

**R19 FS\_eEDGE\_5GC\_Ph3 First Round NWM questions - Version 0.0.3**

**SA2**

<https://nwm-trial.etsi.org/#/documents/8830>

**Pre-SA2#163 NWM Discussion**

**(The contents below will be posted to NWM. Each Q needs ' Feedback Form'in NWM)**

**Title: NWM first round discussion to be considered for Rel-19 FS\_eEDGE\_5GC\_Ph3 conclusion**

**Source: Intel (FS\_eEDGE\_5GC\_Ph3 Rapporteur)**

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## 1. Introduction

### 1.1 Solutions in the TR

After SA2#162 meeting (April 2024), TR 23.700-49v0.3.0 includes 26 solutions as below.

**Table 1: Mapping of Solutions to Key Issues**

**Table 1:**

Solutions	Key Issues		
	1	2	3
#1: Edge computing handling by I-SMF	X		
#2: Edge computing handling by local SMF	X		
#3: Reducing impact of DNS message handling on central SMF for EAS (re)discovery based on offload to L-SMF	X		
#4: Enhanced EC Architecture with SMF selecting local SMF storing EC related information	X		

#5: Enhanced EC architecture with AMF selecting local SMF	X		
#6: Local management of EAS Deployment Information with local SMF	X		
#7: EAS deployment information report from L-UPF	X		
#8: Selecting an EAS server leveraging analytics		X	
#9: Solution of local UPF and EAS (re)selection jointly considering N6 delay and EAS load		X	
#10: L-PSA and EAS (re)selection based on N6 one-way and two-way delay measurement		X	
#11: Provision weight factor of DNAs from AF		X	
#12: NWDAF and SMF-based EAS and local UPF (re)selection		X	
#13: EAS Discovery taking account of EAS load in EASDF		X	
#14: EAS selection considering DNS historical handling records		X	
#15: The local EASDF assist for the EAS and local UPF (re)selection based on the AF provided N6 delay and EAS load information		X	

#16: Local UPF and EAS (re)selection considering access network delay and N6 delay information by 5GC or AF		X	
#17: EC Traffic Routing between local part of DN and central part of DN with IP replacement in EAS			X
#18: Supporting traffic routing between local DN and central DN within a PDU Session			X
#19: Traffic Routing between local DN and central DN over session breakout model			X
#20: EC Traffic Routing between local part of DN and central part of DN via PDU session			X
#21: Solution to traffic routing between local and central part of DN via tunnel(s)			X
#22: Establishment of connectivity between the local DN and central part of DN based on OAM			X
#23: Traffic steering between different parts of a DN			X
#24: Support traffic routing between local-DN and central-DN via the existing UP path of the PDU session and IP replacement			X

#25: EC Traffic Routing between local part of DN and central part of DN with UE IP address within IP header			X
#26: Solution on Enhancements for EAS (re)discovery and UPF (re)selection with reducing impact on central 5GC NFs	X		

### 1.2 General Guidance for the answer

Companies should provide clear Yes or No to each question.

In order to better understand the position, companies may also provide the reasons for Yes or No and potential compromise.

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## 2. Company views to be considered for conclusion

### 2.1 KI#1: Enhancements for EAS (re)discovery and UPF (re)selection with reducing impact on central 5GC NFs

#### 2.1.1 Company Views on solution direction for KI#1 conclusion

**Feedback Form 1: KI#1\_Q1: Can I-SMF based solution (i.e. #1, #5, #26) be supported?**

<p><b>1 – QUALCOMM Europe Inc. - Italy</b></p> <p>I-SMF option is sufficient.</p>
<p><b>2 – Samsung R&amp;D Institute UK</b></p> <p>Yes.</p>
<p><b>3 – CATT</b></p> <p>Yes.</p>
<p><b>4 – HUAWEI TECHNOLOGIES Co. Ltd.</b></p> <p>Negative, for this solution following issue also need be considered, e.g.</p> <p>1. The I(L)-SMF is always inserted into the signaling path and not based on the matched DNS message.</p>

