**3GPP TSG-RAN WG2 Meeting #127 R2-2407773**

**Maastricht, Netherlands, Aug 19th – 23rd, 2024**

Agenda Item: 8.1.4

Source: InterDigital Inc. (Rapporteur)

Title: Report of [AT127][021][AIML PHY] UE side data collection

Document for: Discussion, Decision

# Introduction

This contribution is aimed at reporting the discussion and results of the following offline discussion:

* [AT127][021][AI PHY] UE Data Collection (Interdigital)

 Intended outcome: face to face discussion on table FFS

 Deadline: 08-23-24

# Discussion

The table below regarding the different data collection options for UE side model training has been proposed to be captured in the TR ([R2-2407209](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_127/Docs/R2-2407209.zip)):

Table 7.2.1.3.2-1. Analysis of different data collection options for UE-side model training.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  OptionAspect | Option 1a) | Option 1b) | Option 2 | Option 3 |
| First termination entity | Training entity (e.g., Over-The-Top (OTT) server) | Server for data collection for UE-side model training | Inside the CN  | Inside OAM domain |
| AI/ML-specific Data Transfer Path | UE to OTT server via either 3GPP or non-3GPP network | UE ->Server for data collection for UE-side model training/OTT server(Note 4) | UE-> CN -> Server for data collection for UE-side model training/OTT server(Note 4) | UE-> gNB->OAM -> Server for data collection for UE-side model training/OTT server(Note 4) |
| UP/CP tunnel | UP tunnel (for the case of data transfer from UE to OTT server via 3GPP network) | UP tunnel  | CP tunnel (provided that the data volume remains within the NAS signalling capacity)FFS: UP tunnel FFS: LPP | CP tunnel (provided that the data volume remains within the RRC signalling capacity)FFS: UP tunnel |
| Protocol layer for data transfer | Application layer | Application layer | NAS layer for CP tunnelFFS: the protocol layer for UP tunnel | RRC layer for CP tunnelFFS: the protocol layer for UP tunnel |
| Controllability of MNO on data transfer | No AI/ML specific controllability | Controllability can be achieved.FFS: level of controllability | Full controllability (Note 1) | Full controllability(Note 1) |
| Solution for network controllability | N/A (the OTT server can directly request data from the UE) | Example: per PDU sessions  | Via NAS procedureFFS: impact to other layers | Via RRC procedure |
| Possible Options for Visibility of data content in MNO and Data format (Note 2, Note 3)  | No standardized visibility | FFS  | Opt A) Full visibility for standardized data content.FFS: Opt B) Partial visibility for partially standardized data content. FFS Opt C) No standardized visibility.FFS: meaning of ‘partial/partially’ and how to achieve different levels of visibility. | Opt A) Full visibility for standardized data content.FFS: Opt B) Partial visibility for partially standardized data content. FFS Opt C) No standardized visibility.FFS: meaning of ‘partial/partially’ and how to achieve different levels of visibility |
| Involved WGs | N/A | SA2, SA3, RAN2, RAN3, CT1 | SA2, SA3, RAN3, RAN2, CT1 and CT3 | RAN2, RAN3, SA3, SA5, FFS SA2 |
| * Note 1: Full controllability: The MNO has the capability to manage data transfer to the server for UE-side data collection. This includes initiating, terminating, and fully managing data transfer. FFS if further refinements/modifications to this definition are needed.
* Note 2: Visibility of data content signifies the capability of the MNO to, at least, be aware of, access, and comprehend the data during transfer. FFS if further refinements/modifications to this definition are needed (e.g. on the capability of the MNO to modify the collected data).
* Note 3: The following options are identified to realize the different levels of data content visibility to the MNO:
	+ Full visibility for standardized data content.
	+ Partial visibility for partially standardized data content.
	+ No standardized visibility.
* Note 4: The potential involvement of NF or other higher layers entities/functionalities should be discussed in other WGs. Impact on the OTT server is not in the scope of RAN2 discussion.
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**Q1: Definitions:**

Controllability

TP:

Full controllability: The MNO has the capability to manage data transfer to the server for UE-side data collection. This includes initiating, terminating, and fully managing data transfer. FFS if further refinements/modifications to this definition are needed

(CMCC)[R2-2406965](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_127/Docs/R2-2406965.zip)(Proposal 1)

Full controllability on data collection means all the procedures as well as the control info, e.g. data collection configuration, involved in the procedures for data collection are understandable and managed by MNO, MNO can do adjustment anytime without any SLA with third party.

(Vivo)[R2-2406389](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_127/Docs/R2-2406389.zip) (Proposal 6)

Introduce another level of MNO controllability on data transfer, i.e., partial controllability. The definition can be: The MNO has the capability to permit or reject data transfer between UE and the server. In addition, the MNO is aware of the initiating and terminating of data transfer.

(Futurewei) [R2-2407490](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_127/Docs/R2-2407490.zip) (Proposal 3)

Define the following terminologies related to the level of controllability.

• Full Control: The MNO has the capability to manage data transfer to the server for UE-side data collection. This may include initiating, terminating, and fully managing the volume of data. For example, the UE should start the data transfer only if that is allowed by the MNO/NW.

• Partial Control: The MNO has some degree of control over the data transfer but may be limited by certain factors such as agreements with third parties. For example, the UE can start the data transfer without involvement of MNO/NW as long as the tunnel is available.

• No Control: The MNO has no capability to influence or manage the data transfer.

*Meeting notes:*

Visibility

TP:

Visibility of data content signifies the capability of the MNO to, at least, be aware of, access, and comprehend the data during transfer. FFS if further refinements/modifications to this definition are needed (e.g. on the capability of the MNO to modify the collected data).

(CMCC)[R2-2406965](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_127/Docs/R2-2406965.zip)(Proposal 2)

Full visibility of data content signifies the capability of the MNO to decode and process, e.g. modify/use, the data using 3GPP spec and/or standardized spec out of 3GPP without SLA with third party.

*Meeting notes:*

**Q2: Level of controllability (for option 1b):**

- *Full controllability possible:* NEC, Ericsson, ZTE/QC (if server is inside MNO),

- *Not possible (or only possible via SLA):* Samsung, (Apple), Nokia, Huawei

- *Partial controllability:* Vivo

*Meeting notes:*

**Q3: Level of visibility**

*No (standardized) visibility for option 1b:* Apple, CATT

*Coarse level of visibility achievable for option 1b:* MediaTek

*Full visibility for the server is inside MNO for option 1b:* ZTE

*Full visibility for all solutions except 1a (i.e., standardized content):* Vivo, QC, Ericsson

*Partial (standardized + transparent container):* Intel/Xiaomi/MediaTek/CATT/(Samsung?) (option2/3)

* *QC: partial visibility for 1b is straightforward, but it is not for solution 2/3 (e.g., currently we have no transparent containers for QoE reporting?)*

*Meeting notes:*

**Q4: FFSs regarding UP support for solution 2 and 3.**

* UP option for solution 2:
	+ **Yes:** (NEC, vivo, Xiaomi, ZTE, Ericsson) (need to check with SA2),
	+ **No:**  Apple, Samsung, CATT, Huawei
* UP option for solution 3:
	+ **Yes:** ZTE (UP between OAM and server)
	+ **No:** NEC, Vivo, Xiaomi, Apple, Samsung, CATT, Huawei

*Meeting notes:*

# Conclusion