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5G System Split Bearer in Dual Connectivity of WiFi
[draft-sfc-sinha-5g-bearer-dc-wifi-00](#)

Abstract

This document attempts the case for new work that needs to be developed for 5G users to improve faster download and upload of user's data in a scenario of dual-connectivity for non-3GPP access outlining the poor wifi coverage issues. This document also outlines the faster user data mechanism accompanying non-3GPP access of 5G user device via split bearer in case of a poor coverage.

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sinha

Expires December 9, 2018

[Page 1]

Table of Contents:

1. Introduction.....	2
2. Conventions and Terminology.....	2
3. User data flow for Dual Connectivity for non-3GPP Access and problem statement.....	2
3.1 5G System Architecture.....	2
3.2 QoS.....	3
3.3 Dual Connectivity.....	3
3.4 Problem Statement.....	3
4. Proposal for Split Bearer in Dual-Connectivity of Non-3GPP access.....	4
5. IANA Considerations.....	5
6. Security Considerations.....	5
7. Privacy Considerations	5
8. Acknowledgements.....	5
9. References1.....	5
9.1. Normative References.....	6
9.2. Informative References.....	6
Authors' Addresses.....	7

[1. Introduction](#)

5G System has been evolved to serve user in more efficient way of meeting higher download and upload of user data, 5G Users accessing the network via wireline and wireless, in addition to Residential Gateway RG and IoT support. In 5G System, access and user experience are a challenging for poor radio coverage for both wi-fi and RAN. The proposal in this document address to the problem of non-3GPP access only when having poor coverage.

[2. Conventions and Terminology](#)

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [1].

[3. User data flow for Dual Connectivity for non-3GPP Access and problem statement](#)

[3.1 5G System Architecture](#)

5G System supporting UE access to the network function and services via non-3GPP is shown in Figure-1. An example of such access is like WLAN or Wi-Fi. The N3IWF interface connect UE with 5G core network via N2 and N3 interface.

sinha

Expires December 9, 2018

[Page 2]

