Source: **SA3**

Title: **CRs to 33.220 on Generic bootstrapping architecture (Rel-6)**

Document for: **Approval**

Agenda Item: **7.3.3**

Meeting	SA Doc	TS No.	CR No	Rev	Rel	Cat	Subject	Vers. Current	Vers New	SA1 Doc
SP-28	SP-050262	33.220	050	1	Rel-6	F	Usage of USS for local policy enforcement in BSF	6.4.0	6.5.0	S3-050288
SP-28	SP-050262	33.220	051	1	Rel-6	F	Correcting figure 4.4	6.4.0	6.5.0	S3-050287

3GPP TSG-SA WG3 Meeting S3#38
Geneva, Switzerland, 26-29 April, 2005

Tdoc ⌘S3-050288

CR-Form-v7.1

CHANGE REQUEST

⌘ **33.220** **CR** **050** ⌘ **rev** **1** ⌘ Current version: **6.4.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Usage of USS for local policy enforcement in BSF
Source:	⌘	SA3 (Nokia, Ericsson, Siemens)
Work item code:	⌘	SEC1-SC
Date:	⌘	27/4/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction 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.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	The local policy usage in the case where the NAF does not use USS is extended and missing option added to prevent possible ambiguity and interoperability problems
Summary of change:	⌘	- One requirement was extended to provide needed details - Order of the requirements was changed for better readibility. - One requirement was rephrased for better readibility and missing option added.
Consequences if not approved:	⌘	Possible interoperability problems

Clauses affected:	⌘	4.4.6

		Y	N		
Other specs Affected:	⌘		N	Other core specifications	⌘
			N	Test specifications	
			N	O&M Specifications	

Other comments:	⌘	

4.4.6 Requirements on reference point Zn

The requirements for reference point Zn are:

- mutual authentication, confidentiality and integrity shall be provided;
- If the BSF and the NAF are located within the same operator's network, the Zn reference point shall be secured according to NDS/IP [13];
- If the BSF and the NAF are located in different operators' networks, the Zn' reference point between the D-Proxy and the BSF shall be secured using TLS as specified in RFC 2246 [6];

NOTE 1: Annex E specifies the TLS profile that is used for securing the Zn' reference point.

- The BSF shall verify that the requesting NAF is authorised to obtain the key material or the key material and the requested USS;
- The NAF shall be able to send a key material request to the BSF, containing NAF's public hostname used by the UE's corresponding request. The BSF shall be able to verify that a NAF is authorized to use this hostname, i.e. the FQDN used by UE when it contacts the NAF;
- The BSF shall be able to send the requested key material to the NAF;
- The NAF shall be able to get a selected set of application-specific USSs from the BSF, depending on the policy of the BSF and the application indicated in the request from the NAF over Zn;
- The NAF shall be able to indicate to the BSF the single application or several applications it requires USSs for;

NOTE 2: If some application needs only a subset of an application-specific USS, e.g. only one IMPU, the NAF selects this subset from the complete set of USS sent from BSF.

~~- If a NAF requests USSs from the BSF and they are not present in subscriber's GUSS, it shall not cause an error, provided the conditions of the local policy of the BSF are fulfilled. The BSF shall then send only the requested and found USSs to the NAF;~~

- The BSF shall be able to be configured on a per NAF or per application basis if private subscriber identity and which application-specific USSs may be sent to a NAF;
- If a NAF requests USSs from the BSF and they are not present in subscriber's GUSS, it shall not cause an error, provided the conditions of the local policy of the BSF are fulfilled. The BSF shall then send only the requested and found USSs to the NAF;
- It~~The~~ shall be possible to configure a local policy as follows: BSF may require one or more application-specific USS to be present in a particular subscriber's GUSS for a particular requesting NAF~~BSF shall be able to be configured locally by the MNO in such a way that the BSF is able to decide on a per NAF basis if one or more application specific USSs shall be present in subscriber's GUSS~~, and to reject the request from the NAF in case the conditions are not fulfilled. In order to satisfy this local policy, it is not required that the NAF requests the USSs over the Zn reference point, which the BSF requires to be present in the GUSS, rather it is sufficient that the BSF checks the presence of the USSs locally. It shall also be possible configure the BSF in such a way that no USS is required for the requesting NAF;
- The BSF shall be able to indicate to the NAF the bootstrapping time and the lifetime of the key material. The key lifetime sent by the BSF over Zn shall indicate the expiry time of the key, and shall be identical to the key lifetime sent by the BSF to the UE over Ub.

