**FS\_ATSSS\_Ph2 Agenda:**

CC:  July 29th (Wed.) (tdoc deadline July 24th (Fri.) @6 am Pacific Time)

- Review PCRs based on first come first serve, 20 minutes per PCR

Rapporteur Proposed Agenda for CC

3GPP Folder: <https://www.3gpp.org/ftp/Email_Discussions/SA2/Jul.29.FS_ATSSS_Ph2%20Pre%20SA2%23140E%20CC>

Attendees:

Huawei, Broadcom, Tencent, Firstnet, AT&T, LG, Charter, Interdigital, Samsung, Apple, Cablelab, Ericsson, BT, Google, Matrixx, Motorola, Nokia, Vodafone, Intel, ZTE, Spirent, Telecom Italia, Qualcomm, China Mobile

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| Item#'s  | Solution Titles | Key Issue#'s | Contributor(s)  |
| 1 | Solution for KI1 of ATSSS about new steering mode <https://www.3gpp.org/ftp/Email_Discussions/SA2/Jul.29.FS_ATSSS_Ph2%20Pre%20SA2%23140E%20CC/Solution%20for%20KI1%20of%20ATSSS%20about%20new%20steering%20mode.docx> | KI#1 | Huawei |
| Meeting Notes: * ZTE asked if the measurement done at the same time or in sequential because in Rel-16, PMF is already supporting RTT measurement. Hence, why would a new steering mode is needed? HW responded that, the new steering mode can reuse the existing PMF capability to support this new steering mode. This new steering mode is just to propose the measurement of the RTT differences between the two accesses. This should be clarified in the proposal.
* E/// asked how the threshold of the differences is determined? HW responded that, it is determined by the network which is then sent to the UE and to the UPF. This should be clarified in the proposal.
* Spirent asked to HW to clarify in the proposal for which protocol is used to support this steering mode. Nokia suggested that it should be possible to use either the protocol defined by CT or via MPTCP.
* Please provide more feedback Hulin over SA2 Discussion mailing list before the tdoc deadline.
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| 2 | S2-200xxxx\_QUIC-LL\_update\_v3<https://www.3gpp.org/ftp/Email_Discussions/SA2/Jul.29.FS_ATSSS_Ph2%20Pre%20SA2%23140E%20CC/S2-200xxxx_QUIC-LL_update_v3.doc> | KI#2 | Moto |
| Meeting Notes: * Nokia asked how would QUIC-LL proposed by Moto et al to support traffic splitting for bandwidth aggregation? Moto responded that, QUIC protocol itself does not support traffic splitting for bandwidth aggregation, unless an additional packet sequence number is added so that the receiver can identifying the ordering of the packet. In order to support traffic splitting for bandwidth aggregation, MPQUIC-LL as proposed by other Moto et al is needed. However, the current IETF schedule for MPQUIC may not be in time for Rel-17. Hence, traffic splitting support would have dependency on IETF on MPQUIC.
* Huawei asked about the proportion between the QoS flow and the QUIC connection in Moto et al proposal, e.g. 1:1 or n:1 etc.? In case of unidirectional traffic, how would the QUIC RTT and loss ratio performance measurement be done? Also, does QUIC-LL support TCP traffic? In addition, in Rel-16, the QoS rules are separated from the ATSSS rules with the expectation that these two types of rules are targeted to different functional entities, but in QUIC-LL proposal, such separation is no longer true. E/// further clarified HW’s question that, QoS rules are intended to apply E2E, however, in QUIC-LL proposal, the QoS rules are associated with the link local IP addresses, hence, the impacts need to be further assessed. E/// also asked how Reflective QoS can be supported in this QUIC-LL. Moto agrees that further clarifications are needed.
* AT&T asked if QUIC-LL to impose any change to the QUIC protocol in IETF? Moto responded that, there is no intent to change the QUIC protocol in IETF.
* BT asked if this revision of Moto et al still supports unreliable tunnelling transport? Moto responded that the unreliable tunnelling transport is still part of this proposal.
* Please provide more feedback over the SA2 Discussion mailing list to make this proposal more complete.
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| 3 | S2-200bxxx -Update QUIC solution to solve ENs<https://www.3gpp.org/ftp/Email_Discussions/SA2/Jul.29.FS_ATSSS_Ph2%20Pre%20SA2%23140E%20CC/S2-200bxxx%20-Update%20QUIC%20solution%20to%20solve%20ENs.docx> | KI#2 | Huawei |
| Meeting Notes: * Nokia commented that the optional support for the QUIC security which is currently mandatory in the proposed RFC should be consulted with IETF as part of the 3GPP ATSSS’s requirement. Such requirement applied to all QUIC/MPQUIC related proposals in this study.