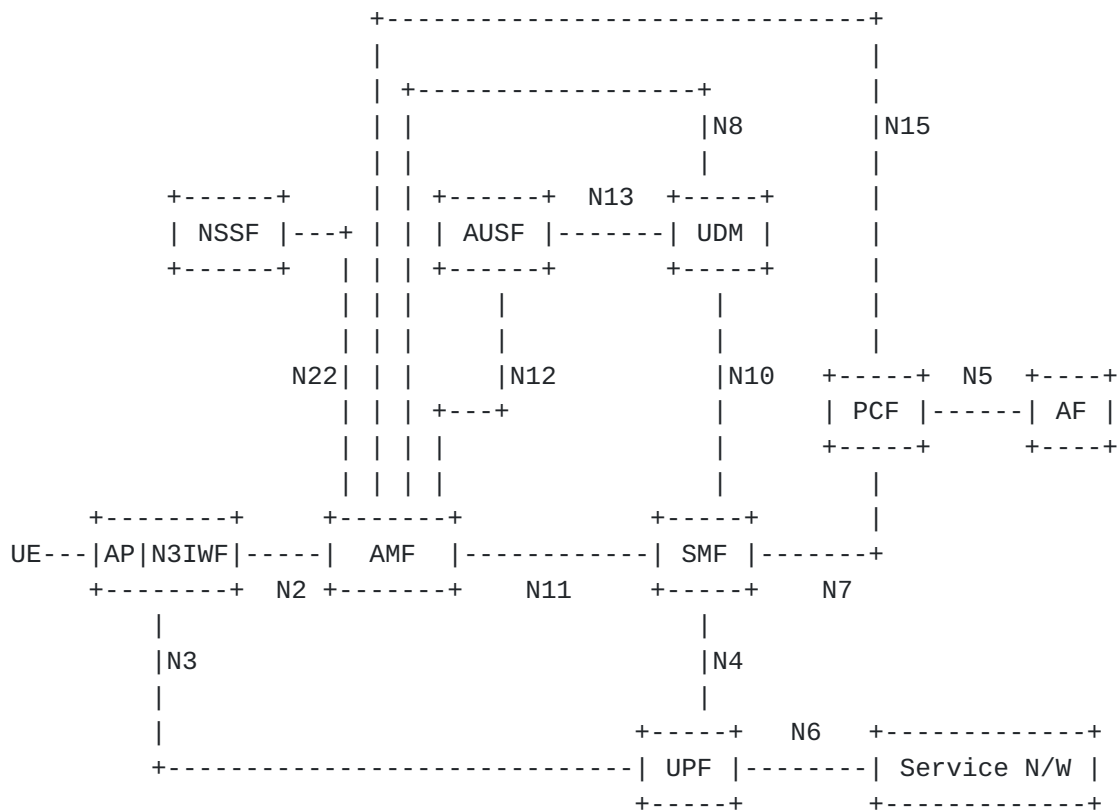


Figure 1 : Simplified 5G System Architecture for Wi-Fi access

3.2 QoS

QFI is defined as QoS Flow ID is a identity to QoS flow in the 5G System. All data traffic within a PDU session are each labelled or identified by QFI, implies same QFI labelled data flow will receive same traffic forwarding treatment like scheduling, priority, etc.

Data flow is via N3 (and N3 and N9) interface, being encapsulated end-to-end. This flow is controlled by SMF, who provides QoS profile during session establishment to R(AN) and provide the PDR to the UPF. Please Note that like 4G System, default QoS flow is applied to each PDU session and retain till lifetime span of connectivity. In case of non-3GPP access QFI is delivered to N3IWF entity (or NG-RAN) for every time User Plane of the PDU session is established, modified or activated.

3.3 Dual Connectivity

Dual connectivity (DC) concept developed for 3GPP access, functionality support the network to make use of additional radio resource to achieve required throughput in downlink and uplink of user data. Same concept has been introduced in this document for

non-3GPP access via Access-Point acting as master-AP and Secondary-AP.

3.4 Problem Statement

sinha

Expires December 9, 2018

[Page 3]

N3IWF have enhanced aggregation feature of governing single user

data on multiple Access Points. That is N3IWF control user data delivery via two Access Points namely Master-AP and Secondary-AP. Based on Wi-Fi radio resource condition, N3IWF SHOULD take decision to split user data delivery via multiple Access-Points.

N3IWF MUST also completely switch all the user data to Secondary-AP and releasing them from Master-AP. Thereafter Secondary-AP will be referred as Master-AP.

5. IANA Considerations

None.

6. Security Considerations

Security considerations related to the 5G Systems are discussed in [NGMN]. Due to the request for intrinsic realization of security such aspects have to be considered by design for architecture and protocols.

Especially as a joint usage of resources and network functions by different separate logical network slices (e.g. in terms of virtual network functions) seems to be inevitable in the framework of 5G the need for strong security measures in such an environment is a major challenge.

7. Privacy Considerations

Support of full privacy of the users (customers and tenants / end service providers) is a basic feature of the next generation trusted and reliable communications offering system. Such a high degree of ensured privacy shall be reflected in the proposed architecture and protocol solutions.

Especially as Identifiers and mapping of locators to them are addressed some privacy concerns arise. Mobility solutions tend to expose unique identifiers. A solution inside the mobile network exposes these identifiers to the network operator, which is not a big deal since the network operator already has information about the device's location. In contrast, an IP level solution exposes both the identifiers and the locations at the IP layer. That means that web sites, for example, can now track the device's successive locations by watching the IP address. Solutions such as transporting the identifiers not as part of the IP header should be considered.

8. Acknowledgements

This work has been partially performed in the framework of the cooperation Config. Contributions of the project partners are gratefully acknowledged. The project consortium is not liable for any use that may be made of any of the information contained therein.

Comments, constructive criticisms from Karthik Palaniswamy and Nagesh V. J. are respectfully acknowledged.

9. References

sinha

Expires December 9, 2018

[Page 5]

9.1. Normative References

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sinha

Expires December 9, 2018

[Page 6]

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sinha

Expires December 9, 2018

[Page 7]