**3GPP TSG-SA2 Meeting #143-E**  ***S2-200YYYY***

**Online, 24th Feb 2021 – 9th Mar 2021**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **23.502** | **CR** | **YYYY** | **rev** | **-** | **Current version:** | **16.7.1** |  |
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| *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 |  | Radio Access Network |  | Core Network | **x** |

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| ***Title:***  | DCAMP related update of BSF services (23.502) |
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| ***Source to WG:*** | Oracle Corporation |
| ***Source to TSG:*** | SA2 |
|  |  |
| ***Work item code:*** | TEI17\_DCAMP |  | ***Date:*** | 2020-02-24 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *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 canbe 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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | This paper proposes DCAMP related update of BSF services. The purpose of the update is to:1. Allow discovery of PCF-AM by an AF/NEF (This covers the case where the UE is already registered at the time when the AF/NEF wishes to submit DCAMP related requests to PCF-AM).2. Allow discovery of PCF-SM by PCF-AM (This covers the case where the UE already has an SM Policy Association for the relevant S-NSSAI/DNN at the time when the PCF-AM receives DCAMP related request from the NEF/AF (either directly or via the UDR). Consequently, this will allow PCF-AM to subscribe at the PCF-SM for detection of ‘start/stop of application’ event). 3. Allow BSF to notify PCF-AM about a newly registered PCF-SM (This covers the case where the UE does not have an SM Policy Association for the relevant S-NSSAI/DNN at the time when the PCF-AM receives DCAMP related request). |
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| ***Summary of change:*** | 1. Update of Nbsf\_Management\_Register and Nbsf\_Management\_Discovery, such that it will support registration and discovery of a PCF-AM.2. Add new service operations to Nbsf\_Management service. The new service operations are subscribe, unsubscribe and notify. This will allow PCF-AM to get notified about a new PCF-SM serving the combination of a SUPI, DNN, S-NSSAI.3. Add PCF-AM as a consumer of the BSF for the sake of discovery (or subscription for the status) of PCF-SM).Key changes: 1. PCF registration type attribute is added to PCF registration at the BSF. The value of this attribute can be ‘PCF-SM’ or ‘PCF-AM’. (This will indicate to the BSF whether the registration is PDU Session related (PCF-SM) or whether it is Access and Mobility related (PCF-AM))2. The category of some attributes (eg UE address) is changed from mandatory to conditional based on the registration type (eg In Nbsf\_Management\_Register service operation UE address is a required input attribute only if PCF registration type is ‘PCF-SM’. (The reason for this change is: so far we used to have only PCF-SM performing registration at the BSF. Now we also have PCF-AM performing registration at the BSF) |
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| ***Consequences if not approved:*** | DCAMP functionality will not work properly, because: 1. PCF-AM will not be able to get notified when a new PCF-SM serves a combination of a SUPI, DNN, S-NSSAI. Consequently, PCF-AM will not know which PCF-SM to contact for sake of getting notified when a DCAMP related application starts or stops. 2. AF/NEF will not be able to discover PCF-AM, which serves an AM Association for a SUPI or GPSI. Consequently, AF/NEF will not be able to influence PCF-AM decisions for RFSP index value and/or SAR when specific services are in use by a UE. |
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| ***Clauses affected:*** | 5.2.13.1, 5.2.13.2.1, 5.2.13.2.2, 5.2.13.2.3, 5.2.13.2.4, 5.2.13.2.6, 5.2.13.2.7, 5.2.13.2.8 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

1st change

### 5.2.13 BSF Services

#### 5.2.13.1 General

The following table shows the BSF Services and Service Operations:

Table 5.2.13.1-1: NF services provided by the BSF

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| --- | --- | --- | --- |
| Service Name | Service Operations | OperationSemantics | Example Consumer(s) |
| Nbsf\_management | Register | Request/Response | PCF |
|  | Deregister | Request/Response | PCF |
|  | Discovery | Request/Response | NEF, AF, NWDAF, PCF |
|  | Update | Request/Response | PCF |
|  | Susbcsribe | Subscribe/Notify | PCF |
|  | Unsubscribe | Subscribe/Notify | PCF |
|  | Notify | Subscribe/Notify | PCF |

#### 5.2.13.2 Nbsf\_Management service

##### 5.2.13.2.1 General

The Nbsf provides the Nbsf Management Register, Nbsf Management Deregister , the Nbsf Management Discovery, the Nbsf Management Update, the Nbsf Management Subscribe, the Nbsf Management Unsubscribe and the Nbsf Management Notify service operations.

##### 5.2.13.2.2 Nbsf\_Management\_Register service operation

**Service Operation name:** Nbsf\_Management\_Register

**Description:** Registers the tuple (UE address(es), SUPI, GPSI, DNN, S-NSSAI, PCF address(es), PCF instance id, PCF Set ID, level of Binding, PCF registration type) for an SM Policy Association or for an AM Policy Association.

NOTE 1: In some cases only subset of these parameters may be registered (eg UE address(es) will be registered only if PCF registration is for an SM Policy Association).

**Inputs, Required:** PCF address(es).

UE address can contain IP address/prefix or MAC address as defined in TS 23.501 [2]. It can optionally include Framed Route information. W-5GAN specific UE IP address information is specified in TS 23.316 [53].

Framed Route information is defined in Table 5.2.3.3.1-1.

NOTE 2: For TSN scenarios the UE address contains the DS-TT port MAC address.

