Timing Compensation of Idle Mode in MR

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Source:

Keiichi Nakatsugawa
Fujitsu Laboratories Ltd
Kamikodanaka 4-1-1,
Kawasaki, 211-8588, Japan
Voice: +81-44-754-2811
E-mail: nakatsugawa@jp.fujitsu.com

Yuefeng Zhou
Fujitsu Laboratories of Europe Ltd
Hayes Park Central, Hayes End Road
Hayes, Middlesex, UB4 8FE, UK
Voice: +44 (0) 20 8606 4444
E-mail: yuefeng.zhou@uk.fujitsu.com

Shiao-Li Tsao, Fang-Ching Ren, Wern-Ho Sheen, I-Kang Fu
National Chiao Tung University (NCTU)
Industrial Technology Research Institute (ITRI), Taiwan
No. 195, Sec. 4, Chung Hsing Rd., Chutung, Hsinchu,
Voice: +886-3-5712121-54717
Fax: +886-3-5721490
E-mail: sltsao@cs.nctu.edu.tw; frank_ren@itri.org.tw

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Purpose:

Discuss and adopt proposed text and message format

Timing Compensation of Idle Mode in MR

1. Assumptions

- Non-transparent RS system
- Processing delay existing in RS. RS may not relay MAC PDU within current frame.
- RS and MR-BS are synchronized, and have same frame number

2. Problem Description

-- The MOB_PAG-ADV sent by MR-BS will reach the idle-mode MS "D_R" frame later because of the processing delay in RS.

-- MS may miss the MOB_PAG-ADV message

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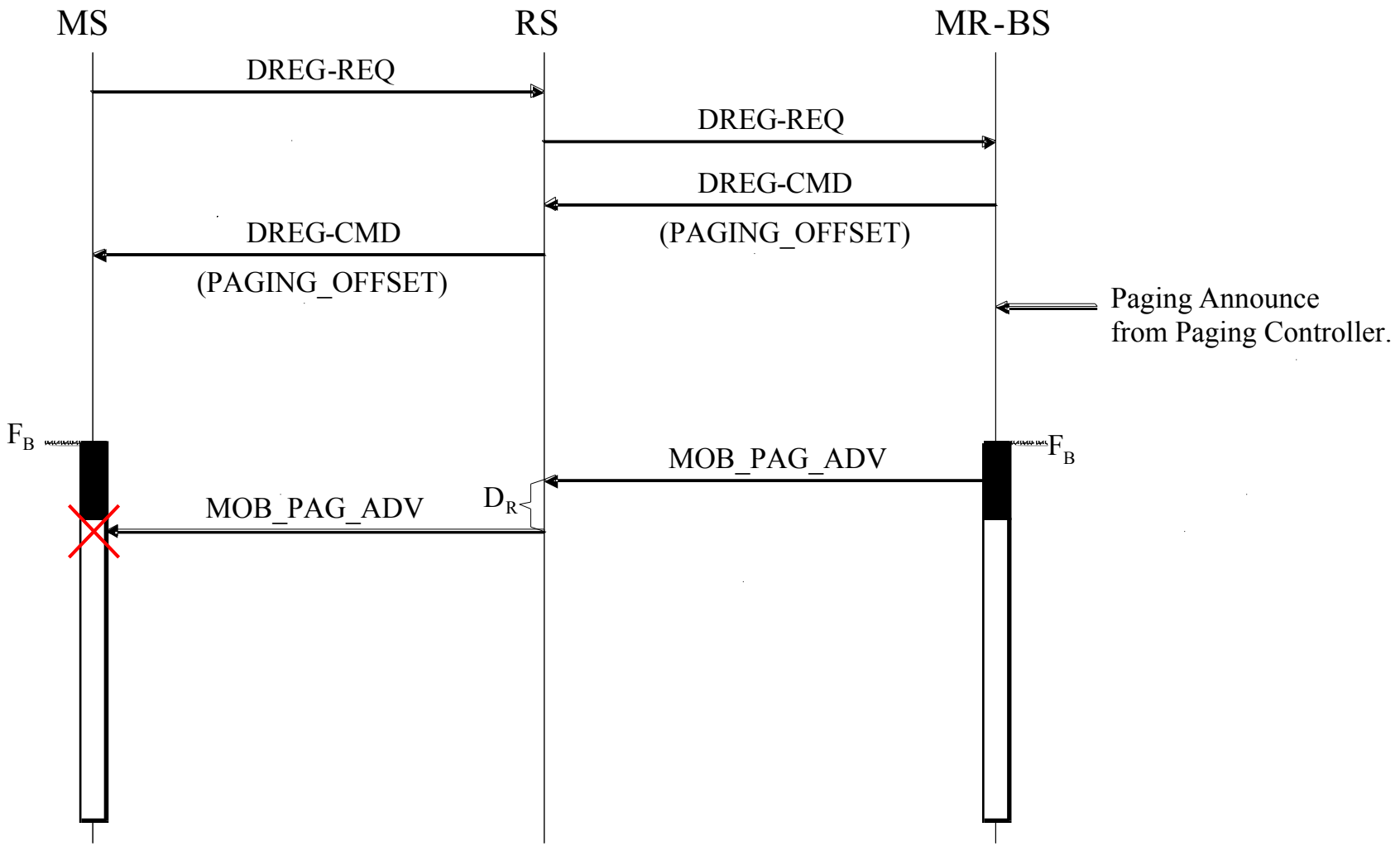