* E/// asked for the current HW’s proposal, it is intended to one QUIC connection on both accesses. This implies that, one packet could be over 3gpp access and the next packet could be over non3gpp access. However, the two accesses could have different round trip time or capacity, and the current QUIC design will not know that this is the case. This could impact the congestion control handling in QUIC. Also, in current HW’s proposal, there is no description on the QoS handling. All of these need to be clarified. Nokia and Moto agreed with E///’s concern.
* More specifically, Moto asked, given QUIC supports multiplexing of multiple PDUs into the same QUIC packet. If there are different QoS requirements for different PDUs, how this can be handled in HW’s proposal. In Moto et al proposal, different QUIC connections will have their corresponding QoS profile, but this is not the case for HW’s proposal. HW responded that, the intent is to one QUIC connection per IP flow, and the QUIC itself supports reordering. Hence, even when the packets for the same IP flow are sent out of order over the two accesses, QUIC would be able to re-order them.
* Moto commented that, in such case, this implies the UE will need to setup a new QUIC connection whenever there is a new IP flow. Tencent raised concern that, such approach may impose too many QUIC connections and additional setup delay. HW argued that, for a given UE, there should not be so many IP flows. E/// believed more time more analysis are needed since different accessed would have different QoS performance.
* Moto commented that, QUIC’s performance measurement is based on QUIC connection and not based access. HW responded that, her proposal is to rely on the use of PMF developed by 3GPP, e.g. HW’s another new proposal for autonomous steering mode and not to rely on QUIC’s performance measurement.
* Tencent commented QUIC’s congestion control is based on QUIC’s performance measurement and not based on PMF. This may create an issue for QUIC congestion control. HW does not necessarily see this as an issue. Regardless, support for PMF is needed in 3GPP regarding which solution is adopted. Hence, why it can’t be used to support HW’s proposal.
* Tencent suggested that, QUIC supports multiple subflows. Hence, HW may want to take it into consideration as the way to support QoS for different IP flows. HW agrees to look into this, but her concern with this subflow approach may not work for packet re-ordering to support traffic splitting.
* Moto commented that it is unclear whether HW’s proposal complies to QUIC given that QUIC’s congestion control is not aware of two different accesses and hence, the measurement may not be accurate to support the QUIC congestion control.
* Please provide more feedback over the SA2 Discussion mailing list to make this proposal more complete.
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| 4 | S2-200xx\_Clarification on steering mode\_23700<https://www.3gpp.org/ftp/Email_Discussions/SA2/Jul.29.FS_ATSSS_Ph2%20Pre%20SA2%23140E%20CC/S2-200xx_Clarification%20on%20steering%20mode_23700.docx> | KI#1 | Huawei |
| Meeting Notes: * Moto asked what is the different between this autonomous steering mode vs. redundant steering mode that was proposed before in Rel-16. HW responded that, redundant steering mode applied to single packet to be sent on both accesses. Autonomous steering mode is to distribute the packets over both accesses autonomously and can be used for load balancing.
* Nokia asked if this steering mode requires NO additional parameter (e.g. weight factor). HW responded that, the intent of this steering mode is based on UE and the network implementation decision to decide on how to distribute the load across the two accesses. Nokia asked HW’s proposal should clarify this aspect.
* ZTE asked if this steering mode is independent on which steering functionality is supported? HW responded that this is a generic proposal.
* Apple asked if HW has considered to provide some inputs to IETF on the new steering mode proposal towards QUIC/MPQUIC? Apple believes that the support of steering mode would have impacts to the operational logic transport protocol, i.e. transmitting the packet over specific access. Moto agrees with Apple if the steering mode support also impacts the packet scheduler.
* Apple further commented that, today IETF has already started to look into extending the IETF drafts to support various steering modes. Hence, it is important that for 3GPP to inform IETF for any new proposal on the steering mode requirement on QUIC/MPQUIC.
* HW responded that, there are two ways to integrate the steering mode support from 3GPP with IETF. The first approach is what Apple has proposed, and the second approach is similar what has been done in Rel-16 where 3GPP documented the steering mode in 3GPP specifications and inform IETF on such info. Afterall, the implementation affects only 3GPP UEs and 3GPP network functions.