<p>2. Complexity handling in the mobility handling procedure due to additional DNS context handling at the EASDF if the I(L)-SMF is changed.</p> <p>3. Homogenous support of AMF within the network is required. If not, additional issue on how to support the coexistence of the different type of AMF.</p> <p>As this solution requires the additional support of AMF, it is a quite big effort for operator to deploy this mechanism.</p>
<p><b>5 – Ericsson LM</b></p> <p><u>We support #26 for distributed anchor and multiple sessions and #1 for session breakout.</u></p>
<p><b>6 – LG Electronics France</b></p> <p>The I-SMF based solution can be supported with enhancement to the legacy.</p>
<p><b>7 – China Mobile Com. Corporation</b></p> <p>We support the I-SMF based solution.</p>
<p><b>8 – ZTE Corporation</b></p> <p>Yes, I-SMF based solution can be used together with the L-SMF based solution.</p>
<p><b>9 – Nokia UK</b></p> <p>Yes, an I-SMF based solution can be supported to reduce impact on central NFs.</p>

**Feedback Form 2: KI#1\_Q2: Can L-SMF based solution (i.e. #3, #4, #7) be supported?**

<p><b>1 – QUALCOMM Europe Inc. - Italy</b></p> <p>Not required.</p>
<p><b>2 – Samsung R&amp;D Institute UK</b></p> <p>Negative. Redundant impact on the architecture is expected.</p>
<p><b>3 – CATT</b></p> <p>No. It is not preferred to introduce a new NF.</p>
<p><b>4 – HUAWEI TECHNOLOGIES Co. Ltd.</b></p> <p>Yes, we support to include this L-SMF based solution. The reason is that:</p> <ol style="list-style-type: none"><li>1. The L-SMF can be inserted per matched DNS message.</li><li>2. No impact on the mobility handling procedure.</li><li>3. No impact on the AMF.</li></ol>

<p>This solution minimizes the impact to the network.</p>
<p><b>5 – Ericsson LM</b></p> <p>No, minimize the number of solutions. impacts likely underestimated and similar specification as I-SMF will be needed.</p>
<p><b>6 – LG Electronics France</b></p> <p>The L-SMF based solution can be supported with new services and procedures.</p>
<p><b>7 – China Mobile Com. Corporation</b></p> <p>Neutral. There are also some benitif of the L-SMF based solutions</p>
<p><b>8 – Intel Corporation (UK) Ltd</b></p> <p>Yes. We see it a useful solution to minimize the impacts to operator’s network by offloading some functionality to L-SMF for quick Edge Computing deployment.</p>
<p><b>9 – ZTE Corporation</b></p> <p>Yes. L-SMF can be deployed to manage the configuration in Local DN, without impact on the Anchor SMF.</p>
<p><b>10 – Nokia UK</b></p> <p>No, L-SMF based solution proposals in #3, #4 and #7 are not aligned with the existing mechanisms which are considered as the architectural assumptions. They propose SMF selection in a very different way than what has been used since Rel-15, i.e., AMF to perform SMF selection. Additionally, there is no clear benefit or sufficient requirements to introduce a new network function beyond SMF / I-SMF.</p>

**Feedback Form 3: KI#1\_Q3: Can two options of both I-SMF and L-SMF based solutions be supported?**

<p><b>1 – QUALCOMM Europe Inc. - Italy</b></p> <p>No</p>
<p><b>2 – Samsung R&amp;D Institute UK</b></p> <p>Not sure how the two options can co-exist, which needs further clarification.</p>
<p><b>3 – CATT</b></p> <p>See answers above.</p>

