

MN Status Option for Proxy Mobile IPv6

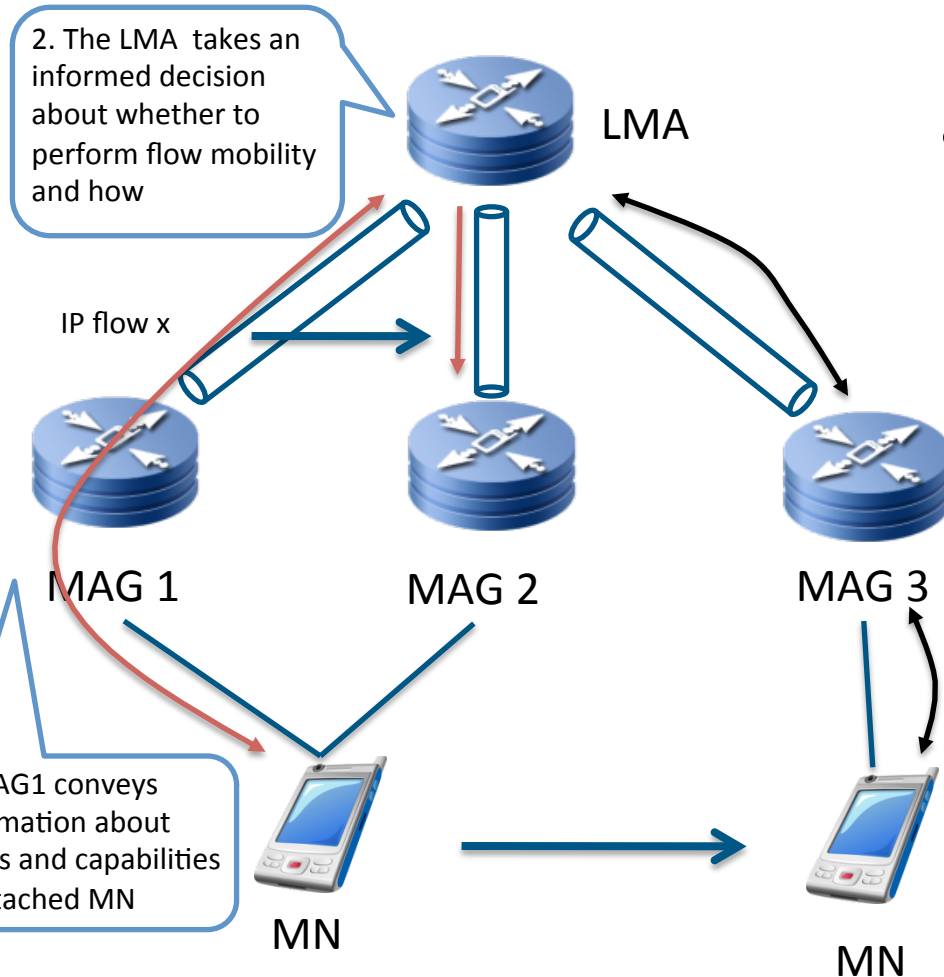
draft-tu-netext-mn-status-option-02

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Motivation

- There are some use cases that the LMA can decide to perform flow mobility from one access network to another.
 - e.g. between 3GPP and WLAN
- LMA can only know the different access technologies the MN is attached to, but no accurate information about MN status and capabilities, as for example:
 - If it is in idle/power saving mode
 - If it is experiencing low radio quality
 - Logical interface support
 - Dual IPv4/IPv6 stack availability
- It is necessary to provide this information to the LMA which can trigger flow mobility actions with a lower risk of failure/data loss.

Motivation and overview



- Flow mobility can benefit from the LMA knowing MN information
 - Status information: helps taking optimal decisions
 - Capabilities information: helps the network know if flow mobility is supported by the MN