* Apple commented that, protocol such as MPTCP is implemented at the OS layer in a generic way. It does not differentiate whether it is specific to 3GPP or not. Hence, it is important for IETF to know upfront on the type of steering mode support in advance. Moto agreed with Apple’s concern and commented that such issue also applied to Rel-16 steering modes for MPTCP as well.
* HW agreed with Apple and Moto assessment. Rapporteur agreed to include the steering mode alignment consideration into the LS to be sent to IETF in the next SA2#140E eMeeting.
* Please provide more feedback over the SA2 Discussion mailing list to make this proposal more complete.
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| 5 | S2-200bxx\_Loss rate and jitter measurement\_23700<https://www.3gpp.org/ftp/Email_Discussions/SA2/Jul.29.FS_ATSSS_Ph2%20Pre%20SA2%23140E%20CC/S2-200bxx_Loss%20rate%20and%20jitter%20measurement_23700.docx> | KI#1 | Huawei |
| Meeting Notes: * ZTE asked why the jitter proposal applied to non-GBR? Tencent commented that there is no jitter KPI for GBR traffic in 3gpp. HW agreed to restore the jitter measurement for GBR traffic.
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| 6 | S2-200xxxx\_FS\_ATSSS\_Ph2 Eval Criteria Discussions<https://www.3gpp.org/ftp/Email_Discussions/SA2/Jul.29.FS_ATSSS_Ph2%20Pre%20SA2%23140E%20CC/S2-200xxxx_FS_ATSSS_Ph2%20Eval%20Criteria%20Discussions.doc>*
 | Eval | Rapporteur |
| Meeting Notes: * In order to find a way to conclude the study, rapporteur has prepared a draft moderated paper to collect the evaluation criteria for different key issues. The proposed evaluation criteria in this document are the initial suggestions and can be updated or removed based on the feedback. Also, any new suggested criteria are welcome. The goal is to collect all the feedback before SA2#140E eMeeting so that the criteria can apply to the conclusion discussions after the SA2#140E eMeeting assuming that all the solutions are relatively complete by then.
* Another objective of this moderated paper is to collect any IETF dependency as soon as possible (i.e. before the tdoc deadline for SA2#140E eMeeting) so that we can send question and/or requirements (e.g. optional security support in QUIC/MPQUIC and availability for MPQUIC working group draft) to IETF based on our study.
* E/// asked if we need to specify which candidate working group drafts that 3GPP is interested during the SA2#140E eMeeting? Rapporteur suggested that the reference of the IETF drafts should be waited until we have better idea on the outcome of our study. After some discussions, we agree that Aug. eMeeting sends only the requirements, questions and timeline.
* Broadcom commented that, in term of the security question to IETF, there are two different considerations – how is it related to the implementation of QUIC Proxy vs. terminating QUIC at the UPF. Based on the discussions so far, our security question is more related to the QUIC Proxy implementation scenario and this security issue is not all equal for the two approaches that we have solutions so far. Furthermore, unlike the MPQUIC drafts, the QUIC related drafts are already working group drafts. Hence, any additional requirement towards QUIC related working group drafts would be questionable.
* Tencent commented that, QUIC’s security is based on TLSv1.3 of which the support of security is mandatory. Nokia agreed with Tencent.
* HW also commented that, in HW’s proposal, two options were proposed – (a) extending TLSv1.3 to support non-encryption, and (b) skipping the TLS layer in QUIC. May be we can mention these two possible options to IETF to make security optional. Nokia suggested that, at the end of the day, it is IETF to decide on the solution for optional support for security.
* Tencent commented that the very recent IETF QUIC discussions have already been considering to decrease the byte overheads and encryption overheads.
* ZTE asked for clarification for the optional security support consideration in our study. Is the goal to make the entire QUIC security support to be optional, or just the encryption part but not the header integrity protection part.
* Apple commented that, it would be impossible to ask IETF to remove the QUIC security, however, during the protocol handshake, there are separate keys negotiated for the header protection and the user plane traffic protection. It should be feasible to extend the option in TLS to allow skipping the user plane protection.
* One issue was brought up by Broadcom regarding HW’s proposal for the E2E encryption support in the transparent mode. How would the QUIC proxy in HW’s proposal handle such scenario? Unfortunately, due to the voice quality, I don’t quite catch the issue. Please HW and Tencent clarify the discussions and the considerations for this particular issue.
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