NOTE 3: This does not preclude a NAF to refresh the key before the expiry time according to the NAF's local policy.

NOTE 4: If one or more of the USSs that have been delivered to the NAF has been updated in subscriber's GUSS in the HSS, this change is propagated to the NAF the next time it fetches the USS from the BSF over Zn reference point (provided that the BSF has updated subscriber's GUSS from the HSS over Zh reference point).

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CHANGE REQUEST

⌘ **33.220** **CR** **051** ⌘**rev** **1** ⌘ Current version: **6.4.0** ⌘

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Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Correcting figure 4.4
Source:	⌘	SA3 (Ericsson)
Work item code:	⌘	SEC1-SC
Date:	⌘	19/04/2005
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
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R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change:	⌘	Figure 4.4 indicates that the first message would be protected by a MAC. The use of the term MAC in the figure might be confusing and no corresponding text explaining the MAC is included in the body. It might not even be possible to protect the first message using a MAC with all Ua protocols.
Summary of change:	⌘	Removing MAC from message 1 in figure 4.4
Consequences if not approved:	⌘	Incorrect specification, since not all Ua protocols might be able to protect the first message using a MAC.

Clauses affected:	⌘	4.5.3

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	O&M Specifications

⌘

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

*** BEGIN OF CHANGE ***

4.5.3 Procedures using bootstrapped Security Association

Before communication between the UE and the NAF can start, the UE and the NAF first have to agree whether to use shared keys obtained by means of the GBA. If the UE does not know whether to use GBA with this NAF, it uses the Initiation of Bootstrapping procedure described in clause 4.5.1.

Once the UE and the NAF have established that they want to use GBA then every time the UE wants to interact with an NAF the following steps are executed as depicted in figure 4.4.

1. UE starts communication over reference point Ua with the NAF:

   - in general, UE and NAF will not yet share the key(s) required to protect the reference point Ua. If they already do (i.e. if a key Ks_NAF for the corresponding key derivation parameter NAF_Id is already available),, the UE and the NAF can start to securely communicate right away. If the UE and the NAF do not yet share a key, the UE proceeds as follows:

     - if a key Ks for the selected UICC application is available in the UE, the UE derives the key Ks_NAF from Ks, as specified in clause 4.5.2;

     - if no key Ks for the selected UICC application is available in the UE, the UE first agrees on a new key Ks with the BSF over the reference point Ub, and then proceeds to derive Ks_NAF;

   NOTE 1: If it is not desired by the UE to use the same Ks for the selected UICC application to derive more than one Ks_NAF then the UE should agree on a new key Ks with the BSF over the reference point Ub, and then proceed to derive Ks_NAF;

   - if the NAF shares a key with the UE, but the NAF requires an update of that key, e.g. because the key's lifetime has expired or will expire soon, or the key can not meet the NAF local validity condition, it shall send a suitable bootstrapping renegotiation request to the UE, see figure 4.5. If the key's lifetime has expired the protocol used over reference point Ua shall be terminated. The form of this indication depends on the particular protocol used over reference point Ua. If the UE receives a bootstrapping renegotiation request, it starts a run of the protocol over reference point Ub, as specified in clause 4.5.2, in order to obtain a new key Ks.

   NOTE 2: To allow for consistent key derivation in BSF and UE, both have to use the same FQDN for derivation (see NOTE 2 of clause 4.5.2). For each protocol used over Ua it shall be specified if only cases (1) and (2) of NOTE 2 of clause 4.5.2 are allowed for the NAF or if the protocol used over Ua shall transfer also the FQDN used for key derivation by UE to NAF.