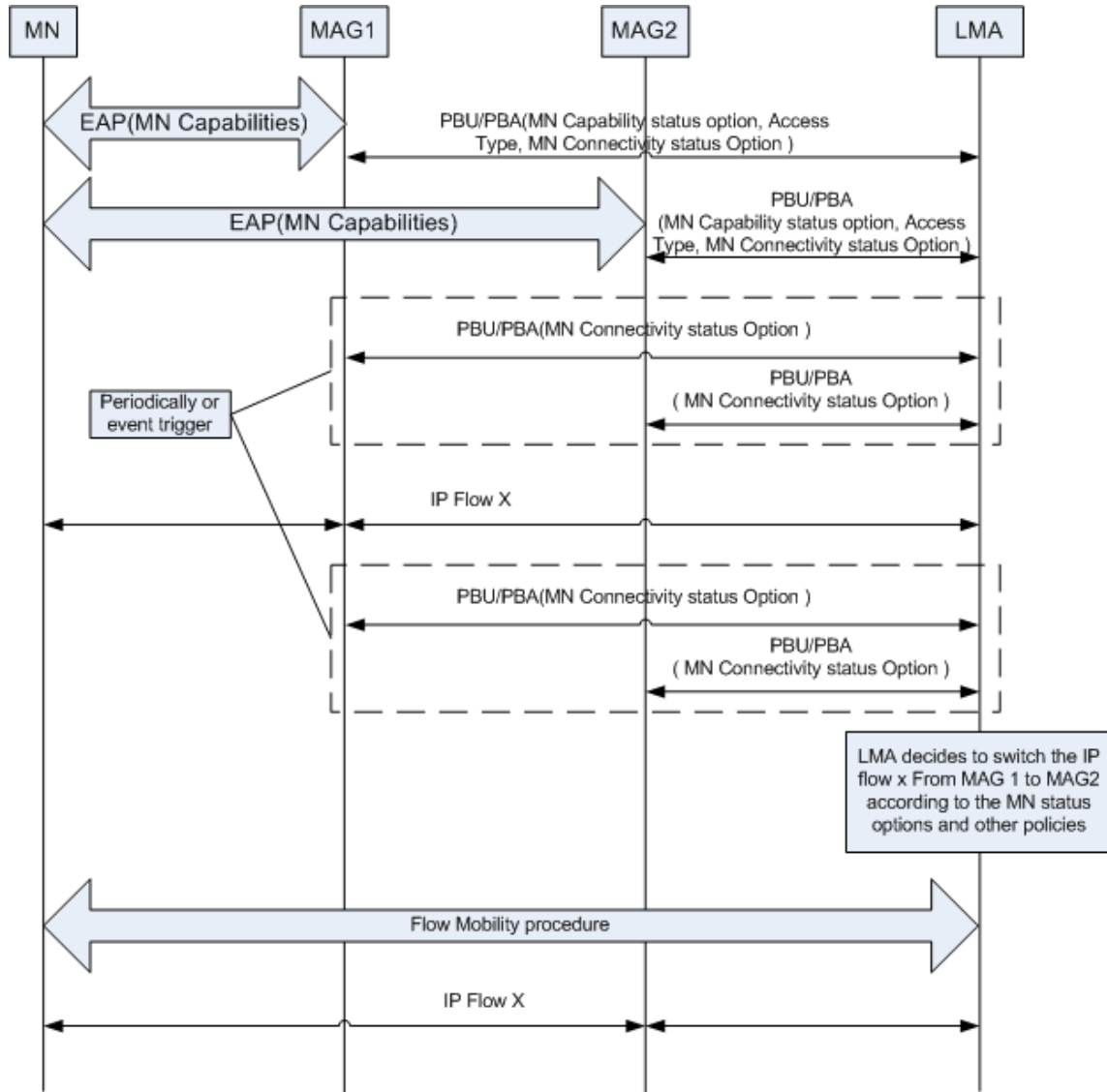
Problem statements

- For flow mobility the LMA essentially decides the routing rules for the specific IP flow (s), however,
 - the connectivity and capabilities status of a mobile node is not carried to the LMA.
 - Connectivity status, e.g. in idle/power saving mode, low radio quality in connected mode
 - Capabilities status, e.g. logical interface support, Dual IPv4/IPv6 stack availability
 - Details of problems refer to the following slides
 - so that it is impossible to guarantee the flow mobility can be done successfully.

Solution

- New options are defined to be included in the PMIPv6 signaling(e.g. PBU and PBA) exchanged between a LMA and a MAG.
 - mobile node connectivity status option
 - **Idle/Power Saving mode:** MAG can retrieve this information from some network elements, such as Paging Controller(WiMAX), MME(3GPP) and AP(WLAN)
 - **Low radio quality:** MAG can retrieve this information from other network elements, such as eNB in 3GPP or BS in WiMAX, which can obtains the radio quality of MN-MAG periodically(e.g. Location Based services).
 - Additional signaling may be needed in the specific access network, which is out of scope of this draft
 - mobile node capability status option
 - Logical Interface support, Dual IPv4/IPv6 stack and MIPv6 stack support
 - MN needs to update these information to the MAG, e.g. using the EAP signaling during the initial attachment (details are out of scope of this draft).