<p><b>4 – HUAWEI TECHNOLOGIES Co. Ltd.</b></p> <p>We prefer the L-SMF based solution to be standardized. However, to move forward we can live with to define two options together. If two option are all be considered, for one DNN/S-NSSAI only one option is adopted. Then for different DNN/S-NSSAI, different option can be considered.</p>
<p><b>5 – Ericsson LM</b></p> <p>No. <u>Only one solution (per connectivity model) should go forward. We think the principles of solution#26 is preferable for distributed anchor and multiple and #1 for session breakout</u></p>
<p><b>6 – LG Electronics France</b></p> <p>The one either I-SMF or L-SMF based solution is preferred and not both in order to minimize the impact.</p>
<p><b>7 – China Mobile Com. Corporation</b></p> <p>One solution is preferred.</p>
<p><b>8 – Intel Corporation (UK) Ltd</b></p> <p>Yes, it can be a way forward. When I-SMF based option is used, there is no need to use L-SMF based option, and vice versa. Operators can choose one option to deploy.</p>
<p><b>9 – ZTE Corporation</b></p> <p>Yes. In our view the L-SMF based solution is compatible with the I-SMF based solution so they can be deployed together.</p>
<p><b>10 – Nokia UK</b></p> <p>No, as the I-SMF based solutions can enable offloading with minimal impact to the existing mechanisms compared to the L-SMF based solutions, and an I-SMF based solution by itself completely addresses agreed goals of the KI#1, only I-SMF based solutions shall be supported.</p>

## 2.2 KI#2: Enhancement of EAS and local UPF (re)selection

### 2.2.1 Company Views on open aspects for KI#2 conclusion – N6 delay

#### Feedback Form 4: KI#2\_Q1: Should N6 delay per pair of L-PSA UPF and EAS?

<p><b>1 – QUALCOMM Europe Inc. - Italy</b></p> <p>Yes, this is sufficient.</p>
<p><b>2 – HuaWei Technologies Co.</b></p>

<p>YES. The N6 delays need to be measured per each connection, i.e. the pair of the L-PSA UPF and EAS. It should not per the DNAI, i.e. the measurement average result of all connection within this DNAI. If it is per DNAI, it cannot reflect the actual N6 delay between the EAS and L-PSA.</p>
<p><b>3 – Samsung R&amp;D Institute UK</b></p> <p>Yes.</p>
<p><b>4 – CATT</b></p> <p>Yes. The N6 delay should be considered per pair of L-PSA UPF and EAS and used for local UPF and EAS (re)selection.</p>
<p><b>5 – Ericsson LM</b></p> <p><u>We prefer that the AF provides the e2e or N6 Delay</u></p>
<p><b>6 – Ericsson LM</b></p> <p>Ignore #5</p> <p><u>Yes, but could also be per UPF and IPv4 range/IPv6 prefix</u></p>
<p><b>7 – LG Electronics France</b></p> <p>Yes.</p>
<p><b>8 – China Mobile Com. Corporation</b></p> <p>This question is not clear since per flow level also the pair of UPF and EAS. This question should be changed into per node level N6 delay for a pair of UPF and EAS</p>
<p><b>9 – Intel Corporation (UK) Ltd</b></p> <p>Yes.</p>
<p><b>10 – ZTE Corporation</b></p> <p>Yes</p>
<p><b>11 – Nokia UK</b></p> <p>No. N6 delay measurements should be performed between relevant measurement endpoints selected by 5GC and AF/edge hosting environment respectively. The measurement endpoint in 5GC side is(are) in UPF(s). The measurement endpoint in AF / edge hosting environment side can be in the service ingress point, EAS instance, or any other relevant endpoint considering firewall, NAT, or other networking configurations.</p>
<p><b>12 – China Telecom Corporation Ltd.</b></p> <p>Yes</p>



