**3GPP TSG-S4 Meeting # 128 *S4-240943***

Jeju Island, KR, 20-24 May 2024

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| *CR-Form-v12.2* | | | | | | | | |
| **PSEUDO CHANGE REQUEST** | | | | | | | | |
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|  | **26.804** | **CR** | **0009** | **rev** |  | **Current version:** | 18.1.0 |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | FS\_AMD: Common Service- and Network-Assisted Streaming | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Tencent | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | FS\_AMD | | | | |  | ***Date:*** | | | 24-05-11 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | Adding depoloyment scenarios. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Two deployment scenarios are described. One additional one is listed for completeness but not proposed to be studied. | | | | | | | | |
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| ***Consequences if not approved:*** | | Lack of support | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **1st Change** |

### **X.0 References**

[ETSI-CS] ETSI TS 103 998: "Publicly Available Specification (PAS); DASH-IF: Content Steering for DASH", http://www.etsi.org/deliver/etsi\_ts/103900\_103999/103998/01.01.01\_60/ts\_103998v010101p.pdf

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| **2nd Change** |

## X.1 Description

Editor's Note: TODO.

## X.2 Collaboration Scenarios

## X.2.1 Content steering and distribution inside the trusted domain

In this collaboration, content steering is provided by the Mobile Network Operator between various distribution networks (internal CDNs). The content steering server also exists inside the trusted DN. Figure X.2.1-1 shows such a scenario.

UE

5GMSd

Client

5GMSd-Aware Application

5GMSd AS

External DN

5GMSd

Application Provider

M1d

M2d

Trusted DN

M4d

5GMSd AF

M5d

PCF

M8d

N5

Steering Server

Instance 1

Instance 2

Figure X.2.1-1: Content steering inside Trusted DN

In this case:

1. The MNO provides multiple 5GMSd AS instances to deliver the content to/from the UE at reference point M4d.
2. The MNO also provides a content steering server as part of the 5GMSd AS.
3. The presentation manifest published by the 5GMSd Application Provider at reference point M2d does not include any content steering information. The MNO manipulates the manifest by adding Base URLs, as well as the steering server information, before providing it the 5GMSd Client at reference point M2d.
4. During streaming, the UE makes requests to the content steering server based on the information provided. The content steering operation is internal to the MNO and opaque to the 5GMSd Application Provider.

## X.2.2 Content steering outside the trusted domain with mixed content delivery inside and outside

In this collaboration, content steering is provided by an outside entity in the external DN steers the UE to get the content among multiple delivery networks, which one of them is the MNO network. Figure X.2.2-1 shows such a scenario.

UE

5GMSd

Client

5GMSd-Aware Application

5GMSd AS

External DN

5GMSd

Application Provider

M1d

M2d

Trusted DN

M4d

5GMSd AF

M5d

PCF

M8d

N5

Steering Server

Instance 1

Distribution Server Ext

Figure 5.2.4.1-1: Content steering outside Trusted DN

In this case:

1. The MNO provides a 5GMSd AS for delivering the content to/from the UE. The same content is also available from other distribution networks outside the MNO’s trusted DN. The 5GMSd Application Provider has the information of the external distribution networks. The existence and nature of these networks are not necessarily known to the MNO.
2. The content steering server is also located in the external DN.
3. The 5GMSd Application Provider provides a presentation manifest at reference point M2d that contains Base URLs for the MNO’s 5GMSd AS as well as the external distribution networks and also information regarding the content steering service.
4. The 5GMSd Client may use the MNO’s 5GMSd AS at reference point M4d, or an external network depending on the content steering server’s responses.

## X.2.3 Content steering outside and content delivery inside trusted domain

In this collaboration, content steering provided by an outside entity in the external DN steers the UE to retrieve content from multiple 5GMSd AS instances, all of which are deployed in the Trusted DN of the MNO. Figure X.2.3-1 shows such a scenario.

UE

5GMSd

Client

5GMSd-Aware Application

5GMSd AS

External DN

5GMSd

Application Provider

M1d

M2d

Trusted DN

M4d

5GMSd AF

M5d

PCF

M8

N5

Steering Server

Instance 1

Instance 2

Figure X.2.3-1: Content steering outside Trusted DN while distribution inside

In this case:

1. The MNO provides 5GMSd AS instances for delivering the content to/from the UE.
2. The 5GMSd Application Provider has the information about the MNO 5GMSd AS instances.
3. The content steering server is located in the external DN.
4. The Application Provider provides a presentation manifest at reference point M2d that contains Base URLs for the MNO’s 5GMSd AS instances, as well as the information regarding the external content steering service.
5. The 5GMSd Client uses one of the MNO’s 5GMSd AS instances at reference point M4d depending on the content steering server’s responses.

## X.2.4 Content steering outside and content delivery inside trusted domain

In this collaboration, content steering provided by an outside entity in the external DN steers the UE to get the content among multiple delivery networks, all of which are the MNO network. Figure X.2.3-1 shows such a scenario.

UE

5GMSd

Client

5GMSd-Aware Application

5GMSd AS

External DN

5GMSd

Application Provider

M1d

M2d

Trusted DN

M4d

5GMSd AF

M5d

PCF

M8d

N5

Steering Server

Instance 1

Instance 2

Figure X.2.3-1: Content steering outside Trusted DN while distribution inside

In this case:

1. The MNO provides all 5GMSd AS instances for delivering the content to/from the UE.
2. The 5GMSd Application Provider has the information of the MNO 5GMSd AS instances.
3. The content steering server is located in the external DN.
4. The Application Provider provides a presentation manifest at reference point M2d that contains Base URLs for the MNO’s 5GMSd AS instances as well as the information regarding the external content steering service.
5. The 5GMSd Client selects one of the MNO’s 5GMSd AS instances at reference point M4d depending on the content steering server’s responses.

Since the 5GMSd Application Provider does not have detailed information about the MNO 5GMSd AS instances, this deployment scenario seems not to be practical, and is therefore not studied further in this Key Issue.

## X.3 Architecture mapping

3. Based on existing architectures, develop one or more deployment architectures that address the key topics and the collaboration models.

## X.4 High-level call flow

4. Map the key topics to basic functions and develop high-level call flows.

## X.5 Gap analysis and requirements

5. Identify the issues that need to be solved.

## X.6 Candidate solutions

6. Provide candidate solutions including call flows, protocols and APIs for each of the identified issues.

## X.7 Summary and conclusions