D_R : Relay processing delay of RS

F_B : The beginning frame of Paging Listening Interval

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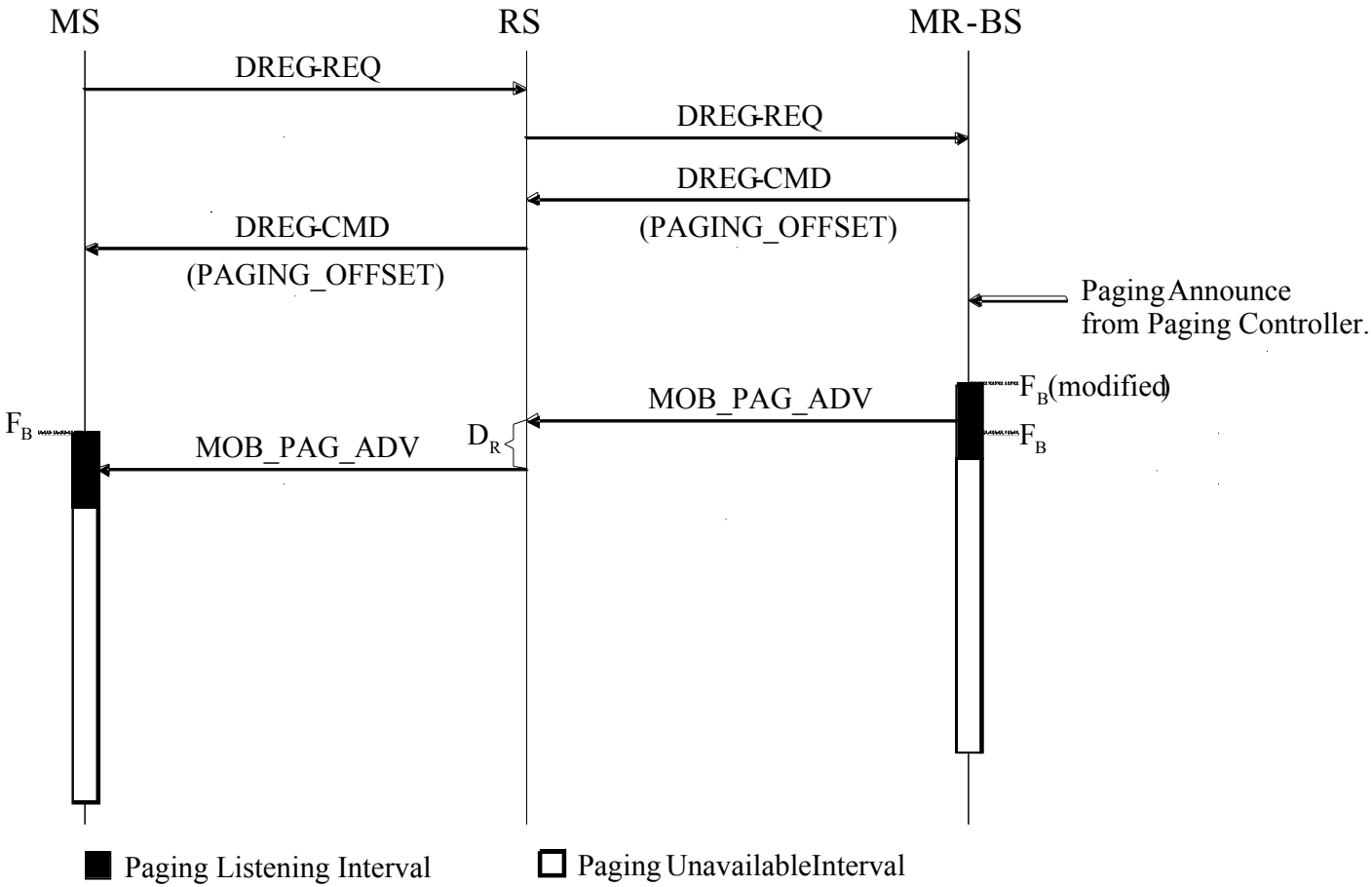
3. Compensation Method