   NOTE 3: If the shared key between UE and NAF is invalid, the NAF can set deletion conditions to the corresponding security association for subsequent removal.

   - the UE supplies the B-TID to the NAF, in the form as specified in clause 4.3.2, to allow the NAF to retrieve the corresponding keys from the BSF;

   NOTE 4: The UE may adapt the key material Ks_NAF to the specific needs of the reference point Ua. This adaptation is outside the scope of this specification.

   - key management for GBA related keys in the ME (i.e. Ks and Ks_NAF keys):

     - all GBA related keys shall be deleted from the ME when a different UICC is inserted. Therefore the ME needs to store in non-volatile memory the last inserted UICC-identity to be able to compare that with the used UICC-identity at UICC insertion and power on;

     - the Key Ks shall be deleted from the ME when the ME is powered down;

     - all other GBA related keys may be deleted from the ME when the ME is powered down. If the ME does not delete the GBA keys at power down then the GBA keys need to be stored in non-volatile memory.

- when a new Ks is agreed over the reference point Ub and a key Ks_NAF, derived from one NAF_Id, is updated, the other keys Ks_NAF, derived from different values NAF_Id, stored on the UE shall not be affected;

NOTE 5: According to the procedures defined in clauses 4.5.2 and 4.5.3, in the UE there is at most one Ks_NAF key stored per NAF-Id.

2. NAF starts communication over reference point Zn with BSF

- The NAF requests key material corresponding to the B-TID supplied by the UE to the NAF over reference point Ua. If the NAF has several FQDNs, which may be used in conjunction with this specification, then the NAF shall transfer in the request over Zn the same FQDN, which was used over Ua (see NOTE 2 on key derivation in this clause);

- The NAF may also request one or more application-specific USSs for the applications, which the request received over Ua from UE may access;

- With the key material request, the NAF shall supply NAF's public hostname that UE has used to access NAF to BSF, and BSF shall be able verify that NAF is authorized to use that hostname;

3. The BSF derives the keys required to protect the protocol used over reference point Ua from the key Ks and the key derivation parameters, as specified in clause 4.5.2, and supplies to NAF the requested key Ks_NAF, as well as the bootstrapping time and the lifetime of that key, and the requested application-specific and potentially NAF group specific USSs if they are available in subscriber's GUSS and if the NAF is authorized to receive the requested USSs. If the key identified by the B-TID supplied by the NAF is not available at the BSF, the BSF shall indicate this in the reply to the NAF. The NAF then indicates a bootstrapping renegotiation request to the UE.

NOTE 6: The NAF can further set the local validity condition of the Ks_NAF according to the local policy, for example a limitation of reuse times of a Ks_NAF.

NOTE 7: The NAF shall adapt the key material Ks_NAF to the specific needs of the reference point Ua in the same way as the UE did. This adaptation is outside the scope of this specification.

- The BSF may require that one or more application-specific and potentially NAF group specific USSs shall be present in subscriber's GUSS for the NAF (see clause 4.4.6). If one or more of these required settings are missing from the GUSS, the BSF shall indicate this in the reply to the NAF.

- The BSF may also send the private user identity (IMPI) and requested USSs to NAF according to the BSF's policy;

4. NAF continues with the protocol used over the reference point Ua with the UE.

Once the run of the protocol used over reference point Ua is completed the purpose of bootstrapping is fulfilled as it enabled UE and NAF to use reference point Ua in a secure way.

