

3GPP TSG-RAN WG3 #112-e R3-212611

Online, 17 – 28 May, 2021

Agenda Item: 8.1

Source: Huawei (moderator)

Title: Summary of Offline Discussion on expected UE activity behaviour

Document for: Approval

1 Introduction

This contribution is to kick off the following discussion.

CB: # 14_ExpUEActivBehavior

- (HW,Len,Moto) Add PDU session level “expected UE activity behavior” from AMF to NG-RAN outside SMF container; NGAP+XnAP impacts

- (E///) Add PDU session level “expected UE activity behavior” from AMF to NG-RAN in SMF container; no XnAP impact (info can be sent in path switch message)

(HW - moderator)

[NWM] Summary of offline disc R3-212611

2 For the Chairman’s Notes

Propose to agree the following:

Agreement 1: For NGAP, the PDU session level “Expected UE Activity Behavior” is included in the following messages.

- PDU SESSION RESOURCE SETUP REQUEST
- INITIAL CONTEXT SETUP REQUEST
- HANDOVER REQUEST
- PATH SWITCH REQUEST ACKNOWLEDGE
- PDU SESSION RESOURCE MODIFY REQUEST

Agreement 2: For XnAP, the PDU session level “Expected UE Activity Behavior” is included in the S-NODE MODIFICATION REQUEST message.

Proposal 1: Continue to study whether the PDU session level “Expected UE Activity Behavior” is included within or outside of the SMF container for NGAP (Captured as “To Be Continued” in the Chairman Notes).

Based on the above, then the following two CRs are noted.

Proposal a: Note R3-212809 (revision of R3-212188) for NGAP

Proposal b: Note R3-212808 (revision of R3-212151) for XnAP

3 Discussion - first-round

All contributions to this meeting agree that the PDU session level “Expected UE Activity Behavior” should be provided to the NG-RAN node, based on the SA2 reply LS R3-211448.

But there are several issues to be further discussed as follows.

3.1 The location of PDU session level “Expected UE Activity Behavior”

R3-212150 proposes to include the new IE outside the SMF container, while R3-212334 proposes within the SMF container. Thus there are two different proposals.

Option 1: outside of the SMF container

Option 2: in the SMF container

Note that in section 5.4.6.2 in TS 23.501, it is specified that the SMF sends the SMF derived parameters to the AMF, then AMF uses it to determine the PDU session “Expected UE activity behaviour”.

Table 1: Cited from section 5.4.6.2 in TS 23.501

<p>The SMF uses the SMF-Associated parameters (e.g. Expected UE Behaviour parameters or Network Configuration parameters of the UE) to derive the SMF derived CN assisted RAN parameters tuning. The SMF sends the SMF derived CN assisted RAN parameters tuning to the AMF during the PDU Session establishment procedure and if the SMF-Associated parameters change the PDU Session modification procedure is applied. The AMF stores the SMF derived CN assisted RAN parameters tuning in the PDU Session level context. The AMF uses the SMF derived CN assisted RAN parameters tuning to determine a PDU Session level “Expected UE activity behaviour” parameters set, which may be associated with a PDU Session ID, as described below in this clause.</p>

In the same section, it is also specified that the AMF sends this information to the RAN.

Table 2: Cited from section 5.4.6.2 in TS 23.501

- AMF may provide to the RAN a PDU Session level "Expected UE activity behaviour" parameters set, e.g. considering the SMF derived CN assisted RAN parameters tuning, per established PDU Session. The PDU Session level "Expected UE activity behaviour" set of parameters is associated with and valid for a PDU Session ID. The RAN may consider the PDU Session level "Expected UE activity behaviour" parameters when the User Plane resources for the PDU Session are activated;

Thus the moderator tends to propose that option 1 (outside of the SMF container) is the correct understanding.

Question: Do you agree that the PDU session level "Expected UE Activity Behavior" should be included outside of the SMF container?

Feedback Form 1: The location of PDU session level "Expected UE Activity Behavior"

<p>1 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Agree</p>
<p>2 – Ericsson LM</p> <p>Ericsson: If the PDU Session level IE comes from SMF, we think it is logic to be included inside the SMF container.</p>
<p>3 – Lenovo Information Technology</p> <p>Yes.</p> <p>In addition to 23.501, also 23.502 in "Table 5.2.2.2.2-1: UE Context in AMF" describes that "SMF derived CN assisted RAN parameters tuning" are part of the UE context in the AMF.</p> <p>If RAN3 decides to go with Option 2 then SA2 needs to change/align the Rel-16 specs, which are frozen since more then 1,5 years. Unless there is something technically broken, we would suggest that RAN3 goes with option 1.</p>
<p>4 – ZTE Corporation</p> <p>Agree. Align with SA2 spec.</p>
<p>5 – Nokia France</p> <p>No. We think like Ericsson that to respect the AMF-SMF separation it is better to include inside the container.</p>

3.2 Impacted NGAP Messages.

Though included in different way, R3-212150 and R3-212335 propose the following NGAP messages should be considered to signal the PDU session level "Expected UE activity behaviour".