**Feedback Form 5: KI#2\_Q2: Should N6 delay per Traffic Flow level?**

<p><b>1 – QUALCOMM Europe Inc. - Italy</b></p> <p>This is not required.</p>
<p><b>2 – HuaWei Technologies Co.</b></p> <p>Needs further clarification. If the measurement is per flow, it seems the measurement can only be done when the packet is transferring. So not sure how the delay is measured for the target side. Besides, within one connection at the N6 interface, it seems there is no big difference for different flow.</p>
<p><b>3 – Samsung R&amp;D Institute UK</b></p> <p>Further clarification is required. When a given traffic flow for an EAS can be associated with the pair of L-PSA (or DNAI) and EAS at SMF, the estimated/measured N6 delay for the pair can be utilized for the traffic flow. Thus, not sure if N6 delay per Traffic Flow level has meaningful difference from the N6 delay per pair of L-PSA and EAS.</p>
<p><b>4 – CATT</b></p> <p>No. Don't see the benefit from this option.</p>
<p><b>5 – Ericsson LM</b></p> <p><u>No, we don't see how this is possible or needed</u></p>
<p><b>6 – LG Electronics France</b></p> <p>It should be per pair of candidate L-PSA UPF and EAS or it can also be the average between candidate DNAIs.</p>
<p><b>7 – China Mobile Com. Corporation</b></p> <p>We support the per flow level N6 delay, of course this flow level is based on average of some N6 delay measurement results. Almost the same idea as QoS monitoring. What's more, we think the true e2e(UE to EAS) is very important to the 5G system.</p>
<p><b>8 – ZTE Corporation</b></p> <p>No. The AF influence traffic routing request message include the target DNAI and the N6 traffic routing information, the N6 delay should be set per pair of DNAI and N6 traffic routing information.</p>
<p><b>9 – Nokia UK</b></p> <p>No. However, it is important to note that the measurements are performed considering the same path and constraints as the (potential) traffic flow between UE and application server. Currently, the measurement of the UL/DL packet delay between NG-RAN and PSA UPF can be performed on different levels of granularities, i.e. per QoS Flow per UE level, or per GTP-U path level, subject to the operators' configuration. To determine delay information within 5GC (N3/N9) for candidate DNAI(s) for which UE does not have</p>

active traffic flows delay can be determined per GTP-U path level. To determine delay information for N6 on each of candidate DNAI(s), existing mechanisms (e.g. defined in IETF) for the measurement(s) are used irrespective of whether there is currently active traffic flow between the UE and application server or not.

**Feedback Form 6: KI#2\_Q3: Should SMF collect N6 delay measurement from L-PSA UPF?**

<b>1 – vivo Mobile Communication Co.</b> yes.
<b>2 – QUALCOMM Europe Inc. - Italy</b> Yes.
<b>3 – HuaWei Technologies Co.</b> YES. It is better for SMF to collect N6 delay measurement from L-PSA UPF, as the 5GC could easily control the measurement and get the result whenever needed.
<b>4 – Samsung R&amp;D Institute UK</b> Yes.
<b>5 – CATT</b> Yes. The SMF can indicate the PSA UPF to report the N6 delay (between PSA UPF and EAS) measurements in real-time.
<b>6 – Ericsson LM</b> <u>We prefer that the AF provides the e2e or N6 Delay</u>
<b>7 – LG Electronics France</b> N6 delay measurement result can be provided either from the L-PSA UPF or the AF to the SMF or to the local EASDF.
<b>8 – China Mobile Com. Corporation</b> Yes, we support the SMF has the whole control for the N6 delay measurement.
<b>9 – Intel Corporation (UK) Ltd</b> Yes.

**10 – ZTE Corporation**

We prefer that AF provides N6 delay information to SMF so the SMF can select a proper target DNAI and N6 traffic routing information. It is questionable how the SMF can trigger the N6 delay measurement before the SMF receives the AF influence traffic routing request.

**11 – Nokia UK**

No. If the enhancement on EAS and L-PSA UPF selection is considered by means of N6 delay and EAS load, the AF can perform N6 delay measurements by utilizing the assistance information provided from 5GC. In this case, AF can make use of N6 delay and EAS load (based on its internal mechanisms) for EAS selection. For this case, UPF may not need to perform any N6 delay measurement, hence, SMF may not need to collect N6 delay measurement.

