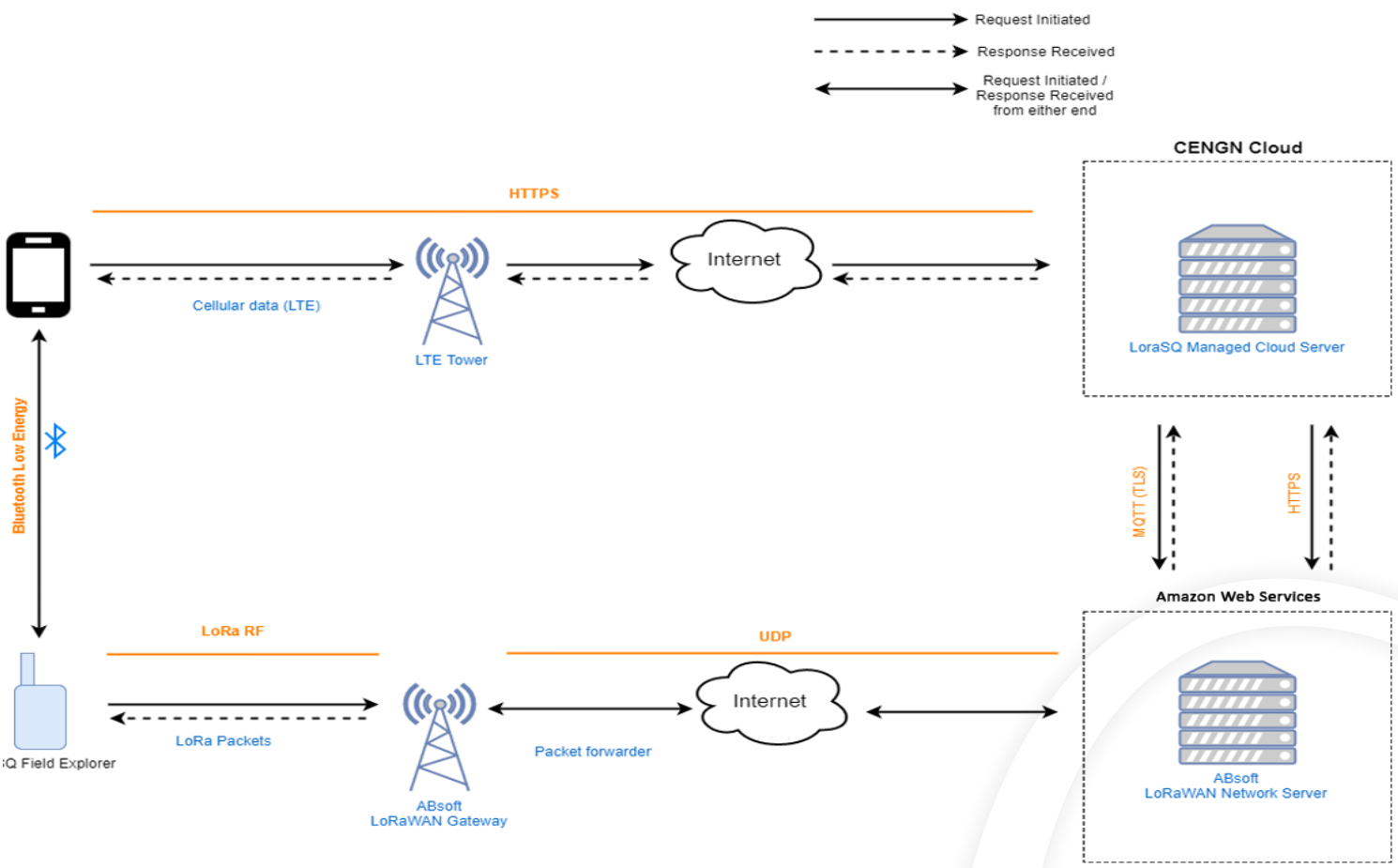

Figure 1: Project Setup

THE RESULTS

This project verified the successful deployment of LoRaSQ's Managed Cloud Service in the CENGN Cloud, revealing the various locations in the range of ABsoft's LoRaWAN gateway. Each location was sampled using LoRaSQ's field explorer and iOS application, which were then communicated to the LoRaSQ Managed Cloud Service in the CENGN Cloud. With the successful deployment and testing of LoRaSQ's server stack, ABsoft proved the solution could operate in multiple production environments.

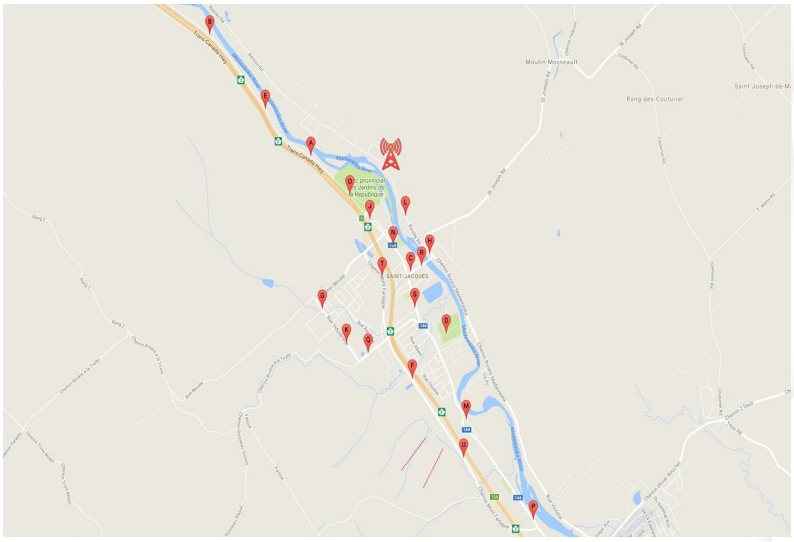

Figure 2: Field Explorer Map

As shown in Figure 2, LoRaSQ's Managed Cloud Service created a map of the locations tested by the field explorer along with each test's precise distance from the gateway. During each test, 25 uplink streams are sent to the server stack and, based upon the number of downlinks returned a success probability is determined, showing the quality and strength of the LoRaWAN at that particular location point.

CONCLUSION

This project demonstrated the successful deployment of ABsoft's LoRaSQ server in a real-world production-based network environment. CENGN was able to provide the required network infrastructure that consisted of a cloud platform with a dedicated project space and sufficient cloud resources for ABsoft. ABsoft also took advantage of the opportunity to deploy their solution on an OpenStack environment and gain exposure to CENGN members and partners.

CENGN
CENTRE OF EXCELLENCE IN NEXT GENERATION NETWORKS

Rick Penwarden, Marketing Manager
rick.penwarden@cengn.ca
cengn.ca/projects

François Aucoin, Owner
frank.aucoin@absoft.ca
https://www.absoft.ca/en

ABsoft