

3GPP TSG RAN Meeting #80

LA JOLLA, CALIFORNIA, USA, JUNE 11 – 15, 2018

Agenda item: 10.1.3

RP-180654

Motivation for IoT Relay (or Multi-hop)

Hisense

Background

- When deploying IoT solutions (e.g., metering, smart parking, fire alarm), power saving and coverage are important.
- Power saving
 - In some applications(e.g. smart parking and fire alarm), IoT devices are power sensitive and they can not easily be recharged after deployment.
 - Compared to the sensing module, the power consumption of communication module accounts for the majority of the whole device. So the life cycle of the IoT device is closely related to the power consumption of the communication module.
 - The manpower and economic cost of redeployment is high when the life cycle of the IoT device ends early.
 - The transmission power of NB-IoT is higher than LoRa. When there's a lot of traffic coming in and out in the smart parking application, the life cycle of device using NB-IoT is shorter than device using LoRa.

Background

- Coverage
 - Water pumps
 - They are usually deployed in the pipe well or basement.
 - The IoT communication module is usually next to the transformer causing electromagnetic interference.
 - Meters in factory
 - The walls of the workshop are made of special materials which have strong shielding.
 - There are many large equipment in the workshop causing electromagnetic interference.
 - Smart parking
 - The coverage is poor when the weather is bad (raining, snowing, high temperature).

Main benefits

- Relay(or multi-hop) has benefits in both technical and business fields.
- Technical benefits:
 - Reduce power consumption.
 - Ensure coverage in some special situations.
- Business perspective:
 - Extend the life cycle of the device and then reduce redeployment costs.
 - Relay can be deployed flexibly.
 - Relay has potential applications, e.g. relay can perform multiprotocol (3GPP and non-3GPP) conversion function as a gateway.
 - Enhanced competitiveness with non 3GPP technologies.

Proposals

- Relay(or multi-hop) is needed for IoT applications.
- Path switch is needed so that the remote UE can choose different links (connect to base station or connect to relay) according to different events.