**Inputs, Conditional:** UE address(es) [Required, if PCF registration is for an SM Policy Association], SUPI [Required, if PCF registration is for AM Policy Association, otherwise it is optional].

**Inputs, Optional:** DNN, GPSI, S-NSSAI, PCF instance ID and PCF Set ID, level of Binding (see clause 6.3.1.0 of TS 23.501 [2]), PCF registration type.

NOTE 3: PCF registration type can be either PCF-SM or PCF-AM.

NOTE 4: The default value of PCF registration type is PCF-SM.

NOTE 5: DNN and S-NSSAI are not applicable in the case where PCF registration type is PCF-AM.

**Outputs, Required:** Result indication, Binding Identifier for an SM Policy Association or for an AM Policy Association.

**Outputs, Optional:** None.

##### 5.2.13.2.3 Nbsf\_Management\_Deregister service operation

**Service Operation name:** Nbsf\_Management\_Deregister

**Description:** Removes the binding information for an SM Policy Association or for an AM Policy Association.

**Inputs, Required:** Binding Identifier for an SM Policy Association or for an AM Policy Association.

W-5GAN specific UE IP address information are specified in TS 23.316 [53].

**Inputs, Optional:**

**Outputs, Required:** Result indication.

**Outputs, Optional:** None.

##### 5.2.13.2.4 Nbsf\_Management\_Discovery service operation

**Service Operation name:** Nbsf\_Management Discovery

**Description:** Discovers the PCF and PCF set selected for the tuple (UE address(es), SUPI, GPSI, DNN, S-NSSAI) in case where PCF for an SM Policy Association is to be discovered or the tuple (SUPI, GPSI) in case where PCF for an AM Policy Association is to be discovered.

**Inputs, Required:** None.

NOTE 1: For TSN scenarios the UE address contains the DS-TT port MAC address.

**Inputs, Conditional:** UE address (i.e. IP address or MAC address) [Required, if if PCF discovery is for an SM Policy Association and if consumer is AF or NEF], DNN [Required, if PCF discovery is for an SM Policy Association and if available], S-NSSAI [Required, if PCF discovery is for an SM Policy Association and if available], SUPI [Required, if PCF discovery is for an AM Policy Association and if available, otherwise it is optional].

**Inputs, Optional**GPSI, PCF discovery type.

NOTE 2: PCF discovery type can be either PCF-SM or PCF-AM.

NOTE 3: The default value of PCF discovery type is PCF-SM.

NOTE 4: if PCF discovery is for an AM Policy Association at least one of the parameters SUPI or GPSI has to be provided.

**Outputs, Required:** PCF address(es), PCF instance ID [Conditional, if available] and PCF Set ID [Conditional, if available], level of Binding [Conditional, if available] (see clause 6.3.1.0 of TS 23.501 [2]), UE address(es) (i.e. IP address(es) or MAC address(es)) [Conditional if PCF discovery type is PCF-SM and if consumer is PCF-AM].

**Outputs, Optional:** None.

##### 5.2.13.2.5 Nbsf\_Management\_Update service operation

**Service Operation name:** Nbsf\_Management\_Update

**Description:** Replaces the list of UE address(es) for an SM Policy Association or replace PCF id or PCF address(es) for an SM Policy Association or for an AM Policy Association.

NOTE: For example, PCF-2 may update its PCF id in cases where level of binding is NF Instance and PCF-1 fails and PCF-2 is the new NF Instance handling the SM Policy Association or the AM Policy Association.

**Inputs, Required:** Binding Identifier for the PDU Session.

UE address can contain IP address/prefix or Ethernet address as defined in TS 23.501 [2].

NOTE: For TSN scenarios the UE address contains the DS-TT port MAC address.

**Inputs, Optional:** UE address(es), PCF id, PCF address(es).

**Outputs, Required:** Result indication.

**Outputs, Optional:** None.

##### 5.2.13.2.6 Nbsf\_Management\_Susbcribe service operation

**Service Operation name:** Nbsf\_Management Susbcribe

**Description:** PCF-AM can subscribe to be notified of newly registered PCF-SM or of Deregistered PCF-SM.

**Inputs, Required:** SUPI [Conditional if available], GPSI [Conditional if available], callback URI.

NOTE: At least one of the parameters SUPI or either GPSI has to be provided.

**Inputs, Optional:** DNN, S-NSSAI,

**Outputs, Required:** When the subscription is accepted: Subscription Correlation ID.

**Outputs, Optional:** None.

##### 5.2.13.2.7 Nbsf\_Management\_Unsusbcribe service operation

**Service Operation name:** Nbsf\_Management Unsusbcribe

**Description:** PCF-AM can undo a previous subscribtion.

**Inputs, Required:** Subscription Correlation ID.

**Inputs, Optional:** None.

**Outputs, Required:** result.

**Outputs, Optional:** None.

##### 5.2.13.2.8 Nbsf\_Management\_Notify service operation

**Service Operation name:** Nbsf\_Management Notify

**Description:** BSF cannotify PCF-AM of newly registered PCF-SM or of Deregistered PCF-SM.

**Inputs, Required:** Notification Correlation Information, UE address(es), PCF address(es), PCF instance ID [Conditional, if available] and PCF Set ID [Conditional, if available], level of Binding [Conditional, if available] (see clause 6.3.1.0 of TS 23.501 [2]).

**Inputs, Optional:** None.

**Outputs, Required:** None.

**Outputs, Optional:** None.End of changes