**3GPP TSG-RAN3 Meeting #111-e R3-210539**

**E-meeting, 25 Jan – 5 Feb 2021**

**Title:** Evaluation of slicing solutions

**Source:** Huawei

**Agenda item:** 17.2

**Document Type:** Discussion and Decision

# 1. TP for TR 38.832

# 6.3 Solution evaluation

The evaluation criteria are as follows:

* **RAN impact**

The point here is to analyze RAN impact of the solution (standardization and node behaviour), for example what signalling procedures may be affected and at what extent.

* **Core impact**

The point here is to analyze Core impact of the solution (standardization and node behaviour), for example what signalling procedures may be affected and at what extent. Such analysis needs to be carried out together with SA2 and CT groups.

* **OAM impact**

The point here is to analyze operator and maintenance effort, for example how many network elements (e,g. gNB, NF) should be configured and managed by OAM. Such analysis may need to involve SA5.

* **UE Impact**

This is to analyse the impact at NAS and AS level on the UE. Such analysis needs to be carried out together with RAN2, SA2 and CT groups.

* **Effectiveness of solution**

The point here is to analyse the effectiveness after applying the solution, for example the UE’s service experience after applying the solution.

* **Applicable scenarios**

The point here is to list the applicable scenarios which the corresponding solution targets.

**Table 6.3-1: Evaluation of the solutions**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Criteria****Solution** | **RAN impact** | **Core impact** | **OAM impact** | **UE impact** | **Effectiveness** | **Applicable scenarios** |
| **6.2.1: Re-mapping Policy in target NG-RAN node** | **Configuration in target NG-RAN node** | RAN is configured with re-mapping policy from the OAM. RAN may possibly signal the remapping decision to CN. | CN may possibly be notified in case of any remapping. **(Q: need to clarify what the CN does with this information? What does remapping mean in this context?)** | OAM configures slice re-mapping policy to the NG-RAN. | No impact**(Q: can a PDU session be remapped without UE involvement?)** | Simple and effective at the main cost of the OAM impact | 1, 3, 5, 6 |
| **Signalled from 5GC/source RAN node** | RAN is signalled with the remapping policy from CN/the source RAN node. RAN may possibly signal the remapping decision to CN. | CN is configured with remapping policy from the OAM, and signals the re-mapping policy to the NG-RAN.CN needs to support new NAS signalling to the UE to associate a PDU Session to a remapped slice. Details are depending on SA2. | OAM configures slice re-mapping policy to the CN. | CN needs to support new NAS signalling to the UE to associate a PDU Session to a remapped slice. Details are depending on SA2.  | Complicated, and effective solution, at the cost of CN, OAM, RAN and UE impact | 2, 4 |
| **6.2.3: Configuration based Solution** | RAN is configured with re-mapping policy from the OAM. RAN may possibly signal the remapping decision to CN. | CN may possibly be notified in case of any remapping e.g., for charging purpose**(Comment: it should be clarified that “remapping” seems to be a RAN-internal operation in this case)** | OAM configures slice resource policy to the NG-RAN.  | No impact | Simple and effective at the main cost of the OAM impact. whether it can be applied to non-supported slice scenarios, depending on SA5 feedback | 1, 2, 3, 4, 5, 6. |
| **6.2.4: Candidate solutions with/without CN involvement** | **Solution with CN involvement** | Same as 6.2.1But 6.2.1 has two quite different solutions. It is not clear which one this refers to. | Same as 6.2.1 | Same as 6.2.1 | Same as 6.2.1 | Same as 6.2.1 | Same as 6.2.1 |
| **Solution without CN involvement** | RAN is configured with re-mapping policy from the OAM. New functionality to support semi-handover case.New behaviour in new gNB (allow usage by non-supported slice).Requires Xn support from inside old RA to any node inside new RA (unless continuity is broken later)  | New functionality to support the new handover case, where the UE is connected to target but source maintains UE signalling connection with CN.  | OAM configures slice re-mapping policy to the NG-RAN. | New functionality to support the new handover case, where the UE is connected to target but source maintains UE signalling connection with CN..Details are depending on SA2. | Complicated and effective solution. Uses resources in new gNB that are not meant to be available for the slice.Only seems to work at immediate RA boundaries. | 1, 2, 3, 4, 5, 6 |
| **6.2.5: Slice resource re-partitioning** | RAN is configured with re-mapping policy from the OAM. RAN may possibly signal the remapping decision to CN.(NB: there is no remapping as such) | CN may possibly be notified in case of any remapping e.g., for charging purpose. (NB: there is no remapping as such) | OAM configures slice re-mapping policy to the NG-RAN.  | No impact | Simple and effective at the main cost of the OAM impact | 1, 3, 5, 6 |
| **6.2.6: Multi-carrier radio resource sharing** | No impact.  | No impact | No impact | No impact | Simple and effective solution. It requires the same slice coverage across different frequencies.  | 1, 3, 5, 6 |
| **6.2.7: 5GC Solution based on SSC-mode 3** | RAN is signalled with the remapping policy from CN/the source RAN node.New procedure is needed to support the “SSC-mode 3”.  | CN is configured with remapping policy from the OAM, and signals the re-mapping policy to the NG-RAN.New procedure is needed to support the “SSC-mode 3”.  | OAM configures slice re-mapping policy to the CN.  | The new procedures to support this “SSC-mode 3”. Details are depending on SA2.  | Complicated and effective solution, at the cost of OAM, CN, RAN and UE impact | 2 |
| **6.2.8: Slice Remapping decision in 5GC** | No impact | CN is configured with remapping policy from the OAM.New intra-CN procedure is needed to change the slice for an ongoing PDU session.  | OAM configures slice re-mapping policy to the CN. | UE needs to be reconfigured at NAS level to associate an ongoing PDU Session to a new S-NSSAI. Details are depending on SA2.  | Less complicated and effective solution, at the cost of OAM, CN and UE impact | 2, 4 |