**3GPP TSG-CT WG4 Meeting #111-eC4-224196v1**

**E-Meeting, 18th – 26th August 2022**

**Source: ZTE**

**Title: Solution for Avoiding Duplicate Configuration and Transmission of Shareable Data**

**Spec: 3GPP TR 29.831 v0.1.0**

**Agenda item: 6.1.3**

**Document for: Approval**

**1. Introduction**

This pCR introduces one solution to avoid duplicate configuration and transmission of shareable data (e.g. UE identifier ranges) configured to multiple NFs (e.g. AUSF/UDM/PCF/BSF/CHF).

**2. Proposal**

It is proposed to agree the following changes to 3GPP TR 29.831 v0.1.0.

\* \* \* First Change \* \* \* \*

## 6.X Solution #X: Avoid Duplicate Configuration and Transmission of Shareable Data

### 6.X.1 Description

The solution is to address the Key Issue #X: Avoid Duplicate Configuration and Transmission of Shareable Data.

To avoid duplicate configuration and transmission of shareable data (e.g. UE identifier ranges), the shareable data can be organized as shared data which is separately stored outside of the NF profile. One NF profile using the shared data (e.g. UE identifier ranges) should carry a reference (i.e. shared data identifier) pointing to that shared data. An NF may be associate with multiple shared data with different types, thus multiple instance of shared data identifiers may be registered in one NF profile.

The following enhancements to data structure of the NRF API are proposed:

- Define individual data structures for each type of shared data;

- For example, define a SharedIdRanges data structure, which carries the identifier of the SharedIdRanges and a list of SUPI/GPSI/External-ID/Internal-ID ranges, etc;

- Define a SharedDataIdentifier data type as identifier of each type of shared data;

- For example, the SharedIdRanges data structure includes an "sharedDataId" attribute of type SharedDataIdentifier, to indicate the unique identifier of that SharedIdRanges;

- Add attribute in the NF profile to refer to the separately stored shared data;

- For example, add "sharedDataList" attribute in the NFProfile of an NF to contain a list of shared data identifiers to multiple shared data, and within the "sharedDataList" container a "sharedRangeId" attribute refers to one SharedIdRanges. Or, add one attribute "sharedRangeId" directly in the AusfInfo/UdmInfo/PcfInfo/BsfInfo/ChfInfo to indicate the reference to a SharedIdRanges;

The following enhancements to resource tree of the NRF API are proposed:

- Define individual resources in the resource tree of the NRF API, to provide creation/update/deletion/retrieval operation to each type of shared data;

- For example, a separate resource "/shared-id-ranges" is defined to represent the collection of SharedIdRages. A POST operation to the "/shared-id-ranges" resource will create an instance of SharedIdRanges. A GET operation to the "/shared-id-ranges/{sharedDataId}" will retrieve the content of the SharedIdRanges identified by the {sharedDataId}.

- A parent resource "/shared-data" may be used to umbrella all kinds of shared data types. In this case, the resource "/shared-data/shared-id-ranges" represents the collection of SharedIdRanges.

To configure the shared data in the NRF, the following methods should be used:

- An operator should arrange those shareable data (e.g. UE identifier ranges) to shared data in well-organized manner, and register those shared data to the NRF;

- The registration of shared data to the NRF may be done by the operator management system, or by an operator granted NF (e.g. a special UDR). In the latter case, the granted NF invokes POST method to the resource representing the collection of that type of shared data (e.g. to the resource "/shared-id-ranges") to register the shared data.

- An NF can register a reference (i.e. the shared data identifier) to one shared data in its own NF profile, if the NF is configured to share some data with other NFs and is aware of the shared data identifier. Multiple shared data identifiers may be registered in the NF profile to refer to different type of shared data;

To download NF profiles with shared data from the NRF, the following methods should be used:

- A request NF should indicate its support for the SharedData feature to the NRF, in the NF discovery procedure or subscription to NF profile change notification.

- During NF discovery or NF profile change notification procedure, the NRF and the request NF behaves as the following:

- For a request NF supporting the SharedIdRange feature, the NRF only indicates the shared data identifier(s) referring to the shared data (e.g. shared data identifier to a SharedIdRanges) in the NF profile, when sending NF profile the request NF.

- For a request NF not supporting SharedData feature, the NRF shall translate the shared data identifier included in the NF profile to the content of existing attributes in the NF profile, when sending NF profile to the request NF.

- When receiving NF profile with shared data identifier(s), the request NF shall separately invoke GET operation to the NRF resource representing the shared data to retrieval the shared data, if not yet get the shared data.

### 6.X.2 Impacts on services, entities and interfaces

NRF:

- extend the existing NRF API to separately organize the shared data, and provide individual operations to the resource representing the shared UE identifier ranges.

NF:

- invoke separate retrieval to the resource representing the shared data, after receiving NF profile indicating a reference to the shared data from the NRF.

### 6.X.3 Pros

This solution provides an efficient way to configure the shared data to multiple NF profiles, and avoid duplicate transmission of same data configured in multiple NF profiles.

### 6.X.4 Cons

The NRF needs to differentiate the handling to a request NF supporting or not supporting SharedData feature.

\* \* \* End of Changes \* \* \* \*