Call flow illustration

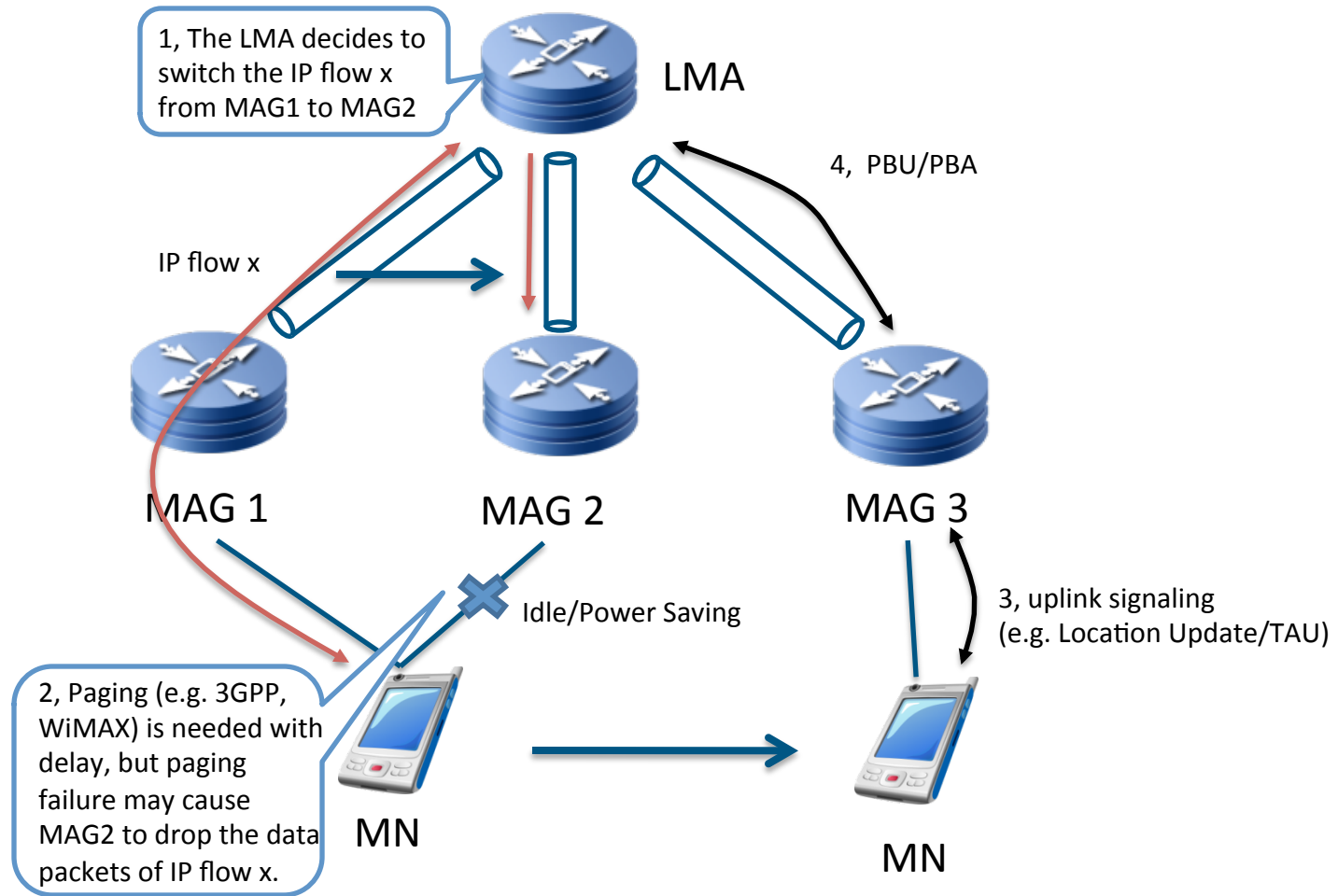


