

Short overview of buffering in a mobile network

WiBrA Workshop

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Disclaimer

- We do not claim proper understanding and knowledge on buffering in mobile network.. that is far more complex than it appears on paper.. if you manage to find those papers ;-)

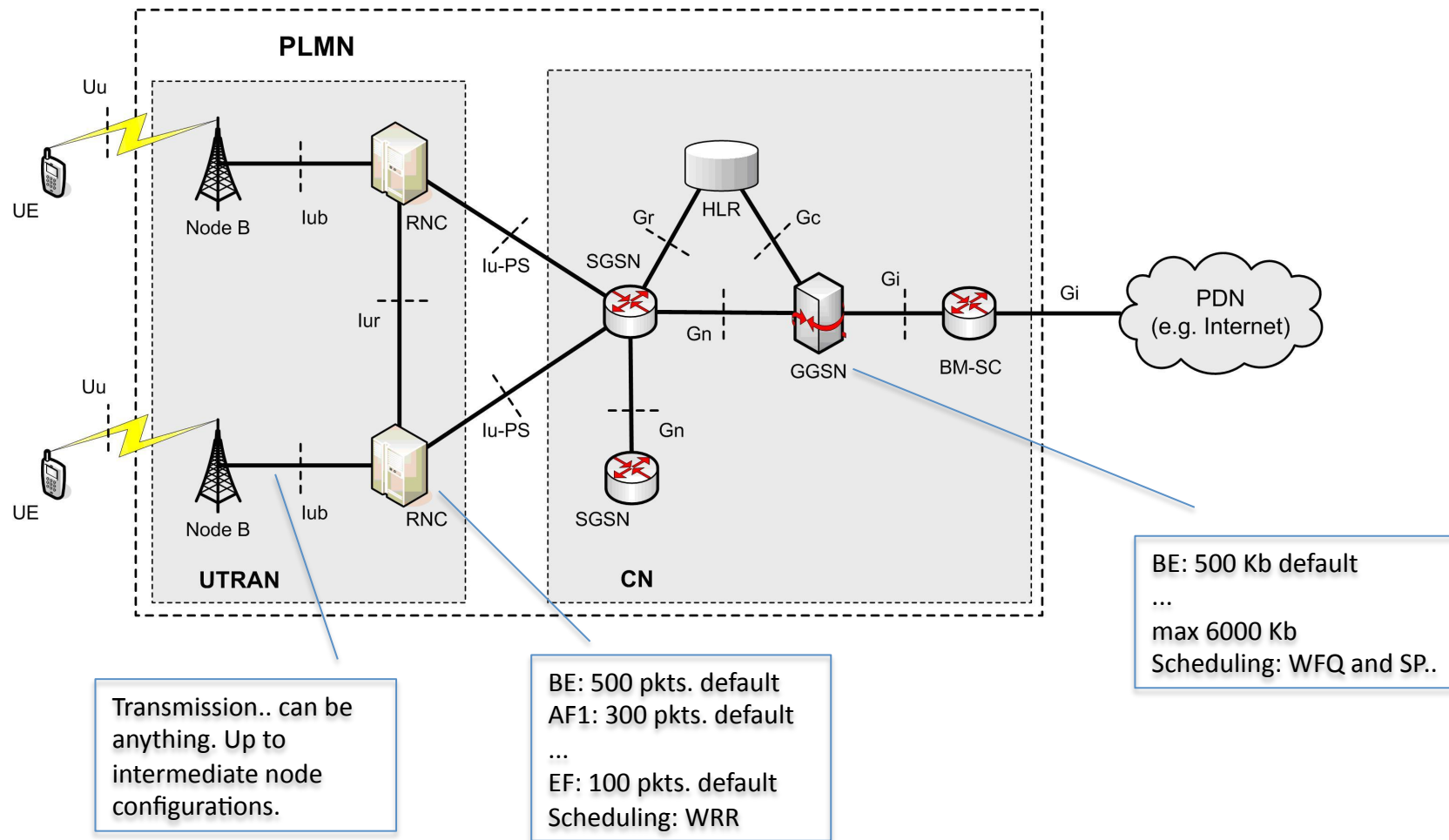
Background

- Mobile networks do buffer (also user plane) IP packets.. they do.. a lot... and then some more.
- Buffering is done for multiple reasons, e.g.:
 - Smooths traffic spikes.
 - Makes it possible to have packet lossless handovers.
 - Not to miss a packet due wireless part errors.
- Excess buffering (==[buffer bloat](#)) is harmful e.g., for:
 - Protocols that are interactive.
 - Protocols that are designed to cope with packet losses (e.g. due congestion).

Where buffering takes place?

- From the user plane IP point of view the GGSN/PGW is the first hop router for the mobile device but..
- .. in practice between the base station and the GGSN/PGW there are multiple places where IP packets are buffered.

Naive examples with deployed gear..



Note: most parameters are configurable..

Other random thoughts

- Buffers are shared, not per PDP Context or so..
- There are different DSCP markings and queuing algorithms in various boxes that may map to 3GPP defined QCI's etc..
- Makes things a bit more challenging to track down when there is a need to find the root cause for some identified behavior ;)

What then?

- Lets hear what transport folks think about buffering and congestion control in cellular..
- .. and how multiple traffic flows with different congestion control algorithms play “fairness” game together over the same shared pipes.