**3GPP TSG-SA2 Meeting #143-E**  ***S2-210XXXX***

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

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.502** | **CR** | **<CR#>** | **rev** | **-** | **Current version:** | **16.7.1** |  |
|  | | | | | | | | |
| *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) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Oracle Corporation, Huawei?, Ericsson? | | | | | | | | | |
| ***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 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | This paper proposes DCAMP related update of BSF services.  The purpose of the update is to:  1. Allow discovery of PCF for a UE by an AF/NEF (Technically it will be done via subscription and notification (either an immediate notifcation or a future one)).  2. Allow discovery of PCF for a PDU Session by PCF for a UE or by the AF/NEF (Technically it will be done via subscription and notification (either an immediate notifcation or a future one). | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Update the Nbsf\_Management\_Register service operation such that it will also support registration of a PCF for a UE.  2. Add new service operations to Nbsf\_Management service. The new service operations are subscribe, unsubscribe and notify.  3. Additional minor updates/clean-ups. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | DCAMP functionality will not work properly, because:  1. PCF for a UE or AF/NEF will not be able to retrieve information about PCF for a PDU Session. Consequently, PCF for a UE or/and AF/NEF will not know which PCF for a PDU Session 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 for a UE, which serves an AM Association for a SUPI or GPSI. Consequently, AF/NEF will not be able to influence PCF for a UE decisions for RFSP index value and/or SAR when specific services are in use by a UE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***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 ... | | |
|  | |  | | | | | | | | |
| ***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

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

#### 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) for a PDU Session or for a UE.

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 a PDU Session).

**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 a PDU Session], SUPI [Required, if PCF registration is for a UE, 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]).

NOTE 3: DNN and S-NSSAI are not applicable when the PCF registration is for a UE.

NOTE 4: It is up to stage3 to ensure an unambiguous error proof way for the BSF to differentiate between PCF for a PDU Session and PCF for a UE. This may or may not require providing the BSF additional parameter(s) when a PCF registers itself with the BSF.**Outputs, Required:** Result indication, Binding Identifier for a PDU Session or for a UE.

**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 a PDU Session or for a UE.

**Inputs, Required:** Binding Identifier for a PDU Session or for a UE.

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).

**Inputs, Required:** UE address (i.e. IP address or MAC address), DNN [Conditional], S-NSSAI [Conditional].

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

**Inputs, Optional:** SUPI, GPSI.

**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]).

**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 a PDU Session or replace PCF id or PCF address(es) for a PDU Session or for a UE.

NOTE: For example, PCF-2 may update its PCF id when level of binding is NF Instance and PCF-1 fails, and PCF-2 is the new NF Instance handling the PDU Session or the UE.

**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:** NEF or AF or PCF for a UE can subscribe to be notified of newly registered or deregistered PCF for a PDU Session. In addition, NEF or AF can subscribe to be notified of newly registered or deregistered PCF for a UE.

NOTE 1: If BSF has already the requested information at the time of the subscription, it will accept the subscription request, and will immediately follow it with a notification (ie Nbsf\_Management\_Notify).

**Inputs, Required:** SUPI, DNN [Required, if PCF subscription is for a PDU Session], S-NSSAI [Required, if PCF subscription is for a PDU Session], callback URI.

**Inputs, Optional:** GPSI.

NOTE 2: It is up to stage3 to ensure an unambiguous error proof way for the BSF to differentiate between PCF for a PDU Session and PCF for a UE. This may or may not require providing the BSF additional input parameter(s).

**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 for a UE 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 for a UE of newly registered PCF for a PDU Session or of deregistered PCF for a PDU Session.

**Inputs, Required:** Notification Correlation Information, UE address(es) [Required, if PCF notification is for a PDU Session], 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