- The delay in RS will be reported to MR-BS as a capability parameter of SBC-REQ message
- MR-BS broadcast the MOB_PAG-ADV over R-DL earlier than the paging listening interval.



D_R : Relay processing delay of RS
F_B : The beginning frame of Paging Listening Interval
F_B(modified): Modified beginning frame of Paging Listening Interval

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4. Benefits

- Guarantee the idle-mode MS can receive the MOB_PAG-ADV message in the presence of RS delay
- Support MS roaming

** MSs connecting with RS and MSs connecting with MR-BS directly will receive the MOB_PAG-ADV at the same time.

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4. Other Consideration

- Multiple RSs with different delay

** MR-BS examines the maximum delay, D_M,of all RS

** MR-BS will inform this maximum delay to all RS by SBC-RSP message

** MR-BS broadcasts the MOB_PAG-ADV earlier by D_M.

** All RS relay the MOB-PAG-ADV with this maximum delay.

- Deal with the idle-mode MSs connecting MR-BS directly

** MR-BS broadcasts the MOB_PAG-ADV earlier by D_M frames over R-DL

** MR-BS broadcasts the MOB_PAG-ADV with normal paging listening interval over the access link again.

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Insert the following text at the end of 6.3.24.5:

For MR, The RS delay, D_R, is given to MR-BS as a capability parameter of SBC-REQ message. MR-BS sends MOB_PAG-ADV over the R-DL as a pre-transmission D_R frame earlier than the normal MOB_PAG-ADV transmission time. MR-BS may wait for D_R frames, and then sends MOB-PAG-ADV data again over the access link.

If multiple RSs with different delay performance existing, MR-BS shall firstly examine the maximum delay of RSs, which is D_M, and notify it to all RSs by SBC-RSP message. MR-BS sends MOB_PAG-ADV over the R-DL as a pre-transmission D_M frame earlier than normal MOB_PAG-ADV transmission time. MR-BS may wait for D_R frames, and then sends MOB-PAG-ADV data again over the access link. All RSs shall use D_M as the delay to transmit MOB_PAG-ADV over access link. If the MR-BS detects that the delay of a RS is greater than the examined maximum delay, it shall update the current maximum RS delay parameter by this greater value. Also, MR-BS needs to send an unsolicited SBC-RSP message to all RSs to notify the change of the maximum RS delay.

Insert new subclause 11.8.3.7:

11.8.3.7.X Maximum RS Downlink Delay for Paging Group

Type	Length	Value	Scope
TBA	1	Maximum RS Downlink Delay for Paging Group (unit: frame)	SBC-RSP