**12 – China Telecom Corporation Ltd.**

Yes.

**Feedback Form 7: KI#2\_Q4: Should SMF collect N6 delay measurement from AF?**

**1 – QUALCOMM Europe Inc. - Italy**

This is not necessary and adds unnecessary complexity.

**2 – HuaWei Technologies Co.**

NO. Not necessary. Besides, if the measurement is done by the AF, the feature will fully rely on AF deployment, which is not sufficient.

**3 – CATT**

Yes. It could be an alternative.

**4 – Ericsson LM**

Yes, it's preferred that the AF provides the N6 delay or the e2e delay.

This is also aligned with the SA6 solution for E2E and N6 delay measurements 23.433

If the SA6 solution is reused there is no further impact on SA2 specification

The only required impact is the AF providing N6 or e2e delay to SMF (via NEF).

**5 – LG Electronics France**

The N6 delay measurement result can be provided either from the AF or from L-PSA UPF to the SMF or the EASDF. In the case, if N6 delay per pair of L-PSA UPF and EAS or for each candidate DNAs is available from the AF with the existing traffic in the local part, it can be provided from the AF based on subscription.

<b>6 – China Mobile Com. Corporation</b> Not agree that the AF control this N6 delay measurement.
<b>7 – Intel Corporation (UK) Ltd</b> No
<b>8 – ZTE Corporation</b> Yes. The AF can know the target DNAI and N6 traffic routing information towards the EAS therefore it is possible to trigger the EAS to perform the N6 delay measurement.
<b>9 – Nokia UK</b> No. When AF performs N6 delay measurements with assistance from 5GC/UPF(s), AF makes the EAS selection, hence, 5GC/SMF would not need N6 delay measurements.
<b>10 – China Telecom Corporation Ltd.</b> Yes, the N6 delay measurement could be alternatively provided by AF and the SMF collects the measurement.

### 2.2.2 Company Views on open aspects for KI#2 conclusion – EAS load

**Feedback Form 8: KI#2\_Q5: Should EAS load be aware and used by SMF/EASDF for the purpose of (re)selecting EAS or L-PSA UPF?**

<b>1 – vivo Mobile Communication Co.</b> yes. positive for this.
<b>2 – QUALCOMM Europe Inc. - Italy</b> Not necessary and adds complexity and signalling load.
<b>3 – HuaWei Technologies Co.</b> YES. If the AF has given its requirement on the E2E delay, it means that the EAS load which contribute to the delay also need to be considered. There are two case: 1. EAS is owned by the operator. In this case, the EAS can give its EAS load information to the 5GC. Based on that information and N6 delay, the SMF can jointly consider the best UPF and EAS pair. 2. EAS is from 3rd party. In this case as the AF has given its E2E delay requirement and the EAS load really does impact the delay, hence it should be possible that EAS can expose its handing delay information to 5GC. By using that information and N6 delay information, the SMF can jointly consider the best UPF and EAS pair.

