3GPP TSG SA WG 1 Meeting #105
Athens, Greece, 26 February – 01 March 2024

S1-240031

Motivation for Study on non-3GPP_fallback_to_gain_3GPP_access

NEC

Introduction

- In crowded environments (stadium, emergency/disaster cases) many UEs may attach concurrently

- UEs connect to the 5G Core through 3GPP Access Network (RAN) & use the selected radio cell‘s shared channel for initial access

Problem:

- With an increase in the number of mobile devices and the occurrence of crowded/loaded environments, cell‘s overloaded shared channel results in deferred access and delay for one or multiple UEs

Background & Motivation

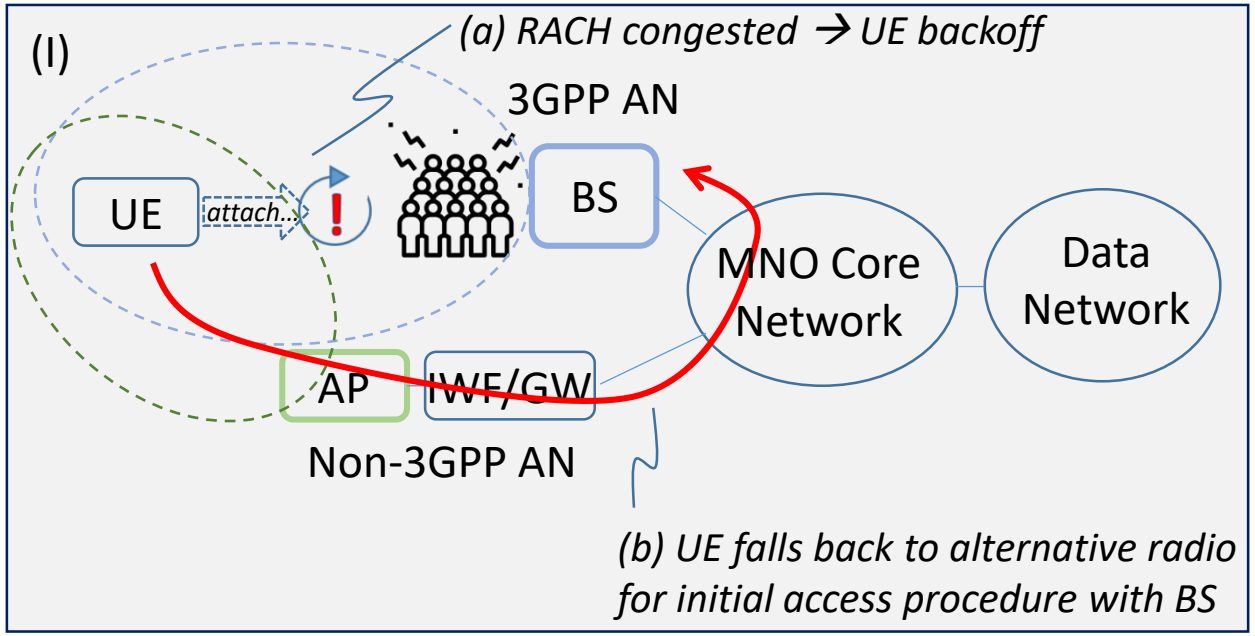
- First phase of a UE‘s procedure to access the 5G Core network through 3GPP AN (after cell search and selection, synchronization and retrieval of system information):
  - UE performs Random Access Channel (RACH) procedure → contention-based
- In crowded areas or periods with high BHCA, multiple UEs‘ request may collide → exponential backoff
  - Access is delayed
- Frequency and impact of delayed access to expected performance might increase in the future
  - Expected increase in the number of mobile devices, crowded/loaded environments
  - More frequent events that trigger mass-attachments

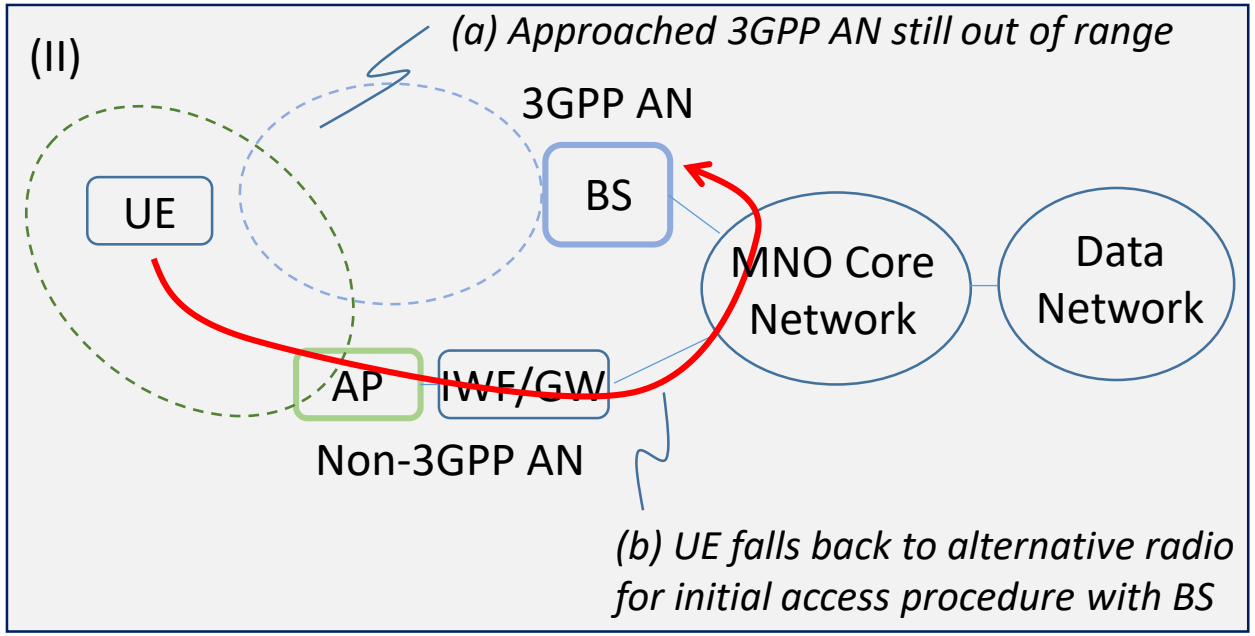
Study Proposal: FS_fallBACK

- fallBACK: Enable the use of alternative capacity @non-3GPP access to accelerate 3GPP access procedure
- UE can leverage non-3GPP access to perform initial operations with CN (i.e. AMF) and 3GPP AN
- Benefit (some examplary use cases):

(I) Scale and accelerate access to 3GPP services in crowded environments;

(II) Fast access: Early initiation of 3GPP access (UE still out of range of approached target 3GPP AN BS).





Objectives

- Perform study (Release 20) on non-3GPP fallback to gain 3GPP access (FS_fallBACK)
  - Support study by exemplary use cases and scenarios
- Stage1 impact on required 5GS functionality to support fallBACK
- Policy aspects
  - When to fallBACK
  - Permission considerations (MNO policies, subscriber profiles)
  - Control of non-3GPP access, incl. trust and fallBACK-capability discovery
- Service requirements