- PDU SESSION RESOURCE SETUP REQUEST
- INITIAL CONTEXT SETUP REQUEST

- HANDOVER REQUEST
- PATH SWITCH REQUEST ACKNOWLEDGE.

In addition, R3-212335 proposes the following NGAP messages would be impacted

- PDU SESSION RESOURCE MODIFY REQUEST

Note that in section 5.4.6.2 in TS 23.501, it is specified that the SMF may send the parameters tuning in case of the PDU session modification procedure.

Table 3: Cited from section 5.4.6.2 in TS 23.501

- The SMF uses the SMF-Associated parameters (e.g. Expected UE Behaviour parameters or Network Configuration parameters of the UE) to derive the SMF derived CN assisted RAN parameters tuning. The SMF sends the SMF derived CN assisted RAN parameters tuning to the AMF during the PDU Session establishment procedure and if the SMF-Associated parameters change the PDU Session modification procedure is applied

The moderator tends to propose that all the above NGAP messages should be considered to include the PDU session “Expected UE Activity Behavior”, i.e. the following messages are impacted.

- PDU SESSION RESOURCE SETUP REQUEST
- INITIAL CONTEXT SETUP REQUEST
- HANDOVER REQUEST
- PATH SWITCH REQUEST ACKNOWLEDGE.
- PDU SESSION RESOURCE MODIFY REQUEST

Please provide your view on this.

Feedback Form 2: Impacted NGAP Messages

<p>1 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>Agree</p>
<p>2 – Lenovo Information Technology</p> <p>Agree</p>
<p>3 – ZTE Corporation</p> <p>Agree</p>
<p>4 – Nokia France</p> <p>OK</p>

3.3 Whether/how the XnAP CR is needed?

R3-212151 proposes to add the PDU session “Expected UE Activity Behavior” in S-NODE ADDITION REQUEST. While R3-212334 think this is not needed given that this IE is included in the Path Switch Request Acknowledge message.

The moderator then intends to agree that there is **no need** to consider the new IE in the SN Addition Request.

But if the IE is included in the PDU SESSION RESOURCE MODIFY REQUEST, as discussed above, then it should be considered to include the PDU session “Expected UE Activity Behavior” in the SN Modify Request message.

Question: Do you agree the above analysis, i.e. the S-NODE MODIFICATION REQUEST should include the PDU session level “Expected UE Activity Behavior”

Feedback Form 3: whether/how the XnAP CR is needed

1 – HUAWEI TECHNOLOGIES Co. Ltd. Agree
2 – Lenovo Information Technology Yes
3 – ZTE Corporation Yes
4 – Nokia France OK

4 Discussion - 2nd-round

Based on the discussion above, the moderator provides the following proposals.

Proposal 1: For NGAP, the PDU session level “Expected UE Activity Behavior” is included outside of the SMF container.

Proposal 2: For NGAP, the PDU session level “Expected UE Activity Behavior” is included in the following messages.

- PDU SESSION RESOURCE SETUP REQUEST
- INITIAL CONTEXT SETUP REQUEST
- HANDOVER REQUEST
- PATH SWITCH REQUEST ACKNOWLEDGE.

- PDU SESSION RESOURCE MODIFY REQUEST

Proposal 3: For XnAP, the PDU session level “Expected UE Activity Behavior” is included in the S-NODE MODIFICATION REQUEST message.

Also for proposal 1, this seems the correct understanding according to the SA2/CT4 specs (see below).

1 Procedure descriptions in section 5.4.6.2 of TS 23.501

- SMF sends the “CN assisted RAN parameters tuning” to the AMF.

- Based on this, the AMF determines the “Expected UE activity behaviour”.

2 The IE contents of **CN assisted RAN parameters tuning** in 29. 518/29.502 and **Expected UE activity behavior** in 38.413

It can be observed that these two IEs are totally different. It is the AMF that generates the “Expected UE activity behavior” based on the “CN assisted RAN parameters tuning”

Please provide your views to the above proposals if you have different understandings.

Feedback Form 4: Comments to the above three proposals

1 – Ericsson LM

It is indeed interesting that SA2 specifies the above, that SMF sends the ”parameters” to AMF, and AMF determines, etc.

With this logic, we do not need to have UE/PDU session, the two level parameters at all.

If we do need the two levels parameters, we do not see why the PDU session level parameters are sent from AMF.

2 – HUAWEI TECHNOLOGIES Co. Ltd.

We understand E///’s comment. But we don’t see the need to change SA2/CT4 specificatons at this late moment, given that their specifications are pretty steady for R16.

5 Conclusion, Recommendations [if needed]