<p>Per above consideration, EAS load needs to be aware and used by SMF/EASDF.</p>
<p><b>4 – Samsung R&amp;D Institute UK</b></p> <p>Negative. burden on NF(s) due to signaling load and managing such dynamic external information within the CN. Utilizing DNS-based load balancing would be a best effort option to avoid such burden.</p>
<p><b>5 – CATT</b></p> <p>Yes. The EAS load should be aware and used by SMF and then SMF could select the proper EAS based on the EAS load.</p>
<p><b>6 – Ericsson LM</b></p> <p><u>No, Load is already considered on the application level.</u></p>
<p><b>7 – LG Electronics France</b></p> <p>Having less burden to the SMF, the local EASDF would be an option to manage the Edge related information and provides to the SMF when necessary. The local EASDF can be configured to subscribe both EAS load and N6 delay information to the AF and to inform the SMF for the purpose of EAS/L-PSA UPF (re)selection.</p>
<p><b>8 – China Mobile Com. Corporation</b></p> <p>We support the EAS load should be considered for the purpose of PAS and EAS selection</p>
<p><b>9 – Intel Corporation (UK) Ltd</b></p> <p>Neutral</p>
<p><b>10 – ZTE Corporation</b></p> <p>We only support to use weight factor for DNAI selection.</p>
<p><b>11 – Nokia UK</b></p> <p>No. AF and edge hosting environment understand best the site-specific requirements and deployments, and can best consider EAS load information in terms of granularity and frequency without need to consider loss of information due to (i) metric transformation, and (ii) use of means to mitigate impacts of signalling load because of the amount of information. Also, enabling SMF and EASDF to be aware of EAS load introduces significantly large amount of signalling overhead, and often lacks real time EAS load situation/information. Moreover, it is worth to note that there is no unique description/representation of EAS load that has being discussed in various SDOs. Furthermore, 3GPP may not be the best forum to define such information exchange.</p>

**12 – China Telecom Corporation Ltd.**

Yes

2.2.3 Company Views on open aspects for KI#2 conclusion – NWDAF assistance

**Feedback Form 9: KI#2\_Q6: Should NWDAF be involved to determine the N6 delay in the (re)selection procedure of L-PSA UPF?**

**1 – vivo Mobile Communication Co.**

positive for this.

**2 – QUALCOMM Europe Inc. - Italy**

This is not the function of NWDAF, currently there is no NWDAF support for this type of measurement/determination, and benefits are very much unclear.

**3 – HuaWei Technologies Co.**

The analytics provided by NWDAF is just statistic or prediction of the data based on the model trained by the label. Hence it is not the deterministic factor when the SMF selects the L-PSA and EAS. It is suggested that to decide above selection logic first. Then at the 2nd step we can check whether it is worth to do some further optimization using the NWADF based mechanism.

**4 – Samsung R&D Institute UK**

Positive. NWDAF can be utilized to release the overhead on real-time or frequent measurement.

**5 – CATT**

**Yes. The existing analytics data provided by NWDAF can be reused to determine the N6 delay. It could be a complementary solution for some use cases without very high real-time requirement or UPF/EAS can not support real-time measurement.**

**6 – Motorola Mobile Com Technology**

Yes. The NWDAF already provides analytics (i.e. DN Performance Analytics and Service Experience Analytics) that can be used by the SMF to select an EAS application server and L-PSA UPF to ensure lowest delay.

It is important to note that according to solution #8 the SMF determines EAS and L-PSA UPF during the DNS discovery procedure. As an EAS server has not been selected at this point in time by the UE to establish a session, any additional delay introduced in the DNS request/response message between the UE and the AS will have no impacts on the application performance/user experience.

<b>7 – Ericsson LM</b> No
<b>8 – LG Electronics France</b> The NWDAF involvement is unlikely to be needed because the N6 delay should be provided from the L-PSA UPF or the AF to the SMF
<b>9 – China Mobile Com. Corporation</b> There is no need to involve NWDAF for this KI#2.
<b>10 – Intel Corporation (UK) Ltd</b> In case SMF can know the N6 delay information from L-PSA UPF for AF, NWDAF analytics on N6 delay doesn't seem necessary and useful.
<b>11 – ZTE Corporation</b> No
<b>12 – Nokia UK</b> No. In R18 SMF may determine the DNAI based on various UPF selection criteria possibly including Service Experience or DN performance analytics for an Edge Application as described in TS 23.288, see TS 23.548 clause 6.2.3.2.2 EAS Discovery Procedure with EASDF step 20. This would not require determining N6 delay analytics.