Next steps

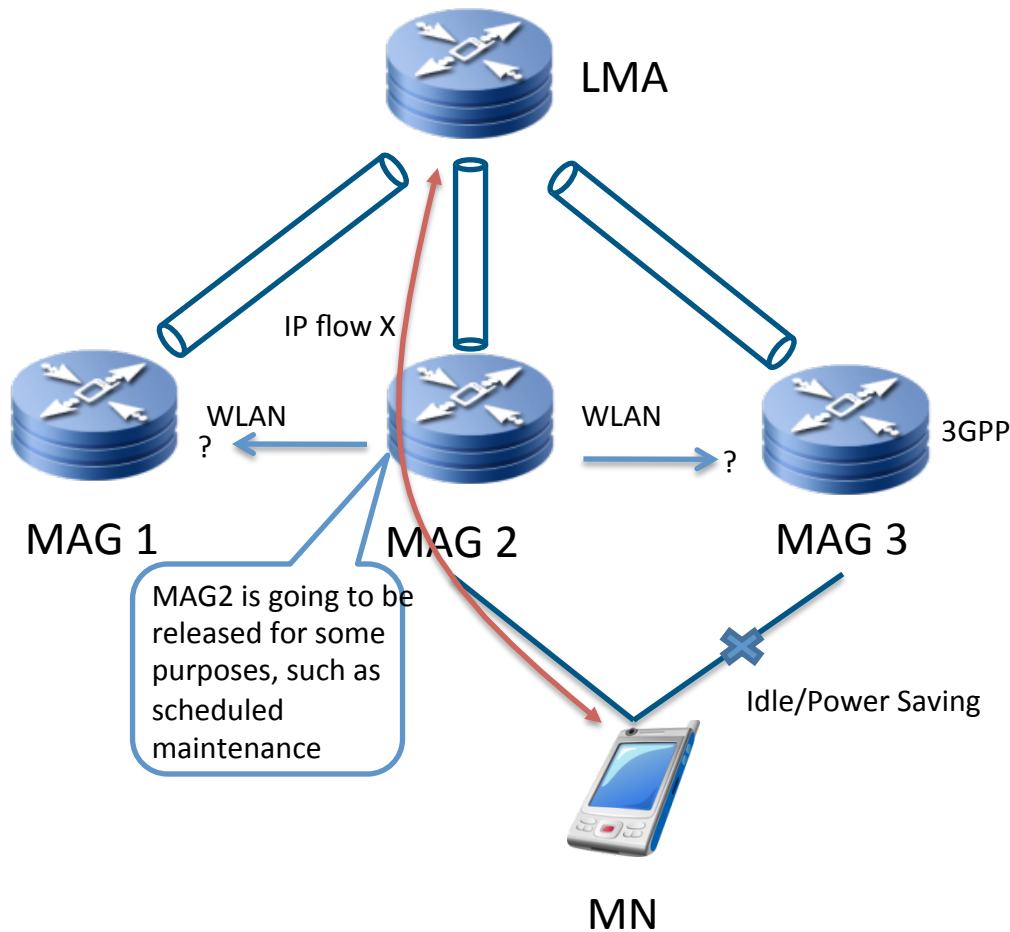
- Comments & questions?

