

3GPP SA WG2 Meeting#115
23 – 27 May, Nanjing, P.R. China

S2-162587

Agenda item: 5.1.1

Work Item/Release: Clot/Rel-13

Active flag handling for pending data via CP Clot Optimization

LG Electronics

Previous discussion

- **SA2 Discussion on active flag handling at SA2#114:**

- Raised an issue on how to handle pending data over NAS (CP CloT optimization) during TAU procedure.
 - Active flag activates User Plane bearer, so the UE should not set Active flag for data over NAS.
 - MME immediately releases signaling connection with a UE if no active flag is set.
 - Due to the reasons above, UE may not send data over NAS reliably with TAU procedure.
- There was a question whether the UE can send data over NAS before completion of TAU procedure or not. Therefore LS **S2-162061 / C1A160016** has been sent to CT1.

- **Progress in CT1 Ad-hoc on IoT:**

- CT1 sent reply LS **C1A160062 / S2-162297** with following answer.
 - CT1 would like to confirm that UE is NOT allowed to send data via NAS before the completion of TAU procedure.
- There was an alternative proposal on active flag handling for CP CloT optimization
 - Reusing active flag even for pending data over NAS (CP CloT optimization).

Options with Pros & Cons

| | Description | Pros | Cons |
|---------|--|--|---|
| Option1 | Introducing new flag which indicates the UE has pending data over NAS (Control Plane) | <ul style="list-style-type: none"> - Guaranteed delivery of pending data over NAS - MME can immediately release the connection if there is no MO data from the UE. Therefore the efficiency of power consumption of the UE can be maximized. - Can use RAI for fast connection release. | <ul style="list-style-type: none"> - Additional flag should be introduced * <i>How to implement is up to Stage 3</i> |
| Option2 | MME take into whether UE has Control Plane capable PDN connection. So MME can defer connection release with the UE. | No additional flag is required | The release of connection is delayed even there is no pending data over NAS. It increases UE's power consumption. |
| Option3 | Reusing Active flag even for pending data over NAS | No additional flag is required | <p>For UE using CP optimization only</p> <ul style="list-style-type: none"> - Legacy Active Flag usage should be modified <p>For UE using CP&UP simultaneously</p> <ul style="list-style-type: none"> - Unnecessary DRB is established and increases UE's power consumption - Result in delay of S1 release since RAI is not applicable once DRB is established. - For non NB-IoT UE, eNB may trigger measurement report. This also increases UE's power consumption. |

Proposal

- **In order to provide complete solution with regard to the UE's power efficiency, it is proposed to adopt Option 1 as below.**
- **Option 1: Introducing new flag which indicates the UE has pending data over NAS (CP CloT Optimization)**
 - Guaranteed delivery of pending data over NAS is possible
 - MME can immediately release the connection if there is no MO data from the UE via NAS. Therefore the efficiency of power consumption of the UE can be maximized.
 - Can use RAI for fast connection release. So helpful for UE's power efficiency