**Feedback Form 10: KI#2\_Q7: Should NWDAF be involved to determine EAS load in the (re)selection procedure of EAS?**

<b>1 – vivo Mobile Communication Co.</b> positive for this.
<b>2 – QUALCOMM Europe Inc. - Italy</b> Same as KI#2_Q6, no.
<b>3 – HuaWei Technologies Co.</b> Same as KI#2_Q6
<b>4 – Samsung R&amp;D Institute UK</b> Negative. burdensome due to signaling load and managing dynamic external information within the CN.

<p><b>5 – CATT</b></p> <p>Yes. The AF can provide original EAS load to NWDAF for load analytics. The benefit is the both of EAS load statistics and predictions analytics can be provided to 5GC for EAS selection.</p>
<p><b>6 – Motorola Mobile Com Technology</b></p> <p>Yes. As pointed in other solutions (e.g. Solution #9) it is possible to retrieve EAS load information form the AF. The NWDAF can also use such EAS Load information as input for deriving analytics such as DN Performance Analytics, Service Experience Analytics.</p>
<p><b>7 – Ericsson LM</b></p> <p>No</p>
<p><b>8 – LG Electronics France</b></p> <p>Having such additional functionality in the NWDAF is not preferred because the EAS load information is already available to the AF according to the SA6 specification.</p>
<p><b>9 – China Mobile Com. Corporation</b></p> <p>There is no needed to involved NWDAF for this KI#2.</p>
<p><b>10 – Intel Corporation (UK) Ltd</b></p> <p>No. Since AF knows the real-time EAS load, there is no need to get EAS load analytics from NWDAF.</p>
<p><b>11 – ZTE Corporation</b></p> <p>No</p>
<p><b>12 – Nokia UK</b></p> <p>No. It is important to consider the scope and schedule of the study to allow timely completion of R19. Use of analytics is system optimization and there can be deployments that need to be operational also without assistance of analytics, e.g., in non-urban scenarios. AF and edge hosting environment understand best the site-specific requirements and deployments and can best consider EAS load information. Also, there is no guarantee that the AF/3rd party edge hosting owner has the will to share EAS load information with 5GC. Please see answer to Question 5 for further reasoning.</p>

## 2.3 KI#3: EC Traffic Routing between local part of DN and central part of DN

### 2.3.1 Company Views on open aspects for KI#3 conclusion



**Feedback Form 11: KI#3\_Q1: Should CAT-A solution: UL and DL traffic forwarding via UL CL over the existing PDU Session be supported?**

<p><b>1 – QUALCOMM Europe Inc. - Italy</b></p> <p>No, the issue related to change of IP address versus treatment of E2E encryption has not been resolved or even addressed.</p>
<p><b>2 – HuaWei Technologies Co.</b></p> <p>YES, for the traffic transferring via the existing PDU session, QoS and charging can be supported based on existing mechanism. Also the tunnel can easily be managed, i.e. the tunnel is released when the PDU session is released.</p>
<p><b>3 – Samsung R&amp;D Institute UK</b></p> <p>Yes. Positive.</p>
<p><b>4 – CATT</b></p> <p>Yes. The solution for both Session Breakout Connection Model and Distributed Anchor Point Model should be supported.</p>
<p><b>5 – Ericsson LM</b></p> <p><u>No, we don't currently see how CAT-A solutions can work. All of them have unreasonable expectations on what an EAS could implement, and thus having solutions in 5GC that cannot be used is not wanted.</u></p>
<p><b>6 – LG Electronics France</b></p> <p>No strong view.</p>
<p><b>7 – China Mobile Com. Corporation</b></p> <p>Yes, support this approach.</p>
<p><b>8 – Intel Corporation (UK) Ltd</b></p> <p>Yes.</p>
<p><b>9 – ZTE Corporation</b></p> <p>Yes, We also prefer that the tunnel is between L-PSA and PSA, without going through the ULCL/BP.</p>
<p><b>10 – Nokia UK</b></p> <p>No. CAT-A solutions captured in the TR (i) the addressing information used between the L-EAS and the C-EAS is quite unclear: if usage by L-EAS of the UE IP address as source address is required then this is a strong and not acceptable impact to the EAS. If the EAS is using a specific addressing information (e.g.</p>