BACKUP SLIDES

Idle/Power Saving mode

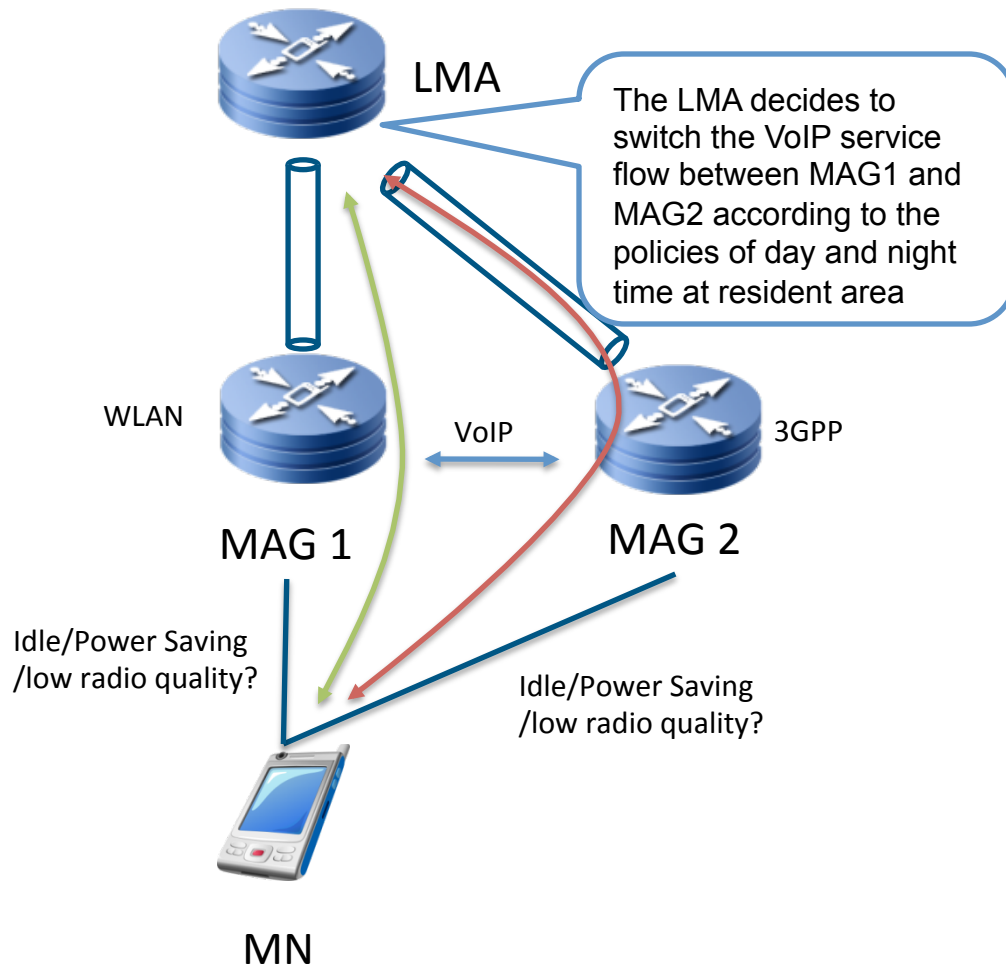


Scenarios(1/3)



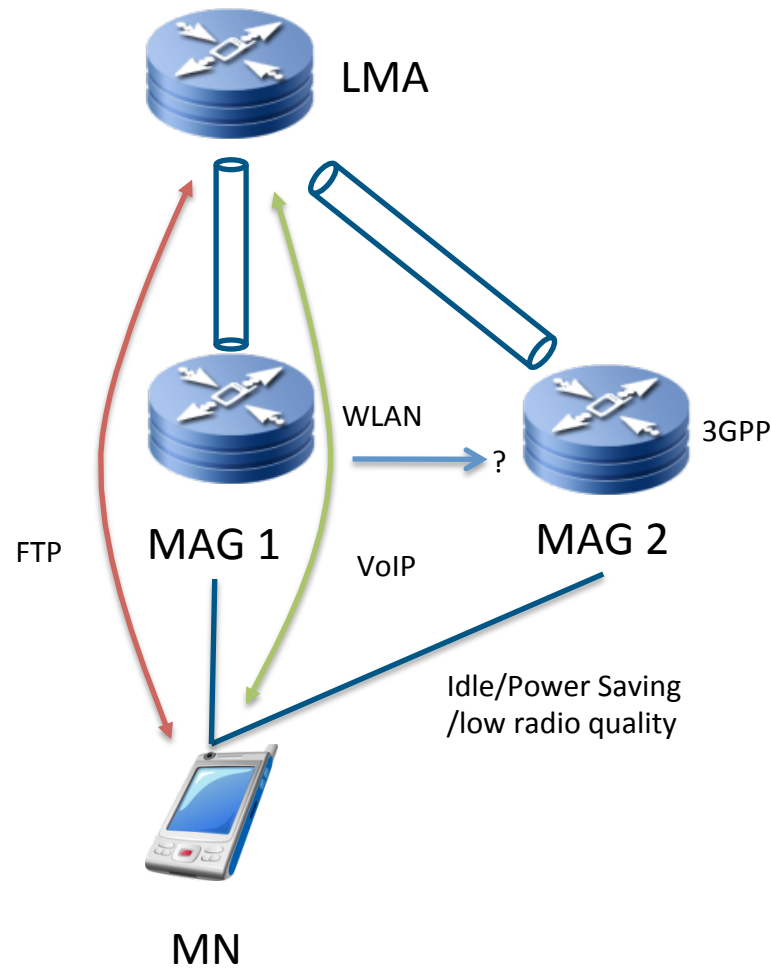
- 1, the LMA can either to switch the IP flow x to the 3GPP access, or to switch the flows to another WLAN access (if available).
- 2, if 3GPP access is currently in Idle mode, the LMA may switch the IP flow X to MAG 1 according to the MN status information and other policies, rather than wake up the 3GPP access;
- 3, the LMA may also switch the IP flow x to MAG 3 after waking the 3GPP access up, if the radio quality of WLAN access on MAG 1 is not good enough.

Scenarios(2/3)



- At residential areas, during night there are more people using WLAN, and less people using a cellular access, hence for the VoIP service it might be better to switch some users to the cellular access. On the other hand, during the day, it might be better to use the WLAN to offload the cellular network.
- no accurate information about MN status and capabilities may cause the flow mobility of VoIP service to be failure/data loss.

Scenarios(3/3)



- 1, an FTP IP flow is initiated which may cause the bandwidth resources to be insufficient ;
- 2, The LMA may consider changing the flows for VoIP service from the WLAN to the 3GPP access;
- 3, if the MN on 3GPP access is in idle/power saving or even low radio quality, then the LMA may not switch the VoIP IP flows.
- 4, the LMA may also wake up the MN in 3GPP access before switch the VoIP IP flows.