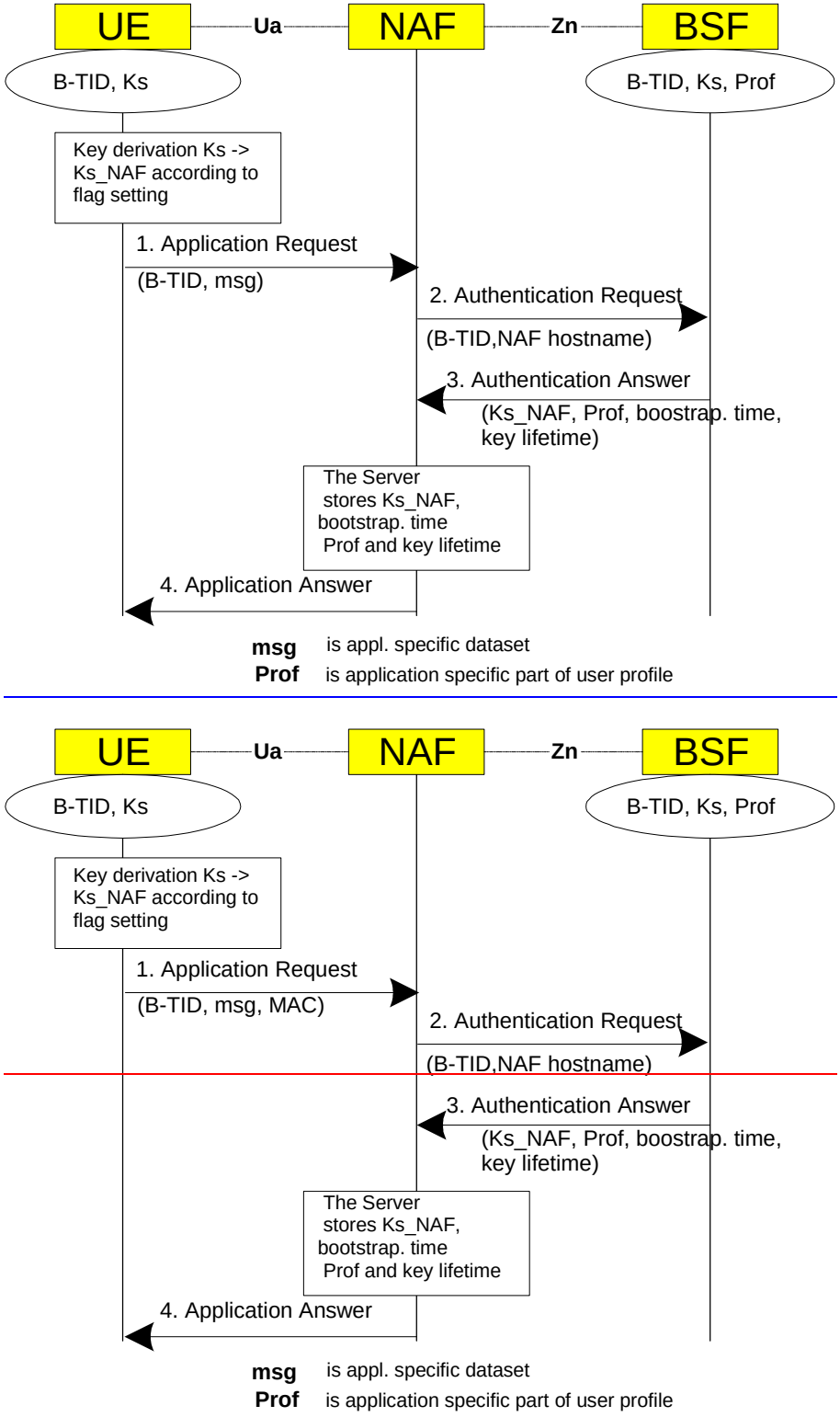

Figure 4.4: The bootstrapping usage procedure

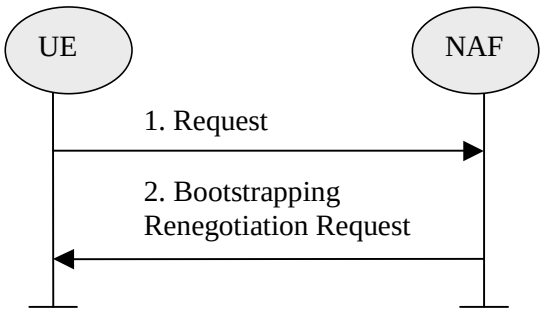

Figure 4.5: Bootstrapping renegotiation request

*** END OF CHANGE ***