port) for a given UE, communicating this information to the L-PSA (for the L-PSA to map to the PDU session) would be very cumbersome; (ii) are considering the processed traffic as UE traffic which is incorrect as the traffic being processed by an entity other than the UE (which creates a security concern if it is considered as UE traffic); (iii) cannot handle application-related traffic that needs to be exchanged between EAS and AS; (iv) require PDR/FAR configuration for each single UE for the processed traffic; and (v) charges UE for the traffic that is processed locally and centrally based on the application preference/deployment.

**11 – China Telecom Corporation Ltd.**

Yes, QoS and charging mechanism can be reused if over the existing PDU session, which is more efficient for monitoring and charging.

**Feedback Form 12: KI#3\_Q2: Should CAT-B solution (Sol#21): UL and DL traffic forwarding via direct tunnel between L-PSA UPF and C-PSA UPF independent of PDU Session be supported?**

**1 – HuaWei Technologies Co.**

Comparing to the PDU session based tunnel, we do not see big advantage. Also new mechanism for node level QoS and charging need to be involved. Also it is unclear when the tunnel need be established and released.

**2 – Samsung R&D Institute UK**

Neutral. may be effective for certain edge application logic/operations. But, aspects on the QoS/usage monitoring/charging need further investigated.

**3 – CATT**

No.

**4 – Ericsson LM**

Yes

**5 – LG Electronics France**

No strong view.

**6 – China Mobile Com. Corporation**

No, not agree with this method. What's more, the QoS guarantee and charging for this described approach should be further clarified.

**7 – ZTE Corporation**

No. It is unclear how the AF knows when the tunnel is established or released.

**8 – Nokia UK**

Yes. A direct tunnel between L-PSA and C-PSA UPF that is independent of PDU session should be supported in order (i) to enable connectivity between EAS and AS; (ii) to send application-related traffic that needs to be exchanged between EAS and AS before/during/after UEs start using the application; (iii) to enable single connection to transmit the processed traffic from/to multiple UEs; and (iv) to enable a simple PDR/FAR configuration for the transmission of the processed traffic. Also, this solution aligns with existing security procedures which is not the case for CAT-A solutions.

**9 – China Telecom Corporation Ltd.**

No, too much new mechanism needs to be defined.

**Feedback Form 13: KI#3\_Q3: Should both CAT-A solution and CAT-B solution be supported?**

**1 – QUALCOMM Europe Inc. - Italy**

No

**2 – HuaWei Technologies Co.**

From our view, we prefer only CAT A. But to move forward we can live with two options both be specified if the questions in KI#3\_Q2 can be clarified. Then depending on operator's configuration, one of the above options can be selected for one DNN/S-NSSAI.

**3 – Samsung R&D Institute UK**

Both options can be considered to cover various application logic/operations that require traffic routing between local and central parts of DN.

**4 – CATT**

See answers above.

**5 – Ericsson LM**

No, only CAT-B

**6 – LG Electronics France**

No strong view but prefer the one either CAT-A or CAT-B to be selected considering impacts to the legacy.

**7 – China Mobile Com. Corporation**

Seems no need for two solutions. prefer one solution.

**8 – Intel Corporation (UK) Ltd**

Yes, it can be a way forward.

**9 – ZTE Corporation**

prefer one solution.

**10 – Nokia UK**

No, only CAT-B should be supported. Please see reasons explained as part of answers to Questions 1 and 2.

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### 3. Any other comments or questions?

**If there are any other comments or questions you would like to provide for second round NWM discussion, please provide them for consideration.**

#### **Feedback Form 14: Further questions or comments**

**1 – LG Electronics France**

For Question on KI#2, whether the EAS load and/or the N6 delay information can be subscribed and managed by the other NF (e.g. EASDF)