Problem Statement for IP measurement in mobile networks

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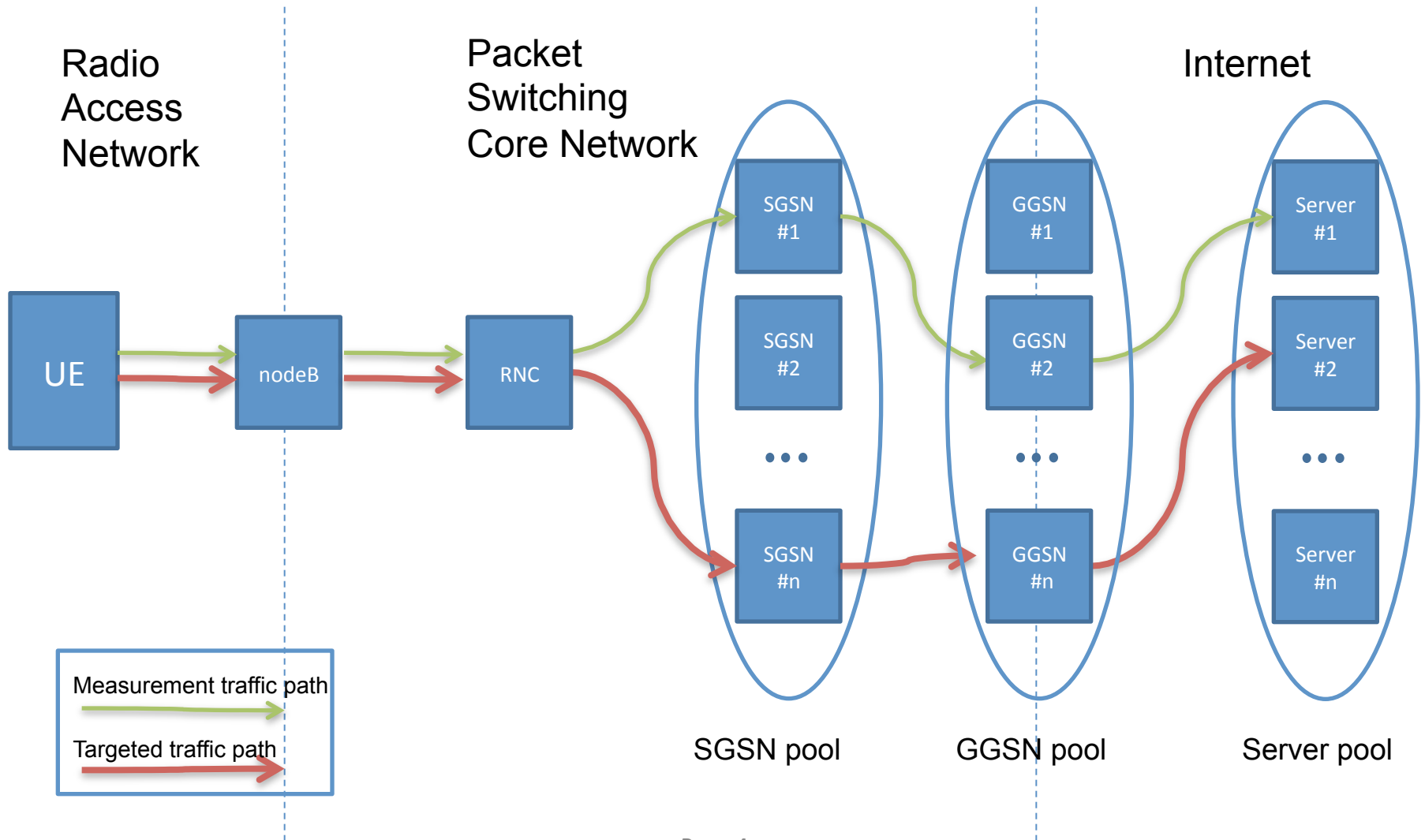
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Outline

- Motivation

- Use Cases

- Discussion

Motivation

- Demand for e2e QoE management
  - Mobile Internet usage is going to increase fast in the coming years
  - Traffic increase and higher user service requirement demand better network and service management
  - Service Provider deemed responsible for mobile internet end2end performance – subscribers want to get what they want
- Question: How does mobile service provider manage end2end service quality?

Use case
Dynamic Load Balance

Radio Access Network

Packet Switching Core Network

Internet

SGSN #1

SGSN #2

...

SGSN #n

GGSN #1

GGSN #2

...

GGSN #n

Server #1

Server #2

...

Server #n

UE

nodeB

RNC

Measurement traffic path

Targeted traffic path

SGSN pool

GGSN pool

Server pool

Use case
Radio Congestion Detection

- QoE indicator: (achievable) throughput
  - Except for total traffic load, the available throughput for a UE depends on
    - Distance to closest NodeB
    - Interference
    - Shadowing
    - Multipath fading

- QoS metric: delay, packet/byte count
  - misleading for monitoring a radio-bounded path

Discussion

- Existing IP measurement metrics and protocols
  - **Challenge:** Active measurements inject extra traffic, which may traverse along a different path to the one used by the targeted traffic or even interfere with them.
    Requirement: Viable passive measurement methodology.

  - **Challenge:** There is considerable gap between IP measurement results to the performance evaluation and fault detection requirements in mobile-involved environment.
    Requirement: Robust metric against transient wireless conditions.